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GROUNDWATER-SURFACE WATER INTERFACE (GSI) RESPONSE ACTIVITY PLAN North Kent Study Area

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PREPARED FOR:
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ACRONYMS

| | |
|-----------|--|
| CD | Consent Decree |
| CFS | Cubic Feet per Second |
| CSM | Conceptual Site Model |
| DoD | United States Department of Defense |
| EGLE | Michigan Department of Environmental, Great Lakes and Energy |
| FAV | Final Acute Values |
| FCV | Final Chronic Values |
| GIS | Geographic Information Systems |
| GSI | Groundwater-Surface Water Interface |
| HNDV | Human Health Non-Drinking Water Values |
| HSDS | House Street Disposal Site |
| ID | Identification |
| MDEQ | Michigan Department of Environmental Quality |
| MDOT | Michigan Department of Transportation |
| MGDL | Michigan GIS Data Library |
| ml/min | Milliliters per Minute |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NE | Northeast |
| ng/L | Nanogram per Liter |
| NKSA | North Kent Study Area |
| ORP | Oxidation-Reduction Potential |
| PDF | Portable Document Format |
| PFAS | Per- and Polyfluoroalkyl Substances |
| PFBS | Perfluorobutane Sulfonic Acid |
| PFHxA | Perfluorohexanoic Acid |
| PFHxS | Perfluorohexane Sulfonic Acid |
| PFNA | Perfluorononanoic Acid |
| PFOA | Perfluorooctanoic Acid |
| PFOS | Perfluorooctane Sulfonate |
| PVC | Polyvinyl Chloride |
| QAPP | Quality Assurance Project Plan [<i>Former Wolverine Tannery, House Street Disposal Area, and Woven/Jewell Area, Per- and Polyfluoroalkyl Substances Investigation Program</i>] |
| QA/QC | Quality Assurance/Quality Control |
| QSM | Quality Systems Manual |
| R&W/GZA | Rose & Westra, a Division of GZA GeoEnvironmental, Inc. |
| RAP | Response Activity Plan |
| SAP | Sampling and Analysis Plan |
| SOP | Standard Operating Procedures |
| USGS | United States Geological Survey |
| VAP | Vertical Aquifer Profiling |
| Wolverine | Wolverine World Wide, Inc. |
| WV | Wildlife Values |



1.0 INTRODUCTION

On behalf of Wolverine, R&W/GZA, prepared this RAP for the proposed GSI investigation in the NKSA. The objective of this RAP is to investigate potential environmental risks to the GSI in the Rogue River, due to regulated PFAS in groundwater, originating from the former HSDS and the Wolven/Jewell area. Based on the flow and PFAS distribution assessment, the following locations are identified as potential surface water discharge areas for the PFAS-containing groundwater in the HSDS and Wolven-Jewell study areas:

- Southeast downgradient of the HSDS primary plume;
- Downgradient of the HSDS, near the confluence of the Rogue River and the Grand River;
- Downgradient of the HSDS, near the Freska Lake area;
- Wolven Northeast study area;
- Wolven Northwest study area; and
- North Childsdale study area, downgradient of the Wolven study area.

This RAP is prepared pursuant to CD No. 1:18-cv-00039-JTN-SJB, effective February 19, 2020. Specifically, this scope of work is established in Sections 7.4, 7.10, and Appendix S of the CD. This RAP is organized into the following sections:

- Introduction
- CSM
- Proposed Statement of Work
- Investigation Methodologies
- Sampling and Analysis Methods and Procedures
- Data Quality Objectives
- Data Quality Control and Assurance
- Project Schedule for Field Sampling and Analysis
- Project Schedule for Data Evaluation and Report Submittals

The information obtained during the implementation of this RAP will be used as provided in Section 7.10(e) of the CD.

2.0 CONCEPTUAL SITE MODEL

The development of the CSM (as defined in Section 4.4 of the CD) was based on interpretation of regional geology and hydrogeology, residential water well sampling data in the NKSA, and groundwater investigations performed associated with the former HSDS and Wolven/Jewell areas. **Figure 1** is a layout of the NKSA and the PFAS Investigation Areas. For the purpose of this RAP, the CSM is focused on the groundwater flow from the source areas to the Rogue River, PFAS distribution in groundwater, and the fate and transport of PFAS in groundwater.



The following sections provide discussions of source areas, hydrology, geology and hydrogeology, PFAS distribution in groundwater, groundwater flow, and PFAS transport.

2.01 HOUSE STREET DISPOSAL SITE

The HSDS, located at 1855 House Street NE, Plainfield Township, Kent County, Michigan, encompasses approximately 76 acres (**Figure 1**). The HSDS is currently undeveloped and, according to available information, no buildings were previously present. An electric utility right-of-way and associated high-voltage transmission lines cross the northern portion of the HSDS, and an access road from House Street runs south to north across the HSDS.

The properties surrounding the HSDS are primarily undeveloped or residential. Properties to the northwest are undeveloped extending to Clear Bottom Lake and Freska Lake. Properties to the west, southwest, and northeast are primarily residential. House Street NE abuts the HSDS to the south and southeast. Portions of the eastern HSDS boundary are formed by Herrington Avenue NE. Land owned by MDOT is present south and southeast of the HSDS (US-131 right-of-way), and additional residential properties are located westward along House Street.

The HSDS was a State of Michigan licensed and regulated disposal facility from the mid-1960s through 1978. Until 1970, the HSDS received leather tanning byproducts over a portion of time. EGLE Remediation and Redevelopment Division files indicated that HSDS's waste disposal license expired in 1978, but it appears no waste was disposed after 1970. It has been determined that the byproducts contained PFOS and PFOA and their precursors, which are part of a larger group of PFAS. PFAS were in Scotchgard™, a waterproofing material manufactured by 3M Company, that was applied to some leather goods manufactured at the former Wolverine Tannery site in Rockford, Michigan. Based on past investigation data at Wolverine's Tannery Site (R&W/GZA, 2019), the byproducts also contained other substances. However, the data indicates that only PFOS and PFOA appear to be migrating to the GSI areas of interest.

Prior to Wolverine acquiring the HSDS in 1964 and Michigan's first disposal area licensing statute (PA 87 of 1965), Wolverine and other entities disposed of materials on the HSDS (perhaps as early as the 1940s) and also possibly on nearby real estate currently identified as the south adjoining MDOT property and nearby Imperial Pine parcel.

2.02 WOLVEN AND JEWELL AREAS

Certain PFAS were detected in wells in the Wellington Ridge neighborhood, located between 10 and 11 Mile Roads, west of Wolven Avenue, and east of US-131. In addition, certain PFAS were also detected in the groundwater monitoring wells near the North Kent Landfill area. No evidence of waste materials was detected during investigations conducted to date in this area. Historical aerial photographs suggest a portion of a gravel pit was previously located in the area of the Lady Lauren cul-de-sac of the Wellington Ridge Development. Aerial photographs suggest disturbances in the gravel pit area ceased by 1965. **Figure 1** identifies the locations of the Wolven/Jewell Areas and the North Kent Landfill Area.

2.03 TOPOGRAPHY

As shown in **Figure 1**, the terrain is generally hilly in the region. The ground surface elevation at HSDS ranges from 740 to 800 feet. The HSDS is flanked by higher ground to the northeast and southwest, but ground surface generally dips to the northwest toward the Clear Bottom Lake and Freska Lake, and to the southeast toward the Rogue River. Ground surface elevations for the area east of the HSDS range from 800 to more than 900 feet; ground surface elevations for the west to southwest of the HSDS range from 800 to 820 feet, with lower terrains to the northwest and southeast.



Ground surface elevations in the eastern portion of the Wolven/Jewell study area, where the Wellington Ridge neighborhood is located, range from approximately 780 to more than 930 feet. Most of the neighborhoods in the eastern portion of the Wolven/Jewell study area sit on relatively high ground, and the lowland areas are generally between the hills, acting as surface water drainage pathways. Ground surface generally dips in various directions, to the west and northwest areas of the Wolven/Jewell study area, and northeast toward Wolven Northeast, toward the Rogue River. The portion of the Wolven/Jewell study area located west of US-131 has ground surface elevations ranging from approximately 710 to 850 feet. The Wolven northeast study area has ground surface elevations ranging from approximately 720 to 910 feet.

2.04 REGIONAL HYDROLOGY

The regional hydrology, geology (Section 2.05) and hydrogeology (Section 2.06) are used to assist in determination of groundwater conditions within the NKSA and specifically as it interacts with the Rogue River for this GSI evaluation.

The NKSA is situated within the Rogue River Basin (Basin No. 14F), which is part of the Lower Grand River watershed (HUC 0405006). Based on the Michigan's Major Watersheds – Sub-basins GIS data (Michigan Department of Environmental Quality, 2011) downloaded from MGD, the HSDS and Wolven/Jewell study areas are situated within the Rogue River Basin (Basin No. 14F), which is part of the Lower Grand River watershed (HUC 0405006). The Rogue River Basin consists of 12 sub-basins, four of which are near the Site area. The HSDS is situated on the water divide of two sub-basins: HUC 405006040080 and HUC 405006040120; the Wolven/Jewell study areas are situated in sub-basins HUC 405006040080 and HUC 405006040110. All of these three sub-basins drain to the Rogue River, which discharges to the Grand River. The HSDA is also near sub-basin HUC 45006050050, which is part of the Grand River basin.

The 2016 National Oceanic and Atmospheric Administration climate data report¹ for Grand Rapids, Michigan, indicates that the mean annual precipitation for the 80-year record period is approximately 36 inches. Based on the state-wide GIS data for the estimated annual groundwater recharge (Michigan State University, 2005), the estimated precipitation at the NKSA ranged from 9 to 15 inches.

From 1989 to 2016, the average annual streamflow rate at USGS Gaging Station No. 04118500 in Rockford, Michigan, is approximately 260 CFS, and the average baseflow rate approximately 210 CFS. The gaging station measures the flow for the sub-basin, HUC 405006040110, and all the upstream sub-basins, representing a drainage area of approximately 234 square miles, according to the USGS record.

2.05 REGIONAL GEOLOGY

Overburden in Kent County is a thick sequence of Pleistocene glacial deposits. The thickness of glacial deposits ranges from 11 to 800 feet in Kent County; however, the majority of glacial deposits range from 200 to 400 feet in thickness (Western Michigan University, 1981; Farrand, 1982). The glacial deposits in the county include till, outwash and lacustrine deposits. Till occurs in end and ground moraines (till plains), interspersed on the surface throughout the County (Stramel, Wisler, & Laird, 1954). For the area near the City of Rockford and Plainfield Township, the Michigan Glacial Land Systems (Michigan State University, 2015) indicates that proglacial outwash plain is present along the Rogue River, and end moraines are present on either side of the Rogue River extending to the "wide" near the Grand River. At the Site and its vicinity, end moraines of medium-textured till are present. The ground (till plain) and end moraine belong to the unstratified group of deposits, composed of fine- to coarse-grained material, including silt, sand, gravel and boulders.

¹ <https://www.ncdc.noaa.gov/cdo-web/search>



Based upon bedrock maps for the area (MDEQ, 1987), the bedrock beneath the NKSA includes the Michigan basin series. Based on GIS data from EGLE (MDEQ, 1987), Jurassic “red beds” are present in most of the site area and its vicinity, with small areas of Saginaw formation outcrops. The Jurassic “red beds” are often poorly consolidated or unconsolidated and consist primarily of clay, mudstone, siltstone, sandstone, shale and gypsum. The “red beds” are of low permeability and are considered a confining unit. However, locally in the county, the “red beds” have been documented to supply small quantities of water (Apple & Reeves, 2007). Beneath the “red beds,” bedrock in the region consists of the Mississippian-aged sandstone (Marshall formation), shale (Michigan formation), and the Bayport limestone as well as the Pennsylvanian-aged Saginaw formation. The regional dip is northeasterly toward the center of the Michigan basin.

Based on the Hydrogeologic Atlas of Michigan (Western Michigan University, 1981), the top of bedrock elevation ranges from 500 to 550 feet near the City of Rockford. The top of bedrock elevations at the HSDS area were estimated to range from 540 to 580 feet (R&W/GZA, 2018).

2.06 REGIONAL HYDROGEOLOGY

The direction of regional groundwater flow is influenced by the primary surface water features of the Rogue River and the Grand River. Streamflow data from the USGS Gaging Station indicates that the Rogue River is gaining stream, acting as a groundwater discharge zone. Based on the static groundwater level in the Wellogic - Statewide Wells GIS Data for Kent County (Michigan State University, 2005a through 2005d), regional groundwater contours were interpolated by R&W/GZA. The regional groundwater contours also indicate regional groundwater flow pattern generally follows the topography, discharging to the Rogue River and the Grand River.

2.07 GROUNDWATER INVESTIGATIONS

R&W/GZA retained drilling contractors to perform subsurface exploration and monitoring well installation to continue delineation of the extent of PFOA and PFOS both vertically and laterally in the NKSA. Since 2017, R&W/GZA oversaw the installation of 84 groundwater monitoring wells at 29 locations in the HSDS study area, and 36 groundwater monitoring wells at 16 locations in the Wolven/Jewell study areas. At most of the locations, multi-depth cluster wells were installed. The borings were drilled using either hollow-stem auguring or rotosonic techniques. Soil samples were collected and logged every 5 feet. VAP groundwater samples were collected every 10 feet in the saturated zone and submitted to an independent laboratory for the PFAS analysis using isotope dilution method in accordance with the most recent version of the DoD QSM procedures.

Monitoring well screen intervals were selected based on PFAS VAP sampling results and geological conditions. Each monitoring well was constructed of factory-slotted, 0.010-inch, 5-foot-long PVC screen (in a few cases, 10 feet), and flush-threaded well casing. The annular space surrounding the well screen was filled with sand filter pack to approximately 3 feet above the top of the well screen, followed by a one-to-one and one-half foot-thick hydrated bentonite seal. The remaining annulus was filled with cement and bentonite grout to approximately one foot bgs. The wells were finished with a steel protective casing set in a concrete pad. A locking expansion cap was placed in the top of the PVC casing. **Appendix A** includes the soil boring and well installation logs. See **Table 1** for well completion information and **Table 2** for static water level measurements. See **Figure 2** for the groundwater monitoring well locations.

Following installation, the newly installed wells were developed to remove sediment from the sand-filter pack and well casing. The wells were developed using a 12-volt Mini-Typhoon® submersible pump equipped with dedicated tubing for each well. The pump was decontaminated between wells using a water and Alconox® wash with a water rinse. The wells were developed until the water ran clear. The development water was containerized and staged prior to proper disposal. The tubing and other disposable materials used during the well development were placed in a separate drum and stored for proper disposal.



In addition, surface water level measurement gauges were installed in the following locations in the Rogue River:

- Rockford Dam Seawall;
- East Bridge Street Bridge;
- Rogue River Road Bridge; and
- Jericho Avenue Bridge

The water levels measured from these locations were used in combination with available gaging height data at USGS gaging station, USGS04118500, to evaluate surface water levels in the Rogue River.

2.08 GROUNDWATER SAMPLING

Groundwater sampling was conducted quarterly throughout 2018 and 2019 using low-flow purging and sampling procedures. The wells were purged using either a GeoTech Peristaltic Pump or a GeoTech Bladder Pump and control box. Static water levels in the monitoring wells were measured to maintain stabilized drawdowns during purging. Field indicator parameters, temperature, pH, dissolved oxygen, specific conductance, ORP and turbidity, were monitored using a YSI PRO and field turbidity meters in accordance with the low-flow sampling SOP in the project QAPP. Once the field parameters stabilized, a groundwater sample was collected by disconnecting the tubing from the flow-through cell and collecting the sample directly from the tubing.

Groundwater samples were collected in laboratory-supplied sample containers labeled with the well ID, sample time and date, and analytes. The samples were packed in coolers with ice and shipped to the laboratory under chain-of-custody control via overnight express shipping.

Groundwater PFAS analytical data for the HSDS area and the Woven/Jewell areas are summarized on **Tables 3** and **4**, respectively. As the subsurface exploration and monitoring well installation progressed, the newly installed wells were added to the sampling list in the quarter following their installation and development.

2.09 SITE GEOLOGY

This section provides a summary of the geology in the NKSA, based on borehole data collected during the subsurface exploration and groundwater monitoring well installation described in **Section 2.07**, and the residential water well construction information and lithology data downloaded from the online Wellogis System.² The Wellogis System made available individual well logs in PDF, GIS shapefiles of county-wide well locations and construction information, and database files of lithology data for some of the wells. R&W/GZA has attempted to verify the well locations by comparing the well addresses to the Kent County Parcel GIS shapefiles and found that some of the well locations in the Wellogis GIS shapefiles are incorrect. To rectify, the Kent County parcel center coordinates are used for the residential well locations if the well addresses are verified with the Kent County Parcel GIS shapefiles. The majority of the well addresses in the Wellogis System GIS shapefiles were verified, and the parcel center locations were used as their coordinates. For some well locations, the addresses of which were not verifiable, the locations in the Wellogis System GIS files were kept and qualified with a note. In addition, lithology data for some of the wells in the Wellogis System GIS shapefiles were not available, and R&W/GZA downloaded the PDF well logs, and compiled the available lithology data into the well lithology database.

The monitoring well locations and the residential water wells with lithology data are shown in **Figure 3**. Geologic cross-sections A-A', B-B', C-C', D-D', and E-E' are created in the HSDS study area, and geologic cross-sections F-F',

² <https://secure1.state.mi.us/wellogis/Login.aspx?ReturnUrl=%2fwellogis%2fdefault.aspx>



G-G', H-H' and I-I' in the Wolven/Jewell study areas to show the lithology in the study areas. See **Figures 4** through **12** for the geological cross-sections.

HSDS Study Area

In the HSDS study area, cross-section A-A' is constructed along the primary plume center line, following the paleo-channel on the Lidar Bare Earth Elevation image on **Figure 3**. Cross-section B-B' is immediately southwest of cross-section A-A'. The lithologies of both A-A' and B-B' are predominantly coarse-grained soil, with the presence of fine-grained soil in a few borings with limited thickness.

Cross-section C-C' is located north-south toward the Grand River. Except for HS-MW-17, where the soil encountered was sand from ground surface to an elevation of approximately 560 feet above mean sea level, fine-grained soil was encountered in all boreholes on this cross-section, with thickness ranging from less than 10 to approximately 80 feet. However, water bearing units were encountered in all wells on the cross-section. The presence of fine-grained soil is expected to affect the flow path locally, but not the primary groundwater flow toward the Rogue River or the Grand River.

Cross-section D-D' is located east of the Rogue River, near the confluence to the Grand River, where proglacial outwash is present. The lithologies of the wells on cross-section D-D' are generally coarse-grained soil, sand or gravel, with the presence of clay of limited thickness in a few boreholes. It is consistent with the regional geology.

Cross-section E-E' is constructed from the HSDS toward the Freska Lake area. The lithologies of the boreholes are similar to cross-section A-A' and cross-section B-B'. Coarse-grained soils are generally predominant. Fine-grained soils are present in some boreholes in thickness ranging from less than 10 to approximately 70 feet. However, water bearing units were encountered in all of these wells.

In general, coarse-grained soil predominates in most of the soil borings and water well logs in the HSDS study area. The presence and thickness of clay and silt deposits varies horizontally and vertically without stratified correlation between borings. The lithologies shown on the cross-sections in the HSDS study area are characteristics of glacial outwash, and end moraines, to a lesser extent, as documented in regional geology.

Wolven/Jewell Study Areas

Cross-section F-F' is constructed from the Wellington Ridge neighborhood to the Wolven Northeast study area. Fine-grained soil, clay, or silt is predominant in the boreholes on cross-section F-F'. Water bearing units were encountered below the clay stratum or between clay strata. The thickness of fine-grained soil varies from approximately 20 to more than 100 feet. In most of the boreholes on cross-section F-F', the top of the clay stratum was shallow, except the well at 3616 11 Mile Road, where more than 100 feet of sand were present above the top of the clay stratum, presenting a potential pathway for surface/shallow contamination to migrate to the deeper zone.

Cross-sections G-G' and H-H' are located from the Wellington Ridge area to the west or northwest toward the portions of the study area located west of US-131. For the boreholes located east of US-131, fine-grained soil is predominant in the boreholes while, for the boreholes located west of US-131, more coarse-grained soil is present. The thickness of fine-grained soil varies from less than 10 to more than 100 feet. Similar to cross-section F-F', water bearing units were encountered below the clay stratum or between clay strata.

Cross-section I-I' is constructed from the Wellington Ridge area to the southeast toward the Rogue River. Fine-grained soil, clay, or silt is generally predominant in the boreholes on cross-section I-I'. The fine-grained soil



strata observed in the borings from 3260 Bent Tree Ridge to 8497 Windstone Road are not as thick when compared to other borings in the NKSA. Overall, the thickness of fine-grained soil varies from approximately 10 to approximately 200 feet. Water bearing units were encountered below the clay stratum or between clay strata.

In general, fine-grained soil predominates in most of the soil borings and water well logs in the Wolven/Jewell study area. In the soil borings located west of US-131 or closer to the Rogue River, coarse-grained soils are present in greater thickness and are even dominant in some locations. In addition, individual borings containing only coarse-grained soil exist even in the areas where fine-grained soils are predominant. These locations provide potential migration pathways from the surface/shallow to the deeper zone. The presence and thickness of clay and slit deposits varies horizontally and vertically. They appear to be unstratified and discontinuous in the area. In the soil borings where fine-grained soils are predominant, water bearing units were encountered below the clay stratum or between clay strata. In rare cases, water wells were screened in the bedrock. The lithologies shown on the cross-sections in the Wolven/Jewell study area are characteristic of end moraines as documented in regional geology. The presence of a relatively large volume of fine-grained soil limits the hydraulically conductive saturated zone, and therefore affects groundwater flow and contaminant transport pathway.

2.10 GROUNDWATER FLOW

Static water levels were collected from the monitoring wells and the staff gauges. Groundwater and surface water elevations were calculated from the surveyed elevations of the top of casing for the monitoring wells or reference points for the staff gauges. In addition, surface water elevations recorded at USGS04118500 were also downloaded and converted to the same datum as the monitoring well survey. See **Table 2** for a summary of the static groundwater water level measurements.

In addition to the R&W/GZA installed groundwater monitoring wells, EGLE also collected static water level data from the monitoring wells installed by EGLE during the November 2019 monitoring event, and requested North Kent County Landfill collect and provide static water level data in November 2019. In combination, the November 2019 static water level data provided the most complete set of static water levels and elevations for the NKSA.

For the locations where multiple wells were installed at different intervals, R&W/GZA grouped the wells into shallow and deep aquifers by borehole lithologies, screen intervals, and static water elevations. See **Table 1** for the well grouping designations.

Based on the November 2019 data set, groundwater elevation contours were interpolated from the static water level data. See **Figure 13** for the groundwater elevation contours in the shallow zone and **Figure 14** for the deep zone.

As shown on **Figure 13**, groundwater in the NKSA flows to the Rogue River. The HSDS is situated at or near a groundwater divide. Groundwater predominantly flows from the HSDS to the southeast to the Rogue River. But a portion of the flow is to the northwest. Because of Freska Lake and Clear Bottom Lake, the hydraulic gradient to the southwest appears to be flat as compared to the southeast. The Wellington Ridge is situated at a groundwater mounding area, and groundwater flows to the northwest, north, northeast and southeast. The hydraulic gradient in the Wolven/Jewell area appears to be steep due to the presence of relatively significant volumes of fine-grain soil.



As shown on **Figure 14**, the deep zone groundwater contours are similar to the shallow zone with a few localized variations. Groundwater flow directions are generally similar to the shallow zone as well.

2.11 PFAS DISTRIBUTION IN GROUNDWATER

PFAS analytical data from the groundwater monitoring wells, VAP samples, and residential water well samples collected until December 2019 were combined and used for the interpolation of isoconcentration maps. Where data from multiple sampling depths or sampling events are available at one location, the maximum concentrations were used during interpolation. It is important to note that the isoconcentration maps were geostatistically interpolated from spatially distributed point data; therefore, they may overestimate the concentrations or extents in areas where data points were relatively sparse. As implied by the method, the isoconcentration maps are estimations only and are not intended to represent measured or true conditions. **Figures 15, 16, and 17** present the interpolated isoconcentration maps for total PFOS, PFOA and PFAS, respectively. Analytical data for the groundwater monitoring wells are provided on **Tables 3 and 4**.

PFAS isoconcentration map indicated PFAS migrated from the HSDS toward the Rogue River, primarily in the southeast direction, along the plume centerline. A portion of the PFAS plume appeared to migrate from the HSDS to the northwest toward the Freska Lake area and the Rogue River, but the plume transport appeared to be slowed as the plume reached the area of the Freska Lake and Clear Bottom Lake, where the groundwater gradient is relatively flat and groundwater flow pattern is affected by the surface water bodies. The PFAS isoconcentration map also indicated a PFAS plume with relatively low concentration near the confluence of the Rogue River and the Grand River.

In the Wolven/Jewell study areas, the PFAS isoconcentration map indicated that PFAS-containing groundwater migrated from the Wellington Ridge neighborhood, where PFOS, PFOA, and total PFAS were detected, to the Wolven Northeast study area, the Wolven Northwest study area, and the North Childsdales area. Based on the groundwater flow evaluation, the PFAS-impacted groundwater is expected to continue migrating to the Rogue River from these areas. It is important to note that the PFAS isoconcentration extent at the northeast corner of US-131 and 10 Mile Road and southwest of the Wellington Ridge neighborhood was a result of interpolation, due to lack of data points in that area.

The PFOA and PFOS isoconcentration maps indicated a similar distribution to the total PFAS isoconcentration map, but their extents and the concentration ranges are less than that of total PFAS because the total PFAS isoconcentration map included other detected compounds, such as PFBS, PFHxA, PFHxS, and PFNA. Furthermore, the mapping indicates distribution of lower chain compound such as PFBS is spatially greater than PFOS and PFOA, likely due to its relatively low sorption coefficient to soil matrix³. In comparison, the extent of PFOS distribution isoconcentration map is slightly less than that of PFOA, likely because PFOS has eight fluorine atoms in the tail, and PFOA has seven fluorine atoms in the tail, and the longer chain PFOS is more strongly sorbed to the soil matrix than PFOA⁴.

2.12 GSI AND APPLICABLE RULE 57 WATER QUALITY STANDARDS

The groundwater flow evaluation and total PFAS, PFOS and PFOA distribution analysis indicate that PFOA and PFOS have migrated toward the Rogue River or will migrate toward the Rogue River. Based on EGLE's Part 201 Administrative Rules, Part 31 Administrative Rules, Part 4 – Water Quality Standards, the potential environmental

³ See Section 5.2.3: https://pfas-1.itrcweb.org/5-environmental-fate-and-transport-processes/#5_2

⁴ See Section 5.2.3: https://pfas-1.itrcweb.org/5-environmental-fate-and-transport-processes/#5_2



exposure pathways for impacted surface water in the Rogue River and applicable Part 4 Rule 57 Water Quality Values are identified as follows:

- Human exposure via non-drinking water exposure route – Rule 57 HNDV;
- Aquatic life exposure to impacted water in the Rogue River – Rule 57 FCV; and
- Wildlife exposure to impacted water in the Rogue River – Rule 57 WV.

The generic Part 201 GSI criteria are the lesser of HNDV, FCV, and WV. It is important to note that the human health drinking water value is not applicable.

| Parameter | Units | HNDV | FCV | WV |
|-----------|-------|--------|---------|---------------|
| PFOA | ng/L | 12,000 | 880,000 | Not Available |
| PFOS | ng/L | 12 | 140,000 | Not Available |

2.13 DATA GAPS

Based on the flow and total PFAS, PFOS and PFOA distribution assessment, the following locations are identified as potential discharge areas for the PFOS- and PFOA-containing groundwater in the HSDS and Wolven-Jewell study areas:

- Southeast downgradient of the HSDS primary plume;
- Downgradient of the HSDS, near the confluence of the Rogue River and the Grand River;
- Downgradient of the HSDS, near the Freska Lake area;
- Wolven Northeast study area;
- Wolven Northwest study area; and
- North Childsdale study area, downgradient of the Wolven study area.

In evaluating the potential risks to the Rogue River, the following data gaps are identified:

- Groundwater elevation and flux at the GSI to evaluate whether groundwater discharges to the Rogue River;
- Groundwater elevation and flux data at the GSI to evaluate the gradient and flux at the GSI, if it is determined groundwater discharges to the Rogue River;
- PFOS, PFOA and PFAS concentrations of the groundwater discharging to the Rogue River; and
- Identification of the proper locations for GSI monitoring wells.

3.0 PROPOSED STATEMENT OF WORK

The following provides a summary of the proposed investigations, based on the identified data gaps. The proposed sampling locations are shown on **Figure 18**. Actual piezometer and pore-water sampling locations may vary slightly from the proposed locations of **Figure 18** during installation. While the target locations are shown, limitations for access on private properties, river bank conditions, and utilities may require moving piezometer locations.



3.01 HSDS STUDY AREA

Based on the groundwater flow, analytical data, and our evaluation, the following pore-water sampling and GSI piezometer locations are proposed:

- Nine pore-water sampling locations (HS-PW-1 through HS-PW-9) and five GSI piezometer locations (HS-GSI-1 through HS-GSI-5) downgradient of the primary House Street plume, along the Rogue River, to monitor potential PFOA and PFOS venting to the surface water.
- Three GSI piezometer locations (HS-GSI-6 through HS-GSI-8) downgradient of the primary House Street plume, along the Grand River, to measure potential venting to the surface water.
- Two pore-water sampling locations (HS-PW-10 and HS-PW-11) and one GSI piezometer location (HS-GSI-9) northwest of the House Street Site, downgradient of the Freska Lake area, along the Rogue River, to monitor potential PFOA and PFOS venting to the surface water.

In addition, existing well cluster HS-MW-19S/D and HS-MW-29A (located hydraulically downgradient of the primary House Street plume) are also considered to be GSI monitoring points to monitor potential PFOA and PFOS venting to the Rogue River. As identified in the GSI SOW, these wells will be sampled during the pore-water sampling event.

3.02 WOLVEN/JEWELL STUDY AREA

Based on the groundwater flow, analytical data, and our evaluation, the following pore-water sampling and GSI piezometer locations are proposed:

- Seven pore-water sampling locations (Area19-PW-1 through Area19-PW-7) downgradient/northeast of the Area 19 plume within the Rogue River to monitor potential venting to the surface water. These pore-water sample locations are located hydraulically downgradient of Wellington Ridge, immediately downgradient of the apparent extent of PFOA+PFOS exceeding 10 ng/L.
- Three GSI piezometer locations (Area19-GSI-1 through Area19-GSI-3) downgradient of the Area 19 plume to the northeast. Staff gauges (as shown on **Figures 18** and **18B**) in the river will be paired with these piezometer locations. These locations along the Rogue River will be used to measure and compare the groundwater elevations to the pore-water and surface-water elevations. In addition, these locations will be used to monitor potential venting to the surface water at the north and south edges of this portion of the plume along with the center of the plume. As identified in the GSI SOW, these piezometers will be sampled during the pore-water sampling event. Additionally, one existing well installed by EGLE (DEQ-MW-9 well series) is also considered to be a GSI monitoring point.
- Four pore-water sampling locations (WVNW-PW-1 through WVNW-PW-4) and two GSI piezometer locations (WVNW-GSI-1 through WVNW-GSI-2) immediately downgradient of the Wolven Northwest plume, along the Rogue River to monitor potential PFOA and PFOS venting to the surface water. Two staff gauges (as shown on **Figures 18** and **18A**) in the river will be paired with these two piezometer locations.
- Six pore-water sampling locations (WV/CH-PW-1 through WV/CH-PW-6) and two GSI piezometer locations (WV/CH-GSI-1 through WV/CH-GSI-2) are proposed immediately downgradient/southeast of the Wolven-North Childsdale plume, along the Rogue River to monitor potential venting to the surface water. The existing staff gauges in this segment of the Rogue River will be utilized for water level comparison and groundwater flow evaluation.



4.0 INVESTIGATION METHODOLOGY

Pore-water sampling will be performed using the same techniques previously used at the former Wolverine Tannery site. Therefore, two weeks of piezometer- and staff-gauge measurements will be made to establish groundwater flows to the surface water before any pore-water samples will be collected. Piezometer- and staff-gauge measurements will be made Monday, Wednesday, and Friday of each week. If these measurements do not demonstrate groundwater flow to the River, the two-week monitoring will be repeated until it does. The lack of demonstration and need to extend the monitoring period will be discussed with EGLE, if needed.

Relevant tasks completed under this RAP will be completed in accordance with the most recent revision of the QAPP prepared for Wolverine by R&W/GZA.

4.01 PIEZOMETERS INSTALLATION AND SAMPLING

The proposed piezometers will be hand-driven into the groundwater on the river bank. The top of the piezometer will be installed above the estimated flood elevation based on observations of vegetation and deposition. The piezometer will be finished with a one-foot-thick bentonite seal, followed by a two-inch concrete pad at the surface. An elevational survey will also be conducted upon completion of the piezometer installations.

The piezometers will be installed following SOP A28 (**Appendix B**). Piezometers slated for sampling as established in the GSI SOW (Area19-GSI-1 through Area19-GSI-3) will be sampled following SOP A29 (**Appendix B**). These piezometers will be sampled a minimum of two weeks after installation and in conjunction with the pore-water sampling event in this RAP.

4.02 PORE-WATER SAMPLING

After demonstrating the groundwater is flowing to the River, pore-water samples will be collected using a temporary well point (i.e., stainless-steel probe) driven to discrete depths within the river bottom. A shroud may be used if river bottom conditions allow, to further minimize any short-circuiting during pore-water sampling. The pore-water sampling will be attempted at 6-inch intervals beginning at 12 inches below the surface of the bottom sediment. Two pore-water samples will be attempted following procedures similar to that described below. R&W/GZA's experience indicates that pore-water sampling methodology can vary from sampling location to location given physical conditions of the stream bed, etc. Step outs may be necessary if refusal is encountered. These will be documented in the field. As such, the following is proposed only as a guide.

- A 6-foot (or appropriate length) stainless-steel probe with a 6-inch screen will be advanced to the desired depth. The top of the screen in the shallowest depth interval will be 12 inches below the surface of the sediment in the river bottom. Screen intervals are expected to be: 12 to 18 inches and 18 to 24 inches.
- A peristaltic pump with dedicated tubing will be used to purge the screen at a flow rate less than 100 ml/min.
- Using a multiparameter meter (as specified in the QAPP) with a flow-through cell, R&W/GZA will measure pH, temperature, conductivity, dissolved oxygen and ORP from the pore-water interval and will compare it to measurements collected concurrently from the river. Both readings will be documented on a field data sheet. DO and ORP will be collected for information purposes only.
- Once the field readings from the pore water have stabilized and the pore-water readings are distinguishable from the river readings (i.e., >10% difference for parameters except for temperature), the pore water will be sampled.



- Pore water will be pumped directly into laboratory-provided sampling containers maintaining the flow rate of less than 100 ml/min. R&W/GZA will submit samples to Pace Analytical of Columbia, South Carolina for PFAS analysis using the DoD QSM (which includes isotope dilution.)
- This is further detailed in SOP A27 (**Appendix B**).

5.0 SAMPLING AND ANALYTICAL PROCEDURES

This section provides a generalized SAP for the piezometer- and pore-water sampling. Specific information regarding sampling procedures and analytical methods is provided in the site-specific QAPP.

5.01 SAMPLING LOCATIONS

As discussed in **Section 3.0**, the following pore-water sampling and GSI piezometer locations are proposed:

| Area of Investigation | Pore Water | Piezometers | Wells |
|--|---------------------------------|--|--------------------------------------|
| Southeast downgradient of the HSDS primary plume along Rogue River | HS-PW-1 through HS-PW-9 | HS GSI-1 through HS-GSI-5 | HS-MW-19S/D and HS-MW-29A |
| Downgradient of the HSDS near Grand River | -- | HS-GSI-6 through HS-GSI-8 | -- |
| Northwest of the HSDS, Downgradient of the Freska Lake area | HS-PW-10 and HS-PW-11 | HS-GSI-9 | -- |
| Downgradient of Wolven Northeast plume within the Rogue River | Area19-PW-1 through Area19-PW-7 | Area19-GSI-1 through Area19-GSI-3, paired staff gauges | One EGLE well (DEQ-MW-9 well series) |
| Downgradient of the northwest portion of the Wolven/Jewell plume along the Rogue River | WVNW-PW-1 through WVNW-PW-4 | WVNW-GSI-1 through WVNW-GSI-2, paired staff gauges | |
| North Childsdales area, downgradient of the Wolven study area | WV/CH-PW-1 through WV/CH-PW-6 | WV/CH-GSI-1 through WV/CH-GSI-2, existing staff gauges | |

5.02 SAMPLE COLLECTION AND LABELING

Samples will be collected for PFAS analysis following the methods summarized in **Section 4.0** and detailed in the sampling SOPs for Pore Water, Piezometers, and Groundwater Monitoring Wells provided in **Appendix B**. Detailed field and laboratory requirements are provided in the site-specific QAPP.

Sample identification will consist of nomenclatures that include the unique location identification (see reference table above). If applicable, sample identification for each sample will be repeated for each sampling event with consistent spelling.

To prevent misidentification of samples, legible labels will be affixed to each sample container. The labels will be sufficiently durable to remain legible even when wet. At a minimum, the labels will contain the following information:

- Location ID;
- Name or initials of collector; and
- Date and time of collection.



5.03 SAMPLE SHIPPING

Sample bottles will be placed into the cooler and packed with double-bagged wet ice immediately following collection. Packing material will be used as necessary. A temperature blank will be placed in the cooler prior to shipment. The cooler shall be addressed to the appropriate laboratory and dispatched as soon as practical to ensure timely arrival.

5.04 ANALYTICAL METHOD AND PARAMETERS

PFAS will be analyzed using DoD QSM 5.3 guidelines for PFAS by isotope dilution methodology. The analyte list will include the 28 PFAS compounds specified by EGLE, and reporting limits are provided in Table A.7.7 of the project-specific QAPP.

6.0 DATA QUALITY ASSURANCE AND CONTROL

The following field quality control samples will be collected at a rate of one per 20 samples in accordance with the project-specific QAPP: Field blanks, field duplicates, and MS/MSDs.

- Field blanks will be collected by pouring laboratory-supplied certified PFAS-free water into a sample container at the point of sample collection. The purpose of field blanks is to assess potential contamination at the sample point.
- Field duplicates will be collected by filling one additional sample container with water from the sample point. The purpose of field duplicates is to assess variability in sample composition. Field duplicates are not intended to be blind duplicates.
- MS/MSD will be collected by filling two additional sets of sample bottles with water from the sample point. MS/MSD analyses are conducted by the analytical laboratory after samples have been collected and submitted. Analysis of known concentrations of analytes spiked in the MS/MSD samples indicate if matrix interference effects are occurring.
- QA/QC samples will be collected using the methods described in **Section 5.0** and the SOPs in **Appendix B**. Samples will be labeled described in **Section 5.0**. The location of QA/QC samples will be entered into the Monitoring Checklist. QA/QC samples will be analyzed using the same analytical methods used for the primary sample.

7.0 INVESTIGATION DERIVED WASTE

Pore-water pumped during the sampling and development and sampling purge water from the piezometers and monitoring wells are the only investigation derived wastes anticipated. The pumped water from sampling for pore water will be discharged back to the surface water body after the PFAS aliquot is collected. The piezometer and monitoring well development and purge water will be managed as follows:

- For locations where PFAS concentrations are below Part 201 GRCC, the water can be discharged to the ground surface in accordance with EGLE interoffice communication regarding purge-water disposal from well sampling and development (EGLE, 1999).



- For locations where PFAS concentrations are unknown or known to exceed Part 201 GRCC, the water will be disposed of appropriately in accordance with the EGLE interoffice communication regarding purge water disposal from well sampling and development (EGLE, 1999), and not discharged to the ground surface.

8.0 ANTICIPATED SCHEDULE

The schedule for piezometer installation will depend greatly on R&W/GZA's ability to procure access to the desired locations and the potential impact of coronavirus disease 2019 (COVID-19). Piezometers will be installed and developed prior to collecting the two weeks of piezometer- and staff-gage measurements. After demonstrating groundwater flow toward the Rogue River, the pore-water sampling will be conducted. Assuming access for all piezometers and river access is obtained expeditiously and there are no COVID-19-related delays, R&W/GZA currently anticipates collecting pore-water samples during fall 2020 low-flow conditions (through early October). If access issues do arise, the protocol laid out in **Section 9.0** of the CD will be implemented.

R&W/GZA will summarize the findings from this investigation and submit a work plan for installation of permanent monitoring well locations needed for GSI monitoring within 90 days following receipt of all analytical data.

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TABLES

TABLE 1
EXISTING MONITORING WELL CONSTRUCTION INFORMATION
 Algona and Plainfield Townships, Kent County, MI

16.0062961.50
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| Site Location | Well Ownership/ Data Provider | Well Field ID | Top of Casing Elevation (ft) | Ground Surface Elevation (ft) | Top of Screen Depth (ft bgs) | Bottom of Screen Depth (ft bgs) | Casing Diameter (in) | Casing Type | Aquifer Zone | Protective Casing Type |
|---------------|----------------------------------|----------------|------------------------------------|-------------------------------------|------------------------------------|---------------------------------------|-------------------------|-------------|--------------|---------------------------|
| House Street | EGLE | HS-DEQ-MW1D | 799.43 | 799.7 | ND | 123.82 | ND | ND | D | ND |
| House Street | EGLE | HS-DEQ-MW1I | 799.83 | 800.2 | ND | 77.58 | ND | ND | S | ND |
| House Street | EGLE | HS-DEQ-MW1S | 799.42 | 799.7 | ND | 56.56 | ND | ND | S | ND |
| House Street | EGLE | HS-DEQ-MW3D | 857.29 | 857.9 | ND | 177.41 | ND | ND | D | ND |
| House Street | EGLE | HS-DEQ-MW3S | 857.40 | 857.9 | ND | 106.45 | ND | ND | S | ND |
| House Street | EGLE | HS-DEQ-MW4-102 | 733.80 | 734.4 | ND | 102.8 | ND | ND | D | ND |
| House Street | EGLE | HS-DEQ-MW4-16 | 734.23 | 734.7 | ND | 16.04 | ND | ND | S | ND |
| House Street | EGLE | HS-DEQ-MW4-53 | 734.33 | 734.7 | ND | 53.85 | ND | ND | D | ND |
| House Street | EGLE | HS-DEQ-MW4-80 | 734.33 | 734.7 | ND | 80.09 | ND | ND | D | ND |
| House Street | EGLE | HS-DEQ-MW4-85 | 733.61 | 734.4 | ND | 85.79 | ND | ND | D | ND |
| House Street | EGLE | HS-DEQ-MW4-90 | 733.99 | 734.4 | ND | 89.68 | ND | ND | D | ND |
| House Street | EGLE | HS-DEQ-MW4-97 | 733.71 | 734.4 | ND | 98.81 | ND | ND | D | ND |
| House Street | EGLE | HS-DEQ-MW5D | 812.95 | 813.5 | ND | 130.16 | ND | ND | S | ND |
| House Street | EGLE | HS-DEQ-MW5S | 813.12 | 813.5 | ND | 47.28 | ND | ND | S | ND |
| House Street | EGLE | HS-DEQ-MW6D | 795.59 | 796.4 | ND | 176.36 | ND | ND | D | ND |
| House Street | EGLE | HS-DEQ-MW6S | 796.09 | 796.4 | ND | 45.71 | ND | ND | S | ND |
| House Street | EGLE | HS-DEQ-MW7-102 | 775.04 | 775.4 | ND | 102.11 | ND | ND | S | ND |
| House Street | EGLE | HS-DEQ-MW7-33 | 775.15 | 775.4 | ND | 33.33 | ND | ND | S | ND |
| House Street | EGLE | HS-DEQ-MW7-87 | 775.02 | 775.4 | ND | 87.71 | ND | ND | S | ND |
| House Street | EGLE | HS-DEQ-MW7-94 | 775.16 | 775.4 | ND | 94.32 | ND | ND | S | ND |
| House Street | EGLE | HS-DEQ-MW8D | 677.86 | 678.2 | ND | 33.37 | ND | ND | S | ND |
| House Street | EGLE | HS-DEQ-MW8S | 677.87 | 678.2 | ND | 28.28 | ND | ND | S | ND |
| House Street | R&W/GZA | HS-MW-10D | 780.94 | 778.1 | 188.2 | 193.2 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-10M | 780.64 | 777.7 | 126.4 | 131.4 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-10S | 780.06 | 777.2 | 48.3 | 58.3 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-11D | 744.75 | 742.1 | 153.6 | 158.6 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-11M | 744.96 | 742.3 | 96.4 | 101.4 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-11S | 744.78 | 742.1 | 21.2 | 31.2 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-12A | 716.50 | 716.8 | 15.4 | 20.4 | 2 | PVC | S | Flush |
| House Street | R&W/GZA | HS-MW-12B | 716.36 | 716.8 | 51.5 | 56.5 | 2 | PVC | S | Flush |
| House Street | R&W/GZA | HS-MW-12C | 716.17 | 716.9 | 127.7 | 132.7 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-12D | 716.48 | 717.0 | 158.7 | 163.7 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-12E | 716.29 | 716.8 | 187.5 | 192.5 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-13A | ND | ND | 79.0 | 84.0 | 2 | PVC | ND | ND |
| House Street | R&W/GZA | HS-MW-13B | ND | ND | 149.0 | 154.0 | 2 | PVC | ND | ND |
| House Street | R&W/GZA | HS-MW-13C | ND | ND | 199.5 | 114.5 | 2 | PVC | ND | ND |
| House Street | R&W/GZA | HS-MW-14D | 673.20 | 670.7 | 109.0 | 114.0 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-14M | 673.53 | 671.0 | 68.1 | 73.1 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-14S | 673.64 | 671.2 | 13.0 | 23.0 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-15D | 642.86 | 639.7 | 108.6 | 118.6 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-15M | 640.98 | 638.0 | 44.8 | 49.8 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-15S | 640.71 | 637.5 | 6.9 | 16.9 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-17D | 784.64 | 782.3 | 222.1 | 227.1 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-17M | 784.17 | 781.9 | 167.3 | 172.3 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-17S | 784.77 | 782.0 | 105.8 | 110.8 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-18D | 684.73 | 682.0 | 140.6 | 145.6 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-18S | 683.93 | 682.0 | 12.8 | 22.8 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-19D | 680.79 | 677.7 | 85.9 | 95.9 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-19S | 680.83 | 677.8 | 58.4 | 61.4 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-1D | 790.73 | 788.7 | 172.3 | 176.9 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-1S | 791.01 | 788.8 | 67.4 | 72.1 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-20D | 706.64 | 703.9 | 126.1 | 131.1 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-20M | 706.90 | 704.2 | 101.5 | 106.5 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-20S | 706.72 | 703.9 | 61.1 | 66.1 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-21D | 648.38 | 645.7 | 76.2 | 86.2 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-21M | 648.85 | 645.9 | 59.0 | 64.0 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-21S | 648.67 | 645.8 | 9.8 | 19.8 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-23A | 791.23 | 791.7 | 72.1 | 77.1 | 2 | PVC | S | Flush |
| House Street | R&W/GZA | HS-MW-23B | 791.21 | 791.5 | 137.9 | 142.8 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-23C | 791.09 | 791.4 | 210.2 | 215.0 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-23D | 791.47 | 792.0 | 238.9 | 243.9 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-24A | 776.01 | 776.3 | 55.6 | 60.4 | 2 | PVC | S | Flush |
| House Street | R&W/GZA | HS-MW-24B | 775.72 | 776.2 | 225.2 | 230.0 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-25D | 650.61 | 651.1 | 65.7 | 70.7 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-25S | 650.83 | 651.2 | 51.1 | 56.1 | 2 | PVC | S | Flush |
| House Street | R&W/GZA | HS-MW-26D | 651.75 | 652.1 | 79.6 | 84.6 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-26M | 651.31 | 651.7 | 61.7 | 66.7 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-26S | 651.88 | 652.0 | 25.8 | 30.8 | 2 | PVC | S | Flush |
| House Street | R&W/GZA | HS-MW-27A | 668.44 | 668.7 | 21.6 | 26.2 | 2 | PVC | S | Flush |
| House Street | R&W/GZA | HS-MW-27B | 668.49 | 668.9 | 35.4 | 38.0 | 2 | PVC | S | Flush |
| House Street | R&W/GZA | HS-MW-27C | 668.64 | 669.0 | 41.3 | 45.9 | 2 | PVC | S | Flush |
| House Street | R&W/GZA | HS-MW-27D | 668.54 | 668.9 | 52.4 | 56.4 | 2 | PVC | D | Flush |

TABLE 1
EXISTING MONITORING WELL CONSTRUCTION INFORMATION
Algona and Plainfield Townships, Kent County, MI

16.0062961.50
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| Site Location | Well Ownership/ Data Provider | Well Field ID | Top of Casing Elevation (ft) | Ground Surface Elevation (ft) | Top of Screen Depth (ft bgs) | Bottom of Screen Depth (ft bgs) | Casing Diameter (in) | Casing Type | Aquifer Zone | Protective Casing Type |
|---------------------|----------------------------------|-----------------|------------------------------------|-------------------------------------|------------------------------------|---------------------------------------|-------------------------|-------------|--------------|---------------------------|
| House Street | R&W/GZA | HS-MW-27E | 668.56 | 668.9 | 58.5 | 62.5 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-28A | 665.88 | 666.2 | 39.1 | 43.7 | 2 | PVC | S | Flush |
| House Street | R&W/GZA | HS-MW-28B | 666.14 | 666.4 | 43.3 | 47.9 | 2 | PVC | S | Flush |
| House Street | R&W/GZA | HS-MW-28C | 666.16 | 666.5 | 49.2 | 53.8 | 2 | PVC | S | Flush |
| House Street | R&W/GZA | HS-MW-28D | 665.89 | 666.3 | 62.2 | 66.8 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-28E | 665.61 | 666.0 | 82.7 | 87.3 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-29A | 633.13 | 630.3 | 3.5 | 13.5 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-29B | 633.89 | 630.5 | 16.8 | 21.8 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-29C | 633.60 | 630.4 | 27.2 | 32.2 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-29D | 633.19 | 630.7 | 37.1 | 42.1 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-2S | 799.66 | 797.6 | 77.9 | 82.5 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-30A | 672.78 | 673.0 | 46.9 | 51.5 | 2 | PVC | S | Flush |
| House Street | R&W/GZA | HS-MW-30B | 673.09 | 673.4 | 51.5 | 56.1 | 2 | PVC | S | Flush |
| House Street | R&W/GZA | HS-MW-30C | 672.90 | 673.1 | 77.4 | 82.0 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-30D | 673.37 | 673.6 | 112.7 | 117.3 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-30E | 672.32 | 672.9 | 123.2 | 127.7 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-31A | 639.30 | 639.5 | 17.1 | 21.6 | 2 | PVC | S | Flush |
| House Street | R&W/GZA | HS-MW-31B | 639.27 | 639.3 | 26.0 | 30.5 | 2 | PVC | S | Flush |
| House Street | R&W/GZA | HS-MW-31C | 639.27 | 639.4 | 41.3 | 45.8 | 2 | PVC | S | Flush |
| House Street | R&W/GZA | HS-MW-31D | 638.96 | 639.1 | 48.8 | 53.4 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-31E | 638.95 | 639.2 | 64.1 | 68.7 | 2 | PVC | D | Flush |
| House Street | R&W/GZA | HS-MW-32A | 727.36 | 724.8 | 60.9 | 65.5 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-32B | 727.85 | 725.1 | 79.1 | 83.7 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-32C | 727.72 | 725.1 | 108.8 | 113.4 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-32D | 727.55 | 725.0 | 142.3 | 146.9 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-3P | 790.15 | 787.7 | 19.3 | 24.3 | 2 | PVC | P | Stickup |
| House Street | R&W/GZA | HS-MW-3S | 790.69 | 788.1 | 70.1 | 75.0 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-4S | 784.88 | 782.3 | 70.2 | 74.8 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-5D | 781.99 | 779.3 | 190.5 | 200.5 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-5P | 781.55 | 779.1 | 17.7 | 22.4 | 2 | PVC | P | Stickup |
| House Street | R&W/GZA | HS-MW-5S | 781.79 | 779.2 | 60.3 | 65.0 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-6D | 773.44 | 771.0 | 157.5 | 162.5 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-6S | 773.34 | 770.7 | 58.2 | 62.9 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-7S | 791.09 | 788.9 | 69.9 | 74.5 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-8 | 745.09 | 742.2 | 30.0 | 35.0 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-9D | 820.88 | 818.2 | 204.3 | 209.3 | 2 | PVC | D | Stickup |
| House Street | R&W/GZA | HS-MW-9M | 820.66 | 817.9 | 126.8 | 131.8 | 2 | PVC | S | Stickup |
| House Street | R&W/GZA | HS-MW-9S | 820.20 | 817.8 | 26.2 | 31.2 | 2 | PVC | P | Stickup |
| North Kent Landfill | NKL | NKLF-MW-35 | 900.23 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-MW-48 | 901.64 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-MW-53 | 893.99 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-MW-54 | 912.79 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-MW-55 | 893.11 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-MW-56 | 867.88 | 866.4 | ND | 43.97 | ND | ND | S | ND |
| North Kent Landfill | NKL | NKLF-MW-57 | 894.35 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-MW-60 | 844.35 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-MW-61 | 841.14 | 839.8 | ND | 28.47 | ND | ND | S | ND |
| North Kent Landfill | NKL | NKLF-MW-63 | 840.81 | 839.1 | ND | 102.41 | ND | ND | D | ND |
| North Kent Landfill | NKL | NKLF-MW-65 | 835.27 | 834.2 | ND | 21.87 | ND | ND | S | ND |
| North Kent Landfill | NKL | NKLF-MW-66 | 874.57 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-MW-67 | 902.72 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-MW-68 | 900.98 | 899.2 | ND | 92.79 | ND | ND | S | ND |
| North Kent Landfill | NKL | NKLF-MW-69 | 893.04 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-MW-70 | 897.8 | 895.6 | ND | 63.33 | ND | ND | S | ND |
| North Kent Landfill | NKL | NKLF-MW-71 | 894.71 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-MW-72 | 882.18 | 879.5 | ND | 26.98 | ND | ND | S | ND |
| North Kent Landfill | NKL | NKLF-MW-73 | 900.19 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-MW-74 | 880.34 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-MW-75 | 881.23 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-MW-76 | 849.47 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-MW-77 | 837.14 | 834.2 | ND | 22.8 | ND | ND | S | ND |
| North Kent Landfill | NKL | NKLF-MW-78 | 883.89 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-MW-80 | 888.05 | 887.4 | ND | 42.44 | ND | ND | S | ND |
| North Kent Landfill | NKL | NKLF-MW-81 | 834.71 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-MW-82 | 896.26 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-TW-02 | 900.95 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-TW-04 | 858.20 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-TW-05 | 838.64 | ND | ND | ND | ND | ND | ND | ND |
| North Kent Landfill | NKL | NKLF-TW-06 | 883.99 | ND | ND | ND | ND | ND | ND | ND |
| Wolven | EGLE | WV-DEQ-MW10-121 | 764.74 | 763.865 | ND | 120.72 | ND | ND | D | ND |
| Wolven | EGLE | WV-DEQ-MW10-177 | 764.934 | 763.865 | ND | 177.63 | ND | ND | D | ND |
| Wolven | EGLE | WV-DEQ-MW10-55 | 764.909 | 763.376 | ND | 55.21 | ND | ND | S | ND |

TABLE 1
EXISTING MONITORING WELL CONSTRUCTION INFORMATION
Algoma and Plainfield Townships, Kent County, MI

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| Site Location | Well Ownership/ Data Provider | Well Field ID | Top of Casing Elevation (ft) | Ground Surface Elevation (ft) | Top of Screen Depth (ft bgs) | Bottom of Screen Depth (ft bgs) | Casing Diameter (in) | Casing Type | Aquifer Zone | Protective Casing Type |
|---------------|----------------------------------|-----------------|------------------------------------|-------------------------------------|------------------------------------|---------------------------------------|-------------------------|-------------|--------------|---------------------------|
| Wolveren | EGLE | WV-DEQ-MW10-84 | 764.442 | 763.376 | ND | 84.14 | ND | ND | D | ND |
| Wolveren | EGLE | WV-DEQ-MW10-95 | 764.931 | 763.376 | ND | 95.25 | ND | ND | D | ND |
| Wolveren | EGLE | WV-DEQ-MW11-130 | 859.121 | 855.95 | ND | 130.22 | ND | ND | D | ND |
| Wolveren | EGLE | WV-DEQ-MW11-137 | 859.212 | 855.763 | ND | 136.65 | ND | ND | D | ND |
| Wolveren | EGLE | WV-DEQ-MW11-145 | 859.14 | 855.95 | ND | 145.71 | ND | ND | D | ND |
| Wolveren | EGLE | WV-DEQ-MW11-57 | 858.794 | 855.95 | ND | 56.99 | ND | ND | S | ND |
| Wolveren | EGLE | WV-DEQ-MW11-95 | 859.129 | 855.763 | ND | 95.47 | ND | ND | S | ND |
| Wolveren | EGLE | WV-DEQ-MW2D | 877.53 | 877.80 | ND | 168.72 | ND | ND | D | ND |
| Wolveren | EGLE | WV-DEQ-MW2S | 877.57 | 877.80 | ND | 58.04 | ND | ND | S | ND |
| Wolveren | EGLE | WV-DEQ-MW9-114 | 712.079 | 712.402 | ND | 114.07 | ND | ND | D | ND |
| Wolveren | EGLE | WV-DEQ-MW9-131 | 712.031 | 712.402 | ND | 130.97 | ND | ND | D | ND |
| Wolveren | EGLE | WV-DEQ-MW9-57 | 712.128 | 712.562 | ND | 56.85 | ND | ND | ND | ND |
| Wolveren | EGLE | WV-DEQ-MW9-73 | 712.096 | 712.562 | ND | 73.34 | ND | ND | D | ND |
| Wolveren | EGLE | WV-DEQ-MW9-94 | 711.979 | 712.562 | ND | 94.09 | ND | ND | D | ND |
| Wolveren | R&W/GZA | WV-MW-1 | 859.24 | 859.2 | 137.8 | 142.8 | 2 | PVC | D | Stickup |
| Wolveren | R&W/GZA | WV-MW-10D | 751.00 | 748.6 | 165 | 170 | 2 | PVC | D | Stickup |
| Wolveren | R&W/GZA | WV-MW-10M | 751.19 | 748.7 | 69.9 | 74.9 | 2 | PVC | S | Stickup |
| Wolveren | R&W/GZA | WV-MW-10S | 751.26 | 748.4 | 7.0 | 12.0 | 2 | PVC | S | Stickup |
| Wolveren | R&W/GZA | WV-MW-11D | 735.96 | 733.0 | 158.9 | 163.9 | 2 | PVC | D | Stickup |
| Wolveren | R&W/GZA | WV-MW-11S | 735.89 | 732.8 | 29.4 | 34.4 | 2 | PVC | S | Stickup |
| Wolveren | R&W/GZA | WV-MW-12D | 771.12 | 771.4 | 179.2 | 184.2 | 2 | PVC | D | Flush |
| Wolveren | R&W/GZA | WV-MW-12M | 770.75 | 771.3 | 146.6 | 151.6 | 2 | PVC | D | Flush |
| Wolveren | R&W/GZA | WV-MW-12S | 771.06 | 771.3 | 75.8 | 80.8 | 2 | PVC | S | Flush |
| Wolveren | R&W/GZA | WV-MW-13D | 823.91 | 821.3 | 58.8 | 63.8 | 2 | PVC | D | Stickup |
| Wolveren | R&W/GZA | WV-MW-13M | 823.75 | 821.6 | 18.1 | 23.1 | 2 | PVC | S | Stickup |
| Wolveren | R&W/GZA | WV-MW-13S | 823.68 | 821.3 | 1.7 | 6.7 | 2 | PVC | S | Stickup |
| Wolveren | R&W/GZA | WV-MW-14D | 872.05 | 872.3 | 142.3 | 147.3 | 2 | PVC | D | Flush |
| Wolveren | R&W/GZA | WV-MW-14S | 872.18 | 872.5 | 8.9 | 13.9 | 2 | PVC | S | Flush |
| Wolveren | R&W/GZA | WV-MW-15A | 721.25 | 721.5 | 9.0 | 14 | 2 | PVC | P | Flush |
| Wolveren | R&W/GZA | WV-MW-15B | 721.07 | 721.4 | 33.1 | 38.1 | 2 | PVC | S | Flush |
| Wolveren | R&W/GZA | WV-MW-15C | 720.84 | 721.3 | 43.7 | 48.5 | 2 | PVC | S | Flush |
| Wolveren | R&W/GZA | WV-MW-15D | 721.09 | 721.3 | 135.1 | 137.8 | 2 | PVC | D | Flush |
| Wolveren | R&W/GZA | WV-MW-16D | 823.45 | 820.9 | 91.7 | 96.7 | 2 | PVC | D | Stickup |
| Wolveren | R&W/GZA | WV-MW-16S | 823.42 | 820.9 | 17.5 | 22.5 | 2 | PVC | S | Stickup |
| Wolveren | R&W/GZA | WV-MW-2D | 791.36 | 790.5 | 30.2 | 35.2 | 2 | PVC | D | Stickup |
| Wolveren | R&W/GZA | WV-MW-2S | 793.39 | 790.6 | 20.2 | 25.2 | 2 | PVC | S | Stickup |
| Wolveren | R&W/GZA | WV-MW-3D | 823.28 | 820.7 | 57.5 | 62.5 | 2 | PVC | D | Stickup |
| Wolveren | R&W/GZA | WV-MW-3S | 823.31 | 820.6 | 5.1 | 10.1 | 2 | PVC | S | Stickup |
| Wolveren | R&W/GZA | WV-MW-4 | 854.99 | 852.5 | 130.2 | 135.2 | 2 | PVC | D | Stickup |
| Wolveren | R&W/GZA | WV-MW-5D | 865.07 | 862.0 | 68.7 | 73.7 | 2 | PVC | D | Stickup |
| Wolveren | R&W/GZA | WV-MW-5S | 865.01 | 862.1 | 61.5 | 66.5 | 2 | PVC | S | Stickup |
| Wolveren | R&W/GZA | WV-MW-6D | 786.51 | 784.1 | 99.1 | 104.1 | 2 | PVC | D | Stickup |
| Wolveren | R&W/GZA | WV-MW-6S | 786.62 | 784.6 | 13.3 | 18.3 | 2 | PVC | S | Stickup |
| Wolveren | R&W/GZA | WV-MW-7D | 727.36 | 727.8 | 89.5 | 94.5 | 2 | PVC | S | Flush |
| Wolveren | R&W/GZA | WV-MW-7M | 728.19 | 728.5 | 49.9 | 54.9 | 2 | PVC | S | Flush |
| Wolveren | R&W/GZA | WV-MW-7S | 727.61 | 728.0 | 16.1 | 21.1 | 2 | PVC | S | Flush |
| Wolveren | R&W/GZA | WV-MW-8D | 845.81 | 846.0 | 117.2 | 122.2 | 2 | PVC | D | Flush |
| Wolveren | R&W/GZA | WV-MW-8M | 845.74 | 845.9 | 60.0 | 65.0 | 2 | PVC | S | Flush |
| Wolveren | R&W/GZA | WV-MW-8S | 845.55 | 846.0 | 30.0 | 35.0 | 2 | PVC | S | Flush |
| Wolveren | R&W/GZA | WV-MW-9 | 859.86 | 857.4 | 92.3 | 97.3 | 2 | PVC | S | Stickup |

Abbreviations

ND = No data provided/ available

ft = feet

bgs = below ground surface

in = inches

NKL = Kent County North Kent Landfill

EGLE = Michigan Department of Environment, Great Lakes, and Energy

R&W/GZA = Rose & Westra, a Division of GZA

P = perched zone

S = shallow zone

D = deep zone

Notes

1) Elevations are provided in North American Vertical Datum of 1988 (NAVD 88).

2) North Kent Landfill elevations converted from NGVD29 to NAVD88 by R&W/GZA by subtracting 0.43 feet from provided elevation.

TABLE 2
STATIC WATER LEVEL MEASUREMENTS
Algoma and Plainfield Townships, Kent County, MI

| Site Location | Well Field ID | November 4, 2019 Static Water Level Elevation (ft) |
|---------------|----------------|---|
| House Street | HS-DEQ-MW1D | 739.09 |
| House Street | HS-DEQ-MW1I | 748.63 |
| House Street | HS-DEQ-MW1S | 749.96 |
| House Street | HS-DEQ-MW3D | 748.76 |
| House Street | HS-DEQ-MW3S | 839.76 |
| House Street | HS-DEQ-MW4-102 | 687.91 |
| House Street | HS-DEQ-MW4-16 | 729.17 |
| House Street | HS-DEQ-MW4-53 | 688.26 |
| House Street | HS-DEQ-MW4-80 | 688.11 |
| House Street | HS-DEQ-MW4-85 | 688.07 |
| House Street | HS-DEQ-MW4-90 | 688.00 |
| House Street | HS-DEQ-MW4-97 | 687.77 |
| House Street | HS-DEQ-MW5D | 740.83 |
| House Street | HS-DEQ-MW5S | Dry |
| House Street | HS-DEQ-MW6D | 650.30 |
| House Street | HS-DEQ-MW6S | Dry |
| House Street | HS-DEQ-MW7-102 | 751.35 |
| House Street | HS-DEQ-MW7-33 | 751.20 |
| House Street | HS-DEQ-MW7-87 | 751.33 |
| House Street | HS-DEQ-MW7-94 | 751.36 |
| House Street | HS-DEQ-MW8D | 652.76 |
| House Street | HS-DEQ-MW8S | 653.68 |
| House Street | HS-MW-10D | 734.19 |
| House Street | HS-MW-10M | 726.19 |
| House Street | HS-MW-10S | 726.18 |
| House Street | HS-MW-11D | 719.37 |
| House Street | HS-MW-11M | 719.35 |
| House Street | HS-MW-11S | 720.13 |
| House Street | HS-MW-12A | ND |
| House Street | HS-MW-12B | ND |
| House Street | HS-MW-12C | ND |
| House Street | HS-MW-12D | ND |
| House Street | HS-MW-12E | ND |
| House Street | HS-MW-13A | ND |
| House Street | HS-MW-13B | ND |
| House Street | HS-MW-13C | ND |
| House Street | HS-MW-14D | 660.09 |
| House Street | HS-MW-14M | 661.24 |
| House Street | HS-MW-14S | 656.70 |
| House Street | HS-MW-15D | 635.56 |
| House Street | HS-MW-15M | 634.13 |
| House Street | HS-MW-15S | 630.84 |
| House Street | HS-MW-17D | 689.38 |
| House Street | HS-MW-17M | 689.45 |
| House Street | HS-MW-17S | 703.64 |
| House Street | HS-MW-18D | 663.55 |
| House Street | HS-MW-18S | 670.37 |
| House Street | HS-MW-19D | 649.16 |
| House Street | HS-MW-19S | 651.59 |
| House Street | HS-MW-1D | 727.41 |
| House Street | HS-MW-1S | 728.00 |
| House Street | HS-MW-20D | 648.97 |
| House Street | HS-MW-20M | 649.07 |
| House Street | HS-MW-20S | 649.12 |
| House Street | HS-MW-21D | 638.75 |
| House Street | HS-MW-21M | 637.58 |
| House Street | HS-MW-21S | 637.79 |
| House Street | HS-MW-23A | 723.53 |
| House Street | HS-MW-23B | 723.47 |
| House Street | HS-MW-23C | 723.48 |
| House Street | HS-MW-23D | 723.45 |
| House Street | HS-MW-24A | 723.25 |
| House Street | HS-MW-24B | 723.21 |
| House Street | HS-MW-25D | 627.83 |
| House Street | HS-MW-25S | 627.93 |
| House Street | HS-MW-26D | 640.12 |
| House Street | HS-MW-26M | 639.96 |
| House Street | HS-MW-26S | 636.05 |
| House Street | HS-MW-27A | 644.51 |
| House Street | HS-MW-27B | 644.58 |
| House Street | HS-MW-27C | 645.51 |
| House Street | HS-MW-27D | 645.74 |

TABLE 2
STATIC WATER LEVEL MEASUREMENTS
 Algoma and Plainfield Townships, Kent County, MI

16.0062961.50
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| Site Location | Well Field ID | November 4, 2019 Static Water Level Elevation (ft) |
|---------------------|-----------------|---|
| House Street | HS-MW-27E | 645.61 |
| House Street | HS-MW-28A | 629.35 |
| House Street | HS-MW-28B | 629.37 |
| House Street | HS-MW-28C | 629.30 |
| House Street | HS-MW-28D | 630.25 |
| House Street | HS-MW-28E | 630.35 |
| House Street | HS-MW-29A | ND |
| House Street | HS-MW-29B | ND |
| House Street | HS-MW-29C | ND |
| House Street | HS-MW-29D | ND |
| House Street | HS-MW-2S | 725.55 |
| House Street | HS-MW-30A | 631.99 |
| House Street | HS-MW-30B | 632.00 |
| House Street | HS-MW-30C | 632.35 |
| House Street | HS-MW-30D | 632.53 |
| House Street | HS-MW-30E | 632.54 |
| House Street | HS-MW-31A | 624.83 |
| House Street | HS-MW-31B | 625.05 |
| House Street | HS-MW-31C | 624.83 |
| House Street | HS-MW-31D | 624.69 |
| House Street | HS-MW-31E | 624.77 |
| House Street | HS-MW-32A | 720.65 |
| House Street | HS-MW-32B | 720.67 |
| House Street | HS-MW-32C | 720.90 |
| House Street | HS-MW-32D | 720.75 |
| House Street | HS-MW-3P | 763.67 |
| House Street | HS-MW-3S | 724.86 |
| House Street | HS-MW-4S | 724.49 |
| House Street | HS-MW-5D | 724.82 |
| House Street | HS-MW-5P | 758.61 |
| House Street | HS-MW-5S | 724.82 |
| House Street | HS-MW-6D | 725.47 |
| House Street | HS-MW-6S | 725.44 |
| House Street | HS-MW-7S | 726.43 |
| House Street | HS-MW-8 | 724.19 |
| House Street | HS-MW-9D | 744.72 |
| House Street | HS-MW-9M | 744.56 |
| House Street | HS-MW-9S | 793.72 |
| North Kent Landfill | NKLF-MW-35 | 867.33 |
| North Kent Landfill | NKLF-MW-48 | 870.29 |
| North Kent Landfill | NKLF-MW-53 | 872.08 |
| North Kent Landfill | NKLF-MW-54 | 877.50 |
| North Kent Landfill | NKLF-MW-55 | 867.98 |
| North Kent Landfill | NKLF-MW-56 | 845.56 |
| North Kent Landfill | NKLF-MW-57 | 862.99 |
| North Kent Landfill | NKLF-MW-60 | 834.09 |
| North Kent Landfill | NKLF-MW-61 | 834.67 |
| North Kent Landfill | NKLF-MW-63 | 752.97 |
| North Kent Landfill | NKLF-MW-65 | 834.86 |
| North Kent Landfill | NKLF-MW-66 | 871.83 |
| North Kent Landfill | NKLF-MW-67 | 863.70 |
| North Kent Landfill | NKLF-MW-68 | 867.15 |
| North Kent Landfill | NKLF-MW-69 | 855.72 |
| North Kent Landfill | NKLF-MW-70 | 848.12 |
| North Kent Landfill | NKLF-MW-71 | 862.76 |
| North Kent Landfill | NKLF-MW-72 | 856.81 |
| North Kent Landfill | NKLF-MW-73 | 895.07 |
| North Kent Landfill | NKLF-MW-74 | 871.50 |
| North Kent Landfill | NKLF-MW-75 | 870.84 |
| North Kent Landfill | NKLF-MW-76 | 848.24 |
| North Kent Landfill | NKLF-MW-77 | 832.26 |
| North Kent Landfill | NKLF-MW-78 | 836.08 |
| North Kent Landfill | NKLF-MW-80 | 867.52 |
| North Kent Landfill | NKLF-MW-81 | 831.74 |
| North Kent Landfill | NKLF-MW-82 | 863.27 |
| North Kent Landfill | NKLF-TW-02 | 863.72 |
| North Kent Landfill | NKLF-TW-04 | 846.15 |
| North Kent Landfill | NKLF-TW-05 | 835.50 |
| North Kent Landfill | NKLF-TW-06 | 854.24 |
| Wolven | WV-DEQ-MW10-121 | 719.14 |
| Wolven | WV-DEQ-MW10-177 | 721.88 |
| Wolven | WV-DEQ-MW10-55 | 723.29 |

TABLE 2
STATIC WATER LEVEL MEASUREMENTS
 Algoma and Plainfield Townships, Kent County, MI

| Site Location | Well Field ID | November 4, 2019 Static Water Level Elevation (ft) |
|---------------|--------------------------|---|
| Wolven | WV-DEQ-MW10-84 | 720.09 |
| Wolven | WV-DEQ-MW10-95 | 715.81 |
| Wolven | WV-DEQ-MW11-130 | 757.03 |
| Wolven | WV-DEQ-MW11-137 | 757.20 |
| Wolven | WV-DEQ-MW11-145 | 756.95 |
| Wolven | WV-DEQ-MW11-57 | 815.57 |
| Wolven | WV-DEQ-MW11-95 | 810.62 |
| Wolven | WV-DEQ-MW2D | 753.80 |
| Wolven | WV-DEQ-MW2S | 826.21 |
| Wolven | WV-DEQ-MW9-114 | 711.27 |
| Wolven | WV-DEQ-MW9-131 | 711.27 |
| Wolven | WV-DEQ-MW9-57 | 703.29 |
| Wolven | WV-DEQ-MW9-73 | 711.32 |
| Wolven | WV-DEQ-MW9-94 | 711.39 |
| Wolven | WV-MW-1 | 751.30 |
| Wolven | WV-MW-10D | 749.49 |
| Wolven | WV-MW-10M | 747.82 |
| Wolven | WV-MW-10S | 742.24 |
| Wolven | WV-MW-11D | <i>Artesian Conditions</i> |
| Wolven | WV-MW-11S | 726.20 |
| Wolven | WV-MW-12D | 716.97 |
| Wolven | WV-MW-12M | 716.94 |
| Wolven | WV-MW-12S | 721.81 |
| Wolven | WV-MW-13D | 803.32 |
| Wolven | WV-MW-13M | 820.92 |
| Wolven | WV-MW-13S | 820.91 |
| Wolven | WV-MW-14D | 731.14 |
| Wolven | WV-MW-14S | 861.25 |
| Wolven | WV-MW-15A | ND |
| Wolven | WV-MW-15B | ND |
| Wolven | WV-MW-15C | ND |
| Wolven | WV-MW-15D | ND |
| Wolven | WV-MW-16D | 761.52 |
| Wolven | WV-MW-16S | 815.71 |
| Wolven | WV-MW-2D | 785.38 |
| Wolven | WV-MW-2S | 790.29 |
| Wolven | WV-MW-3D | 802.01 |
| Wolven | WV-MW-3S | 819.14 |
| Wolven | WV-MW-4 | 753.96 |
| Wolven | WV-MW-5D | 802.39 |
| Wolven | WV-MW-5S | 802.11 |
| Wolven | WV-MW-6D | 765.11 |
| Wolven | WV-MW-6S | 781.51 |
| Wolven | WV-MW-7D | 715.73 |
| Wolven | WV-MW-7M | 715.73 |
| Wolven | WV-MW-7S | 715.71 |
| Wolven | WV-MW-8D | 754.38 |
| Wolven | WV-MW-8M | 823.77 |
| Wolven | WV-MW-8S | 823.75 |
| Wolven | WV-MW-9 | 824.90 |
| Rogue River | Dam Seawall | 680.71 |
| Rogue River | E Bridge Street Bridge | 680.34 |
| Rogue River | Rogue River Road Bridge | 618.90 |
| Rogue River | Jericho Ave Bridge | 672.24 |
| Rogue River | USGS04118500 | 630.419 |
| Rogue River | Rogue River at Rum Creek | 692.84 |

Abbreviations

ND = No data provided/available
 ft = feet

Notes

- 1) Elevations are provided in North American Vertical Datum of 1988 (NAVD 88).
- 2) Water level static measurements were completed on November 4, 2019 by R&W/GZA, AECOM (for EGLE), and North Ke

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-1D | HS-MW-1D | HS-MW-1D | HS-MW-1D | HS-MW-1D | HS-MW-1D | HS-MW-1D | HS-MW-1S | HS-MW-1S | HS-MW-1S | HS-MW-1S | HS-MW-1S | HS-MW-1S | HS-MW-1S | HS-MW-2S | HS-MW-2S |
|--|---|--|--------------|---------------|---------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|
| Sample Name | | | MW-1D | MW-1D | HS-GW-MW-1D | HS-MW-1D | HS-GW-MW1D | HS-GW-MW1D | HS-GW-MW-1D | MW-1S | MW-1S | HS-GW-MW-1S | HS-MW-1S | HS-GW-MW1S | HS-GW-MW1S | HS-GW-MW-1S | MW-2 | MW-2 |
| Well Screen Interval (Feet below ground surface) | | | 172.3-176.9 | 172.3 - 176.9 | 172.3 - 176.9 | 172.3-176.9 | 172.3-176.9 | 172.3-176.9 | 172.3-176.9 | 67.4-72.1 | 67.4 - 72.1 | 67.4 - 72.1 | 67.4-72.1 | 67.4-72.1 | 67.4-72.1 | 67.4-72.1 | 77.9-82.5 | 77.9 - 82.5 |
| Laboratory Sample ID | | | K1711117-004 | TG26033-001 | TJ24030-014 | UC16019-001 | UE30036-007 | UI28005-011 | UL05055-005 | K1711117-003 | TG26033-002 | TJ24030-013 | UC16019-002 | UE30036-008 | UI28005-010 | UL05055-003 | K1711117-005 | TG26033-003 |
| Sample Date | | | 10/12/2017 | 07/24/2018 | 10/24/2018 | 03/11/2019 | 05/29/2019 | 09/27/2019 | 12/02/2019 | 10/12/2017 | 07/23/2018 | 10/24/2018 | 03/11/2019 | 05/29/2019 | 09/27/2019 | 12/02/2019 | 10/12/2017 | 07/24/2018 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0042 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0042 | <0.0037 | <0.0037 | <0.0035 | <0.0038 | <0.0035 | <0.0035 | <0.0042 | <0.0035 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0042 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0042 | <0.0037 | <0.0037 | <0.0035 | <0.0038 | <0.0035 | <0.0035 | <0.0042 | <0.0035 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0042 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0042 | <0.0037 | <0.0037 | <0.0035 | <0.0038 | <0.0035 | <0.0035 | <0.0042 | <0.0035 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | <0.0042 | - | - | - | - | - | - | <0.0042 | - | - | - | - | - | - | <0.0042 | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0042 | <0.0069 | <0.0073 | <0.0071 | <0.0072 | <0.0068 | <0.0069 | <0.0042 | <0.0074 | <0.0074 | <0.007 | <0.0076 | <0.007 | <0.0071 | <0.0042 | <0.0069 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | <0.0042 | - | - | - | - | - | - | <0.0042 | - | - | - | - | - | - | <0.0042 | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0042 | 0.0046 | 0.0056 | 0.0056 | 0.0057 | 0.005 | 0.0054 | 0.018 | 0.0057 | 0.0059 | 0.0057 | 0.0059 | 0.0051 | 0.0054 | <0.0042 | 0.091 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0042 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0042 | <0.0037 | <0.0037 | <0.0035 | <0.0038 | <0.0035 | <0.0035 | <0.0042 | <0.0035 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0042 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0042 | <0.0037 | <0.0037 | <0.0035 | <0.0038 | <0.0035 | <0.0035 | <0.0042 | <0.0035 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | - | <0.0069 | <0.0073 | <0.0071 | <0.0072 | <0.0068 | <0.0069 | - | <0.0074 | <0.0074 | <0.007 | <0.0076 | <0.007 | <0.0071 | - | <0.0069 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0042 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0042 | <0.0037 | <0.0037 | <0.0035 | <0.0038 | <0.0035 | <0.0035 | <0.0042 | <0.0035 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | - | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | - | 0.0045 | 0.0045 | <0.0035 | 0.0038 | <0.0035 | <0.0035 | - | 0.1 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0042 | 0.0035 | 0.0038 | <0.0035 | <0.0036 | <0.0034 | 0.0035 | 0.026 | 0.039 | 0.043 | 0.04 | 0.034 | 0.026 | 0.022 | <0.0042 | 0.037 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0083 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0083 | <0.0037 | <0.0037 | <0.0035 | <0.0038 | <0.0035 | <0.0035 | <0.0083 | 0.011 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0042 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0042 | <0.0037 | <0.0037 | <0.0035 | <0.0038 | <0.0035 | <0.0035 | <0.0042 | <0.0035 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0042 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0042 | <0.0037 | <0.0037 | <0.0035 | <0.0038 | <0.0035 | <0.0035 | <0.0042 | <0.0035 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0042 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | 0.012 | <0.0037 | <0.0037 | <0.0035 | <0.0038 | <0.0035 | <0.0035 | <0.0042 | 0.011 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0042 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | 0.016 | 0.0064 | 0.0061 | 0.0053 | 0.0051 | <0.0035 | <0.0035 | <0.0042 | 0.069 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0042 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0042 | <0.0037 | <0.0037 | <0.0035 | <0.0038 | <0.0035 | <0.0035 | <0.0042 | <0.0035 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.0017 | 0.0081 | 0.0089 | 0.0091 | 0.0098 | 0.0087 | 0.01 | 0.0042 | 0.0079 [J] | 0.009 [J] | 0.0095 | 0.013 | 0.0064 | 0.0072 | <0.0017 | 0.0048 [J] |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0042 | <0.0034 | <0.0036 | 0.0042 | 0.0044 | 0.0034 | <0.0038 | <0.0042 | <0.0037 | 0.005 [J] | 0.0046 | 0.012 | <0.0035 | 0.006 | <0.0042 | <0.0035 |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | 0.0081 | 0.0089 | 0.013 | 0.014 | 0.012 | 0.014 | 0.0042 | 0.0079 | 0.014 | 0.014 | 0.025 | 0.0064 | 0.013 | ND | 0.0048 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0042 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0042 | <0.0037 | <0.0037 | <0.0035 | <0.0038 | <0.0035 | <0.0035 | <0.0042 | 0.015 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0042 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0042 | <0.0037 | <0.0037 | <0.0035 | <0.0038 | <0.0035 | <0.0035 | <0.0042 | <0.0035 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0042 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0042 | <0.0037 | <0.0037 | <0.0035 | <0.0038 | <0.0035 | <0.0035 | <0.0042 | <0.0035 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0042 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0042 | <0.0037 | <0.0037 | <0.0035 | <0.0038 | <0.0035 | <0.0035 | <0.0042 | <0.0035 |
| Total PFAS (Calculated) | NCL | NCL | ND | 0.016 | 0.018 | 0.019 | 0.02 | 0.017 | 0.023 | 0.076 | 0.064 | 0.074 | 0.065 | 0.074 | 0.038 | 0.041 | ND | 0.34 |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-2S | HS-MW-2S | HS-MW-2S | HS-MW-2S | HS-MW-2S | HS-MW-3S | HS-MW-3S | HS-MW-3S | HS-MW-3S | HS-MW-3S | HS-MW-3S | HS-MW-3S | HS-MW-3S | HS-MW-3S | HS-MW-3S | HS-MW-4S |
|--|---|--|-------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|-----------------|-------------|--------------|-------------|-------------|-------------|--------------|
| Sample Name | | | HS-GW-MW-2S | HS-MW-2 | HS-GW-MW2 | HS-GW-MW2 | HS-GW-MW-2S | MW-3S | MW-3D | MW-3D Dup | HS-GW-MW-3S | HS-GW-MW-3S DUP | HS-MW-3S | HS-MW-3S DUP | HS-GW-MW3S | HS-GW-MW3S | HS-GW-MW-3S | MW-4S |
| Well Screen Interval (Feet below ground surface) | | | 77.9 - 82.5 | 77.9-82.5 | 77.9-82.5 | 77.9-82.5 | 77.9-82.5 | 70.1-75 | 70.1 - 75 | 70.1 - 75 | 70.1 - 75 | 70.1 - 75 | 70.1-75 | 70.1-75 | 70.1-75 | 70.1-75 | 70.1-75 | 70.2-74.8 |
| Laboratory Sample ID | | | TJ24030-012 | UC16019-003 | UE30036-015 | UI28005-012 | UL05055-009 | K1711250-001 | TG26033-005 | TG26033-006 | TJ24030-008 | TJ24030-009 | UC16019-005 | UC16019-006 | UE30036-016 | UI26001-008 | UL05055-011 | K1711250-002 |
| Sample Date | | | 10/24/2018 | 03/11/2019 | 05/30/2019 | 09/27/2019 | 12/03/2019 | 10/13/2017 | 07/24/2018 | 07/24/2018 | 10/23/2018 | 10/23/2018 | 03/13/2019 | 03/13/2019 | 05/30/2019 | 09/24/2019 | 12/03/2019 | 10/13/2017 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0043 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0043 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0043 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | <0.0043 | - | - | - | - | - | - | - | - | - | <0.0043 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0073 | <0.0071 | <0.0072 | <0.0071 | <0.0075 | <0.0043 | <0.0069 | <0.007 | <0.007 | <0.0069 | <0.007 | <0.007 | <0.0071 | <0.0069 | <0.0071 | <0.0043 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | <0.0043 | - | - | - | - | - | - | - | - | - | <0.0043 |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.14 | 0.079 | 0.099 | 0.089 | 0.04 | 0.37 | 0.28 | 0.29 | 0.32 | 0.33 | 0.38 | 0.39 | 0.5 | 0.4 | 0.57 | 0.093 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0043 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | 0.032 | 0.019 | 0.019 | 0.03 | 0.029 | 0.034 | 0.04 | 0.065 | 0.056 | 0.05 | 0.55 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0073 | <0.0071 | <0.0072 | <0.0071 | <0.0075 | - | <0.0069 | <0.007 | <0.007 | <0.0069 | <0.007 | <0.007 | <0.0071 | <0.0069 | <0.0071 | - |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0043 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | 0.18 | 0.097 | 0.11 | 0.094 | 0.028 | - | 0.47 | 0.48 | 0.52 | 0.52 | 0.68 | 0.6 | 0.92 | 0.71 | 0.75 | - |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 0.054 | 0.046 | 0.055 | 0.03 | 0.022 | 0.93 | 1.1 | 1.1 | 1.3 | 1.3 | 1.5 | 1.3 | 2.1 | 1.7 | 1.6 | 1.6 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | 0.019 | 0.0095 | 0.011 | 0.01 | 0.0063 | 0.091 | 0.061 | 0.061 | 0.076 | 0.074 | 0.093 | 0.09 | 0.13 | 0.1 | 0.14 | 0.16 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0043 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0043 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | 0.037 | 0.023 | 0.022 | 0.018 | 0.0065 | 0.18 | 0.14 | 0.13 | 0.14 | 0.15 | 0.14 | 0.15 | 0.34 | 0.2 | 0.24 | 0.32 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 0.11 | 0.053 | 0.072 | 0.05 | 0.03 | 0.39 | 0.21 | 0.21 | 0.31 | 0.29 | 0.35 | 0.33 | 0.41 | 0.36 | 0.51 | 0.42 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0043 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.0098 [J] | 0.0088 | 0.019 | 0.006 | 0.0044 | 0.38 | 0.52 | 0.52 | 0.59 | 0.61 | 0.69 | 0.63 | 0.89 | 0.83 | 0.73 | 0.83 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | 0.022 | 0.017 [J] | 0.016 [J] | 0.019 [J] | 0.018 [J] | 0.032 | 0.032 | 0.057 | 0.024 | 0.023 | 2 |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.0098 | 0.0088 | 0.019 | 0.006 | 0.0044 | 0.4 | 0.54 | 0.54 | 0.61 | 0.63 | 0.72 | 0.66 | 0.95 | 0.85 | 0.75 | 2.8 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | 0.023 | 0.012 | 0.015 | 0.014 | 0.0076 | 0.13 | 0.084 | 0.083 | 0.1 | 0.1 | 0.11 | 0.11 | 0.14 | 0.13 | 0.16 | 0.17 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0043 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0043 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0043 |
| Total PFAS (Calculated) | NCL | NCL | 0.57 | 0.33 | 0.4 | 0.31 | 0.14 | 2.5 | 2.9 | 2.9 | 3.4 | 3.4 | 4 | 3.7 | 5.6 | 4.5 | 4.8 | 6.1 |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-4S | HS-MW-4S | HS-MW-4S | HS-MW-4S | HS-MW-4S | HS-MW-4S | HS-MW-4S | HS-MW-4S | HS-MW-5D | HS-MW-5D | HS-MW-5D | HS-MW-5D | HS-MW-5D | HS-MW-5D | HS-MW-5D | HS-MW-5S |
|--|---|--|--------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|---------------|---------------|-------------|-------------|-------------|-------------|-----------------|--------------|
| Sample Name | | | MW-4S | MW-4 | HS-GW-MW-4S | HS-MW-4 | HS-GW-MW4 | HS-GW-MW4S | HS-GW-MW-4S | MW-5D | MW-5D | HS-GW-MW-5D | HS-MW-5D | HS-GW-MW5D | HS-GW-MW5D | HS-GW-MW-5D | HS-GW-MW-5D DUP | MW-5S |
| Well Screen Interval (Feet below ground surface) | | | 70.2-74.8 | 70.2 - 74.8 | 70.2 - 74.8 | 70.2-74.8 | 70.2-74.8 | 70.2-74.8 | 70.2-74.8 | 190.5-200.5 | 190.5 - 200.5 | 190.5 - 200.5 | 190.5-200.5 | 190.5-200.5 | 190.5-200.5 | 190.5-200.5 | 190.5-200.5 | 60.3-65 |
| Laboratory Sample ID | | | K1713964-002 | TG26033-014 | TJ24030-006 | UC16019-015 | UE30036-014 | UI26001-009 | UL05055-020 | K1800647-004 | TG26033-009 | TJ24030-003 | UC16019-013 | UE30036-005 | UI26001-007 | UL05055-018 | UL05055-019 | K1711250-003 |
| Sample Date | | | 12/28/2017 | 07/26/2018 | 10/23/2018 | 03/15/2019 | 05/30/2019 | 09/24/2019 | 12/04/2019 | 01/22/2018 | 07/25/2018 | 10/22/2018 | 03/14/2019 | 05/28/2019 | 09/24/2019 | 12/04/2019 | 12/04/2019 | 10/13/2017 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0042 | <0.0037 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0042 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0042 | <0.0037 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0042 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0042 | <0.0037 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0042 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | <0.0042 | - | - | - | - | - | - | <0.0042 | - | - | - | - | - | - | - | <0.0042 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0042 | <0.007 | <0.007 | <0.007 | <0.0069 | <0.007 | <0.0074 | <0.0042 | <0.0075 | <0.0071 | <0.0071 | <0.0069 | <0.0073 | <0.007 | <0.0072 | <0.0042 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | <0.0042 | - | - | - | - | - | - | <0.0042 | - | - | - | - | - | - | - | <0.0042 |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.17 | 0.16 | 0.097 | 0.058 | 0.055 | 0.033 | 0.1 | 0.0054 | 0.0063 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | 0.005 | 0.0068 | 0.57 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0042 | <0.0037 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0042 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | 0.95 | 0.84 | 0.61 | 0.56 | 0.46 | 0.27 | 0.74 | <0.0042 | <0.0037 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | 1.1 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | - | <0.007 | <0.007 | <0.007 | <0.0069 | <0.007 | <0.0074 | - | <0.0075 | <0.0071 | <0.0071 | <0.0069 | <0.0073 | <0.007 | <0.0072 | - |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0042 | <0.0037 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0042 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | - | 0.56 | 0.31 | 0.18 | 0.19 | 0.14 | 0.38 | - | 0.0072 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | 0.0053 | 0.0077 | - |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 3.2 | 6 | 3.5 | 3 | 2.9 | 2.1 | 4.6 | 0.013 | 0.017 | 0.004 | <0.0035 | <0.0034 | 0.0058 | 0.013 | 0.02 | 1.9 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | 0.29 | 0.29 | 0.16 | 0.095 | 0.071 | 0.047 | 0.23 | <0.0083 | <0.0037 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | 0.14 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0042 | <0.0037 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0042 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0042 | <0.0037 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0042 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | 0.56 | 0.4 | 0.3 | 0.19 | 0.19 | 0.15 | 0.45 | <0.0042 | <0.0037 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | 0.71 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 0.73 | 0.55 | 0.42 | 0.22 | 0.2 | 0.12 | 0.48 | 0.0077 | <0.0037 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | 0.45 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | 0.006 | 0.0051 | 0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0042 | <0.0037 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | 0.018 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 1.5 | 2.7 | 1.6 | 1.5 | 1.4 | 0.82 | 2.1 | 0.0089 | 0.0091 | 0.002 | <0.0018 | 0.0028 | 0.0035 | 0.008 | 0.013 | 2.8 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 3.6 | 5.9 [J] | 4.8 [J] | 4.5 | 3.2 | 1.1 | 2.3 | 0.026 | 0.021 [J] | 0.0056 [J] | 0.0053 | 0.011 | 0.0083 | 0.01 | 0.015 | 44 |
| PFOA + PFOS (Calculated) | NCL | NCL | 5.1 | 8.6 | 6.4 | 6 | 4.6 | 1.9 | 4.4 | 0.035 | 0.03 | 0.0076 | 0.0053 | 0.014 | 0.012 | 0.018 | 0.028 | 47 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | 0.33 | 0.27 | 0.16 | 0.094 | 0.075 | 0.048 | 0.21 | <0.0042 | <0.0037 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | 0.19 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0042 | <0.0037 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0042 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0042 | <0.0037 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0042 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0042 | <0.0037 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0042 |
| Total PFAS (Calculated) | NCL | NCL | 11 | 18 | 12 | 10 | 8.7 | 4.8 | 12 | 0.061 | 0.061 | 0.012 | 0.0053 | 0.014 | 0.018 | 0.041 | 0.063 | 52 |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-5S | HS-MW-5S | HS-MW-5S | HS-MW-5S | HS-MW-5S | HS-MW-5S | HS-MW-5S | HS-MW-5S | HS-MW-6D | HS-MW-6D | HS-MW-6D | HS-MW-6D | HS-MW-6D | HS-MW-6D | HS-MW-6S | HS-MW-6S |
|--|---|--|--------------|---------------|---------------|-------------|-------------|-------------|-------------|--------------|---------------|---------------|-------------|-------------|-------------|-------------|--------------|-------------|
| Sample Name | | | MW-5S | MW-5M | HS-GW-MW-5M | HS-MW-5S | HS-GW-MW5S | HS-GW-MW5S | HS-GW-MW-5S | MW-6D | MW-6D | HS-GW-MW-6D | HS-MW-6D | HS-GW-MW6D | HS-GW-MW6D | HS-GW-MW-6D | MW-6S | MW-6S |
| Well Screen Interval (Feet below ground surface) | | | 60.3-65 | 60.3 - 65 | 60.3 - 65 | 60.3-65 | 60.3-65 | 60.3-65 | 60.3-65 | 157.5-162.5 | 157.5 - 162.5 | 157.5 - 162.5 | 157.5-162.5 | 157.5-162.5 | 157.5-162.5 | 157.5-162.5 | 58.2-62.9 | 58.2 - 62.9 |
| Laboratory Sample ID | | | K1713964-001 | TG26033-008 | TJ24030-004 | UC16019-012 | UE30036-004 | UI26001-006 | UL05055-021 | K1713273-007 | TG26033-015 | TJ24030-002 | UC21029-008 | UE30036-009 | UI28005-004 | UL05055-028 | K1711250-004 | TG26033-016 |
| Sample Date | | | 12/28/2017 | 07/25/2018 | 10/23/2018 | 03/14/2019 | 05/28/2019 | 09/24/2019 | 12/04/2019 | 12/07/2017 | 07/26/2018 | 10/22/2018 | 03/20/2019 | 05/29/2019 | 09/26/2019 | 12/05/2019 | 10/16/2017 | 07/26/2018 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.03 | <0.19 | <0.07 | <0.078 | <0.07 | <0.07 | <0.071 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0042 | <0.0035 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.03 | <0.19 | <0.07 | <0.078 | <0.07 | <0.07 | <0.071 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0042 | <0.0035 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.03 | <0.19 | <0.07 | <0.078 | <0.07 | <0.07 | <0.071 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0042 | <0.0035 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | <0.03 | - | - | - | - | - | - | <0.0043 | - | - | - | - | - | - | <0.0042 | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.03 | <0.37 | <0.14 | <0.16 | <0.14 | <0.14 | <0.14 | <0.0043 | <0.007 | <0.0069 | <0.007 | <0.0071 | <0.0072 | <0.0071 | <0.0042 | <0.0069 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | <0.03 | - | - | - | - | - | - | <0.0043 | - | - | - | - | - | - | <0.0042 | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 1.6 | 1.2 | 1.1 | 1.9 | 1.6 | 1.4 | 1.4 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0042 | 0.0051 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.03 | <0.19 | <0.07 | <0.078 | <0.07 | <0.07 | <0.071 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0042 | <0.0035 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | 2.2 | 2.2 | 1.4 | 1.7 | 3.5 | 2.2 | 3.4 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0042 | <0.0035 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | - | <0.37 | <0.14 | <0.16 | <0.14 | <0.14 | <0.14 | - | <0.007 | <0.0069 | <0.007 | <0.0071 | <0.0072 | <0.0071 | - | <0.0069 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.03 | <0.19 | <0.07 | <0.078 | <0.07 | <0.07 | <0.071 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0042 | <0.0035 [U] |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | - | 1.8 | 1.7 | 3.1 | 3.1 | 2.8 | 3.5 | - | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | - | 0.01 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 8.2 | 5.6 | 4.7 | 7.5 | 11 | 9.9 | 15 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | 0.014 | 0.048 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | 0.36 | 0.29 | 0.28 | 0.56 | 0.52 | 0.47 | 0.43 | <0.0086 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0083 | <0.0035 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.03 | <0.19 | <0.07 | <0.078 | <0.07 | <0.07 | <0.071 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0042 | <0.0035 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.03 | <0.19 | <0.07 | <0.078 | <0.07 | <0.07 | <0.071 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0042 | <0.0035 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | 1.9 | 0.99 | 0.84 | 1.6 | 1.8 | 1.4 | 2.4 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0042 | 0.0061 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 1.3 | 0.81 | 0.74 | 1.5 | 1.6 | 1.3 | 1.3 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0042 | 0.0065 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | 0.03 | <0.19 | <0.07 | <0.078 | <0.07 | <0.07 | <0.071 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0042 | <0.0035 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 7.4 | 6.2 | 5.6 | 8.5 | 11 | 8.2 | 11 | <0.0017 | <0.0018 | <0.0017 | <0.0018 | <0.0018 | <0.0018 | <0.0018 | 0.0098 | 0.028 [J] |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 41 | 81 [J] | 47 [J] | 42 | 100 | 59 | 71 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0042 | <0.0035 |
| PFOA + PFOS (Calculated) | NCL | NCL | 48 | 87 | 53 | 51 | 110 | 67 | 82 | ND | ND | ND | ND | ND | ND | ND | 0.0098 | 0.028 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | 0.51 | 0.36 | 0.37 | 0.65 | 0.61 | 0.54 | 0.51 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0042 | <0.0035 [U] |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.03 | <0.19 | <0.07 | <0.078 | <0.07 | <0.07 | <0.071 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0042 | <0.0035 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.03 | <0.19 | <0.07 | <0.078 | <0.07 | <0.07 | <0.071 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0042 | <0.0035 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.03 | <0.19 | <0.07 | <0.078 | <0.07 | <0.07 | <0.071 | <0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0042 | <0.0035 |
| Total PFAS (Calculated) | NCL | NCL | 65 | 100 | 64 | 69 | 130 | 87 | 110 | ND | ND | ND | ND | ND | ND | ND | 0.024 | 0.1 |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-6S | HS-MW-6S | HS-MW-6S | HS-MW-6S | HS-MW-6S | HS-MW-7S | HS-MW-7S | HS-MW-7S | HS-MW-7S | HS-MW-7S | HS-MW-7S | HS-MW-7S | HS-MW-7S | HS-MW-8 | HS-MW-8 | HS-MW-8 |
|--|---|--|-------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|--------------|-------------|-------------|
| Sample Name | | | HS-GW-MW-6S | HS-MW-6S | HS-GW-MW6S | HS-GW-MW6S | HS-GW-MW-6S | MW-7S | MW-7 | HS-GW-MW-7S | HS-MW-7S | HS-MW-7S DUP | HS-GW-MW7S | HS-GW-MW7S | HS-GW-MW-7S | MW-8 | MW-8 | HS-GW-MW-8 |
| Well Screen Interval (Feet below ground surface) | | | 58.2 - 62.9 | 58.2-62.9 | 58.2-62.9 | 58.2-62.9 | 58.2-62.9 | 69.9-74.5 | 69.9 - 74.5 | 69.9 - 74.5 | 69.9-74.5 | 69.9-74.5 | 69.9-74.5 | 69.9-74.5 | 69.9-74.5 | 30-35 | 30 - 35 | 30 - 35 |
| Laboratory Sample ID | | | TJ24030-001 | UC21029-007 | UE30036-010 | UI28005-005 | UL05055-027 | K1711250-005 | TG28011-001 | TJ24030-007 | UC23028-001 | UC23028-002 | UE30036-017 | UI26001-004 | UL05055-022 | K1713273-008 | TG28011-002 | TJ24030-015 |
| Sample Date | 10/22/2018 | 03/20/2019 | 05/29/2019 | 09/26/2019 | 12/05/2019 | 10/16/2017 | 07/27/2018 | 10/23/2018 | 03/21/2019 | 03/21/2019 | 05/30/2019 | 09/23/2019 | 12/04/2019 | 12/07/2017 | 07/27/2018 | 10/24/2018 | | |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0035 | <0.0044 | <0.0035 | <0.0037 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0035 | <0.0044 | <0.0035 | <0.0037 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0035 | <0.0044 | <0.0035 | <0.0037 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | <0.0042 | - | - | - | - | - | - | - | <0.0044 | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0069 | <0.0073 | <0.0069 | <0.0072 | <0.0072 | <0.0042 | <0.007 | <0.007 | <0.0071 | <0.007 | <0.0069 | <0.0067 | <0.007 | <0.0044 | <0.0071 | <0.0074 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | <0.0042 | - | - | - | - | - | - | - | <0.0044 | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.039 | 0.047 | 0.0052 | 0.034 | 0.0046 | <0.0042 | 0.0046 | 0.0058 | 0.0051 | 0.0053 | 0.006 | 0.0046 | 0.0055 | 0.11 | 0.1 | 0.041 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0035 | <0.0044 | <0.0035 | <0.0037 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0035 | 0.12 | 0.032 | 0.16 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0069 | <0.0073 | <0.0069 | <0.0072 | <0.0072 | - | <0.007 | <0.007 | <0.0071 | <0.007 | <0.0069 | <0.0067 | <0.007 | - | <0.0071 | <0.0074 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0035 | <0.0044 | <0.0035 | <0.0037 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | 0.058 | 0.061 | 0.011 | 0.036 | <0.0036 | - | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0035 | - | 0.12 | 0.053 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 0.08 | 0.085 | 0.039 | 0.074 | 0.013 | 0.0069 | 0.0064 | 0.0093 | 0.011 | 0.0099 | 0.0089 | 0.0089 | 0.01 | 0.25 | 0.28 | 0.22 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0035 | 0.0046 | <0.0035 | 0.0036 | <0.0036 | <0.0083 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0035 | 0.018 | 0.017 | 0.011 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0035 | <0.0044 | <0.0035 | <0.0037 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0035 | <0.0044 | <0.0035 | <0.0037 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | 0.013 | 0.015 | 0.0043 | 0.012 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0035 | 0.088 | 0.079 | 0.046 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 0.029 | 0.031 | 0.0053 | 0.021 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0035 | 0.033 | 0.049 | 0.023 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0035 | <0.0044 | <0.0035 | <0.0037 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.045 [J] | 0.044 | 0.028 | 0.043 | 0.012 | 0.0033 | 0.0023 [J] | 0.0024 [J] | 0.0029 | 0.003 | 0.0035 | 0.0029 | 0.003 | 0.6 | 0.62 | 0.59 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 0.0049 [J] | 0.0087 | 0.0059 | 0.005 | 0.0046 | 0.0047 | 0.0035 [J] | 0.004 [J] | <0.0035 | <0.0035 | 0.0037 | 0.0047 | 0.0091 | 0.15 | 0.045 [J] | 0.18 [J] |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.05 | 0.053 | 0.034 | 0.048 | 0.017 | 0.008 | 0.0058 | 0.0064 | 0.0029 | 0.003 | 0.0072 | 0.0076 | 0.012 | 0.75 | 0.67 | 0.77 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | 0.0061 | 0.0078 | <0.0035 | 0.006 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0035 | 0.017 | 0.016 | 0.0091 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0035 | <0.0044 | <0.0035 | <0.0037 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0035 | <0.0044 | <0.0035 | <0.0037 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0035 | <0.0044 | <0.0035 | <0.0037 |
| Total PFAS (Calculated) | NCL | NCL | 0.28 | 0.3 | 0.099 | 0.23 | 0.034 | 0.015 | 0.017 | 0.022 | 0.019 | 0.018 | 0.022 | 0.021 | 0.028 | 1.4 | 1.4 | 1.3 |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-8 | HS-MW-8 | HS-MW-8 | HS-MW-8 | HS-MW-9D | HS-MW-9D | HS-MW-9D | HS-MW-9D | HS-MW-9D | HS-MW-9D | HS-MW-9D | HS-MW-9D | HS-MW-9M | HS-MW-9M | HS-MW-9M | HS-MW-9M |
|--|---|--|-------------|-------------|-------------|-------------|--------------|---------------|---------------|-------------|-------------|----------------|-------------|-------------|--------------|---------------|---------------|-------------|
| Sample Name | | | HS-MW-8 | HS-GW-MW8 | HS-GW-MW8 | HS-GW-MW-8 | MW-9C | MW-9D | HS-GW-MW-9D | HS-MW-9D | HS-GW-MW9D | HS-GW-MW9D DUP | HS-GW-MW9D | HS-GW-MW-9D | MW-9B | MW-9M | HS-GW-MW-9M | HS-MW-9M |
| Well Screen Interval (Feet below ground surface) | | | 30-35 | 30-35 | 30-35 | 30-35 | 204.3-209.3 | 204.3 - 209.3 | 204.3 - 209.3 | 204.3-209.3 | 204.3-209.3 | 204.3-209.3 | 204.3-209.3 | 204.3-209.3 | 126.8-131.8 | 126.8 - 131.8 | 126.8 - 131.8 | 126.8-131.8 |
| Laboratory Sample ID | | | UC23028-003 | UE30036-006 | UI26001-010 | UL05055-031 | K1713273-004 | TH01022-002 | TJ24030-022 | UC21029-006 | UE24001-014 | UE24001-015 | UI26001-014 | UL12091-004 | K1713273-002 | TH01022-005 | TJ24030-017 | UC21029-005 |
| Sample Date | | | 03/21/2019 | 05/29/2019 | 09/24/2019 | 12/06/2019 | 12/06/2017 | 07/31/2018 | 10/25/2018 | 03/19/2019 | 05/22/2019 | 05/22/2019 | 09/25/2019 | 12/09/2019 | 12/06/2017 | 07/30/2018 | 10/25/2018 | 03/19/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0036 | <0.0035 | <0.0039 | <0.0038 | <0.0041 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | <0.0035 | <0.0034 | <0.0036 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0036 | <0.0035 | <0.0039 | <0.0038 | <0.0041 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | <0.0035 | <0.0034 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0036 | <0.0035 | <0.0039 | <0.0038 | <0.0041 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | <0.0035 | <0.0034 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | <0.0041 | - | - | - | - | - | - | - | <0.0043 | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0072 | <0.0071 | <0.0078 | <0.0075 | <0.0041 | <0.007 | <0.0073 | <0.007 | <0.0072 | <0.0071 | <0.0068 | <0.0076 | <0.0043 | <0.0069 | <0.0069 | <0.0071 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | <0.0041 | - | - | - | - | - | - | - | <0.0043 | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.026 | 0.028 | 0.075 | 0.086 | <0.0041 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | <0.0035 | <0.0034 | <0.0036 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0036 | <0.0035 | <0.0039 | <0.0038 | <0.0041 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | <0.0035 | <0.0034 | <0.0036 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | 0.078 | 0.033 | 0.09 | 0.12 | <0.0041 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | <0.0035 | <0.0034 | <0.0036 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0072 | <0.0071 | <0.0078 | <0.0075 | - | <0.007 | <0.0073 | <0.007 | <0.0072 | <0.0071 | <0.0068 | <0.0076 | - | <0.0069 | <0.0069 | <0.0071 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0036 | <0.0035 | <0.0039 | <0.0038 | <0.0041 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | 0.0064 | <0.0034 | <0.0036 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | 0.044 | 0.035 | 0.13 | 0.11 | - | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | - | <0.0035 | <0.0034 | <0.0036 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 0.15 | 0.085 | 0.39 | 0.32 | <0.0041 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | <0.0035 | <0.0034 | <0.0036 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | 0.0066 | 0.0066 | 0.012 | 0.017 | <0.0081 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0086 | <0.0035 | <0.0034 | <0.0036 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0039 | <0.0038 | <0.0041 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | <0.0035 | <0.0034 | <0.0036 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0039 | <0.0038 | <0.0041 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | <0.0035 | <0.0034 | <0.0036 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | 0.037 | 0.044 | 0.06 | 0.074 | <0.0041 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | <0.0035 | <0.0034 | <0.0036 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 0.016 | 0.024 | 0.028 | 0.031 | 0.0064 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | <0.0035 | <0.0034 | <0.0036 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0036 | <0.0035 | <0.0039 | <0.0038 | <0.0041 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | <0.0035 | <0.0034 | <0.0036 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.38 | 0.35 | 1.3 | 0.7 | <0.0016 | <0.0017 | <0.0018 | <0.0017 | <0.0018 | <0.0018 | <0.0017 | <0.0019 | <0.0017 | <0.0017 | <0.0017 | <0.0018 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 0.14 | 0.051 | 0.099 | 0.12 | <0.0041 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | <0.0035 | <0.0034 | <0.0036 |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.52 | 0.4 | 1.4 | 0.82 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | 0.0055 | 0.0067 | 0.01 | 0.011 | <0.0041 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | <0.0035 | <0.0034 | <0.0036 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0039 | <0.0038 | <0.0041 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | <0.0035 | <0.0034 | <0.0036 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0039 | <0.0038 | <0.0041 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | <0.0035 | <0.0034 | <0.0036 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0039 | <0.0038 | <0.0041 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0038 | <0.0043 | <0.0035 | <0.0034 | <0.0036 |
| Total PFAS (Calculated) | NCL | NCL | 0.88 | 0.66 | 2.2 | 1.6 | 0.0064 | ND | ND | ND | ND | ND | ND | ND | ND | 0.0064 | ND | ND |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-9M | HS-MW-9M | HS-MW-9M | HS-MW-9S | HS-MW-9S | HS-MW-9S | HS-MW-9S | HS-MW-9S | HS-MW-9S | HS-MW-9S | HS-MW-9S | HS-MW-9S | HS-MW-9S | HS-MW-10D | HS-MW-10D | HS-MW-10D | HS-MW-10D |
|--|---|--|-------------|-------------|-------------|--------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-----------------|--------------|---------------|---------------|-------------|-----------|
| Sample Name | | | HS-GW-MW9M | HS-GW-MW9M | HS-GW-MW-9M | MW-9A | MW-9S | HS-GW-MW-9S | HS-GW-MW-9S | HS-MW-9S | HS-GW-MW9S | HS-GW-MW9S | HS-GW-MW-9S | HS-GW-MW-9S DUP | MW-10C | MW-10D | HS-GW-MW-10D | HS-MW-10D | |
| Well Screen Interval (Feet below ground surface) | | | 126.8-131.8 | 126.8-131.8 | 126.8-131.8 | 26.2-31.2 | 26.2 - 31.2 | 26.2 - 31.2 | 26.2 - 31.2 | 26.2-31.2 | 26.2-31.2 | 26.2-31.2 | 26.2-31.2 | 26.2-31.2 | 188.2-193.2 | 188.2 - 193.2 | 188.2 - 193.2 | 188.2-193.2 | |
| Laboratory Sample ID | | | UE24001-013 | UI26001-020 | UL12091-003 | K1713273-001 | TH01022-004 | TJ24030-016 | TK12032-001 | UC21029-004 | UE24001-012 | UI26001-016 | UL12091-013 | UL12091-014 | K1800647-002 | TH01022-007 | TJ24030-021 | UC21029-003 | |
| Sample Date | | | 05/22/2019 | 09/25/2019 | 12/09/2019 | 12/06/2017 | 07/30/2018 | 10/24/2018 | 11/07/2018 | 03/19/2019 | 05/22/2019 | 09/25/2019 | 12/11/2019 | 12/11/2019 | 01/22/2018 | 08/01/2018 | 10/25/2018 | 03/18/2019 | |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | <0.0038 | <0.0037 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | <0.0064 | <0.0035 | <0.0034 | <0.0037 [UJ] | <0.0036 | <0.0035 | 0.0039 | <0.0038 | <0.0037 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | <0.0038 | <0.0037 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | <0.0042 | - | - | - | - | - | - | - | - | <0.0044 | - | - | - | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0069 | <0.0071 | <0.0071 | <0.0042 | <0.007 | <0.0069 | <0.0073 | <0.0073 | <0.007 | <0.0074 | <0.0077 | <0.0074 | <0.0044 | <0.0069 | <0.0069 | <0.0075 | |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | <0.0042 | - | - | - | - | - | - | - | - | <0.0044 | - | - | - | |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | 0.005 | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | <0.0038 | <0.0037 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | <0.0038 | <0.0037 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | <0.0038 | <0.0037 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0069 | <0.0071 | <0.0071 | - | <0.007 | <0.0069 | <0.0073 | <0.0073 | <0.007 | <0.0074 | <0.0077 | <0.0074 | - | <0.0069 | <0.0069 | <0.0075 | |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | <0.0038 | <0.0037 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | - | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | <0.0038 | <0.0037 | - | <0.0034 | <0.0035 | <0.0038 | |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | <0.0038 | <0.0037 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | <0.0083 | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | 0.0049 | 0.0049 | <0.0088 | <0.0034 | <0.0035 | <0.0038 | |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | <0.0038 | <0.0037 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | <0.0038 | <0.0037 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | <0.0038 | <0.0037 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | <0.0038 | <0.0037 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | <0.0038 | <0.0037 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.0017 | <0.0018 | <0.0018 | 0.0024 | <0.0017 | <0.0017 | <0.0018 | <0.0018 | <0.0017 | <0.0018 | 0.0048 | 0.0049 | <0.0018 | <0.0017 | <0.0017 | <0.0019 | |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | 0.0055 [J] | <0.0037 | <0.0036 | 0.0049 | <0.0037 | 0.0076 | 0.0081 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | ND | ND | 0.0024 | ND | 0.0055 | ND | ND | 0.0049 | ND | 0.012 | 0.013 | ND | ND | ND | ND | |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | <0.0038 | <0.0037 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | <0.0038 | <0.0037 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | <0.0038 | <0.0037 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0036 | <0.0042 | <0.0035 | <0.0034 | <0.0037 | <0.0036 | <0.0035 | <0.0037 | <0.0038 | <0.0037 | <0.0044 | <0.0034 | <0.0035 | <0.0038 | |
| Total PFAS (Calculated) | NCL | NCL | ND | ND | ND | 0.0074 | ND | 0.0055 | ND | ND | 0.0049 | 0.0039 | 0.017 | 0.018 | ND | ND | ND | ND | |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-10D | HS-MW-10D | HS-MW-10D | HS-MW-10M | HS-MW-10M | HS-MW-10M | HS-MW-10M | HS-MW-10M | HS-MW-10M | HS-MW-10M | HS-MW-10M | HS-MW-10S | HS-MW-10S | HS-MW-10S | HS-MW-10S | HS-MW-10S | |
|--|---|--|-------------|-------------|--------------|--------------|---------------|---------------|--------------|-------------|-------------|-----------------|--------------|--------------|------------------|------------------|-------------|--------------|-----------|
| Sample Name | | | HS-GW-MW10D | HS-GW-MW10D | HS-GW-MW-10D | MW-10B | MW-10M | HS-GW-MW-10M | HS-MW-10M | HS-GW-MW10M | HS-GW-MW10M | HS-GW-MW10M DUP | HS-GW-MW-10M | MW-10A | MW-10S | HS-GW-MW-10S | HS-MW-10S | HS-GW-MW10S | |
| Well Screen Interval (Feet below ground surface) | | | 188.2-193.2 | 188.2-193.2 | 188.2-193.2 | 126.4-131.4 | 126.4 - 131.4 | 126.4 - 131.4 | 126.4-131.4 | 126.4-131.4 | 126.4-131.4 | 126.4-131.4 | 126.4-131.4 | 126.4-131.4 | 48.3-58.3 | 48.3 - 58.3 | 48.3 - 58.3 | 48.3-58.3 | 48.3-58.3 |
| Laboratory Sample ID | | | UE24001-003 | UI26001-015 | UL05055-006 | K1800647-001 | TH01022-008 | TJ24030-018 | UC21029-002 | UE24001-002 | UI26001-017 | UI26001-018 | UL05055-010 | K1800647-003 | TH01022-003 | TJ27021-002 | UC21029-001 | UE24001-001 | |
| Sample Date | | | 05/20/2019 | 09/25/2019 | 12/02/2019 | 01/22/2018 | 08/01/2018 | 10/25/2018 | 03/18/2019 | 05/20/2019 | 09/25/2019 | 09/25/2019 | 12/03/2019 | 01/22/2018 | 07/31/2018 | 10/26/2018 | 03/18/2019 | 05/20/2019 | |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0042 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0039 | |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0042 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0039 | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0042 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0039 | |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | <0.0042 | - | - | - | - | - | - | - | <0.0042 | - | - | - | - | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.007 | <0.0072 | <0.007 | <0.0042 | <0.0077 | <0.007 | <0.007 | <0.007 | <0.0072 | <0.0071 | <0.0071 | <0.0042 | <0.007 | <0.007 | <0.007 | <0.0078 | |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | <0.0042 | - | - | - | - | - | - | - | <0.0042 | - | - | - | - | |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | 0.0084 | 0.0062 | 0.01 | 0.0085 | 0.0063 | 0.0075 | 0.0079 | 0.0089 | <0.0042 | 0.004 | 0.0036 | <0.0035 | 0.004 | |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0042 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0039 | |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0042 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | 0.0085 | 0.0055 | 0.0051 | 0.0047 | 0.0049 | |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.007 | <0.0072 | <0.007 | - | <0.0077 | <0.007 | <0.007 | <0.007 | <0.0072 | <0.0071 | <0.0071 | - | <0.007 | <0.007 | <0.007 | <0.0078 | |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0042 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0039 | |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | - | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | - | <0.0035 | <0.0035 | <0.0035 | <0.0039 | |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | 0.0045 | 0.0052 | 0.0054 | 0.0048 | 0.0036 | 0.0039 | 0.0039 | 0.0039 | 0.008 | 0.01 | 0.0075 | 0.006 | 0.0084 | |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0083 | <0.0039 | 0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0083 | <0.0035 | <0.0035 | <0.0035 | <0.0039 | |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0042 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0039 | |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0042 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0039 | |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0042 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0039 | |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0042 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0039 | |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0042 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0039 | |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.0017 | <0.0018 | <0.0018 | 0.0093 | 0.0073 | 0.0092 | 0.0084 | 0.0072 | 0.0096 | 0.0094 | 0.01 | 0.015 | 0.014 | 0.015 | 0.012 | 0.015 | |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0035 | <0.0036 | <0.0035 | 0.012 | 0.012 | 0.014 | 0.013 | 0.012 | 0.012 | 0.011 | 0.013 | 0.037 | 0.041 [J] | 0.041 [J] | 0.04 | 0.036 | |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | ND | ND | 0.021 | 0.019 | 0.023 | 0.021 | 0.019 | 0.022 | 0.02 | 0.023 | 0.052 | 0.055 | 0.056 | 0.052 | 0.051 | |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0042 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0039 | |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0042 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0039 | |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0042 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0039 | |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0042 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0042 | <0.0035 | <0.0035 | <0.0035 | <0.0039 | |
| Total PFAS (Calculated) | NCL | NCL | ND | ND | ND | 0.034 | 0.031 | 0.042 | 0.035 | 0.029 | 0.033 | 0.032 | 0.036 | 0.069 | 0.075 | 0.072 | 0.063 | 0.068 | |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-10S | HS-MW-10S | HS-MW-11D | HS-MW-11D | HS-MW-11D | HS-MW-11D | HS-MW-11D | HS-MW-11D | HS-MW-11D | HS-MW-11D | HS-MW-11M | HS-MW-11M | HS-MW-11M | HS-MW-11M | HS-MW-11M | HS-MW-11M | HS-MW-11M |
|--|---|--|-------------|--------------|--------------|---------------|---------------|-------------|-------------|-------------|-------------|--------------|-------------|--------------|--------------|-------------|-------------|-------------|--------------|
| Sample Name | | | HS-GW-MW10S | HS-GW-MW-10S | MW-11C | MW-11D | HS-GW-MW-11D | HS-MW-11D | HS-GW-MW11D | HS-GW-MW11D | HS-GW-MW11D | HS-GW-MW-11D | MW-11B | MW-11M | HS-GW-MW-11M | HS-MW-11M | HS-GW-MW11M | HS-GW-MW11M | HS-GW-MW-11M |
| Well Screen Interval (Feet below ground surface) | | | 48.3-58.3 | 48.3-58.3 | 153.6-158.6 | 153.6 - 158.6 | 153.6 - 158.6 | 153.6-158.6 | 153.6-158.6 | 153.6-158.6 | 153.6-158.6 | 153.6-158.6 | 96.4-101.4 | 96.4 - 101.4 | 96.4 - 101.4 | 96.4-101.4 | 96.4-101.4 | 96.4-101.4 | 96.4-101.4 |
| Laboratory Sample ID | | | UI26001-019 | UL05055-001 | K1713273-012 | TH01022-016 | TJ27021-001 | UC16019-011 | UE24001-016 | UI28005-003 | UL05055-013 | K1713273-015 | TH01022-017 | TJ27021-003 | UC16019-010 | UE24001-018 | UI28005-002 | UL05055-012 | |
| Sample Date | | | 09/25/2019 | 12/02/2019 | 12/08/2017 | 08/02/2018 | 10/26/2018 | 03/14/2019 | 05/22/2019 | 09/26/2019 | 12/03/2019 | 12/08/2017 | 08/02/2018 | 10/26/2018 | 03/14/2019 | 05/22/2019 | 09/26/2019 | 12/03/2019 | |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0036 | <0.0035 | <0.0077 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0036 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0036 | <0.0035 | <0.0081 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0036 | <0.0035 | <0.0041 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | <0.0041 | - | - | - | - | - | - | <0.0041 | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0072 | <0.0071 | <0.0041 | <0.0071 | <0.007 | <0.0076 | <0.0075 | <0.0073 | <0.0075 | <0.0041 | <0.0069 | <0.0072 | <0.0072 | <0.0072 | <0.0074 | <0.0073 | <0.0073 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | <0.0041 | - | - | - | - | - | - | <0.0041 | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0036 | 0.0037 | <0.0041 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | 0.0061 | 0.014 | 0.013 | 0.046 | 0.05 | |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0036 | <0.0035 | <0.0041 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0036 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0036 | 0.0037 | <0.0041 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0036 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0072 | <0.0071 | - | <0.0071 | <0.007 | <0.0076 | <0.0075 | <0.0073 | <0.0075 | - | <0.0069 | <0.0072 | <0.0072 | <0.0072 | <0.0074 | <0.0073 | <0.0073 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0036 | <0.0035 | <0.0041 | 0.014 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0036 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0036 | <0.0035 | - | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | - | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | 0.016 | |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 0.014 | 0.013 | <0.0041 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | 0.0045 | |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0036 | <0.0035 | <0.0081 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0081 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0036 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0041 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0036 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0041 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0036 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0036 | <0.0035 | <0.0041 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0036 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0036 | <0.0035 | <0.0041 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0036 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0036 | <0.0035 | <0.0041 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0036 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.018 | 0.021 | <0.0016 | <0.0018 | <0.0018 | <0.0019 | <0.0019 | <0.0018 | <0.0019 | <0.0016 | <0.0017 | <0.0018 | <0.0018 | <0.0018 | <0.0018 | <0.0018 | <0.0018 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 0.024 | 0.024 | <0.0041 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0036 |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.042 | 0.045 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0036 | <0.0035 | <0.0041 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0036 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0041 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0036 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0041 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0036 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0041 | <0.0036 | <0.0035 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0041 | <0.0034 | <0.0036 | <0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0036 |
| Total PFAS (Calculated) | NCL | NCL | 0.056 | 0.065 | ND | 0.014 | ND | ND | ND | ND | ND | ND | ND | 0.0061 | 0.014 | 0.013 | 0.046 | 0.071 | |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-11S | HS-MW-11S | HS-MW-11S | HS-MW-11S | HS-MW-11S | HS-MW-11S | HS-MW-11S | HS-MW-11S | HS-PMW-12 | HS-PMW-12 | HS-PMW-12 | HS-PMW-12 | HS-PMW-12 | HS-PMW-12 | HS-PMW-12 | HS-PMW-12 | HS-PMW-12 |
|--|---|--|--------------|-------------|--------------|-------------|-------------|-------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|--------------------|--------------------|-----------|
| Sample Name | | | MW-11A | MW-11S | HS-GW-MW-11S | HS-MW-11S | HS-GW-MW11S | HS-GW-MW11S | HS-GW-MW-11S | HS-MW-12 (15-20) | HS-MW-12 (25-30) | HS-MW-12 (35-40) | HS-MW-12 (49-54) | HS-MW-12 (75-80) | HS-MW-12 (85-90) | HS-MW-12 (95-100) | HS-MW-12 (105-110) | HS-MW-12 (115-120) | |
| Well Screen Interval (Feet below ground surface) | | | 21.2-31.2 | 21.2 - 31.2 | 21.2 - 31.2 | 21.2-31.2 | 21.2-31.2 | 21.2-31.2 | 21.2-31.2 | 15-20 | 25-30 | 35-40 | 49-54 | 75-80 | 85-90 | 95-100 | 105-110 | 115-120 | |
| Laboratory Sample ID | | | K1713273-011 | TH01022-018 | TJ27021-005 | UC16019-009 | UE24001-017 | UI28005-001 | UL05055-014 | UI05015-001 | UI05015-002 | UI05015-003 | UI12066-001 | UI12066-002 | UI12066-003 | UI12066-004 | UI12066-005 | UI12066-006 | |
| Sample Date | | | 12/08/2017 | 08/02/2018 | 10/26/2018 | 03/14/2019 | 05/22/2019 | 09/26/2019 | 12/03/2019 | 09/04/2019 | 09/04/2019 | 09/04/2019 | 09/06/2019 | 09/10/2019 | 09/10/2019 | 09/11/2019 | 09/11/2019 | 09/11/2019 | |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | <0.0035 | <0.0037 | <0.0036 | <0.0039 | |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | <0.0035 | <0.0037 | <0.0036 | <0.0039 | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | <0.0035 | <0.0037 | <0.0036 | <0.0039 | |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | <0.0043 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0043 | <0.0074 | <0.007 | <0.0072 | <0.0075 | <0.0077 | <0.0071 | <0.0071 | <0.0078 | <0.0075 | <0.0075 | <0.0076 | <0.007 | <0.0074 | <0.0072 | <0.0078 | |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | <0.0043 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | 0.034 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | 0.0083 | 0.054 | 0.035 | 0.06 | |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | <0.0035 | <0.0037 | <0.0036 | <0.0039 | |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | <0.0035 | <0.0037 | <0.0036 | <0.0039 | |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | - | <0.0074 | <0.007 | <0.0072 | <0.0075 | <0.0077 | <0.0071 | <0.0071 | <0.0078 | <0.0075 | <0.0075 | <0.0076 | <0.007 | <0.0074 | <0.0072 | <0.0078 | |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | <0.0035 | <0.0037 | <0.0036 | <0.0039 | |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | - | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | 0.029 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | 0.0065 | 0.052 | 0.022 | 0.055 | |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | 0.038 | 0.0067 | 0.0052 | 0.0038 | <0.0038 | 0.0062 | 0.069 | 0.015 | 0.064 | |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0086 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | 0.0071 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | <0.0035 | 0.013 | 0.012 | 0.018 | |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | <0.0035 | <0.0037 | <0.0036 | <0.0039 | |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | <0.0035 | <0.0037 | <0.0036 | <0.0039 | |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | 0.012 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | 0.0035 | 0.027 | 0.018 | 0.035 | |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | 0.013 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | 0.0044 | 0.028 | 0.02 | 0.034 | |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | <0.0035 | <0.0037 | <0.0036 | <0.0039 | |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.0017 | <0.0019 | 0.0018 | 0.0024 | 0.0028 | <0.0019 | 0.0041 | 0.026 | 0.0065 | <0.0019 | <0.0019 | <0.0019 | 0.0093 | 0.086 | 0.033 | 0.1 | |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | <0.0035 | 0.0046 | <0.0036 | <0.0039 | |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | ND | 0.0018 | 0.0024 | 0.0028 | ND | 0.0041 | 0.026 | 0.0065 | ND | ND | ND | 0.0093 | 0.091 | 0.033 | 0.1 | |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | 0.0064 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | <0.0035 | 0.012 | 0.011 | 0.017 | |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | <0.0035 | <0.0037 | <0.0036 | <0.0039 | |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | <0.0035 | <0.0037 | <0.0036 | <0.0039 | |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0043 | <0.0037 | <0.0035 | <0.0036 | <0.0038 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0037 | <0.0038 | <0.0038 | <0.0035 | <0.0037 | <0.0036 | <0.0039 | |
| Total PFAS (Calculated) | NCL | NCL | ND | ND | 0.0018 | 0.0024 | 0.0028 | ND | 0.0041 | 0.17 | 0.013 | 0.0052 | 0.0038 | ND | 0.038 | 0.35 | 0.17 | 0.38 | |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-PMW-12 | HS-PMW-12 | HS-PMW-12 | HS-PMW-12 | HS-PMW-12 | HS-PMW-12 | HS-PMW-12 | HS-MW-12A | HS-MW-12B | HS-MW-12C | HS-MW-12D | HS-MW-12E | HS-PMW-13 | HS-PMW-13 | HS-PMW-13 | HS-PMW-13 |
|--|---|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|
| Sample Name | | | HS-MW-12 (125-130) | HS-MW-12 (135-140) | HS-MW-12 (145-150) | HS-MW-12 (155-160) | HS-MW-12 (165-170) | HS-MW-12 (175-180) | HS-MW-12 (185-190) | HS-GW-MW-12A | HS-GW-MW-12B | HS-GW-MW-12C | HS-GW-MW-12D | HS-GW-MW-12E | HS-13 59-64 | HS-13 69-74 | HS-13 79-84 | HS-13 89-94 |
| Well Screen Interval (Feet below ground surface) | | | 125-130 | 135-140 | 145-150 | 155-160 | 165-170 | 175-180 | 185-190 | 15.4-20.4 | 51.5-56.5 | 127.7-132.7 | 158.7-163.7 | 187.5-192.5 | 59-64 | 69-74 | 79-84 | 89-94 |
| Laboratory Sample ID | | | UI12066-007 | UI18051-001 | UI18051-002 | UI18051-003 | UI18051-004 | UI18051-005 | UI18051-006 | UK29008-021 | UK29008-012 | UK29008-011 | UK29008-010 | UK29008-013 | UL12092-001 | UL12092-002 | UL12092-003 | UL12092-004 |
| Sample Date | | | 09/11/2019 | 09/12/2019 | 09/12/2019 | 09/12/2019 | 09/13/2019 | 09/13/2019 | 09/16/2019 | 11/27/2019 | 11/25/2019 | 11/25/2019 | 11/25/2019 | 11/25/2019 | 12/09/2019 | 12/10/2019 | 12/10/2019 | 12/10/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0034 | <0.0039 | <0.0036 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0037 | <0.0038 | <0.0034 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0034 | <0.0039 | <0.0036 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0037 | <0.0038 | <0.0034 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0034 | <0.0039 | <0.0036 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0037 | <0.0038 | <0.0034 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0068 | <0.0079 | <0.0072 | <0.0074 | <0.0074 | <0.0074 | <0.0069 | <0.0072 | <0.0073 | <0.0076 | <0.0068 | <0.007 | <0.0068 | <0.0068 | <0.0068 | <0.0068 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.095 | 0.079 | 0.11 | 0.17 | 0.13 | 0.061 | <0.0035 | <0.0036 | <0.0037 | 0.13 | 0.14 | <0.0035 | 0.0044 | 0.0044 | 0.0054 | 0.0051 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0034 | <0.0039 | <0.0036 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0037 | <0.0038 | <0.0034 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0034 | <0.0039 | <0.0036 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0037 | <0.0038 | <0.0034 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0068 | <0.0079 | <0.0072 | <0.0074 | <0.0074 | <0.0074 | <0.0069 | <0.0072 | <0.0073 | <0.0076 | <0.0068 | <0.007 | <0.0068 | <0.0068 | <0.0068 | <0.0068 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0034 | <0.0039 | <0.0036 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0037 | <0.0038 | <0.0034 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | 0.09 | 0.085 | 0.11 | 0.13 | 0.11 | 0.037 | <0.0035 | <0.0036 | <0.0037 | 0.13 | 0.12 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 0.09 | 0.082 | 0.1 | 0.06 | 0.06 | 0.013 | <0.0035 | <0.0036 | 0.0054 | 0.12 | 0.091 | <0.0035 | <0.0034 | <0.0034 | 0.011 | 0.0079 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | 0.029 | 0.021 | 0.026 | 0.054 | 0.037 | 0.023 | <0.0035 | <0.0036 | <0.0037 | 0.036 | 0.037 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0034 | <0.0039 | <0.0036 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0037 | <0.0038 | <0.0034 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0034 | <0.0039 | <0.0036 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0037 | <0.0038 | <0.0034 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | 0.056 | 0.045 | 0.057 | 0.078 | 0.065 | 0.025 | <0.0035 | <0.0036 | <0.0037 | 0.07 | 0.072 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 0.056 | 0.045 | 0.061 | 0.1 | 0.074 | 0.037 | <0.0035 | <0.0036 | <0.0037 | 0.076 | 0.09 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0034 | <0.0039 | <0.0036 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0037 | <0.0038 | <0.0034 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.15 | 0.13 | 0.15 | 0.14 | 0.13 | 0.037 | <0.0017 | 0.0089 | 0.0023 | 0.19 | 0.17 | <0.0017 | <0.0017 | <0.0017 | 0.0018 | 0.0035 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0034 | <0.0039 | <0.0036 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | 0.0063 | <0.0037 | <0.0038 | <0.0034 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.15 | 0.13 | 0.15 | 0.14 | 0.13 | 0.037 | ND | 0.015 | 0.0023 | 0.19 | 0.17 | ND | ND | ND | 0.0018 | 0.0035 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | 0.028 | 0.023 | 0.029 | 0.059 | 0.036 | 0.023 | <0.0035 | 0.0039 | <0.0037 | 0.039 | 0.038 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0034 | <0.0039 | <0.0036 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0037 | <0.0038 | <0.0034 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0034 | <0.0039 | <0.0036 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0037 | <0.0038 | <0.0034 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0034 | <0.0039 | <0.0036 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0037 | <0.0038 | <0.0034 | <0.0035 | <0.0034 | <0.0034 | <0.0034 | <0.0034 |
| Total PFAS (Calculated) | NCL | NCL | 0.59 | 0.51 | 0.64 | 0.79 | 0.64 | 0.26 | ND | 0.019 | 0.0077 | 0.79 | 0.76 | ND | 0.0044 | 0.0044 | 0.018 | 0.017 |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-PMW-13 | HS-PMW-13 | HS-PMW-13 | HS-PMW-13 | HS-PMW-13 | HS-PMW-13 | HS-PMW-13 | HS-PMW-13 | HS-PMW-13 | HS-PMW-13 | HS-PMW-13 | HS-PMW-14 | HS-PMW-14 | HS-PMW-14 | HS-PMW-14 | HS-PMW-14 | HS-PMW-14 |
|--|---|--|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------|
| Sample Name | | | HS-13 99-104 | HS-13 109-114 | HS-13 119-124 | HS-13 129-134 | HS-13-139-144 | HS-13-149-154 | HS-13-159-164 | HS-13-169-174 | HS-13-179-184 | HS-13 189-194 | PMW-14 18-23 | PMW-14 38-43 | PMW-14 48-53 | PMW-14 63-68 | PMW-14 73-78 | PMW-14 83-88 | |
| Well Screen Interval (Feet below ground surface) | | | 99-104 | 109-114 | 119-124 | 129-134 | 139-144 | 149-154 | 159-164 | 169-174 | 179-184 | 189-194 | 18-23 | 38-43 | 48-53 | 63-68 | 73-78 | 83-88 | |
| Laboratory Sample ID | | | UL12092-005 | UL12092-006 | UL12092-007 | UL12092-008 | UL17018-001 | UL17018-002 | UL17018-003 | UL17018-004 | UL17018-005 | UL19173-001 | K1802201-001 | K1802201-002 | K1802201-003 | K1802247-001 | K1802247-002 | K1802247-005 | |
| Sample Date | | | 12/10/2019 | 12/11/2019 | 12/11/2019 | 12/11/2019 | 12/12/2019 | 12/12/2019 | 12/12/2019 | 12/13/2019 | 12/13/2019 | 12/16/2019 | 03/08/2018 | 03/08/2018 | 03/08/2018 | 03/09/2018 | 03/09/2018 | 03/09/2018 | |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0068 | <0.0072 | <0.0072 | <0.0074 | <0.0071 | <0.0069 | <0.0074 | <0.0074 | <0.0073 | <0.0076 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | 0.0035 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0068 | <0.0072 | <0.0072 | <0.0074 | <0.0071 | <0.0069 | <0.0074 | <0.0074 | <0.0073 | <0.0076 | - | - | - | - | - | - | |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | - | - | - | - | - | - | |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0096 | <0.01 | <0.0096 | <0.0096 | <0.01 | <0.0096 | |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | 0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.0038 | 0.0029 | 0.003 | 0.0033 | 0.0031 | 0.0034 | 0.0035 | 0.0023 | <0.0018 | <0.0019 | 0.002 | <0.002 | <0.0019 | <0.0019 | <0.002 | <0.0019 | |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.0038 | 0.0029 | 0.003 | 0.0033 | 0.0031 | 0.0034 | 0.0035 | 0.0023 | ND | ND | 0.002 | ND | ND | ND | ND | ND | |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0034 | <0.0036 | <0.0036 | <0.0037 | <0.0035 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0038 | <0.0048 | <0.005 | <0.0048 | <0.0048 | <0.005 | <0.0048 | |
| Total PFAS (Calculated) | NCL | NCL | 0.0038 | 0.0029 | 0.003 | 0.007 | 0.0031 | 0.0069 | 0.0035 | 0.0023 | ND | ND | 0.002 | ND | ND | ND | ND | ND | |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-PMW-14 | HS-PMW-14 | HS-MW-14D | HS-MW-14D | HS-MW-14D | HS-MW-14D | HS-MW-14D | HS-MW-14D | HS-MW-14M | HS-MW-14M | HS-MW-14M | HS-MW-14M | HS-MW-14M | HS-MW-14S | HS-MW-14S | HS-MW-14S |
|--|---|--|--------------|----------------|-------------|-------------|---------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|
| Sample Name | | | PMW-14 93-98 | PMW-14 103-108 | PMW-14D | HS-MW-14D | HS-MW-14D DUP | HS-GW-MW14D | HS-GW-MW14D | HS-GW-MW-14D | PMW-14M | HS-MW-14M | HS-GW-MW14M | HS-GW-MW14M | HS-GW-MW-14M | PMW-14S | HS-MW-14S | HS-GW-MW14S |
| Well Screen Interval (Feet below ground surface) | | | 93-98 | 103-108 | 109-114 | 109-114 | 109-114 | 109-114 | 109-114 | 109-114 | 68.1-73.1 | 68.1-73.1 | 68.1-73.1 | 68.1-73.1 | 68.1-73.1 | 13-23 | 13-23 | 13-23 |
| Laboratory Sample ID | | | K1802247-006 | K1802302-001 | TD12015-001 | UB27031-003 | UB27031-004 | UE18016-008 | UI12010-007 | UK29008-016 | TD12015-003 | UB27031-001 | UE18016-009 | UI12010-009 | UK29008-015 | TD12015-005 | UB27031-002 | UE18016-010 |
| Sample Date | | | 03/09/2018 | 03/12/2018 | 04/10/2018 | 02/26/2019 | 02/26/2019 | 05/17/2019 | 09/10/2019 | 11/25/2019 | 04/10/2018 | 02/26/2019 | 05/17/2019 | 09/10/2019 | 11/25/2019 | 04/10/2018 | 02/26/2019 | 05/17/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0052 | <0.0046 | <0.0072 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0073 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0073 | <0.0036 | <0.0036 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0052 | <0.0046 | <0.0072 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0073 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0073 | <0.0036 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0052 | <0.0046 | <0.0072 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0073 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0073 | <0.0036 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | <0.0052 | <0.0046 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0052 | <0.0046 | <0.014 | <0.0075 | <0.0073 | <0.0074 | <0.0074 | <0.007 | <0.015 | <0.0071 | <0.0073 | <0.0075 | <0.0069 | <0.015 | <0.0071 | <0.0072 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | <0.0052 | <0.0046 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0052 | <0.0046 | <0.0036 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0037 | <0.0036 | <0.0036 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0052 | <0.0046 | <0.0036 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0037 | <0.0036 | <0.0036 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0052 | <0.0046 | <0.0036 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0037 | <0.0036 | <0.0036 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | - | - | <0.0072 | <0.0075 | <0.0073 | <0.0073 | <0.0074 | <0.007 | <0.0073 | <0.0071 | <0.0073 | <0.0075 | <0.0069 | <0.0073 | <0.0071 | <0.0072 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0052 | <0.0046 | <0.0072 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0073 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0073 | <0.0036 | <0.0036 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | - | - | <0.0036 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0037 | <0.0036 | <0.0036 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0052 | <0.0046 | <0.0036 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0037 | <0.0036 | <0.0036 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.01 | <0.0093 | <0.0036 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0037 | <0.0036 | 0.005 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0052 | <0.0046 | <0.0036 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0037 | <0.0036 | <0.0036 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0052 | <0.0046 | <0.0036 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0037 | <0.0036 | <0.0036 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0052 | <0.0046 | <0.0036 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0037 | <0.0036 | <0.0036 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0052 | <0.0046 | <0.0036 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0037 | <0.0036 | 0.0065 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0052 | <0.0046 | <0.0036 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0037 | <0.0036 | <0.0036 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.0021 | <0.0019 | <0.0036 | <0.0019 | <0.0018 | <0.0019 | <0.0019 | <0.0017 | <0.0036 | <0.0018 | <0.0018 | <0.0019 | <0.0017 | <0.0037 | <0.0018 | 0.0047 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0052 | <0.0046 | <0.0036 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0037 | <0.0036 | <0.0036 |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0047 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0052 | <0.0046 | <0.0036 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0037 | <0.0036 | 0.0054 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0052 | <0.0046 | <0.0072 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0073 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0073 | <0.0036 | <0.0036 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0052 | <0.0046 | <0.0036 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0037 | <0.0036 | <0.0036 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0052 | <0.0046 | <0.0036 | <0.0037 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0034 | <0.0037 | <0.0036 | <0.0036 |
| Total PFAS (Calculated) | NCL | NCL | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.022 |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-14S | HS-MW-14S | HS-PMW-15 | HS-PMW-15 | HS-PMW-15 | HS-PMW-15 | HS-MW-15D | HS-MW-15D | HS-MW-15D | HS-MW-15D | HS-MW-15D | HS-MW-15M | HS-MW-15M | HS-MW-15M | HS-MW-15M | HS-MW-15M |
|--|---|--|-------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|-------------|--------------|--------------|-------------|-------------|-------------|--------------|
| Sample Name | | | HS-GW-MW14S | HS-GW-MW-14S | PMW152530 | PMW154550 | PMW15110115 | PMW15D110115 | PMW-15D | HS-MW-15D | HS-GW-MW15D | HS-GW-MW15D | HS-GW-MW-15D | PMW-15I | HS-MW-15M | HS-GW-MW15M | HS-GW-MW15M | HS-GW-MW-15M |
| Well Screen Interval (Feet below ground surface) | | | 13-23 | 13-23 | 25-30 | 45-30 | 110-115 | 110-115 | 108.6-118.6 | 108.6-118.6 | 108.6-118.6 | 108.6-118.6 | 108.6-118.6 | 44.8-49.8 | 44.8-49.8 | 44.8-49.8 | 44.8-49.8 | 44.8-49.8 |
| Laboratory Sample ID | | | UI12010-008 | UK29008-014 | K1713825-001 | K1713825-003 | K1713825-005 | K1713825-006 | K1802511-008 | UB28086-006 | UE18016-005 | UI21016-005 | UK19008-012 | K1802511-007 | UB28086-005 | UE18016-006 | UI21016-004 | UK21036-009 |
| Sample Date | | | 09/10/2019 | 11/25/2019 | 12/19/2017 | 12/20/2017 | 12/21/2017 | 12/21/2017 | 03/15/2018 | 02/27/2019 | 05/16/2019 | 09/19/2019 | 11/20/2019 | 03/15/2018 | 02/27/2019 | 05/16/2019 | 09/19/2019 | 11/19/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0036 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0036 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0036 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | - | - | - | - | - | <0.0047 | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0072 | <0.0069 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0075 | <0.0073 | <0.0073 | <0.0069 | <0.0047 | <0.0074 | <0.0076 | <0.0075 | <0.0073 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | - | - | - | - | - | <0.0047 | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0036 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0036 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0036 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0072 | <0.0069 | - | - | - | - | - | <0.0075 | <0.0073 | <0.0073 | <0.0069 | - | <0.0074 | <0.0076 | <0.0075 | <0.0073 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0036 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0036 | <0.0034 | - | - | - | - | - | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | - | <0.0037 | <0.0038 | <0.0037 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0036 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0036 | <0.0034 | <0.0083 | <0.0083 | <0.0083 | <0.01 | <0.0094 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0094 | <0.0037 | <0.0038 | <0.0037 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0036 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0036 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0036 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0036 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0036 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.0023 | <0.0017 | <0.0017 | <0.0017 | <0.0017 | <0.002 | <0.0019 | <0.0019 | <0.0019 | <0.0018 | <0.0018 | <0.0017 | <0.0019 | <0.0018 | <0.0019 | <0.0018 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 0.0036 | <0.0034 | <0.0042 | 0.066 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.0059 | ND | ND | 0.066 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0036 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0036 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0036 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0036 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.005 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0047 | <0.0037 | <0.0038 | <0.0037 |
| Total PFAS (Calculated) | NCL | NCL | 0.0059 | ND | ND | 0.066 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-15S | HS-MW-15S | HS-MW-15S | HS-MW-15S | HS-MW-15S | HS-PMW-17 | HS-PMW-17 | HS-PMW-17 | HS-PMW-17 | HS-PMW-17 | HS-PMW-17 | HS-PMW-17 | HS-PMW-17 | HS-PMW-17 | HS-PMW-17 | HS-PMW-17 |
|--|---|--|--------------|-------------|-------------|-------------|--------------|--------------|--------------|----------------|----------------|----------------|----------------|----------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Sample Name | | | PMW-15S | HS-MW-15S | HS-GW-MW15S | HS-GW-MW15S | HS-GW-MW-15S | PMW-17 83-88 | PMW-17 93-98 | PMW-17 103-108 | PMW-17 113-118 | PMW-17 153-158 | PMW-17 163-168 | PMW-17 173-178 | PMW-17-183'-188'- 2/19 | PMW-17-193'-198'- 2/20 | PMW-17-203'-208'- 2/20 | PMW-17-213'-218'- 2/22 |
| Well Screen Interval (Feet below ground surface) | | | 6.9-16.9 | 6.9-16.9 | 6.9-16.9 | 6.9-16.9 | 6.9-16.9 | 83-88 | 93-98 | 103-108 | 113-118 | 153-158 | 163-168 | 173-178 | 183-188 | 193-198 | 203-208 | 213-218 |
| Laboratory Sample ID | | | K1802511-006 | UB28086-004 | UE18016-007 | UI21016-003 | UK21036-010 | K1801045-003 | K1801045-004 | K1801045-007 | K1801045-008 | K1801045-011 | K1801593-002 | K1801593-004 | K1801660-001 | K1801660-004 | K1801660-007 | K1801740-001 |
| Sample Date | | | 03/15/2018 | 02/27/2019 | 05/16/2019 | 09/19/2019 | 11/19/2019 | 01/30/2018 | 01/30/2018 | 01/31/2018 | 01/31/2018 | 02/02/2018 | 02/16/2018 | 02/16/2018 | 02/19/2018 | 02/20/2018 | 02/20/2018 | 02/22/2018 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0046 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | <0.0046 | <0.0048 | <0.0046 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0046 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | <0.0046 | <0.0048 | <0.0046 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0046 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | <0.0046 | <0.0048 | <0.0046 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | <0.0046 | - | - | - | - | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | <0.0046 | <0.0048 | <0.0046 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0046 | <0.0074 | <0.0073 | <0.0077 | <0.0069 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | <0.0046 | <0.0048 | <0.0046 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | <0.0046 | - | - | - | - | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | <0.0046 | <0.0048 | <0.0046 |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.0086 | 0.0073 | 0.0058 | 0.0068 | 0.0073 | <0.0042 | <0.0042 | 0.0057 | 0.0069 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | 0.026 | 0.14 | 0.4 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0046 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | <0.0046 | <0.0048 | <0.0046 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0046 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | <0.0046 | <0.0048 | 0.067 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | - | <0.0074 | <0.0073 | <0.0077 | <0.0069 | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0046 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | <0.0046 | <0.0048 | <0.0046 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | - | <0.0037 | <0.0036 | <0.0038 | <0.0034 | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0046 | <0.0037 | <0.0036 | <0.0038 | 0.004 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | 0.0068 | 0.29 | 0.89 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0093 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0084 | <0.0084 | <0.0084 | <0.0084 | <0.0084 | <0.0094 | <0.0094 | <0.0093 | 0.015 | 0.029 | 0.089 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0046 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | <0.0046 | <0.0048 | <0.0046 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0046 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | <0.0046 | <0.0048 | <0.0046 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0046 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | 0.007 | 0.1 | 0.32 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0046 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | 0.0055 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | 0.023 | 0.11 | 0.27 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0046 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | <0.0046 | <0.0048 | <0.0046 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.0019 | <0.0018 | <0.0018 | <0.0019 | 0.0018 | <0.0017 | <0.0017 | 0.0044 | 0.0077 | <0.0017 | 0.0038 | 0.0023 | <0.0019 | 0.005 | 0.2 | 0.72 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0046 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0042 | <0.0042 | 0.0063 | 0.0045 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | <0.0046 | <0.0048 | 0.039 |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | ND | ND | ND | 0.0018 | ND | ND | 0.011 | 0.012 | ND | 0.0038 | 0.0023 | ND | 0.005 | 0.2 | 0.76 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0046 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | 0.017 | 0.038 | 0.13 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0046 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | <0.0046 | <0.0048 | <0.0046 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0046 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | <0.0046 | <0.0048 | <0.0046 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0046 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0042 | <0.0047 | <0.0047 | <0.0046 | <0.0046 | <0.0048 | <0.0046 |
| Total PFAS (Calculated) | NCL | NCL | 0.0086 | 0.0073 | 0.0058 | 0.0068 | 0.013 | ND | ND | 0.016 | 0.025 | ND | 0.0038 | 0.0023 | ND | 0.1 | 0.91 | 2.9 |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-17D | HS-MW-17D | HS-MW-17D | HS-MW-17D | HS-MW-17D | HS-MW-17M | HS-MW-17M | HS-MW-17M | HS-MW-17M | HS-MW-17M | HS-MW-17S | HS-MW-17S | HS-MW-17S | HS-MW-17S | HS-MW-17S | HS-PMW-18 |
|--|---|--|--------------|-------------|-------------|--------------|--------------|--------------|-------------|-------------|-------------|--------------|--------------|-------------|-------------|-------------|--------------|--------------|
| Sample Name | | | MW-17D | HS-MW-17D | HS-GW-MW17D | HS-GW-MW17D | HS-GW-MW-17D | MW-17M | HS-MW-17M | HS-GW-MW17M | HS-GW-MW17M | HS-GW-MW-17M | MW-17S | HS-MW-17S | HS-GW-MW17S | HS-GW-MW17S | HS-GW-MW-17S | PMW-18-14-19 |
| Well Screen Interval (Feet below ground surface) | | | 222.1-227.1 | 222.1-227.1 | 222.1-227.1 | 222.1-227.1 | 222.1-227.1 | 167.3-172.3 | 167.3-172.3 | 167.3-172.3 | 167.3-172.3 | 167.3-172.3 | 105.8-110.8 | 105.8-110.8 | 105.8-110.8 | 105.8-110.8 | 105.8-110.8 | 14-19 |
| Laboratory Sample ID | | | K1803589-002 | UC09042-006 | UE25011-001 | UI19006-002 | UL12091-010 | K1803589-003 | UC09042-005 | UE25011-003 | UI12010-016 | UL12091-012 | K1803589-001 | UC09042-003 | UE25011-002 | UI12010-014 | UL12091-007 | TE17021-002 |
| Sample Date | | | 04/17/2018 | 03/07/2019 | 05/23/2019 | 09/16/2019 | 12/10/2019 | 04/17/2018 | 03/07/2019 | 05/23/2019 | 09/11/2019 | 12/11/2019 | 04/17/2018 | 03/06/2019 | 05/23/2019 | 09/11/2019 | 12/10/2019 | 05/14/2018 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0046 | <0.0035 | <0.0035 | <0.004 | <0.0037 | <0.0045 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0049 | <0.0035 | <0.0035 | <0.0033 | <0.0038 | <0.0035 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0046 | <0.0035 | <0.0035 | <0.004 | <0.0037 | <0.0045 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0049 | <0.0035 | <0.0035 | <0.0033 | <0.0038 | <0.0035 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0046 | <0.0035 | <0.0035 | <0.004 | <0.0037 | <0.0045 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0049 | <0.0035 | <0.0035 | <0.0033 | <0.0038 | <0.0035 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | <0.0046 | - | - | - | - | <0.0045 | - | - | - | - | <0.0049 | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0046 | <0.007 | <0.007 | <0.007900001 | <0.0074 | <0.0045 | <0.0074 | <0.0071 | <0.0066 | <0.0068 | <0.0049 | <0.0071 | <0.0069 | <0.0067 | <0.0075 | <0.0069 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | <0.0046 | - | - | - | - | <0.0045 | - | - | - | - | <0.0049 | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.44 | 0.43 | 0.41 | 0.47 | 0.42 | <0.0045 | 0.004 | 0.0039 | 0.0036 | 0.0038 | <0.0049 | 0.014 | 0.02 | 0.014 | 0.018 | 0.0051 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0046 | <0.0035 | <0.0035 | <0.004 | <0.0037 | <0.0045 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0049 | <0.0035 | <0.0035 | <0.0033 | <0.0038 | <0.0035 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | 0.081 | 0.022 | 0.024 | 0.028 | 0.029 | <0.0045 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0049 | <0.0035 | <0.0035 | <0.0033 | <0.0038 | <0.0035 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | - | <0.007 | <0.007 | <0.007900001 | <0.0074 | - | <0.0074 | <0.0071 | <0.0066 | <0.0068 | - | <0.0071 | <0.0069 | <0.0067 | <0.0075 | <0.0069 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0046 | <0.0035 | <0.0035 | <0.004 | <0.0037 | <0.0045 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0049 | <0.0035 | <0.0035 | <0.0033 | <0.0038 | <0.0035 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | - | 0.56 | 0.5 | 0.57 | 0.49 | - | <0.0037 | <0.0036 | <0.0033 | <0.0034 | - | <0.0035 | <0.0035 | <0.0033 | <0.0038 | <0.0035 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 1.2 | 0.96 | 1 | 1.1 | 1 | <0.0045 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0049 | <0.0035 | <0.0035 | <0.0033 | <0.0038 | <0.0035 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | 0.14 | 0.11 | 0.11 | 0.12 | 0.12 | <0.0089 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0098 | 0.0041 | 0.0058 | 0.0034 | 0.0042 | <0.0035 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0046 | <0.0035 | <0.0035 | <0.004 | <0.0037 | <0.0045 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0049 | <0.0035 | <0.0035 | <0.0033 | <0.0038 | <0.0035 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0046 | <0.0035 | <0.0035 | <0.004 | <0.0037 | <0.0045 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0049 | <0.0035 | <0.0035 | <0.0033 | <0.0038 | <0.0035 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | 0.51 | 0.3 | 0.3 | 0.33 | 0.31 | <0.0045 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0049 | <0.0035 | <0.0035 | <0.0033 | <0.0038 | <0.0035 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 0.42 | 0.27 | 0.31 | 0.27 | 0.28 | <0.0045 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0049 | <0.0035 | <0.0035 | <0.0033 | 0.0054 | <0.0035 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0046 | <0.0035 | <0.0035 | <0.004 | <0.0037 | <0.0045 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0049 | <0.0035 | <0.0035 | <0.0033 | <0.0038 | <0.0035 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 1.3 | 1 | 1.2 | 1.2 | 1.1 | <0.0018 | <0.0019 | <0.0018 | <0.0017 | <0.0017 | <0.002 | <0.0018 | <0.0017 | <0.0017 | <0.0019 | <0.0017 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 0.072 | 0.06 | 0.058 | 0.072 | 0.076 | <0.0045 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0049 | <0.0035 | <0.0035 | <0.0033 | <0.0038 | <0.0035 |
| PFOA + PFOS (Calculated) | NCL | NCL | 1.4 | 1.1 | 1.3 | 1.3 | 1.2 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | 0.16 | 0.12 | 0.13 | 0.13 | 0.14 | <0.0045 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0049 | <0.0035 | 0.0044 | 0.0048 | 0.0073 | <0.0035 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0046 | <0.0035 | <0.0035 | <0.004 | <0.0037 | <0.0045 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0049 | <0.0035 | <0.0035 | <0.0033 | <0.0038 | <0.0035 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0046 | <0.0035 | <0.0035 | <0.004 | <0.0037 | <0.0045 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0049 | <0.0035 | <0.0035 | <0.0033 | <0.0038 | <0.0035 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0046 | <0.0035 | <0.0035 | <0.004 | <0.0037 | <0.0045 | <0.0037 | <0.0036 | <0.0033 | <0.0034 | <0.0049 | <0.0035 | <0.0035 | <0.0033 | <0.0038 | <0.0035 |
| Total PFAS (Calculated) | NCL | NCL | 4.3 | 3.8 | 4 | 4.3 | 4 | ND | 0.004 | 0.0039 | 0.0036 | 0.0038 | ND | 0.018 | 0.03 | 0.022 | 0.035 | 0.0051 |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-PMW-18 | HS-PMW-18 | HS-PMW-18 | HS-PMW-18 | HS-PMW-18 | HS-PMW-18 | HS-PMW-18 | HS-PMW-18 | HS-PMW-18 | HS-PMW-18 | HS-PMW-18 | HS-PMW-18 | HS-MW-18D | HS-MW-18D | HS-MW-18D | HS-MW-18D |
|--|---|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|----------------|----------------|----------------|----------------|-------------|-------------|-------------|-------------|
| Sample Name | | | PMW-18-24-29 | PMW-18-34-39 | PMW-18-44-49 | PMW-18-54-59 | PMW-18-64-69 | PMW-18-74-79 | PMW-18-84-89 | PMW-18-94-99 | PMW-18-104-109 | PMW-18-114-119 | PMW-18-124-129 | PMW-18-134-139 | MW-18D | HS-MW-18D | HS-GW-MW18D | HS-GW-MW18D |
| Well Screen Interval (Feet below ground surface) | | | 24-29 | 34-39 | 44-49 | 54-59 | 64-69 | 74-79 | 84-89 | 94-89 | 104-109 | 114-119 | 124-129 | 134-139 | 140.6-145.6 | 140.6-145.6 | 140.6-145.6 | 140.6-145.6 |
| Laboratory Sample ID | | | TE17021-004 | TE17021-005 | TE17021-006 | TE17021-007 | TE17021-008 | TE17021-011 | TE17021-012 | TE17020-001 | TE17020-004 | TE17020-005 | TE17020-006 | TE17020-007 | TG07027-006 | UC02020-006 | UE24001-004 | UI12010-006 |
| Sample Date | | | 05/15/2018 | 05/15/2018 | 05/15/2018 | 05/15/2018 | 05/15/2018 | 05/15/2018 | 05/15/2018 | 05/16/2018 | 05/16/2018 | 05/16/2018 | 05/16/2018 | 05/16/2018 | 07/06/2018 | 03/01/2019 | 05/21/2019 | 09/10/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0034 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0034 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0034 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.007 | <0.007 | <0.0072 | <0.007 | <0.0072 | <0.007 | <0.007 | <0.0074 | <0.0071 | <0.0072 | <0.0071 | <0.0071 | <0.007 | <0.0073 | <0.0074 | <0.0068 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.0062 | <0.0035 | <0.0036 | <0.0035 | 0.0056 | 0.01 | 0.015 | 0.033 | 0.14 | 0.14 | 0.18 | 0.17 | 0.024 | 0.029 | 0.031 | 0.025 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0034 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | 0.011 | 0.034 | 0.03 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0034 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.007 | <0.007 | <0.0072 | <0.007 | <0.0072 | <0.007 | <0.007 | <0.0074 | <0.0071 | <0.0072 | <0.0071 | <0.0071 | <0.007 | <0.0073 | <0.0074 | <0.0068 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0034 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | 0.0064 | 0.013 | 0.041 | 0.16 | 0.17 | 0.13 | 0.098 | 0.011 | 0.015 | 0.014 | 0.012 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 0.0043 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | 0.011 | 0.026 | 0.09 | 0.35 | 0.32 | 0.13 | 0.06 | 0.0058 | 0.0074 | 0.0082 | 0.0062 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | 0.0089 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | 0.0074 | 0.028 | 0.03 | 0.059 | 0.06 | 0.016 | 0.018 | 0.02 | 0.018 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0034 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0034 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | 0.0035 | 0.0071 | 0.019 | 0.082 | 0.087 | 0.084 | 0.07 | 0.0095 | 0.011 | 0.011 | 0.01 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | 0.0052 | 0.0072 | 0.017 | 0.079 | 0.084 | 0.12 | 0.12 | 0.019 | 0.022 | 0.024 | 0.021 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0034 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.0017 | <0.0017 | <0.0018 | <0.0017 | 0.0022 | 0.011 | 0.026 | 0.083 | 0.33 | 0.33 | 0.18 | 0.1 | 0.0092 | 0.014 | 0.015 | 0.015 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | 0.011 | 0.043 | 0.098 | 0.084 | 0.0045 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0034 |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | ND | ND | ND | 0.0022 | 0.011 | 0.037 | 0.13 | 0.43 | 0.41 | 0.18 | 0.1 | 0.0092 | 0.014 | 0.015 | 0.015 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | 0.0073 | 0.03 | 0.032 | 0.057 | 0.06 | 0.014 | 0.015 | 0.017 | 0.016 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0034 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0034 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0034 |
| Total PFAS (Calculated) | NCL | NCL | 0.019 | ND | ND | ND | 0.0078 | 0.047 | 0.11 | 0.35 | 1.3 | 1.3 | 0.94 | 0.74 | 0.11 | 0.13 | 0.14 | 0.12 |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-18D | HS-MW-18S | HS-MW-18S | HS-MW-18S | HS-MW-18S | HS-MW-18S | HS-MW-18S | HS-PMW-19 | HS-PMW-19 | HS-PMW-19 | HS-PMW-19 | HS-MW-19D | HS-MW-19D | HS-MW-19D | HS-MW-19D | HS-MW-19D | HS-MW-19S |
|--|---|--|--------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|--------------|-----------|
| Sample Name | | | HS-GW-MW-18D | MW-18S | HS-MW-18S | HS-GW-MW18S | HS-GW-MW18S | HS-GW-MW-18S | HS-GW-MW-18S | PMW-19 55-60 | Dupe-1 | PMW-19 80-85 | PMW-19 90-95 | PMW-19D | HS-MW-19D | HS-GW-MW19D | HS-GW-MW19D | HS-GW-MW-19D | PMW-19S |
| Well Screen Interval (Feet below ground surface) | | | 140.6-145.6 | 12.8-22.8 | 12.8-22.8 | 12.8-22.8 | 12.8-22.8 | 12.8-22.8 | 12.8-22.8 | 55-60 | 55-60 | 80-85 | 90-95 | 85.9-95.9 | 85.9-95.9 | 85.9-95.9 | 85.9-95.9 | 85.9-95.9 | 58.4-61.4 |
| Laboratory Sample ID | | | UK19008-015 | TG07027-005 | UC02020-007 | UE24001-005 | UI12010-010 | UK21036-020 | K1800413-001 | K1800413-004 | K1800413-006 | K1800413-007 | K1802511-009 | UC02020-005 | UE24001-007 | UI26001-003 | UL12091-019 | K1802511-010 | |
| Sample Date | | | 11/20/2019 | 07/06/2018 | 03/01/2019 | 05/21/2019 | 09/10/2019 | 11/21/2019 | 01/09/2018 | 01/09/2018 | 01/10/2018 | 01/10/2018 | 03/16/2018 | 02/28/2019 | 05/21/2019 | 09/23/2019 | 12/12/2019 | 03/16/2018 | |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0045 | |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0045 | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0045 | |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | - | - | - | - | <0.0045 | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0075 | <0.007 | <0.0074 | <0.0073 | <0.0068 | <0.007 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.007 | <0.007 | <0.0069 | <0.0072 | <0.0045 | |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | - | - | - | - | <0.0045 | |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.029 | <0.0035 | 0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0045 | |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0045 | |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0045 | |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0075 | <0.007 | <0.0074 | <0.0073 | <0.0068 | <0.007 | - | - | - | - | - | <0.007 | <0.007 | <0.0069 | <0.0072 | - | |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0045 | |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | 0.014 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | - | - | - | - | - | <0.0035 | <0.0035 | <0.0034 | <0.0036 | - | |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 0.0072 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | 0.0043 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0045 | |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | 0.02 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0086 | <0.0083 | <0.0086 | <0.0083 | <0.0098 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0091 | |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0045 | |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0045 | |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | 0.011 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0045 | |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 0.022 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0045 | |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0045 | |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.015 | <0.0018 | <0.0019 | <0.0018 | <0.0017 | <0.0017 | <0.0017 | <0.0017 | <0.0017 | <0.0017 | <0.002 | <0.0018 | <0.0018 | <0.0017 | <0.0018 | <0.0018 | |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | 0.0075 | |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.015 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0075 | |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | 0.016 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0045 | |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0045 | |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0045 | |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0043 | <0.0042 | <0.0043 | <0.0042 | <0.0049 | <0.0035 | <0.0035 | <0.0034 | <0.0036 | <0.0045 | |
| Total PFAS (Calculated) | NCL | NCL | 0.13 | ND | 0.0037 | ND | ND | 0.0043 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0075 | |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-19S | HS-MW-19S | HS-MW-19S | HS-MW-19S | HS-PMW-20 | HS-PMW-20 | HS-PMW-20 | HS-PMW-20 | HS-PMW-20 | HS-PMW-20 | HS-PMW-20 | HS-MW-20D | HS-MW-20D | HS-MW-20D | HS-MW-20D | HS-MW-20M |
|--|---|---|-------------|-------------|-------------|--------------|-------------|-------------|-------------|--------------|---------------|---------------|---------------|-------------|-------------|-------------|--------------|-------------|
| Sample Name | | | HS-MW-19S | HS-GW-MW19S | HS-GW-MW19S | HS-GW-MW-19S | SB-20 60-65 | SB-20 70-75 | SB-20 80-85 | SB-20 90-95 | SB-20 100-105 | SB-20 110-115 | SB-20 120-125 | HS-MW-20D | HS-GW-MW20D | HS-GW-MW20D | HS-GW-MW-20D | HS-MW-20M |
| Well Screen Interval (Feet below ground surface) | | | 58.4-61.4 | 58.4-61.4 | 58.4-61.4 | 58.4-61.4 | 60-65 | 70-75 | 80-85 | 90-95 | 100-105 | 110-115 | 120-125 | 126.1-131.1 | 126.1-131.1 | 126.1-131.1 | 126.1-131.1 | 101.5-106.5 |
| Laboratory Sample ID | | | UC02020-004 | UE24001-006 | UI26001-002 | UL12091-016 | TJ21003-001 | TJ21003-002 | TJ21003-005 | TJ21003-006 | TJ21003-007 | TJ21003-008 | TJ21003-011 | UC09042-002 | UE30036-003 | UI19006-022 | UK29008-019 | UC09042-001 |
| Sample Date | | | 02/28/2019 | 05/21/2019 | 09/23/2019 | 12/11/2019 | 10/15/2018 | 10/15/2018 | 10/16/2018 | 10/16/2018 | 10/16/2018 | 10/16/2018 | 10/17/2018 | 03/06/2019 | 05/28/2019 | 09/18/2019 | 11/27/2019 | 03/06/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0081 | <0.0069 | <0.0077 | <0.0072 | <0.007 | <0.007 | <0.007 | <0.007 | <0.0071 | <0.0071 | <0.0071 | <0.0071 | <0.0073 | <0.007 | <0.0069 | <0.0074 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | 0.014 | 0.0035 | 0.018 | 0.05 | 0.068 | 0.11 | 0.15 | 0.16 | 0.17 | 0.17 | 0.15 | 0.071 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | 0.0067 | 0.0066 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | 0.0095 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0081 | <0.0069 | <0.0077 | <0.0072 | <0.007 | <0.007 | <0.007 | <0.007 | <0.0071 | <0.0071 | <0.0071 | <0.0071 | <0.0073 | <0.007 | <0.0069 | <0.0074 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | 0.0081 | <0.0035 | 0.022 | 0.058 | 0.079 | 0.11 | 0.1 | 0.097 | 0.098 | 0.11 | 0.098 | 0.083 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | 0.0051 | <0.0035 | 0.044 | 0.11 | 0.13 | 0.11 | 0.053 | 0.042 | 0.042 | 0.046 | 0.043 | 0.16 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | 0.0036 | <0.0035 | 0.0045 | 0.012 | 0.015 | 0.027 | 0.043 | 0.047 | 0.052 | 0.05 | 0.049 | 0.015 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | 0.0054 | <0.0035 | 0.011 | 0.03 | 0.042 | 0.06 | 0.066 | 0.07 | 0.078 | 0.077 | 0.076 | 0.043 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | 0.0074 | <0.0035 | 0.012 | 0.028 | 0.041 | 0.069 | 0.11 | 0.088 | 0.1 | 0.1 | 0.1 | 0.038 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.002 | <0.0017 | <0.0019 | <0.0018 | 0.0084 | 0.0053 | 0.041 | 0.1 | 0.13 | 0.13 | 0.096 | 0.09 | 0.12 | 0.12 | 0.11 | 0.16 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.004 | <0.0034 | <0.0038 | <0.0036 | <0.0035 | <0.0035 | 0.011 | 0.023 | 0.019 | 0.0081 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | 0.04 |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | ND | ND | ND | 0.0084 | 0.0053 | 0.052 | 0.12 | 0.15 | 0.14 | 0.096 | 0.09 | 0.12 | 0.12 | 0.11 | 0.2 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | <0.0035 | <0.0035 | 0.0051 | 0.013 | 0.016 | 0.032 | 0.046 | 0.045 | 0.054 | 0.052 | 0.049 | 0.017 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.004 | <0.0034 | <0.0038 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0037 |
| Total PFAS (Calculated) | NCL | NCL | ND | ND | ND | ND | 0.052 | 0.0088 | 0.17 | 0.43 | 0.55 | 0.66 | 0.66 | 0.64 | 0.71 | 0.73 | 0.68 | 0.64 |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-20M | HS-MW-20M | HS-MW-20M | HS-MW-20M | HS-MW-20S | HS-MW-20S | HS-MW-20S | HS-MW-20S | HS-MW-20S | HS-PMW-21 | HS-PMW-21 | HS-PMW-21 | HS-PMW-21 | HS-PMW-21 | HS-MW-21D | HS-MW-21D | HS-MW-21D |
|--|---|--|-------------|-------------|-----------------|--------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|-------------|
| Sample Name | | | HS-GW-MW20M | HS-GW-MW20M | HS-GW-MW20M DUP | HS-GW-MW-20M | MW-20S | HS-GW-MW20S | HS-GW-MW20S | HS-GW-MW-20S | HS-GW-MW-20S | PMW-21 15-20 | PMW-21 25-30 | PMW-21 35-40 | PMW-21 55-60 | PMW-21 80-85 | PMW-21D | HS-MW-21D | HS-GW-MW21D |
| Well Screen Interval (Feet below ground surface) | | | 101.5-106.5 | 101.5-106.5 | 101.5-106.5 | 101.5-106.5 | 61.1-66.1 | 61.1-66.1 | 61.1-66.1 | 61.1-66.1 | 61.1-66.1 | 15-20 | 25-30 | 35-40 | 55-60 | 80-65 | 76.2-86.2 | 76.2-86.2 | 76.2-86.2 |
| Laboratory Sample ID | | | UE30036-002 | UI19006-020 | UI19006-021 | UK29008-002 | UC06036-001 | UE30036-001 | UI19006-019 | UK29008-001 | K1800184-001 | K1800184-002 | K1800184-003 | K1800184-004 | K1800184-005 | K1802511-005 | UB28086-003 | UE18016-001 | |
| Sample Date | 05/28/2019 | 09/18/2019 | 09/18/2019 | 11/26/2019 | 03/04/2019 | 05/28/2019 | 09/18/2019 | 11/26/2019 | 01/02/2018 | 01/03/2018 | 01/03/2018 | 01/03/2018 | 01/03/2018 | 01/03/2018 | 03/15/2018 | 02/27/2019 | 05/16/2019 | | |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0036 | <0.0036 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0036 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0036 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0069 | <0.0069 | <0.007 | <0.0071 | <0.0071 | <0.0074 | <0.0071 | <0.007 | <0.007 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0072 | <0.0073 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.068 | 0.069 | 0.07 | 0.06 | 0.015 | 0.016 | 0.018 | 0.018 | 0.018 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0036 | <0.0036 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0036 | <0.0036 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | 0.0088 | 0.008 | 0.0084 | 0.0077 | <0.0036 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0036 | <0.0036 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0069 | <0.0069 | <0.007 | <0.0071 | <0.0071 | <0.0074 | <0.0071 | <0.007 | <0.007 | - | - | - | - | - | - | <0.0072 | <0.0073 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0036 | <0.0036 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | 0.079 | 0.08 | 0.085 | 0.062 | 0.013 | 0.013 | 0.016 | 0.012 | 0.012 | - | - | - | - | - | - | <0.0036 | <0.0036 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 0.16 | 0.15 | 0.14 | 0.13 | 0.014 | 0.017 | 0.019 | 0.013 | 0.013 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0036 | <0.0036 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | 0.015 | 0.015 | 0.014 | 0.014 | 0.0042 | 0.0043 | 0.0047 | 0.0067 | 0.0067 | <0.0086 | <0.0086 | <0.0083 | <0.0083 | <0.0086 | <0.0094 | <0.0036 | <0.0036 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0036 | <0.0036 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0036 | <0.0036 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | 0.042 | 0.039 | 0.045 | 0.038 | 0.0056 | 0.0082 | 0.0094 | 0.0092 | 0.0092 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0036 | <0.0036 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 0.038 | 0.036 | 0.034 | 0.034 | 0.0068 | 0.0085 | 0.0093 | 0.013 | 0.013 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0036 | <0.0036 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0036 | <0.0036 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.17 | 0.17 | 0.17 | 0.15 | 0.016 | 0.022 | 0.022 | 0.023 | 0.022 | 0.0022 | <0.0017 | <0.0017 | <0.0017 | <0.0017 | <0.0019 | <0.0018 | <0.0018 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 0.034 | 0.033 | 0.032 | 0.029 | <0.0036 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | 0.0061 | <0.0036 | <0.0036 |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.2 | 0.2 | 0.2 | 0.18 | 0.016 | 0.022 | 0.022 | 0.023 | 0.0022 | ND | ND | ND | ND | ND | 0.0061 | ND | ND |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | 0.017 | 0.015 | 0.016 | 0.014 | <0.0036 | 0.0039 | 0.0045 | 0.0064 | 0.0064 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0036 | <0.0036 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0036 | <0.0036 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0036 | <0.0036 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0043 | <0.0043 | <0.0042 | <0.0042 | <0.0043 | <0.0047 | <0.0036 | <0.0036 |
| Total PFAS (Calculated) | NCL | NCL | 0.63 | 0.62 | 0.61 | 0.54 | 0.075 | 0.093 | 0.1 | 0.1 | 0.1 | 0.0022 | ND | ND | ND | ND | 0.0061 | ND | ND |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-21D | HS-MW-21D | HS-MW-21D | HS-MW-21D | HS-MW-21M | HS-MW-21M | HS-MW-21M | HS-MW-21M | HS-MW-21M | HS-MW-21S | HS-MW-21S | HS-MW-21S | HS-MW-21S | HS-MW-21S | HS-MW-21S | HS-PMW-23 | HS-PMW-23 |
|--|---|--|-----------------|-------------|--------------|------------------|--------------|-------------|-------------|-------------|--------------|--------------|-------------|-------------|-------------|--------------|---------------|---------------|-----------|
| Sample Name | | | HS-GW-MW21D DUP | HS-GW-MW21D | HS-GW-MW-21D | HS-GW-MW-21D DUP | PMW-21I | HS-MW-21M | HS-GW-MW21M | HS-GW-MW21M | HS-GW-MW-21M | PMW-21S | HS-MW-21S | HS-GW-MW21S | HS-GW-MW21S | HS-GW-MW-21S | PMW-23(10-20) | PMW-23(70-80) | |
| Well Screen Interval (Feet below ground surface) | | | 76.2-86.2 | 76.2-86.2 | 76.2-86.2 | 76.2-86.2 | 59-64 | 59-64 | 59-64 | 59-64 | 59-64 | 9.8-19.8 | 9.8-19.8 | 9.8-19.8 | 9.8-19.8 | 9.8-19.8 | 10-20 | 70-80 | |
| Laboratory Sample ID | | | UE18016-002 | UI19006-003 | UL12091-001 | UL12091-002 | K1802511-002 | UB28086-002 | UE18016-003 | UI19006-004 | UK29008-020 | K1802511-001 | UB28086-001 | UE18016-004 | UI19006-006 | UK29008-022 | UF15016-001 | UF15016-002 | |
| Sample Date | | | 05/16/2019 | 09/16/2019 | 12/09/2019 | 12/09/2019 | 03/15/2018 | 02/27/2019 | 05/16/2019 | 09/16/2019 | 11/27/2019 | 03/15/2018 | 02/27/2019 | 05/16/2019 | 09/16/2019 | 11/27/2019 | 06/10/2019 | 06/11/2019 | |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0047 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0036 | 0.0058 | <0.0036 | <0.0035 | <0.0047 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0047 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | <0.0047 | - | - | - | - | <0.0047 | - | - | - | - | - | - | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0073 | <0.0072 | <0.0072 | <0.0071 | <0.0047 | <0.0075 | <0.0073 | <0.0071 | <0.0074 | <0.0047 | <0.0073 | <0.0074 | <0.0074 | <0.007 | <0.0072 | <0.0069 | |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | <0.0047 | - | - | - | - | <0.0047 | - | - | - | - | - | - | |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0047 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | 0.0036 | 0.037 | 0.015 | |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0047 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0047 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0073 | <0.0072 | <0.0072 | <0.0071 | - | <0.0075 | <0.0073 | <0.0071 | <0.0074 | - | <0.0073 | <0.0074 | <0.0074 | <0.007 | <0.0072 | <0.0069 | |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0047 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | - | <0.0037 | <0.0036 | <0.0036 | <0.0037 | - | <0.0037 | <0.0037 | <0.0037 | <0.0035 | 0.034 | 0.011 | |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0047 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | 0.072 | 0.032 | |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0094 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0094 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | 0.0085 | <0.0035 | |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0047 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0047 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0047 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0047 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | 0.0078 | <0.0035 | |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0047 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.0018 | <0.0018 | <0.0018 | <0.0018 | <0.0019 | <0.0019 | <0.0018 | <0.0018 | <0.0019 | 0.0056 | 0.0028 | 0.0026 | 0.0034 | 0.0031 | 0.015 | 0.013 | |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | 0.017 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | 0.0092 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | 0.0057 | |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | ND | ND | ND | 0.017 | ND | ND | ND | ND | 0.015 | 0.0028 | 0.0026 | 0.0034 | 0.0031 | 0.015 | 0.019 | |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0047 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0047 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0047 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0047 | <0.0037 | <0.0036 | <0.0036 | <0.0037 | <0.0047 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | |
| Total PFAS (Calculated) | NCL | NCL | ND | 0.0058 | ND | ND | 0.017 | ND | ND | ND | ND | 0.015 | 0.0028 | 0.0026 | 0.0034 | 0.0067 | 0.17 | 0.077 | |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-PMW-23 | HS-PMW-23 | HS-PMW-23 | HS-PMW-23 | HS-PMW-23 | HS-PMW-23 | HS-PMW-23 | HS-PMW-23 | HS-PMW-23 | HS-PMW-23 | HS-PMW-23 | HS-PMW-23 | HS-PMW-23 | HS-PMW-23 | HS-PMW-23 | HS-PMW-23 |
|--|---|--|---------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Sample Name | | | PMW-23(80-90) | PMW-23(90-100) | PMW-23(100-110) | PMW-23(110-120) | PMW-23(120-130) | PMW-23(130-140) | PMW-23(140-150) | PMW-23(150-160) | PMW-23(160-170) | PMW-23(170-180) | PMW-23(180-190) | PMW-23(190-200) | PMW-23(200-210) | PMW-23(210-220) | PMW-23(220-230) | PMW-23(230-240) |
| Well Screen Interval (Feet below ground surface) | | | 80-90 | 90-100 | 100-110 | 110-120 | 120-130 | 130-140 | 140-150 | 150-160 | 160-170 | 170-180 | 180-190 | 190-200 | 200-210 | 210-220 | 220-230 | 230-240 |
| Laboratory Sample ID | | | UF15016-003 | UF15016-004 | UF15016-005 | UF15016-006 | UF15016-007 | UF15016-008 | UF15016-009 | UF15016-010 | UF15016-011 | UF15016-012 | UF15016-013 | UF15016-014 | UF20036-001 | UF20036-002 | UF20036-003 | UF20036-004 |
| Sample Date | | | 06/11/2019 | 06/11/2019 | 06/11/2019 | 06/12/2019 | 06/12/2019 | 06/12/2019 | 06/12/2019 | 06/13/2019 | 06/13/2019 | 06/13/2019 | 06/14/2019 | 06/14/2019 | 06/17/2019 | 06/17/2019 | 06/18/2019 | 06/18/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0069 | <0.007 | <0.0071 | <0.0072 | <0.0071 | <0.007 | <0.0071 | <0.007 | <0.0071 | <0.0071 | <0.0073 | <0.007 | <0.0069 | <0.007 | <0.007 | <0.0069 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.0091 | <0.0035 | <0.0035 | <0.0036 | 0.0042 | 0.069 | 0.086 | 0.057 | 0.16 | 0.15 | 0.23 | 0.22 | 0.38 | 0.28 | 0.25 | 0.25 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0069 | <0.007 | <0.0071 | <0.0072 | <0.0071 | <0.007 | <0.0071 | <0.007 | <0.0071 | <0.0071 | <0.0073 | <0.007 | <0.0069 | <0.007 | <0.007 | <0.0069 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | 0.0046 | <0.0035 | <0.0035 | <0.0036 | 0.0054 | 0.056 | 0.069 | 0.052 | 0.13 | 0.092 | 0.16 | 0.19 | 0.3 | 0.19 | 0.14 | 0.15 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 0.0076 | <0.0035 | <0.0035 | 0.0041 | 0.012 | 0.06 | 0.086 | 0.062 | 0.11 | 0.031 | 0.052 | 0.071 | 0.11 | 0.064 | 0.021 | 0.017 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | 0.012 | 0.014 | 0.0097 | 0.028 | 0.026 | 0.049 | 0.052 | 0.084 | 0.067 | 0.072 | 0.071 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | 0.013 | 0.015 | 0.012 | 0.025 | 0.022 | 0.042 | 0.041 | 0.066 | 0.044 | 0.044 | 0.043 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | 0.056 | 0.058 | 0.042 | 0.11 | 0.092 | 0.18 | 0.18 | 0.33 | 0.26 | 0.27 | 0.25 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.0049 | <0.0017 | <0.0018 | 0.003 | 0.0049 | 0.02 | 0.028 | 0.02 | 0.037 | 0.02 | 0.033 | 0.03 | 0.047 | 0.03 | 0.017 | 0.015 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 0.0054 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | 0.0048 | 0.005 | 0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.01 | ND | ND | 0.003 | 0.0049 | 0.025 | 0.033 | 0.024 | 0.037 | 0.02 | 0.033 | 0.03 | 0.047 | 0.03 | 0.017 | 0.015 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | 0.02 | 0.019 | 0.013 | 0.036 | 0.038 | 0.069 | 0.081 | 0.13 | 0.11 | 0.13 | 0.13 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0035 |
| Total PFAS (Calculated) | NCL | NCL | 0.032 | ND | ND | 0.0071 | 0.027 | 0.31 | 0.38 | 0.27 | 0.64 | 0.47 | 0.82 | 0.87 | 1.4 | 1 | 0.94 | 0.93 |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-23A | HS-MW-23A | HS-MW-23B | HS-MW-23B | HS-MW-23D | HS-MW-23C | HS-MW-23C | HS-MW-23D | HS-PMW-24 | HS-PMW-24 | HS-PMW-24 | HS-PMW-24 | HS-PMW-24 | HS-PMW-24 | HS-PMW-24 | HS-PMW-24 |
|--|---|--|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|----------------|----------------|----------------|----------------|-----------------|------------------|------------------|------------------|
| Sample Name | | | HS-GW-MW23A | HS-GW-MW-23A | HS-GW-MW23B | HS-GW-MW-23B | HS-GW-MW23D | HS-GW-MW-23C | HS-GW-MW23C | HS-GW-MW-23D | MW-24A (55-60) | MW-24A (65-70) | MW-24A (75-80) | MW-24A (85-90) | MW-24A (95-100) | MW-24A (105-110) | MW-24A (115-120) | MW-24A (125-130) |
| Well Screen Interval (Feet below ground surface) | | | 72.1-77.1 | 72.1-77.1 | 137.9-142.8 | 137.9-142.8 | 238.9-243.9 | 210.2-215 | 210.2-215 | 238.9-243.9 | 55-60 | 65-70 | 75-80 | 85-90 | 95-100 | 105-110 | 115-120 | 125-130 |
| Laboratory Sample ID | | | UI21016-007 | UL05055-032 | UI21016-009 | UL05055-033 | UI21016-008 | UL05055-034 | UI26001-001 | UL12091-008 | UI26018-001 | UI26018-002 | UI26018-003 | UI26018-004 | UI26018-005 | UI26018-006 | UI26018-007 | UI26018-008 |
| Sample Date | | | 09/20/2019 | 12/06/2019 | 09/20/2019 | 12/06/2019 | 09/20/2019 | 12/06/2019 | 09/23/2019 | 12/10/2019 | 09/23/2019 | 09/23/2019 | 09/23/2019 | 09/23/2019 | 09/24/2019 | 09/24/2019 | 09/24/2019 | 09/24/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0072 | <0.0071 | <0.0068 | <0.007 | <0.0069 | <0.0071 | <0.007 | <0.0072 | <0.0068 | <0.0068 | <0.007 | <0.0072 | <0.007 | <0.007 | <0.0068 | <0.007 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.02 | 0.018 | 0.015 | 0.014 | 0.23 | 0.28 | 0.26 | 0.14 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0072 | <0.0071 | <0.0068 | <0.007 | <0.0069 | <0.0071 | <0.007 | <0.0072 | <0.0068 | <0.0068 | <0.007 | <0.0072 | <0.007 | <0.007 | <0.0068 | <0.007 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | 0.011 | 0.0094 | 0.0081 | 0.0071 | 0.15 | 0.23 | 0.22 | 0.076 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 0.02 | 0.019 | 0.019 | 0.015 | 0.016 | 0.09 | 0.091 | 0.011 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0036 | <0.0035 | <0.0034 | <0.0035 | 0.067 | 0.067 | 0.064 | 0.043 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0036 | <0.0035 | <0.0034 | <0.0035 | 0.037 | 0.057 | 0.05 | 0.02 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 0.0047 | <0.0035 | 0.0061 | 0.0044 | 0.24 | 0.26 | 0.22 | 0.16 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.013 | 0.012 | 0.0075 | 0.0082 | 0.013 | 0.03 | 0.03 | 0.0056 | <0.0017 | <0.0017 | <0.0017 | <0.0018 | <0.0017 | <0.0018 | <0.0017 | <0.0017 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 0.0042 | 0.015 | <0.0034 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.017 | 0.027 | 0.0075 | 0.0082 | 0.013 | 0.03 | 0.03 | 0.0056 | ND | ND | ND | ND | ND | ND | ND | ND |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0036 | <0.0035 | <0.0034 | <0.0035 | 0.13 | 0.11 | 0.1 | 0.08 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0034 | <0.0035 |
| Total PFAS (Calculated) | NCL | NCL | 0.073 | 0.073 | 0.056 | 0.049 | 0.88 | 1.1 | 1 | 0.54 | ND | ND | ND | ND | ND | ND | ND | ND |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-PMW-24 | HS-PMW-24 | HS-PMW-24 | HS-PMW-24 | HS-PMW-24 | HS-PMW-24 | HS-PMW-24 | HS-PMW-24 | HS-PMW-24 | HS-PMW-24 | HS-MW-24A | HS-MW-24B | HS-PMW-25 | HS-PMW-25 | HS-PMW-25 | HS-MW-25D |
|--|---|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|--------------|-------------|-------------|-------------|--------------|
| Sample Name | | | MW-24A(135-140) | MW-24A(145-150) | MW-24A(155-160) | MW-24A(165-170) | MW-24A(175-180) | MW-24A(185-190) | MW-24A(195-200) | HS-MW24 205-210 | HS-MW24 215-220 | HS-MW24 225-230 | HS-GW-MW-24A | HS-GW-MW-24B | SB-25 41-46 | SB-25 55-60 | SB-25 65-70 | HS-MW-25D |
| Well Screen Interval (Feet below ground surface) | | | 135-140 | 145-150 | 155-160 | 165-170 | 175-180 | 185-190 | 195-200 | 205-210 | 215-220 | 225-230 | 55.6-60.4 | 225.2-230 | 41-46 | 55-60 | 65-70 | 65.7-70.7 |
| Laboratory Sample ID | | | UI28012-001 | UI28012-002 | UI28012-003 | UI28012-004 | UI28012-005 | UI28012-006 | UI28012-007 | UI02010-001 | UI02010-002 | UI02010-003 | UL12091-009 | UL12091-015 | TJ05091-003 | TJ05091-004 | TJ05091-005 | UC02020-009 |
| Sample Date | | | 09/25/2019 | 09/25/2019 | 09/25/2019 | 09/26/2019 | 09/26/2019 | 09/26/2019 | 09/26/2019 | 09/27/2019 | 09/30/2019 | 09/30/2019 | 09/30/2019 | 12/10/2019 | 12/11/2019 | 10/03/2018 | 10/03/2018 | 10/03/2018 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0073 | <0.007 | <0.0071 | <0.0071 | <0.0068 | <0.007 | <0.0069 | <0.0076 | <0.0072 | <0.0072 | <0.007 | <0.0074 | <0.0074 | <0.0073 | <0.0072 | |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | 0.0039 | 0.012 | 0.0099 | 0.016 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0073 | <0.007 | <0.0071 | <0.0071 | <0.0068 | <0.007 | <0.0069 | <0.0076 | <0.0072 | <0.0072 | <0.007 | <0.0074 | <0.0074 | <0.0073 | <0.0072 | |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0037 | <0.0036 | |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | 0.0065 | 0.005 | 0.008 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | 0.01 | 0.005 | 0.0038 | 0.0054 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0036 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0036 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | 0.0055 | <0.0037 | 0.0056 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | 0.0049 | 0.011 | 0.0075 | 0.011 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0036 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.0018 | <0.0018 | <0.0018 | <0.0018 | <0.0017 | <0.0017 | <0.0017 | <0.0019 | <0.0018 | <0.0018 | <0.0017 | <0.0018 | 0.0062 | 0.018 | 0.012 | 0.016 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | 0.011 | 0.08 | 0.05 | 0.072 |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.017 | 0.098 | 0.062 | 0.088 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | 0.0089 | 0.006 | 0.0091 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0036 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0036 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0036 |
| Total PFAS (Calculated) | NCL | NCL | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.036 | 0.15 | 0.094 | 0.14 |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-25D | HS-MW-25D | HS-MW-25D | HS-MW-25S | HS-MW-25S | HS-MW-25S | HS-MW-25S | HS-MW-25S | HS-PMW-26 | HS-PMW-26 | HS-PMW-26 | HS-PMW-26 | HS-PMW-26 | HS-MW-26D | HS-MW-26D | HS-MW-26D | HS-MW-26D |
|--|---|--|-------------|-------------|--------------|-------------|-------------|-------------|--------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| Sample Name | | | HS-GW-MW25D | HS-GW-MW25D | HS-GW-MW-25D | HS-MW-25S | HS-GW-MW25S | HS-GW-MW25S | HS-GW-MW-25S | HS-GW-MW-25S | SB-26 25-30 | SB-26 50-55 | SB-26 60-65 | SB-26 70-75 | SB-26 79-84 | HS-MW-26D | HS-GW-MW26D | HS-GW-MW26D | HS-GW-MW-26D |
| Well Screen Interval (Feet below ground surface) | | | 65.7-70.7 | 65.7-70.7 | 65.7-70.7 | 51.1-56.1 | 51.1-56.1 | 51.1-56.1 | 51.1-56.1 | 51.1-56.1 | 25-30 | 50-55 | 60-65 | 70-75 | 79-84 | 79.6-84.6 | 79.6-84.6 | 79.6-84.6 | 79.6-84.6 |
| Laboratory Sample ID | | | UE15023-008 | UI19006-009 | UL05055-004 | UC02020-008 | UE15023-007 | UI19006-012 | UL05055-002 | TK16018-001 | TK16018-003 | TK16018-004 | TK16018-005 | TK16018-006 | UC02020-003 | UE15023-009 | UI12010-013 | UK21036-008 | |
| Sample Date | | | 05/14/2019 | 09/17/2019 | 12/02/2019 | 03/01/2019 | 05/14/2019 | 09/17/2019 | 12/02/2019 | 11/12/2018 | 11/14/2018 | 11/14/2018 | 11/14/2018 | 11/14/2018 | 02/28/2019 | 05/15/2019 | 09/11/2019 | 11/19/2019 | |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0037 | <0.0037 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0037 | <0.0037 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0037 | <0.0037 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0074 | <0.0073 | <0.0077 | <0.0073 | <0.0072 | <0.0076 | <0.0074 | <0.0072 | <0.0071 | <0.007 | <0.0071 | <0.0072 | <0.0074 | <0.0071 | <0.0077 | <0.007 | <0.007 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.012 | 0.011 | 0.018 | 0.017 | 0.01 | 0.0082 | 0.012 | <0.0036 | 0.0059 | 0.0072 | 0.0094 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0037 | <0.0037 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0037 | <0.0037 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0074 | <0.0073 | <0.0077 | <0.0073 | <0.0072 | <0.0076 | <0.0074 | <0.0072 | <0.0071 | <0.007 | <0.0071 | <0.0072 | <0.0074 | <0.0071 | <0.0077 | <0.007 | <0.007 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0037 | <0.0037 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0037 | <0.0037 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 0.0069 | 0.007 | 0.0082 | 0.0083 | 0.0045 | 0.0045 | 0.0057 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | 0.0047 | 0.0045 | 0.0054 | 0.0046 | <0.0036 | <0.0038 | 0.0039 | <0.0036 | <0.0035 | <0.0035 | 0.0036 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0037 | <0.0037 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0037 | <0.0037 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | 0.0045 | <0.0037 | 0.005 | 0.004 | <0.0036 | <0.0038 | 0.0049 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 0.01 | 0.0076 | 0.012 | 0.0089 | 0.0056 | 0.0068 | 0.0092 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0037 | <0.0037 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.014 | 0.01 | 0.015 | 0.012 | 0.0091 | 0.011 | 0.014 | <0.0018 | <0.0018 | 0.0071 | 0.0051 | <0.0018 | 0.0022 | <0.0018 | <0.0019 | <0.0017 | <0.0017 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 0.051 | 0.039 | 0.042 | 0.11 | 0.071 | 0.057 | 0.061 | <0.0036 | <0.0035 | 0.028 | 0.014 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.065 | 0.049 | 0.057 | 0.12 | 0.08 | 0.068 | 0.075 | ND | ND | 0.035 | 0.019 | ND | 0.0022 | ND | ND | ND | ND |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | 0.0086 | 0.0061 | 0.0087 | 0.007 | 0.0043 | 0.0047 | 0.0067 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0037 | <0.0037 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0037 | <0.0037 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0037 | <0.0037 | <0.0038 | <0.0037 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0036 | <0.0038 | <0.0035 | <0.0035 |
| Total PFAS (Calculated) | NCL | NCL | 0.11 | 0.085 | 0.11 | 0.17 | 0.1 | 0.092 | 0.12 | ND | 0.0059 | 0.042 | 0.032 | ND | 0.0022 | ND | ND | ND | ND |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-26M | HS-MW-26M | HS-MW-26M | HS-MW-26M | HS-MW-26S | HS-MW-26S | HS-MW-26S | HS-MW-26S | HS-MW-26S | HS-MW-26S | HS-PMW-27 | HS-PMW-27 | HS-PMW-27 | HS-PMW-27 | HS-PMW-27 | HS-MW-27A | HS-MW-27B |
|--|---|--|-------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-----------------|--------------|---------------|---------------|---------------|---------------|---------------|--------------|-------------|
| Sample Name | | | HS-MW-26M | HS-GW-MW26M | HS-GW-MW26M | HS-GW-MW-26M | HS-MW-26S | HS-GW-MW26S | HS-GW-MW26S | HS-GW-MW26S | HS-GW-MW26S DUP | HS-GW-MW-26S | HS-MW27 21-25 | HS-MW27 33-37 | HS-MW27 41-45 | HS-MW27-52-56 | HS-MW27-60-64 | HS-GW-MW-27A | HS-GW-MW27B |
| Well Screen Interval (Feet below ground surface) | | | 61.7-66.7 | 61.7-66.7 | 61.7-66.7 | 61.7-66.7 | 25.8-30.8 | 25.8-30.8 | 25.8-30.8 | 25.8-30.8 | 25.8-30.8 | 25.8-30.8 | 21-25 | 33-37 | 41-45 | 52-56 | 60-64 | 21.6-26.2 | 35.4-38 |
| Laboratory Sample ID | | | UC02020-002 | UE15023-011 | UI12010-017 | UK21036-005 | UC02020-001 | UE15023-010 | UI12010-015 | UI12010-018 | UK21036-001 | UF19002-001 | UF19002-001 | UF19002-002 | UF19002-003 | UF19026-001 | UF19026-002 | UK19008-001 | UI12010-002 |
| Sample Date | | | 02/28/2019 | 05/15/2019 | 09/11/2019 | 11/19/2019 | 02/28/2019 | 05/15/2019 | 09/11/2019 | 09/11/2019 | 09/11/2019 | 11/19/2019 | 06/17/2019 | 06/17/2019 | 06/17/2019 | 06/18/2019 | 06/18/2019 | 11/18/2019 | 09/09/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | <0.0038 | <0.0034 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | <0.0038 | <0.0034 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | <0.0038 | <0.0034 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0076 | <0.0074 | <0.0071 | <0.0073 | <0.0073 | <0.0073 | <0.0076 | <0.0073 | <0.0073 | <0.0073 | <0.0075 | <0.0069 | <0.0075 | <0.0071 | <0.0082 | <0.0077 | <0.0068 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.0044 | 0.0046 | 0.0049 | 0.0053 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | 0.004 | <0.0034 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | <0.0038 | <0.0034 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | <0.0038 | <0.0034 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0076 | <0.0074 | <0.0071 | <0.0073 | <0.0073 | <0.0073 | <0.0076 | <0.0073 | <0.0073 | <0.0073 | <0.0075 | <0.0069 | <0.0075 | <0.0071 | <0.0082 | <0.0077 | <0.0068 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | <0.0038 | <0.0034 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | <0.0038 | <0.0034 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | 0.0056 | <0.0034 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | 0.0079 | <0.0035 | <0.0037 | <0.0036 | 0.012 | 0.0067 | <0.0034 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | <0.0038 | <0.0034 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | <0.0038 | <0.0034 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | <0.0038 | <0.0034 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | 0.0038 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | 0.0069 | <0.0034 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | <0.0038 | <0.0034 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.006 | 0.0055 | 0.0054 | 0.0052 | <0.0018 | <0.0018 | <0.0019 | <0.0018 | <0.0018 | <0.0018 | 0.0067 | 0.0032 | <0.0019 | <0.0018 | 0.0025 | 0.0051 | <0.0017 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 0.014 | 0.011 | 0.016 | 0.017 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | 0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | <0.0038 | <0.0034 |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.02 | 0.017 | 0.021 | 0.022 | ND | ND | ND | ND | ND | ND | 0.01 | 0.0032 | ND | ND | 0.0025 | 0.0051 | ND |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | 0.0037 | <0.0035 | <0.0037 | <0.0036 | 0.006 | <0.0038 | <0.0034 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | <0.0038 | <0.0034 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | <0.0038 | <0.0034 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0038 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | <0.0037 | <0.0035 | <0.0037 | <0.0036 | <0.0041 | <0.0038 | <0.0034 |
| Total PFAS (Calculated) | NCL | NCL | 0.024 | 0.021 | 0.026 | 0.028 | ND | ND | ND | ND | ND | ND | 0.026 | 0.0032 | ND | ND | 0.021 | 0.028 | ND |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-27B | HS-MW-27C | HS-MW-27C | HS-MW-27D | HS-MW-27D | HS-MW-27E | HS-MW-27E | HS-PMW-28 | HS-PMW-28 | HS-PMW-28 | HS-PMW-28 | HS-MW-28A | HS-MW-28A | HS-MW-28B | HS-MW-28B | HS-MW-28C |
|--|---|--|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-----------------|-----------------|---------------------|---------------|-------------|--------------|-------------|--------------|-------------|
| Sample Name | | | HS-GW-MW-27B | HS-GW-MW27C | HS-GW-MW-27C | HS-GW-MW27D | HS-GW-MW-27D | HS-GW-MW27E | HS-GW-MW-27E | HS-MW28 (42-44) | HS-MW28 (51-53) | HS-MW28 (70.5-72.5) | HS-MW28 81-85 | HS-GW-MW28A | HS-GW-MW-28A | HS-GW-MW28B | HS-GW-MW-28B | HS-GW-MW28C |
| Well Screen Interval (Feet below ground surface) | | | 35.4-38 | 41.3-45.9 | 41.3-45.9 | 52.4-56.4 | 52.4-56.4 | 58.5-62.5 | 58.5-62.5 | 42-44 | 51-53 | 70.5-72.5 | 81-85 | 39.1-43.7 | 39.1-43.7 | 43.3-47.9 | 43.3-47.9 | 49.2-53.8 |
| Laboratory Sample ID | | | UK19008-003 | UI12010-001 | UK19008-002 | UI12010-003 | UK21036-002 | UI12010-004 | UK19008-004 | UF07034-001 | UF07034-002 | UF07034-003 | UF12004-001 | UI19006-013 | UK21036-018 | UI19006-005 | UK21036-019 | UI19006-001 |
| Sample Date | | | 11/18/2019 | 09/09/2019 | 11/18/2019 | 09/09/2019 | 11/19/2019 | 09/09/2019 | 11/18/2019 | 06/05/2019 | 06/05/2019 | 06/06/2019 | 06/10/2019 | 09/17/2019 | 11/21/2019 | 09/16/2019 | 11/21/2019 | 09/16/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | 0.011 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0075 | <0.0072 | <0.0075 | <0.0068 | <0.0076 | <0.0073 | <0.0074 | <0.007 | <0.0072 | <0.0069 | <0.007900001 | <0.0072 | <0.0072 | <0.0074 | <0.0075 | <0.0076 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | 0.005 | 0.0065 | <0.0035 | <0.004 | 0.0063 | 0.0047 | 0.0083 | 0.0092 | <0.0038 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0075 | <0.0072 | <0.0075 | <0.0068 | <0.0076 | <0.0073 | <0.0074 | <0.007 | <0.0072 | <0.0069 | <0.007900001 | <0.0072 | <0.0072 | <0.0074 | <0.0075 | <0.0076 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | <0.0035 | 0.0039 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | 0.01 | 0.0074 | <0.0035 | 0.0049 | <0.0035 | 0.006 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | 0.0037 | <0.0037 | <0.0035 | 0.0041 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.0019 | <0.0018 | <0.0019 | <0.0017 | <0.0019 | 0.0031 | 0.0025 | <0.0017 | 0.0059 | <0.0017 | 0.002 | <0.0018 | <0.0018 | 0.0023 | <0.0019 | <0.0019 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | <0.0035 | 0.0057 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | ND | ND | ND | ND | 0.0031 | 0.0025 | ND | 0.012 | ND | 0.002 | ND | ND | 0.0023 | ND | ND |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | <0.0035 | 0.0038 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0037 | <0.0036 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0035 | <0.004 | <0.0036 | <0.0036 | <0.0037 | <0.0038 | <0.0038 |
| Total PFAS (Calculated) | NCL | NCL | ND | ND | ND | ND | ND | 0.017 | 0.0099 | 0.005 | 0.035 | ND | 0.008 | 0.0063 | 0.0047 | 0.011 | 0.0092 | 0.011 |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-28C | HS-MW-28D | HS-MW-28D | HS-MW-28D | HS-MW-28E | HS-MW-28E | HS-PMW-29 | HS-PMW-29 | HS-PMW-29 | HS-PMW-29 | HS-PMW-29 | HS-MW-29A | HS-MW-29B | HS-MW-29C | HS-MW-29D | HS-PMW-30 |
|--|---|--|--------------|-------------|--------------|------------------|-------------|--------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------|--------------|--------------|--------------|-----------------|
| Sample Name | | | HS-GW-MW-28C | HS-GW-MW28D | HS-GW-MW-28D | HS-GW-MW-28D DUP | HS-GW-MW28E | HS-GW-MW-28E | HS-GW-MW29 (11-15) | HS-GW-MW29 (21-25) | HS-GW-MW29 (31-35) | HS-GW-MW29 (41-45) | HS-GW-MW29 (46-50) | HS-GW-MW-29A | HS-GW-MW-29B | HS-GW-MW-29C | HS-GW-MW-29D | HS-MW30 (52-54) |
| Well Screen Interval (Feet below ground surface) | | | 49.2-53.8 | 62.2-66.8 | 62.2-66.8 | 62.2-66.8 | 82.7-87.3 | 82.7-87.3 | 11-15 | 21-25 | 31-35 | 41-45 | 46-50 | 3.5-13.5 | 16.8-21.8 | 27.2-32.2 | 37.1-42.1 | 52-54 |
| Laboratory Sample ID | | | UK21036-016 | UI19006-010 | UK21036-014 | UK21036-015 | UI19006-011 | UK21036-017 | UJ08016-001 | UJ08016-002 | UJ08016-003 | UJ08016-004 | UJ08016-005 | UK19008-006 | UK21036-003 | UK21036-004 | UK19008-005 | UE17049-001 |
| Sample Date | | | 11/21/2019 | 09/17/2019 | 11/21/2019 | 11/21/2019 | 09/17/2019 | 11/21/2019 | 10/01/2019 | 10/01/2019 | 10/01/2019 | 10/01/2019 | 10/02/2019 | 11/18/2019 | 11/19/2019 | 11/19/2019 | 11/18/2019 | 05/13/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0036 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0071 | <0.007 | <0.0072 | <0.0074 | <0.007 | <0.0072 | <0.0071 | <0.007 | <0.007 | <0.0071 | <0.0073 | <0.007 | <0.0069 | <0.007 | <0.007 | <0.0072 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | 0.015 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | 0.018 | 0.024 | 0.011 | 0.0035 | 0.0067 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0036 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | 0.01 | <0.0034 | <0.0035 | <0.0035 | <0.0036 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0071 | <0.007 | <0.0072 | <0.0074 | <0.007 | <0.0072 | <0.0071 | <0.007 | <0.007 | <0.0071 | <0.0073 | <0.007 | <0.0069 | <0.007 | <0.007 | <0.0072 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0036 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | 0.0056 | <0.0034 | <0.0035 | <0.0035 | <0.0036 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | 0.017 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | 0.025 | <0.0034 | <0.0035 | <0.0035 | 0.0044 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | 0.01 | <0.0034 | <0.0035 | <0.0035 | <0.0036 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0036 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0036 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | 0.0064 | <0.0034 | <0.0035 | <0.0035 | <0.0036 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | 0.017 | <0.0034 | <0.0035 | <0.0035 | 0.0041 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0036 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.0018 | <0.0017 | <0.0018 | <0.0018 | <0.0018 | <0.0018 | 0.0091 | <0.0017 | <0.0018 | <0.0018 | <0.0018 | 0.036 | <0.0017 | <0.0018 | <0.0018 | 0.0088 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | 0.053 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | 0.32 | 0.004 | <0.0035 | <0.0035 | <0.0036 |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | ND | ND | ND | ND | ND | 0.062 | ND | ND | ND | ND | 0.36 | 0.004 | ND | ND | 0.0088 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | 0.01 | <0.0034 | <0.0035 | <0.0035 | <0.0036 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0036 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0036 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0035 | <0.0036 |
| Total PFAS (Calculated) | NCL | NCL | ND | ND | ND | ND | ND | ND | 0.094 | ND | ND | ND | ND | 0.46 | 0.028 | 0.011 | 0.0035 | 0.024 |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-PMW-30 | HS-PMW-30 | HS-PMW-30 | HS-PMW-30 | HS-PMW-30 | HS-PMW-30 | HS-PMW-30 | HS-PMW-30 | HS-MW-30A | HS-MW-30A | HS-MW-30A | HS-MW-30A | HS-MW-30B | HS-MW-30B | HS-MW-30B | HS-MW-30B | HS-MW-30C | HS-MW-30C | |
|--|---|--|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------|-------------|--------------|------------------|-------------|-------------|-------------|--------------|-------------|-------------|
| Sample Name | | | HS-MW30 (61-63) | HS-MW30 (75-77) | HS-MW30 (100-102) | HS-MW30 (111-113) | HS-MW30 (121-123) | HS-MW30 (128-130) | HS-MW30 (138-140) | HS-MW30 (138-140) | HS-MW30 (138-140) | HS-GW-MW30A | HS-GW-MW30A | HS-GW-MW-30A | HS-GW-MW-30A DUP | HS-GW-MW30B | HS-GW-MW30B | HS-GW-MW30B | HS-GW-MW-30B | HS-GW-MW30C | HS-GW-MW30C |
| Well Screen Interval (Feet below ground surface) | | | 61-63 | 75-77 | 100-102 | 111-113 | 121-123 | 128-130 | 138-140 | 138-140 | 138-140 | 46.9-51.5 | 46.9-51.5 | 46.9-51.5 | 46.9-51.5 | 51.5-56.1 | 51.5-56.1 | 51.5-56.1 | 51.5-56.1 | 77.4-82 | 77.4-82 |
| Laboratory Sample ID | | | UE17049-003 | UE17049-004 | UE17049-005 | UE17049-006 | UE17005-001 | UE17005-002 | UE17005-003 | UE17005-003 | UE17005-003 | UG03026-005 | UI19006-014 | UK19008-010 | UK19008-011 | UG03026-007 | UI21016-001 | UK19008-014 | UG06001-001 | UI19006-015 | |
| Sample Date | | | 05/14/2019 | 05/14/2019 | 05/14/2019 | 05/14/2019 | 05/15/2019 | 05/15/2019 | 05/15/2019 | 05/15/2019 | 05/15/2019 | 07/02/2019 | 09/17/2019 | 11/20/2019 | 11/20/2019 | 07/02/2019 | 09/19/2019 | 11/20/2019 | 07/03/2019 | 09/17/2019 | |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.007 | <0.0073 | <0.0071 | <0.0075 | <0.0073 | <0.0071 | <0.0071 | <0.0071 | <0.0069 | <0.0071 | <0.0069 | <0.0071 | <0.0072 | <0.0075 | <0.007 | <0.0074 | <0.0069 | <0.0069 | |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0035 | 0.0042 | <0.0035 | 0.004 | <0.0036 | <0.0036 | <0.0036 | 0.0061 | 0.0068 | 0.0072 | 0.0069 | 0.0071 | 0.0074 | 0.0073 | 0.0073 | 0.0057 | 0.0055 | 0.0055 | |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.007 | <0.0073 | <0.0071 | <0.0075 | <0.0073 | <0.0071 | <0.0071 | <0.0071 | <0.0069 | <0.0071 | <0.0069 | <0.0084 | <0.0072 | <0.0075 | <0.007 | <0.0074 | <0.0069 | <0.0069 | |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | 0.0038 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | 0.0038 | <0.0038 | 0.0038 | <0.0037 | <0.0035 | <0.0035 | |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | 0.0043 | 0.01 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0037 | 0.0056 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.0017 | <0.0018 | <0.0018 | 0.0026 | 0.0041 | <0.0018 | <0.0018 | 0.0033 | 0.0025 | 0.003 | 0.0027 | 0.0064 | 0.0035 | 0.0041 | <0.0018 | <0.0017 | <0.0017 | <0.0017 | |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | ND | ND | 0.0026 | 0.0041 | ND | ND | 0.0033 | 0.0025 | 0.003 | 0.0027 | 0.0064 | 0.0035 | 0.0041 | ND | ND | ND | ND | |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | 0.0041 | 0.0066 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0042 | <0.0036 | <0.0038 | <0.0035 | <0.0037 | <0.0035 | <0.0035 | |
| Total PFAS (Calculated) | NCL | NCL | ND | 0.0042 | ND | 0.015 | 0.026 | ND | ND | 0.013 | 0.0093 | 0.01 | 0.0096 | 0.017 | 0.011 | 0.015 | 0.0057 | 0.0055 | 0.0055 | 0.0055 | |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-30C | HS-MW-30D | HS-MW-30D | HS-MW-30D | HS-MW-30E | HS-MW-30E | HS-MW-30E | HS-MW-30E | HS-PMW-31 | HS-PMW-31 | HS-PMW-31 | HS-PMW-31 | HS-MW-31A | HS-MW-31A | HS-MW-31A | HS-MW-31B | HS-MW-31B |
|--|---|---|--------------|-------------|-------------|--------------|-------------|-------------|--------------|-------------------|---------------------|---------------------|---------------------|-------------|-------------|--------------|-------------|-------------|-----------|
| Sample Name | | | HS-GW-MW-30C | HS-GW-MW30D | HS-GW-MW30D | HS-GW-MW-30D | HS-GW-MW30E | HS-GW-MW30E | HS-GW-MW-30E | HS-MW31 (21.22.5) | HS-MW31 (31.0-32.5) | HS-MW31 (41.0-42.5) | HS-MW31 (51.0-52.5) | HS-GW-MW31A | HS-GW-MW31A | HS-GW-MW-31A | HS-GW-MW31B | HS-GW-MW31B | |
| Well Screen Interval (Feet below ground surface) | | | 77.4-82 | 112.7-117.3 | 112.7-117.3 | 112.7-117.3 | 123.2-127.7 | 123.2-127.7 | 123.2-127.7 | 21-22.5 | 31-32.5 | 41-42.5 | 51-52.5 | 17.1-21.6 | 17.1-21.6 | 17.1-21.6 | 26-30.5 | 26-30.5 | |
| Laboratory Sample ID | | | UK21036-026 | UG03026-008 | UI21016-002 | UK21036-024 | UG03026-006 | UI19006-016 | UK21036-025 | UE17005-006 | UE17005-007 | UE17005-008 | UE17005-009 | UG03026-003 | UI13033-001 | UK21036-006 | UG03026-001 | UI13033-004 | |
| Sample Date | | | 11/22/2019 | 07/02/2019 | 09/19/2019 | 11/22/2019 | 07/02/2019 | 09/17/2019 | 11/22/2019 | 05/15/2019 | 05/15/2019 | 05/17/2019 | 05/17/2019 | 07/01/2019 | 09/12/2019 | 11/19/2019 | 07/01/2019 | 09/12/2019 | |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | 0.0047 | <0.0038 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0069 | <0.0071 | <0.007 | <0.0071 | <0.0074 | <0.0069 | <0.0077 | <0.0068 | <0.007 | <0.0072 | <0.0071 | <0.007 | <0.007 | <0.0073 | <0.0073 | <0.0075 | |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.0055 | 0.0048 | 0.0053 | 0.0056 | 0.0055 | 0.0063 | 0.0059 | <0.0034 | 0.0099 | 0.015 | 0.011 | 0.011 | 0.0055 | 0.0068 | 0.014 | 0.012 | |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0069 | <0.0071 | <0.007 | <0.0071 | <0.0074 | <0.0069 | <0.0077 | <0.0068 | <0.007 | <0.0072 | <0.0071 | <0.007 | <0.007 | <0.0073 | <0.0073 | <0.0075 | |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | <0.0034 | <0.0035 | 0.0055 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | 0.0041 | 0.0049 | |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | <0.0034 | 0.0091 | 0.012 | 0.008 | 0.0071 | 0.0075 | 0.0053 | 0.011 | 0.011 | |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | <0.0034 | 0.0042 | 0.005 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | 0.006 | 0.0042 | |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | 0.0034 | 0.0039 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | 0.0038 | <0.0037 | |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | 0.0054 | 0.0059 | 0.007 | 0.0075 | <0.0035 | <0.0035 | 0.0043 | 0.0056 | 0.0082 | |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.0017 | <0.0018 | <0.0018 | <0.0018 | <0.0018 | <0.0017 | <0.0019 | 0.0069 | 0.011 | 0.011 | 0.008 | 0.0035 | 0.0038 | 0.0032 | 0.022 | 0.012 | |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | <0.0034 | <0.0035 | 0.0055 | 0.0055 | <0.0035 | <0.0035 | <0.0036 | 0.0059 | 0.005 | |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | ND | ND | ND | ND | ND | ND | 0.0069 | 0.011 | 0.017 | 0.014 | 0.0035 | 0.0038 | 0.0032 | 0.028 | 0.017 | |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | 0.0067 | 0.0048 | 0.005 | 0.0053 | <0.0035 | <0.0035 | <0.0036 | 0.0051 | 0.0059 | |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0034 | <0.0036 | <0.0035 | <0.0036 | <0.0037 | <0.0034 | <0.0038 | <0.0034 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0037 | |
| Total PFAS (Calculated) | NCL | NCL | 0.0055 | 0.0048 | 0.0053 | 0.0056 | 0.0055 | 0.011 | 0.0059 | 0.022 | 0.049 | 0.066 | 0.045 | 0.022 | 0.017 | 0.02 | 0.078 | 0.063 | |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-31B | HS-MW-31C | HS-MW-31C | HS-MW-31C | HS-MW-31D | HS-MW-31D | HS-MW-31D | HS-MW-31E | HS-MW-31E | HS-MW-31E | HS-MW-31E | HS-MW-31E | HS-PMW-32 | HS-PMW-32 | HS-PMW-32 | HS-PMW-32 | HS-PMW-32 |
|--|---|--|--------------|-------------|-------------|--------------|-------------|-------------|--------------|-------------|-----------------|-------------|--------------|------------------|------------------|--------------------|--------------------|--------------------|-----------|
| Sample Name | | | HS-GW-MW-31B | HS-GW-MW31C | HS-GW-MW31C | HS-GW-MW-31C | HS-GW-MW31D | HS-GW-MW31D | HS-GW-MW-31D | HS-GW-MW31E | HS-GW-MW31E DUP | HS-GW-MW31E | HS-GW-MW-31E | WV-MW-32 (54-64) | WV-MW-32 (64-74) | WV-MW-32 (102-112) | WV-MW-32 (112-122) | WV-MW-32 (130-140) | |
| Well Screen Interval (Feet below ground surface) | | | 26-30.5 | 41.3-45.8 | 41.3-45.8 | 41.3-45.8 | 48.8-53.4 | 48.8-53.4 | 48.8-53.4 | 64.1-68.7 | 64.1-68.7 | 64.1-68.7 | 64.1-68.7 | 54-64 | 64-74 | 102-112 | 112-122 | 130-140 | |
| Laboratory Sample ID | | | UK19008-013 | UG03026-004 | UI13033-003 | UK21036-007 | UG03026-002 | UI13033-002 | UK21036-027 | UG06001-002 | UG06001-003 | UI13033-005 | UK19008-009 | UD19022-001 | UD19022-002 | UD19022-003 | UD19022-004 | UD19022-005 | |
| Sample Date | | | 11/20/2019 | 07/01/2019 | 09/12/2019 | 11/19/2019 | 07/01/2019 | 09/12/2019 | 11/22/2019 | 07/03/2019 | 07/03/2019 | 09/12/2019 | 11/20/2019 | 04/15/2019 | 04/16/2019 | 04/16/2019 | 04/17/2019 | 04/17/2019 | |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0073 | <0.0075 | <0.007 | <0.0073 | <0.0072 | <0.0069 | <0.0075 | <0.0075 | <0.0072 | <0.0068 | <0.007 | <0.01 | <0.0084 | <0.0088 | <0.0078 | <0.0078 | |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.012 | 0.018 | 0.016 | 0.015 | 0.012 | 0.011 | 0.0076 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0073 | <0.0075 | <0.007 | <0.0073 | <0.0072 | <0.0069 | <0.0075 | <0.0075 | <0.0072 | <0.0068 | <0.007 | <0.01 | <0.0084 | <0.0088 | <0.0078 | <0.0078 | |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | 0.0043 | 0.005 | 0.0052 | 0.0048 | <0.0036 | 0.0035 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 0.013 | 0.011 | 0.0095 | 0.01 | 0.0082 | 0.0069 | 0.0053 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | 0.0072 | 0.0051 | 0.0048 | 0.0047 | 0.0042 | 0.0035 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | 0.0046 | <0.0039 | <0.0039 | |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | 0.018 | <0.0037 | <0.0035 | <0.0036 | 0.0037 | 0.0038 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 0.017 | 0.006 | 0.0063 | 0.0073 | 0.0074 | 0.0064 | 0.0041 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.052 | 0.01 | 0.0086 | 0.0079 | 0.0073 | 0.0075 | 0.0074 | <0.0019 | <0.0018 | <0.0017 | <0.0018 | <0.0026 | <0.0021 | 0.0026 | <0.002 | <0.0019 | |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 0.014 | 0.0077 | 0.0059 | 0.0052 | 0.0044 | 0.0053 | 0.007 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.066 | 0.018 | 0.015 | 0.013 | 0.012 | 0.013 | 0.014 | ND | ND | ND | ND | ND | ND | 0.0026 | ND | ND | |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | 0.014 | 0.004 | 0.0045 | 0.0057 | 0.006 | 0.0048 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0037 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0037 | <0.0036 | <0.0034 | <0.0035 | <0.0051 | <0.0042 | <0.0044 | <0.0039 | <0.0039 | |
| Total PFAS (Calculated) | NCL | NCL | 0.15 | 0.067 | 0.061 | 0.061 | 0.053 | 0.053 | 0.031 | ND | ND | ND | ND | ND | ND | 0.0072 | ND | ND | |

TABLE 3
GROUNDWATER ANALYTICAL DATA - PFAS
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | HS-MW-32A | HS-MW-32A | HS-MW-32A | HS-MW-32B | HS-MW-32B | HS-MW-32B | HS-MW-32C | HS-MW-32C | HS-MW-32C | HS-MW-32D | HS-MW-32D | HS-MW-32D |
|--|---|---|-------------|-------------|--------------|-------------|-------------|--------------|-------------|-------------|--------------|-------------|-------------|--------------|
| Sample Name | | | HS-GW-MW32A | HS-GW-MW32A | HS-GW-MW-32A | HS-GW-MW32B | HS-GW-MW32B | HS-GW-MW-32B | HS-GW-MW32C | HS-GW-MW32C | HS-GW-MW-32C | HS-GW-MW32D | HS-GW-MW32D | HS-GW-MW-32D |
| Well Screen Interval (Feet below ground surface) | | | 60.9-65.5 | 60.9-65.5 | 60.9-65.5 | 79.1-83.7 | 79.1-83.7 | 79.1-83.7 | 108.8-113.4 | 108.8-113.4 | 108.8-113.4 | 142.3-146.9 | 142.3-146.9 | 142.3-146.9 |
| Laboratory Sample ID | | | UE25011-005 | UI07020-001 | UK29008-003 | UE25011-006 | UI07020-003 | UK29008-004 | UE25011-007 | UI07020-002 | UK29008-005 | UE25011-008 | UI07020-004 | UK29008-006 |
| Sample Date | | | 05/24/2019 | 09/06/2019 | 11/26/2019 | 05/24/2019 | 09/06/2019 | 11/26/2019 | 05/24/2019 | 09/06/2019 | 11/26/2019 | 05/24/2019 | 09/06/2019 | 11/26/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0073 | <0.0074 | <0.0068 | <0.0074 | <0.0069 | <0.0069 | <0.0076 | <0.0071 | <0.0074 | <0.0074 | <0.0069 | <0.0071 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0073 | <0.0074 | <0.0068 | <0.0074 | <0.0069 | <0.0069 | <0.0076 | <0.0071 | <0.0074 | <0.0074 | <0.0069 | <0.0071 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | 0.0044 | <0.0035 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.0018 | <0.0019 | <0.0017 | <0.0018 | <0.0017 | <0.0017 | <0.0019 | <0.0018 | <0.0019 | <0.0018 | <0.0017 | <0.0018 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0036 | <0.0037 | <0.0034 | <0.0037 | <0.0035 | <0.0035 | <0.0038 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 |
| Total PFAS (Calculated) | NCL | NCL | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0044 | ND |

TABLE 3 NOTES
House Street Disposal Site Study Area
Plainfield Township, Kent County, MI

16.0062961.50
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NOTES:

1. Concentration and criteria units are micrograms per Liter ($\mu\text{g/L}$) or parts per billion (ppb). Calculated criteria and concentrations are rounded to two significant digits. "ND" indicates the parameters used in the calculation were not detected.
2. Michigan Part 201 Groundwater Cleanup Criteria are based on "Table 1, Groundwater: Residential and Nonresidential Part 201 Generic Cleanup Criteria and Screening Levels/Part 213 Tier I Risk Based Screening Levels," Michigan Administrative Code, Cleanup Criteria Requirements for Response Activity, Rules 299.44 and 299.49, effective December 30, 2013; updated August 3, 2020.
Abbreviations Include:
"NCL" indicates no criterion listed in EGLE Table 1.
Footnotes Include:
(A) - The criterion is the State of Michigan drinking water standard.
3. Bold, italic number with thick line border or italic parameter name indicates that parameter was detected above the Michigan Part 201 Groundwater Cleanup Criteria listed.
4. Abbreviations include:
" < RL " indicates the parameter was analyzed for but not detected above the method detection limit; RL = Reporting Limit.
"DUP" indicates a duplicate sample.
"-" indicates the parameter was not analyzed.
"J" indicates the result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
"UJ" indicates the analyte was analyzed for but was not detected. The reported quantitation limit is approximate.
5. Well screen interval presented is the top of the well screen to the bottom of the well screen in feet below ground surface.

TABLE 4
GROUNDWATER ANALYTICAL DATA - PFAS
Wolver/Jewell Study Areas
Algoma Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | WV-MW-1 | WV-MW-1 | WV-MW-1 | WV-MW-1 | WV-MW-1 | WV-PMW-2 | WV-PMW-2 | WV-MW-2D | WV-MW-2D | WV-MW-2D | WV-MW-2D | WV-MW-2D | WV-MW-2S | WV-MW-2S | WV-MW-2S | WV-MW-2S |
|--|---|--|-------------|-------------|-------------|-------------|-------------|------------------|------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Name | | | PMW-WV-1 | MW-WV-1 | WV-GW-MW1 | WV-GW-MW1 | WV-GW-MW-1 | PMW-WV-2 (13-18) | PMV-WV 2 31 - 36 | PMW-WV-2D | MW-WV-2D | WV-GW-MW2D | WV-GW-MW2D | WV-GW-MW-2D | PMW-WV-2S | MW-WV-2S | WV-GW-MW2S | WV-GW-MW2S |
| Well Screen Interval (Feet below ground surface) | | | 137.8-142.8 | 137.8-142.8 | 137.8-142.8 | 137.8-142.8 | 137.8-142.8 | 13-18 | 31-36 | 30.2-35.2 | 30.2-35.2 | 30.2-35.2 | 30.2-35.2 | 30.2-35.2 | 20.2-25.2 | 20.2-25.2 | 20.2-25.2 | 20.2-25.2 |
| Laboratory Sample ID | | | TC30012-002 | UB20051-010 | UE09028-012 | UI05007-008 | UK13023-002 | K1801515-002 | K1801591-001 | TC30012-006 | UB20051-002 | UE09028-013 | UI05007-005 | UK07051-005 | TC30012-010 | UB20051-001 | UE09028-014 | UI05007-004 |
| Sample Date | | | 03/28/2018 | 02/20/2019 | 05/10/2019 | 09/04/2019 | 11/12/2019 | 02/14/2018 | 02/16/2018 | 03/29/2018 | 02/18/2019 | 05/10/2019 | 09/03/2019 | 11/05/2019 | 03/29/2018 | 02/18/2019 | 05/10/2019 | 09/03/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.007 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0047 | <0.0051 | <0.0072 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0074 | <0.0036 | <0.0037 | <0.0036 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.007 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0047 | <0.0051 | <0.0072 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0074 | <0.0036 | <0.0037 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.007 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0047 | <0.0051 | <0.0072 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0074 | <0.0036 | <0.0037 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | <0.0047 | <0.0051 | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.014 | <0.007 | <0.0071 | <0.0067 | <0.007 | <0.0047 | <0.0051 | <0.014 | <0.0071 | <0.0072 | <0.0072 | <0.0077 | <0.015 | <0.0071 | <0.0073 | <0.0071 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | <0.0047 | <0.0051 | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.046 | 0.032 | 0.0072 | 0.048 | 0.041 | 0.02 | 0.05 | 0.056 | 0.051 | 0.046 | 0.045 | 0.042 | 0.017 | 0.014 | 0.013 | 0.016 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0047 | <0.0051 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0036 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | 0.23 | 0.17 | 0.071 | 0.25 | 0.22 | 0.13 | 0.024 | 0.015 | 0.016 | 0.016 | 0.022 | 0.016 | 0.074 | 0.062 | 0.047 | 0.054 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.007 | <0.007 | <0.0071 | <0.0067 | <0.007 | - | - | <0.0072 | <0.0071 | <0.0072 | <0.0072 | <0.0077 | <0.0074 | <0.0071 | <0.0073 | <0.0071 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.007 | <0.0035 | 0.0099 | <0.0034 | <0.0035 | <0.0047 | <0.0051 | <0.0072 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0074 | <0.0036 | <0.0037 | <0.0036 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | 0.14 | 0.1 | 0.022 | 0.14 | 0.12 | - | - | 0.14 | 0.14 | 0.12 | 0.13 | 0.13 | 0.018 | 0.015 | 0.016 | 0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 1.1 | 0.81 | 0.18 | 1.1 | 0.77 | 0.086 | 0.24 | 0.35 | 0.32 | 0.28 | 0.26 | 0.28 | 0.08 | 0.065 | 0.052 | 0.065 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | 0.031 | 0.022 | 0.0059 | 0.037 | 0.029 | <0.0094 | 0.02 | 0.026 | 0.022 | 0.02 | 0.017 | 0.019 | 0.011 | 0.0081 | 0.0074 | 0.0096 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0047 | <0.0051 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0036 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0047 | <0.0051 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0036 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | 0.25 | 0.17 | 0.035 | 0.26 | 0.22 | 0.035 | 0.15 | 0.15 | 0.14 | 0.13 | 0.12 | 0.12 | 0.033 | 0.024 | 0.022 | 0.032 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 0.1 | 0.065 | 0.014 | 0.11 | 0.095 | 0.023 | 0.061 | 0.081 | 0.068 | 0.061 | 0.055 | 0.057 | 0.023 | 0.016 | 0.015 | 0.017 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | 0.015 | 0.01 | 0.0049 | 0.017 | 0.013 | 0.0057 | <0.0051 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | 0.0058 | 0.0059 | 0.006 | 0.0071 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 3.3 | 2.8 | 0.57 | 4.3 | 2.9 | 0.28 | 0.72 | 0.97 | 1.1 | 1 | 0.89 | 0.92 | 0.32 | 0.29 | 0.27 | 0.32 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 7.3 | 6.1 | 3.7 | 10 | 6.7 | 2.7 | 0.096 | 0.064 | 0.064 | 0.077 | 0.15 | 0.11 | 3.2 | 3.8 | 3.4 | 3.8 |
| PFOA + PFOS (Calculated) | NCL | NCL | 11 | 8.9 | 4.3 | 14 | 9.6 | 3 | 0.82 | 1 | 1.2 | 1.1 | 1 | 1 | 3.5 | 4.1 | 3.7 | 4.1 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | 0.039 | 0.025 | 0.0057 | 0.037 | 0.036 | 0.014 | 0.025 | 0.033 | 0.027 | 0.026 | 0.025 | 0.026 | 0.014 | 0.0093 | 0.0083 | 0.0089 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.007 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0047 | <0.0051 | <0.0072 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0074 | <0.0036 | <0.0037 | <0.0036 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0047 | <0.0051 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0036 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0035 | <0.0035 | <0.0036 | <0.0034 | <0.0035 | <0.0047 | <0.0051 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0036 |
| Total PFAS (Calculated) | NCL | NCL | 13 | 10.3 | 4.6 | 16 | 11 | 3.3 | 1.4 | 1.9 | 1.9 | 1.8 | 1.7 | 1.7 | 3.8 | 4.3 | 3.9 | 4.3 |

TABLE 4
GROUNDWATER ANALYTICAL DATA - PFAS
Wolver/Jewell Study Areas
Algoma Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | WV-MW-2S | WV-PMW-3 | WV-PMW-3 | WV-PMW-3 | WV-PMW-3 | WV-PMW-3 | WV-MW-3D | WV-MW-3D | WV-MW-3D | WV-MW-3D | WV-MW-3D | WV-MW-3D | WV-MW-3S | WV-MW-3S | WV-MW-3S | WV-MW-3S |
|--|---|--|-------------|---------------|----------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Name | | | WV-GW-MW-2S | PMW-WV-3 5-10 | PMW-WV-3 13-18 | PMW_WV3-3439 | PMW_WV3-4449 | PMW_WV3-5459 | DUP-1 | PMW-WV-3D | MW-WV-3D | WV-GW-MW3D | WV-GW-MW3D | WV-GW-MW-3D | PMW-WV-3S | MW-WV-3S | WV-GW-MW3S | WV-GW-MW3S |
| Well Screen Interval (Feet below ground surface) | | | 20.2-25.2 | 5-10 | 13-18 | 34-39 | 44-49 | 54-59 | 57.5-62.5 | 57.5-62.5 | 57.5-62.5 | 57.5-62.5 | 57.5-62.5 | 57.5-62.5 | 5.1-10.1 | 5.1-10.1 | 5.1-10.1 | 5.1-10.1 |
| Laboratory Sample ID | | | UK07051-004 | K1801320-001 | K1801320-002 | K1801365-002 | K1801365-004 | K1801365-005 | TC30012-011 | TC30012-008 | UB16022-008 | UE09028-018 | UI05007-010 | UK07025-005 | TC30012-009 | UB16022-007 | UE09028-022 | UI05007-011 |
| Sample Date | | | 11/05/2019 | 02/08/2018 | 02/08/2018 | 02/12/2018 | 02/12/2018 | 02/12/2018 | 03/29/2018 | 03/29/2018 | 02/15/2019 | 05/09/2019 | 09/04/2019 | 11/06/2019 | 03/29/2018 | 02/15/2019 | 05/09/2019 | 09/04/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0036 | <0.0042 | <0.0042 | <0.0044 | <0.0044 | <0.0044 | <0.0075 | <0.0075 | <0.0038 | <0.0037 | <0.0037 | <0.0037 | <0.0039 | <0.007 | <0.0037 | <0.0037 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0036 | <0.0042 | <0.0042 | <0.0044 | <0.0044 | <0.0044 | <0.0075 | <0.0075 | <0.0038 | <0.0037 | <0.0037 | 0.0049 | <0.007 | <0.0037 | <0.0037 | <0.0035 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0036 | <0.0042 | <0.0042 | <0.0044 | <0.0044 | <0.0044 | <0.0075 | <0.0075 | <0.0038 | <0.0037 | <0.0037 | <0.0039 | <0.007 | <0.0037 | <0.0037 | <0.0035 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | <0.0042 | <0.0042 | <0.0044 | <0.0044 | <0.0044 | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0073 | <0.0042 | <0.0042 | <0.0044 | <0.0044 | <0.0044 | <0.015 | <0.015 | <0.0076 | <0.0074 | <0.0073 | <0.0078 | <0.014 | <0.0075 | <0.0074 | <0.0071 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | <0.0042 | <0.0042 | <0.0044 | <0.0044 | <0.0044 | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.013 | 0.0049 | 0.012 | <0.0044 | 0.0052 | 0.0053 | 0.0066 | 0.0064 | 0.006 | 0.0051 | 0.006 | 0.0054 | 0.0049 | 0.006 | 0.0068 | 0.0082 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0036 | <0.0042 | <0.0042 | <0.0044 | <0.0044 | <0.0044 | <0.0038 | <0.0037 | <0.0038 | <0.0037 | <0.0037 | <0.0039 | <0.0035 | <0.0037 | <0.0037 | <0.0035 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | 0.049 | 0.021 | <0.0042 | <0.0044 | <0.0044 | <0.0044 | <0.0038 | <0.0037 | <0.0038 | <0.0037 | <0.0037 | <0.0039 | 0.0092 | 0.0044 | <0.0037 | 0.0041 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0073 | - | - | - | - | - | <0.0075 | <0.0075 | <0.0076 | <0.0074 | <0.0073 | <0.0078 | <0.007 | <0.0075 | <0.0074 | <0.0071 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0036 | <0.0042 | <0.0042 | <0.0044 | <0.0044 | <0.0044 | <0.0075 | <0.0075 | <0.0038 | <0.0037 | <0.0037 | <0.0039 | <0.007 | <0.0037 | <0.0037 | <0.0035 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | 0.017 | - | - | - | - | - | <0.0038 | <0.0037 | <0.0038 | <0.0037 | <0.0037 | <0.0039 | 0.005 | 0.0052 | 0.0053 | 0.0074 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 0.061 | 0.045 | 0.11 | 0.024 | <0.0044 | 0.0061 | 0.0047 | 0.0042 | 0.004 | <0.0037 | 0.004 | 0.0039 | 0.023 | 0.018 | 0.014 | 0.024 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | 0.0081 | 0.009 | <0.0085 | <0.0089 | <0.0089 | <0.0087 | <0.0038 | <0.0037 | <0.0038 | <0.0037 | <0.0037 | <0.0039 | 0.0053 | 0.008 | 0.0081 | 0.0097 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0036 | <0.0042 | <0.0042 | <0.0044 | <0.0044 | <0.0044 | <0.0038 | <0.0037 | <0.0038 | <0.0037 | <0.0037 | <0.0039 | <0.0035 | <0.0037 | <0.0037 | <0.0035 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0036 | <0.0042 | <0.0042 | <0.0044 | <0.0044 | <0.0044 | <0.0038 | <0.0037 | <0.0038 | <0.0037 | <0.0037 | <0.0039 | <0.0035 | <0.0037 | <0.0037 | <0.0035 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | 0.023 | 0.029 | 0.06 | <0.0044 | <0.0044 | <0.0044 | <0.0038 | <0.0037 | <0.0038 | <0.0037 | <0.0037 | <0.0039 | 0.011 | 0.0097 | 0.009 | 0.014 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 0.013 | 0.013 | 0.024 | <0.0044 | <0.0044 | <0.0044 | <0.0038 | <0.0037 | <0.0038 | <0.0037 | <0.0037 | <0.0039 | 0.0061 | 0.007 | 0.008 | 0.0083 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | 0.0059 | <0.0042 | <0.0042 | <0.0044 | <0.0044 | <0.0044 | <0.0038 | <0.0037 | <0.0038 | <0.0037 | <0.0037 | <0.0039 | <0.0035 | <0.0037 | <0.0037 | <0.0035 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.27 | 0.19 | 0.13 | 0.028 | <0.0018 | <0.0017 | <0.0038 | <0.0037 | <0.0019 | <0.0018 | 0.0019 | <0.0019 | 0.093 | 0.082 | 0.063 | 0.099 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 3.1 | 0.34 | <0.0042 | 0.028 | <0.0044 | <0.0044 | <0.0038 | <0.0037 | <0.0038 | <0.0037 | <0.0037 | <0.0039 | 0.23 | 0.15 | 0.11 | 0.15 |
| PFOA + PFOS (Calculated) | NCL | NCL | 3.4 | 0.53 | 0.13 | 0.056 | ND | ND | ND | ND | ND | ND | 0.0019 | ND | 0.32 | 0.23 | 0.17 | 0.25 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | 0.0079 | 0.0059 | 0.0051 | <0.0044 | <0.0044 | <0.0044 | <0.0038 | <0.0037 | <0.0038 | <0.0037 | <0.0037 | <0.0039 | <0.0035 | <0.0037 | <0.0037 | 0.0049 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0036 | <0.0042 | <0.0042 | <0.0044 | <0.0044 | <0.0044 | <0.0075 | <0.0075 | <0.0038 | <0.0037 | <0.0037 | <0.0039 | <0.007 | <0.0037 | <0.0037 | <0.0035 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0036 | <0.0042 | <0.0042 | <0.0044 | <0.0044 | <0.0044 | <0.0038 | <0.0037 | <0.0038 | <0.0037 | <0.0037 | <0.0039 | <0.0035 | <0.0037 | <0.0037 | <0.0035 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0036 | <0.0042 | <0.0042 | <0.0044 | <0.0044 | <0.0044 | <0.0038 | <0.0037 | <0.0038 | <0.0037 | <0.0037 | <0.0039 | <0.0035 | <0.0037 | <0.0037 | <0.0035 |
| Total PFAS (Calculated) | NCL | NCL | 3.6 | 0.7 | 0.34 | 0.08 | 0.0052 | 0.011 | 0.011 | 0.011 | 0.01 | 0.0051 | 0.012 | 0.014 | 0.39 | 0.29 | 0.22 | 0.33 |

TABLE 4
GROUNDWATER ANALYTICAL DATA - PFAS
Wolven/Jewell Study Areas
Algoma Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | WV-MW-3S | WV-PMW-4 | WV-PMW-4 | WV-MW-4 | WV-MW-4 | WV-MW-4 | WV-MW-4 | WV-MW-4 | WV-MW-4 | WV-PMW-5 | WV-MW-5D | WV-MW-5D | WV-MW-5D | WV-MW-5D | WV-MW-5D | WV-MW-5D | WV-MW-5S |
|--|---|--|--------------|--------------|------------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|----------|
| Sample Name | | | WV-GW-MW-3S | PMW-WV-4-123 | PMW-WV-4-125-130 | PMW-WV-4 | MW-WV-4 | WV-GW-MW4 | WV-GW-MW4 | WV-GW-MW-4 | PMW-WV5 | PMW-WV-5D | MW-WV-5D | MW-WV-5D DUP | WV-GW-MW5D | WV-GW-MW5D | WV-GW-MW-5D | PMW-WV-5S | |
| Well Screen Interval (Feet below ground surface) | | | 5.1-10.1 | 118-123 | 125-130 | 130.2-135.2 | 130.2-135.2 | 130.2-135.2 | 130.2-135.2 | 130.2-135.2 | - | 68.7-73.7 | 68.7-73.7 | 68.7-73.7 | 68.7-73.7 | 68.7-73.7 | 68.7-73.7 | 61.5-66.5 | |
| Laboratory Sample ID | | | UK07025-004 | K1802438-001 | K1802438-002 | TE25018-002 | UB20051-013 | UE16022-001 | UI05007-002 | UK19013-002 | K1802089-001 | TC30012-004 | UB16022-003 | UB16022-005 | UE09028-017 | UI05007-001 | UK19013-003 | TC30012-003 | |
| Sample Date | | | 11/06/2019 | 03/14/2018 | 03/14/2018 | 05/23/2018 | 02/21/2019 | 05/13/2019 | 09/03/2019 | 11/13/2019 | 03/06/2018 | 03/28/2018 | 02/14/2019 | 02/14/2019 | 05/09/2019 | 09/03/2019 | 11/13/2019 | 03/28/2018 | |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0037 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0048 | <0.0072 | <0.0037 | <0.0038 | <0.0035 | <0.0034 | <0.0036 | <0.0071 | |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0037 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0048 | <0.0072 | <0.0037 | <0.0038 | <0.0035 | <0.0034 | <0.0036 | <0.0071 | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0037 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0048 | <0.0072 | <0.0037 | <0.0038 | <0.0035 | <0.0034 | <0.0036 | <0.0071 | |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | <0.0051 | <0.0046 | - | - | - | - | - | <0.0048 | - | - | - | - | - | - | - | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0075 | <0.0051 | <0.0046 | <0.007 | <0.007 | <0.0071 | <0.0069 | <0.0074 | <0.0048 | <0.014 | <0.0073 | <0.0076 | <0.007 | <0.0069 | <0.0072 | <0.014 | |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | <0.0051 | <0.0046 | - | - | - | - | - | <0.0048 | - | - | - | - | - | - | - | |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.0074 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | 0.008 | 0.0083 | 0.0077 | 0.0074 | 0.0074 | 0.0086 | 0.009 | 0.006 | |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0037 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0048 | <0.0036 | <0.0037 | <0.0038 | <0.0035 | <0.0034 | <0.0036 | <0.0036 | |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0037 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0048 | <0.0036 | <0.0037 | <0.0038 | <0.0035 | <0.0034 | <0.0036 | <0.0036 | |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0075 | - | - | <0.007 | <0.007 | <0.0071 | <0.0069 | <0.0074 | - | <0.0072 | <0.0073 | <0.0076 | <0.007 | <0.0069 | <0.0072 | <0.0071 | |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0037 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0048 | <0.0072 | <0.0037 | <0.0038 | <0.0035 | <0.0034 | <0.0036 | <0.0071 | |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | 0.0054 | - | - | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | - | <0.0036 | <0.0037 | <0.0038 | <0.0035 | <0.0034 | <0.0036 | <0.0036 | |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 0.015 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | 0.0069 | <0.0036 | <0.0037 | 0.0038 | 0.0039 | 0.0037 | 0.0036 | <0.0036 | |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | 0.0085 | 0.016 | <0.0093 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0096 | <0.0036 | <0.0037 | <0.0038 | 0.005 | 0.0041 | <0.0036 | <0.0036 | |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0037 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0048 | <0.0036 | <0.0037 | <0.0038 | <0.0035 | <0.0034 | <0.0036 | <0.0036 | |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0037 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0048 | <0.0036 | <0.0037 | <0.0038 | <0.0035 | <0.0034 | <0.0036 | <0.0036 | |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | 0.0089 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0048 | <0.0036 | <0.0037 | <0.0038 | <0.0035 | <0.0034 | <0.0036 | <0.0036 | |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 0.0063 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0048 | <0.0036 | <0.0037 | <0.0038 | <0.0035 | 0.0051 | 0.0046 | <0.0036 | |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0037 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0048 | <0.0036 | <0.0037 | <0.0038 | <0.0035 | <0.0034 | <0.0036 | <0.0036 | |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.06 | 0.0044 | <0.0019 | <0.0017 | <0.0017 | <0.0018 | <0.0017 | <0.0019 | 0.0043 | <0.0036 | 0.0027 | 0.0027 | 0.0055 | 0.0082 | 0.0061 | <0.0036 | |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 0.095 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0048 | <0.0036 | <0.0037 | <0.0038 | <0.0035 | <0.0034 | <0.0036 | <0.0036 | |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.16 | 0.0044 | ND | ND | ND | ND | ND | ND | 0.0043 | ND | 0.0027 | 0.0027 | 0.0055 | 0.0082 | 0.0061 | ND | |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0037 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0048 | <0.0036 | <0.0037 | <0.0038 | <0.0035 | <0.0034 | <0.0036 | <0.0036 | |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0037 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0048 | <0.0072 | <0.0037 | <0.0038 | <0.0035 | <0.0034 | <0.0036 | <0.0071 | |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0037 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0048 | <0.0036 | <0.0037 | <0.0038 | <0.0035 | <0.0034 | <0.0036 | <0.0036 | |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0037 | <0.0051 | <0.0046 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0048 | <0.0036 | <0.0037 | <0.0038 | <0.0035 | <0.0034 | <0.0036 | <0.0036 | |
| Total PFAS (Calculated) | NCL | NCL | 0.21 | 0.0 | ND | ND | ND | ND | ND | ND | 0.019 | 0.0083 | 0.01 | 0.014 | 0.022 | 0.03 | 0.023 | 0.006 | |

TABLE 4
GROUNDWATER ANALYTICAL DATA - PFAS
Wolven/Jewell Study Areas
Algoma Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | WV-MW-5S | WV-MW-5S | WV-MW-5S | WV-MW-5S | WV-PMW-6 | WV-PMW-6 | WV-MW-6D | WV-MW-6D | WV-MW-6D | WV-MW-6D | WV-MW-6D | WV-MW-6S | WV-MW-6S | WV-MW-6S | WV-MW-6S | WV-MW-6S |
|--|---|--|-------------|-------------|-------------|-------------|----------------|---------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Name | | | MW-WV-5S | WV-GW-MW5S | WV-GW-MW5S | WV-GW-MW-5S | PMW-WV-6 13-18 | PMWVWV6-03-21-18 (98-103) | MW-6D | MW-WV-6D | WV-GW-MW6D | WV-GW-MW6D | VW-GW-MW-6D | MW-6S | MW-WV-6S | WV-GW-MW6S | WV-GW-MW6S | VW-GW-MW-6S |
| Well Screen Interval (Feet below ground surface) | | | 61.5-66.5 | 61.5-66.5 | 61.5-66.5 | 61.5-66.5 | 13-18 | 98-103 | 99.1-104.1 | 99.1-104.1 | 99.1-104.1 | 99.1-104.1 | 99.1-104.1 | 13.3-18.3 | 13.3-18.3 | 13.3-18.3 | 13.3-18.3 | 13.3-18.3 |
| Laboratory Sample ID | | | UB16022-004 | UE09028-016 | UI05007-003 | UK19013-004 | K1802550-001 | K1802656-003 | TD12014-001 | UB20051-005 | UE02030-010 | UH29005-021 | UK09009-004 | TD12014-003 | UB20051-004 | UE02030-011 | UH29005-020 | UK09009-003 |
| Sample Date | | | 02/14/2019 | 05/09/2019 | 09/03/2019 | 11/13/2019 | 03/19/2018 | 03/21/2018 | 04/11/2018 | 02/19/2019 | 05/02/2019 | 08/28/2019 | 11/08/2019 | 04/11/2018 | 02/19/2019 | 05/02/2019 | 08/28/2019 | 11/08/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0037 | <0.0036 | <0.0035 | <0.0038 | <0.0049 | <0.0048 | <0.0075 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | <0.0073 | <0.0036 | <0.0036 | <0.0034 | <0.0036 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0037 | <0.0036 | <0.0035 | <0.0038 | <0.0049 | <0.0048 | <0.0075 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | <0.0073 | <0.0036 | <0.0036 | <0.0034 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0037 | <0.0036 | <0.0035 | <0.0038 | <0.0049 | <0.0048 | <0.0075 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | <0.0073 | <0.0036 | <0.0036 | <0.0034 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | <0.0049 | <0.0048 | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0073 | <0.0072 | <0.007 | <0.0077 | <0.0049 | <0.0048 | <0.015 | <0.0072 | <0.0072 | <0.0067 | <0.0072 | <0.015 | <0.0071 | <0.0071 | <0.0069 | <0.0072 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | <0.0049 | <0.0048 | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.0088 | 0.0075 | 0.0087 | 0.0074 | 0.0083 | 0.017 | 0.018 | 0.016 | 0.016 | 0.017 | 0.017 | 0.0078 | 0.0076 | 0.0082 | 0.0086 | 0.0093 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0037 | <0.0036 | <0.0035 | <0.0038 | <0.0049 | <0.0048 | <0.0038 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0034 | <0.0036 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0037 | <0.0036 | <0.0035 | <0.0038 | <0.0049 | <0.0048 | <0.0038 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0034 | <0.0036 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0073 | <0.0072 | <0.007 | <0.0077 | - | - | <0.0075 | <0.0072 | <0.0072 | <0.0067 | <0.0072 | <0.0073 | <0.0071 | <0.0071 | <0.0069 | <0.0072 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0037 | <0.0036 | <0.0035 | <0.0038 | <0.0049 | <0.0048 | <0.0075 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | <0.0073 | <0.0036 | <0.0036 | <0.0034 | <0.0036 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0037 | <0.0036 | <0.0035 | <0.0038 | - | - | <0.0038 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0034 | <0.0036 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0037 | <0.0036 | 0.004 | <0.0038 | <0.0049 | <0.0048 | <0.0038 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0034 | 0.0039 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0037 | <0.0036 | <0.0035 | <0.0038 | <0.0098 | <0.0096 | 0.005 | 0.0047 | 0.0049 | 0.0055 | 0.0053 | <0.0036 | 0.0072 | 0.0056 | 0.0036 | 0.0098 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0037 | <0.0036 | <0.0035 | <0.0038 | <0.0049 | <0.0048 | <0.0038 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0034 | <0.0036 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0037 | <0.0036 | <0.0035 | <0.0038 | <0.0049 | <0.0048 | <0.0038 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0034 | <0.0036 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0037 | <0.0036 | <0.0035 | <0.0038 | <0.0049 | <0.0048 | <0.0038 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | <0.0036 | 0.0039 | <0.0036 | <0.0034 | 0.0036 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 0.004 | <0.0036 | <0.0035 | <0.0038 | <0.0049 | <0.0048 | <0.0038 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | <0.0036 | 0.0063 | <0.0036 | <0.0034 | 0.0066 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0037 | <0.0036 | <0.0035 | <0.0038 | <0.0049 | <0.0048 | <0.0038 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0034 | <0.0036 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.005 | 0.0047 | 0.0061 | 0.0026 | 0.009 | 0.0029 | <0.0038 | 0.0027 | 0.0027 | 0.0034 | 0.0035 | 0.0069 | 0.019 | 0.013 | 0.0066 | 0.024 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0037 | <0.0036 | <0.0035 | <0.0038 | 0.0058 | <0.0048 | <0.0038 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | 0.0048 | 0.0044 | 0.0046 | 0.0066 | 0.0089 |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.005 | 0.0047 | 0.0061 | 0.0026 | 0.015 | 0.0029 | ND | 0.0027 | 0.0027 | 0.0034 | 0.0035 | 0.012 | 0.023 | 0.018 | 0.013 | 0.033 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0037 | <0.0036 | <0.0035 | <0.0038 | <0.0049 | <0.0048 | <0.0038 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0034 | <0.0036 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0037 | <0.0036 | <0.0035 | <0.0038 | <0.0049 | <0.0048 | <0.0075 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | <0.0073 | <0.0036 | <0.0036 | <0.0034 | <0.0036 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0037 | <0.0036 | <0.0035 | <0.0038 | <0.0049 | <0.0048 | <0.0038 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0034 | <0.0036 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0037 | <0.0036 | <0.0035 | <0.0038 | <0.0049 | <0.0048 | <0.0038 | <0.0036 | <0.0036 | <0.0033 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0034 | <0.0036 |
| Total PFAS (Calculated) | NCL | NCL | 0.018 | 0.012 | 0.019 | 0.01 | 0.023 | 0.02 | 0.023 | 0.023 | 0.023 | 0.024 | 0.026 | 0.02 | 0.048 | 0.031 | 0.025 | 0.066 |

TABLE 4
GROUNDWATER ANALYTICAL DATA - PFAS
Wolver/Jewell Study Areas
Algoma Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | WV-PMW-7 | WV-PMW-7 | WV-PMW-7 | WV-PMW-7 | WV-PMW-7 | WV-PMW-7 | WV-PMW-7 | WV-PMW-7 | WV-PMW-7 | WV-MW-7D | WV-MW-7D | WV-MW-7D | WV-MW-7D | WV-MW-7M | WV-MW-7M | WV-MW-7M | WV-MW-7S |
|--|---|--|----------------|--------------------|----------------|----------------|----------------|----------------|----------------|----------------|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| Sample Name | | | PMW-WV-7 20-25 | PMW-WV-7 29.5-34.5 | PMW-WV-7 40-45 | PMW-WV-7 50-55 | PMW-WV-7 60-65 | PMW-WV-7 70-75 | PMW-WV-7 70-75 | PMW-WV-7 80-85 | PMW-WV-7 88.5-93.5 | MW-WV-7D | WV-GW-MW7D | WV-GW-MW 7D | WV-GW-MW-7D | WV-GW-MW7M | WV-GW-MW 7M | WV-GW-MW-7M | MW-WV-7S |
| Well Screen Interval (Feet below ground surface) | | | 20-25 | 29.5-34.5 | 40-45 | 50-55 | 60-65 | 70-75 | 80-85 | | 88.5-93.5 | 89.5-94.5 | 89.5-94.5 | 89.5-94.5 | 89.5-94.5 | 49.9-54.9 | 49.9-54.9 | 49.9-54.9 | 16.1-21.1 |
| Laboratory Sample ID | | | TJ26001-001 | TJ26001-002 | TJ26001-003 | TJ26001-004 | TJ26001-007 | TJ26001-008 | TJ26001-009 | TJ26001-010 | UB14084-007 | UE02030-009 | UH29005-001 | UK07051-003 | UE02030-008 | UH29005-003 | UK07051-002 | UB14084-005 | |
| Sample Date | | | 10/23/2018 | 10/23/2018 | 10/23/2018 | 10/23/2018 | 10/24/2018 | 10/24/2018 | 10/24/2018 | 10/24/2018 | 10/24/2018 | 02/13/2019 | 05/03/2019 | 08/26/2019 | 11/05/2019 | 05/03/2019 | 08/26/2019 | 11/05/2019 | 02/13/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0036 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0035 | <0.0038 | <0.0039 | |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0036 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0035 | <0.0038 | <0.0039 | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0036 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0035 | <0.0038 | <0.0039 | |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0072 | <0.0072 | <0.0071 | <0.0071 | <0.0071 | <0.0073 | <0.0071 | <0.0071 | <0.0077 | <0.0072 | <0.0071 | <0.0078 | <0.0072 | <0.007 | <0.0076 | <0.0078 | |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.0051 | 0.0064 | 0.0073 | 0.011 | 0.0066 | 0.0073 | 0.0095 | 0.0076 | 0.012 | 0.01 | 0.011 | 0.0097 | 0.0083 | 0.01 | 0.0091 | 0.0039 | |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0036 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0035 | <0.0038 | <0.0039 | |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0036 | 0.011 | 0.0092 | 0.012 | 0.009 | 0.0081 | 0.013 | 0.0053 | 0.013 | 0.013 | 0.013 | 0.012 | 0.01 | 0.011 | 0.0097 | <0.0039 | |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0072 | <0.0072 | <0.0071 | <0.0071 | <0.0071 | <0.0073 | <0.0071 | <0.0071 | <0.0077 | <0.0072 | <0.0071 | <0.0078 | <0.0072 | <0.007 | <0.0076 | <0.0078 | |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0036 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0035 | <0.0038 | <0.0039 | |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0036 | 0.0042 | 0.0042 | 0.006 | 0.0037 | 0.0039 | 0.0054 | 0.0068 | 0.0092 | 0.0078 | 0.0069 | 0.0077 | 0.0046 | 0.0053 | 0.0053 | <0.0039 | |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 0.0058 | 0.025 | 0.02 | 0.028 | 0.018 | 0.018 | 0.028 | 0.023 | 0.041 | 0.035 | 0.034 | 0.033 | 0.024 | 0.022 | 0.024 | 0.0044 | |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0036 | 0.0036 | <0.0035 | 0.0044 | 0.0039 | 0.0039 | 0.0047 | 0.0042 | 0.0056 | 0.0054 | 0.0055 | 0.0052 | 0.004 | 0.0043 | 0.0042 | 0.0047 | |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0036 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0035 | <0.0038 | <0.0039 | |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0036 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0035 | <0.0038 | <0.0039 | |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0036 | 0.0075 | 0.006 | 0.009 | 0.0064 | 0.0065 | 0.0092 | 0.0087 | 0.012 | 0.012 | 0.011 | 0.01 | 0.0073 | 0.0078 | 0.0074 | <0.0039 | |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0036 | 0.0073 | 0.0064 | 0.0088 | 0.0062 | 0.0075 | 0.0099 | 0.0074 | 0.011 | 0.0097 | 0.0095 | 0.0081 | 0.0066 | 0.0061 | 0.0059 | 0.011 | |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0036 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0035 | <0.0038 | <0.0039 | |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.015 | 0.063 | 0.052 | 0.075 | 0.051 | 0.055 | 0.077 | 0.063 | 0.11 | 0.1 | 0.12 | 0.095 | 0.067 | 0.077 | 0.076 | 0.011 | |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 0.018 | 0.23 | 0.23 | 0.32 | 0.27 | 0.26 | 0.31 | 0.06 | 0.14 | 0.16 | 0.2 | 0.17 | 0.27 | 0.28 | 0.3 | <0.0039 | |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.033 | 0.29 | 0.28 | 0.4 | 0.32 | 0.32 | 0.39 | 0.12 | 0.25 | 0.26 | 0.32 | 0.27 | 0.34 | 0.36 | 0.38 | 0.011 | |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0036 | <0.0036 | <0.0035 | 0.0039 | 0.0043 | 0.0045 | 0.0056 | 0.0035 | 0.0049 | 0.0052 | 0.005 | 0.0046 | 0.0038 | 0.0039 | <0.0038 | 0.0091 | |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0036 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0035 | <0.0038 | <0.0039 | |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0036 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0035 | <0.0038 | <0.0039 | |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0036 | <0.0036 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0038 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0035 | <0.0038 | <0.0039 | |
| Total PFAS (Calculated) | NCL | NCL | 0.044 | 0.4 | 0.34 | 0.48 | 0.38 | 0.37 | 0.47 | 0.19 | 0.36 | 0.36 | 0.42 | 0.36 | 0.41 | 0.43 | 0.44 | 0.044 | |

TABLE 4
GROUNDWATER ANALYTICAL DATA - PFAS
Wolver/Jewell Study Areas
Algoma Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | WV-MW-7S | WV-MW-7S | WV-MW-7S | WV-PMW-8 | WV-PMW-8 | WV-PMW-8 | WV-PMW-8 | WV-PMW-8 | WV-PMW-8 | WV-MW-8D | WV-MW-8D | WV-MW-8D | WV-MW-8D | WV-MW-8M | WV-MW-8M | WV-MW-8M |
|--|---|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Name | | | WV-GW-MW7S | WV-GW-MW 7S | WV-GW-MW-7S | WV-8 30-35 | WV-8 40-45 | WV-8 50-55 | WV-8 60-65 | PMW-WV-8-109-114 | PMW-WV-8-119-124 | MW-WW-8D | MW-WV-8D | WV-GW-MW 8D | VW-GW-MW-8D | MW-WW-8M | MW-WV-8M | WV-GW-MW8M |
| Well Screen Interval (Feet below ground surface) | | | 16.1-21.1 | 16.1-21.1 | 16.1-21.1 | 30-35 | 40-45 | 50-55 | 60-65 | 109-114 | 119-124 | 117.2-122.2 | 117.2-122.2 | 117.2-122.2 | 117.2-122.2 | 60-65 | 60-65 | 60-65 |
| Laboratory Sample ID | | | UE02030-007 | UH29005-002 | UK07051-001 | TE03004-001 | TE03004-002 | TE03004-003 | TE03004-004 | TE09005-001 | TE09005-002 | TG07028-003 | UB16022-009 | UH29005-004 | UK09009-001 | TG07028-002 | UB14084-002 | UE02030-003 |
| Sample Date | | | 05/03/2019 | 08/26/2019 | 11/05/2019 | 05/01/2018 | 05/01/2018 | 05/01/2018 | 05/01/2018 | 05/08/2018 | 05/08/2018 | 07/05/2018 | 02/15/2019 | 08/26/2019 | 11/08/2019 | 07/05/2018 | 02/12/2019 | 05/01/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0035 | <0.0034 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | <0.0035 | <0.0038 | <0.0036 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0035 | <0.0034 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | <0.0035 | <0.0038 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0035 | <0.0034 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | <0.0035 | <0.0038 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0071 | <0.0068 | <0.0078 | <0.0071 | <0.0069 | <0.0069 | <0.0072 | <0.007 | <0.007 | <0.0069 | <0.007 | <0.0069 | <0.0075 | <0.007 | <0.0075 | <0.0072 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0035 | <0.0034 | <0.0039 | 0.016 | 0.023 | 0.054 | 0.025 | <0.0035 | 0.0038 | <0.0035 | <0.0035 | 0.0034 | <0.0037 | 0.073 | 0.083 | 0.081 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0035 | <0.0034 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | <0.0035 | <0.0038 | <0.0036 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0035 | <0.0034 | <0.0039 | 0.0039 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | <0.0035 | <0.0038 | <0.0036 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0071 | <0.0068 | <0.0078 | <0.0071 | <0.0069 | <0.0069 | <0.0072 | <0.007 | <0.007 | <0.0069 | <0.007 | <0.0069 | <0.0075 | <0.007 | <0.0075 | <0.0072 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0035 | <0.0034 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | <0.0035 | <0.0038 | <0.0036 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0035 | <0.0034 | <0.0039 | 0.0043 | 0.0051 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | <0.0035 | <0.0038 | <0.0036 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0035 | 0.0065 | <0.0039 | 0.021 | 0.02 | 0.011 | 0.012 | 0.0047 | 0.0041 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | 0.01 | 0.012 | 0.01 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0035 | 0.028 | 0.0053 | 0.0065 | 0.0058 | 0.0077 | 0.0056 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | 0.0085 | 0.0097 | 0.01 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0035 | <0.0034 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | <0.0035 | <0.0038 | <0.0036 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0035 | <0.0034 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | <0.0035 | <0.0038 | <0.0036 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0035 | 0.016 | 0.0054 | 0.0092 | 0.0069 | 0.0049 | 0.0043 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | 0.0042 | 0.0052 | 0.0046 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0035 | 0.028 | 0.0079 | 0.012 | 0.011 | 0.0096 | 0.0067 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | 0.0087 | 0.011 | 0.011 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0035 | <0.0034 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | <0.0035 | <0.0038 | <0.0036 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.011 | 0.026 | 0.011 | 0.085 | 0.06 | 0.031 | 0.037 | 0.011 | 0.0059 | 0.0048 | 0.0048 | 0.0052 | 0.0057 | 0.028 | 0.03 | 0.03 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 0.0036 | <0.0034 | <0.0039 | 0.039 | 0.0065 | 0.0061 | 0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | 0.0045 | 0.0065 | 0.005 |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.015 | 0.026 | 0.011 | 0.12 | 0.067 | 0.037 | 0.041 | 0.011 | 0.0059 | 0.0048 | 0.0048 | 0.0052 | 0.0057 | 0.033 | 0.037 | 0.035 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0035 | 0.031 | 0.0069 | 0.0068 | 0.0074 | 0.0074 | 0.0047 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | 0.0081 | 0.0093 | 0.0086 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0035 | <0.0034 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | <0.0035 | <0.0038 | <0.0036 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0035 | <0.0034 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | <0.0035 | <0.0038 | <0.0036 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0035 | <0.0034 | <0.0039 | <0.0035 | <0.0035 | <0.0035 | <0.0036 | <0.0035 | <0.0035 | <0.0035 | <0.0035 | <0.0034 | <0.0037 | <0.0035 | <0.0038 | <0.0036 |
| Total PFAS (Calculated) | NCL | NCL | 0.015 | 0.1 | 0.037 | 0.2 | 0.15 | 0.13 | 0.099 | 0.016 | 0.014 | 0.0048 | 0.0048 | 0.0086 | 0.0057 | 0.15 | 0.17 | 0.16 |

TABLE 4
GROUNDWATER ANALYTICAL DATA - PFAS
Wolver/Jewell Study Areas
Algoma Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | WV-MW-8M | WV-MW-8M | WV-MW-8S | WV-MW-8S | WV-MW-8S | WV-MW-8S | WV-MW-8S | WV-MW-8S | WV-MW-8S | WV-PMW-9 | WV-PMW-9 | WV-MW-9 | WV-MW-9 | WV-MW-9 | WV-MW-9 | WV-MW-9 | WV-MW-9 | WV-PMW-10 |
|--|---|--|-------------|-------------|--------------|--------------|--------------|---------------|--------------|--------------|----------------|----------------|-------------|-------------|-------------|-------------|-------------|-----------------|---------|-----------|
| Sample Name | | | WV-GW-MW 8M | WV-GW-MW-8M | MW-WW-8S | MW-WV-8S | WV-GW-MW8S | WV-GW-MW8SDUP | WV-GW-MW 8S | WV-GW-MW-8S | PMW-WV-9 79-84 | PMW-WV-9 89-94 | MW-WW-9 | MW-WV-9 | WV-GW-MW9 | WV-GW-MW9 | WV-GW-MW9 | WV-MW-10 (8-18) | | |
| Well Screen Interval (Feet below ground surface) | | | 60-65 | 60-65 | 30-35 | 30-35 | 30-35 | 30-35 | 30-35 | 30-35 | 79-84 | 89-94 | 92.3-97.3 | 92.3-97.3 | 92.3-97.3 | 92.3-97.3 | 92.3-97.3 | 8-18 | | |
| Laboratory Sample ID | | | UH29005-005 | UK07025-007 | TG07028-001 | UB14084-001 | UE02030-004 | UE02030-005 | UH29005-006 | UK07025-006 | TE12011-001 | TE12011-002 | TG07028-004 | UB20051-012 | UE09028-015 | UI05007-009 | UK13023-011 | UB28083-001 | | |
| Sample Date | | | 08/26/2019 | 11/06/2019 | 07/05/2018 | 02/12/2019 | 05/01/2019 | 05/01/2019 | 08/26/2019 | 11/06/2019 | 05/10/2018 | 05/10/2018 | 07/05/2018 | 02/21/2019 | 05/10/2019 | 09/04/2019 | 11/11/2019 | 02/25/2019 | | |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0036 | <0.0039 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0038 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0037 | <0.0038 | <0.0036 | | |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0036 | <0.0039 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0038 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0037 | <0.0038 | <0.0036 | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0036 | <0.0039 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0038 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0037 | <0.0038 | <0.0036 | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0071 | <0.0078 | <0.0069 | <0.0074 | <0.0073 | <0.0072 | <0.0068 | <0.0074 | <0.0076 | <0.0073 | <0.007 | <0.0069 | <0.0071 | <0.0075 | <0.0077 | <0.0072 | | |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.092 | 0.08 | 0.018 | 0.021 | 0.012 | 0.014 | 0.015 | 0.013 | <0.0038 | 0.011 | 0.011 | 0.014 | 0.012 | 0.014 | 0.015 | 0.0077 | | |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0036 | <0.0039 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0038 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0037 | <0.0038 | <0.0036 | | |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0036 | <0.0039 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | 0.022 | 0.025 | 0.026 | 0.023 | 0.026 | 0.047 | 0.038 | 0.0046 | | |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0071 | <0.0078 | <0.0069 | <0.0074 | <0.0073 | <0.0072 | <0.0068 | <0.0074 | <0.0076 | <0.0073 | <0.007 | <0.0069 | <0.0071 | <0.0075 | <0.0077 | <0.0072 | | |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0036 | <0.0039 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | 0.2 | 0.026 | 0.031 | 0.032 | 0.027 | 0.025 | 0.021 | <0.0036 | | |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0036 | <0.0039 | 0.004 | 0.0042 | 0.0042 | 0.0043 | 0.0037 | 0.0037 | 0.0074 | 0.031 | 0.033 | 0.036 | 0.035 | 0.039 | 0.043 | <0.0036 | | |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 0.011 | 0.01 | 0.016 | 0.019 | 0.016 | 0.016 | 0.017 | 0.02 | 0.042 | 0.13 | 0.11 | 0.13 | 0.13 | 0.18 | 0.21 | 0.0098 | | |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | 0.011 | 0.0099 | 0.006 | 0.0069 | 0.0062 | 0.0063 | 0.0061 | 0.0056 | 0.0069 | 0.0073 | 0.0063 | 0.0075 | 0.0081 | 0.0099 | 0.011 | <0.0036 | | |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0036 | <0.0039 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0038 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0037 | <0.0038 | <0.0036 | | |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0036 | <0.0039 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0038 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0037 | <0.0038 | <0.0036 | | |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | 0.0055 | 0.0049 | 0.0051 | 0.0048 | 0.0047 | 0.005 | 0.0054 | 0.007 | 0.017 | 0.045 | 0.04 | 0.047 | 0.049 | 0.062 | 0.067 | <0.0036 | | |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 0.012 | 0.011 | 0.0045 | 0.0038 | 0.0042 | <0.0036 | 0.004 | 0.0057 | 0.0083 | 0.021 | 0.019 | 0.022 | 0.025 | 0.03 | 0.029 | 0.0042 | | |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0036 | <0.0039 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0038 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0037 | <0.0038 | <0.0036 | | |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.033 | 0.031 | 0.05 | 0.055 | 0.052 | 0.051 | 0.066 | 0.092 | 0.21 | 0.47 | 0.47 | 0.53 | 0.54 | 0.73 | 0.77 | 0.023 | | |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 0.0052 | 0.0055 | 0.042 | 0.058 | 0.046 | 0.048 | 0.042 | 0.034 | 1.6 | 0.36 | 0.59 | 0.54 | 0.47 | 0.48 | 0.31 | | | |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.038 | 0.037 | 0.092 | 0.11 | 0.098 | 0.099 | 0.11 | 0.13 | 1.8 | 0.83 | 1.1 | 1.1 | 1 | 1.2 | 1.3 | 0.33 | | |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | 0.0096 | 0.009 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0038 | 0.0076 | 0.0071 | 0.0083 | 0.0086 | 0.01 | 0.011 | <0.0036 | | |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0036 | <0.0039 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0038 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0037 | <0.0038 | <0.0036 | | |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0036 | <0.0039 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0038 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0037 | <0.0038 | <0.0036 | | |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0036 | <0.0039 | <0.0035 | <0.0037 | <0.0036 | <0.0036 | <0.0034 | <0.0037 | <0.0038 | <0.0036 | <0.0035 | <0.0034 | <0.0035 | <0.0037 | <0.0038 | <0.0036 | | |
| Total PFAS (Calculated) | NCL | NCL | 0.18 | 0.2 | 0.15 | 0.17 | 0.15 | 0.14 | 0.16 | 0.18 | 2.1 | 1.1 | 1.3 | 1.4 | 1.3 | 1.6 | 1.7 | 0.36 | | |

TABLE 4
GROUNDWATER ANALYTICAL DATA - PFAS
Wolver/Jewell Study Areas
Algoma Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | WV-PMW-10 | WV-PMW-10 | WV-PMW-10 | WV-PMW-10 | WV-MW-10D | WV-MW-10D | WV-MW-10D | WV-MW-10M | WV-MW-10M | WV-MW-10M | WV-MW-10S | WV-MW-10S | WV-MW-10S | WV-MW-10S | WV-PMW-11 | WV-PMW-11 | WV-PMW-11 |
|--|---|--|------------------|------------------|------------------|--------------------|-------------|-------------|--------------|-------------|-------------|--------------|-------------|-------------|--------------|-------------|-------------|-------------------|-----------|
| Sample Name | | | WV-MW-10 (18-28) | WV-MW-10 (26-36) | WV-MW-10 (66-76) | WV-MW-10 (163-168) | WV-GW-MW10D | WV-GW-MW10D | WV-GW-MW-10D | WV-GW-MW10M | WV-GW-MW10M | WV-GW-MW-10M | WV-GW-MW10S | WV-GW-MW10S | WV-GW-MW-10S | SB-11 20-25 | SB-11 29-34 | SB-11-107.5-112.5 | |
| Well Screen Interval (Feet below ground surface) | | | 18-28 | 26-36 | 66-76 | 163-168 | 165-170 | 165-170 | 165-170 | 69.9-74.9 | 69.9-74.9 | 69.9-74.9 | 7-12 | 7-12 | 7-12 | 20-25 | 29-34 | 107.5-112.5 | |
| Laboratory Sample ID | | | UB28083-002 | UB28083-003 | UB28083-004 | UC21100-001 | UE09028-004 | UH29005-011 | UK07025-003 | UE02030-002 | UH29005-009 | UK07025-002 | UE02030-001 | UH29005-010 | UK07025-001 | UA05034-001 | UA05034-002 | UA11012-001 | |
| Sample Date | | | 02/25/2019 | 02/26/2019 | 02/27/2019 | 03/13/2019 | 05/08/2019 | 08/27/2019 | 11/06/2019 | 04/30/2019 | 08/27/2019 | 11/06/2019 | 04/30/2019 | 08/27/2019 | 11/06/2019 | 01/03/2019 | 01/03/2019 | 01/08/2019 | |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0083 | <0.0075 | <0.0073 | <0.0073 | <0.0072 | <0.0071 | <0.0078 | <0.0071 | <0.0072 | <0.0074 | <0.0073 | <0.0071 | <0.007 | <0.0072 | <0.0071 | <0.0071 | |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | 0.0059 | 0.0039 | 0.0042 | 0.0039 | <0.0036 | <0.0036 | <0.0037 | 0.011 | 0.013 | 0.009 | 0.0051 | <0.0036 | <0.0036 | |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | 0.014 | 0.014 | 0.016 | <0.0036 | <0.0036 | <0.0036 | |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0083 | <0.0075 | <0.0073 | <0.0073 | <0.0072 | <0.0071 | <0.0078 | <0.0071 | <0.0072 | <0.0074 | <0.0073 | <0.0071 | <0.007 | <0.0072 | <0.0071 | <0.0071 | |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | 0.006 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | 0.0057 | 0.006 | 0.0044 | <0.0036 | <0.0036 | <0.0036 | |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | 0.023 | 0.029 | 0.021 | <0.0036 | <0.0036 | <0.0036 | |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | 0.0037 | 0.01 | 0.0051 | <0.0036 | <0.0036 | <0.0036 | |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | 0.0053 | 0.012 | 0.0081 | <0.0036 | <0.0036 | <0.0036 | |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | <0.0037 | 0.013 | 0.0048 | <0.0036 | <0.0036 | <0.0036 | |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.0021 | <0.0019 | <0.0018 | 0.0045 | 0.0027 | 0.0029 | 0.0026 | <0.0018 | <0.0018 | <0.0018 | 0.061 | 0.11 | 0.092 | 0.0029 | <0.0018 | <0.0018 | |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 0.0082 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | 0.49 | 1 | 0.69 | <0.0036 | <0.0036 | <0.0036 | |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.0082 | ND | ND | 0.0045 | 0.0027 | 0.0029 | 0.0026 | ND | ND | ND | 0.55 | 1.1 | 0.78 | 0.0029 | ND | ND | |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | <0.0037 | 0.0092 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0041 | <0.0038 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0039 | <0.0036 | <0.0036 | <0.0037 | <0.0037 | <0.0035 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | |
| Total PFAS (Calculated) | NCL | NCL | 0.0082 | ND | ND | 0.016 | 0.0066 | 0.0071 | 0.0065 | ND | ND | ND | 0.61 | 1.2 | 0.85 | 0.008 | ND | ND | |

TABLE 4
GROUNDWATER ANALYTICAL DATA - PFAS
Wolver/Jewell Study Areas
Algoma Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | WV-PMW-11 | WV-PMW-11 | WV-PMW-11 | WV-PMW-11 | WV-PMW-11 | WV-MW-11D | WV-MW-11D | WV-MW-11D | WV-MW-11D | WV-MW-11D | WV-MW-11S | WV-MW-11S | WV-MW-11S | WV-MW-11S | WV-PMW-12 | WV-PMW-12 |
|--|---|--|---------------|---------------|---------------|---------------|-------------------|-------------|-------------|-------------|--------------|------------------|-------------|-------------|-------------|--------------|-------------|-------------|
| Sample Name | | | SB-11-118-123 | SB-11-128-133 | SB-11-138-143 | SB-11-148-153 | SB-11-158.5-163.5 | MW-WV-11D | WV-GW-MW11D | WV-GW-MW11D | WV-GW-MW-11D | WV-GW-MW-11D DUP | MW-WV-11S | WV-GW-MW11S | WV-GW-MW11S | WV-GW-MW-11S | SB-12 75-80 | SB-12 85-90 |
| Well Screen Interval (Feet below ground surface) | | | 118-123 | 128-133 | 138-143 | 148-153 | 158.5-163.5 | 158.9-163.9 | 158.9-163.9 | 158.9-163.9 | 158.9-163.9 | 158.9-163.9 | 29.4-34.4 | 29.4-34.4 | 29.4-34.4 | 29.4-34.4 | 75-80 | 85-90 |
| Laboratory Sample ID | | | UA11012-002 | UA11012-003 | UA11012-004 | UA11012-005 | UA11012-006 | UB16022-001 | UE02030-012 | UH29005-012 | UK07051-006 | UK07051-007 | UB16022-002 | UE02030-013 | UH29005-013 | UK07051-008 | TJ31080-001 | TJ31080-002 |
| Sample Date | | | 01/08/2019 | 01/08/2019 | 01/09/2019 | 01/09/2019 | 01/09/2019 | 02/14/2019 | 05/02/2019 | 08/27/2019 | 11/05/2019 | 11/05/2019 | 02/14/2019 | 05/02/2019 | 08/27/2019 | 11/05/2019 | 10/29/2018 | 10/29/2018 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0072 | <0.0071 | <0.0072 | <0.0072 | <0.0071 | <0.0073 | <0.0072 | <0.0081 | <0.0074 | <0.0074 | <0.0072 | <0.0072 | <0.0071 | <0.0072 | <0.0072 | <0.0086 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0072 | <0.0071 | <0.0072 | <0.0072 | <0.0071 | <0.0073 | <0.0072 | <0.0081 | <0.0074 | <0.0074 | <0.0072 | <0.0072 | <0.0071 | <0.0072 | <0.0072 | <0.0086 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.0018 | <0.0018 | <0.0018 | <0.0018 | <0.0018 | <0.0018 | <0.0018 | <0.002 | <0.0019 | <0.0018 | <0.0018 | <0.0018 | <0.0018 | <0.0018 | <0.0018 | <0.0021 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0035 | <0.0037 | <0.0036 | <0.004 | <0.0037 | <0.0037 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0043 |
| Total PFAS (Calculated) | NCL | NCL | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

TABLE 4
GROUNDWATER ANALYTICAL DATA - PFAS
Wolver/Jewell Study Areas
Algoma Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | WV-PMW-12 | WV-PMW-12 | WV-PMW-12 | WV-PMW-12 | WV-MW-12D | WV-MW-12D | WV-MW-12D | WV-MW-12D | WV-MW-12M | WV-MW-12M | WV-MW-12M | WV-MW-12M | WV-MW-12S | WV-PMW-13 | WV-MW-12S | WV-MW-12S |
|--|---|--|---------------|---------------|---------------|---------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|--------------|-------------|----------------|-------------|-------------|
| Sample Name | | | SB-12 145-150 | SB-12 155-160 | SB-12 165-170 | SB-12 175-180 | MW-WV-12D | WV-GW-MW12D | WV-GW-MW12D | WV-GW-MW-12D | MW-WV-12M | WV-GW-MW12M | WV-GW-MW12M | WV-GW-MW-12M | MW-WV-12S | WV-MW-13(0-10) | WV-GW-MW12S | WV-GW-MW12S |
| Well Screen Interval (Feet below ground surface) | | | 145-150 | 155-160 | 165-170 | 175-180 | 179.2-184.2 | 179.2-184.2 | 179.2-184.2 | 179.2-184.2 | 146.6-151.6 | 146.6-151.6 | 146.6-151.6 | 146.6-151.6 | 75.8-80.8 | 0-10 | 75.8-80.8 | 75.8-80.8 |
| Laboratory Sample ID | | | TL01010-001 | TL01010-002 | TL01010-003 | TL01010-004 | UB14084-006 | UE09028-006 | UH31001-004 | UK09008-003 | UB14084-004 | UE09028-007 | UH31001-007 | UK09008-002 | UB14084-003 | UB16023-001 | UE09028-008 | UH31001-003 |
| Sample Date | | | 11/26/2018 | 11/27/2018 | 11/27/2018 | 11/29/2018 | 02/13/2019 | 05/07/2019 | 08/29/2019 | 11/07/2019 | 02/13/2019 | 05/07/2019 | 08/30/2019 | 11/07/2019 | 02/12/2019 | 02/14/2019 | 05/07/2019 | 08/29/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | <0.0038 | <0.0035 | <0.0036 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | <0.0038 | <0.0035 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | <0.0038 | <0.0035 | <0.0036 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.026 | <0.023 | <0.011 | <0.0078 | <0.0074 | <0.0071 | <0.007 | <0.0071 | <0.0074 | <0.0074 | <0.0068 | <0.0068 | <0.0072 | <0.0077 | <0.0071 | <0.0072 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | 0.0045 | <0.0035 | <0.0036 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | <0.0038 | <0.0035 | <0.0036 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | <0.0038 | <0.0035 | <0.0036 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.026 | <0.023 | <0.011 | <0.0078 | <0.0074 | <0.0071 | <0.007 | <0.0071 | <0.0074 | <0.0074 | <0.0068 | <0.0068 | <0.0072 | <0.0077 | <0.0071 | <0.0072 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | <0.0038 | <0.0035 | <0.0036 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | <0.0038 | <0.0035 | <0.0036 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | 0.0059 | <0.0035 | <0.0036 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | 0.0066 | <0.0035 | <0.0036 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | <0.0038 | <0.0035 | <0.0036 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | <0.0038 | <0.0035 | <0.0036 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | <0.0038 | <0.0035 | <0.0036 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | <0.0038 | <0.0035 | <0.0036 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | <0.0038 | <0.0035 | <0.0036 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.008 | <0.0057 | 0.0034 | <0.002 | <0.0018 | <0.0018 | <0.0017 | <0.0018 | <0.0018 | <0.0017 | <0.0018 | <0.0017 | <0.0018 | 0.029 | <0.0018 | <0.0018 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | 0.13 | <0.0035 | <0.0036 |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.008 | ND | 0.0034 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.16 | ND | ND |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | <0.0038 | <0.0035 | <0.0036 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | <0.0038 | <0.0035 | <0.0036 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | <0.0038 | <0.0035 | <0.0036 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.013 | <0.011 | <0.0056 | <0.0039 | <0.0037 | <0.0035 | <0.0035 | <0.0035 | <0.0037 | <0.0037 | <0.0034 | <0.0034 | <0.0036 | <0.0038 | <0.0035 | <0.0036 |
| Total PFAS (Calculated) | NCL | NCL | 0.008 | ND | 0.0034 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.18 | ND | ND |

TABLE 4
GROUNDWATER ANALYTICAL DATA - PFAS
Wolver/Jewell Study Areas
Algoma Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | WV-MW-12S | WV-PMW-13 | WV-PMW-13 | WV-PMW-13 | WV-PMW-13 | WV-PMW-13 | WV-MW-13D | WV-MW-13D | WV-MW-13D | WV-MW-13M | WV-MW-13M | WV-MW-13M | WV-MW-13S | WV-MW-13S | WV-MW-13S | WV-PMW-14 | WV-PMW-14 |
|--|---|--|--------------|-----------------|------------------|------------------|------------------|-------------|-------------|--------------|-------------|-------------|--------------|-------------|-------------|--------------|--------------------|-----------------|-----------|
| Sample Name | | | WV-GW-MW-12S | WV-MW-13(10-20) | WV-MW-13 (35-45) | WV-MW-13 (45-55) | WV-MW-13 (53-63) | WV-GW-MW13D | WV-GW-MW13D | WV-GW-MW-13D | WV-GW-MW13M | WV-GW-MW13M | WV-GW-MW-13M | WV-GW-MW13S | WV-GW-MW13S | WV-GW-MW-13S | WV-MW-14 (139-144) | WV-MW-14 (9-14) | |
| Well Screen Interval (Feet below ground surface) | | | 75.8-80.8 | 10-20 | 35-45 | 45-55 | 53-63 | 58.8-63.8 | 58.8-63.8 | 58.8-63.8 | 18.1-23.1 | 18.1-23.1 | 18.1-23.1 | 1.7-6.7 | 1.7-6.7 | 1.7-6.7 | 139-144 | 9-14 | |
| Laboratory Sample ID | | | UK09008-001 | UB16023-002 | UB20051-007 | UB20051-008 | UB20051-009 | UE09028-002 | UH29005-017 | UK09008-006 | UE09028-001 | UH29005-019 | UK09008-005 | UE09028-003 | UH29005-016 | UK09008-004 | UD30028-001 | UD20015-001 | |
| Sample Date | | | 11/07/2019 | 02/14/2019 | 02/18/2019 | 02/18/2019 | 02/18/2019 | 05/08/2019 | 08/28/2019 | 11/07/2019 | 05/08/2019 | 08/28/2019 | 11/07/2019 | 05/08/2019 | 08/28/2019 | 11/07/2019 | 04/24/2019 | 04/15/2019 | |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0036 | <0.0037 | |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0036 | <0.0037 | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0036 | <0.0037 | |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0079 | <0.0084 | <0.007 | <0.0073 | <0.007 | <0.0072 | <0.0073 | <0.0076 | <0.007 | <0.0072 | <0.0072 | <0.0072 | <0.0072 | <0.0076 | <0.0072 | <0.0073 | |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.004 | <0.0042 | 0.0053 | 0.011 | 0.01 | 0.01 | 0.01 | 0.0098 | 0.0052 | 0.0047 | 0.005 | <0.0036 | <0.0036 | <0.0038 | <0.0036 | 0.015 | |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0036 | <0.0037 | |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0036 | <0.0037 | |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0079 | <0.0084 | <0.007 | <0.0073 | <0.007 | <0.0072 | <0.0073 | <0.0076 | <0.007 | <0.0072 | <0.0072 | <0.0072 | <0.0072 | <0.0076 | <0.0072 | <0.0073 | |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0036 | <0.0037 | |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0036 | <0.0037 | |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | 0.0038 | 0.005 | 0.0048 | 0.0056 | <0.0036 | <0.0036 | 0.004 | <0.0036 | 0.0062 | |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | 0.0052 | 0.0066 | 0.0062 | 0.0045 | 0.0076 | 0.0078 | <0.0036 | <0.0037 | |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0036 | <0.0037 | |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0036 | <0.0037 | |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0036 | <0.0037 | |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0036 | <0.0037 | |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0036 | <0.0037 | |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.002 | 0.0091 | 0.0032 | 0.0023 | 0.0025 | 0.0027 | 0.0031 | 0.003 | 0.012 | 0.016 | 0.015 | 0.011 | 0.014 | 0.018 | <0.0018 | 0.011 | |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.004 | 0.014 | 0.0062 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | 0.016 | 0.017 | 0.017 | 0.022 | 0.041 | 0.085 | <0.0036 | 0.0059 | |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | 0.023 | 0.0094 | 0.0023 | 0.0025 | 0.0027 | 0.0031 | 0.003 | 0.028 | 0.033 | 0.032 | 0.033 | 0.055 | 0.1 | ND | 0.017 | |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0036 | <0.0037 | |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0036 | <0.0037 | |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0036 | <0.0037 | |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.004 | <0.0042 | <0.0035 | <0.0037 | <0.0035 | <0.0036 | <0.0036 | <0.0038 | <0.0035 | <0.0036 | <0.0036 | <0.0036 | <0.0036 | <0.0038 | <0.0036 | <0.0037 | |
| Total PFAS (Calculated) | NCL | NCL | ND | 0.0 | 0.015 | 0.013 | 0.013 | 0.013 | 0.013 | 0.017 | 0.043 | 0.049 | 0.049 | 0.038 | 0.063 | 0.11 | ND | 0.038 | |

TABLE 4
GROUNDWATER ANALYTICAL DATA - PFAS
Wolver/Jewell Study Areas
Algoma Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | WV-MW-14D | WV-MW-14D | WV-MW-14S | WV-MW-14S | WV-PMW-15 | WV-PMW-15 | WV-PMW-15 | WV-MW-15A | WV-MW-15B | WV-MW-15C | WV-PMW-16 | WV-MW-15D | WV-MW-15D | WV-PMW-16 | WV-PMW-16 | WV-MW-16D |
|--|---|--|-------------|--------------|-------------|--------------|-----------------|----------------|----------------|--------------|--------------|--------------|-----------------|--------------|------------------|------------------|------------------|-------------|
| Sample Name | | | WV-GW-MW14D | VW-GW-MW-14D | WV-GW-MW14S | WV-GW-MW-14S | WV-MW-15 (9-14) | WV-MW-15 33-38 | WV-MW-15 43-48 | WV-GW-MW-15A | WV-GW-MW-15B | WV-GW-MW-15C | WV-MW-16 (4-14) | WV-GW-MW-15D | WV-GW-MW-15D DUP | WV-MW-16 (12-22) | WV-MW-16 (86-96) | WV-GW-MW16D |
| Well Screen Interval (Feet below ground surface) | | | 142.3-147.3 | 142.3-147.3 | 8.9-13.9 | 8.9-13.9 | 9-14 | 33-38 | 43-48 | 9-14 | 33.1-38.1 | 43.7-48.5 | 4-14 | 135.1-137.8 | 135.1-137.8 | 12-22 | 86-96 | 91.7-96.7 |
| Laboratory Sample ID | | | UH29005-018 | UK09009-002 | UH29005-015 | UK09008-007 | UH22047-001 | UH23038-001 | UH23038-002 | UK13023-008 | UK13023-009 | UK13023-010 | UC23027-001 | UK13023-013 | UK13023-014 | UC23027-002 | UC23027-003 | UE09028-005 |
| Sample Date | | | 08/28/2019 | 11/08/2019 | 08/28/2019 | 11/07/2019 | 08/19/2019 | 08/21/2019 | 08/21/2019 | 11/11/2019 | 11/11/2019 | 11/11/2019 | 03/19/2019 | 11/11/2019 | 11/11/2019 | 03/20/2019 | 03/22/2019 | 05/08/2019 |
| Parameter (µg/L) | | | | | | | | | | | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0034 | <0.0035 | <0.0034 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0038 | <0.0037 | <0.0042 | <0.0037 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0034 | <0.0035 | <0.0034 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0038 | <0.0037 | 0.006 | <0.0037 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0034 | <0.0035 | <0.0034 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0038 | <0.0037 | <0.0042 | <0.0037 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0068 | <0.007 | <0.0068 | <0.0076 | <0.0069 | <0.0076 | <0.0072 | <0.0077 | <0.0076 | <0.0074 | <0.0071 | <0.0074 | <0.0075 | <0.0073 | <0.0083 | <0.0074 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | 0.029 | 0.03 | 0.015 | 0.008 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | 0.0083 | <0.0037 | <0.0038 | 0.025 | <0.0042 | <0.0037 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0034 | <0.0035 | <0.0034 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0038 | <0.0037 | <0.0042 | <0.0037 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | 0.0035 | 0.0036 | <0.0034 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0038 | <0.0037 | <0.0042 | <0.0037 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0068 | <0.007 | <0.0068 | <0.0076 | <0.0069 | <0.0076 | <0.0072 | <0.0077 | <0.0076 | <0.0074 | <0.0071 | <0.0074 | <0.0075 | <0.0073 | <0.0083 | <0.0074 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0034 | <0.0035 | <0.0034 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0038 | <0.0037 | <0.0042 | <0.0037 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | 0.064 | 0.07 | <0.0034 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0038 | 0.006 | <0.0042 | <0.0037 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | 0.17 | 0.16 | 0.0085 | 0.01 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0038 | 0.011 | <0.0042 | <0.0037 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | 0.011 | 0.0099 | <0.0034 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | 0.01 | <0.0037 | <0.0038 | 0.059 | <0.0042 | <0.0037 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0034 | <0.0035 | <0.0034 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0038 | <0.0037 | <0.0042 | <0.0037 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0034 | <0.0035 | <0.0034 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0038 | <0.0037 | <0.0042 | <0.0037 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | 0.083 | 0.076 | <0.0034 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0038 | 0.019 | <0.0042 | <0.0037 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | 0.033 | 0.033 | <0.0034 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | 0.0083 | <0.0037 | <0.0038 | 0.055 | <0.0042 | <0.0037 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0034 | <0.0035 | <0.0034 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0038 | <0.0037 | <0.0042 | <0.0037 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | 0.54 | 0.52 | 0.0065 | 0.013 | <0.0017 | <0.0019 | <0.0018 | <0.0019 | <0.0019 | <0.0019 | 0.01 | <0.0018 | <0.0019 | 0.054 | 0.0024 | <0.0019 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | 0.007 | 0.0074 | <0.0034 | 0.009 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | 0.021 | <0.0037 | <0.0038 | 0.066 | <0.0042 | <0.0037 |
| PFOA + PFOS (Calculated) | NCL | NCL | 0.55 | 0.53 | 0.0065 | 0.022 | ND | ND | ND | ND | ND | ND | 0.031 | ND | ND | 0.12 | 0.0024 | ND |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | 0.012 | 0.012 | <0.0034 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | 0.0043 | <0.0037 | <0.0038 | 0.026 | <0.0042 | <0.0037 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0034 | <0.0035 | <0.0034 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0038 | <0.0037 | <0.0042 | <0.0037 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0034 | <0.0035 | <0.0034 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0038 | <0.0037 | <0.0042 | <0.0037 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0034 | <0.0035 | <0.0034 | <0.0038 | <0.0034 | <0.0038 | <0.0036 | <0.0038 | <0.0038 | <0.0037 | <0.0036 | <0.0037 | <0.0038 | <0.0037 | <0.0042 | <0.0037 |
| Total PFAS (Calculated) | NCL | NCL | 0.95 | 0.9 | 0.03 | 0.04 | ND | ND | ND | ND | ND | ND | 0.062 | ND | ND | 0.32 | 0.0084 | ND |

TABLE 4
GROUNDWATER ANALYTICAL DATA - PFAS
Wolver/Jewell Study Areas
Algoma Township, Kent County, MI

| Sample Location | Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ² | Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ² | WV-MW-16D | WV-MW-16D | WV-MW-16S | WV-MW-16S | WV-MW-16S | WV-MW-16S |
|--|---|--|-------------|--------------|--------------|--------------|-----------------|--------------|
| Sample Name | | | WV-GW-MW16D | WV-GW-MW-16D | WV-GW-MW16S | WV-GW-MW16S | WV-GW-MW16S DUP | WV-GW-MW-16S |
| Well Screen Interval (Feet below ground surface) | | | 91.7-96.7 | 91.7-96.7 | 17.5-22.5 | 17.5-22.5 | 17.5-22.5 | 17.5-22.5 |
| Laboratory Sample ID | | | UH31001-005 | UK13023-001 | UE02030-006 | UH31001-001 | UH31001-002 | UK19013-001 |
| Sample Date | | | 08/29/2019 | 11/12/2019 | 05/03/2019 | 08/29/2019 | 08/29/2019 | 11/13/2019 |
| Parameter (µg/L) | | | | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | NCL | NCL | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0037 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | NCL | NCL | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0037 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | NCL | NCL | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0037 |
| N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) | NCL | NCL | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | NCL | NCL | <0.0072 | <0.007 | <0.0071 | <0.007 | <0.0074 | <0.0074 |
| N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE) | NCL | NCL | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | NCL | NCL | <0.0036 | <0.0035 | 0.0073 | 0.016 | 0.018 | 0.016 |
| Perfluorodecane sulfonic acid (PFDS) | NCL | NCL | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0037 |
| Perfluoroheptane sulfonic acid (PFHpS) | NCL | NCL | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0037 |
| Perfluorononane sulfonic acid (PFNS) | NCL | NCL | <0.0072 | <0.007 | <0.0071 | <0.007 | <0.0074 | <0.0074 |
| Perfluorooctane sulfonamide (FOSA) | NCL | NCL | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0037 |
| Perfluoropentane sulfonic acid (PFPeS) | NCL | NCL | <0.0036 | <0.0035 | <0.0036 | <0.0035 | 0.004 | <0.0037 |
| Perfluorohexane sulfonic acid (PFHxS) | NCL | NCL | <0.0036 | <0.0035 | <0.0036 | 0.0068 | 0.007 | 0.0072 |
| Perfluorobutanoic acid (PFBA) | NCL | NCL | <0.0036 | <0.0035 | 0.0074 | 0.028 | 0.029 | 0.02 |
| Perfluorodecanoic acid (PFDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0037 |
| Perfluorododecanoic acid (PFDoDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0037 |
| Perfluoroheptanoic acid (PFHpA) | NCL | NCL | <0.0036 | <0.0035 | <0.0036 | 0.0076 | 0.0085 | 0.0054 |
| Perfluorohexanoic acid (PFHxA) | NCL | NCL | <0.0036 | <0.0035 | 0.0061 | 0.023 | 0.023 | 0.013 |
| Perfluorononanoic acid (PFNA) | NCL | NCL | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0037 |
| Perfluorooctanoic acid (PFOA) | 8.0 (A) | 12 | <0.0018 | <0.0018 | 0.0094 | 0.026 | 0.029 | 0.021 |
| Perfluorooctane sulfonic acid (PFOS) | 16 (A) | 0.012 | <0.0036 | <0.0035 | 0.026 | 0.023 | 0.025 | 0.027 |
| PFOA + PFOS (Calculated) | NCL | NCL | ND | ND | 0.035 | 0.049 | 0.054 | 0.048 |
| Perfluoropentanoic acid (PFPeA) | NCL | NCL | <0.0036 | <0.0035 | <0.0036 | 0.0097 | 0.011 | 0.007 |
| Perfluorotetradecanoic acid (PFTeDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0037 |
| Perfluorotridecanoic acid (PFTrDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0037 |
| Perfluoroundecanoic acid (PFUnDA) | NCL | NCL | <0.0036 | <0.0035 | <0.0036 | <0.0035 | <0.0037 | <0.0037 |
| Total PFAS (Calculated) | NCL | NCL | ND | ND | 0.056 | 0.14 | 0.15 | 0.12 |

TABLE 4 NOTES
Wolven/Jewell Study Areas
Algoma Township, Kent County, MI

16.0062961.50
Page 1 of 1

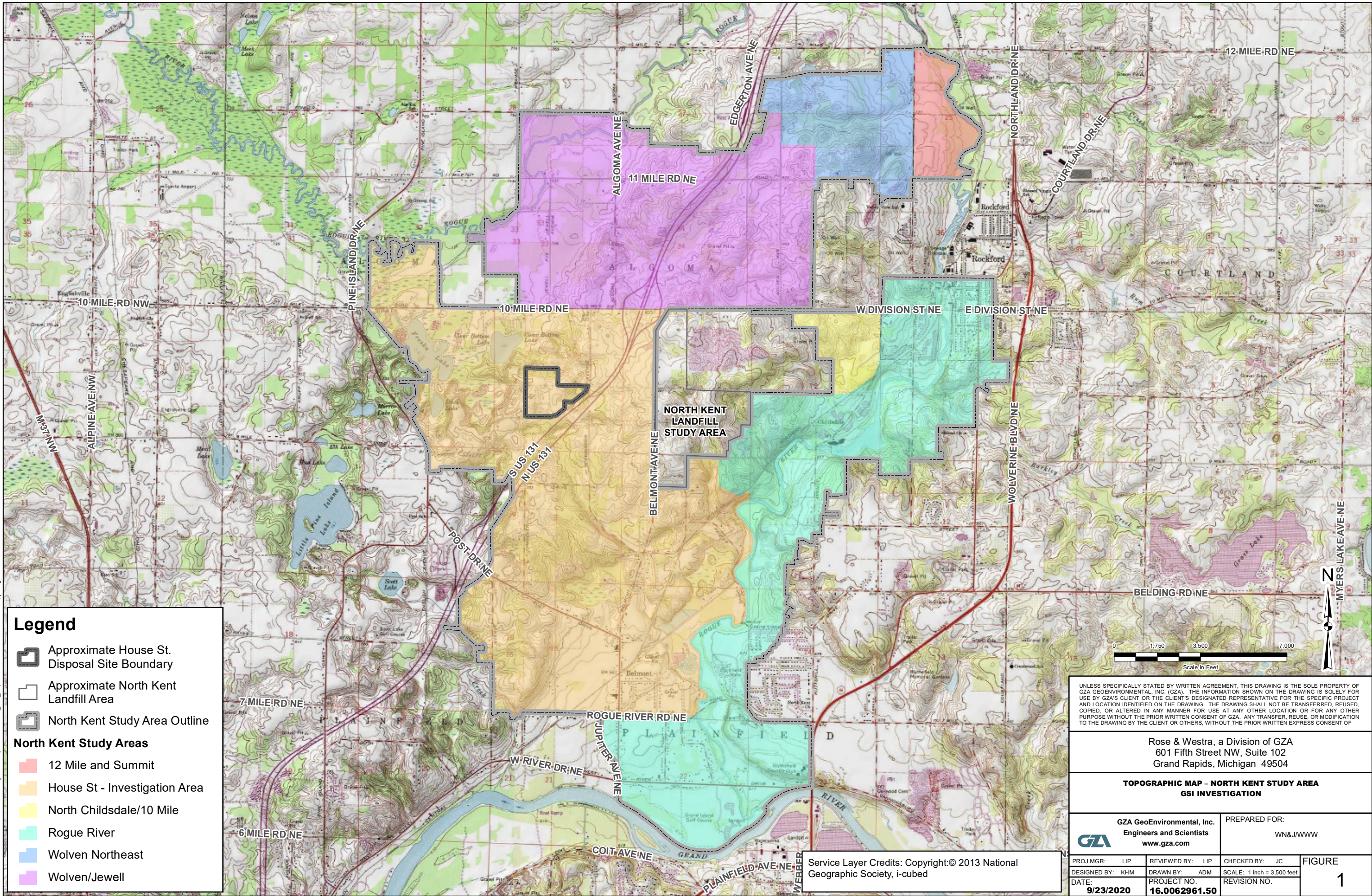
NOTES:

1. Concentration and criteria units are micrograms per Liter ($\mu\text{g/L}$) or parts per billion (ppb). Calculated criteria and concentrations are rounded to two significant digits. "ND" indicates the parameters used in the calculation were not detected.
2. Michigan Part 201 Groundwater Cleanup Criteria are based on "Table 1, Groundwater: Residential and Nonresidential Part 201 Generic Cleanup Criteria and Screening Levels/Part 213 Tier I Risk Based Screening Levels," Michigan Administrative Code, Cleanup Criteria Requirements for Response Activity, Rules 299.44 and 299.49, effective December 30, 2013; updated August 3, 2020.
Abbreviations Include:
"NCL" indicates no criterion listed in EGLE Table 1.
Footnotes Include:
(A) - The criterion is the State of Michigan drinking water standard.
3. Bold, italic number with thick line border or italic parameter name indicates that parameter was detected above the Michigan Part 201 Groundwater Cleanup Criteria listed.
4. Abbreviations include:
" < RL " indicates the parameter was analyzed for but not detected above the method detection limit; RL = Reporting Limit.
"DUP" indicates a duplicate sample.
"-" indicates the parameter was not analyzed.
5. Well screen interval presented is the top of the well screen to the bottom of the well screen in feet below ground surface.



FIGURES

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Legend

- Approximate House St. Disposal Site Boundary
- Approximate North Kent Landfill Area
- North Kent Study Area Outline

North Kent Study Areas

- 12 Mile and Summit
- House St - Investigation Area
- North Childsdales/10 Mile
- Rogue River
- Wolven Northeast
- Wolven/Jewell

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TOPOGRAPHIC MAP - NORTH KENT STUDY AREA GSI INVESTIGATION



GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
WN&J/WWW

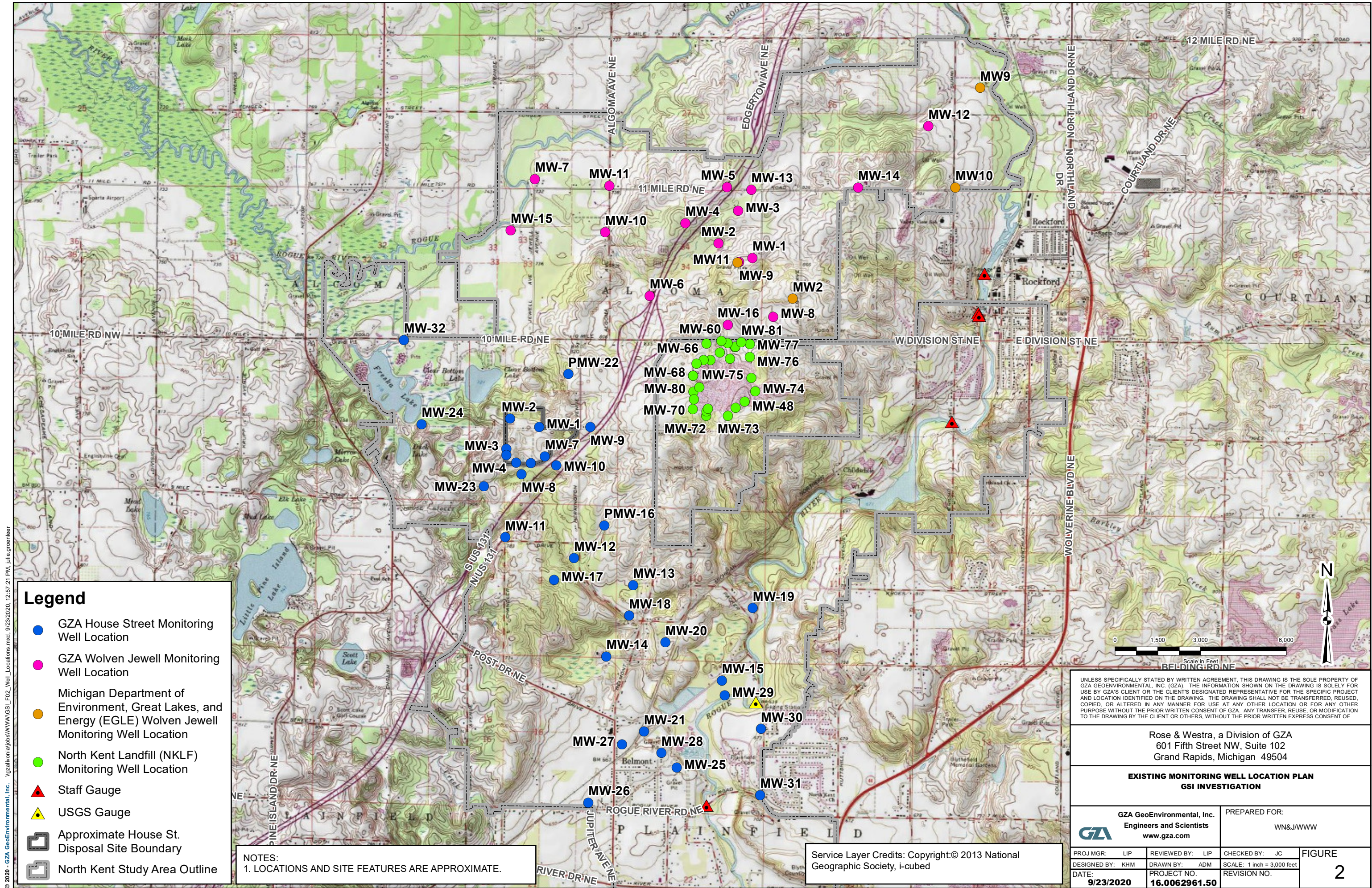
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DATE: 9/23/2020

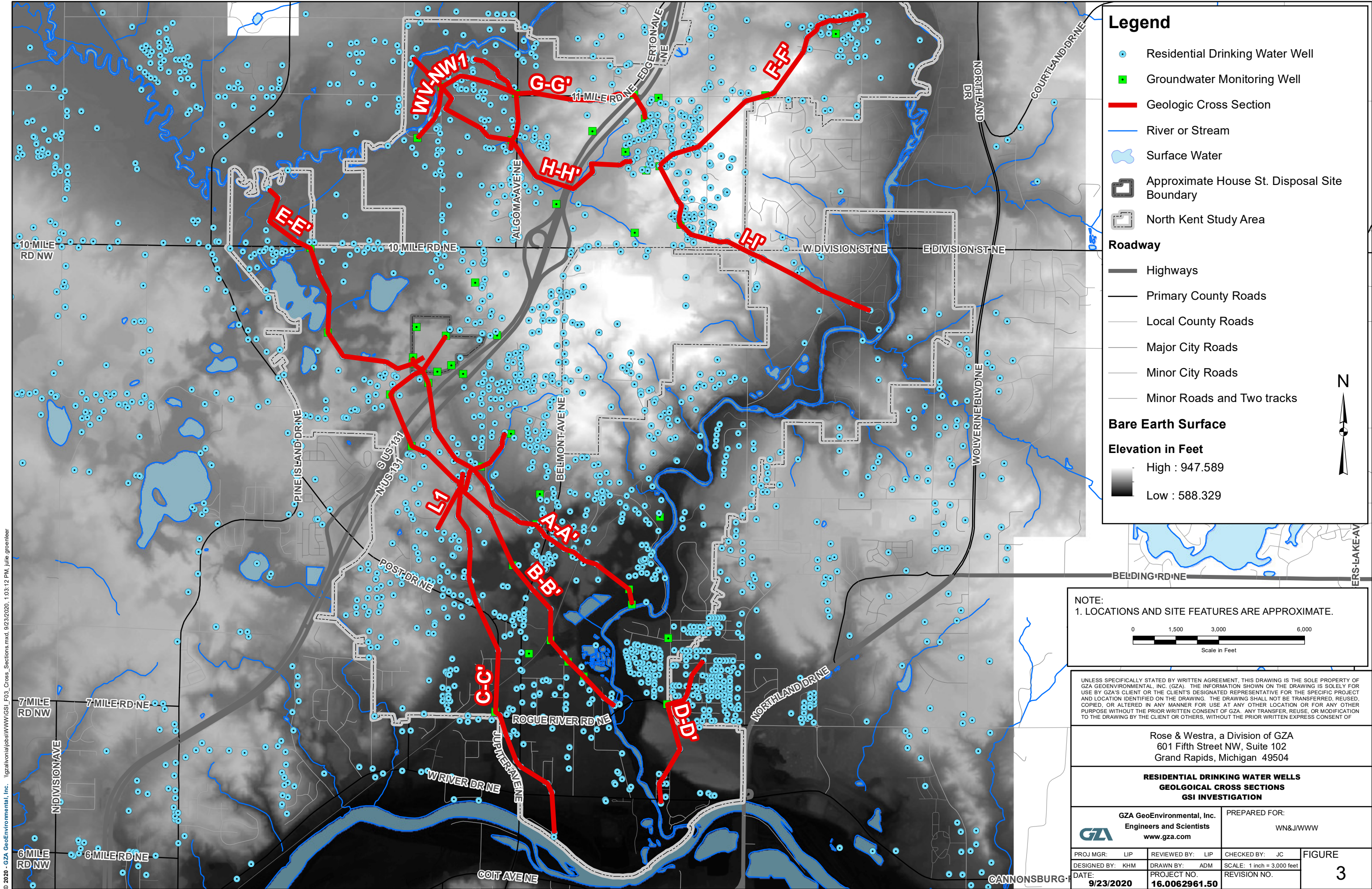
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DRAWN BY: ADM
PROJECT NO. 16.0062961.50

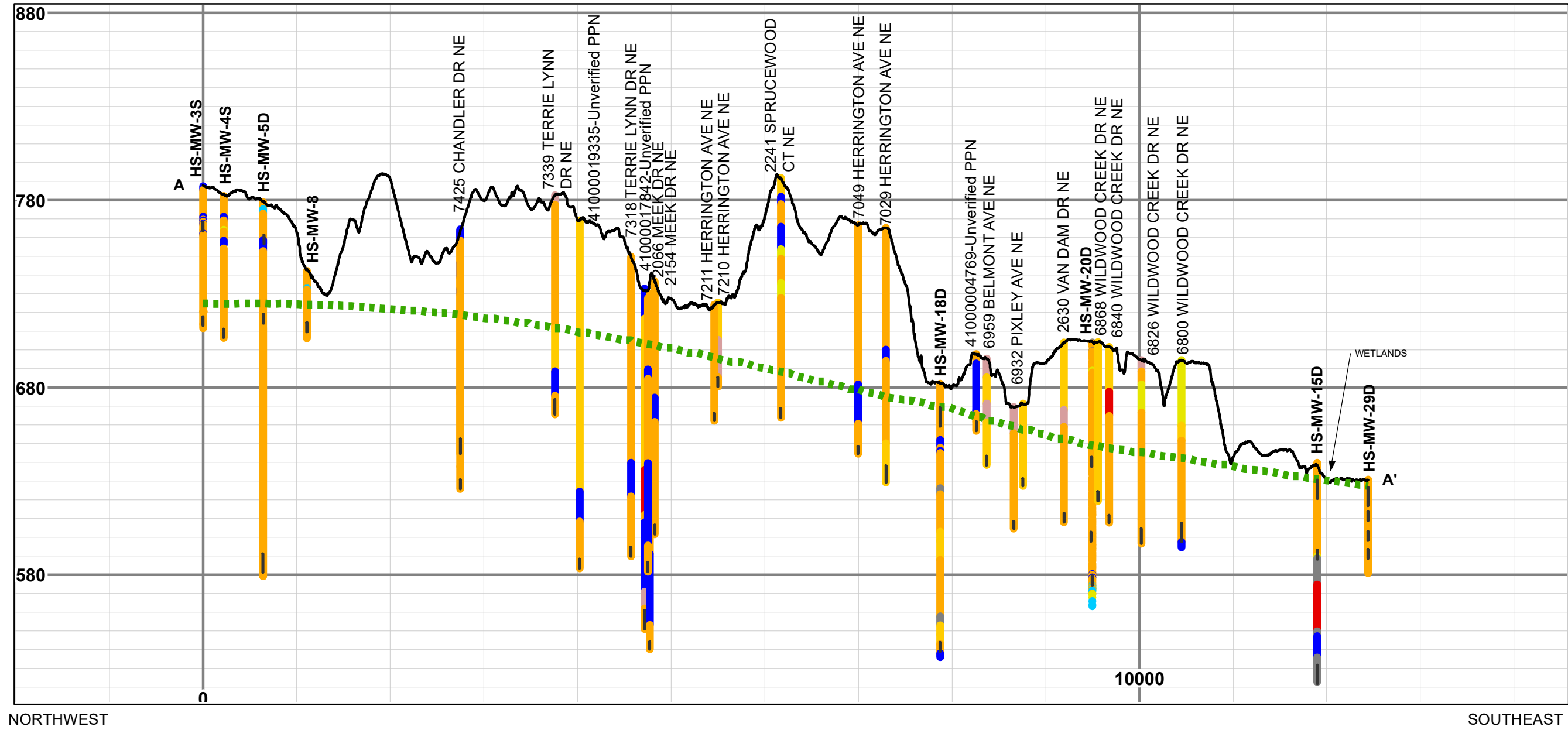
CHECKED BY: JC
SCALE: 1 inch = 3,500 feet
REVISION NO.

FIGURE
1

Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed







CROSS SECTION LEGEND

- | | | |
|---------------------------------------|----------------------------|----------------------------|
| WELL SCREEN | BOREHOLE LITHOLOGY | CLAY/SILT WITH SAND/GRAVEL |
| ESTIMATED GROUNDWATER TABLE (11/2019) | GRAVEL | SILT |
| GROUND SURFACE | SAND AND | CLAY AND SILT |
| | SAND | CLAY |
| | SAND/GRAVEL WITH CLAY/SILT | |

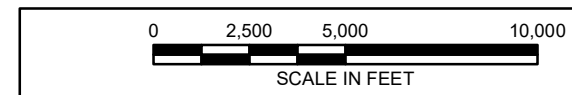
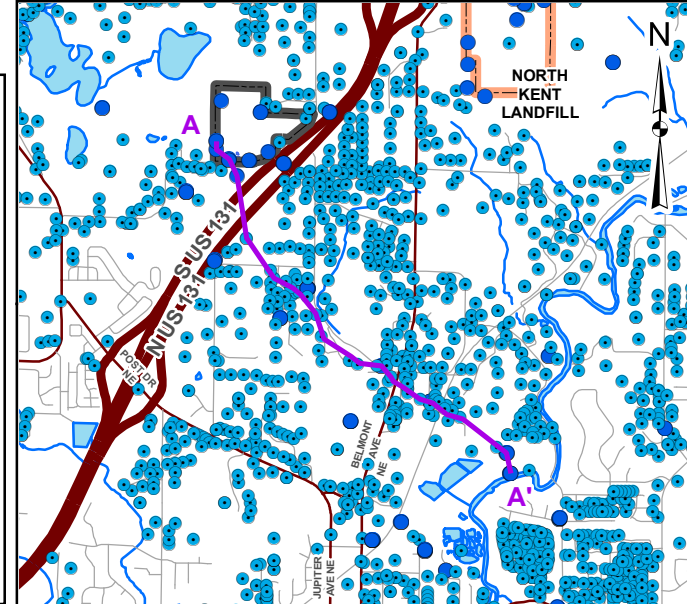
OVERVIEW MAP LEGEND

- | | | |
|------------------------|---------------------|--|
| RESIDENTIAL WATER WELL | CROSS SECTION LINE | APPROXIMATE HOUSE ST. DISPOSAL SITE BOUNDARY |
| MONITORING WELL | HIGHWAY | NORTH KENT LANDFILL |
| | PRIMARY COUNTY ROAD | |
| | OTHER ROAD | |
| | RIVER OR STREAM | |
| | SURFACE WATER | |

NOTES:

- LOCATIONS AND SITE FEATURES ARE APPROXIMATE.
- GROUND SURFACE ELEVATIONS ARE BASED ON DIGITAL RASTER FILES OF BARE EARTH DIGITAL ELEVATION MODELS (DEMS), GENERATED FROM LIDAR DATA WITH 1-METER HORIZONTAL ACCURACY AND 18.5-CENTIMETER VERTICAL ACCURACY. DIGITAL FILES OF DEMS AND LIDAR DATA WERE PROVIDED BY KENT COUNTY.
- ESTIMATED GROUNDWATER TABLE WAS DEVELOPED BASED ON MEASUREMENTS MADE IN GROUNDWATER MONITORING WELLS IN NOVEMBER 2019. GROUNDWATER ELEVATIONS WERE NOT MEASURED FROM RESIDENTIAL WATER SUPPLY WELLS.
- WELL SCREEN ELEVATIONS PROVIDED IN FEET ABOVE MEAN SEA LEVEL, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). RESIDENTIAL WELL SCREEN ELEVATIONS AND BOREHOLE LITHOLOGY ELEVATIONS WERE CALCULATED USING WELL INFORMATION PROVIDED BY THE STATE OF MICHIGAN'S WELLOGIC DATABASE AND GROUND SURFACE ELEVATIONS OF THE CENTER OF THE PPN GENERATED FROM LIDAR DATA PROVIDED BY KENT COUNTY. ELEVATIONS ARE ROUNDED TO THE NEAREST FOOT.

OVERVIEW MAP

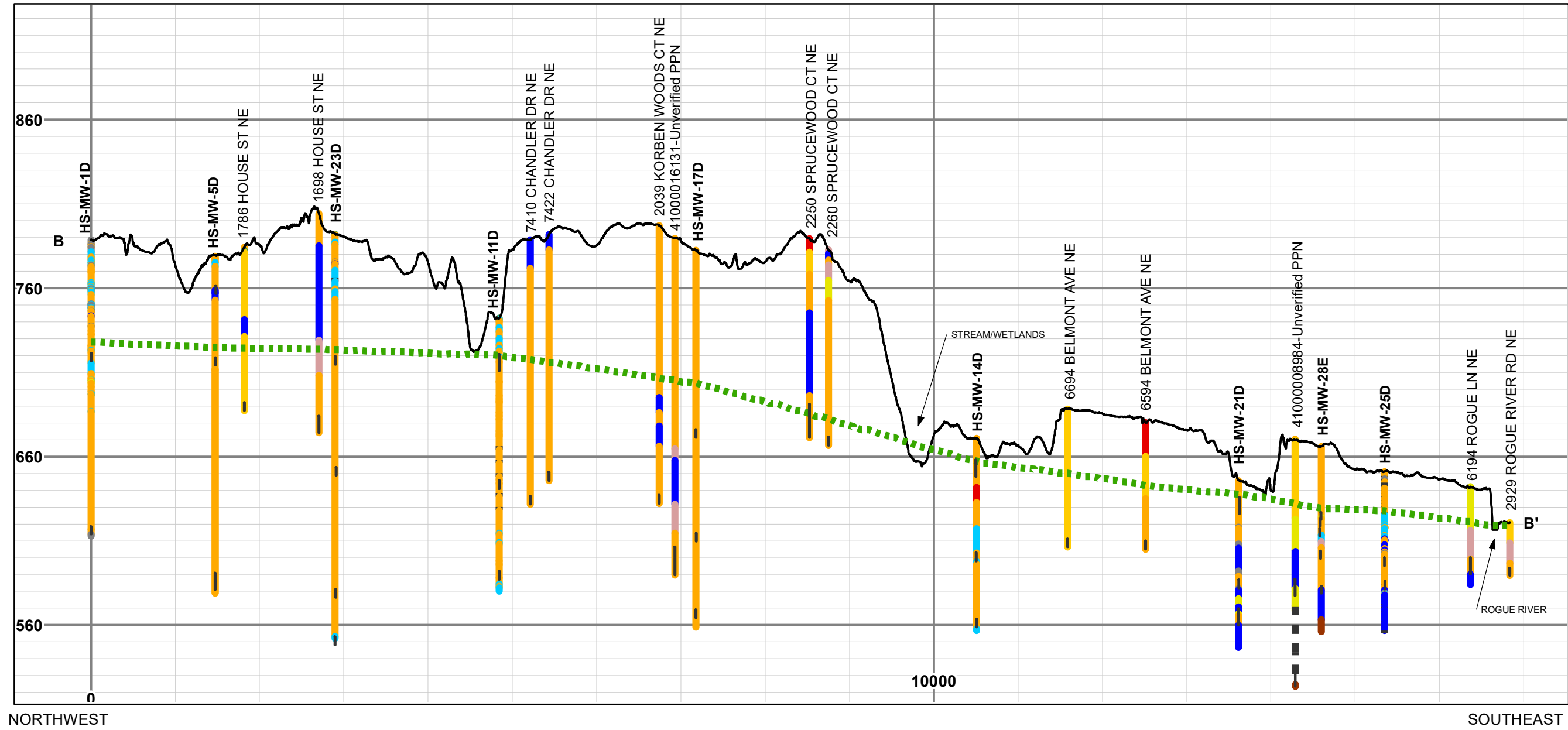


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NORTH KENT STUDY AREA CROSS SECTION A-A' GSI INVESTIGATION

| | | | |
|---|------------------------------|-------------------------------|-----------------|
| PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com | | PREPARED FOR: WN&J/WWW | |
| PROJ MGR: LJP | REVIEWED BY: MW | CHECKED BY: LMN | FIGURE 4 |
| DESIGNED BY: JC | DRAWN BY: JMG | SCALE: 1 in = 5,000 ft | |
| DATE: 09/17/2020 | PROJECT NO: 16.0062961.50 | REVISION NO: | |



CROSS SECTION LEGEND

- | | | |
|---------------------------------------|----------------------------|---------------|
| WELL SCREEN | GRAVEL | CLAY AND SILT |
| ESTIMATED GROUNDWATER TABLE (11/2019) | SAND AND GRAVEL | CLAY |
| GROUND SURFACE | SAND | TOP SOIL |
| | SAND/GRAVEL WITH CLAY/SILT | BEDROCK |
| | CLAY/SILT WITH SAND/GRAVEL | NOT AVAILABLE |
| | SILT | |

OVERVIEW MAP LEGEND

- | | | |
|------------------------|---------------------|--|
| RESIDENTIAL WATER WELL | CROSS SECTION LINE | APPROXIMATE HOUSE ST. DISPOSAL SITE BOUNDARY |
| MONITORING WELL | HIGHWAY | NORTH KENT LANDFILL |
| | PRIMARY COUNTY ROAD | |
| | OTHER ROAD | |
| | RIVER OR STREAM | |
| | SURFACE WATER | |

NOTES:

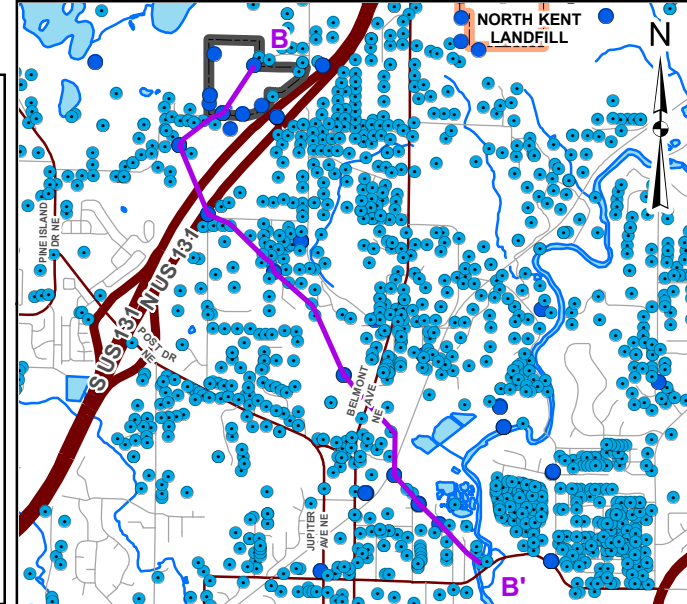
1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.

2. GROUND SURFACE ELEVATIONS ARE BASED ON DIGITAL RASTER FILES OF BARE EARTH DIGITAL ELEVATION MODELS (DEMS), GENERATED FROM LIDAR DATA WITH 1-METER HORIZONTAL ACCURACY AND 18.5-CENTIMETER VERTICAL ACCURACY. DIGITAL FILES OF DEMS AND LIDAR DATA WERE PROVIDED BY KENT COUNTY.

3. ESTIMATED GROUNDWATER TABLE WAS DEVELOPED BASED ON MEASUREMENTS MADE IN GROUNDWATER MONITORING WELLS IN NOVEMBER 2019. GROUNDWATER ELEVATIONS WERE NOT MEASURED FROM RESIDENTIAL WATER SUPPLY WELLS.

4. WELL SCREEN ELEVATIONS PROVIDED IN FEET ABOVE MEAN SEA LEVEL, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). RESIDENTIAL WELL SCREEN ELEVATIONS AND BOREHOLE LITHOLOGY ELEVATIONS WERE CALCULATED USING WELL INFORMATION PROVIDED BY THE STATE OF MICHIGAN'S WELLOGIC DATABASE AND GROUND SURFACE ELEVATIONS OF THE CENTER OF THE PPN GENERATED FROM LIDAR DATA PROVIDED BY KENT COUNTY. ELEVATIONS ARE ROUNDED TO THE NEAREST FOOT.

OVERVIEW MAP



02,5005,00010,000

SCALE IN FEET

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NORTH KENT STUDY AREA
CROSS SECTION B-B'
GSI INVESTIGATION

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
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PREPARED FOR:
WN&J/WWW

PROJ MGR: LJP

REVIEWED BY: MW

CHECKED BY: LMN

FIGURE

DESIGNED BY: JC

DRAWN BY: JMG

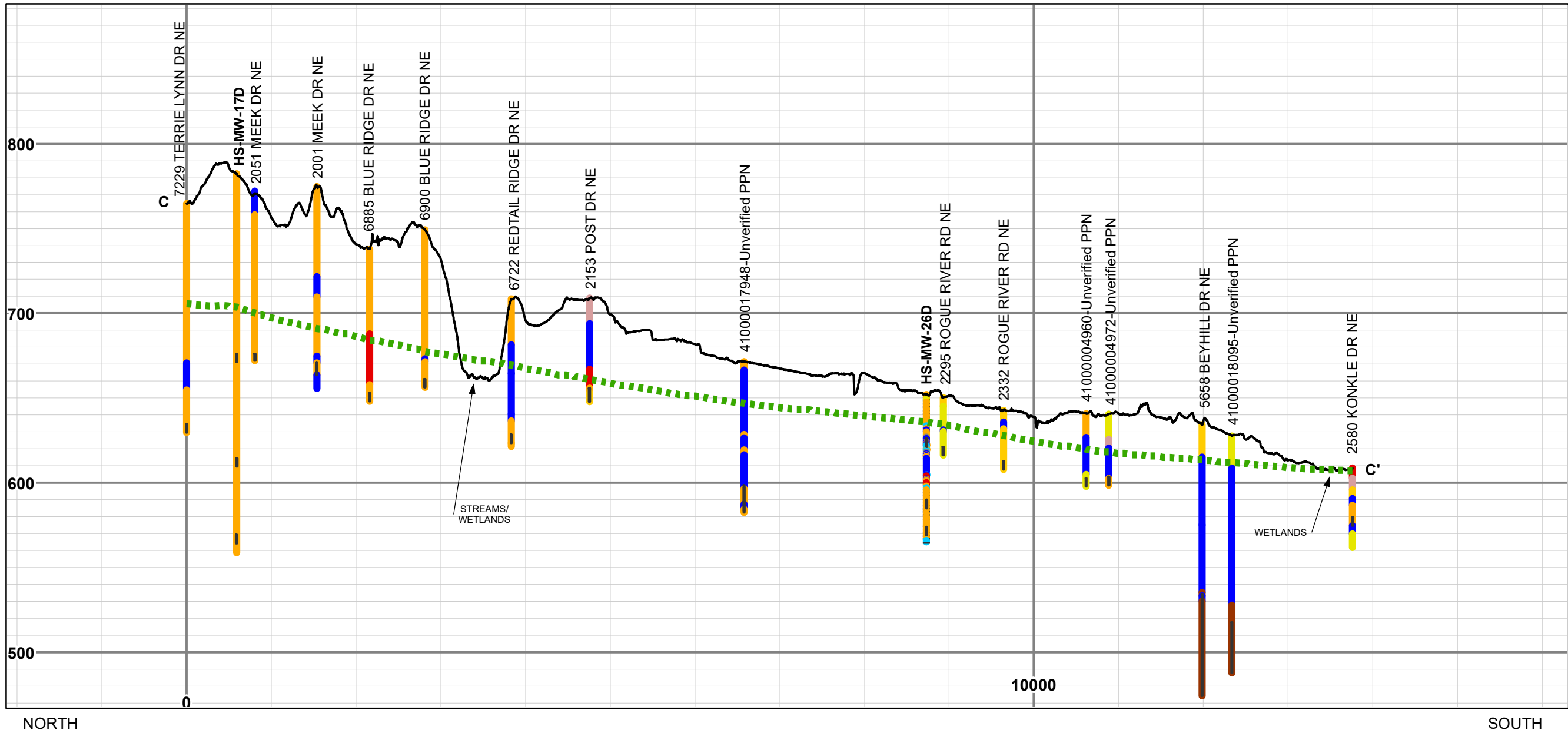
SCALE: 1 in = 5,000 ft

5

DATE: 09/17/2020

PROJECT NO: 16.0062961.50

REVISION NO:



CROSS SECTION LEGEND

| | | | | | |
|--|---------------------------------------|--|----------------------------|--|---------------|
| | WELL SCREEN | | GRAVEL | | SILT |
| | ESTIMATED GROUNDWATER TABLE (11/2019) | | SAND AND GRAVEL | | CLAY AND SILT |
| | GROUND SURFACE | | SAND | | CLAY |
| | | | SAND/GRAVEL WITH CLAY/SILT | | BEDROCK |
| | | | CLAY/SILT WITH SAND/GRAVEL | | NOT AVAILABLE |

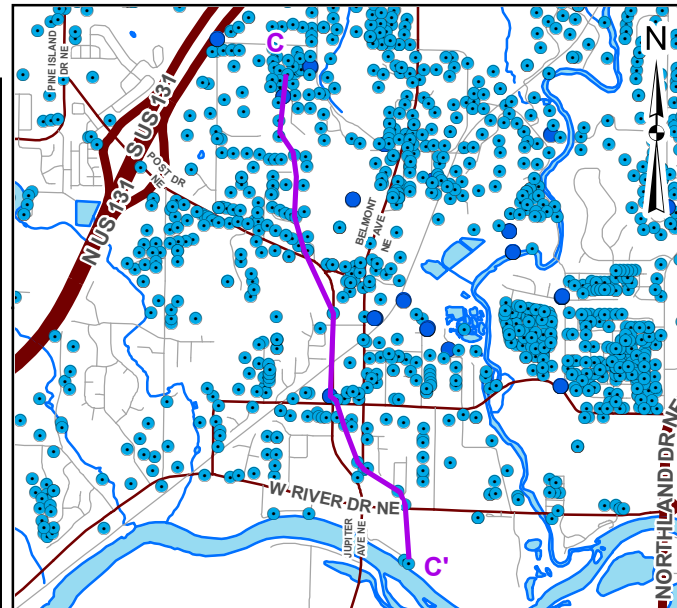
OVERVIEW MAP LEGEND

| | | | |
|--|------------------------|--|---------------------|
| | RESIDENTIAL WATER WELL | | CROSS SECTION LINE |
| | MONITORING WELL | | HIGHWAY |
| | | | PRIMARY COUNTY ROAD |
| | | | OTHER ROAD |
| | | | RIVER OR STREAM |
| | | | SURFACE WATER |

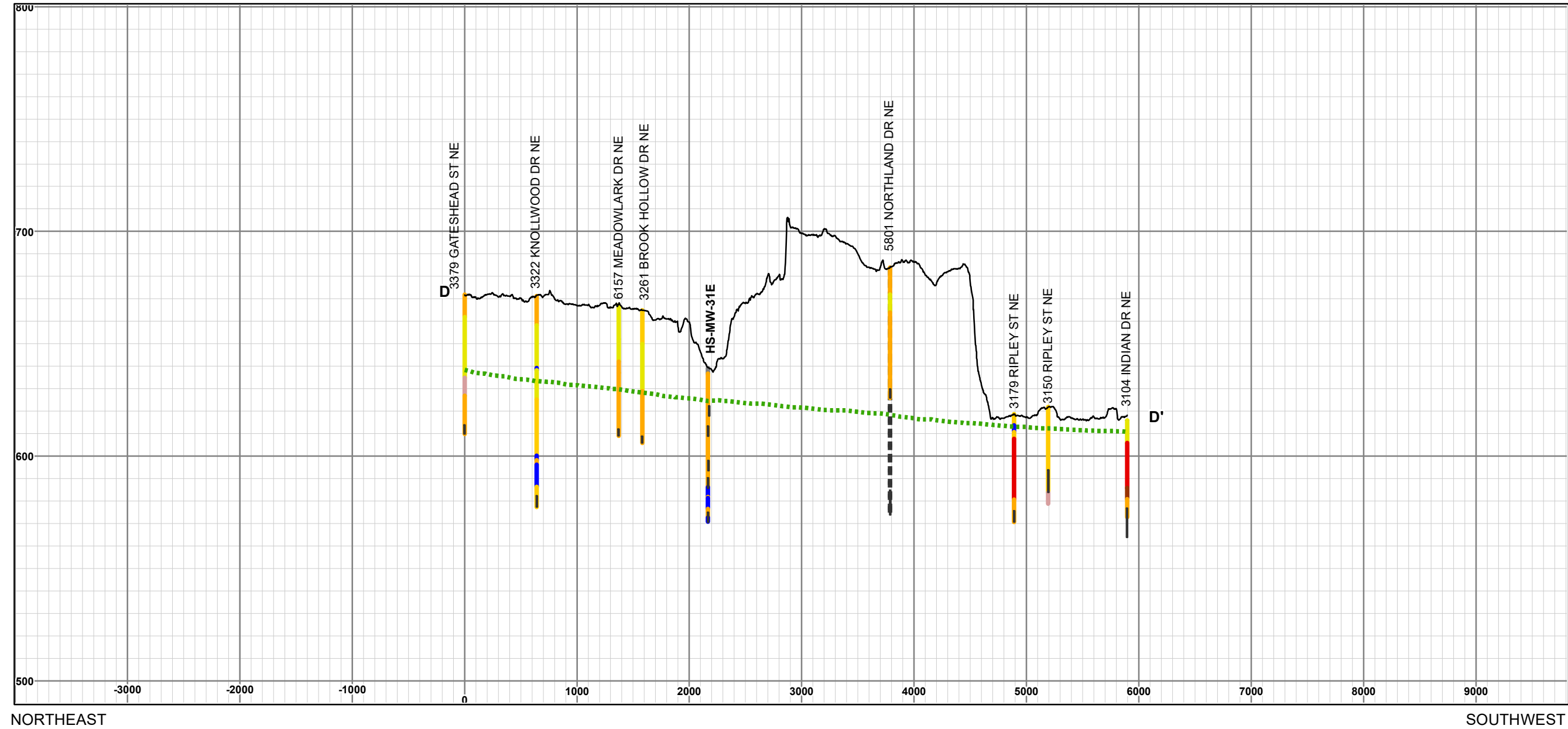
NOTES:

- LOCATIONS AND SITE FEATURES ARE APPROXIMATE.
- GROUND SURFACE ELEVATIONS ARE BASED ON DIGITAL RASTER FILES OF BARE EARTH DIGITAL ELEVATION MODELS (DEMS), GENERATED FROM LIDAR DATA WITH 1-METER HORIZONTAL ACCURACY AND 18.5-CENTIMETER VERTICAL ACCURACY. DIGITAL FILES OF DEMS AND LIDAR DATA WERE PROVIDED BY KENT COUNTY.
- ESTIMATED GROUNDWATER TABLE WAS DEVELOPED BASED ON MEASUREMENTS MADE IN GROUNDWATER MONITORING WELLS IN NOVEMBER 2019. GROUNDWATER ELEVATIONS WERE NOT MEASURED FROM RESIDENTIAL WATER SUPPLY WELLS.
- WELL SCREEN ELEVATIONS PROVIDED IN FEET ABOVE MEAN SEA LEVEL, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). RESIDENTIAL WELL SCREEN ELEVATIONS AND BOREHOLE LITHOLOGY ELEVATIONS WERE CALCULATED USING WELL INFORMATION PROVIDED BY THE STATE OF MICHIGAN'S WELLOGIC DATABASE AND GROUND SURFACE ELEVATIONS OF THE CENTER OF THE PPN GENERATED FROM LIDAR DATA PROVIDED BY KENT COUNTY. ELEVATIONS ARE ROUNDED TO THE NEAREST FOOT.

OVERVIEW MAP



| | | | |
|--|---------------------------|-------------------------------|-----------------|
| | | | |
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| Rose & Westra, a Division of GZA 601 Fifth Street NW, Suite 102 Grand Rapids, Michigan 49504 | | | |
| NORTH KENT STUDY AREA CROSS SECTION C-C' GSI INVESTIGATION | | | |
| PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com | | PREPARED FOR: WN&J/WWW | |
| PROJ MGR: LJP | REVIEWED BY: MW | CHECKED BY: LMN | FIGURE 6 |
| DESIGNED BY: JC | DRAWN BY: JMG | SCALE: 1 in = 5,000 ft | |
| DATE: 09/17/2020 | PROJECT NO: 16.0062961.50 | REVISION NO: | |



CROSS SECTION LEGEND

- | | | |
|---------------------------------------|----------------------------|---------------|
| WELL SCREEN | GRAVEL | SILT |
| ESTIMATED GROUNDWATER TABLE (11/2019) | SAND AND GRAVEL | CLAY |
| GROUND SURFACE | SAND | BEDROCK |
| | SAND/GRAVEL WITH CLAY/SILT | NOT AVAILABLE |
| | CLAY/SILT WITH SAND/GRAVEL | |

OVERVIEW MAP LEGEND

- | | |
|------------------------|---------------------|
| RESIDENTIAL WATER WELL | CROSS SECTION LINE |
| MONITORING WELL | HIGHWAY |
| | PRIMARY COUNTY ROAD |
| | OTHER ROAD |
| | RIVER OR STREAM |
| | SURFACE WATER |

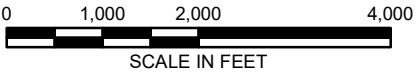
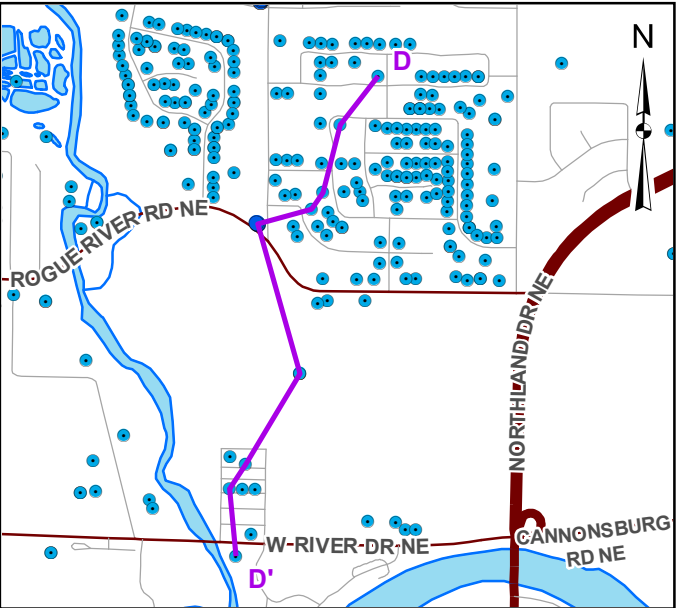
NOTES:
1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.

2. GROUND SURFACE ELEVATIONS ARE BASED ON DIGITAL RASTER FILES OF BARE EARTH DIGITAL ELEVATION MODELS (DEMS), GENERATED FROM LIDAR DATA WITH 1-METER HORIZONTAL ACCURACY AND 18.5-CENTIMETER VERTICAL ACCURACY. DIGITAL FILES OF DEMS AND LIDAR DATA WERE PROVIDED BY KENT COUNTY.

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4. WELL SCREEN ELEVATIONS PROVIDED IN FEET ABOVE MEAN SEA LEVEL, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). RESIDENTIAL WELL SCREEN ELEVATIONS AND BOREHOLE LITHOLOGY ELEVATIONS WERE CALCULATED USING WELL INFORMATION PROVIDED BY THE STATE OF MICHIGAN'S WELLOGIC DATABASE AND GROUND SURFACE ELEVATIONS OF THE CENTER OF THE PPN GENERATED FROM LIDAR DATA PROVIDED BY KENT COUNTY. ELEVATIONS ARE ROUNDED TO THE NEAREST FOOT.

OVERVIEW MAP



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Grand Rapids, Michigan 49504

NORTH KENT STUDY AREA
CROSS SECTION D-D'
GSI INVESTIGATION

PREPARED BY:
 GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
WN&J/WWW

PROJ MGR: LJP

REVIEWED BY: MW

CHECKED BY: LMN

FIGURE

DESIGNED BY: JC

DRAWN BY: JMG

SCALE: 1 in = 2,000 ft

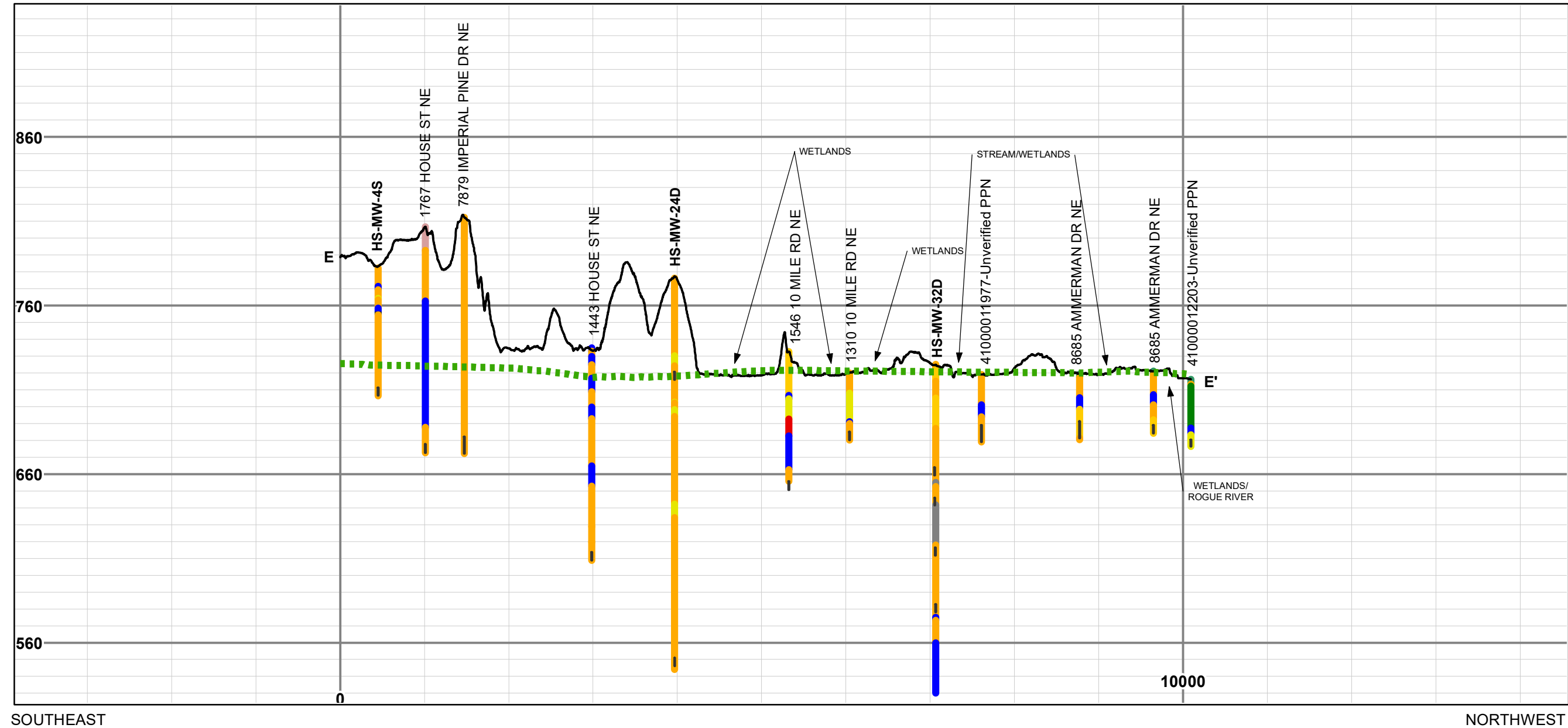
DATE:
09/17/2020

PROJECT NO:
16.0062961.50

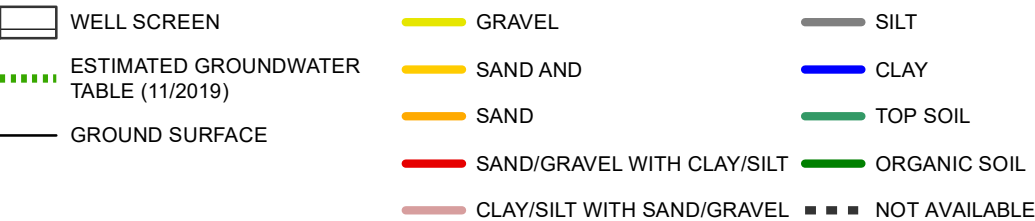
REVISION NO:

7

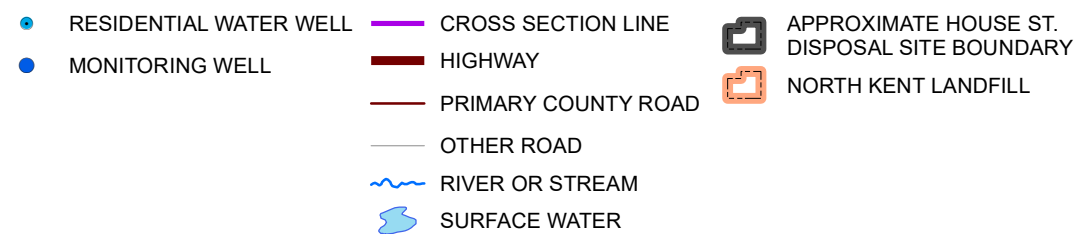
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CROSS SECTION LEGEND



OVERVIEW MAP LEGEND

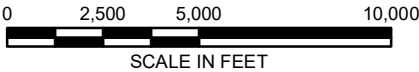
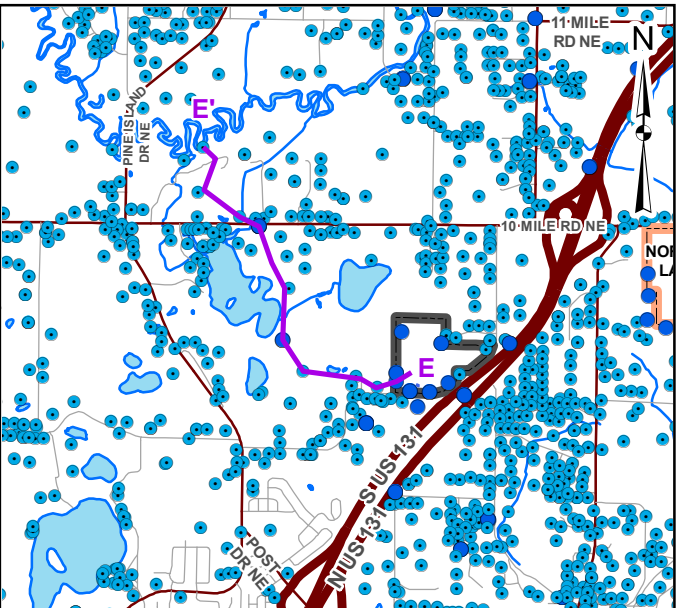


NOTES:
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OVERVIEW MAP



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Grand Rapids, Michigan 49504

NORTH KENT STUDY AREA
CROSS SECTION E-E'
GSI INVESTIGATION

PREPARED BY:
 GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
WN&J/WWW

PROJ MGR: LJP

REVIEWED BY: MW

CHECKED BY: LMN

FIGURE

DESIGNED BY: JC

DRAWN BY: JMG

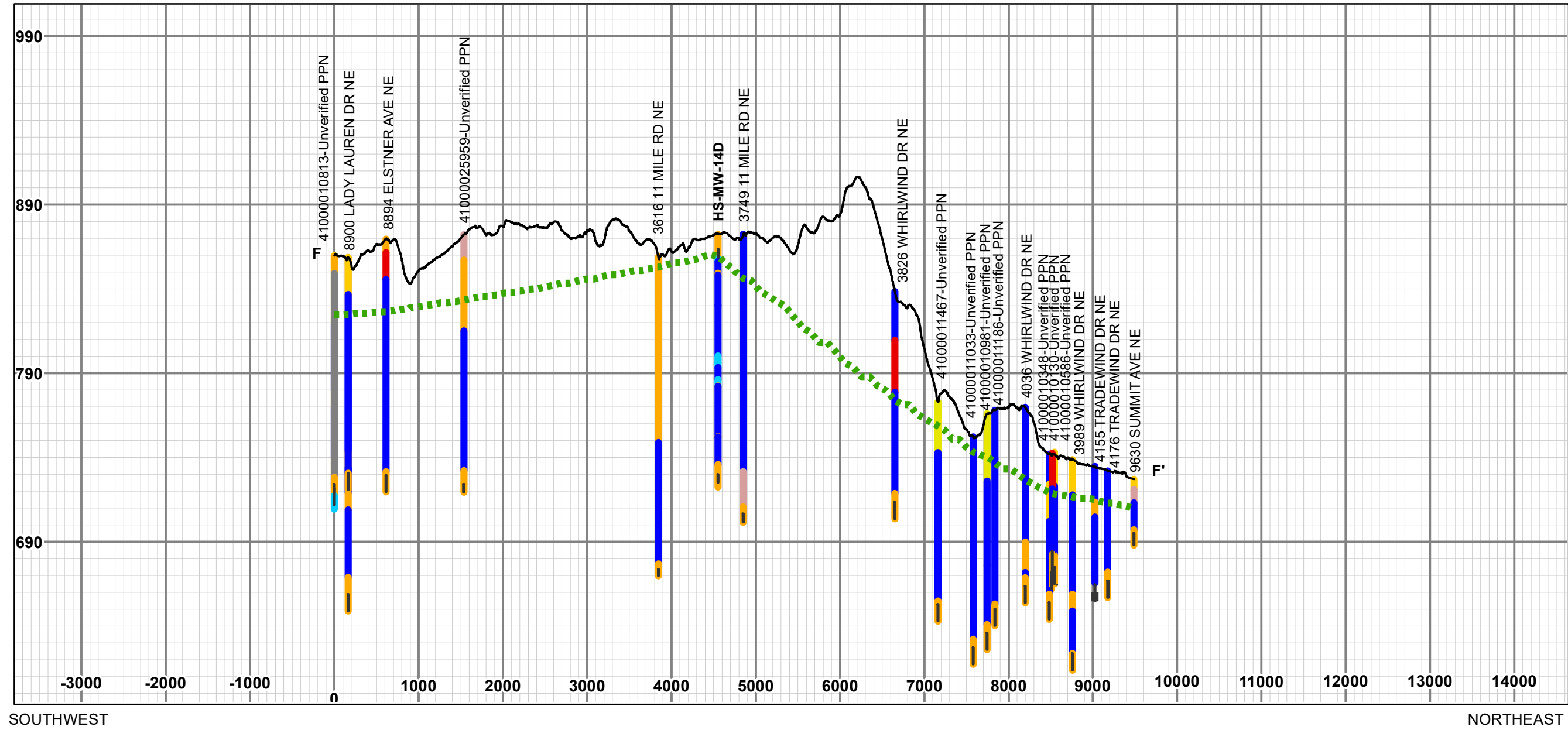
SCALE: 1 in = 5,000 ft

DATE:
09/17/2020

PROJECT NO:
16.0062961.50

REVISION NO:

8



CROSS SECTION LEGEND

- | | | |
|---------------------------------------|----------------------------|---------------|
| WELL SCREEN | GRAVEL | SILT |
| ESTIMATED GROUNDWATER TABLE (11/2019) | SAND AND GRAVEL | CLAY AND SILT |
| GROUND SURFACE | SAND | CLAY |
| | SAND/GRAVEL WITH CLAY/SILT | NOT AVAILABLE |
| | CLAY/SILT WITH SAND/GRAVEL | |

OVERVIEW MAP LEGEND

- | | |
|------------------------|---------------------|
| RESIDENTIAL WATER WELL | CROSS SECTION LINE |
| MONITORING WELL | HIGHWAY |
| | PRIMARY COUNTY ROAD |
| | OTHER ROAD |
| | RIVER OR STREAM |
| | SURFACE WATER |
| | NORTH KENT LANDFILL |

NOTES:

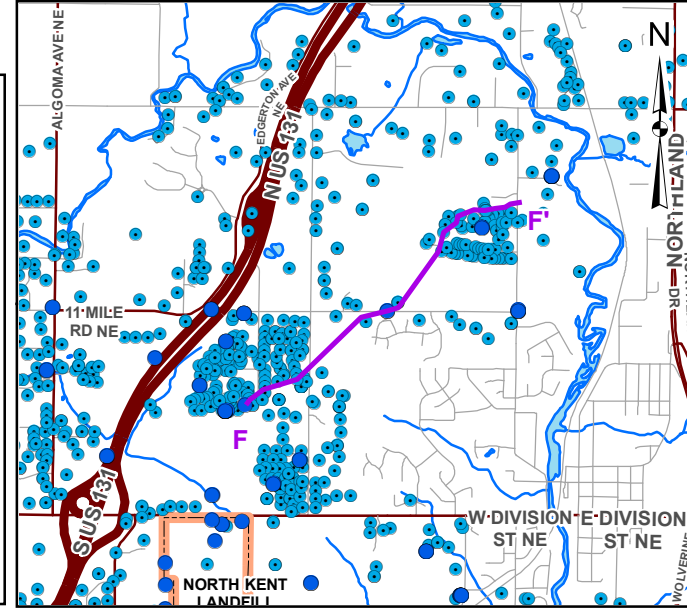
1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.

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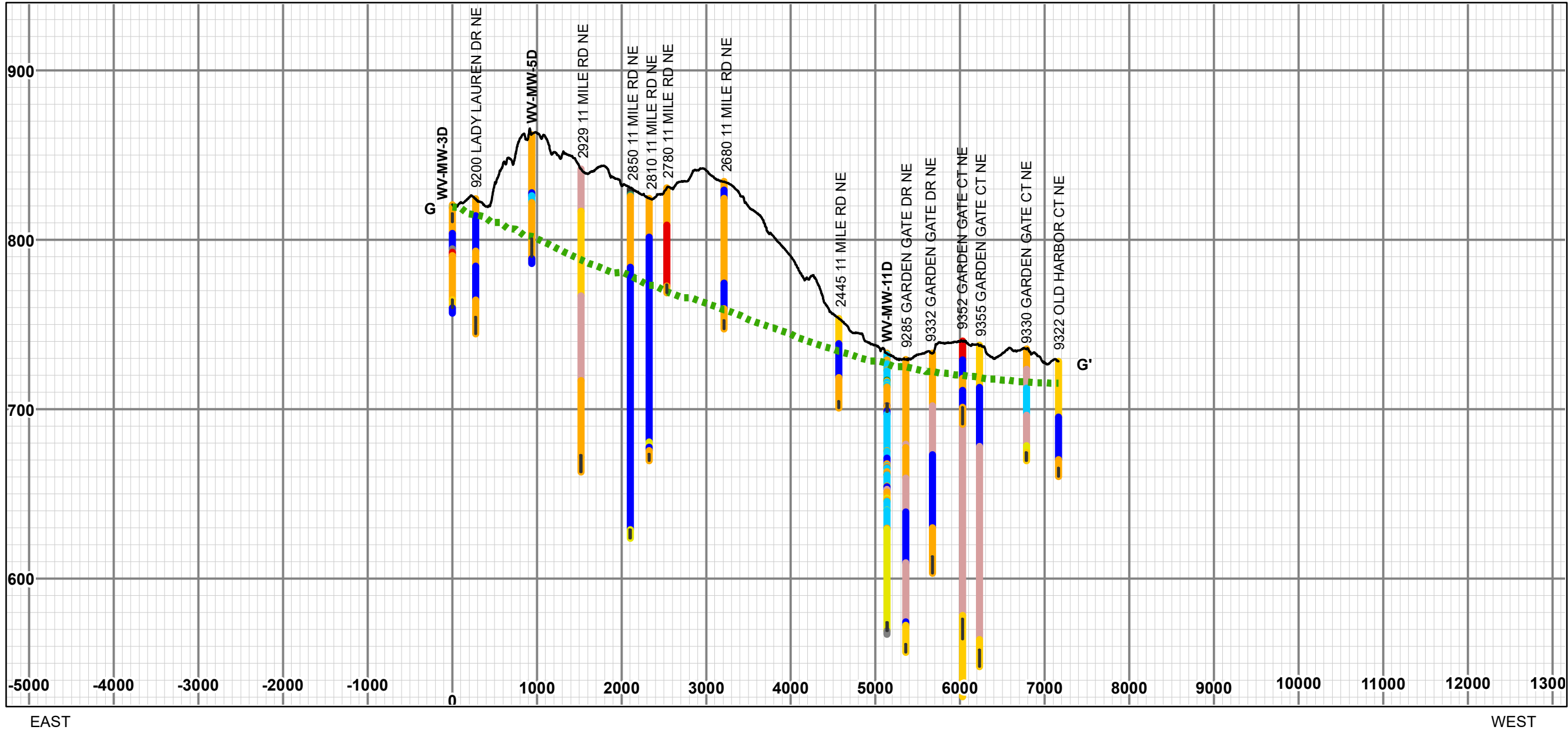
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4. WELL SCREEN ELEVATIONS PROVIDED IN FEET ABOVE MEAN SEA LEVEL, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). RESIDENTIAL WELL SCREEN ELEVATIONS AND BOREHOLE LITHOLOGY ELEVATIONS WERE CALCULATED USING WELL INFORMATION PROVIDED BY THE STATE OF MICHIGAN'S WELLOGIC DATABASE AND GROUND SURFACE ELEVATIONS OF THE CENTER OF THE PPN GENERATED FROM LIDAR DATA PROVIDED BY KENT COUNTY. ELEVATIONS ARE ROUNDED TO THE NEAREST FOOT.

OVERVIEW MAP



| | | | |
|--|---------------------------|---------------------------|-------------|
| | | | |
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| NORTH KENT STUDY AREA CROSS SECTION F-F' GSI INVESTIGATION | | | |
| PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com | | PREPARED FOR: WN&J/WWW | |
| PROJ MGR: LJP | REVIEWED BY: MW | CHECKED BY: LMN | FIGURE 9 |
| DESIGNED BY: JC | DRAWN BY: JMG | SCALE: 1 in = 5,000 ft | |
| DATE: 09/17/2020 | PROJECT NO: 16.0062961.50 | REVISION NO: | |



CROSS SECTION LEGEND

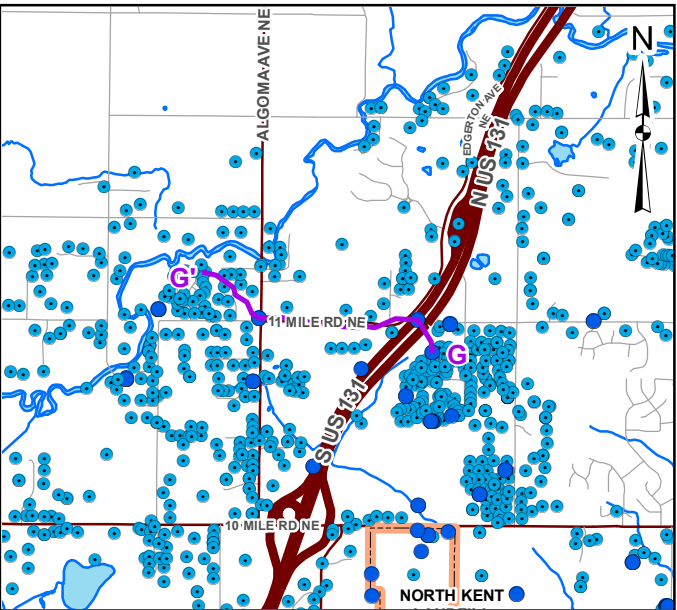
- WELL SCREEN
- ESTIMATED GROUNDWATER TABLE (11/2019)
- GROUND SURFACE
- GRAVEL
- SAND AND
- SAND
- SAND/GRAVEL WITH CLAY/SILT
- CLAY/SILT WITH SAND/GRAVEL
- SILT
- CLAY AND SILT
- CLAY
- TOP SOIL
- ORGANIC SOIL
- NOT AVAILABLE

OVERVIEW MAP LEGEND

- RESIDENTIAL WATER WELL
- MONITORING WELL
- CROSS SECTION LINE
- HIGHWAY
- PRIMARY COUNTY ROAD
- OTHER ROAD
- RIVER OR STREAM
- SURFACE WATER
- NORTH KENT LANDFILL

NOTES:
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OVERVIEW MAP



02,5005,00010,000

SCALE IN FEET

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Grand Rapids, Michigan 49504

NORTH KENT STUDY AREA
CROSS SECTION G-G'
GSI INVESTIGATION

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
WN&J/WWW

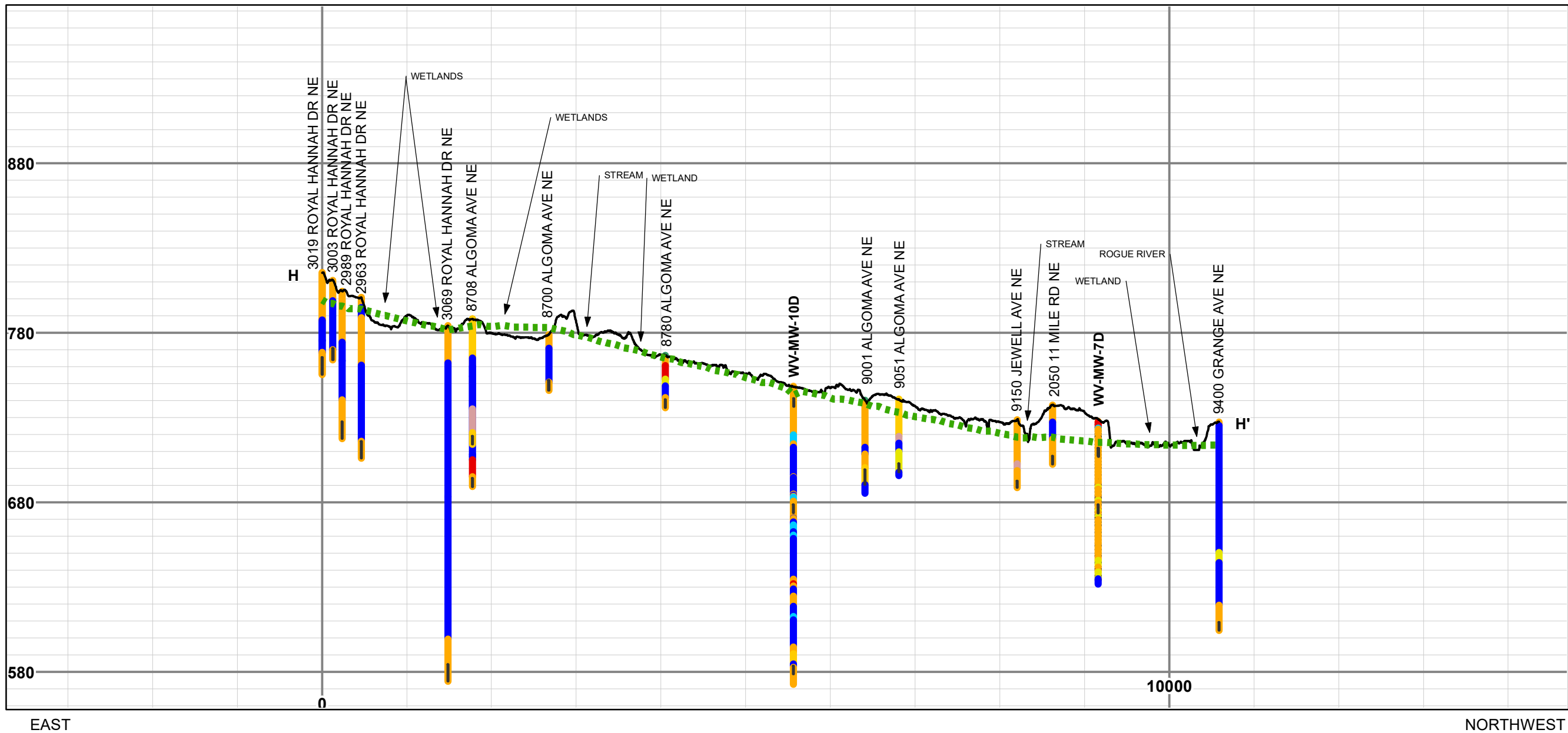
PROJ MGR: LJP
DESIGNED BY: JC
DATE: 09/17/2020

REVIEWED BY: MW
DRAWN BY: JMG
PROJECT NO: 16.0062961.50

CHECKED BY: LMN
SCALE: 1 in = 5,000 ft
REVISION NO:

FIGURE
10

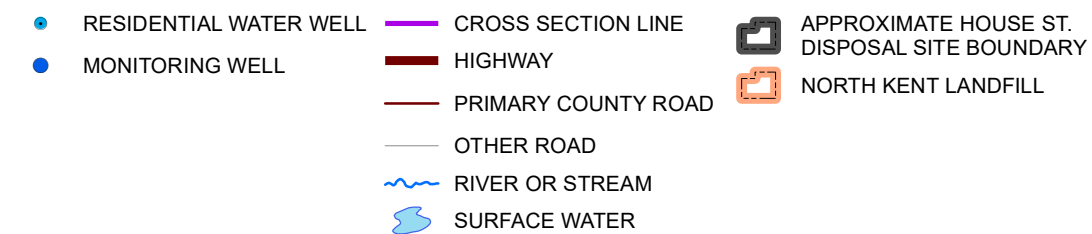
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CROSS SECTION LEGEND



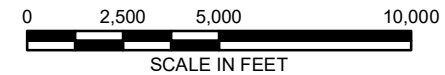
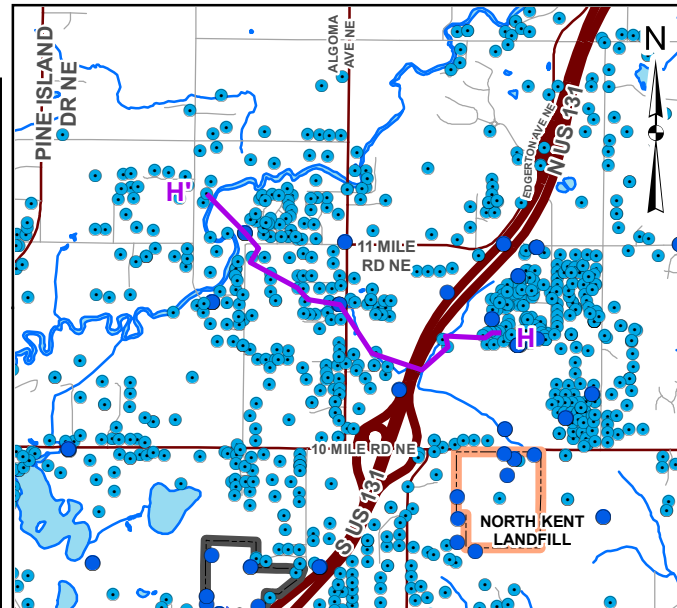
OVERVIEW MAP LEGEND



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OVERVIEW MAP



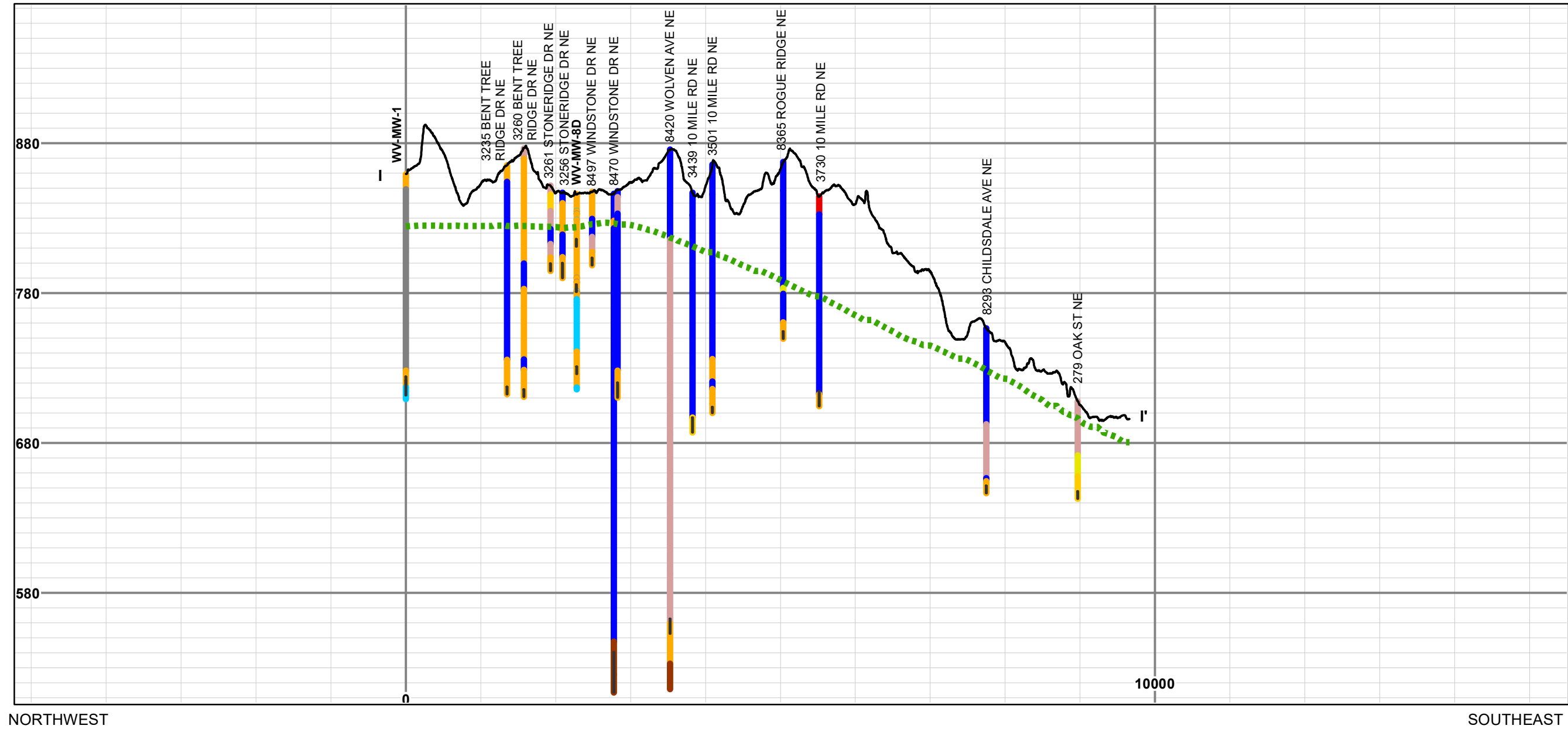
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Grand Rapids, Michigan 49504

NORTH KENT STUDY AREA CROSS SECTION H-H' GSI INVESTIGATION

| | | | | |
|---|---------------------------|------------------------|-------------------------------|--|
| PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com | | | PREPARED FOR: WN&J/WWW | |
| PROJ MGR: LJP | REVIEWED BY: MW | CHECKED BY: LMN | FIGURE | |
| DESIGNED BY: JC | DRAWN BY: JMG | SCALE: 1 in = 5,000 ft | 11 | |
| DATE: 09/17/2020 | PROJECT NO: 16.0062961.50 | REVISION NO: | | |

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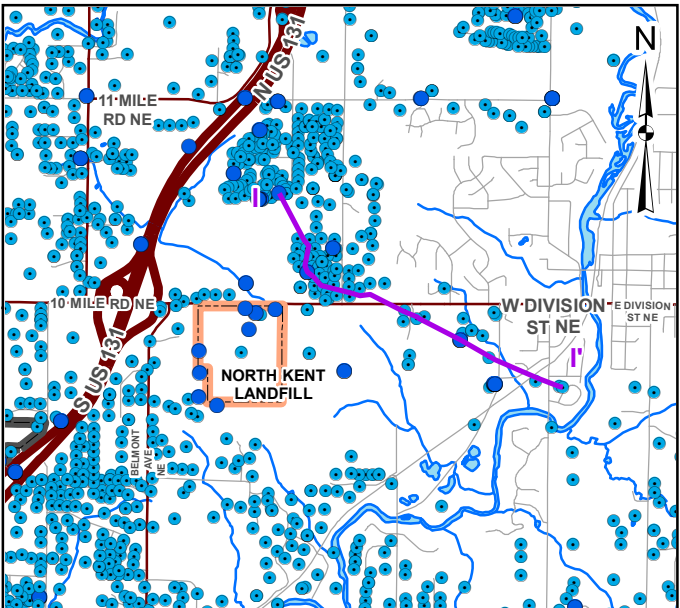
CROSS SECTION LEGEND

- | | | |
|---------------------------------------|----------------------------|---------------|
| WELL SCREEN | GRAVEL | SILT |
| ESTIMATED GROUNDWATER TABLE (11/2019) | SAND AND GRAVEL | CLAY AND SILT |
| GROUND SURFACE | SAND | CLAY |
| | SAND/GRAVEL WITH CLAY/SILT | BEDROCK |
| | CLAY/SILT WITH SAND/GRAVEL | |

OVERVIEW MAP LEGEND

- | | | |
|------------------------|---------------------|--|
| RESIDENTIAL WATER WELL | CROSS SECTION LINE | APPROXIMATE HOUSE ST. DISPOSAL SITE BOUNDARY |
| MONITORING WELL | HIGHWAY | NORTH KENT LANDFILL |
| | PRIMARY COUNTY ROAD | |
| | OTHER ROAD | |
| | RIVER OR STREAM | |
| | SURFACE WATER | |

OVERVIEW MAP



NOTES:
1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.

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0 2,500 5,000 10,000
SCALE IN FEET

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601 Fifth Street NW, Suite 102
Grand Rapids, Michigan 49504

NORTH KENT STUDY AREA CROSS SECTION I-I' GSI INVESTIGATION

PREPARED BY:
 GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
WN&J/WWW

PROJ MGR: LJP

REVIEWED BY: MW

CHECKED BY: LMN

FIGURE

DESIGNED BY: JC

DRAWN BY: JMG

SCALE: 1 in = 5,000 ft

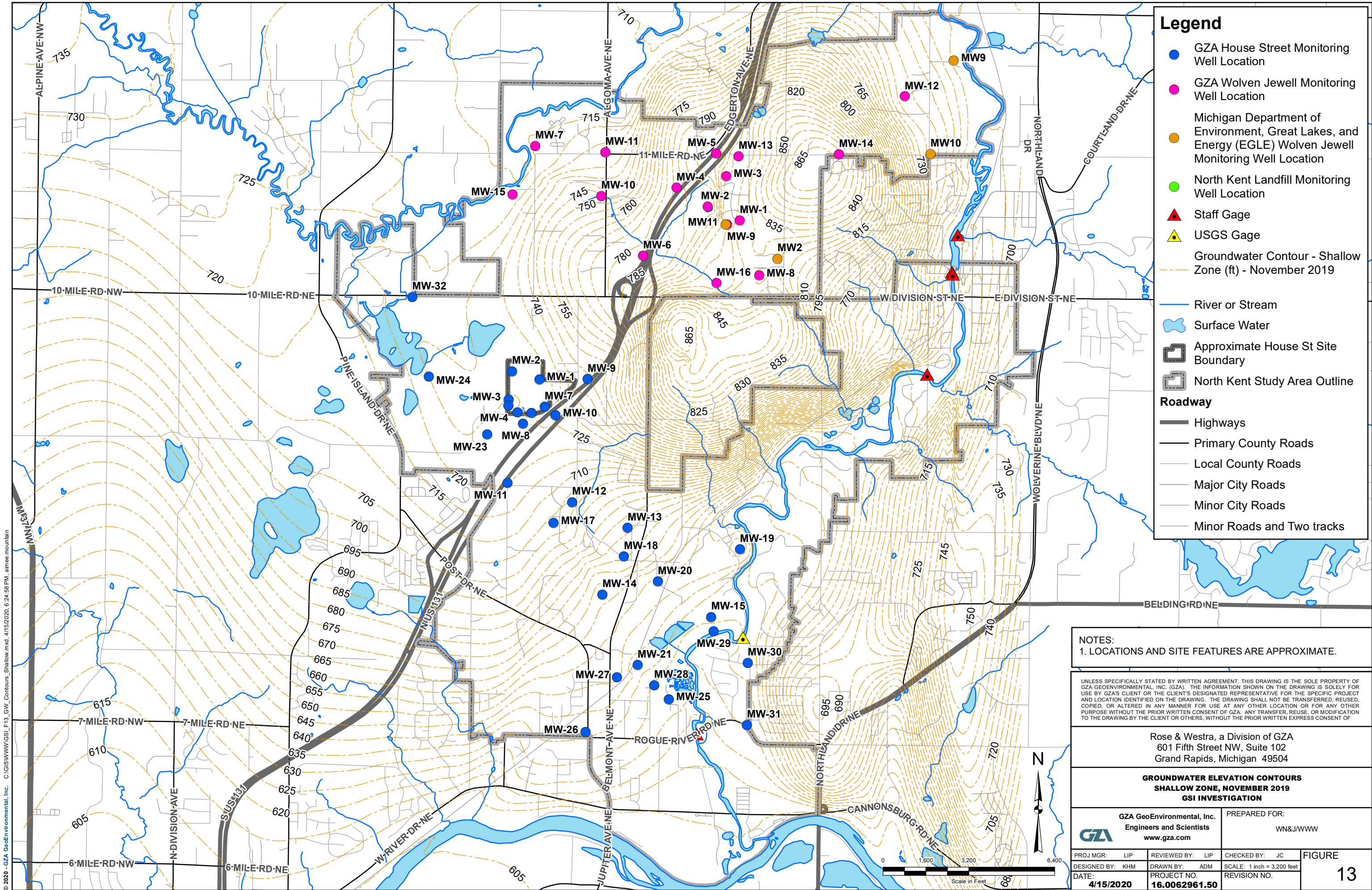
DATE: 09/17/2020

PROJECT NO: 16.0062961.50

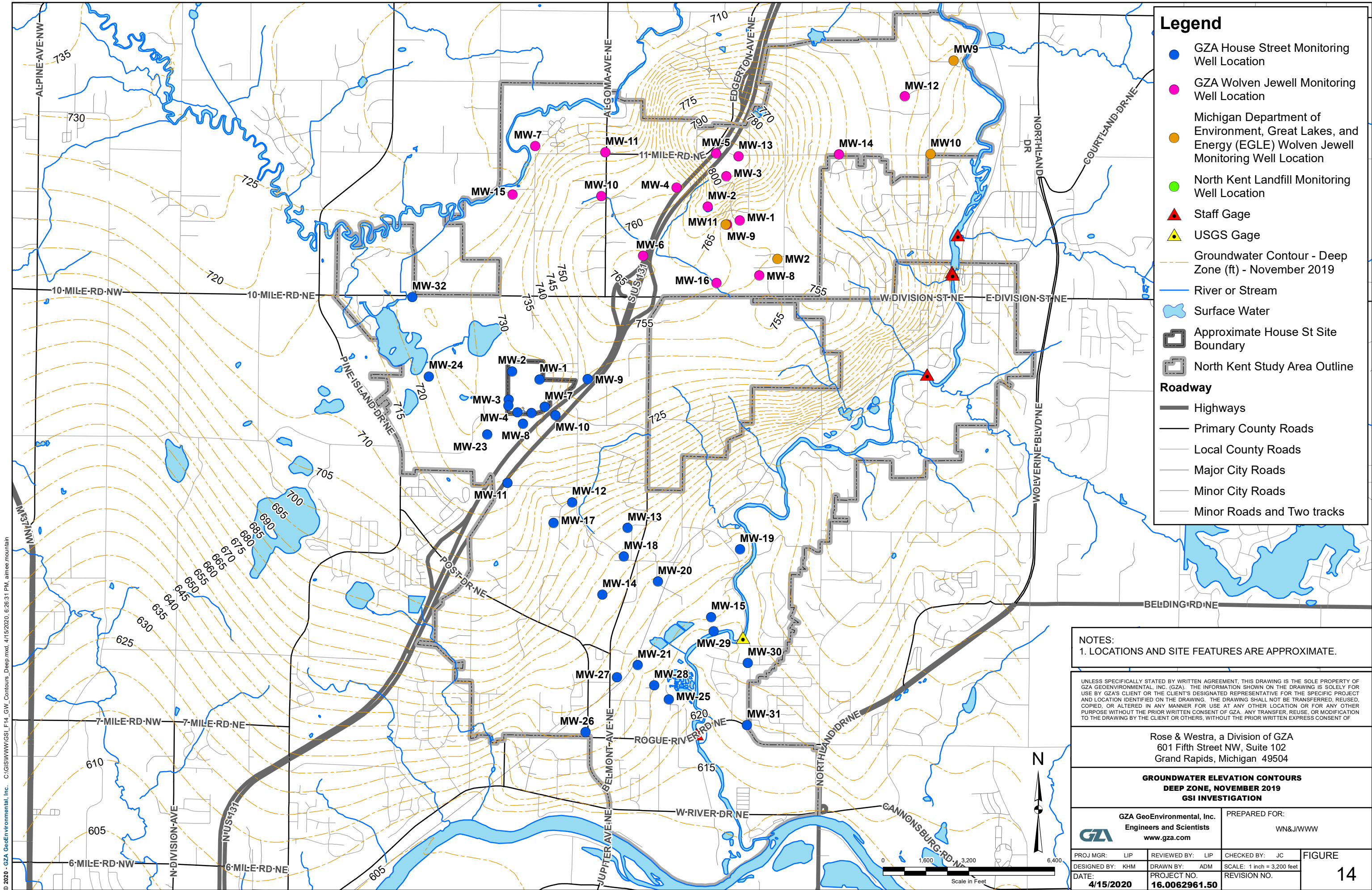
REVISION NO:

12

© 2020 - GZA GeoEnvironmental, Inc. C:\GIS\WW\GSI_F13_GW_Contours_Shallow.mxd, 4/15/2020, 6:24:58 PM, almea.mountain



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Legend

- GZA House Street Monitoring Well Location
- GZA Wolven Jewell Monitoring Well Location
- Michigan Department of Environment, Great Lakes, and Energy (EGLE) Wolven Jewell Monitoring Well Location
- North Kent Landfill (NKLf) Monitoring Well Location
- Staff Gage
- USGS Gage
- River or Stream
- Surface Water
- Approximate House St. Disposal Site Boundary
- North Kent Study Area Outline

Roadway

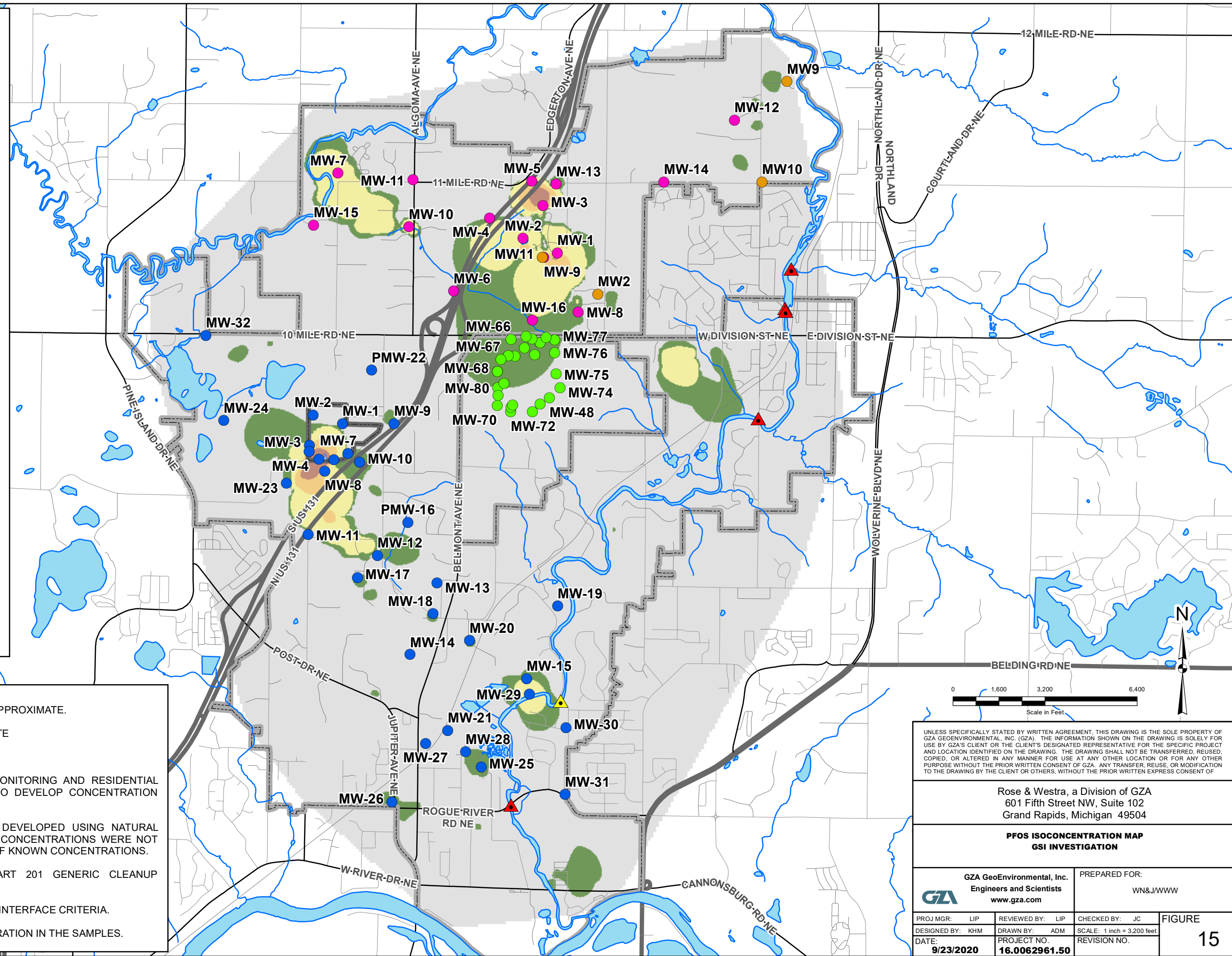
- Highways
- Primary County Roads
- Local County Roads
- Major City Roads
- Minor City Roads
- Minor Roads and Two tracks

Approximate PFOS Extent

- $\leq 0.012 \mu\text{g/L}$ (GSI)
- $>0.012 - 0.07 \mu\text{g/L}$
- $>0.07 - 5.0 \mu\text{g/L}$
- $>5.0 - 20.0 \mu\text{g/L}$
- $>20.0 - 100 \mu\text{g/L}$ (MAX)

NOTES:

- LOCATIONS AND SITE FEATURES ARE APPROXIMATE.
- PFOS = PERFLUOROOCTANE SULFONATE
- $\mu\text{g/L}$ = MICROGRAM PER LITER
- MAXIMUM CONCENTRATION FROM MONITORING AND RESIDENTIAL WELL SAMPLE RESULTS WERE USED TO DEVELOP CONCENTRATION ISOPLETHS.
- CONCENTRATION ISOPLETHS WERE DEVELOPED USING NATURAL NEIGHBOR INTERPOLATION IN ARCGIS. CONCENTRATIONS WERE NOT EXTRAPOLATED OUTSIDE OF THE AREA OF KNOWN CONCENTRATIONS.
- ABBREVIATIONS FOR MICHIGAN PART 201 GENERIC CLEANUP CRITERIA FOR RESIDENTIAL USES:
GSI = GROUNDWATER - SURFACE WATER INTERFACE CRITERIA.
- MAX = MAXIMUM DETECTED CONCENTRATION IN THE SAMPLES.



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Grand Rapids, Michigan 49504

PFOS ISOCONCENTRATION MAP GSI INVESTIGATION

GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
WN&J/WWW

| | | | |
|------------------|---------------------------|----------------------------|--------------|
| PROJ MGR: LIP | REVIEWED BY: LIP | CHECKED BY: JC | FIGURE 15 |
| DESIGNED BY: KHM | DRAWN BY: ADM | SCALE: 1 inch = 3,200 feet | |
| DATE: 9/23/2020 | PROJECT NO. 16.0062961.50 | REVISION NO. | |

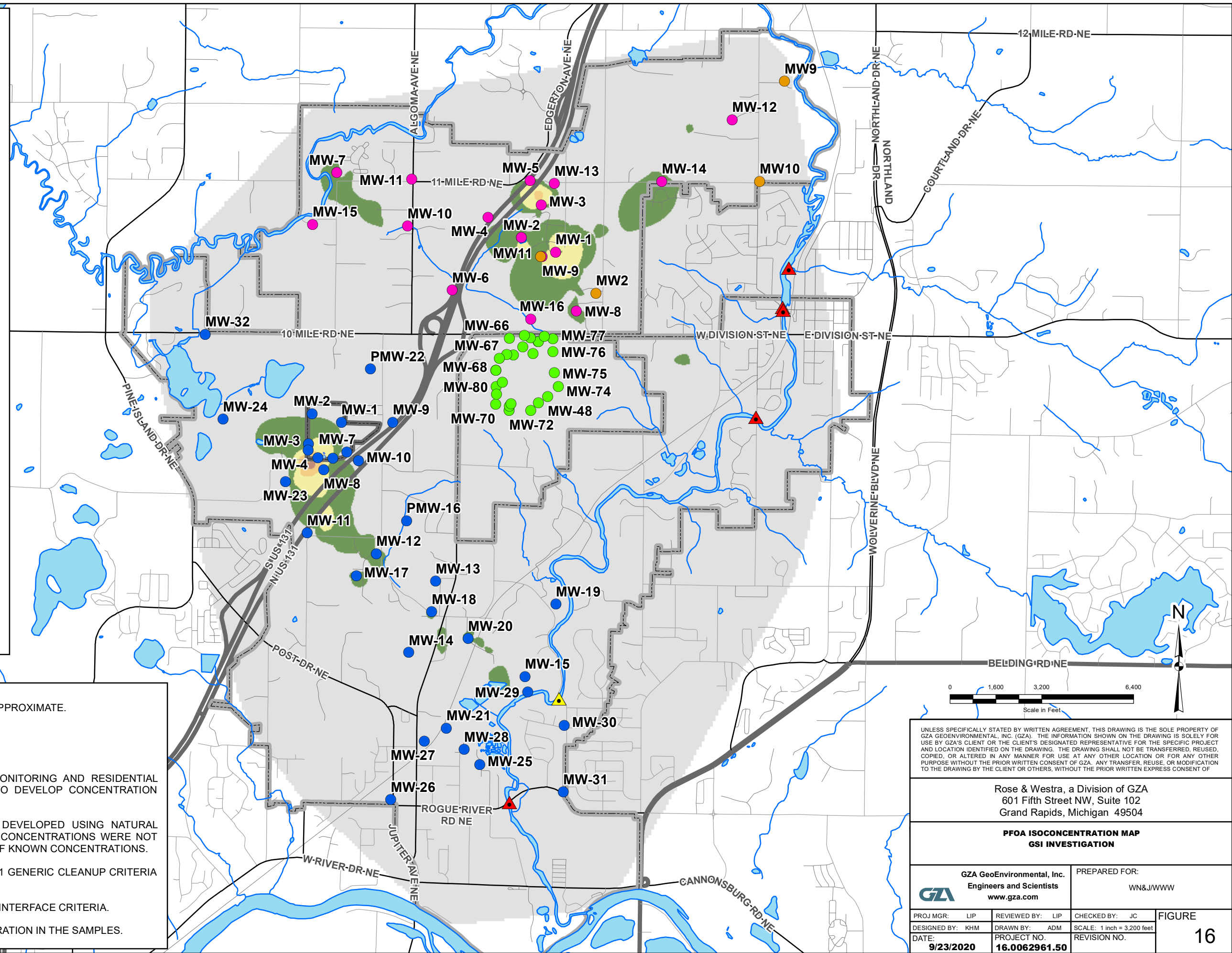
© 2020 - GZA GeoEnvironmental, Inc. I:\gals\env\proj\pfoa\GSI_F16_ISO_PFOA.mxd, 9/23/2020, 11:35:07 AM, jule.groenier

Legend

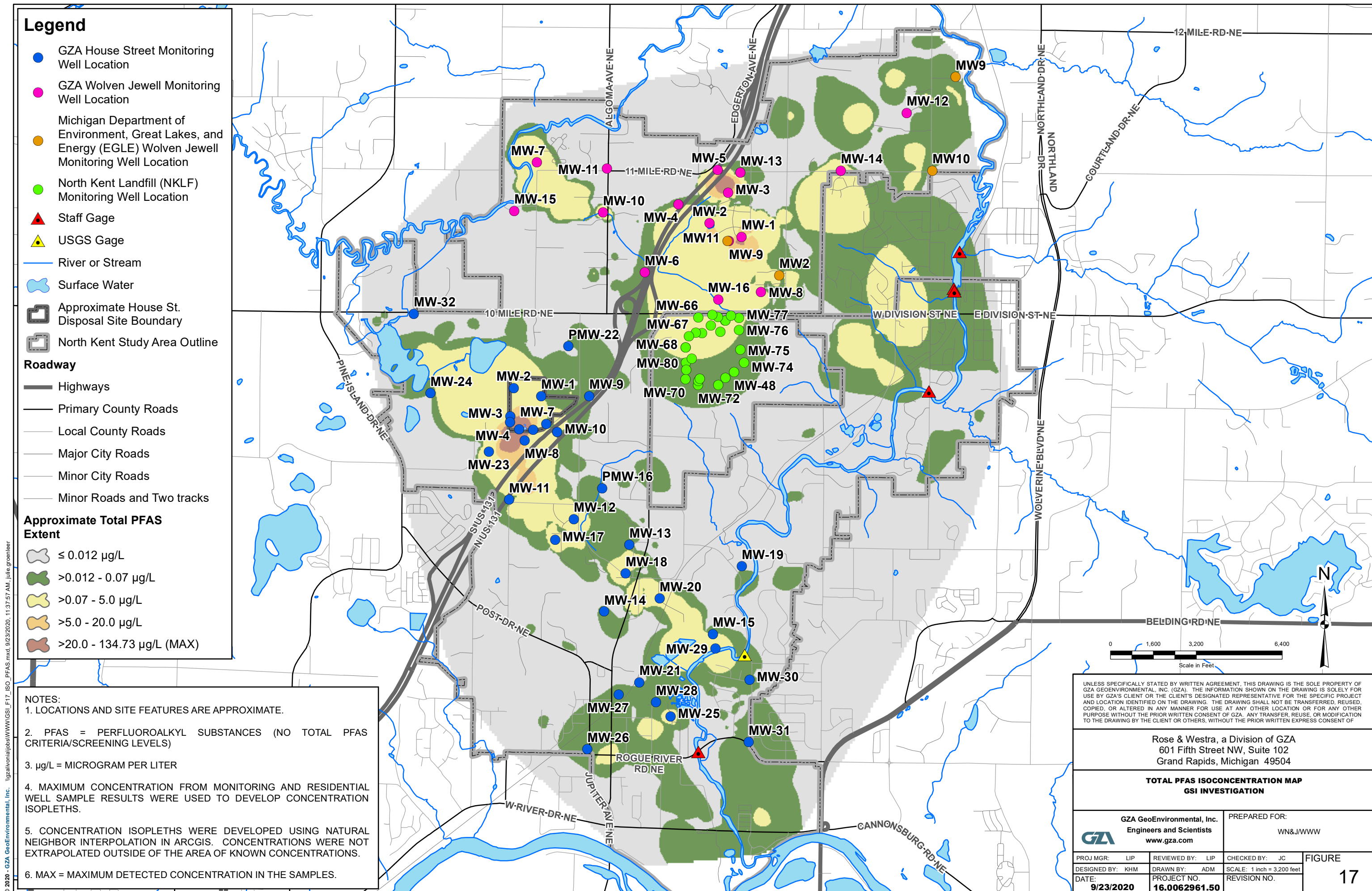
- GZA House Street Monitoring Well Location
 - GZA Wolven Jewell Monitoring Well Location
 - Michigan Department of Environment, Great Lakes, and Energy (EGLE) Wolven Jewell Monitoring Well Location
 - North Kent Landfill (NKLf) Monitoring Well Location
 - Staff Gage
 - USGS Gage
 - River or Stream
 - Surface Water
 - Approximate House St. Disposal Site Boundary
 - North Kent Study Area Outline
- ### Roadway
- Highways
 - Primary County Roads
 - Local County Roads
 - Major City Roads
 - Minor City Roads
 - Minor Roads and Two tracks
- ### Approximate PFOA Extent
- $\leq 0.07 \mu\text{g/L}$
 - $>0.07 - 1.0 \mu\text{g/L}$
 - $>1.0 - 5.0 \mu\text{g/L}$
 - $>5.0 - 12.0 \mu\text{g/L}$ (GSI)
 - $>12.0 - 16 \mu\text{g/L}$ (MAX)

- ### NOTES:
- LOCATIONS AND SITE FEATURES ARE APPROXIMATE.
 - PFOA = PERFLUORO-N-OCTANOIC ACID
 - $\mu\text{g/L}$ = MICROGRAM PER LITER
 - MAXIMUM CONCENTRATION FROM MONITORING AND RESIDENTIAL WELL SAMPLE RESULTS WERE USED TO DEVELOP CONCENTRATION ISOPLETHS.
 - CONCENTRATION ISOPLETHS WERE DEVELOPED USING NATURAL NEIGHBOR INTERPOLATION IN ARCGIS. CONCENTRATIONS WERE NOT EXTRAPOLATED OUTSIDE OF THE AREA OF KNOWN CONCENTRATIONS.
 - ABBREVIATIONS FOR MICHIAN PART 201 GENERIC CLEANUP CRITERIA FOR RESIDENTIAL USES:

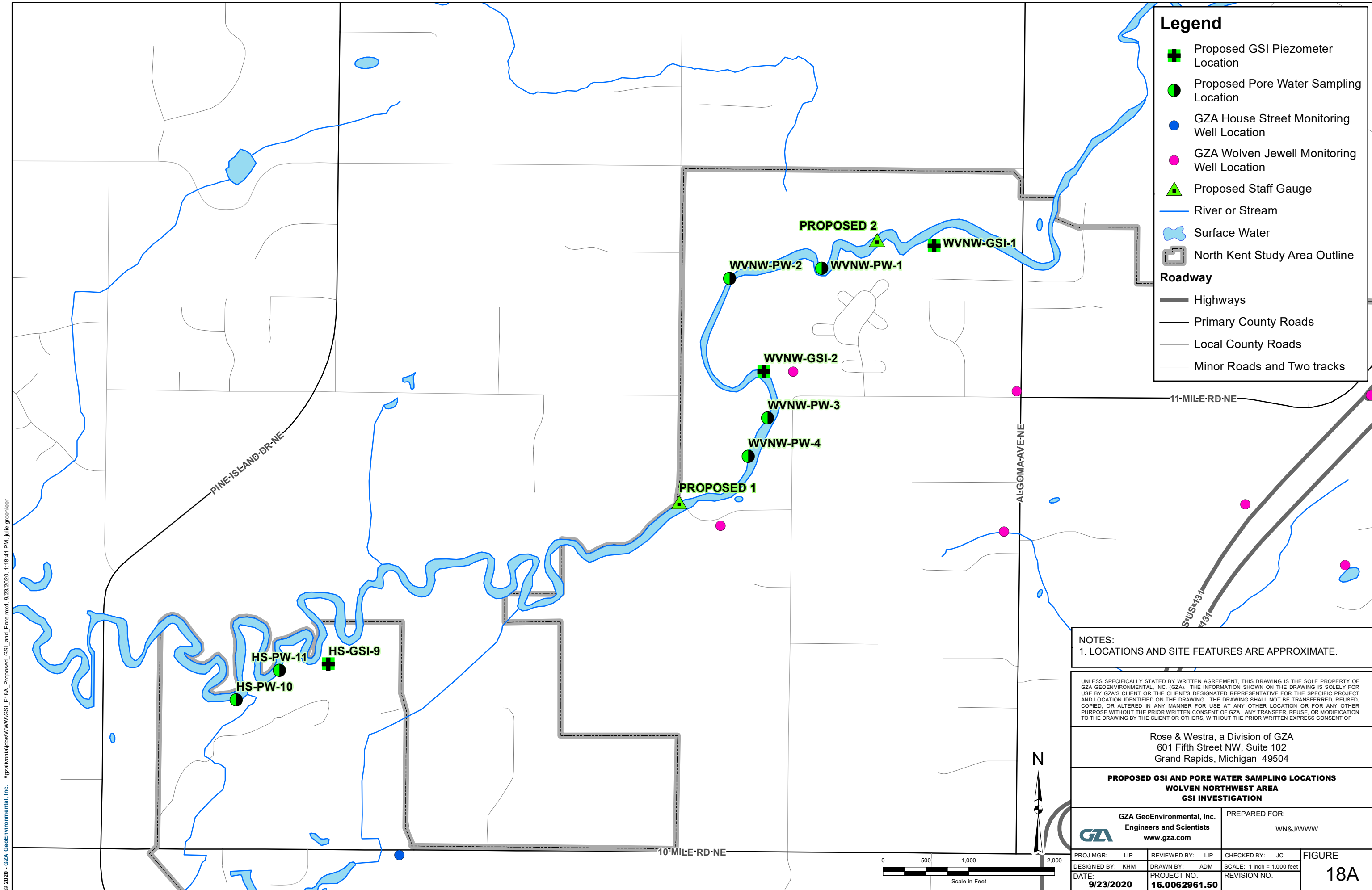
GSI = GROUNDWATER - SURFACE WATER INTERFACE CRITERIA.
 - MAX = MAXIMUM DETECTED CONCENTRATION IN THE SAMPLES.



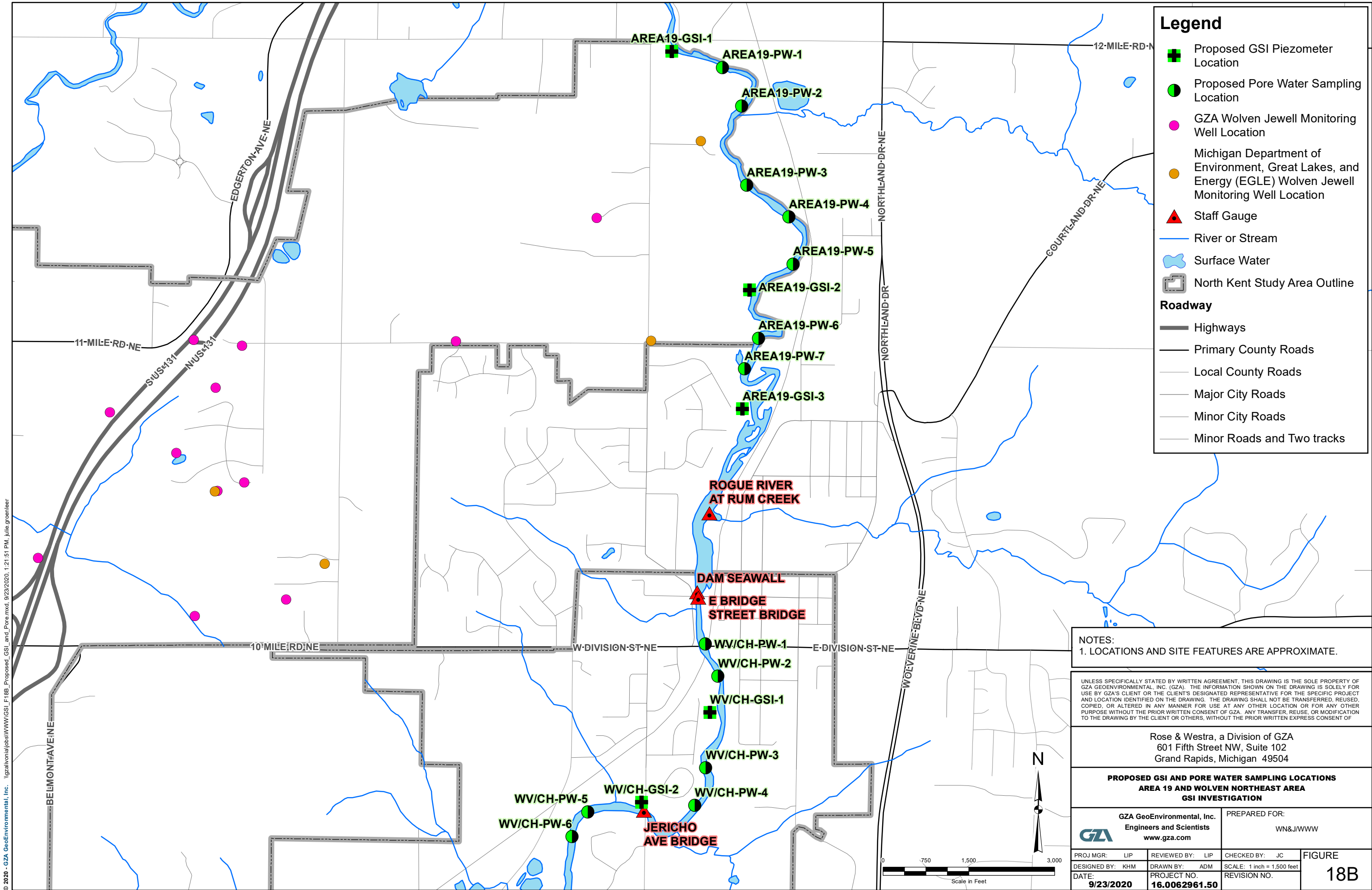
| | | | |
|---|---------------------------|----------------------------|--------|
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| PFOA ISOCONCENTRATION MAP GSI INVESTIGATION | | | |
| GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com | | PREPARED FOR: WN&J/WWW | |
| PROJ MGR: LIP | REVIEWED BY: LIP | CHECKED BY: JC | FIGURE |
| DESIGNED BY: KHM | DRAWN BY: ADM | SCALE: 1 inch = 3,200 feet | 16 |
| DATE: 9/23/2020 | PROJECT NO. 16.0062961.50 | REVISION NO. | |



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NOTES:
1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.

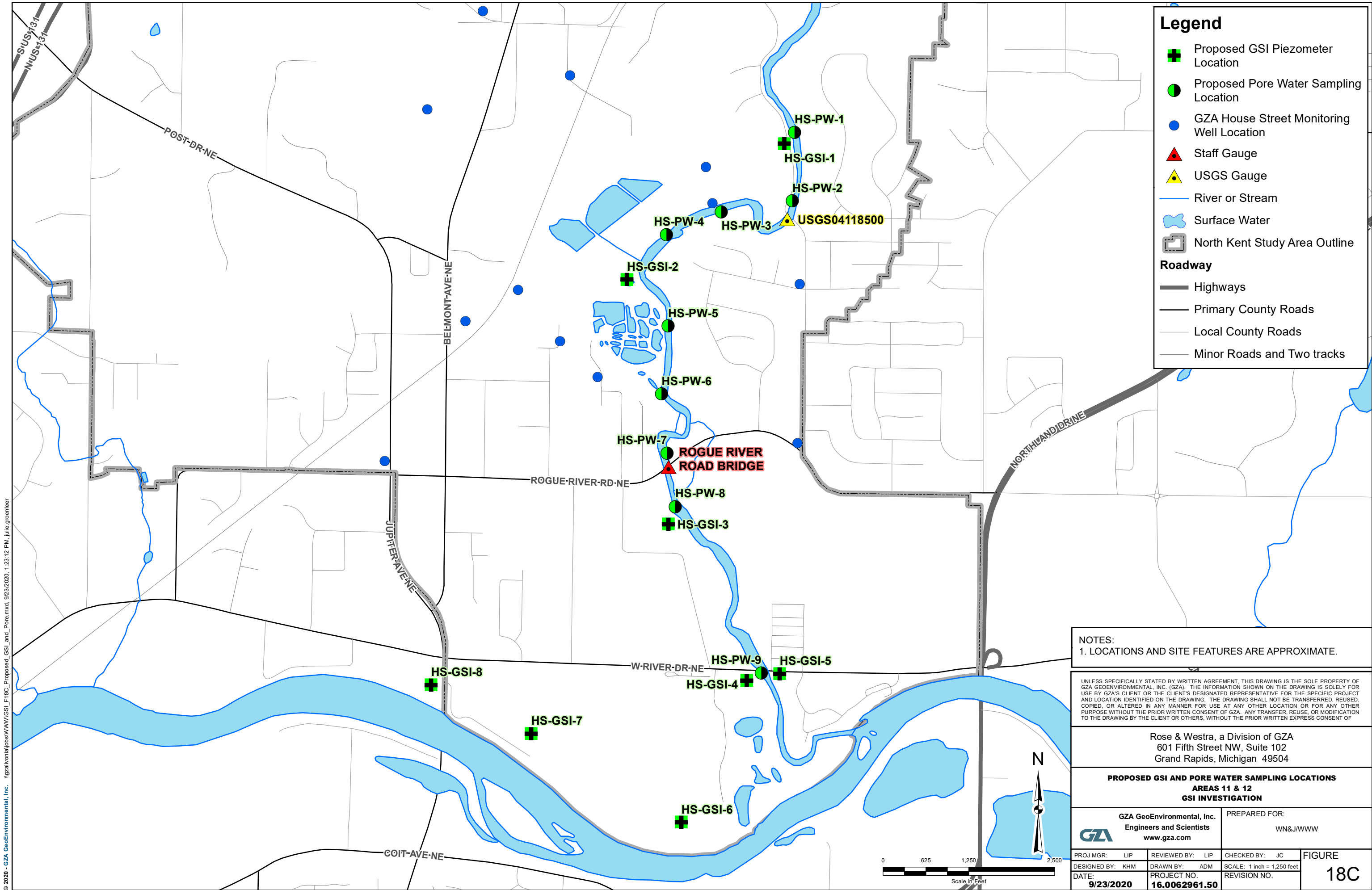
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**PROPOSED GSI AND PORE WATER SAMPLING LOCATIONS
AREA 19 AND WOVEN NORTHEAST AREA
GSI INVESTIGATION**

| | | | |
|---|---------------------------|----------------------------|---------------|
| GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com | | PREPARED FOR: WN&J/WWW | |
| PROJ MGR: LIP | REVIEWED BY: LIP | CHECKED BY: JC | FIGURE 18B |
| DESIGNED BY: KHM | DRAWN BY: ADM | SCALE: 1 inch = 1,500 feet | |
| DATE: 9/23/2020 | PROJECT NO. 16.0062961.50 | REVISION NO. | |

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APPENDIX A – GROUNDWATER MONITORING WELL INSTALLATION LOGS, SOIL BORING LOGS



GZA
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Engineers and Scientists

Wolverine World Wide, Inc.

1855 House Street NE

Belmont, Michigan

Boring No.: SB-1/MW-1D

Page: 1 of 13

File No.: 16.0062335.52

Check: J Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 9-5-17 / 9-5-17

Boring Location:

GS Elev.: 788.80' Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 8.0" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: 140lbs NA

Hammer Fall: 30.0" NA

TOC Elev.: NA NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|--|---------------------------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | 1 | 24/20 | 0-2 | 3-4 4-7 | | Yellowish-brown to brown, SILT, some fine grained Sand, trace Gravel, poorly sorted, dry (ML). | SILT (ML) | | | |
| 2 | 2 | 24/22 | 2-4 | 4-5 8-9 | | Yellowish-brown to brown, SILT, some fine grained Sand, trace Gravel, poorly sorted, dry (ML). Changing at 2.6 feet to: Yellowish-brown, fine to medium SAND, little Silt, moderately sorted, dry (SM). Changing at 2.7 feet to: Mottled dark yellowish-brown to light grayish-brown, SILT, little Clay, little Sand, trace Gravel, poorly sorted, dry (ML). | 2.6' 2.7' SAND (SM) SILT (ML) | | | |
| 3 | 3 | 24/24 | 4-6 | 8-6 7-7 | | Yellowish-red to dark brown, medium to fine grained SAND, some Silt, trace Gravel, moderate sorting, dry (SM). Changing at 4.5 feet to: Mottled dark yellowish-brown to light gray, SILT, little Clay, little fine to medium grained Sand, slightly plastic, cohesive, poorly sorted, dry (ML). | 4' 4.5' SAND (SM) SILT (ML) | | | |
| 4 | 4 | 24/24 | 6-8 | 3-4 5-5 | | Mottled dark yellowish-brown to light gray, SILT, little Clay, little fine to medium grained Sand, slightly plastic, cohesive, poorly sorted, dry (ML). Changing at 7.1 feet to: Mottled grayish-brown to dark yellowish-brown, CLAY & SILT, plastic, cohesive, moist (CL). | 7.1' CLAY & SILT (CL) | | | |
| 5 | 5 | 24 | 8-10 | 4-4 3-5 | | Mottled grayish-brown to dark yellowish-brown, CLAY & SILT, plastic, cohesive, moist (CL). | | | | |
| 6 | 6 | 24/20 | 10-12 | 2-4 2-2 | | Mottled grayish-brown to dark yellowish-brown, CLAY & SILT, plastic, cohesive, moist (CL). Changing at 10.4 feet to: Dark gray to dark grayish-brown, fine to medium grained SAND, trace Silt, moderately sorted, moist (SP). Changing at 11.4 feet to: Dark gray to dark grayish-brown, fine to coarse SAND, trace | 10.4' 11.4' SAND (SP) SAND (SW) | | | |
| 7 | | | | | | | 12' | | | |

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-1/MW-1D

BORING WELL 6233550 WWW.HOUSE STREET NE.GPJ GZA_CORP.GDT 1/25/18



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Engineers and Scientists

Wolverine World Wide, Inc.

1855 House Street NE

Belmont, Michigan

Boring No.: SB-1/MW-1D

Page: 2 of 13

File No.: 16.0062335.52

Check: J Cai

| Sample Information | | | | | | Demont, Michigan | | Check: J Cai | | |
|---|-----|------------------|-------------|--------------|-----------|---|--|--------------|------------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 13 | 7 | 24/24 | 12-14 | 5-6 14-16 | | Gravel, trace Silt, trace Clay, slightly cohesive, poorly sorted, moist to wet (SW). Dark grayish-brown to very dark grayish-brown, CLAY & SILT, trace Gravel, plastic, cohesive, poorly sorted, moist (CL). Changing at 13.6 feet to: Grayish-brown, coarse to medium SAND, trace Gravel, trace Silt, poorly sorted, moist (SP). Changing at 13.7 feet to: Mottled yellowish-brown to light yellowish-brown to dark gray to black, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, poorly sorted, moist (CL). Mottled yellowish-brown to light yellowish-brown to dark gray to black, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, poorly sorted, moist (CL). Changing at 15.0 feet to: Black, fine to coarse grained SAND, trace Gravel, trace Silt, poorly sorted, moist (SW). Changing at 15.1 feet to: Brownish-yellow, SILT, very well sorted, moist to wet (ML). Light yellowish-brown to pale brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing at 17.3 feet to: Dark yellowish-brown, fine grained SAND, little Clay, little Silt, slightly to moderately plastic, cohesive, moderately sorted, moist (SC). Light yellowish-brown to pale brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing at 19.0 feet to: Yellowish-brown, fine grained SAND, little Clay, little Silt, moderately plastic, cohesive, moderately sorted, moist (SC). Changing at 19.3 feet to: Light yellowish-brown to pale brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Light yellowish-brown to pale brown, fine grained SAND, trace Silt, very well sorted, moist (SP). | CLAY & SILT (CL) | | | |
| 14 | 8 | 24/24 | 14-16 | 4-12 7-7 | | | 13.6' 13.7' SAND (SP) CLAY & SILT (CL) | | | |
| 15 | | | | | | | 15' 15.1' SAND (SW) SILT (ML) | | | |
| 16 | 9 | 24/18 | 16-18 | 3-3 5-6 | | | 16' SAND (SP) | | | |
| 17 | | | | | | | 17.3' SAND (SM) | | | |
| 18 | 10 | 24/20 | 18-20 | 2-4 7-9 | | | 18' SAND (SP) | | | |
| 19 | | | | | | | 19' 19.3' SAND (SM) SAND (SP) | | | |
| 20 | 11 | 24/17 | 20-22 | 3-6 7-10 | | | | | | |
| 21 | | | | | | | | | | |
| 22 | 12 | 24/18 | 22-24 | 3-5 6-9 | | Light yellowish-brown to pale brown, fine grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 23 | | | | | | | | | | |
| 24 | 13 | 24/23 | 24-26 | 5-9 10-14 | | Light yellowish-brown to pale brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing at 25.5 feet to: Yellowish-brown, SILT & CLAY, little Silt, slightly plastic, cohesive, well sorted, moist (CL). | 25.5' CLAY & SILT (CL) | | | |
| 25 | | | | | | | 26' | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-1/MW-1D | |

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-1/MW-1D

BORING WELL 6233550 WWW.HOUSE STREET NE.GPJ GZA CORP.GDT 1/25/18



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Wolverine World Wide, Inc.

1855 House Street NE

Belmont, Michigan

Boring No.: SB-1/MW-1D

Page: 3 of 13

File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|---|-------------------------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 27 | 14 | 24/24 | 26-28 | 6-8 13-13 | | Light yellowish-brown to pale brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing at 26.3 feet to: Yellowish-brown, SILT & CLAY, little Silt, slightly plastic, cohesive, well sorted, moist (CL). Changing at 27.7 feet to: Light yellowish-brown to pale brown, fine grained SAND, trace Silt, very well sorted, moist (SP). | 26.3' SAND (SP) CLAY & SILT (CL) | | | |
| 28 | 15 | 24/23 | 28-30 | 4-10 8-13 | | Yellowish-brown, CLAY & SILT, little Sand, slightly plastic, cohesive, well sorted, moist (CL). Changing at 28.9 feet to: Light yellowish-brown to pale brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing at 29.1 feet to: Yellowish-brown, CLAY & SILT, little Sand, slightly plastic, cohesive, well sorted, moist (CL). Changing at 29.3 feet to: Yellowish-brown, SILT, cohesive, well sorted, moist (ML). Changing at 29.9 feet to: Yellowish-brown, CLAY & SILT, little Sand, slightly plastic, cohesive, well sorted, moist (CL). | 27.7' SAND (SP) CLAY & SILT (CL) | | | |
| 30 | 16 | 24/22 | 30-32 | 9-12 16-15 | | Yellowish-brown, CLAY & SILT, little Sand, slightly plastic, cohesive, well sorted, moist (CL). Changing at 29.3 feet to: Yellowish-brown, SILT, cohesive, well sorted, moist (ML). Changing at 29.9 feet to: Yellowish-brown, CLAY & SILT, little Sand, slightly plastic, cohesive, well sorted, moist (CL). | 28.9' SAND (SP) CLAY & SILT (CL) | | | |
| 32 | 17 | 24/22 | 32-34 | 4-10 8-13 | | Yellowish-brown, CLAY & SILT, little Sand, slightly plastic, cohesive, well sorted, moist (CL). Changing at 30.6 feet to: Light yellowish-brown to pale brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing at 31.0 feet to: Yellowish-brown, CLAY & SILT, little Silt, slightly plastic, cohesive, well sorted, moist (CL). | 29.1' SAND (SP) CLAY & SILT (CL) | | | |
| 34 | 18 | 24/23 | 34-36 | 7-13 20-25 | | Yellowish-brown, CLAY & SILT, little Silt, slightly plastic, cohesive, well sorted, moist (CL). Changing at 32.5 feet to: Light gray to light brownish-gray, fine grained SAND, trace Silt, very well sorted, moist (SP). | 29.3' CLAY & SILT (CL) SILT (ML) | | | |
| 36 | 19 | 24/20 | 36-38 | 4-11 18-26 | | Light gray to light brownish-gray, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing 37.1 feet to: Light gray, fine to medium SAND, trace Silt, well sorted, moist (SP). | 29.9' CLAY & SILT (CL) | | | |
| 38 | 20 | 24/23 | 38-40 | 4-7 12-15 | | Very pale brown to light yellowish-brown, SILT, little Clay, slightly plastic, cohesive, well sorted, moist (ML). Changing at 38.2 feet to: Yellowish-brown, CLAY & SILT, plastic, cohesive, moderately well sorted, moist (CL). Changing at 38.4 feet to: Very pale, brown to light yellowish-brown, SILT, little Clay, slightly plastic, cohesive, | 30.6' SAND (SP) CLAY & SILT (CL) | | | |
| 39 | | | | | | | 31' CLAY & SILT (CL) | | | |
| | | | | | | | 32.5' SAND (SP) | | | |
| | | | | | | | 38' SILT (ML) | | | |
| | | | | | | | 38.2' CLAY & SILT (CL) | | | |
| | | | | | | | 38.4' CLAY & SILT (CL) | | | |
| | | | | | | | 38.7' SILT (ML) | | | |
| | | | | | | | 38.9' CLAY & SILT (CL) | | | |
| | | | | | | | SILT (ML) | | | |
| | | | | | | | 40' | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-1/MW-1D | |

BORING WELL 6233550 WWW.HOUSE STREET NE.GPJ GZA CORP.GDT 1/25/18



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1855 House Street NE

Belmont, Michigan

Boring No.: SB-1/MW-1D

Page: 4 of 13

File No.: 16.0062335.52

Check: J Cai

| Sample Information | | | | | | Demont, Michigan | Check: J Cai | | | |
|---|-----|------------------|-------------|----------------|-----------|---|--|---------|------------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 41 | 21 | 24/20 | 40-42 | 5-10 14-14 | | moderately well sorted, moist (ML). Changing at 38.7 feet to: Yellowish-brown, CLAY & SILT, plastic, cohesive, moderately well sorted, moist (CL). Changing at 38.9 feet to: Very pale brown to light yellowish-brown, SILT, little Clay, slightly plastic, cohesive, well sorted, moist (ML). Light yellowish-brown, CLAY & SILT, slight plastic, cohesive, very well sorted, moist (CL). Changing at 40.2 feet to: Very pale brown to yellowish-brown, SILT, little Clay, slightly plastic, coheisive, well sorted, moist (ML). Changing at 40.5 feet to: Light yellowish-brown, CLAY & SILT, slight plastic, cohesive, very well sorted, moist (CL). Changing at 41.0 feet to: Very pale brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Very pale brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing at 42.2 feet to: Light yellowish-brown, SILT, trace Clay, slightly plastic, cohesive, well sorted, moist (ML).Changing at 42.4 feet to: Very pale, brown, fine grained SAND, trace Silt, very well sorted, moist (SP). | 40.2' CLAY & SILT (CL) 40.5' SILT (ML) 41' CLAY & SILT (CL) SAND (SP) | | | |
| 42 | 22 | 24/18 | 42-44 | 5-5 11-13 | | Very pale brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing at 42.2 feet to: Light yellowish-brown, SILT, trace Clay, slightly plastic, cohesive, well sorted, moist (ML).Changing at 42.4 feet to: Very pale, brown, fine grained SAND, trace Silt, very well sorted, moist (SP). | 42.2' SAND (SP) 42.4' SILT (ML) SAND (SP) | | | |
| 44 | 23 | 24/20 | 44-46 | 10-10 15-22 | | Very pale, brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing at 45.3 feet to: Brown to yellowish-brown, CLAY & SILT, plastic, cohesive, very well sorted, moist (CL). Changing at 45.6 feet to: Very pale brown, fine grained SAND, trace Silt, very well sorted, moist (SP). | 45.3' CLAY (CL) 45.6' SILT (ML) SAND (SP) | | | |
| 46 | 24 | 24/20 | 46-48 | 4-13 16-21 | | Very pale brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing at 51.2 feet to: Yellowish-brown, SILT, trace Clay, cohesive, non to slightly plastic, very well sorted (bedded), moist (ML).Changing at 51.7 feet to: Very pale brown, fine grained SAND, trace Silt, very well sorted, moist, with occasional very thin Silt seams (SP). | | | | |
| 48 | 25 | 24/17 | 48-50 | 5-12 23-28 | | Very pale brown, fine grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 50 | 26 | 24/20 | 50-52 | 4-6 15-17 | | Very pale brown, fine grained SAND, trace Silt, very well sorted, moist, with occasional very thin Silt seams (SP). | 51.2' SILT (ML) 51.7' SAND (SP) | | | |
| 52 | 27 | 24/16 | 52-54 | 7-12 16-21 | | Very pale brown, fine grained SAND, trace Silt, very well sorted, moist, with occasional very thin Silt seams (SP). | | | | |
| 53 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-1/MW-1D | |

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|--|---|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 55 | 28 | 24/20 | 54-56 | 5-11 17-26 | | Very pale brown, fine grained SAND, trace Silt, very well sorted, moist, with occasional very thin Silt seams (SP). Changing at 54.2 feet to: Very pale brown, fine grained SAND, little Silt, very well sorted, moist (SP). | 54.2' SAND (SM) | | | |
| 56 | 29 | 24/23 | 56-58 | 4-9 16-20 | | Light yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, moist (SP). Changing at 56.3 feet to: Very pale brown, fine grained SAND, little Silt, very well sorted, moist (SM). | 56' SAND (SP) 56.3' SAND (SM) | | | |
| 58 | 30 | 24/24 | 58-60 | 9-13 18-24 | | Very pale brown, fine grained SAND, little Silt, very well sorted, moist (SM). Changing at 59.0 feet to: Brown, fine grained SAND, some Silt, very well sorted, moist to wet (SM). | | | | |
| 60 | 31 | 24/22 | 60-62 | 11-13 22-28 | | Brown, fine grained SAND, little Silt, non plastic, moderately cohesive, very well sorted, moist (SP). | | | | |
| 62 | 32 | 24/22 | 62-64 | 6-6 11-14 | | Brown, fine grained SAND, little Silt, non plastic, moderately cohesive, very well sorted, moist (SM). Changing at 62.7 feet to: Brown, fine to medium grained SAND, trace Silt, grading fine with depth, well sorted, damp (SP). Changing at 63.0 feet to: Brown, fine grained SAND, trace Silt, very well sorted, damp (SP). | 62.7' SAND (SP) 63' SAND (SM) | | | |
| 64 | 33 | 24/20 | 64-66 | 11-3 6-11 | | Brown, fine to medium grained SAND, trace Silt, grading fine with depth, well sorted, damp (SP). Changing at 65.0 feet to: Brown, fine grained SAND, some Silt, very well sorted, damp (SM). Changing at 65.1 feet to: Brown, fine to medium grained SAND, trace Silt, grading fine with depth, well sorted, wet (SP). Changing at 65.6 feet to: Brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). | 64' SAND (SP) 65' SAND (SM) 65.1' SAND (SP) 65.6' CLAY & SILT (CL) | | | |
| 66 | 34 | 24/24 | 66-68 | 5-11 12-14 | | Brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). Changing at 67.0 feet to: Yellowish-brown, fine to medium grained SAND, little Silt, very well sorted wet (SP). | 66' SAND (SP) 67' SAND (SM) | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-1/MW-1D | |

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|--------------|-----------|--|---------------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 69 | 35 | 24/13 | 68-70 | 2-4 7-13 | | Yellowish-brown, fine to medium grained SAND, little Silt, very well sorted wet (SP). | SAND (SM) | | | |
| 70 | 36 | 24/18 | 70-72 | 2-6 12-16 | | Yellowish-brown, fine to medium grained SAND, little Silt, very well sorted wet (SP). | | | | |
| 72 | 37 | 24/23 | 72-74 | 3-3 5-9 | | Brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). Changing at 73.1 feet to: Brown, CLAY & SILT, slightly plastic, moderately cohesive, well sorted, moist to wet (CL). | 72' SAND (SP) | | | |
| 73 | | | | | | | 73.1' CLAY & SILT (CL) | | | |
| 74 | 38 | 24/20 | 74-76 | 2-1 2-2 | | Brown, CLAY & SILT, slightly plastic, moderately cohesive, well sorted, moist to wet (CL). | | | | |
| 76 | 39 | 24/19 | 76-78 | 2-5 8-11 | | Brown, CLAY & SILT, slightly plastic, moderately cohesive, well sorted, moist to wet (CL). | | | | |
| 78 | 40 | 24/23 | 78-80 | 2-4 5-10 | | Brown, CLAY & SILT, slightly plastic, moderately cohesive, well sorted, moist to wet (CL). Changing at 79.3 feet to: Yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Changing at 79.4 feet to: Yellowish-brown, medium to coarse grained SAND, trace Silt, moderately well sorted, wet (SW). | 79.4' SAND (SW) | | | |
| 80 | 41 | 24/22 | 80-82 | 2-4 6-7 | | Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | 80' SAND (SP) | | | |
| 81 | | | | | | | 82' | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|--------------|-----------|--|--|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 82 | 42 | 24/24 | 82-84 | 2-5 11-12 | | Yellowish-brown, medium to coarse grained SAND, trace Silt, well sorted, wet (SW). Changing at 82.4 feet to: Yellowish-brown, medium to coarse grained SAND, trace Silt, poorly sorted, wet (SW). Changing at 83.2 feet to: Yellowish-brown to gray, GRAVEL, some coarse grained Sand, trace Silt, poorly sorted, wet (GW). Changing at 83.4 feet to: Yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Changing at 83.5 feet to: Yellowish-brown to gray, GRAVEL, some coarse grained Sand, trace Silt, poorly sorted, wet (GW). Changing at 83.7 feet to: Yellowish-brown, fine to medium SAND, trace Silt, trace Gravel, well sorted, wet (SP). | SAND (SW) 82.4' SAND (SW) 83.4' CLAY & SILT (CL) 83.5' GRAVEL (GW) 83.7' SAND (SP) 84.7' GRAVEL (GW) 85.2' SAND (SP) | | | |
| 83 | | | | | | | | | | |
| 84 | 43 | 24/23 | 84-86 | 3-6 11-14 | | Yellowish-brown, fine to medium SAND, trace Silt, trace Gravel, well sorted, wet (SP). Changing at 84.7 feet to: Yellowish-brown to gray, GRAVEL, some coarse to medium grained Sand, trace Silt, poorly sorted, wet (GW). Changing at 85.2 feet to: Yellowish-brown, fine grained SAND, trace Silt, very well sorted, wet (SP). Yellowish-brown, fine grained SAND, trace Silt, very well sorted, wet (SP). Changing at 87.2 feet to: Yellowish-brown, coarse grained SAND, some Gravel, trace Silt, very well sorted, wet (SW). Yellowish-brown, medium to coarse grained SAND, some Gravel, trace Silt, poorly sorted wet (SW). | | | | |
| 85 | | | | | | | | | | |
| 86 | 44 | 24/24 | 86-88 | 3-4 9-15 | | | | | | |
| 87 | | | | | | | | | | |
| 88 | 45 | 24/16 | 88-90 | 3-5 8-12 | | | 87.2' SAND (SW) | | | |
| 89 | | | | | | | | | | |
| 90 | 46 | 24/22 | 90-92 | 3-4 7-11 | | Yellowish-brown, fine to medium SAND, trace Silt, moderately sorted, wet (SP). Changing at 91.6 feet to: Dark grayish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Changing at 91.7 feet to: Yellowish-brown, medium to coarse grained SAND, trace Silt, trace Gravel, grading finer with depth, well sorted, wet (SW). Yellowish-brown, medium to coarse grained SAND, trace Silt, trace Gravel, grading finer with depth, well sorted, wet (SW). | 90' SAND (SP) | | | |
| 91 | | | | | | | | | | |
| 92 | 47 | 24/1 | 92-94 | 5-7 12-13 | | | 91.6' CLAY & SILT (CL) 91.7' SAND (SW) | 1 | | |
| 93 | | | | | | | | | | |
| 94 | 48 | 24/4 | 94-96 | 5-7 9-10 | | Yellowish-brown, medium to coarse grained SAND, trace Silt, trace Gravel, grading finer with depth, well sorted, wet (SW). | | | | |
| 95 | | | | | | | | | | |
| <div>REMARKS</div> <div>1. Groundwater was encountered at approximately 91.7 feet below ground surface.</div> | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|--------------|-----------|--|---|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 97 | 49 | 24/8 | 96-98 | 2-3 6-12 | | Yellowish-brown, medium to coarse grained SAND, trace Silt, trace Gravel, grading finer with depth, well sorted, wet (SW). | SAND (SW) | | | |
| 98 | 50 | 24/11 | 98-100 | 2-3 10-12 | | Yellowish-brown, medium to coarse grained SAND, trace Silt, trace Gravel, grading finer with depth, well sorted, wet (SW). | | | | |
| 100 | 51 | 24/23 | 100-102 | 3-4 9-13 | | Yellowish-brown, medium to coarse grained SAND, trace Silt, trace Gravel, grading finer with depth, well sorted, wet (SW). Changing at 101.8 feet to: Dark yellowish-brown to yellowish-brown, CLAY & SILT, moderately plastic, cohesive, well sorted, moist (CL). | | | | |
| 102 | 52 | 24/11 | 102-104 | 1-1 3-9 | | Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | 101.8' 102'CLAY & SILT (CL) SAND (SP) | | | |
| 104 | 53 | 24/11 | 104-106 | 4-4 15-26 | | Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 106 | 54 | 24/11 | 106-108 | 1-5 15-30 | | Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 108 | 55 | 24/10 | 108-110 | 4-9 25-32 | | Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|--|---------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 111 | 56 | 24/10 | 110-112 | 4-9 20-31 | | Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | SAND (SP) | | | |
| 112 | 57 | 24/8 | 112-114 | 2-5 14-27 | | Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 114 | 58 | 24/11 | 114-116 | 2-4 10-28 | | Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 116 | 59 | 24/14 | 116-118 | 4-10 25-40 | | Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 118 | 60 | 24/10 | 118-120 | 3-7 21-25 | | Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 120 | 61 | 24/16 | 120-122 | 4-7 14-31 | | Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 122 | 62 | 24/14 | 122-124 | 3-6 22-32 | | Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 123 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|---|---------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 125 | 63 | 24/19 | 124-126 | 5-13 29-45 | | Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | SAND (SP) | | | |
| 126 | 64 | 24/1 | 126-128 | 1-5 18-34 | | Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 128 | 65 | 24/24 | 128-130 | 6-18 34-48 | | Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 130 | 66 | 24/23 | 130-132 | 5-10 28-46 | | Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). Changing at 131.5 feet to: Yellowish-brown, medium to coarse grained SAND, trace Silt, moderately sorted, wet (SW). Changing at 131.7 feet to: Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 132 | 67 | 24/23 | 132-134 | 5-15 30-45 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 134 | 68 | 24/24 | 134-136 | 3-5 21-31 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 136 | 69 | 24/11 | 136-138 | 6-16 29-43 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 137 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|------------------|-----------|---|---------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 139 | 70 | 24/6 | 138-140 | 2-3 13-33 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | SAND (SP) | | | |
| 140 | 71 | 24/11 | 140-142 | 2-4 9-27 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 142 | 72 | 24/14 | 142-144 | 3-10 25-42 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 144 | 73 | 24/20 | 144-146 | 9-25-50/5" | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 146 | 74 | 24/18 | 146-148 | 6-27 52-53 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 148 | 75 | 24/12 | 148-150 | 9-34 48-50/3" | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 150 | 76 | 24/0 | 150-152 | 6-11 26-29 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 151 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|---|---------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 153 | 77 | 24/24 | 152-154 | 2-8 26-31 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | SAND (SP) | | | |
| 154 | 78 | 24/20 | 154-156 | 5-12 28-43 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 156 | 79 | 24/1 | 156-158 | 3-6 18-21 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 158 | 80 | 24/24 | 158-160 | 7-8 19-25 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 160 | 81 | 24/7 | 160-162 | 3-10 21-29 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 162 | 82 | 24/0 | 162-164 | 4-11 25-32 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 164 | 83 | 24/6 | 164-166 | 1-14 34-45 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | | |
| REMARKS | | | | | | | | | | |
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| Sample Information | | | | | | | | Check: | J Cai |
|---|-----|------------------|-------------|------------------|-----------|---|---------------------|---------|------------------------|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
| | | | | | | | | | |
| 167 | 84 | 24/24 | 166-168 | 9-29 51-50/3" | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | SAND (SP) | | |
| 168 | 85 | 24/13 | 168-170 | 3-6 18-34 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | |
| 169 | | | | | | | | | |
| 170 | 86 | 24/1 | 170-172 | 5-6 19-44 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | | | |
| 171 | | | | | | | | | |
| 172 | 87 | 24/16 | 172-174 | 2-4 7-14 | | Yellowish-brown, fine to medium grained SAND, little Silt, trace Gravel, well sorted, wet (SP). | 172' SAND (SM) | | |
| 173 | | | | | | | | | |
| 174 | 88 | 24/24 | 174-176 | 8-13 21-23 | | Yellowish-brown, fine to medium grained SAND, little Silt, very well sorted, wet (SP). Changing at 174.7 feet to: Yellowish-brown, SILT, trace Clay, non plastic, cohesive, very well sorted (bedded), moist (ML). Changing at 175.5 feet to: Yellowish-brown, SILT, trace Clay, moderately plastic, cohesive, very well sorted (bedded), wet (ML). | 174.7' SILT (ML) | | |
| 175 | | | | | | | | | |
| 176 | | | | | | Bottom of Borehole at 176.0 Feet | 176' | 2 | |
| 177 | | | | | | | | | |
| 178 | | | | | | | | | |
| 179 | | | | | | | | | |
| <div>REMARKS</div> <div>2. Monitoring well was installed in borehole upon completion. Well screen set from 170.1 to 174.7 feet below ground surface.</div> | | | | | | | | | |
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Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 9-5-17 / 9-5-17

Boring Location:

GS Elev.: 788.70' Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30.0"

NA

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|---|------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | | | | | | See SB-1/MW-1D boring log for detailed soil descriptions. | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-1S

BORING WELL 6233550 WWW.HOUSE STREET NE.GPJ GZA_CORP.GDT 1/25/18



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Belmont, Michigan

Boring No.: MW-1S

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File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|-----------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |
| 31 | | | | | | | | | | |
| 32 | | | | | | | | | | Bentonite/Grout |
| 33 | | | | | | | | | | |
| 34 | | | | | | | | | | |
| 35 | | | | | | | | | | |
| 36 | | | | | | | | | | |
| 37 | | | | | | | | | | |
| 38 | | | | | | | | | | |
| 39 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 41 | | | | | | | | | | |
| 42 | | | | | | | | | | |
| 43 | | | | | | | | | | |
| 44 | | | | | | | | | | |
| 45 | | | | | | | | | | |
| 46 | | | | | | | | | | |
| 47 | | | | | | | | | | |
| 48 | | | | | | | | | | |
| 49 | | | | | | | | | | |
| 50 | | | | | | | | | | |
| 51 | | | | | | | | | | |
| 52 | | | | | | | | | | |
| 53 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 55 | | | | | | | | | | |
| 56 | | | | | | | | | | |
| 57 | | | | | | | | | | |
| 58 | | | | | | | | | | |
| 59 | | | | | | | | | | |
| 60 | | | | | | | | | | |
| 61 | | | | | | | | | | |
| 62 | | | | | | | | | | |
| 63 | | | | | | | | | | |
| 64 | | | | | | | | | | |
| 65 | | | | | | | | | | |
| 66 | | | | | | | | | | |
| 67 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-1S | |

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Bentonite Seal



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Boring No.: MW-1S

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File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|---|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 69 | | | | | | | | | | Top of Well Screen |
| 70 | | | | | | | | | | Silica Sand Filter Pack |
| 71 | | | | | | | | | | 2-Inch Dia. 5-Foot PVC Screen (0.010" Slot) |
| 72 | | | | | | | | | | |
| 73 | | | | | | | | | | Bottom of Well Screen |
| 74 | | | | | | | | | | |
| 75 | | | | | | Bottom of Borehole at 75.0 Feet | | 1 | | |
| 76 | | | | | | | | | | |
| 77 | | | | | | | | | | |
| 78 | | | | | | | | | | |
| 79 | | | | | | | | | | |
| 80 | | | | | | | | | | |
| 81 | | | | | | | | | | |
| 1. Monitoring well was installed in borehole upon completion. Well screen set from 68.4 to 73.1 feet below ground surface. | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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Boring No.: SB-2/MW-2S

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File No.: 16.0062335.52

Check: J Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 9-11-17 / 9-11-17

Boring Location:

GS Elev.: 797.60' Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30.0"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|--|---------|---------------------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | 1 | 24/18 | 0-2 | 7-8 8-10 | | Dark brown to yellowish-brown, SILT & CLAY, some Sand, plastic, cohesive, poorly sorted, moist (CL). | CLAY & SILT (CL) | | | PROTECTIVE CASING |
| 2 | 2 | 24/23 | 2-4 | 8-8 9-9 | | Dark brown to yellowish-brown, SILT & CLAY, some Sand, plastic, cohesive, poorly sorted, moist (CL). | | | | Backfill/Cement Pad |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/22 | 4-6 | 5-6 7-7 | | Dark brown to yellowish-brown, CLAY & SILT, some Sand, plastic, cohesive, poorly sorted, moist (CL). Changing at 4.6 feet to: Brown to grayish-brown, SILT, some fine grained Sand, trace Clay, non to slightly plastic, slightly cohesive, moderately sorted moist (ML). Changing at 5.1 feet to: Yellowish-brown to brown, CLAY & SILT, some Sand, moderately plastic, cohesive, moderately sorted, moist (CL). | 4.6' SILT (ML) | | | |
| 5 | | | | | | | 5.1' CLAY & SILT (CL) | | | |
| 6 | 4 | 24/22 | 6-8 | 4-5 5-6 | | Yellowish-brown to brown, CLAY & SILT, some Sand, moderately plastic, cohesive, moderately sorted, moist (CL). Yellowish-brown to brown, CLAY & SILT, some Sand, moderately plastic, cohesive, moderately sorted, moist (CL). | | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/17 | 8-10 | 2-4 6-6 | | Yellowish-brown to brown, CLAY & SILT, some Sand, moderately plastic, cohesive, moderately sorted, moist (CL). Changing at 9.0 feet to: Dark yellowish-brown, fine to medium SAND, trace Silt, moderately sorted moist (SP). | 9' SAND (SP) | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/17 | 10-12 | 3-4 4-4 | | Mottled dark yellowish-red to dark reddish-brown to dark brown to dark grayish-brown, SILT, some fine grained SAND, moderately sorted, moist (ML). Changing at 10.5 feet to: Yellowish-brown to pale brown, fine to medium SAND, trace Silt, well sorted, moist (SP). | 10' SILT (ML) 10.5' SAND (SP) | | | |
| 11 | | | | | | | | | | |

REMARKS

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Boring No.: SB-2/MW-2S

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Belmont, Michigan

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File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|--|---|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 13 | 7 | 24/17 | 12-14 | 2-2 3-4 | | Yellowish-brown to pale brown, fine to medium SAND, trace Silt, well sorted, moist (SP). | SAND (SP) | | | |
| 14 | 8 | 24/22 | 14-16 | 2-2 3-5 | | Yellowish-brown to pale brown, fine to medium SAND, trace Silt, well sorted, moist (SP). Changing at 15.2 feet to: Soft, Dark brown, CLAY & SILT, plastic, cohesive, moderately sorted, moist (CL). Changing at 15.3 feet to: Yellowish-brown to pale brown, fine to medium grained SAND, trace Silt, well sorted, moist (SP). | 15.2' 15.3' CLAY & SILT (CL) SAND (SP) | | | |
| 16 | 9 | 24/24 | 16-18 | 4-5 6-6 | | Yellowish-brown to pale brown, fine to medium grained SAND, trace Silt, well sorted, moist (SP). Changing at 16.6 feet to: Yellowish-brown, CLAY & SILT, plastic, cohesive, moderately sorted, moist (CL). | 16.6' CLAY & SILT (CL) | | | |
| 18 | 10 | 24/14 | 18-20 | 4-5 8-10 | | Yellowish-brown, CLAY & SILT, plastic, cohesive, moderately sorted, moist (CL). Changing at 18.6 feet to: Yellowish-brown, fine to coarse grained SAND, some Gravel, trace Silt, poorly sorted, moist SW). Changing at 19.0 feet to: Yellowish-brown, CLAY & SILT, plastic, cohesive, moderately sorted, moist (CL). Changing at 19.3 feet to: Yellowish-brown, fine grained SAND, some Silt, non plastic, moderately cohesive, well sorted, moist (SM). | 18.6' SAND (SW) 19' CLAY & SILT (CL) 19.3' SAND (SM) | | | |
| 20 | 11 | 24/24 | 20-22 | 4-5 8-10 | | Dark yellowish-brown to yellowish-brown, SILT & CLAY, moderately plastic, cohesive, well sorted, moist (CL). Changing at 21.7 feet to: Light gray to light brownish-gray, fine grained SAND, trace Silt, very well sorted, moist (SP). | 20' CLAY & SILT (CL) 21.7' SAND (SP) | | | |
| 22 | 12 | 24/16 | 22-24 | 2-3 5-6 | | Dark yellowish-brown to yellowish-brown, SILT & CLAY, moderately plastic, cohesive, well sorted, moist (CL). Changing at 22.4 feet to: Light yellowish-brown to pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | 22' CLAY & SILT (CL) 22.4' SAND (SP) | | | |
| 24 | 13 | 24/16 | 24-26 | 4-6 6-6 | | Light yellowish-brown to pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 25 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|---|--------------------|---------|------------------------|-------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 27 | 14 | 24/20 | 26-28 | 4-5 6-6 | | Light yellowish-brown to pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | SAND (SP) | | | |
| 28 | 15 | 24/18 | 28-30 | 6-7 12-12 | | Light yellowish-brown to pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 30 | 16 | 24/22 | 30-32 | 7-9 11-13 | | Light yellowish-brown to pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). Changing at 31.7 feet to: Light yellowish-brown, fine to medium grained SAND, trace Gravel, trace Silt, moderately well sorted, moist (SP). | | | | |
| 32 | 17 | 24/18 | 32-34 | 7-7 7-8 | | Light yellowish-brown to yellowish-brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing at 32.2 feet to: Pale brown to very pale brown, fine to coarse grained SAND, some Gravel, trace Silt, poorly sorted, moist (SW). | 32.2' SAND (SW) | | | |
| 34 | 18 | 24/20 | 34-36 | 13-38 31-18 | | Pale brown, fine to coarse grained SAND, some Gravel, trace Silt, poorly sorted, moist (SW). | | | | |
| 36 | 19 | 24/20 | 36-38 | 2-4 7-8 | | Very pale brown, fine grained SAND, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | 36' SAND (SP) | | | |
| 38 | 20 | 24/19 | 38-40 | 2-3 6-7 | | Very pale brown, fine grained SAND, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | | | | Grout |
| 39 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---------|--------------------|------------------|-------------|--------------|-----------|--|--|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 41 | 21 | 24/20 | 40-42 | 5-7 9-13 | | Very pale brown, fine grained SAND, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | SAND (SP) | | | |
| 42 | 22 | 24/19 | 42-44 | 4-6 9-11 | | Very pale brown, fine grained SAND, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | | | | |
| 44 | 23 | 24/22 | 44-46 | 5-8 10-13 | | Very pale brown, fine grained SAND, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | | | | |
| 46 | 24 | 24/22 | 46-48 | 3-5 8-13 | | Very pale brown, fine grained SAND, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | | | | |
| 48 | 25 | 24/23 | 48-50 | 5-7 9-10 | | Very pale brown, fine grained SAND, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | | | | |
| 50 | 26 | 24/22 | 50-52 | 6-7 12-13 | | Very pale brown, fine grained SAND, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | | | | |
| 52 | 27 | 24/20 | 52-54 | 5-9 11-13 | | Very pale brown, fine grained SAND, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). Changing at 52.8 feet to: Yellowish-brown, CLAY & SILT, well sorted, moist (CL). Changing at 52.9 feet to: Very pale brown, fine grained SAND, trace Silt, very well sorted, moist (SP). | 52.8' 52.9' CLAY & SILT (CL) SAND (SP) | | | |
| 53 | | | | | | | 54' | | | |
| REMARKS | | | | | | | | | | |

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Boring No.: SB-2/MW-2S

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File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|--|------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 55 | 28 | 24/22 | 54-56 | 5-9 13-13 | | Yellowish-brown, fine to coarse grained SAND, trace Gravel, trace Silt, poorly sorted, moist (SW). Changing at 55.0 feet to: Very pale brown grading to yellowish-brown, fine grained SAND, little Silt, grading to fine to medium grained Sand, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | SAND (SW) | | | |
| 56 | 29 | 24/22 | 56-58 | 3-5 11-14 | | Very pale brown grading to yellowish-brown, fine grained SAND, little Silt, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | 55' SAND (SM) | | | |
| 58 | 30 | 24/20 | 58-60 | 8-12 15-20 | | Very pale brown grading to yellowish-brown, fine grained SAND, little Silt, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | | | | |
| 60 | 31 | 24/20 | 60-62 | 5-9 10-11 | | Very pale brown grading to yellowish-brown, fine grained SAND, little Silt, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | | | | |
| 62 | 32 | 24/22 | 62-64 | 8-11 14-15 | | Very pale brown grading to yellowish-brown, fine grained SAND, little Silt, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | | | | |
| 64 | 33 | 24/18 | 64-66 | 2-4 8-14 | | Very pale brown grading to yellowish-brown, fine grained SAND, little Silt, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | | | | |
| 66 | 34 | 24/18 | 66-68 | 6-14 17-18 | | Very pale brown grading to yellowish-brown, fine grained SAND, little Silt, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | | | | |
| 67 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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Belmont, Michigan

Boring No.: SB-2/MW-2S

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File No.: 16.0062335.52

Check: J Cai

| Sample Information | | | | | | DELMONT, Michigan | | Check: J Cai | | |
|------------------------|---|------------------|-------------|---------------|-----------|--|--|--------------|---|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 69 | 35 | 24/18 | 68-70 | 5-14 19-24 | | Very pale brown grading to yellowish-brown, fine grained SAND, little Silt, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). Changing at 69.3 feet to: Light yellowish-brown, fine to coarse grained SAND, trace Silt, moderately sorted, moist (SW). Changing at 69.4 feet to: Very pale brown grading to yellowish-brown, fine grained SAND, little Silt, grading to fine to medium grained Sand, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | SAND (SM) 69.3' 69.4' SAND (SW) SAND (SP) | | | |
| 70 | 36 | 24/16 | 70-72 | 4-10 17-19 | | Very pale brown grading to yellowish-brown, fine grained SAND, little Silt, grading to fine to medium grained Sand, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | | | | |
| 71 | | | | | | Very pale brown grading to yellowish-brown, fine grained SAND, little Silt, grading to fine to medium grained Sand, trace Silt, very well sorted, moist with occasional trace Gravel, moist (SP). | | | | |
| 72 | 37 | 24/18 | 72-74 | 6-14 24-23 | | Brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 73 | | | | | | | | | | |
| 74 | 38 | 24/23 | 74-76 | 2-3 5-10 | | Brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). Changing at 75.5 feet to: Brown, fine to coarse grained SAND, trace Silt, trace Gravel, poorly sorted, wet (SW). | 75.5' SAND (SW) | | | |
| 75 | | | | | | | | | | |
| 76 | 39 | 24/18 | 76-78 | 2-8 14-20 | | Brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 77 | | | | | | | | | | |
| 78 | 40 | 24/18 | 78-80 | 3-7 10-18 | | Brown, fine to coarse grained SAND, trace Silt, trace Gravel, poorly sorted, wet (SW). | | | | |
| 79 | | | | | | | | | Top of Well Screen Silica Sand Filter Pack | |
| 80 | 41 | 24/18 | 80-82 | 3-9 9-19 | | Brown, fine to coarse grained SAND, trace Silt, trace Gravel, poorly sorted, wet (SW). Changing at 80.7 feet to: Brown, fine to medium SAND, trace Silt, trace Gravel, moderately well sorted, wet (SW). | 80.7' SAND (SP) | | | |
| 81 | | | | | | | 82' | | 2-Inch Dia. 5-Foot PVC Screen (0.010" Slot) | |
| REMARKS | 1. Groundwater was not encountered during drilling or upon completion. 2. Monitoring well was installed in borehole upon completion. Well screen set from 78.5 to 83.1 feet below ground surface. | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |
| Boring No.: SB-2/MW-2S | | | | | | | | | | |

BORING WELL 6233550 WWW.HOUSE STREET NE.GPJ GZA CORP.GDT 1/25/18

Top of Well Screen
Silica Sand Filter Pack

2-Inch Dia.
5-Foot PVC Screen (0.010" Slot)



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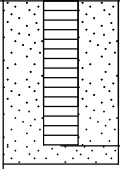
Belmont, Michigan

Boring No.: SB-2/MW-2S

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File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|----------------|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|--|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 83 | | | | | | Bottom of Borehole at 82.0 Feet | | <div></div> | |
| 84 | | | | | | | | | |
| 85 | | | | | | | | | |
| 86 | | | | | | | | | |
| 87 | | | | | | | | | |
| 88 | | | | | | | | | |
| 89 | | | | | | | | | |
| 90 | | | | | | | | | |
| 91 | | | | | | | | | |
| 92 | | | | | | | | | |
| 93 | | | | | | | | | |
| 94 | | | | | | | | | |
| 95 | | | | | | | | | |
| REMARKS | | | | | | | | | |

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-2/MW-2S



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Boring No.: SB-3P/MW-3P

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File No.: 16.0062335.52

Check: J Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 9-12-17 / 9-12-17

Boring Location:

GS Elev.: 787.50' Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30.0"

NA

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|---|------------------|---------|---------------------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | | | | | | See SB-3/MW-3S boring log for detailed soil descriptions. | | | | PROTECTIVE CASING |
| 2 | | | | | | | | | | Backfill/Cement Pad |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | Bentonite/Grout |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-3P/MW-3P

BORING WELL 6233550 WWW.HOUSE STREET NE.GPJ GZA_CORP.GDT 1/25/18



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Boring No.: SB-3P/MW-3P

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Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|--------------------|---------|-------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | 1 | 24/24 | 23-25 | 3-4 7-9 | | Medium dense, brown, well sorted, fine SAND, trace Silt, wet (SP). Changing at 24.3 feet to: Hard, gray and brown mottled, CLAY, trace Silt, damp (CL). | SAND (SP) | | | |
| 24 | | | | | >4.0 tsf | | 24.3' CLAY (CL) | 1 | | |
| 25 | | | | | | Bottom of Borehole at 25.0 Feet | 25' | 2 | | |
| REMARKS 1. Pocket penetrometer readings were measured in tons per square foot (tsf) and are used to evaluate consistency of cohesive soil. 2. Monitoring well was installed in borehole upon completion. Well screen set from 19.0 to 24.0 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-3P/MW-3P | |

BORING WELL 6233550 WWW.HOUSE STREET NE.GPJ GZA CORP.GDT 1/25/18

Bentonite Seal

Top of Well Screen

Silica Sand Filter Pack

2-Inch Dia. 5-Foot PVC Screen (0.010" Slot)

Bottom of Well Screen



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Boring No.: SB-3/MW-3S

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File No.: 16.0062335.52

Check: J Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 9-12-17 / 9-12-17

Boring Location:

GS Elev.: 788.10' Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30.0"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|---------------------|--|-----------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | 1 | 24/21 | 0-2 | 5-6 6-7 | 0.0 ppm >4.0 tsf | Hard, brown, CLAY, trace Silt, trace fine Sand, dry (CL). | CLAY (CL) | 1 2 | PROTECTIVE CASING | |
| 2 | 2 | 24/21 | 2-4 | 7-5 5-4 | 0.0 ppm | Loose, dark brown, yellowish brown, fine SAND, trace Silt, damp (SP). | 2' SAND (SP) | | Backfill/Cement Pad | |
| 3 | 3 | 24/14 | 4-6 | 3-2 2-3 | 0.0 ppm | Loose, dark yellowish brown, fine SAND, trace Silt, damp (SP) Changing at 5.2 feet to: Loose, dark yellowish-brown, fine SAND, little Gravel, trace Silt, damp (SP). | | | | |
| 4 | 4 | 24/21 | 6-8 | 2-5 5-5 | | Loose, yellowish-brown, well sorted, fine SAND, damp (SP). Changing at 7.8 feet to: Loose, pale brown, fine SAND, damp (SP). | | | | |
| 5 | 5 | 24/21 | 8-10 | 1-4 5-7 | | Loose, pale brown, well sorted, fine SAND, trace Silt, damp (SP). | | | | |
| 6 | 6 | 24/20 | 10-12 | 4-5 6-7 | | Loose, pale brown, well sorted, fine SAND, trace Silt, damp (SP). | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 2000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million (ppm) of isobutylene. Background was measured at 0.0 ppm.
- Pocket penetrometer readings were measured in tons per square foot (tsf) and are used to evaluate consistency of cohesive soil.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-3/MW-3S

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Boring No.: SB-3/MW-3S

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Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|--|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 13 | 7 | 24/20 | 12-14 | 3-5 5-5 | | Loose, pale brown, well sorted, fine SAND, trace Silt, damp (SP). | SAND (SP) | | | |
| 14 | 8 | 24/20 | 14-16 | 4-5 5-5 | | Loose, pale brown, well sorted, fine SAND, trace Silt, damp (SP). | | | | |
| 16 | 9 | 24/24 | 16-18 | 2-5 9-10 | >4.0 tsf | Loose, pale brown, well sorted, fine SAND, trace Silt, damp (SP). Changing at 16.2 feet to: Hard, brown, CLAY, trace Silt, damp (CL). Changing at 17.8 feet to: Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | 16.2' CLAY (CL) | | | |
| 18 | 10 | 24/24 | 18-20 | 2-6 7-9 | | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). Changing at 18.2 feet to: Brown, CLAY, trace Silt, damp (CL). Changing at 19.0 feet to: Medium dense, brown, well sorted, fine to medium SAND, trace Silt, moist (SP). | 17.8' SAND (SP) 18.2' CLAY (CL) | | | |
| 20 | 11 | 24/24 | 20-22 | 5-6 7-10 | >4.0 tsf | Hard, brown, CLAY, trace Silt, damp (CL). Changing at 20.5 feet to: Medium dense, brown, well sorted, fine to medium SAND, trace Silt, moist (SP). Changing at 21.5 feet to: Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | 19' SAND (SP) 20' CLAY (CL) 20.5' SAND (SP) | | | |
| 22 | 12 | 24/22 | 22-24 | 4-4 5-6 | | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). Changing at 23.5 feet to: Medium dense, pale brown, well sorted, fine SAND, some Silt, wet (SM). | 23.5' SAND (SM) | | | |
| 24 | 13 | 24/22 | 24-26 | 4-4 5-6 | | Medium dense, pale brown, well sorted, fine SAND, some Silt, wet (SM). Changing at 25.3 feet to: Hard, light gray and brown mottled, CLAY, trace Silt, moist (CL). Changing at 25.9 feet to: Loose, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | 25.3' CLAY (CL) 25.9' | | | |
| <div>REMARKS</div> <div>3. Double cased from 0.0 to 25.0 feet during drilling.</div> | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-3/MW-3S | |

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Boring No.: SB-3/MW-3S

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File No.: 16.0062335.52

Check: J Cai

| Sample Information | | | | | | Check: J Cai | | | | |
|---|-----|------------------|-------------|----------------|-----------|---|---------------|---------|------------------------|-------|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 27 | 14 | 24/20 | 26-28 | 2-2 6-8 | >4.0 tsf | Loose, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | SAND (SP) | 3 | | |
| 28 | 15 | 24/20 | 28-30 | 6-10 10-11 | | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 29 | | | | | | | | | | |
| 30 | 16 | 24/20 | 30-32 | 2-4 9-10 | | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 31 | | | | | | | | | | |
| 32 | 17 | 24/21 | 32-34 | 5-12 13-20 | | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 33 | | | | | | | | | | |
| 34 | 18 | 24/19 | 34-36 | 8-16 28-40 | | Dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | Grout |
| 35 | | | | | | | | | | |
| 36 | 19 | 24/21 | 36-38 | 18-18 19-31 | | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 37 | | | | | | | | | | |
| 38 | 20 | 24 | 38-40 | | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 39 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-3/MW-3S | |

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Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------------|----------------|----------------|--------------|--|------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 41 | 21 | 24 | 40-42 | | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | SAND (SP) | | | |
| 42 | 22 | 24 | 42-44 | | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 44 | 24 | 24 | 44-46 | | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 46 | 26 | 24 | 46-48 | | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 48 | 27 | 24 | 48-50 | | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 50 | 28 | 24 | 50-52 | | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 52 | 30 | 24 | 52-54 | | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 53 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-3/MW-3S | |

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Boring No.: SB-3/MW-3S

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File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|--|------------------------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 31 | 24 | 54-56 | | | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | SAND (SP) | | | |
| 55 | | | | | | | | | | |
| 56 | 32 | 24 | 56-58 | | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 57 | | | | | | | | | | |
| 58 | 33 | 24 | 58-60 | | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 59 | | | | | | | | | | |
| 60 | 34 | 24 | 60-62 | | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 61 | | | | | | | | | | |
| 62 | 35 | 24 | 62-64 | | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). Changing at 63.0 feet to: Light yellowish-brown to yellowish-brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 63 | | | | | | | | | | |
| 64 | 36 | 24 | 64-66 | | | Yellowish-brown, fine to medium SAND, trace Silt, very well sorted, wet (SP). | | 4 | | |
| 65 | | | | | | | | | | |
| 66 | 37 | 24 | 66-68 | | | Yellowish-brown, fine to medium SAND, trace Silt, very well sorted, wet (SP). Changing at 67.0 feet to: Yellowish-brown, fine to medium SAND, some Silt, very well sorted, wet (SM). Changing at 67.2 feet to: Yellowish-brown, fine to medium SAND, trace Silt, very well sorted, wet (SP). | 67' 67.2'SAND (SM) SAND (SP) | | | |
| 67 | | | | | | | | | | |
| <div>REMARKS</div> <div>4. Groundwater was encountered at approximately 64.0 feet below ground surface.</div> | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-3/MW-3S | |

BORING WELL 6233550 WWW.HOUSE STREET NE.GPJ GZA CORP.GDT 1/25/18



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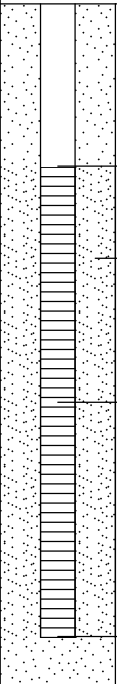
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Boring No.: SB-3/MW-3S

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Check: J Cai

| Sample Information | | | | | | | | Check: J Cai | | |
|---|-----|------------------|-------------|-------------|-----------|---|-----------------|--|------------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 69 | 38 | 24 | 68-70 | | | Yellowish-brown, fine to medium SAND, trace Silt, very well sorted, wet (SP). | SAND (SP) |  | | |
| 70 | 39 | 24 | 70-72 | | | Yellowish-brown, fine to medium SAND, trace Silt, very well sorted, wet (SP). | | | | |
| 71 | | | | | | | | | | |
| 72 | 40 | 24 | 72-74 | | | Yellowish-brown, fine to medium SAND, trace Silt, very well sorted, wet (SP). Changing at 73.8 feet to: Yellowish-brown, fine to medium SAND, some Silt, well sorted, wet (SM). | | | | |
| 73 | | | | | | | | | | |
| 74 | 41 | 24 | 74-76 | | | Yellowish-brown, fine to medium SAND, some Silt, well sorted, wet (SM). | 73.8' SAND (SM) | 5 | | |
| 75 | | | | | | | | | | |
| 76 | | | | | | Bottom of Borehole at 76.0 Feet | 76' | | | |
| 77 | | | | | | | | | | |
| 78 | | | | | | | | | | |
| 79 | | | | | | | | | | |
| 80 | | | | | | | | | | |
| 81 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| 5. Monitoring well was installed in borehole upon completion. Well screen set from 69.7 to 74.6 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-3/MW-3S | |

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Boring No.: SB-4/MW-4S

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File No.: 16.0062335.52

Check: J Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 9-12-17 / 9-12-17

Boring Location:

GS Elev.: 782.30' Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30.0"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|--|------------------|---------|---------------------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | 1 | 24/14 | 0-2 | 1-1 1-1 | 0.0 ppm | Very loose, yellowish- brown, well sorted, fine SAND, some Organic Matter (roots), trace Silt, dry (SP). | SAND | 1 | PROTECTIVE CASING | Backfill/Cement Pad |
| 2 | 2 | 24/14 | 2-4 | 1-2 2-2 | 0.0 ppm | Loose, pale brown, well sorted, fine SAND, damp (SP). | | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/13 | 4-6 | 2-2 4-5 | 0.1 ppm | Loose, pale brown, well sorted, fine SAND, damp (SP). | | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/14 | 6-8 | 2-3 5-7 | 0.0 ppm | Loose, pale brown, well sorted, fine SAND, damp (SP). | | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/14 | 8-10 | 3-3 5-7 | 0.0 ppm | Loose, pale brown, well sorted, fine SAND, damp (SP). | | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/21 | 10-12 | 5-5 7-8 | 0.0 ppm | Loose, pale brown, well sorted, fine SAND, damp (SP). Changing at 11.0 feet to: Hard, gray and brown mottled, CLAY, trace Silt, damp (CL). | | | | |
| 11 | | | | | >4.0 tsf | | 11' CLAY (CL) | 2 | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 2000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million (ppm) of isobutylene. Background was measured at 0.0 ppm.
- Pocket penetrometer readings were measured in tons per square foot (tsf) and are used to evaluate consistency of cohesive soil.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-4/MW-4S

BORING WELL 6233550 WWW.HOUSE STREET NE.GPJ GZA_CORP.GDT 1/25/18



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Belmont, Michigan

Boring No.: SB-4/MW-4S

Page: 2 of 6

File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|---------------------|--|--|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 13 | 7 | 24 | 12-14 | 5-6 7-7 | 0.0 ppm >4.0 tsf | Hard, gray and brown mottled, CLAY, trace Silt, damp (CL). Changing at 13.0 feet to: Medium dense, pale brown and brown mottled, well sorted, fine SAND, trace Silt, damp (SP). | CLAY (CL) 13' SAND (SP) | | | |
| 14 | 8 | 24/24 | 14-16 | 2-2 3-2 | 0.0 ppm | Loose, yellowish-brown, well sorted, fine SAND, trace Silt, damp (SP). | | | | |
| 16 | 9 | 24/18 | 16-18 | 1-1 1-3 | 0.0 ppm | Loose, yellowish-brown, well sorted, fine SAND, trace Silt, damp (SP). Changing at 17.8 feet to: Loose, yellowish-brown, well sorted, fine GRAVEL, trace Silt, damp (GW). | | | | |
| 18 | 10 | 24/16 | 18-20 | 2-3 6-7 | 0.0 ppm | Loose, yellowish-brown, well sorted, fine GRAVEL, trace Silt, damp (GW). Changing at 19.0 feet to: Medium dense, yellowish-brown, well sorted, fine SAND, trace Silt, damp (SP). | 18' GRAVEL (GW) 19' SAND (SP) | | | |
| 20 | 11 | 24/15 | 20-22 | 6-7 9-9 | 0.0 ppm | Medium dense, yellowish-brown, well sorted, fine SAND, trace Silt, damp (SP). | | | | |
| 22 | 12 | 24/24 | 22-24 | 4-8 8-10 | 0.0 ppm | Medium dense, yellowish-brown, well sorted, fine SAND, trace Silt, moist (SP). Changing at 23.9 feet to: Hard, brown, CLAY, damp (CL). | | | | |
| 24 | 13 | 24/24 | 24-26 | 6-7 9-10 | 0.0 ppm >4.0 tsf | Hard, brown, CLAY, damp (CL). | 23.9' CLAY (CL) | | | |
| 25 | | | | | | | 26' | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-4/MW-4S | |

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File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|--|------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 27 | 14 | 24/0 | 26-28 | | | NO RECOVERY. | NO RECOVERY | | | |
| 28 | 15 | 24/16 | 28-30 | 5-9 11-15 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, damp (SP). | 28' SAND (SP) | | | |
| 29 | | | | | | | | | | |
| 30 | 16 | 24/15 | 30-32 | 6-12 13-21 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, damp (SP). | | | | |
| 31 | | | | | | | | | | |
| 32 | 17 | 24/17 | 32-34 | 4-18 31-39 | 0.0 ppm | Dense, pale brown, well sorted, fine SAND, trace Silt, damp (SP). | | | | |
| 33 | | | | | | | | | | |
| 34 | 18 | 24/17 | 34-36 | 7-10 15-19 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, damp (SP). | | | | |
| 35 | | | | | | | | | | |
| 36 | 19 | 24/17 | 36-38 | 4-10 15-22 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, trace Gravel, damp (SP). | | | | |
| 37 | | | | | | | | | | |
| 38 | 20 | 24/20 | 38-40 | 10-12 21-24 | 0.0 ppm | Dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 39 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-4/MW-4S | |

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Bentonite/Grout



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Page: 4 of 6

File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------------|-----------|---|---------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 41 | 21 | 24/17 | 40-42 | 10-11 16-19 | 0.0 ppm | Dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). Encountered Rock at 40.2 feet. | SAND (SP) | | | |
| 42 | 22 | 24/19 | 42-44 | 7-11 17-25 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 43 | | | | | | | | | | |
| 44 | 23 | 24/19 | 44-46 | 7-12 23-26 | 0.0 ppm | Dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 45 | | | | | | | | | | |
| 46 | 24 | 24/19 | 46-48 | 10-14 15-15 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 47 | | | | | | | | | | |
| 48 | 25 | 24/20 | 48-50 | 8-14 36-49 | 0.0 ppm | Dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 49 | | | | | | | | | | |
| 50 | 26 | 24/24 | 50-52 | 18-37 47-47 | 0.0 ppm | Very dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 51 | | | | | | | | | | |
| 52 | 27 | 24/21 | 52-54 | 33-29 52-50/3" | 0.0 ppm | Very dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 53 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-4/MW-4S | |

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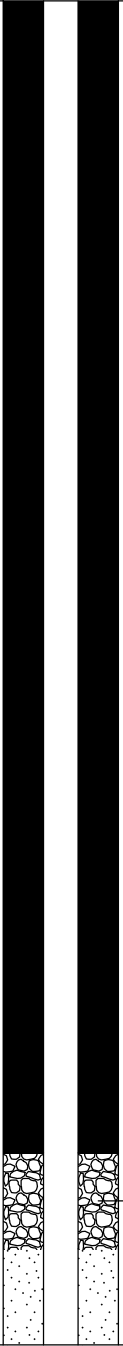
Belmont, Michigan

Boring No.: SB-4/MW-4S

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File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|--|----------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 55 | 28 | 24/16 | 54-56 | 19-58-50/4" | 0.0 ppm | Very dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | SAND (SP) | 3 |  | Bentonite Seal |
| 56 | 29 | 24 | 56-58 | | | Light yellowish-brown to pale brown, very well sorted, fine to medium SAND, trace Silt, moist (SP). | | | | |
| 57 | | | | | | | | | | |
| 58 | 30 | 24 | 58-60 | | | Light yellowish-brown to pale brown, very well sorted, fine to medium SAND, trace Silt, moist (SP). Changing at 59.6 feet to: Brown, very well sorted, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 59 | | | | | | | | | | |
| 60 | 31 | 24 | 60-62 | | | Brown, very well sorted, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 61 | | | | | | | | | | |
| 62 | 32 | 24 | 62-64 | | | Brown, very well sorted, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 63 | | | | | | | | | | |
| 64 | 33 | 24 | 64-66 | | | Brown, very well sorted, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 65 | | | | | | | | | | |
| 66 | 34 | 24 | 66-68 | | | Brown, very well sorted, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 67 | | | | | | | | | | |
| <div>REMARKS</div> <div>3. Groundwater was encountered at approximately 59.6 feet below ground surface.</div> | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-4/MW-4S | |

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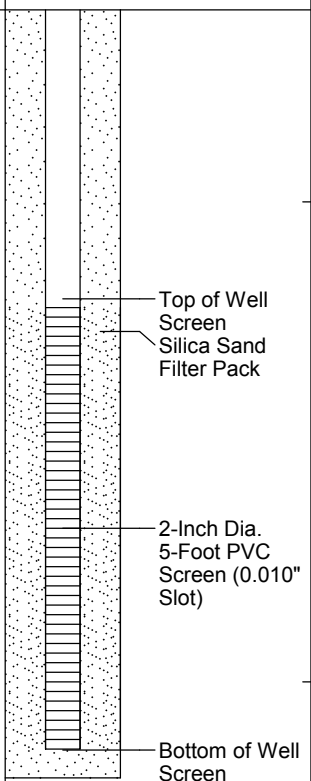
Belmont, Michigan

Boring No.: SB-4/MW-4S

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File No.: 16.0062335.52

Check: J Cai

| Sample Information | | | | | | Check: J Cai | | | | |
|---|-----|------------------|-------------|-------------|-----------|---|---------------|--|---------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 69 | 35 | 24 | 68-70 | | | Brown, very well sorted, fine to medium SAND, trace Silt, wet (SP). | SAND (SP) |  | | |
| 70 | 36 | 24 | 70-72 | | | Brown, very well sorted, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 71 | | | | | | | | | | |
| 72 | 37 | 24 | 72-74 | | | Brown, very well sorted, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 73 | | | | | | | | | | |
| 74 | 38 | 24 | 74-76 | | | Brown, very well sorted, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 75 | | | | | | | | | | |
| 76 | | | | | | Bottom of Borehole at 76.0 Feet | 76' | 4 | | |
| 77 | | | | | | | | | | |
| 78 | | | | | | | | | | |
| 79 | | | | | | | | | | |
| 80 | | | | | | | | | | |
| 81 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| 4. Monitoring well was installed in borehole upon completion. Well screen set from 71.1 to 75.7 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |
| Boring No.: SB-4/MW-4S | | | | | | | | | | |

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Boring No.: SB-4/MW-4S



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Boring No.: SB-5/MW-5D

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File No.: 16.0062335.52

Check: J Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Joe Workman/Adam Kittler

Date Start/Finish: 12-1-17 / 12-5-17

Boring Location:

GS Elev.: 779.10' Datum:

**Auger/
Casing**

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 17.5" / 12.0"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30.0"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|----------------------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | Blind drill from 0.0 to 20.0 feet. Cuttings observed to consist of brown, fine to medium SAND, trace Silt, damp (SP). See SB-5/MW-5S boring log detailed soil descriptions from 0.0 to 66.0 feet. | SAND (SP) (BLIND DRILL) | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
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| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | 1 | 24/24 | 20-22 | 16/24" | 2.5 tsf | Very stiff, gray, Silty CLAY, trace fine Sand, damp (CL). | 20' Silty CLAY (CL) | 1 | | |
| 21 | | | | | | Blind drill from 22.0 to 69.0 feet. | 22' | 2 | | |
| 22 | | | | | | | | 3 | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |

REMARKS

1. Pocket penetrometer readings were measured in tons per square foot (tsf) and are used to evaluate the consistency of cohesive soil.
2. Spoon driven to confirm depth of confining layer.
3. Double cased from 0.0 to 22.0 feet during drilling.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-5/MW-5D

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Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 31 | | | | | | | | | | |
| 32 | | | | | | | | | | |
| 33 | | | | | | | | | | |
| 34 | | | | | | | | | | |
| 35 | | | | | | | | | | |
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| 41 | | | | | | | | | | |
| 42 | | | | | | | | | | |
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| 62 | | | | | | | | | | |
| 63 | | | | | | | | | | |
| 64 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

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File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|---|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 66 | | | | | | | | | | |
| 67 | | | | | | | | | | |
| 68 | | | | | | | | | | |
| 69 | 34 | 24/20 | 69-71 | 5-7 9-10 | 0.0 ppm | Loose, brown, well sorted, fine SAND, trace wet (SP). | SAND (SP) | 4 | | |
| 70 | | | | | | | | | | |
| 71 | | | | | | | | | | |
| 72 | | | | | | | | | | |
| 73 | | | | | | | | | | |
| 74 | 35 | 24/13 | 74-76 | 7-9 12-17 | 0.0 ppm | Medium dense, brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 75 | | | | | | | | | | |
| 76 | | | | | | | | | | |
| 77 | | | | | | | | | | |
| 78 | | | | | | | | | | |
| 79 | 36 | 24/18 | 79-81 | 1-3 4-9 | 0.0 ppm | Loose, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 80 | | | | | | | | | | |
| 81 | | | | | | | | | | |
| 82 | | | | | | | | | | |
| 83 | | | | | | | | | | |
| 84 | 37 | 24/6 | 84-86 | 2-5 11-11 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Gravel, trace Silt, moist (SP). | | | | |
| 85 | | | | | | | | | | |
| 86 | | | | | | | | | | |
| 87 | | | | | | | | | | |
| 88 | | | | | | | | | | |
| 89 | 38 | 24/12 | 89-91 | 2-5 10-14 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Gravel, trace Silt, moist (SP). | | | | |
| 90 | | | | | | | | | | |
| 91 | | | | | | | | | | |
| 92 | | | | | | | | | | |
| 93 | | | | | | | | | | |
| 94 | 39 | 24/18 | 94-96 | 3-10 11-24 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 95 | | | | | | | | | | |
| 96 | | | | | | | | | | |
| 97 | | | | | | | | | | |
| 98 | | | | | | | | | | |
| 99 | 40 | 24/24 | 99-101 | 3-4 10-14 | 0.0 ppm | Medim dense, pale brown, well sorted, fine | | | | |
| | | | | | | | | | | |
| 4. Field screening of samples for organic vapors was performed with a MiniRae 2000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million (ppm) of isobutylene. Background was measured at 0.0 ppm. | | | | | | | | | | |
| Bentonite/Grout | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |
| Boring No.: SB-5/MW-5D | | | | | | | | | | |

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REMARKS



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File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|---|---------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 101 | | | | | | SAND, trace Silt, trace Gravel, moist (SP). | SAND (SP) | | | |
| 102 | | | | | | | | | | |
| 103 | | | | | | | | | | |
| 104 | 41 | 24/9 | 104-106 | 2-6 10-19 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 105 | | | | | | | | | | |
| 106 | | | | | | | | | | |
| 107 | | | | | | | | | | |
| 108 | | | | | | | | | | |
| 109 | 42 | 24/14 | 109-111 | 4-8 18-26 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, trace Gravel, moist (SP). | | | | |
| 110 | | | | | | | | | | |
| 111 | | | | | | | | | | |
| 112 | | | | | | | | | | |
| 113 | | | | | | | | | | |
| 114 | 43 | 24/8 | 114-116 | 5-9 16-22 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, trace Gravel, moist (SP). | | | | |
| 115 | | | | | | | | | | |
| 116 | | | | | | | | | | |
| 117 | | | | | | | | | | |
| 118 | | | | | | | | | | |
| 119 | 44 | 24/8 | 119-121 | 2-4 10-11 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 120 | | | | | | | | | | |
| 121 | | | | | | | | | | |
| 122 | | | | | | | | | | |
| 123 | | | | | | | | | | |
| 124 | 45 | 24/8 | 124-126 | 3-11 22-27 | 0.0 ppm | Dense, pale brown, well sorted, fine SAND, trace Silt, trace Gravel, moist (SP). | | | | |
| 125 | | | | | | | | | | |
| 126 | | | | | | | | | | |
| 127 | | | | | | | | | | |
| 128 | | | | | | | | | | |
| 129 | 46 | 24/24 | 129-131 | 3-8 17-31 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, trace Gravel, moist (SP). | | | | |
| 130 | | | | | | | | | | |
| 131 | | | | | | | | | | |
| 132 | | | | | | | | | | |
| 133 | | | | | | | | | | |
| 134 | 47 | 24/13 | 134-136 | 10-22-50/6" | 0.0 ppm | Very dense, pale brown, well sorted, fine | | | | |
| REMARKS Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |
| | | | | | | | | | Boring No.: SB-5/MW-5D | |

BORING WELL 6233550 WWW.HOUSE STREET NE GPJ GZA CORP.GDT 1/25/18



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Belmont, Michigan

Boring No.: SB-5/MW-5D

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File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|---|---------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 136 | | | | | | SAND, little Gravel, trace Silt, moist (SP). | SAND (SP) | | | |
| 137 | | | | | | | | | | |
| 138 | | | | | | | | | | |
| 139 | 48 | 24/14 | 139-141 | 10-23 34-35 | 0.0 ppm | Very dense, pale brown, well sorted, fine SAND, little Gravel, trace Silt, moist (SP). | | | | |
| 140 | | | | | | | | | | |
| 141 | | | | | | | | | | |
| 142 | | | | | | | | | | |
| 143 | | | | | | | | | | |
| 144 | 49 | 24/6 | 144-146 | 4-7 14-21 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 145 | | | | | | | | | | |
| 146 | | | | | | | | | | |
| 147 | | | | | | | | | | |
| 148 | | | | | | | | | | |
| 149 | 50 | 24/5 | 149-151 | 1-3 8-17 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 150 | | | | | | | | | | |
| 151 | | | | | | | | | | |
| 152 | | | | | | | | | | |
| 153 | | | | | | | | | | |
| 154 | 51 | 24/3 | 154-156 | 4-22-50/6" | 0.0 ppm | Very dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 155 | | | | | | | | | | |
| 156 | | | | | | | | | | |
| 157 | | | | | | | | | | |
| 158 | | | | | | | | | | |
| 159 | 52 | 24/18 | 159-161 | 10-21 29-34 | 0.0 ppm | Dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | |
| 160 | | | | | | | | | | |
| 161 | | | | | | | | | | |
| 162 | | | | | | | | | | |
| 163 | | | | | | | | | | |
| 164 | 53 | 24/12 | 164-166 | 8-11 11-11 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Gravel, trace Silt, moist (SP). | | | | |
| 165 | | | | | | | | | | |
| 166 | | | | | | | | | | |
| 167 | | | | | | | | | | |
| 168 | | | | | | | | | | |
| 169 | 54 | 24/12 | 169-171 | 3-3 3-5 | 0.0 ppm | Loose, pale brown, well sorted, fine SAND, | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-5/MW-5D | |

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Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|-------|--------------------|------------------|-------------|--------------|-----------|---|---------------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 171 | | | | | | trace Silt, trace Gravel, moist (SP). | SAND (SP) | | |
| 172 | | | | | | | | | |
| 173 | | | | | | | | | |
| 174 | 55 | 24/10 | 174-176 | 1-1 1-2 | 0.0 ppm | Very loose, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | |
| 175 | | | | | | | | | |
| 176 | | | | | | | | | |
| 177 | | | | | | | | | |
| 178 | | | | | | | | | |
| 179 | 56 | 24/12 | 179-181 | 1-3 1-3 | 0.0 ppm | Very loose, pale brown, well sorted, fine SAND, trace Silt, trace Gravel, moist (SP). | | | |
| 180 | | | | | | | | | |
| 181 | | | | | | | | | |
| 182 | | | | | | | | | |
| 183 | | | | | | | | | |
| 184 | 57 | 24/18 | 184-186 | 1-1 1-1 | 0.0 ppm | Very loose, pale brown, well sorted, fine SAND, little Gravel, trace Silt, moist (SP). | | | |
| 185 | | | | | | | | | |
| 186 | | | | | | | | | |
| 187 | | | | | | | | | |
| 188 | | | | | | | | | |
| 189 | 58 | 24/12 | 189-191 | 1-3 10-21 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, little Gravel, trace Silt, moist (SP). | | | |
| 190 | | | | | | | | | |
| 191 | | | | | | | | | |
| 192 | | | | | | | | | |
| 193 | | | | | | | | | |
| 194 | 59 | 24/8 | 194-196 | 32-38-50/4" | 0.0 ppm | Very dense, pale brown, well sorted, fine SAND, little Gravel, trace Silt, trace Cobbles, moist (SP). | | | |
| 195 | | | | | | | | | |
| 196 | | | | | | | | | |
| 197 | | | | | | | | | |
| 198 | 60 | 24/0 | 198-200 | 50/0" | | NO RECOVERY. | 198' NO RECOVERY | | |
| 199 | | | | | | | | | |
| 200 | | | | | | Bottom of Borehole at 200.0 | 200' | 5 | |
| 201 | | | | | | | | | |
| 202 | | | | | | | | | |
| 203 | | | | | | | | | |
| 204 | | | | | | | | | |

Top of Well Screen

Silica Sand Filter Pack

2-Inch Dia. 5-Foot PVC Screen (0.010" Slot)

Bottom of Well Screen

5. Monitoring well was installed in borehole upon completion. Well screen set from 188.0 to 198.0 feet below ground surface.

REMARKS

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Boring No.: SB-5/MW-5D

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Boring No.: MW-5P

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File No.: 16.0062335.52

Check: J Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 9-19-17 / 9-19-17

Boring Location:

GS Elev.: 778.90' Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30.0"

NA

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|---|------------------|---------|---------------------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | | | | | | See SB-5/MW-5S boring log for detailed soil descriptions. | | | | PROTECTIVE CASING |
| 2 | | | | | | | | | | Backfill/Cement Pad |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | Bentonite/Grout |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-5P

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File No.: 16.0062335.52

Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | Bottom of borehole at 22.3 Feet | | 1 | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 1. Monitoring well was installed in borehole upon completion. Well screen set from 17.1 to 21.8 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

REMARKS

Boring No.: MW-5P

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File No.: 16.0062335.52

Check: J Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 9-19-17 / 9-19-17

Boring Location:

GS Elev.: 778.80' Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30.0"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|--|--------------------------------------|---------|---------------------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | PROTECTIVE CASING | Backfill/Cement Pad |
| 1 | 1 | 24/19 | 0-2 | 6-5 8-9 | | Dark yellowish-brown, fine to coarse grained SAND, little Gravel, trace Silt, poorly sorted, dry to moist (FILL). Changing at 0.4 feet to: Light yellowish-brown, fine to coarse grained SAND, trace Silt, trace Gravel, moderately sorted, moist (FILL). Changing at 0.7 feet to: Very dark grayish-brown to dark yellowish-brown, fine grained SAND, some Silt, slightly cohesive, moderately sorted, moist (FILL). Changing at 1.2 feet to: Brownish-yellow grading to pale brown to very pale brown, fine grained SAND, trace Silt, well sorted, moist (SP). Brownish-yellow grading to pale brown to very pale brown, fine grained SAND, trace Silt, well sorted, moist (SP). Changing at 3.2 feet to: Dark yellowish-brown to brown, fine to medium grained SAND, little Clay, little Silt, trace Gravel, slightly plastic, moderately cohesive, poorly sorted, moist (SC). Changing at 3.5 feet to: Dark yellowish-brown, CLAY & SILT, plastic, cohesive, moderately well sorted, moist (CL). | SAND (FILL) 1.2' SAND (SP) | | | |
| 2 | 2 | 24/20 | 2-4 | 4-5 5-5 | | | | | | |
| 3 | | | | | | | 3.5' CLAY & SILT (CL) | | | |
| 4 | 3 | 24/18 | 4-6 | 2-3 3-4 | | | | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/19 | 6-8 | 2-2 2-3 | | Dark yellowish-brown, CLAY & SILT, plastic, cohesive, moderately well sorted, moist (CL). Light yellowish-brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | 6' SAND (SP) | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/17 | 8-10 | 2-2 3-4 | | Light yellowish-brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/18 | 10-12 | 3-4 4-6 | | Light yellowish-brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 11 | | | | | | Light yellowish-brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |

REMARKS

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|--------------|-----------|---|------------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 13 | 7 | 24/23 | 12-14 | 2-3 5-9 | | Light yellowish-brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). Light yellowish-brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | SAND (SP) | | | |
| 14 | 8 | 24/20 | 14-16 | 3-9 10-10 | | Light yellowish-brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 16 | 9 | 24/20 | 16-18 | 2-4 4-4 | | Light yellowish-brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). Light yellowish-brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 18 | 10 | 24/19 | 18-20 | 3-5 5-4 | | Light yellowish-brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). Changing at 19.5 feet to: Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, moist (SP). Changing at 19.3 feet to: Dark brown to dark yellowish-brown grading to black, fine to medium grained SAND, trace Silt, well sorted, moist to wet (SP). | | | | |
| 20 | 11 | 24/18 | 20-22 | 3-3 4-3 | | Dark yellowish-brown, fine to medium grained SAND, trace Silt, wet sorted, moist to wet (SP). Changing at 20.2 feet to: Dark gray, fine to medium grained SAND, trace Silt, well sorted, wet (SP). Changing at 20.3 feet to: Reddish-gray, fine to medium grained SAND, trace Silt, well sorted, wet (SP). Changing at 20.7 feet to: Yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 22 | 12 | 24/23 | 22-24 | 2-5 8-8 | | Brown, Silty CLAY, plastic, cohesive, very well sorted, moist (CL). | 22' Silty CLAY (CL) | | | |
| 24 | 13 | 24/20 | 24-26 | 4-6 6-7 | | Brown, Silty CLAY, plastic, cohesive, very well sorted, moist (CL). | 26' | | | |
| 25 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|--------------|-----------|---|---------------|---------|------------------------|-----------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 27 | 14 | 24/17 | 26-28 | 3-5 8-9 | | Pale brown to very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | SAND (SP) | | | |
| 28 | 15 | 24/18 | 28-30 | 4-6 8-9 | | Pale brown to very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | Bentonite/Grout |
| 30 | 16 | 24/24 | 30-32 | 5-6 9-10 | | Pale brown to very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 32 | 17 | 24/18 | 32-34 | 3-5 9-13 | | Pale brown to very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 34 | 18 | 24/18 | 34-36 | 3-7 13-16 | | Pale brown to very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 36 | 19 | 24/19 | 36-38 | 3-7 10-10 | | Pale brown to very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 38 | 20 | 24/24 | 38-40 | 3-5 8-12 | | Pale brown to very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 39 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-5/MW-5S | |

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Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------------|----------------|----------------|--------------|---|------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 41 | 21 | 24/22 | 40-42 | 3-5 11-16 | | Pale brown to very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | SAND (SP) | | | |
| 42 | 22 | 24/24 | 42-44 | 3-11 18-21 | | Pale brown to very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 44 | 23 | 24/20 | 44-46 | 5-10 14-17 | | Pale brown to very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 46 | 24 | 24/24 | 46-48 | 4-7 9-9 | | Pale brown to very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 48 | 25 | 24/20 | 48-50 | 3-8 11-15 | | Pale brown to very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 50 | 26 | 24/24 | 50-52 | 3-10 17-18 | | Pale brown to very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 52 | 27 | 24/22 | 52-54 | 9-13 21-25 | | Pale brown to very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 53 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-5/MW-5S | |

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|--------------|-----------|---|---------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 55 | 28 | 24/24 | 54-56 | 4-5 8-10 | | Pale brown to very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). Changing at 54.5 feet to: Brown to yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | SAND (SP) | 1 | | |
| 56 | 29 | 24/24 | 56-58 | 3-4 5-6 | | Brown to yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 58 | 30 | 24/16 | 58-60 | 2-3 5-5 | | Brown to yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 60 | 31 | 24/16 | 60-62 | 1-1 2-2 | | Brown to yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). Brown to yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 62 | 32 | 24/5 | 62-64 | 1-4 7-11 | | Brown to yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 64 | 33 | 24/11 | 64-66 | 2-6 10-10 | | Brown to yellowish-brown, fine to medium grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 66 | | | | | | | 66' | | | |
| 67 | | | | | | | | | | |
| REMARKS 1. Groundwater was encountered at approximately 54.5 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-5/MW-5S | |

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Belmont, Michigan

Boring No.: SB-5/MW-5S

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Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|--------------|-----------|--|---------------|---------|------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 69 | 34 | 24/20 | 69-71 | 5-7 9-10 | 0.0 ppm | Loose, brwn, well sorted, fine SAND, trace Silt, moist (SP). | | | |
| 70 | | | | | | | | | |
| 71 | | | | | | | | | |
| 72 | | | | | | | | | |
| 73 | 35 | 24/13 | 74-76 | 7-9 12-17 | 0.0 ppm | Medium dense, brown, well sorted, fine SAND, trace Silt, moist (SP). | | | |
| 74 | | | | | | | | | |
| 75 | | | | | | | | | |
| 76 | | | | | | | | | |
| 77 | 36 | 24/18 | 79-81 | 1-3 4-9 | 0.0 ppm | Loose, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | |
| 78 | | | | | | | | | |
| 79 | | | | | | | | | |
| 80 | | | | | | | | | |
| 81 | | | | | | | | | |
| REMARKS | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-5/MW-5S |

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Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|---------------|-----------|---|---------------|---------|------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 83 | | | | | | | | | |
| 84 | 37 | 24/6 | 84-86 | 2-5 11-11 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Gravel, trace Silt, moist (SP). | | | |
| 85 | | | | | | | | | |
| 86 | | | | | | | | | |
| 87 | | | | | | | | | |
| 88 | | | | | | | | | |
| 89 | 38 | 24/12 | 89-91 | 2-5 10-14 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Gravel, trace Silt, moist (SP). | | | |
| 90 | | | | | | | | | |
| 91 | | | | | | | | | |
| 92 | | | | | | | | | |
| 93 | | | | | | | | | |
| 94 | 39 | 24/18 | 94-96 | 3-10 11-24 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | |
| 95 | | | | | | | | | |
| REMARKS | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-5/MW-5S |

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------------|----------------|----------------|--------------|--|------------------|---------|------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 97 | | | | | | | | | |
| 98 | | | | | | | | | |
| 99 | 40 | 24/24 | 99-101 | 3-4 10-14 | 0.0 ppm | Medim dense, pale brown, well sorted, fine SAND, trace Silt, trace Gravel, moist (SP). | | | |
| 100 | | | | | | | | | |
| 101 | | | | | | | | | |
| 102 | | | | | | | | | |
| 103 | | | | | | | | | |
| 104 | 41 | 24/9 | 104-106 | 2-6 10-19 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | |
| 105 | | | | | | | | | |
| 106 | | | | | | | | | |
| 107 | | | | | | | | | |
| 108 | | | | | | | | | |
| 109 | 42 | 24/14 | 109-111 | 4-8 18-26 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, grace Gravel, moist (SP). | | | |
| REMARKS | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-5/MW-5S |

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------------|----------------|----------------|--------------|---|------------------|---------|------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 111 | | | | | | | | | |
| 112 | | | | | | | | | |
| 113 | | | | | | | | | |
| 114 | 43 | 24/8 | 114-116 | 5-9 16-22 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, trace Gravel, moist (SP). | | | |
| 115 | | | | | | | | | |
| 116 | | | | | | | | | |
| 117 | | | | | | | | | |
| 118 | | | | | | | | | |
| 119 | 44 | 24/8 | 119-121 | 2-4 10-11 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | |
| 120 | | | | | | | | | |
| 121 | | | | | | | | | |
| 122 | | | | | | | | | |
| 123 | | | | | | | | | |
| REMARKS | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-5/MW-5S |

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|---------------|-----------|---|---------------|---------|------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 125 | 45 | 24/8 | 124-126 | 3-11 22-27 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, trace Gravel, moist (SP). | | | |
| 126 | | | | | | | | | |
| 127 | | | | | | | | | |
| 128 | | | | | | | | | |
| 129 | 46 | 24/24 | 129-131 | 3-8 17-31 | 0.0 ppm | Dense, pale brown, well sorted, fine SAND, trace Silt, trace Gravel, moist (SP). | | | |
| 130 | | | | | | | | | |
| 131 | | | | | | | | | |
| 132 | | | | | | | | | |
| 133 | | | | | | | | | |
| 134 | 47 | 24/13 | 134-136 | 10-22-50/6" | 0.0 ppm | Very dense, pale brown, well sorted, fine SAND, little Gravel, trace Silt, moist (SW). | | | |
| 135 | | | | | | | | | |
| 136 | | | | | | | | | |
| 137 | | | | | | | | | |
| REMARKS | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-5/MW-5S |

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Check: J Cai

| Sample Information | | | | | | Beaumont, Michigan | | | | Check: | J Cai | | | | | | | |
|--------------------|---|------------------------|----------------|----------------|--------------|--|------------------|---------|------------------------|--------|-------|--|--|--|--|--|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| 139 | 48 | 24/14 | 139-141 | 10-23 34-35 | 0.0 ppm | Dense, pale brown, well sorted, fine SAND, little Gravel, trace Silt, moist (SW). | | | | | | | | | | | | |
| 140 | | | | | | | | | | | | | | | | | | |
| 141 | | | | | | | | | | | | | | | | | | |
| 142 | | | | | | | | | | | | | | | | | | |
| 143 | | | | | | | | | | | | | | | | | | |
| 144 | 49 | 24/6 | 144-146 | 4-7 14-21 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | | | | | | | | | |
| 145 | | | | | | | | | | | | | | | | | | |
| 146 | | | | | | | | | | | | | | | | | | |
| 147 | | | | | | | | | | | | | | | | | | |
| 148 | | | | | | | | | | | | | | | | | | |
| 149 | 50 | 24/5 | 149-151 | 1-3 8-17 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | | | | | | | | | | |
| 150 | | | | | | | | | | | | | | | | | | |
| 151 | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| REMARKS | | | | | | | | | | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | | | | | | | | |
| | | | | | | | | | Boring No.: SB-5/MW-5S | | | | | | | | | |

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Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|----------------|-----------|---|---------------|---------|------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 153 | | | | | | | | | |
| 154 | 51 | 24/3 | 154-156 | 4-22-50/6" | 0.0 ppm | Very dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | |
| 155 | | | | | | | | | |
| 156 | | | | | | | | | |
| 157 | | | | | | | | | |
| 158 | | | | | | | | | |
| 159 | 52 | 24/18 | 159-161 | 10-21 29-34 | 0.0 ppm | Dense, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | |
| 160 | | | | | | | | | |
| 161 | | | | | | | | | |
| 162 | | | | | | | | | |
| 163 | | | | | | | | | |
| 164 | 53 | 24/12 | 164-166 | 8-11 11-11 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, trace Gravel, trace Silt, moist (SP). | | | |
| 165 | | | | | | | | | |
| REMARKS Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |
| | | | | | | | | | Boring No.: SB-5/MW-5S |

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---------|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 167 | | | | | | | | | |
| 168 | | | | | | | | | |
| 169 | 54 | 24/12 | 169-171 | 3-3 3-5 | 0.0 ppm | Loose, pale brown, well sorted, fine SAND, trace Silt, trace Gravel, moist (SP). | | | |
| 170 | | | | | | | | | |
| 171 | | | | | | | | | |
| 172 | | | | | | | | | |
| 173 | | | | | | | | | |
| 174 | 55 | 24/10 | 174-176 | 1-1 1-2 | 0.0 ppm | Very loose, pale brown, well sorted, fine SAND, trace Silt, moist (SP). | | | |
| 175 | | | | | | | | | |
| 176 | | | | | | | | | |
| 177 | | | | | | | | | |
| 178 | | | | | | | | | |
| 179 | 56 | 24/12 | 179-181 | 3-3 3-3 | 0.0 ppm | Very loose, pale brown, well sorted, fine SAND, trace Silt, trace Gravel, moist (SP). | | | |
| REMARKS | | | | | | | | | |

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|--------------|-----------|--|---------------|---------|------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 181 | | | | | | | | | |
| 182 | | | | | | | | | |
| 183 | | | | | | | | | |
| 184 | 57 | 24/18 | 184-186 | 1-1 1-1 | 0.0 ppm | Very loose, pale brown, well sorted, fine SAND, little Gravel, trace Silt, moist (SW). | | | |
| 185 | | | | | | | | | |
| 186 | | | | | | | | | |
| 187 | | | | | | | | | |
| 188 | | | | | | | | | |
| 189 | 58 | 24/12 | 189-191 | 1-3 10-21 | 0.0 ppm | Medium dense, pale brown, well sorted, fine SAND, little Gravel, trace Silt, moist (SW). | | | |
| 190 | | | | | | | | | |
| 191 | | | | | | | | | |
| 192 | | | | | | | | | |
| 193 | | | | | | | | | |
| REMARKS | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-5/MW-5S |

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Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 195 | 59 | 24/8 | 194-196 | 32-38-50/4" | 0.0 ppm | Very dense, pale brown, well sorted, fine SAND, little Gravel, trace Silt, trace Cobbles, moist (SP). | | | |
| 196 | | | | | | | | | |
| 197 | | | | | | | | | |
| 198 | 60 | 24/0 | 198-200 | 50/0" | | NO RECOVERY. | | | |
| 199 | | | | | | | | | |
| 200 | | | | | | Bottom of Borehole at 200.0 | | 2 | |
| 201 | | | | | | | | | |
| 202 | | | | | | | | | |
| 203 | | | | | | | | | |
| 204 | | | | | | | | | |
| 205 | | | | | | | | | |
| 206 | | | | | | | | | |
| 207 | | | | | | | | | |
| <div>REMARKS</div> <div>2. Monitoring well was installed in borehole upon completion. Well screen set from 61.9 to 66.6 feet below ground surface.</div> | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-5/MW-5S |

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Check: J Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Julie Groenleer

Date Start/Finish: 10-31-17 / 11-2-17

Boring Location:

GS Elev.: 770.60' Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30.0"

NA

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|--|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See SB-6/MW-6S for soil description from 0.0 to 70.0 feet. | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
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| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 31 | | | | | | | | | | |
| 32 | | | | | | | | | | |
| 33 | | | | | | | | | | |
| 34 | | | | | | | | | | |
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| 63 | | | | | | | | | | |
| 64 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

Boring No.: SB-6D/MW-6D

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Boring No.: SB-6D/MW-6D

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Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|--|------------------------|---------|-------------------------|-----------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 66 | | | | | | | | | | |
| 67 | | | | | | | | | | |
| 68 | | | | | | | | | | |
| 69 | | | | | | | | | | |
| 70 | 1 | 24/18 | 70-72 | 1-2 4-12 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | SAND (SP) | | | |
| 71 | | | | | | | | | | |
| 72 | 2 | 24/13 | 72-74 | 2-3 11-17 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 73 | | | | | | | | | | |
| 74 | 3 | 24/1 | 74-76 | 7-11 19-18 | | Medium dense, light brown, fine Silty SAND, wet (SM). | 74' Silty SAND (SM) | | | |
| 75 | | | | | | | | | | |
| 76 | 4 | 24/4 | 76-78 | 2-3 3-8 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | 76' SAND (SP) | | | Bentonite/Grout |
| 77 | | | | | | | | | | |
| 78 | 5 | 24/12 | 78-80 | 4-7 15-18 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 79 | | | | | | | | | | |
| 80 | 6 | 24/20 | 80-82 | 2-6 17-25 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 81 | | | | | | | | | | |
| 82 | 7 | 24/16 | 82-84 | 2-2 4-8 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 83 | | | | | | | | | | |
| 84 | 8 | 24/12 | 84-86 | 2-2 2-7 | | Very loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 85 | | | | | | | | | | |
| 86 | 9 | 24/20 | 86-88 | 5-16 37-35 | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 87 | | | | | | | | | | |
| 88 | 10 | 24/13 | 88-90 | 5-6 56-50 | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 89 | | | | | | | | | | |
| 90 | 11 | 24/24 | 90-92 | 6-17 60-30 | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 91 | | | | | | | | | | |
| 92 | 12 | 24/0 | 92-94 | 4-7 10-11 | | NO RECOVERY. | 92' NO RECOVERY | | | |
| 93 | | | | | | | | | | |
| 94 | 13 | 24/0 | 94-96 | 2-3 4-11 | | NO RECOVERY. | | | | |
| 95 | | | | | | | | | | |
| 96 | 14 | 24/24 | 96-98 | 2-7 9-24 | | Medium dense, brown, fine SAND, trace medium Sand, trace Silt, wet (SP). | 96' SAND (SP) | | | |
| 97 | | | | | | | | | | |
| 98 | 15 | 24/24 | 98-100 | 3-6 13-22 | | Medium dense, brown, fine SAND, trace medium Sand, trace Silt, wet (SP). | | | | |
| 99 | | | | | | Changing at 99.6 feet to: Medium dense, | 99.6' 100' | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-6D/MW-6D | |

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|--|--|---------|-------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 101 | 16 | 24/11 | 100-102 | 3-8 20-31 | | brown, fine Silty SAND, wet (SM). Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | Silty SAND (SM)/ SAND (SP) | | | |
| 102 | 17 | 24/18 | 102-104 | 2-3 10-15 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 103 | | | | | | | | | | |
| 104 | 18 | 24/6 | 104-106 | 5-10 23-22 | | Dense, brown, fine Silty SAND, wet (SM). | 104' Silty SAND (SM) | | | |
| 105 | | | | | | | | | | |
| 106 | 19 | 24/17 | 106-108 | 9-19 29-29 | | Dense, brown, fine Silty SAND, wet (SM). | | | | |
| 107 | | | | | | | | | | |
| 108 | 20 | 24/12 | 108-110 | 5-12 18-18 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | 108' SAND (SP) | | | |
| 109 | | | | | | | | | | |
| 110 | 21 | 24/13 | 110-112 | 2-3 5-17 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 111 | | | | | | | | | | |
| 112 | 22 | 24/0 | 112-114 | 3-4 7-12 | | NO RECOVERY. | 112' NO RECOVERY | | | |
| 113 | | | | | | | | | | |
| 114 | 23 | 24/0 | 114-116 | 3-5 15-17 | | NO RECOVERY. | | | | |
| 115 | | | | | | | | | | |
| 116 | 24 | 24/0 | 116-118 | 4-13 30-45 | | NO RECOVERY (bailed for sample description: Brown, fine to medium SAND, trace Silt, moist (SP)). | 116' NO RECOVERY (bailed for sample description: SAND (SP)) | | | |
| 117 | | | | | | | | | | |
| 118 | 25 | 24/10 | 118-120 | 9-29 46-54 | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | 118' SAND (SP) with Silty SAND in spoon at 120.0 feet | | | |
| 119 | | | | | | | | | | |
| 120 | 26 | 24/8 | 120-122 | 6-7 9-19 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 121 | | | | | | | | | | |
| 122 | 27 | 24/24 | 122-124 | 10-22 37-39 | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 123 | | | | | | | | | | |
| 124 | 28 | 24/24 | 124-126 | 6-21 28-28 | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 125 | | | | | | | | | | |
| 126 | 29 | 24/24 | 126-128 | 11-19 33-24 | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 127 | | | | | | | | | | |
| 128 | 30 | 24/12 | 128-130 | 3-3 3-10 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 129 | | | | | | | | | | |
| 130 | 31 | 24/24 | 130-132 | 8-25 35-17 | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 131 | | | | | | | | | | |
| 132 | 32 | 24/14 | 132-134 | 12-29 44-50 | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 133 | | | | | | | | | | |
| 134 | 33 | 24/20 | 134-136 | 2-7 30-50 | | Dense, brown, fine to medium SAND, trace | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-6D/MW-6D | |

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|---------------|----------------------|--|--|-------------------------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 136 | 34 | 24/19 | 136-138 | 2-4 12-21 | | Silt, wet (SP). | SAND (SP) with Silty SAND in spoon at 120.0 feet | | |
| 137 | | | | | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 138 | 35 | 24/14 | 138-140 | 8-11 11-14 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 139 | | | | | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 140 | 36 | 24/12 | 140-142 | 5-11 23-24 | | Dense, brown, fine to medium SAND, trace Silt, trace fine Gravel, wet (SP). | | | |
| 141 | | | | | | Dense, brown, fine to medium SAND, trace Silt, trace fine Gravel, wet (SP). | | | |
| 142 | 37 | 24/12 | 142-144 | 4-8 12-18 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 143 | | | | | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 144 | 38 | 24/10 | 144-146 | 1-3 12-17 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 145 | | | | | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 146 | 39 | 24/8 | 146-148 | 1-2 4-8 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 147 | | | | | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 148 | 40 | 24/9 | 148-150 | 1-3 7-14 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 149 | | | | | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 150 | 41 | 24/7 | 150-152 | 1-2 5-7 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 151 | | | | | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 152 | 42 | 24/0 | 152-154 | 3-7 20-32 | | NO RECOVERY. | 152' NO RECOVERY | | |
| 153 | | | | | | NO RECOVERY. | 154' SAND (SP) | | |
| 154 | 43 | 24/24 | 154-156 | 3-8 18-32 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 155 | | | | | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 156 | 44 | 24/14 | 156-158 | 5-12 47-24 | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 157 | | | | | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 158 | 45 | 24/24 | 158-160 | 3-12 29-36 | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). Changing at 160.0 feet (in shoe) to: Very stiff, gray, CLAY & SILT, some fine Sand, moist (CL). | | | |
| 159 | | | | | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). Changing at 160.0 feet (in shoe) to: Very stiff, gray, CLAY & SILT, some fine Sand, moist (CL). | | | |
| 160 | 46 | 24/24 | 160-162 | 1-9 23-36 | 3.75 tsf >4.0 tsf | Hard, gray, CLAY & SILT, some fine to coarse Sand, moist (CL). | 160' CLAY & SILT (CL) | | |
| 161 | | | | | | Hard, gray, CLAY & SILT, some fine to coarse Sand, moist (CL). | 162' | | |
| 162 | | | | | | Bottom of Borehole at 162.0 Feet | | | |
| 163 | | | | | | | | | |
| 164 | | | | | | | | | |
| 165 | | | | | | | | | |
| 166 | | | | | | | | | |
| 167 | | | | | | | | | |
| 168 | | | | | | | | | |
| 169 | | | | | | | | | |
| REMARKS Pocket penetrometer readings were measured in tons per square foot (tsf) and are used to evaluate consistency of cohesive soil. Monitoring well was installed in borehole upon completion. Well screen set from 155.0 to 160.0 feet below ground surface. | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | Boring No.: SB-6D/MW-6D | |

BORING WELL 6233550 WWW.HOUSE STREET NE GPJ GZA CORP.GDT 1/25/18

Top of Well Screen
Silica Sand Filter Pack
2-Inch Dia.
5-Foot PVC Screen (0.010" Slot)
Bottom of Well Screen



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Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 9-13-17 / 9-14-17

Boring Location:

GS Elev.: 770.30' Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30.0"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|--------------|-----------|---|--|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | 1 | 24/18 | 0-2 | 4-3 3-5 | | Very dark grayish-brown to dark brown, fine to medium grained SAND, some Silt, poorly sorted, dry (SM). Changing at 0.2 feet to: Dark brown, fine to medium grained SAND, some Silt, moderately sorted, dry (SM). Changing at 0.4 feet to: Dark yellowish-brown, fine to medium grained SAND, some Silt, trace Gravel, moderately sorted, dry (SM). | SAND (SM) | | | |
| 2 | 2 | 24/16 | 2-4 | 8-8 11-12 | | Dark yellowish-brown, fine to medium grained SAND, some Silt, trace Gravel, moderately sorted, dry (SM). Changing at 2.8 feet to: Dark yellowish-brown, fine to medium SAND, little Clay, little Silt, non to slightly plastic, moderately cohesive, poorly sorted, dry (SC). Changing at 3.0 feet to: Mottled dark yellowish-brown to pale brown, CLAY & SILT, some Sand, trace Gravel, plastic, cohesive, poorly sorted, dry to moist (CL). | 2.8' 3' SAND (SC) CLAY & SILT (CL) | | | |
| 3 | 3 | 24/19 | 4-6 | 8-9 13-15 | | Mottled dark yellowish-brown to pale brown, CLAY & SILT, some Sand, trace Gravel, plastic, cohesive, poorly sorted, dry to moist (CL). Changing at 5.2 feet to: Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | 5.2' SAND (SP) | | | |
| 4 | 4 | 24/14 | 6-8 | 2-2 2-2 | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 5 | 5 | 24/20 | 8-10 | 1-3 3-4 | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 6 | 6 | 24/24 | 10-12 | 2-3 3-5 | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------------|----------------|----------------|--------------|---|------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 13 | 7 | 24/22 | 12-14 | 3-4 5-5 | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | SAND (SP) | | | |
| 14 | 8 | 24/20 | 14-16 | 2-5 6-11 | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist with some alternating beds of dark yellowish-brown, fine to medium grained SAND, trace Gravel at 14.6 feet. | | | | |
| 16 | 9 | 24/22 | 16-18 | 4-8 9-10 | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 18 | 10 | 24/22 | 18-20 | 4-5 7-8 | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 20 | 11 | 24/19 | 20-22 | 6-9 14-15 | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 22 | 12 | 24/24 | 22-24 | 6-10 11-13 | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 24 | 13 | 24/20 | 24-26 | 5-8 13-18 | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 25 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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| Sample Information | | | | | | Check: J Cai | | | | |
|--------------------|-----|------------------|-------------|----------------|-----------|--|--------------------|---------|---------------------|-----------------|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 27 | 14 | 24/22 | 26-28 | 7-10 15-18 | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | SAND (SP) | | | Bentonite/Grout |
| 28 | 15 | 24/22 | 28-30 | 7-11 12-14 | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 30 | 16 | 24/20 | 30-32 | 7-14 15-17 | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 32 | 17 | 24/16 | 32-34 | 7-10 15-21 | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 34 | 18 | 24/22 | 34-36 | 6-10 18-20 | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 36 | 19 | 24/19 | 36-38 | 10-16 23-34 | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). Changing at 36.8 feet to: Light yellowish-brown, fine grained SAND, little Silt, very well sorted, moist (SM). Changing at 37.8 feet to: Light yellowish-brown to pale brown, fine to medium grained SAND, trace Silt, well sorted, moist (SP). | 36.8' SAND (SM) | | | |
| 38 | 20 | 24/19 | 38-40 | 9-22 22-20 | | Light yellowish-brown to pale brown, fine to medium grained SAND, trace Silt, well sorted, moist (SP). Changing at 38.5 feet to: Light yellowish-brown, fine grained SAND, little Silt, very well sorted, moist (SM). | 37.8' SAND (SP) | | | |
| 39 | | | | | | | 38.5' SAND (SM) | | | |
| REMARKS | | | | | | | | | | |

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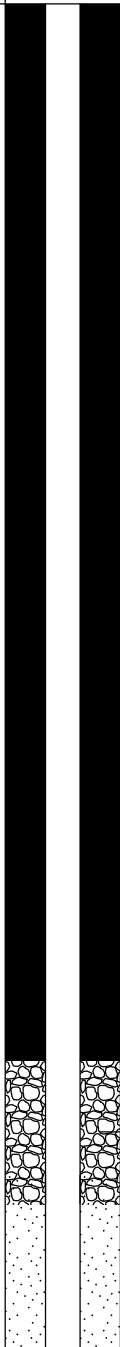
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| Sample Information | | | | | | Check: J Cai | | | | |
|--------------------|---|------------------|-------------|----------------|-----------|--|--------------------|---------|--|----------------|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 41 | 21 | 24/24 | 40-42 | 4-6 7-3 | | Light yellowish-brown, fine grained SAND, little Silt, very well sorted, moist (SM). Changing at 40.9 feet to: Yellowish-brown, fine grained SAND, little Silt, well sorted, moist (SM). | SAND (SM) | 1 |  | Bentonite Seal |
| 42 | 22 | 24/19 | 42-44 | 11-22 37-38 | | Yellowish-brown, fine grained SAND, little Silt, well sorted, moist (SM). Changing at 43.1 feet to: Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). | 43.1' SAND (SP) | | | |
| 43 | | | | | | | | | | |
| 44 | 23 | 24/22 | 44-46 | 16-22 28-30 | | Very pale brown, fine to medium SAND, trace Silt, very well sorted, moist (SP). Changing at 44.8 feet to: Brown, fine to medium grained SAND, trace Silt, well sorted, moist (SP). | | | | |
| 45 | | | | | | | | | | |
| 46 | 24 | 24/22 | 46-48 | 6-8 10-11 | | Brown, fine to medium grained SAND, trace Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 47 | | | | | | | | | | |
| 48 | 25 | 24/18 | 48-50 | 4-11 18-21 | | Brown, fine to medium grained SAND, trace Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 49 | | | | | | | | | | |
| 50 | 26 | 24/18 | 50-52 | 5-11 14-17 | | Brown, fine to medium grained SAND, trace Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 51 | | | | | | | | | | |
| 52 | 27 | 24/11 | 52-54 | 3-9 18-21 | | Brown, fine to medium grained SAND, trace Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 53 | | | | | | | | | | |
| REMARKS | 1. Groundwater was encountered at approximately 46.0 feet below ground surface. | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |
| | | | | | | | | | Boring No.: SB-6/MW-6S | |

BORING WELL 6233550 WWW.HOUSE STREET NE.GPJ GZA CORP.GDT 1/25/18



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Boring No.: SB-6/MW-6S

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Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|--------------|-----------|--|---------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 55 | 28 | 24/20 | 54-56 | 3-8 14-15 | | Brown, fine to medium grained SAND, trace Silt, trace Gravel, well sorted, wet (SP). | SAND (SP) | | | |
| 56 | 29 | 24/8 | 56-58 | 2-4 12-12 | | Brown, fine to medium grained SAND, trace Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 58 | 30 | 24/12 | 58-60 | 3-7 12-11 | | Brown, fine to medium grained SAND, trace Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 60 | 31 | 24/7 | 60-62 | 1-1 3-7 | | Brown, fine to medium grained SAND, trace Silt, trace Gravel, well sorted, wet (SP). | | | | |
| 62 | | | | | | Bottom of Borehole at 62.0 Feet | 62' | 2 | | |
| 63 | | | | | | | | | | |
| 64 | | | | | | | | | | |
| 65 | | | | | | | | | | |
| 66 | | | | | | | | | | |
| 67 | | | | | | | | | | |
| REMARKS 2. Monitoring well was installed in borehole upon completion. Well screen set from 57.1 to 61.8 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-6/MW-6S | |

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Check: J Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 9-19-17 / 9-20-17

Boring Location:

GS Elev.: 788.90' Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30.0"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|-------------------------------------|---------|---------------------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | 1 | 24/18 | 0-2 | 2-1 2-1 | | Very loose, dark brown to yellowish-brown, fine grained SAND, some Silt, moderately sorted, dry (TOPSOIL). Changing at 0.5 feet to: Brownish-yellow, fine grained SAND, little Silt, well sorted, dry (SM). | 0.5' SAND (TOPSOIL) SAND (SM) | | | PROTECTIVE CASING |
| 2 | 2 | 24/12 | 2-4 | 2-3 3-4 | | Loose, yellowish-brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | 2' SAND (SP) | | | Backfill/Cement Pad |
| 3 | 3 | 24/18 | 4-6 | 2-2 3-2 | | Loose, yellowish-brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 4 | 4 | 24/5 | 6-8 | 2-2 2-2 | | Loose, yellowish-brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP) with fractured rock at 6.1 feet. Changing at 6.3 feet to: Dark brown, CLAY & SILT, some Sand, trace Gravel, plastic, cohesive, mmoist (CL). | 6.3' CLAY & SILT (CL) | | | |
| 5 | 5 | 24/12 | 8-10 | 2-2 3-4 | | Loose dark grayish-brown to dark brown, coarse grained SAND, little Gravel, trace Silt, poorly sorted, moist (SP). | 8' SAND (SP) | | | |
| 6 | 6 | 24/11 | 10-12 | 4-6 4-4 | | Loose dark grayish-brown to dark brown, coarse grained SAND, little Gravel, trace Silt, poorly sorted, moist (SP). | | | | |

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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Check: J Cai

| Sample Information | | | | | | Dumont, Michigan | | Check: J Cai | | | |
|---|-----|------------------|-------------|-------------|-----------|--|------------------|--------------|------------------------|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | | | | | | | | | | | |
| 13 | 7 | 24/19 | 12-14 | 4-7 5-5 | | Loose dark grayish-brown to dark brown, coarse grained SAND, little Gravel, trace Silt, poorly sorted, moist (SP). Changing at 12.6 feet to: Stiff, brown, CLAY & SILT, some Sand, trace Gravel, plastic, cohesive, poorly sorted, moist (CL). Changing at 13.2 feet to: Stiff, dark brown, CLAY & SILT, some Sand, trace Gravel, plastic, cohesive, poorly sorted, moist (CL). NO RECOVERY. | SAND (SP) | | | | |
| | | | | | | | 12.6' | | | | |
| | | | | | | | CLAY & SILT (CL) | | | | |
| | | | | | | | 13' | | | | |
| 14 | 8 | 24/0 | 14-16 | 8-8 9-10 | | Loose, brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing at 16.4 feet to: Medium brown, CLAY & SILT, some Sand, trace Gravel, moderately plastic, cohesive, poorly sorted, moist (CL). Changing at 16.7 feet to: Loose, dark yellowish-brown, fine grained SAND, trace Silt, well sorted, moist (SP). Changing at 17.0 feet to: Medium mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Medium mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Changing at 18.6 feet to: Stiff mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Changing at 18.9 feet to: Loose, light yellowish-brown to brownish-yellow, fine grained SAND, very well sorted, moist (SP). Changing at 19.0 feet to: Stiff, mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Stiff, mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Loose to medium dense, very pale brown, fine grained SAND, trace Silt, very well sorted (bedded), moist (SP). | 13.2'SAND (SM) | | | | |
| | | | | | | | CLAY & SILT (CL) | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 16 | 9 | 24/17 | 16-18 | 3-4 3-5 | | Loose, brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing at 16.4 feet to: Medium brown, CLAY & SILT, some Sand, trace Gravel, moderately plastic, cohesive, poorly sorted, moist (CL). Changing at 16.7 feet to: Loose, dark yellowish-brown, fine grained SAND, trace Silt, well sorted, moist (SP). Changing at 17.0 feet to: Medium mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Medium mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Changing at 18.6 feet to: Stiff mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Changing at 18.9 feet to: Loose, light yellowish-brown to brownish-yellow, fine grained SAND, very well sorted, moist (SP). Changing at 19.0 feet to: Stiff, mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Stiff, mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Loose to medium dense, very pale brown, fine grained SAND, trace Silt, very well sorted (bedded), moist (SP). | 16' | | | | |
| | | | | | | | SAND (SP) | | | | |
| | | | | | | | 16.4' | | | | |
| | | | | | | | CLAY & SILT (CL) | | | | |
| 17 | | | | | | Loose, brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing at 16.4 feet to: Medium brown, CLAY & SILT, some Sand, trace Gravel, moderately plastic, cohesive, poorly sorted, moist (CL). Changing at 16.7 feet to: Loose, dark yellowish-brown, fine grained SAND, trace Silt, well sorted, moist (SP). Changing at 17.0 feet to: Medium mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Medium mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Changing at 18.6 feet to: Stiff mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Changing at 18.9 feet to: Loose, light yellowish-brown to brownish-yellow, fine grained SAND, very well sorted, moist (SP). Changing at 19.0 feet to: Stiff, mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Stiff, mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Loose to medium dense, very pale brown, fine grained SAND, trace Silt, very well sorted (bedded), moist (SP). | 16.7' | | | | |
| | | | | | | | CLAY & SILT (CL) | | | | |
| | | | | | | | 17' | | | | |
| | | | | | | | SAND (SP) | | | | |
| 18 | 10 | 24/22 | 18-20 | 4-4 5-6 | | Loose, brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing at 16.4 feet to: Medium brown, CLAY & SILT, some Sand, trace Gravel, moderately plastic, cohesive, poorly sorted, moist (CL). Changing at 16.7 feet to: Loose, dark yellowish-brown, fine grained SAND, trace Silt, well sorted, moist (SP). Changing at 17.0 feet to: Medium mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Medium mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Changing at 18.6 feet to: Stiff mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Changing at 18.9 feet to: Loose, light yellowish-brown to brownish-yellow, fine grained SAND, very well sorted, moist (SP). Changing at 19.0 feet to: Stiff, mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Stiff, mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Loose to medium dense, very pale brown, fine grained SAND, trace Silt, very well sorted (bedded), moist (SP). | CLAY & SILT (CL) | | | | |
| | | | | | | | | | | | |
| | | | | | | | 18.9' | | | | |
| | | | | | | | SAND (SP) | | | | |
| 19 | | | | | | Loose, brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing at 16.4 feet to: Medium brown, CLAY & SILT, some Sand, trace Gravel, moderately plastic, cohesive, poorly sorted, moist (CL). Changing at 16.7 feet to: Loose, dark yellowish-brown, fine grained SAND, trace Silt, well sorted, moist (SP). Changing at 17.0 feet to: Medium mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Medium mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Changing at 18.6 feet to: Stiff mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Changing at 18.9 feet to: Loose, light yellowish-brown to brownish-yellow, fine grained SAND, very well sorted, moist (SP). Changing at 19.0 feet to: Stiff, mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Stiff, mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Loose to medium dense, very pale brown, fine grained SAND, trace Silt, very well sorted (bedded), moist (SP). | 19' | | | | |
| | | | | | | | CLAY & SILT (CL) | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 20 | 11 | 24/14 | 20-22 | 3-3 4-5 | | Loose, brown, fine grained SAND, trace Silt, very well sorted, moist (SP). Changing at 16.4 feet to: Medium brown, CLAY & SILT, some Sand, trace Gravel, moderately plastic, cohesive, poorly sorted, moist (CL). Changing at 16.7 feet to: Loose, dark yellowish-brown, fine grained SAND, trace Silt, well sorted, moist (SP). Changing at 17.0 feet to: Medium mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Medium mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Changing at 18.6 feet to: Stiff mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Changing at 18.9 feet to: Loose, light yellowish-brown to brownish-yellow, fine grained SAND, very well sorted, moist (SP). Changing at 19.0 feet to: Stiff, mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Stiff, mottled yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted, moist (CL). Loose to medium dense, very pale brown, fine grained SAND, trace Silt, very well sorted (bedded), moist (SP). | 20.6' | | | | |
| | | | | | | | SAND (SP) | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 22 | 12 | 24/16 | 22-24 | 1-1 2-3 | | Loose to medium dense, very pale brown, fine grained SAND, trace Silt, very well sorted (bedded), moist (SP). | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 24 | 13 | 24/22 | 24-26 | 2-3 3-2 | | Loose to medium dense, very pale brown, fine grained SAND, trace Silt, very well sorted (bedded), moist (SP). | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 25 | | | | | | Loose to medium dense, very pale brown, fine grained SAND, trace Silt, very well sorted (bedded), moist (SP). | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| REMARKS | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-7/MW-7S | | |

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| Sample Information | | | | | | Check: J Cai | | | | |
|---|-----|------------------|-------------|-------------|-----------|---|---|---------|------------------------|-----------------|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 27 | 14 | 24/22 | 26-28 | 2-3 3-3 | | Loose to medium dense, very pale brown, fine grained SAND, trace Silt, very well sorted (bedded), moist (SP). | SAND (SP) | | | |
| 28 | 15 | 24/22 | 28-30 | 2-3 4-3 | | Loose to medium dense, very pale brown, fine grained SAND, trace Silt, very well sorted (bedded), moist (SP). | | | | |
| 30 | 16 | 24/20 | 30-32 | 1-3 6-8 | | Loose to medium dense, very pale brown, fine grained SAND, trace Silt, very well sorted (bedded), moist (SP). Changing at 30.3 feet to: Stiff, yellowish-brown, SILT, little Clay, plastic, cohesive, well sorted, moist to wet (ML). Changing at 30.7 feet to: Medium dense, very pale brown, fine to medium grained SAND, trace Silt, very well sorted (bedded), moist (SP). | 30.3' SILT (ML) 30.7' SAND (SP) | | | |
| 32 | 17 | 24/23 | 32-34 | 5-5 7-8 | | Medium dense, very pale brown, fine to medium grained SAND, trace Silt, very well sorted (bedded), moist (SP). Changing at 32.7 feet to: Soft, dark yellowish-brown, CLAY & SILT, plastic, cohesive, moist (CL). Changing at 32.8 feet to: Medium dense, very pale brown, fine to coarse grained SAND, some Gravel, trace Silt, poorly sorted, moist (SP). | 32.7' 32.8' CLAY & SILT (CL) SAND (SP) | | | Bentonite/Grout |
| 34 | 18 | 24/20 | 34-36 | 4-8 9-8 | | Medium dense, very pale brown, fine to coarse grained SAND, some Gravel, trace Silt, moderately sorted, moist (SP). | | | | |
| 36 | 19 | 24/18 | 36-38 | 5-6 7-8 | | Medium dense, very pale brown, fine to coarse grained SAND, some Gravel, trace Silt, moderately sorted, moist (SP). Changing at 36.1 feet to: Brown to yellowish-brown, CLAY & SILT, plastic, cohesive, well sorted (bedded), moist (CL). Changing at 36.2 feet to: Medium dense, very pale brown, fine to coarse grained SAND, some Gravel, trace Silt, moderately sorted, moist (SP). | 36.1' 36.2' CLAY & SILT (CL) SAND (SP) | | | |
| 38 | 20 | 24/18 | 38-40 | 3-5 5-7 | | Medium dense, very pale brown, fine to coarse grained SAND, some Gravel, trace Silt, moderately sorted, moist (SP). Changing at 38.5 feet to: Medium dense, light yellowish-brown to very pale brown, fine to medium grained SAND, trace Silt, | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-7/MW-7S | |

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|---|---------------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 41 | 21 | 24/20 | 40-42 | 2-4 7-8 | | very well sorted, moist (SP). Medium dense, light yellowish-brown to very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | SAND (SP) | | | |
| 42 | 22 | 24/16 | 42-44 | 4-4 6-10 | | Medium dense, light yellowish-brown to very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). Changing at 42.9 feet to: Medium dense, light yellowish-brown, fine to coarse grained SAND, some Gravel, trace Silt, poorly sorted, moist (SP). | | | | |
| 44 | 23 | 24/20 | 44-46 | 3-5 6-9 | | Medium dense, light yellowish-brown, fine to coarse grained SAND, trace Silt, poorly sorted, moist (SP). Changing at 45.3 feet to: Stiff to very stiff yellowish-brown grading to dark gray, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, poorly sorted, moist (CL). | 45.3' CLAY & SILT (CL) | | | |
| 46 | 24 | 24/12 | 46-48 | 3-6 7-10 | | Stiff to very stiff yellowish-brown grading to dark gray, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, poorly sorted, moist (CL). | | | | |
| 48 | 25 | 24/18 | 48-50 | 10-11 29-17 | | Stiff to very stiff yellowish-brown grading to dark gray, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, poorly sorted, moist (CL). Changing 48.6 feet to: Dense to very dense, very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | 48.6' SAND (SP) | | | |
| 50 | 26 | 24/6 | 50-52 | 21-39 48-25 | | Dense to very dense, very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 52 | 27 | 24/23 | 52-54 | 6-12 16-20 | | Dense to very dense, very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 53 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-7/MW-7S | |

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|--|---------------|---------|------------------------|----------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 55 | 28 | 24/20 | 54-56 | 6-16 17-23 | | Dense to very dense, very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | SAND (SP) | | | |
| 56 | 29 | 24/23 | 56-58 | 6-13 17-21 | | Dense to very dense, very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 58 | 30 | 24/20 | 58-60 | 8-16 20-31 | | Dense to very dense, very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 60 | 31 | 24/24 | 60-62 | 9-17 18-24 | | Dense to very dense, very pale brown, fine to medium grained SAND, trace Silt, very well sorted, moist (SP). | | | | |
| 62 | 32 | 24/18 | 62-64 | 4-8 10-11 | | Medium dense, yellowish-brown, fine to medim grained SAND, trace Silt, well sorted, wet (SP). | | 1 | | |
| 64 | 33 | 24/23 | 64-66 | 2-3 7-10 | | Medium dense, yellowish-brown, fine to medim grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 66 | 34 | 24/1 | 66-68 | 1-3 5-9 | | Medium dense, yellowish-brown, fine to medim grained SAND, trace Silt, well sorted, wet (SP). | | | | Bentonite Seal |
| <div>REMARKS</div> <div>1. Groundwater was encountered at approximately 62.0 feet below ground surface.</div> | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-7/MW-7S | |

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Check: J Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|--------------|-----------|---|---------------|---------|--|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 69 | 35 | 24/23 | 68-70 | 1-4 7-7 | | Medium dense, yellowish-brown, fine to medim grained SAND, trace Silt, well sorted, wet (SP). | SAND (SP) | | <p>Top of Well Screen</p> <p>Silica Sand Filter Pack</p> <p>2-Inch Dia. 5-Foot PVC Screen (0.010" Slot)</p> <p>Bottom of Well Screen</p> | |
| 70 | 36 | 24/8 | 70-72 | 2-7 11-11 | | Medium dense, yellowish-brown, fine to medim grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 71 | | | | | | | | | | |
| 72 | 37 | 24/5 | 72-74 | 1-2 5-9 | | Medium dense, yellowish-brown, fine to medim grained SAND, trace Silt, well sorted, wet (SP). | | | | |
| 73 | | | | | | | | | | |
| 74 | | | | | | Bottom of Borehole at 74.0 Feet | 74' | 2 | | |
| 75 | | | | | | | | | | |
| 76 | | | | | | | | | | |
| 77 | | | | | | | | | | |
| 78 | | | | | | | | | | |
| 79 | | | | | | | | | | |
| 80 | | | | | | | | | | |
| 81 | | | | | | | | | | |
| REMARKS 2. Monitoring well was installed in borehole upon completion. Well screen set from 70.1 to 74.7 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-7/MW-7S | |

BORING WELL 6233550 WWW.HOUSE STREET NE.GPJ GZA CORP.GDT 1/25/18



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Belmont, Michigan

Boring No.: SB-8/MW-8

Page: 1 of 3

File No.: 16.0062335.52

Check: Jim Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehosue

Date Start/Finish: 10-30-17 / 10-30-17

Boring Location:

GS Elev.: 742.20' Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 8.0" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: 140lbs NA

Hammer Fall: 30" NA

TOC Elev.: NA NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|--|---|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/20 | 0-2 | 1-1 1-3 | | Very loose, very dark grayish-brown, well sorted, fine grained SAND, little silt, slightly cohesive, moist (SM). Changing at 0.9 feet to: Very loose, yellowish-brown, well sorted, fine to medium grained SAND, trace Silt, moist (SP). | SAND (SM) 0.9' SAND (SP) | | | |
| 2 | 2 | 24/6 | 2-4 | 2-2 2-1 | | Very loose, yellowish-brown, well sorted, fine to medium grained SAND, trace Silt, moist (SP). | | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/15 | 4-6 | 2-2 2-1 | | Very loose, yellowish-brown, well sorted, fine to medium grained SAND, trace Silt, moist (SP). | | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/17 | 6-8 | 2-3 4-6 | | Loose, yellowish-brown, well sorted, fine to medium grained SAND, trace Silt, moist (SP). | | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/19 | 8-10 | 3-5 5-7 | | Loose, yellowish-brown, well sorted, fine to medium grained SAND, trace Silt, moist (SP). Changing at 8.5 feet to: Loose, dark yellowish-brown, well sorted, fine grained SAND, little Silt, slightly cohesive, moist (SM). Changing at 8.8 feet to: Loose, light yellowish-brown to brownish-yellow, well sorted, fine to medium grained SAND, trace Silt, moist (SP). Changing at 8.9 feet to: Dark yellowish-brown, moderately well sorted, CLAY & SILT, little Sand, moderately plastic, cohesive, moist (CL). Changing at 9.1 feet to: Loose, light yellowish-brown to brownish-yellow, well sorted, fine to medium grained SAND, trace Silt, moist (SP). Changing at 9.3 feet to: Dark yellowish-brown, moderately well sorted, CLAY & SILT, little Sand, moderately plastic, cohesive, moist (CL). Medium dense, brown, well sorted, fine to medium grained SAND, little Silt, slightly cohesive, moist (SM). Changing at 10.8 feet to: Medium dense, dark yellowish-brown, | 8.5' 8.8' SAND (SM) 8.9' SAND (SP) 9.1' CLAY & SILT (CL) 9.3' SAND (SP) 10' CLAY & SILT (CL) SAND (SM) 10.8' SAND (SP) | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/18 | 10-12 | 6-6 5-5 | | | | | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/17 | 12-14 | 3-3 4-4 | | | | | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/17 | 14-16 | 3-3 4-5 | | | | | | |

Grout

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-8/MW-8

BORING WELL 6233552 WWW.1758 HOUSE STREET NE GPJ GZA CORP GDT 1/25/18



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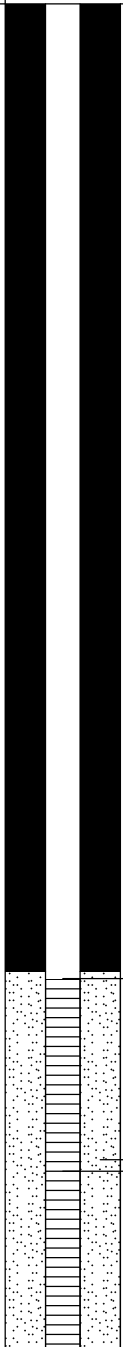
Belmont, Michigan

Boring No.: SB-8/MW-8

Page: 2 of 3

File No.: 16.0062335.52

Check: Jim Cai

| Sample Information | | | | | | DEARBORN, MICHIGAN | | Check: Jim Cai | | |
|---|---|------------------|-------------|-------------|-----------|--|---------------|--------------------|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 16 | 9 | 24/18 | 16-18 | 3-4 5-5 | | very well sorted, fine to medium grained SAND, trace Silt, moist (SP). Loose, dark yellowish-brown, very well sorted, fine to medium grained SAND, trace Silt, moist (SP). Loose, yellowish-brown, very well sorted, fine to medium grained SAND, trace Silt, moist (SP). Loose, dark yellowish-brown, very well sorted, fine to medium grained SAND, trace Silt, moist (SP). | SAND (SP) | 1 |  | |
| 17 | | | | | | | | | | |
| 18 | 10 | 24/19 | 18-20 | 4-4 4-4 | | Loose, dark yellowish-brown, very well sorted, fine to medium grained SAND, trace Silt, moist (SP). Dark yellowish-brown, very well sorted, fine to medium grained SAND, trace Silt, moist (SP). | | | | |
| 19 | | | | | | | | | | |
| 20 | 11 | 24/16 | 20-22 | 2-2 2-3 | | Very loose, brown to yellowish-brown, well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 21 | | | | | | | | | | |
| 22 | 12 | 24/18 | 22-24 | 1-3 2-2 | | Very loose, brown to yellowish-brown, well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 23 | | | | | | | | | | |
| 24 | 13 | 24/19 | 24-26 | 1-0 0-0 | | Very loose, brown to yellowish-brown, well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 25 | | | | | | | | | | |
| 26 | 14 | 24/18 | 26-28 | 0-0 0-1 | | Very loose, brown to yellowish-brown, well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | Top of Well Screen | | |
| 27 | | | | | | | | | | |
| 28 | 15 | 24/6 | 28-30 | 0-0 0-3 | | Very loose, brown to yellowish-brown, well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 29 | | | | | | | | | | |
| 30 | 16 | 24/18 | 30-32 | 0-1 0-1 | | Very loose, brown to yellowish-brown, well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 31 | | | | | | | | | | |
| 32 | 18 | 24/15 | 32-34 | 1-1 2-3 | | Very loose, brown to yellowish-brown, well | | | Silica Sand Filter Pack 2-Inch Dia. 5-Foot PVC Screen (0.010" Slot) | |
| REMARKS | 1. Groundwater was encountered at approximately 20.0 feet below ground surface. | | | | | | | | | |
| | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-8/MW-8 | |

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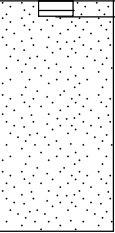
Belmont, Michigan

Boring No.: SB-8/MW-8

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File No.: 16.0062335.52

Check: Jim Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|---|-----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 33 | 19 | 24/17 | 34-36 | 0-1 2-3 | | sorted, fine to medium grained SAND, trace Silt, wet (SP). | SAND (SP) | 2 |  | Bottom of Well Screen |
| 34 | | | | | | Very loose, brown to yellowish-brown, well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 35 | | | | | | | | | | |
| 36 | | | | | | Bottom of Borehole at 36.0 Feet | 36' | | | |
| 37 | | | | | | | | | | |
| 38 | | | | | | | | | | |
| 39 | | | | | | | | | | |
| 40 | | | | | | | | | | |
| 41 | | | | | | | | | | |
| 42 | | | | | | | | | | |
| 43 | | | | | | | | | | |
| 44 | | | | | | | | | | |
| 45 | | | | | | | | | | |
| 46 | | | | | | | | | | |
| 47 | | | | | | | | | | |
| 48 | | | | | | | | | | |
| 49 | | | | | | | | | | |
| <div>REMARKS</div> <div>2. Monitoring well was installed in borehole upon completion. Well screen set from 27.7 to 32.7 feet below ground surface.</div> | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-8/MW-8 | |

BORING WELL 6233552 WWW 1758 HOUSE STREET NE GPJ GZA CORP GDT 1/25/18



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Boring No.: SB-9/MW-9D

Page: 1 of 16

File No.: 16.0062335.52

Check: Jim Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Joe Workman/John Morehouse

Date Start/Finish: 11-10-17 / 11-17-17

Boring Location:

GS Elev.: 818.20' Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|--------------|-----------|--|------------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/13 | 0-2 | 2-2 1-2 | 1.0 tsf | Stiff, brown, CLAY & SILT, trace fine to medium Sand, trace Organic Matter, damp (CL). | CLAY & SILT (CL) | 1 | | |
| 2 | 2 | 24/6 | 2-4 | 1-2 3-5 | 1.5 tsf | Stiff, brown, CLAY & SILT, trace fine to coarse Sand, trace fine Gravel, damp (CL). | | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/24 | 4-6 | 2-4 7-8 | 3.5 tsf | Very stiff, brown, CLAY & SILT, trace fine Sand, damp (CL). | | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/24 | 6-8 | 4-5 9-11 | 3.0 tsf | Very stiff, brown, CLAY & SILT, trace fine Sand, damp (CL). | | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/24 | 8-10 | 2-4 7-9 | 2.5 tsf | Very stiff, brown, CLAY & SILT, trace fine Sand, damp (CL). Changing at 9.0 feet to: Very stiff, brown, CLAY & SILT, little fine to coarse Sand, trace fine Gravel, damp (CL). | | | | |
| 9 | | | | | 3.5 tsf | | | | | |
| 10 | 6 | 24/24 | 10-12 | 4-5 13-12 | 1.0 tsf | Stiff, brown, CLAY & SILT, little fine to coarse Sand, trace fine Gravel, damp (CL). Changing at 11.0 feet to: Very stiff, brown and gray, CLAY & SILT with intermittent 1/8 inch seams of fine to medium Sand, damp (CL). | | | | |
| 11 | | | | | 3.5 tsf | | | | | |

REMARKS

1. Pocket penetrometer readings were measured in tons per square foot (tsf) and are used to evaluate consistency of cohesive soil.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-9/MW-9D

BORING WELL 6233552 WWW.US131.SB-9 THROUGH SB-11.GPJ GZA_CORP.GDT 1/25/18



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US 131

Belmont, Michigan

Boring No.: SB-9/MW-9D

Page: 2 of 16

File No.: 16.0062335.52

Check: Jim Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|--|---|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 13 | 7 | 24/24 | 12-14 | 4-8 12-10 | 3.5 tsf | Very stiff, brown and gray, CLAY & SILT with intermittent 1/8 inch seams of fine to medium Sand, damp (CL). Changing at 13.2 feet to: Very stiff, gray, CLAY & SILT, little fine to coarse Sand, trace fine Gravel, damp (CL). | CLAY & SILT (CL) | | | |
| 14 | 8 | 24/24 | 14-16 | 3-4 7-11 | 3.0 tsf | | | | | |
| 16 | 9 | 24/24 | 16-18 | 3-5 9-12 | 3.0 tsf | Very stiff, brown and gray CLAY & SILT, trace fine to medium Sand, damp (CL). Changing at 17.7 feet to: Medium dense, brown, fine to medium SAND, trace Silt, damp (SP). | 17.7' SAND (SP) | | | |
| 18 | 10 | 24/13 | 18-20 | 2-6 7-8 | | | | | | |
| 20 | 11 | 24/8 | 20-22 | 6-13 12-11 | 3.0 tsf | Very stiff, brown, CLAY & SILT, little fine to coarse Sand, damp (CL). Changing at 21.0 feet to: Medium dense, brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt, damp (SW). | 20' CLAY & SILT (CL) 21' SAND (SP) | | | |
| 22 | 12 | 24/20 | 22-24 | 5-5 7-8 | | | | | | |
| 24 | 13 | 24/20 | 24-26 | 2-2 2-3 | | Medium dense, brown, fine to medium SAND, trace coarse Sand, trace fine to coarse Gravel, trace Silt, wet (SP). | | 2 | | |
| REMARKS 2. Groundwater was encountered at approximately 24.0 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-9/MW-9D | |

BORING WELL 6233552 WWW.US 131 SB-9 THROUGH SB-11.GPJ GZA_CORP.GDT 1/25/18



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Belmont, Michigan

Boring No.: SB-9/MW-9D

Page: 3 of 16

File No.: 16.0062335.52

Check: Jim Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|--|-------------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 27 | 14 | 24/13 | 26-28 | 1-1 3-2 | | Loose, brown, fine to medium SAND, trace coarse Sand, trace Silt, wet (SP). | SAND (SP) | | | |
| 28 | 15 | 24/14 | 28-30 | 1-1 2-3 | | Loose, brown, fine to medium SAND, trace coarse Sand, trace Silt, wet (SP). | | | | |
| 30 | 16 | 24/24 | 30-32 | 3-1 3-4 | | Loose, brown, fine to medium SAND, trace coarse Sand, trace Silt, wet (SP). Changing at 31.0 feet to: Stiff, brown, CLAY & SILT, little fine to coarse Sand, moist (CL). | | | | |
| 31 | | | | | 1.0 tsf | | 31' CLAY & SILT (CL) | | | |
| 32 | 17 | 24/8 | 32-34 | 2-5 4-4 | 0.25 tsf | Very soft, brown, CLAY & SILT, some fine to coarse Sand, little fine Gravel, moist (CL). | | | | |
| 34 | 18 | 24/14 | 34-36 | 6-3 6-7 | 1.5 tsf | Stiff, brown, CLAY & SILT, some fine to coarse Sand, little fine Gravel, damp (CL). | | | | |
| 36 | 19 | 24/15 | 36-38 | 6-8 12-14 | 2.5 tsf | Very stiff, brown, CLAY & SILT, little fine to coarse Sand, trace fine Gravel, damp (CL). | | | | |
| 38 | 20 | 24/14 | 38-40 | 8-16 12-12 | 3.5 tsf | Very stiff, gray, CLAY & SILT, some fine to coarse Sand, trace Cobbles (based on fragments), damp (CL). | | | | |
| 39 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-9/MW-9D | |

BORING WELL 6233552 WWW.US131.SB-9 THROUGH SB-11.GPJ GZA_CORP.GDT 1/25/18



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Belmont, Michigan

Boring No.: SB-9/MW-9D

Page: 4 of 16

File No.: 16.0062335.52

Check: Jim Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|---|-------------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 41 | 21 | 24/16 | 40-42 | 2-9 31-17 | >4.0 tsf | Hard, gray, CLAY & SILT, some fine to coarse Sand, trace fine to coarse Gravel, damp (CL). | CLAY & SILT (CL) | | | |
| 42 | 22 | 24/22 | 42-44 | 3-4 10-14 | 2.5 tsf | Very stiff, gray, CLAY & SILT, little fine to coarse Sand, trace fine Gravel, damp (CL). | | | | |
| 44 | 23 | 24/19 | 44-46 | 4-6 15-18 | 3.0 tsf | Very stiff, gray, CLAY & SILT, little fine to coarse Sand, trace fine to coarse Gravel, damp (CL). | | | | |
| 46 | 24 | 24/20 | 46-48 | 3-15 32-28 | >4.0 tsf | Hard, gray, CLAY & SILT, little fine to coarse Sand, trace fine to coarse Gravel, damp (CL). | | | | |
| 48 | 25 | 24/20 | 48-50 | 4-18 22-30 | >4.0 tsf | Hard, gray, CLAY & SILT, little fine to coarse Sand, damp (CL). | | | | |
| 50 | 26 | 24/0 | 50-52 | 25-29 35-45 | | NO RECOVERY. | 50' NO RECOVERY | | | |
| 52 | 27 | 24/20 | 52-54 | 26-24 30-31 | >4.0 tsf | Hard, gray, CLAY & SILT, some fine to coarse Sand, little fine to coarse Gravel, trace Cobbles (based on fragments), damp (CL). | 52' CLAY & SILT (CL) | | | |
| 53 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-9/MW-9D | |

BORING WELL 6233552 WWW.US131.SB-9 THROUGH SB-11.GPJ GZA_CORP.GDT 1/25/18



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Boring No.: SB-9/MW-9D

Page: 5 of 16

File No.: 16.0062335.52

Check: Jim Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|--|-------------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 55 | 28 | 24/24 | 54-56 | 10-17 20-30 | 4.0 tsf | Hard, gray, CLAY & SILT, little fine to coarse Sand, trace fine Gravel, damp (CL). | CLAY & SILT (CL) | | | |
| 56 | 29 | 24/0 | 56-58 | 24-40 49-54 | | NO RECOVERY. | 56' NO RECOVERY | | | |
| 58 | 30 | 24/24 | 58-60 | 8-18 20-31 | >4.0 tsf | Hard, gray, CLAY & SILT, little fine to coarse Sand, trace fine Gravel, damp (CL). | 58' CLAY & SILT (CL) | | | |
| 60 | 31 | 24/24 | 60-62 | 5-4 18-24 | 4.0 tsf | Hard, gray, CLAY & SILT, little fine to coarse Sand, trace fine Gravel, damp (CL). | | | | |
| 62 | 32 | 24/24 | 62-64 | 6-14 14-15 | | Brown, poorly sorted, SILT & CLAY, little Sand, trace gravel, plastic, cohesive, moist (ML). | 62' SILT & CLAY (ML) | | | |
| 64 | 33 | 24/24 | 64-66 | 6-12 15-17 | | Brown, poorly sorted, SILT & CLAY, little Sand, trace gravel, plastic, cohesive, moist (ML). | | | | |
| 66 | 34 | 24/24 | 66-68 | 5-9 14-25 | | Brown, poorly sorted, SILT & CLAY, little Sand, trace gravel, plastic, cohesive, moist (ML). | | | | |
| 67 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-9/MW-9D | |

BORING WELL 6233552 WWW.US131.SB-9 THROUGH SB-11.GPJ GZA_CORP.GDT 1/25/18



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Belmont, Michigan

Boring No.: SB-9/MW-9D

Page: 6 of 16

File No.: 16.0062335.52

Check: Jim Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|--|-------------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 69 | 35 | 24/24 | 68-70 | 9-14 19-26 | | Brown, poorly sorted, SILT & CLAY, little Sand, trace gravel, plastic, cohesive, moist (ML). | SILT & CLAY (ML) | | | |
| 70 | 36 | 24/23 | 70-72 | 5-15 20-26 | | Brown grading to dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist (CL). | 70' CLAY & SILT (CL) | | | |
| 72 | 37 | 24/24 | 72-74 | 7-14 23-28 | | Brown grading to dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist (CL). | | | | |
| 74 | 38 | 24/24 | 74-76 | 9-11 15-20 | | Brown grading to dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist (CL). | | | | |
| 76 | 39 | 24/14 | 76-78 | 10-13 33-39 | | Brown grading to dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist (CL). | | | | |
| 78 | 40 | 24/24 | 78-80 | 5-25 19-23 | | Brown grading to dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist (CL). | | | | |
| 80 | 41 | 24/24 | 80-82 | 6-11 15-21 | | Brown grading to dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist (CL). | | | | |
| 81 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-9/MW-9D | |

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|--|---------------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 82 | 42 | 24/24 | 82-84 | 10-15 23-25 | | Brown grading to dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist (CL). | CLAY & SILT (CL) | | | |
| 83 | | | | | | | | | | |
| 84 | 43 | 24/12 | 84-86 | 7-14 21-20 | | Brown grading to dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist (CL). | | | | |
| 85 | | | | | | | | | | |
| 86 | 44 | 24/24 | 86-88 | 8-18 23-25 | | Brown grading to dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist (CL). | | | | |
| 87 | | | | | | | | | | |
| 88 | 45 | 24/15 | 88-90 | 5-38 33-33 | | Brown grading to dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist (CL). | | | | |
| 89 | | | | | | | | | | |
| 90 | 46 | 24/24 | 90-92 | 8-14 15-28 | | Brown grading to dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist (CL). | | | | |
| 91 | | | | | | | | | | |
| 92 | 47 | 24/24 | 92-94 | 15-16 25-33 | | Brown grading to dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist (CL). Changing at 92.1 feet to: Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist (CL). | 92.1' Silty CLAY (CL) | | | |
| 93 | | | | | | | | | | |
| 94 | 48 | 24/24 | 94-96 | 13-22 37-43 | | Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist (CL). Changing at 94.4 feet to: Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist (CL). | 94.4' CLAY & SILT (CL) | | | |
| 95 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------------|-----------|--|---------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 97 | 49 | 24/24 | 96-98 | 8-18 30-23 | | Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist (CL). | CLAY & SILT (CL) | | Grout | |
| 98 | 50 | 24/24 | 98-100 | 14-24 33-45 | | Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist (CL). | | | | |
| 99 | | | | | | | | | | |
| 100 | 51 | 24/21 | 100-102 | 19-29 47-50/3.5" | | Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist (CL). Changing at 101.5 feet to: Dark grayish-brown, very well sorted, SILT, trace Clay, cohesive, non to slightly plastic, moist with occasional very thin lenses of Clayey Silt, moist (ML). | 101.5' SILT (ML) | | | |
| 101 | | | | | | | | | | |
| 102 | 52 | 24/24 | 102-104 | 13-26 38-44 | | Dark grayish-brown, very well sorted, SILT, trace Clay, cohesive, non to slightly plastic, moist with occasional very thin lenses of Clayey Silt, moist (ML). | | | | |
| 103 | | | | | | | | | | |
| 104 | 53 | 24/24 | 104-106 | 20-30 41-39 | | Dark grayish-brown, very well sorted, SILT, trace Clay, cohesive, non to slightly plastic, moist with occasional very thin lenses of Clayey Silt, moist (ML). | | | | |
| 105 | | | | | | | | | | |
| 106 | 54 | 24/24 | 106-108 | 22-33 37-50 | | Dark grayish-brown, very well sorted, SILT, trace Clay, cohesive, non to slightly plastic, moist with occasional very thin lenses of Clayey Silt, moist (ML). | | | | |
| 107 | | | | | | | | | | |
| 108 | 55 | 24/14 | 108-110 | 7-9 27-28 | | Dark grayish-brown, very well sorted, SILT, trace Clay, cohesive, non to slightly plastic, moist with occasional very thin lenses of Clayey Silt, moist (ML). Changing at 108.8 feet to: Dark grayish-brown, well sorted, CLAY, plastic, cohesive, moist (CL). | 108.8' CLAY (CL) | | | |
| 109 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|--|--|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 111 | 56 | 24/14 | 110-112 | 20-41-50 | | Dark grayish-brown, well sorted, CLAY, plastic, cohesive, moist (CL). Changing at 110.3 feet to: Dark grayish-brown, very well sorted, SILT, trace Clay, cohesive, non to slightly plastic, moist with occasional very thin lenses of Clayey Silt, moist (ML). | 110.3' CLAY (CL) SILT (ML) | | | |
| 112 | 57 | 24/15 | 112-114 | 9-30-50/5" | | Dark grayish-brown, well sorted, CLAY, plastic, cohesive, moist (CL). Changing at 112.8 feet to: Dark grayish-brown, very well sorted, SILT, trace Clay, cohesive, non to slightly plastic, moist with occasional very thin lenses of Clayey Silt (ML). | 112' CLAY (CL) 112.8' SILT (ML) | | | |
| 114 | 58 | 24/24 | 114-116 | 15-20 36-50 | | Dark grayish-brown, well sorted, CLAY, plastic, cohesive, moist (CL). Changing at 114.4 feet to: Dark grayish-brown, very well sorted, SILT, trace Clay, cohesive, non to slightly plastic, moist with occasional very thin lenses of Clayey Silt, moist (ML). Changing at 114.6 feet to: Dark grayish-brown, well sorted, CLAY, plastic, cohesive, moist (CL). Changing at 115.2 feet to: Dark grayish-brown, well sorted, CLAY, plastic, cohesive, moist (CL). Dark grayish-brown, very well sorted, SILT, trace Clay, cohesive, non to slightly plastic, moist with occasional very thin lenses of Clayey Silt (ML). Changing at 116.3 feet to: Grayish-brown, very well sorted, SILT, trace Clay, cohesive, non to slightly plastic, moist with occasional very thin lenses of Clayey Silt (ML). Grayish-brown, very well sorted, SILT, trace Clay, cohesive, non to slightly plastic, moist with occasional very thin lenses of Clayey Silt (ML). | 114' CLAY (CL) 114.4' SILT (ML) 114.6' CLAY (CL) 115.1' SILT (ML) 115.2' CLAY (CL) | | | |
| 116 | 59 | 24/15 | 116-118 | 1-1 2-5 | | Dark grayish-brown, well sorted, CLAY, plastic, cohesive, moist (CL). Changing at 115.2 feet to: Dark grayish-brown, well sorted, CLAY, plastic, cohesive, moist (CL). Dark grayish-brown, very well sorted, SILT, trace Clay, cohesive, non to slightly plastic, moist with occasional very thin lenses of Clayey Silt (ML). Changing at 116.3 feet to: Grayish-brown, very well sorted, SILT, trace Clay, cohesive, non to slightly plastic, moist with occasional very thin lenses of Clayey Silt (ML). Grayish-brown, very well sorted, SILT, trace Clay, cohesive, non to slightly plastic, moist with occasional very thin lenses of Clayey Silt (ML). | 116' SILT (ML) | | | |
| 118 | 60 | 24/13 | 118-120 | 4-11 23-42 | | Grayish-brown, very well sorted, SILT, trace Clay, cohesive, non to slightly plastic, moist with occasional very thin lenses of Clayey Silt (ML). Grayish-brown, very well sorted, SILT, trace Clay, cohesive, non to slightly plastic, moist with occasional very thin lenses of Clayey Silt (ML). | | | | |
| 120 | 61 | 24/0 | 120-122 | 17-55 | | NO RECOVERY. | 120' NO RECOVERY | | | |
| 122 | 62 | 24/12 | 122-124 | 26-44-50/3" | | Very dense, grayish-brown to brown, very well sorted, fine to medium grained SAND, trace Silt, wet (SP). Changing at 122.8 feet to: Very dense, grayish-brown to brown, very well sorted, fine grained SAND, some Silt, wet (SM). | 122' SAND (SP) 122.8' SAND (SM) | 3 | | |
| 123 | | | | | | | 124' | | | |
| REMARKS 3. Groundwater was encountered at approximately 122.0 feet below ground surface. | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|------------------|-----------|--|--|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 125 | 63 | 24/12 | 124-126 | 27-50/4" | | Very dense, grayish-brown to brown, very well sorted, fine to medium SAND, trace Silt, wet (SP). Changing at 124.4 feet to: Dark gray, poorly sorted, SILT & CLAY, little Sand, trace Gravel, plastic, cohesive, moist (ML). Changing at 124.6 feet to: Very dense, grayish-brown to brown, very well sorted, fine to medium grained SAND, trace Silt, wet (SP). | SAND (SP) 124.4' SILT & CLAY (CL) 124.6' SAND (SP) | | | |
| 126 | 64 | 24/18 | 126-128 | 5-14-50/5" | | Very dense, grayish-brown to brown, very well sorted, fine to medium grained SAND, trace Silt, wet (SP). Changing at 126.3 feet to: Dark grayish-brown, very well sorted, Silty CLAY, plastic, cohesive, bedded, moist (CL). Changing at 127.0 feet to: Very dense, brown to grayish-brown, very well sorted, fine to medium grained SAND, trace Silt, wet (SP). | 126.3' Silty CLAY (CL) 127' SAND (SP) | | | |
| 128 | 65 | 24/14 | 128-130 | 8-46-50/2" | | Very dense, brown to grayish-brown, well sorted, fine to medium grained SAND, little Silt, wet (SM). | 128' SAND (SM) | | | |
| 130 | 66 | 24/6 | 130-132 | 36-50/4" | | Very dense, brown to grayish-brown, well sorted, fine to medium grained SAND, little Silt, wet (SM). | | | | |
| 132 | 67 | 24/9 | 132-134 | 26-50/4.5" | | Very dense, brown to grayish-brown, well sorted, fine to medium grained SAND, little Silt, wet (SM). Changing at 132.3 feet to: Very dense, brown to dark brown, moderately sorted, coarse to fine grained SAND, trace Silt, wet (SW). Changing at 132.5 feet to: Very dense, brown to grayish-brown, well sorted, fine to medium SAND, little Silt, wet (SM). | 132.3' SAND (SW) 132.5' SAND (SP) | | | |
| 134 | 68 | 24/3 | 134-136 | 5-10 39-50/4" | | Dense, brown to grayish-brown, well sorted, fine to medium SAND, little Silt, wet (SM). | | | | |
| 136 | 69 | 24/6 | 136-138 | 9-32-50/5" | | Very dense, brown to grayish-brown, well sorted, fine to medium SAND, little Silt, wet (SM). | | | | |
| 137 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|---------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 139 | 70 | 24/4 | 138-140 | 50/5" | | Very dense, grayish-brown, moderately sorted, fine to medium grained SAND, little Silt, trace Clay, trace Gravel, slightly cohesive, wet (SM). | SAND (SP) | | | |
| 140 | 71 | 24/6 | 140-142 | 50/5.5" | | Very dense, grayish-brown, well sorted, fine grained SAND, trace Silt, non to slightly cohesive, wet with occasional very thin seams of Silty Clay (SP-SC). | | | | |
| 142 | 72 | 24/4 | 142-144 | 50/4.5" | | Very dense, brown to dark brown, moderately sorted, fine to coarse grained SAND, trace Silt, trace Clay, trace Gravel, wet (SW). | 142' SAND (SW) | | | |
| 144 | 73 | 24/8 | 144-146 | 12-37-50/2" | | Very dense, dark grayish-brown, poorly sorted, fine to coarse grained SAND, trace Gravel, trace Silt, trace Clay, wet (SW). Changing at 144.4 feet to: Very dense, pale brown grading to brown, moderately sorted, fine to coarse grained SAND, trace Silt, trace Gravel, non to slightly cohesive, wet (SW). | | | | |
| 146 | 74 | 24/10 | 146-148 | 32-50/3.5" | | Very dense, pale brown grading to brown, moderately sorted, fine to coarse grained SAND, trace Silt, trace Gravel, non to slightly cohesive, wet (SW). | | | | |
| 148 | 75 | 24/9 | 148-150 | 35-50/3" | | Very dense, pale brown grading to brown, moderately sorted, fine to coarse grained SAND, trace Silt, trace Gravel, non to slightly cohesive, wet (SP). Changing at 148.6 feet to: Very dense, pale brown, very well sorted, fine to medium SAND, trace Silt, wet (SP). | 148.6' SAND (SP) | | | |
| 150 | 76 | 24/4 | 150-152 | 50/5" | | Very dense, pale brown, moderately sorted, fine to coarse grained SAND, trace Silt, trace Gravel, wet (SW). | 150' SAND (SW) | | | |
| 151 | | | | | | | 152' | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|---------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 153 | 77 | 24/0 | 152-154 | 50/4" | | NO RECOVERY. | NO RECOVERY | | | |
| 154 | 78 | 24/4 | 154-156 | 50/5.5" | | Very dense, pale brown, moderately sorted, fine to coarse SAND, trace Silt, trace Gravel, wet (SW). | 154' SAND (SW) | | | |
| 156 | 79 | 24/7 | 156-158 | 34-50/4" | | Very dense, pale brown, moderately sorted, fine to coarse grained SAND, trace Silt, trace Gravel, wet (SW). Changing at 156.5 feet to: Pale brown, very well sorted, SILT, trace Clay, moderately cohesive, slightly plastic, wet (ML). | 156.5' SILT (ML) | | | |
| 158 | 80 | 24/4 | 158-160 | 40-50/2.5" | | Very dense, grayish-brown, very well sorted, fine grained SAND, little Silt, wet (SM). | 158' SAND (SM) | | | |
| 160 | 81 | 24/3 | 160-162 | 50/5" | | Very dense, grayish-brown, very well sorted, fine grained SAND, little Silt, wet (SM). | | | | |
| 162 | 82 | 24/4 | 162-164 | 41-50/5" | | Very dense, brown to dark brown, moderately well sorted, fine grained SAND, little Silt, wet (SM). | | | | |
| 164 | 83 | 24/4 | 164-166 | 50/6" | | Very dense, brown to dark brown, moderately well sorted, fine grained SAND, little Silt, wet (SM). | | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|---------------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 167 | 84 | 24/3 | 166-168 | 43-50/3" | | Very dense, brown to dark brown, moderately well sorted, fine grained SAND, little Silt, wet (SM). | SAND (SM) | | | |
| 168 | 85 | 24/2 | 168-170 | 47-50/3" | | Very dense, brown, well sorted, fine to medium SAND, little Silt, trace Clay, slightly cohesive, non to slightly plastic, wet (SM). | | | | |
| 170 | 86 | 24/7 | 170-172 | 36-50/4" | | Very dense, brown, well sorted, fine to medium SAND, little Silt, trace Clay, slightly cohesive, non to slightly plastic, wet (SM). | | | | |
| 172 | 88 | 24/0 | 172-174 | 43-50/3" | | Very dense, brown, well sorted, fine to medium SAND, little Silt, trace Clay, slightly cohesive, non to slightly plastic, wet (SM). | | | | |
| 174 | 89 | 24/10 | 174-176 | 35-50 | | Very dense, brown, well sorted, fine to medium SAND, little Silt, trace Clay, slightly cohesive, non to slightly plastic, wet (SM). Changing at 174.2 feet to: Grayish-brown, very well sorted, SILT, little fine grained Sand, trace Clay, slightly cohesive, slightly plastic, moist to wet (ML). | 174.2' SILT (ML) | | | |
| 176 | 90 | 24/0 | 176-178 | 28-50 | | NO RECOVERY. | 176' NO RECOVERY | | | |
| 178 | 91 | 24/4 | 178-180 | 45-50/3.5" | | Grayish-brown, very well sorted, SILT, little fine grained Sand, trace Clay, slightly cohesive, slightly plastic, moist to wet (ML). | 178' SILT (ML) | | | |
| 179 | | | | | | | 180' | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|---|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 181 | 92 | 24/1 | 180-182 | 45-50/3.5" | | Very dense, brown, well sorted, fine to medium SAND, little Silt, trace Clay, slightly cohesive, non to slightly plastic, wet (SM). | SAND (ML) | | | |
| 182 | 93 | 24/6 | 182-184 | 50 | | Very dense, brown to dark brown, moderately well sorted, fine grained SAND, little Silt, wet (SM). Changing at 182.1 feet to: Brown to dark brown, very well sorted, SILT, moderately cohesive, wet (ML). Changing at 182.2 feet to: Brown to dark brown, moderately well sorted, fine grained SAND, little Silt, wet (SM). Changing at 182.4 feet to: Brown to dark brown, very well sorted, SILT, moderately cohesive, wet (ML). NO RECOVERY. | 182.1' 182.2'SILT (ML) 182.4'SAND (SM) SILT (ML) | | | |
| 184 | 94 | 24/0 | 184-186 | 50/5.5" | | | 184' NO RECOVERY | | | |
| 186 | 95 | 24/6 | 186-188 | 58/6" | | Very dense, grayish-brown, very well sorted, fine to medium SAND, trace Silt, trace Clay, slightly cohesive, wet (SP). | 186' SAND (SP) | | | |
| 188 | 96 | 24/5 | 188-190 | 75/6" | | Very dense, grayish-brown, very well sorted, fine to medium SAND, trace Silt, trace Clay, slightly cohesive, wet (SP). | | | | |
| 190 | 97 | 24/4 | 190-192 | 50/6" | | Very dense, grayish-brown, very well sorted, fine to medium SAND, trace Silt, trace Clay, slightly cohesive, wet (SP). | | | | |
| 192 | 98 | 24/2 | 192-194 | 50/5" | | Very dense, grayish-brown, very well sorted, fine to medium SAND, trace Silt, trace Clay, slightly cohesive, wet (SP). | | | | |
| 193 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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US 131

Belmont, Michigan

Boring No.: SB-9/MW-9D

Page: 15 of 16

File No.: 16.0062335.52

Check: Jim Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---------|--------------------|------------------|-------------|-------------|-----------|--|---|---------|---------------------|---|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 195 | 99 | 24/9 | 194-196 | 42-50/3" | | Grayish-brown, very well sorted, fine to medium SAND, trace Silt, trace Clay, slightly cohesive, wet (SP). Changing at 194.3 feet to: Grayish-brown, very well sorted, SILT, cohesive, moist to wet (ML). | 194.3' SAND (SP) SILT (ML) | | | |
| 196 | 100 | 24/9 | 196-198 | 15-38-50/3" | | Grayish-brown, very well sorted, SILT, cohesive, moist to wet (ML). | | | | |
| 198 | 101 | 24/9 | 198-200 | 24-50/5" | | Grayish-brown, poorly sorted, CLAY & SILT, some Sand, trace Gravel, slightly plastic, moderately cohesive, moist (CL). Changing at 198.2 feet to: Grayish-brown, very well sorted, SILT, cohesive, moist to wet (ML). | 198.2' CLAY & SILT (CL) SILT (ML) | | | |
| 200 | 102 | 24/4 | 200-202 | 28-50/3" | | Grayish-brown, poorly sorted, CLAY & SILT, some Sand, trace Gravel, slightly plastic, moderately cohesive, moist (CL). | 200' CLAY & SILT (CL) | | | |
| 202 | 103 | 24/3 | 202-204 | 50/6" | | Grayish-brown, poorly sorted, CLAY & SILT, some Sand, trace Gravel, slightly plastic, moderately cohesive, moist (CL). | | | | Silica Sand Filter Pack |
| 204 | 104 | 24/7 | 204-206 | 50/6" | | Grayish-brown, poorly sorted, CLAY & SILT, some Sand, trace Gravel, slightly plastic, moderately cohesive, moist (CL). Changing at 204.3 feet to: Grayish-brown, well sorted, fine to medium grained SAND, little Silt, moderately cohesive, wet (SM). Changing at 204.4 feet to: Grayish-brown, moderately well sorted, fine to medium SAND, little Silt, trace Gravel, non-plastic, non-cohesive, moist to wet (SM). | 204.3' SAND (SM) | | | Top of Well Screen |
| 206 | 105 | 24/12 | 206-208 | 30-50/4" | | Grayish-brown, moderately well sorted, fine to medium SAND, little Silt, trace Gravel, non-plastic, non-cohesive, moist to wet (SM). Changing at 206.4 feet to: Grayish-brown, well sorted, SILT, trace Clay, slightly cohesive, moderately | 206.4' SILT (ML) SAND (SM) | | | 2-Inch Dia. 5-Foot PVC Screen (0.010" Slot) |
| REMARKS | | | | | | | | | | |

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-9/MW-9D

BORING WELL 6233552 WWW.US131.SB-9 THROUGH SB-11.GPJ GZA CORP.GDT 1/25/18



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Engineers and Scientists

Wolverine World Wide, Inc.

US 131

Belmont, Michigan

Boring No.: SB-9/MW-9D

Page: 16 of 16

File No.: 16.0062335.52

Check: Jim Cai

| Sample Information | | | | | | Bellingham, Michigan | | Check: Jim Cai | | | |
|------------------------|---|------------------|-------------|----------------|-----------|---|---------------------|-----------------------|---------------------|-----------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | | | | | | | | | | | |
| 209 | 106 | 24/9 | 208-210 | 19-24 23-25 | | cohesive, moist to wet (ML). Changing at 206.5 feet to: Dense, grayish-brown, moderately well sorted, fine to medium SAND, little Silt, trace Gravel, non-plastic, non-cohesive, moist to wet (SM). Dense, grayish-brown, moderately well sorted, fine to medium SAND, little Silt, trace Gravel, non-plastic, non-cohesive, moist to wet (SP). Changing at 208.4 feet to: Grayish-brown, well sorted, SILT, trace Clay, slightly cohesive, moderately cohesive, moist to wet (ML). Changing at 208.8 feet to: Grayish-brown, very well sorted, Silty CLAY, plastic, cohesive, moist (CL). Grayish-brown, very well sorted, Silty CLAY, plastic, cohesive, moist (CL). Changing at 211.3 feet to: Grayish-brown, moderately well sorted, fine to medium SAND, little Silt, trace Gravel, non-plastic, non-cohesive, moist to wet (SM). | SAND (SM) 208.4' | Bottom of Well Screen | | | |
| | | | | | 208.8' | | SILT (ML) | | | | |
| | | | | | | | Silty CLAY (CL) | | | | |
| 210 | 107 | 24/8 | 210-212 | 14-18-75/6" | | Grayish-brown, very well sorted, Silty CLAY, plastic, cohesive, moist (CL). Changing at 211.3 feet to: Grayish-brown, moderately well sorted, fine to medium SAND, little Silt, trace Gravel, non-plastic, non-cohesive, moist to wet (SM). Grayish-brown, very well sorted, Silty CLAY, plastic, cohesive, moist (CL). Changing at 212.9 feet to: Grayish-brown, well sorted, fine to medium SAND, little Silt, trace Clay, wet with occasional very thin Silty Clay seams (SM). | 211.3' | | | | |
| 211 | | | | | | | SAND (SM) | | | | |
| 212 | 108 | 24/15 | 212-214 | 19-45-50/3" | | | 212' | | | Silty CLAY (CL) | |
| 213 | | | | | | 212.9' | | | | | |
| | | | | | | | SAND (SM) | | | | |
| 214 | 109 | 24/12 | 214-216 | 34-50/3" | | Grayish-brown, well sorted, fine to medium SAND, little Silt, trace Clay, wet with occasional very thin Silty Clay seams (SM). Changing at 214.7 feet to: Grayish-brown, moderately well sorted, fine to medium SAND, little Silt, trace Gravel, non-plastic, non-cohesive, moist to wet (SM). Changing at 214.9 feet to: Grayish-brown, well sorted, SILT, trace Clay, slightly to moderately coheisve, moist to wet (ML). Grayish-brown, very well sorted, Silty CLAY, plastic, cohesive, moist (CL). Changing at 217.4 feet to: Dark gray with reddish-yellow stains, poorly sorted, CLAY & SILT, some Sand, trace Gravel, wet (CL). Grayish-brown, very well sorted, Silty CLAY, plastic, cohesive, moist (CL). | 214.9' | | | | |
| 215 | | | | | | | | | | SILT (ML) | |
| 216 | 110 | 24/18 | 216-218 | 18-27-50/5" | | | 216' | | | Silty CLAY (CL) | |
| 217 | | | | | | | | | | | |
| 218 | 111 | 24/18 | 218-220 | 15-32-50/4" | | | 217.4' | CLAY & SILT (CL) | | | |
| 219 | | | | | | | | 218' | Silty CLAY (CL) | | |
| 220 | | | | | | | | 220' | | | |
| 221 | | | | | | Bottom of Borehole at 220.0 Feet | | 4 | | | |
| REMARKS | 4. Monitoring well was installed in borehole upon completion. Well screen set from 203.0 to 208.0 feet below ground surface. | | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |
| Boring No.: SB-9/MW-9D | | | | | | | | | | | |

BORING WELL 6233552 WWW.US 131 SB-9 THROUGH SB-11.GPJ GZA CORP.GDT 1/25/18



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Engineers and Scientists

Wolverine World Wide, Inc.

US 131

Belmont, Michigan

Boring No.: MW-9M

Page: 1 of 4

File No.: 16.0062335.52

Check: Jim Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 11-17-17 / 11-17-17

Boring Location:

GS Elev.: 817.90' Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
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Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|--|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See SB-9/MW-9D boring log for sample description and classification. | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-9M

BORING WELL 6233552 WWW.US131.SB-9 THROUGH SB-11.GPJ GZA_CORP.GDT 1/25/18



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Wolverine World Wide, Inc.

US 131

Belmont, Michigan

Boring No.: MW-9M

Page: 2 of 4

File No.: 16.0062335.52

Check: Jim Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|-------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
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| 63 | | | | | | | | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-9M | |

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Wolverine World Wide, Inc.

US 131

Belmont, Michigan

Boring No.: MW-9M

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File No.: 16.0062335.52

Check: Jim Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-9M | |

BORING WELL 6233552 WWW.US131.SB-9 THROUGH SB-11.GPJ GZA_CORP.GDT 1/25/18



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US 131

Belmont, Michigan

Boring No.: MW-9M

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File No.: 16.0062335.52

Check: Jim Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|-------|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
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| 130 | | | | | | | | | |
| 131 | | | | | | Bottom of Borehole at 131.0 Feet | | 1 | |
| 132 | | | | | | | | | |
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| 134 | | | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 126.0 to 131.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-9M



BORING WELL 6233552 WWW.US131.SB-9 THROUGH SB-11.GPJ GZA_CORP.GDT 1/25/18



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Wolverine World Wide, Inc.

US 131

Belmont, Michigan

Boring No.: MW-9S

Page: 1 of 1

File No.: 16.0062335.52

Check: Jim Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 11-17-17 / 11-17-17

Boring Location:

GS Elev.: 817.80' Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
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Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|--|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See SB-9/MW-9D boring log for sample description and classification. | | | | |
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| 31 | | | | | | | | | | |
| | | | | | | Bottom of Borehole at 31.0 Feet | | 1 | | |

Grout

Bentonite Seal

Top of Well Screen

Silica Sand

Filter Pack

2-Inch Dia.

5-Foot PVC

Screen (0.010"

Slot)

Bottom of Well Screen

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 26.0 to 31.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-9S

BORING WELL 6233552 WWW.US131.SB-9 THROUGH SB-11.GPJ GZA_CORP.GDT 1/25/18



GZA
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Wolverine World Wide, Inc.

House Street

Belmont, Michigan

Boring No.: SB-10/MW-10D

Page: 1 of 10

File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Julie Groenleer/Joe Workman

Date Start/Finish: 11-20-17 / 11-28-17

Boring Location: 587,298.7726 N; 12,789,357.1821 E

GS Elev.: 780.9' Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 8.0" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: 140lbs NA

Hammer Fall: 30" NA

Other: NA NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|------------|-------|---|------------------------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/17 | 0-2 | 2-2 3-2 | | TOPSOIL. Changing at 0.6 feet to: Loose, brown, fine to medium SAND, trace Silt, damp (SP). | 0.6' TOPSOIL SAND (SP) | | | |
| 2 | 2 | 24/16 | 2-4 | 2-3 8-7 | | Medium dense, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/0 | 4-6 | 4-5 6-8 | | NO RECOVERY. | 4' NO RECOVERY | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/18 | 6-8 | 3-3 4-4 | | Loose, brown, fine to medium SAND, trace Silt, damp (SP). | 6' SAND (SW) | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/14 | 8-10 | 2-4 4-4 | | Loose, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/20 | 10-12 | 2-5 7-5 | | Medium dense, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/12 | 12-14 | 3-2 3-3 | | Loose, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/21 | 14-16 | 3-3 3-4 | | Loose, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| 15 | | | | | | | | | | |
| 16 | 9 | 24/20 | 16-18 | 2-4 4-6 | | Loose, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| 17 | | | | | | | | | | |

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-10/MW-10D

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/18/20



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

Wolverine World Wide, Inc.

House Street

Belmont, Michigan

Boring No.: SB-10/MW-10D

Page: 2 of 10

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---------|--------------------|------------------------|----------------|----------------|----------|---|------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 19 | 10 | 24/18 | 18-20 | 3-6 6-6 | | Medium dense, brown, fine to medium SAND, trace Silt, damp (SP). | SAND (SW) | | | |
| 20 | 11 | 24/17 | 20-22 | 3-4 6-7 | | Loose, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| 22 | 12 | 24/19 | 22-24 | 3-5 6-7 | | Medium dense, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| 24 | 13 | 24/22 | 24-26 | 4-6 8-8 | | Medium dense, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| 26 | 14 | 24/18 | 26-28 | 6-13 13-18 | | Medium dense, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| 28 | 15 | 24/20 | 28-30 | 10-13 21-20 | | Dense, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| 30 | 16 | 24/20 | 30-32 | 10-16 21-24 | | Dense, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| 32 | 17 | 24/22 | 32-34 | 11-16 24-27 | | Dense, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| 34 | 18 | 24/18 | 34-36 | 10-16 26-32 | | Dense, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| 36 | 19 | 24/19 | 36-38 | 12-21 25-29 | | Dense, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| 38 | 20 | 24/16 | 38-40 | 8-18 21-27 | | Dense, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| REMARKS | | | | | | | | | | |

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-------|---|---------------|---------|---------------------|--------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 40 | 21 | 24/23 | 40-42 | 14-20 22-25 | | Dense, brown, fine to medium SAND, trace Silt, damp (SP). | SAND (SW) | | | |
| 41 | | | | | | | | | | |
| 42 | 22 | 24/20 | 42-44 | 8-12 17-21 | | Medium dense, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| 43 | | | | | | | | | | |
| 44 | 23 | 24/24 | 44-46 | 7-10 10-9 | | Medium dense, brown, fine to medium SAND, trace Silt, damp (SP). | | | | |
| 45 | | | | | | | | | | |
| 46 | 24 | 24/18 | 46-48 | 7-13 14-14 | | Medium dense, brown, fine to medium SAND, trace Silt, trace Gravel, damp (SP). | | | | |
| 47 | | | | | | | | | | |
| 48 | 25 | 24/24 | 48-50 | 9-11 11-12 | | Medium dense, brown, fine to medium SAND, trace Silt, trace Gravel, damp (SP). | | | | |
| 49 | | | | | | | | | | |
| 50 | 26 | 24/16 | 50-52 | 9-11 13-10 | | Medium dense, brown, fine to medium SAND, trace Silt, moist (SP). | | | | |
| 51 | | | | | | | | | | |
| 52 | 27 | 24/24 | 52-54 | 9-11 11-7 | | Medium dense, brown, fine to medium SAND, trace Silt, moist (SP). Changing at 53.0 feet to: Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | 1 | | |
| 53 | | | | | | | | | | |
| 54 | 28 | 24/17 | 54-56 | 3-3 6-8 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 55 | | | | | | | | | | |
| 56 | 29 | 24/18 | 56-58 | 2-3 7-7 | | Loose, brown, fine to coarse SAND, trace Silt, trace fine Gravel, wet (SW). | | | | |
| 57 | | | | | | | | | | |
| 58 | 30 | 24/13 | 58-60 | 4-8 8-10 | | Medium dense, brown, fine to coarse SAND, trace Silt, trace fine Gravel, wet (SW). | | | | |
| 59 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| 1. Groundwater was encountered at approximately 53.0 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |
| | | | | | | | | | | Boring No.: SB-10/MW-10D |

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-------|---|------------------|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 61 | 31 | 24/6 | 60-62 | 2-4 6-9 | | Loose, brown, fine to coarse SAND, trace Silt, trace fine Gravel, wet (SW). | SAND (SW) | | | |
| 62 | 32 | 24/3 | 62-64 | 6-8 13-20 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | 62' SAND (SP) | | | |
| 63 | | | | | | | | | | |
| 64 | 33 | 24/12 | 64-66 | 4-9 10-15 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 65 | | | | | | | | | | |
| 66 | 34 | 24/12 | 66-68 | 2-5 8-11 | | Medium dense, brown, fine to medium SAND, little Silt, wet (SM). | 66' SAND (SM) | | | |
| 67 | | | | | | | | | | |
| 68 | 35 | 24/8 | 68-70 | 5-7 13-15 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | 68' SAND (SP) | | | |
| 69 | | | | | | | | | | |
| 70 | 36 | 24/11 | 70-72 | 3-3 7-8 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 71 | | | | | | | | | | |
| 72 | 37 | 24/13 | 72-74 | 2-4 10-10 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 73 | | | | | | | | | | |
| 74 | 38 | 24/20 | 74-76 | 2-3 5-12 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 75 | | | | | | | | | | |
| 76 | 39 | 24/17 | 76-78 | 3-8 10-13 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 77 | | | | | | | | | | |
| 78 | 40 | 24/12 | 78-80 | 4-5 8-15 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 79 | | | | | | | | | | |
| 80 | 41 | 24/21 | 80-82 | 4-12 19-22 | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|------------------|-------|--|---------------|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 82 | 42 | 24/13 | 82-84 | 4-12 21-25 | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). | SAND (SP) | | | |
| 83 | | | | | | | | | | |
| 84 | 43 | 24/22 | 84-86 | 6-10 15-15 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 85 | | | | | | | | | | |
| 86 | 44 | 24/18 | 86-88 | 3-7 7-15 | | Medium dense, brown, fine to medium SAND, trace Silt, trace coarse Sand, wet (SP). | | | | |
| 87 | | | | | | | | | | |
| 88 | 45 | 24/19 | 88-90 | 5-11 15-16 | | Medium dense, brown, fine to medium SAND, trace Silt, trace coarse Sand, wet (SP). | | | | |
| 89 | | | | | | | | | | |
| 90 | 46 | 24/16 | 90-92 | 4-8 20-22 | | Medium dense, brown, fine to medium SAND, trace Silt, trace coarse Sand, wet (SP). | | | | |
| 91 | | | | | | | | | | |
| 92 | 47 | 24/20 | 92-94 | 4-7 15-19 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 93 | | | | | | | | | | |
| 94 | 48 | 20/20 | 94-95.7 | 4-12 38-50/4" | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 95 | | | | | | | | | | |
| 96 | 49 | 24/22 | 96-98 | 7-14 22-30 | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 97 | | | | | | | | | | |
| 98 | 50 | 24/4 | 98-100 | 5-8 15-22 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 99 | | | | | | | | | | |
| 100 | 51 | 24/18 | 100-102 | 3-8 13-21 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 101 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---------|--------------------|------------------|-------------|-------------------|-------|---|-------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 103 | 52 | 24/20 | 102-104 | 4-5 15-19 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | SAND (SP) | | | |
| 104 | 53 | 24/18 | 104-106 | 6-7 13-21 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 106 | 54 | 24/13 | 106-108 | 5-13 29-45 | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 108 | 55 | 24/17 | 108-110 | 5-11 21-35 | | Dense, brown, fine to medium SAND, little Silt, wet (SM). | 108' SAND (SM) | | | |
| 110 | 56 | 24/20 | 110-112 | 4-13 32-56 | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). | 110' SAND (SP) | | | |
| 112 | 57 | 24/7 | 112-114 | 5-11 18-31 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 114 | 58 | 24/18 | 114-116 | 3-7 18-35 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 116 | 59 | 24/8 | 116-118 | 2-2 3-5 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 118 | 60 | 24/17 | 118-120 | 2-8 36-50 | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 120 | 61 | 17/8 | 120-121.4 | 4-37-50/5" | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 122 | 62 | 22/20 | 122-123.8 | 11-26 34-50/4" | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| REMARKS | | | | | | | | | | |

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|------------------|-------|---|---------------------|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 124 | 63 | 24/11 | 124-126 | 1-1 15-25 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | SAND (SP) | | | |
| 125 | | | | | | | | | | |
| 126 | 64 | 24/0 | 126-128 | 2-3 8-21 | | NO RECOVERY. | 126' NO RECOVERY | | | |
| 127 | | | | | | | | | | |
| 128 | 65 | 24/21 | 128-130 | 6-6 16-23 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | 128' SAND (SP) | | | |
| 129 | | | | | | | | | | |
| 130 | 66 | 24/13 | 130-132 | 1-10 12-15 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 131 | | | | | | | | | | |
| 132 | 67 | 24/4 | 132-134 | 8-9 23-50 | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 133 | | | | | | | | | | |
| 134 | 68 | 20/12 | 134-135.7 | 5-12 26-50/4" | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 135 | | | | | | | | | | |
| 136 | 69 | 20/13 | 136-137.7 | 3-7 31-50/2" | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 137 | | | | | | | | | | |
| 138 | 70 | 16/11 | 138-139.3 | 2-21-50/4" | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 139 | | | | | | | | | | |
| 140 | 71 | 15/15 | 140-141.3 | 4-25-50/3" | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 141 | | | | | | | | | | |
| 142 | 72 | 12/12 | 142-143 | 19-50/6" | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 143 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-------|--|---------------------|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 145 | 73 | 24/21 | 144-146 | 9-13 28-27 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | SAND (SP) | | | |
| 146 | 74 | 18/16 | 146-147.5 | 1-29-50/6" | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 148 | 75 | 24/20 | 148-150 | 6-13 32-50 | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). Changing at 149.7 feet to: Dense, brown, fine SAND, little Silt, wet (SM). | 149.7' SAND (SM) | | | |
| 150 | 76 | 15/13 | 150-151.36 | 21-50/3" | | Dense, brown, fine SAND, little Silt, wet (SM). Changing at 150.6 feet to: Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | 150.6' SAND (SP) | | | |
| 152 | 77 | 11/11 | 152-152.9 | 11-50/5" | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 154 | 78 | 14/13 | 154-155.28 | 41-50/2" | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 156 | 79 | 24/17 | 156-158 | 8-15 27-50 | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 158 | 80 | 12/12 | 158-159 | 6-14 | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 160 | 81 | 24/11 | 160-162 | 3-5 10-16 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 162 | 82 | 16/11 | 162-163.37 | 43-50/4" | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 164 | 83 | 16/16 | 164-165.32 | 50-50/4" | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------------|-------|--|---------------------|---------|---------------------|--------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 166 | 84 | 23/15 | 166-167.9 | 10-28 34-50/5" | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | SAND (SP) | | | |
| 167 | | | | | | | | | | |
| 168 | 85 | 24/24 | 168-170 | 7-17 23-20 | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 169 | | | | | | | | | | |
| 170 | 86 | 23/23 | 170-171.9 | 6-12 19-50/5" | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). Changing at 171.0 feet to: Very dense, gray, fine to medium SAND, little Clay & Silt, trace coarse Sand, trace fine Gravel, wet (SC). | 171' SAND (SC) | | | |
| 171 | | | | | | | | | | |
| 172 | 87 | 24/24 | 172-174 | 16-28 48-36 | | Very dense, gray, fine to medium SAND, trace Silt, wet (SP). Changing at 173.0 feet to: Very dense, gray, fine to coarse SAND, little Clay & Silt, little fine Gravel, wet (SC). Changing at 173.5 feet to: Very dense, gray, fine to medium SAND, trace Silt, wet (SP). Changing at 173.9 feet to: Very dense, gray, fine to coarse SAND, little Clay & Silt, little fine Gravel, moist (SC). | 172' SAND (SP) | | | |
| 173 | | | | | | | 173' SAND (SC) | | | |
| 174 | 88 | 7/7 | 174-174.6 | 50-50/1" | | Very dense, gray, fine to medium SAND, trace coarse Sand, trace Clay & Silt, wet (SP). | 173.5' SAND (SP) | | | |
| 175 | | | | | | | 173.9' SAND (SC) | | | |
| 176 | 89 | 24/24 | 176-178 | 12-29 31-35 | | Very dense, gray, fine to medium SAND, trace coarse Sand, trace Clay & Silt, wet (SP). | 174' SAND (SP) | | | |
| 177 | | | | | | Very dense, gray, fine to coarse SAND, some fine to coarse Gravel, trace Clay & Silt, wet (SW). | 176' SAND (SW) | | | |
| 178 | 90 | 24/24 | 178-180 | 16-20 17-42 | | Very dense, gray, fine to coarse SAND, little fine Gravel, trace Clay & Silt, wet (SW). | | | | |
| 179 | | | | | | | | | | |
| 180 | 91 | 17/17 | 180-181.4 | 13-16-50/5" | | Medium dense, gray, fine to coarse SAND, little fine Gravel, trace Silt, wet (SW). Changing at 181.5 feet to: Very dense, gray, fine to medium SAND, little Silt, wet (SM). | 181.5' SAND (SM) | | | |
| 181 | | | | | | | | | | |
| 182 | 92 | 10/10 | 182-182.8 | 11-50/4" | | Very dense, fine to coarse SAND, little fine to coarse Gravel, trace Silt, wet (SW). | 182' SAND (SW) | | | Bentonite Seal |
| 183 | | | | | | | | | | |
| 184 | 93 | 4/4 | 184-184.3 | 75/4" | | Very dense, gray, fine to medium SAND, little Clay & Silt, trace coarse Sand, trace fine fine Gravel, moist (SC). | 184' SAND (SC) | | | Top of Well Screen |
| 185 | | | | | | | | | | |
| 186 | | | | | | | | | | |

REMARKS

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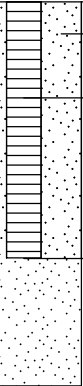
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|-------|--------------------|------------------|-------------|-------|-------|--|--|---------|---|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 187 | 94 | 3/3 | 186-186.3 | 50/3" | | Very dense, gray, fine to coarse SAND, some fine to coarse Gravel, trace Cobble, trace Silt, wet (SW). | SAND (SW) | |  | |
| 188 | 95 | 2/2 | 188-188.2 | 50/2" | | Very dense, gray, fine to coarse SAND, some fine to coarse Gravel, trace Cobble, trace Silt, wet (SW). | | | | |
| 189 | | | | | | | | | | |
| 190 | 96 | 3/1 | 190-190.3 | 50/3" | | NO RECOVERY. | 190' NO RECOVERY (Rock Fragment in Tip) | | | |
| 191 | | | | | | | | | | |
| 192 | | | | | | Bottom of Borehole at 192.0 Feet | 192' | 2 | | |
| 193 | | | | | | | | | | |
| 194 | | | | | | | | | | |
| 195 | | | | | | | | | | |
| 196 | | | | | | | | | | |
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| 205 | | | | | | | | | | |
| 206 | | | | | | | | | | |

REMARKS

2. Monitoring well installed upon completion.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-10/MW-10D

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/18/20



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US 131

Belmont, Michigan

Boring No.: MW-10M

Page: 1 of 2

File No.: 16.0062335.52

Check: Jim Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Joe Workman

Date Start/Finish:

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Sample Information | | | | | | TOC Elev.: | NA | NA | Surveyed By: | NA | Survey Date: |
|--|-----|------------------------|----------------|----------------|--|--|------------------|---------|---------------------|----------------------|--------------|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | | | | | | | | | | PROTECTIVE CASING | |
| 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 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 | | | | | See SB-10/MW-10D boring log for sample description and classification. | | | | | | |

Grout

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-10M



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Belmont, Michigan

Boring No.: MW-10M

Page: 2 of 2

File No.: 16.0062335.52

Check: Jim Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 0000 0001 0002 0003 0004 0005 0006 0007 0008 0009 0010 0011 0012 0013 0014 0015 0016 0017 0018 0019 0020 0021 0022 0023 0024 0025 0026 0027 0028 0029 0030 0031 0032 0033 0034 0035 0036 0037 0038 0039 0040 0041 0042 0043 0044 0045 0046 0047 0048 0049 0050 0051 0052 0053 0054 0055 0056 0057 0058 0059 0060 0061 0062 0063 0064 0065 0066 0067 0068 0069 0070 0071 0072 0073 0074 0075 0076 0077 0078 0079 0080 0081 0082 0083 0084 0085 0086 0087 0088 0089 0090 0091 0092 0093 0094 0095 0096 0097 0098 0099 0100 0101 0102 0103 0104 0105 0106 0107 0108 0109 0110 0111 0112 0113 0114 0115 0116 0117 0118 0119 0120 0121 0122 0123 0124 0125 0126 0127 0128 0129 0130 0131 0132 0133 0134 0135 0136 0137 0138 0139 0140 0141 0142 0143 0144 0145 0146 0147 0148 0149 0150 0151 0152 0153 0154 0155 0156 0157 0158 0159 0160 0161 0162 0163 0164 0165 0166 0167 0168 0169 0170 0171 0172 0173 0174 0175 0176 0177 0178 0179 0180 0181 0182 0183 0184 0185 0186 0187 0188 0189 0190 0191 0192 0193 0194 0195 0196 0197 0198 0199 0200 0201 0202 0203 0204 0205 0206 0207 0208 0209 0210 0211 0212 0213 0214 0215 0216 0217 0218 0219 0220 0221 0222 0223 0224 0225 0226 0227 0228 0229 0230 0231 0232 0233 0234 0235 0236 0237 0238 0239 0240 0241 0242 0243 0244 0245 0246 0247 0248 0249 0250 0251 0252 0253 0254 0255 0256 0257 0258 0259 0260 0261 0262 0263 0264 0265 0266 0267 0268 0269 0270 0271 0272 0273 0274 0275 0276 0277 0278 0279 0280 0281 0282 0283 0284 0285 0286 0287 0288 0289 0290 0291 0292 0293 0294 0295 0296 0297 0298 0299 0300 0301 0302 0303 0304 0305 0306 0307 0308 0309 0310 0311 0312 0313 0314 0315 0316 0317 0318 0319 0320 0321 0322 0323 0324 0325 0326 0327 0328 0329 0330 0331 0332 0333 0334 0335 0336 0337 0338 0339 0340 0341 0342 0343 0344 0345 0346 0347 0348 0349 0350 0351 0352 0353 0354 0355 0356 0357 0358 0359 0360 0361 0362 0363 0364 0365 0366 0367 0368 0369 0370 0371 0372 0373 0374 0375 0376 0377 0378 0379 0380 0381 0382 0383 0384 0385 0386 0387 0388 0389 0390 0391 0392 0393 0394 0395 0396 0397 0398 0399 0400 0401 0402 0403 0404 0405 0406 0407 0408 0409 0410 0411 0412 0413 0414 0415 0416 0417 0418 0419 0420 0421 0422 0423 0424 0425 0426 0427 0428 0429 0430 0431 0432 0433 0434 0435 0436 0437 0438 0439 0440 0441 0442 0443 0444 0445 0446 0447 0448 0449 0450 0451 0452 0453 0454 0455 0456 0457 0458 0459 0460 0461 0462 0463 0464 0465 0466 0467 0468 0469 0470 0471 0472 0473 0474 0475 0476 0477 0478 0479 0480 0481 0482 0483 0484 0485 0486 0487 0488 0489 0490 0491 0492 0493 0494 0495 0496 0497 0498 0499 0500 0501 0502 0503 0504 0505 0506 0507 0508 0509 0510 0511 0512 0513 0514 0515 0516 0517 0518 0519 0520 0521 0522 0523 0524 0525 0526 0527 0528 0529 0530 0531 0532 0533 0534 0535 0536 0537 0538 0539 0540 0541 0542 0543 0544 0545 0546 0547 0548 0549 0550 0551 0552 0553 0554 0555 0556 0557 0558 0559 0560 0561 0562 0563 0564 0565 0566 0567 0568 0569 0570 0571 0572 0573 0574 0575 0576 0577 0578 0579 0580 0581 0582 0583 0584 0585 0586 0587 0588 0589 0590 0591 0592 0593 0594 0595 0596 0597 0598 0599 0600 0601 0602 0603 0604 0605 0606 0607 0608 0609 0610 0611 0612 0613 0614 0615 0616 0617 0618 0619 0620 0621 0622 0623 0624 0625 0626 0627 0628 0629 0630 0631 0632 0633 0634 0635 0636 0637 0638 0639 0640 0641 0642 0643 0644 0645 0646 0647 0648 0649 0650 0651 0652 0653 0654 0655 0656 0657 0658 0659 0660 0661 0662 0663 0664 0665 0666 0667 0668 0669 0670 0671 0672 0673 0674 0675 0676 0677 0678 0679 0680 0681 0682 0683 0684 0685 0686 0687 0688 0689 0690 0691 0692 0693 0694 0695 0696 0697 0698 0699 0700 0701 0702 0703 0704 0705 0706 0707 0708 0709 0710 0711 0712 0713 0714 0715 0716 0717 0718 0719 0720 0721 0722 0723 0724 0725 0726 0727 0728 0729 0730 0731 0732 0733 0734 0735 0736 0737 0738 0739 0740 0741 0742 0743 0744 0745 0746 0747 0748 0749 0750 0751 0752 0753 0754 0755 0756 0757 0758 0759 0760 0761 0762 0763 0764 0765 0766 0767 0768 0769 0770 0771 0772 0773 0774 0775 0776 0777 0778 0779 0780 0781 0782 0783 0784 0785 0786 0787 0788 0789 0790 0791 0792 0793 0794 0795 0796 0797 0798 0799 0800 0801 0802 0803 0804 0805 0806 0807 0808 0809 0810 0811 0812 0813 0814 0815 0816 0817 0818 0819 0820 0821 0822 0823 0824 0825 0826 0827 0828 0829 0830 0831 0832 0833 0834 0835 0836 0837 0838 0839 0840 0841 0842 0843 0844 0845 0846 0847 0848 0849 0850 0851 0852 0853 0854 0855 0856 0857 0858 0859 0860 0861 0862 0863 0864 0865 0866 0867 0868 0869 0870 0871 0872 0873 0874 0875 0876 0877 0878 0879 0880 0881 0882 0883 0884 0885 0886 0887 0888 0889 0890 0891 0892 0893 0894 0895 0896 0897 0898 0899 0900 0901 0902 0903 0904 0905 0906 0907 0908 0909 0910 0911 0912 0913 0914 0915 0916 0917 0918 0919 0920 0921 0922 0923 0924 0925 0926 0927 0928 0929 0930 0931 0932 0933 0934 0935 0936 0937 0938 0939 0940 0941 0942 0943 0944 0945 0946 0947 0948 0949 0950 0951 0952 0953 0954 0955 0956 0957 0958 0959 0960 0961 0962 0963 0964 0965 0966 0967 0968 0969 0970 0971 0972 0973 0974 0975 0976 0977 0978 0979 0980 0981 0982 0983 0984 0985 0986 0987 0988 0989 0990 0991 0992 0993 0994 0995 0996 0997 0998 0999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068 1069 1070 1071 1072 1073 1074 1075 1076 1077 1078 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089 1090 1091 1092 1093 1094 1095 1096 1097 1098 1099 1100 1101 1102 1103 1104 1105 1106 1107 1108 1109 1110 1111 1112 1113 1114 1115 1116 1117 1118 1119 1120 1121 1122 1123 1124 1125 1126 1127 1128 1129 1130 1131 1132 1133 1134 1135 1136 1137 1138 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 1157 1158 1159 1160 1161 1162 1163 1164 1165 1166 1167 1168 1169 1170 1171 1172 1173 1174 1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193 1194 1195 1196 1197 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1221 1222 1223 1224 1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240 1241 1242 1243 1244 1245 1246 1247 1248 1249 1250 1251 1252 1253 1254 1255 1256 1257 1258 1259 1260 1261 1262 1263 1264 1265 1266 1267 1268 1269 1270 1271 1272 1273 1274 1275 1276 1277 1278 1279 1280 1281 1282 1283 1284 1285 1286 1287 1288 1289 1290 1291 1292 1293 1294 1295 1296 1297 1298 1299 1300 1301 1302 1303 1304 1305 1306 1307 1308 1309 1310 1311 1312 1313 1314 1315 1316 1317 1318 1319 1320 1321 1322 1323 1324 1325 1326 1327 1328 1329 1330 1331 1332 1333 1334 1335 1336 1337 1338 1339 1340 1341 1342 1343 1344 1345 1346 1347 1348 1349 1350 1351 1352 1353 1354 1355 1356 1357 1358 1359 1360 1361 1362 1363 1364 1365 1366 1367 1368 1369 1370 1371 1372 1373 1374 1375 1376 1377 1378 1379 1380 1381 1382 1383 1384 1385 1386 1387 1388 1389 1390 1391 1392 1393 1394 1395 1396 1397 1398 1399 1400 1401 1402 1403 1404 1405 1406 1407 1408 1409 1410 1411 1412 1413 1414 1415 1416 1417 1418 1419 1420 1421 1422 1423 1424 1425 1426 1427 1428 1429 1430 1431 1432 1433 1434 1435 1436 1437 1438 1439 1440 1441 1442 1443 1444 1445 1446 1447 1448 1449 1450 1451 1452 1453 1454 1455 1456 1457 1458 1459 1460 1461 1462 1463 1464 1465 1466 1467 1468 1469 1470 1471 1472 1473 1474 1475 1476 1477 1478 1479 1480 1481 1482 1483 1484 1485 1486 1487 1488 1489 1490 1491 1492 1493 1494 1495 1496 1497 1498 1499 1500 1501 1502 1503 1504 1505 1506 1507 1508 1509 1510 1511 1512 1513 1514 1515 1516 1517 1518 1519 1520 1521 1522 1523 1524 1525 1526 1527 1528 1529 1530 1531 1532 1533 1534 1535 1536 1537 1538 1539 1540 1541 1542 1543 1544 1545 1546 1547 1548 1549 1550 1551 1552 1553 1554 1555 1556 1557 1558 1559 1560 1561 1562 1563 1564 1565 1566 1567 1568 1569 1570 1571 1572 1573 1574 1575 1576 1577 1578 1579 1580 1581 1582 1583 1584 1585 1586 1587 1588 1589 1590 1591 1592 1593 1594 1595 1596 1597 1598 1599 1600 1601 1602 1603 1604 1605 1606 1607 1608 1609 1610 1611 1612 1613 1614 1615 1616 1617 1618 1619 1620 1621 1622 1623 1624 1625 1626 1627 1628 1629 1630 1631 1632 1633 1634 1635 1636 1637 1638 1639 1640 1641 1642 1643 1644 1645 1646 1647 1648 1649 1650 1651 1652 1653 1654 1655 1656 1657 1658 1659 1660 1661 1662 1663 1664 1665 1666 1667 1668 1669 1670 1671 1672 1673 1674 1675 1676 1677 1678 1679 1680 1681 1682 1683 1684 1685 1686 1687 1688 1689 1690 1691 1692 1693 1694 1695 1696 1697 1698 1699 1700 1701 1702 1703 1704 1705 1706 1707 1708 1709 1710 1711 1712 1713 1714 1715 1716 1717 1718 1719 1720 1721 1722 1723 1724 1725 1726 1727 1728 1729 1730 1731 1732 1733 1734 1735 1736 1737 1738 1739 1740 1741 1742 1743 1744 1745 1746 1747 1748 1749 1750 1751 1752 1753 1754 1755 1756 1757 1758 1759 1760 1761 1762 1763 1764 1765 1766 1767 1768 1769 1770 1771 1772 1773 1774 1775 1776 1777 1778 1779 1780 1781 1782 1783 1784 1785 1786 1787 1788 1789 1790 1791 1792 1793 1794 1795 1796 1797 1798 1799 1800 1801 1802 1803 1804 1805 1806 1807 1808 1809 1810 1811 1812 1813 1814 1815 1816 1817 1818 1819 1820 1821 1822 1823 1824 1825 1826 1827 1828 1829 1830 1831 1832 1833 1834 1835 1836 1837 1838 1839 1840 1841 1842 1843 1844 1845 1846 1847 1848 1849 1850 1851 1852 1853 1854 1855 1856 1857 1858 1859 1860 1861 1862 1863 1864 1865 1866 1867 1868 1869 1870 1871 1872 1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 197 | | | | | | | | | |



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US 131

Belmont, Michigan

Boring No.: MW-10S

Page: 1 of 2

File No.: 16.0062335.52

Check: Jim Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Joe Workman

Date Start/Finish:

Boring Location:

GS Elev.: Datum:

**Auger/
Casing**

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|--|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See SB-10/MW-10D boring log for sample description and classification. | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
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Grout

**R
E
M
A
R
K
S**

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-10S

BORING WELL 6233552 WWW.US131.SB-9 THROUGH SB-11.GPJ GZA_CORP.GDT 1/25/18



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US 131

Belmont, Michigan

Boring No.: MW-10S

Page: 2 of 2

File No.: 16.0062335.52

Check: Jim Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 31 | | | | | | | | | | |
| 32 | | | | | | | | | | |
| 33 | | | | | | | | | | |
| 34 | | | | | | | | | | |
| 35 | | | | | | | | | | |
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| 57 | | | | | | | | | | |
| 58 | | | | | | | | | | |
| 59 | | | | | | | | | | |
| 60 | | | | | | Bottom of Borehole at 60.0 Feet | | 1 | | |
| 61 | | | | | | | | | | |
| 62 | | | | | | | | | | |
| 63 | | | | | | | | | | |
| 64 | | | | | | | | | | |
| 1. Monitoring well was installed in borehole upon completion. Well screen set from 49.0 to 59.0 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

Boring No.: MW-10S

BORING WELL 6233552 WWW.US131.SB-9 THROUGH SB-11.GPJ GZA_CORP.GDT 1/25/18

REMARKS



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Wolverine World Wide, Inc.

US 131

Belmont, Michigan

Boring No.: SB-11/MW-11D

Page: 1 of 5

File No.: 16.0062335.52

Check: Jim Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Julie Groenleer

Date Start/Finish: 11-6-17 / 11-8-17

Boring Location:

GS Elev.: 742.10' Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|---------------|---------------------|--|--|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/22 | 0-2 | 0-1 1-1 | 1.5 tsf | TOPSOIL. Changing at 0.2 feet to: Very loose, brown, fine to medium SAND, little Silt, damp (SM). Changing at 0.8 feet to: Stiff, brown, CLAY & SILT, trace fine Sand, moist (CL). Changing at 1.4 feet to: Very loose, dark brown, fine to medium SAND, little Clay, little Silt, damp (SC). Medium dense, brown, fine to medium SAND, little Silt, moist (SM). Loose, brown, fine to medium SAND, little Silt, moist (SM). Changing at 5.5 feet to: Stiff, brown, CLAY & SILT, little fine to coarse Sand, moist (CL). Stiff, brown, CLAY & SILT, little fine Sand, moist (CL). Loose, brown, fine to medium SAND, little Silt, moist (SM). Very loose, brown, fine to medium SAND, little Silt, moist (SM). Changing at 11.9 feet to: Stiff, brown, CLAY & SILT, little fine to medium Sand, moist (CL). Hard, brown with gray mottling, CLAY & SILT, trace fine to coarse Sand, damp (CL). | 0.2' TOPSOIL 0.8' SAND (SM) 1.4' CLAY & SILT (CL) 2' SAND (SC) SAND (SM) | 1 | | |
| 2 | 2 | 24/24 | 2-4 | 5-6 7-5 | | | | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/18 | 4-6 | 4-5 5-5 | | | | | | |
| 5 | | | | | | | 5.5' | | | |
| 6 | 4 | 24/24 | 6-8 | 1-1 2-2 | 1.0 tsf 1.0 tsf | | CLAY & SILT (CL) | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/22 | 8-10 | 2-3 2-2 | | | 8' | | | |
| 9 | | | | | | | SAND (SM) | | | |
| 10 | 6 | 24/22 | 10-12 | 2-2 2-2 | | | | | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/22 | 12-14 | 2-5 9-11 | 2.0 tsf >4.0 tsf | | 11.9' | | | |
| 13 | | | | | | | CLAY & SILT (CL) | | | |
| 14 | 8 | 24/24 | 14-16 | 7-14 15-12 | >4.0 tsf | | | | | |
| 15 | | | | | | | | | | |
| 16 | 9 | 24/14 | 16-18 | 1-3 3-3 | | | 16' | | | |
| 17 | | | | | | | SAND (SM) | | | |
| 18 | | | | | | | | | | |
| 19 | 10 | 24/16 | 18-20 | 1-4 3-2 | 2.25 tsf | | 18' | | | |
| 20 | | | | | | | CLAY & SILT (CL) | | | |
| 21 | 11 | 24/4 | 20-22 | 4-6 3-3 | | | 19.5' | | | |
| 22 | | | | | | | SAND (SM) | | | |
| 23 | 12 | 24/24 | 22-24 | 1-7 7-7 | 2.25 tsf | | 22.9' | | | |
| 24 | | | | | | | CLAY & SILT (CL) | | | |
| 25 | 13 | 24/12 | 24-26 | 1-1 1-1 | | | 23.8' | | 2 | |
| 26 | | | | | | | SAND (SM) | | | |
| 27 | 14 | 24/24 | 26-28 | 1-5 7-10 | | | 26' | | | |
| 28 | | | | | | | SAND (SP) | | | |
| 29 | 15 | 24/18 | 28-30 | 8-9 10-11 | | | | | | |

REMARKS

- Pocket penetrometer readings were measured in tons per square foot (tsf) and are used to evaluate consistency of cohesive soil.
- Groundwater was encountered at approximately 24.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-11/MW-11D

BORING WELL 6233552 WWW.US131.SB-9 THROUGH SB-11.GPJ GZA_CORP.GDT 1/25/18



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Engineers and Scientists

Wolverine World Wide, Inc.

US 131

Belmont, Michigan

Boring No.: SB-11/MW-11D

Page: 2 of 5

File No.: 16.0062335.52

Check: Jim Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|--|------------------------|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 31 | 16 | 24/10 | 30-32 | 2-5 8-14 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | SAND (SP) | | | |
| 32 | 17 | 24/15 | 32-34 | 2-7 8-9 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 34 | 18 | 24/10 | 34-36 | 3-8 13-11 | | Medium dense, brown, fine to medium SAND, trace coarse Sand, trace Silt, wet (SP). | | | | |
| 36 | 19 | 24/18 | 36-38 | 7-8 10-10 | | Medium dense, brown, fine to medium SAND, trace coarse Sand, trace Silt, wet (SP). Changing at 37.4 feet to: Medium dense, brown, fine SAND, little Silt, wet (SM). | 37.4' 38' SAND (SM) | | | |
| 38 | 20 | 24/18 | 38-40 | 2-2 5-6 | | Loose, brown, fine SAND, trace Silt, wet (SP). | SAND (SP) | | | |
| 40 | 21 | 24/12 | 40-42 | 2-2 5-12 | | Loose, brown, fine SAND, trace Silt, wet (SP). | | | | |
| 42 | 22 | 24/16 | 42-44 | 2-4 5-7 | | Loose, brown, fine SAND, trace Silt, wet (SP). | | | | |
| 44 | 23 | 24/18 | 44-46 | 3-8 9-10 | | Medium dense, brown, fine SAND, trace Silt, wet (SP). | | | | |
| 46 | 24 | 24/24 | 46-48 | 2-7 7-9 | | Medium dense, brown, fine to coarse SAND, trace fine Gravel, trace Silt, wet (SW). | 46' SAND (SW) | | | |
| 48 | 25 | 24/24 | 48-50 | 2-7 10-12 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). Changing at 49.2 feet to: Medium dense, brown, fine to coarse SAND, trace fine Gravel, trace Silt, wet (SW). | 48' SAND (SP) | | | |
| 49 | | | | | | | 49.2' SAND (SW) | | | |
| 50 | 26 | 24/10 | 50-52 | 2-11 14-22 | | Medium dense, brown, fine SAND, trace Silt, wet (SP). | 50' SAND (SP) | | | |
| 51 | | | | | | Medium dense, brown, fine SAND, trace Silt, wet (SP). | | | | |
| 52 | 27 | 24/6 | 52-54 | 4-8 15-22 | | Medium dense, brown, fine SAND, trace Silt, wet (SP). | | 3 | | |
| 53 | | | | | | | | | | |
| 54 | 28 | 24/14 | 54-56 | 2-4 7-11 | | Medium dense, brown, fine SAND, trace Silt, wet (SP). | | | | |
| 55 | | | | | | | | | | |
| 56 | 29 | 24/24 | 56-58 | 2-4 6-6 | | Loose, brown, fine SAND, little Silt, wet (SM). | 56' SAND (SM) | | | |
| 57 | | | | | | | | | | |
| 58 | 30 | 24/24 | 58-60 | 2-4 7-11 | | Medium dense, brown, fine SAND, trace Silt, wet (SP). | 58' SAND (SP) | | | |
| 59 | | | | | | | | | | |
| 60 | 31 | 24/18 | 60-62 | 5-8 13-22 | | Medium dense, brown, fine SAND, some Silt, wet (SM). | 60' SAND (SM) | | | |
| 61 | | | | | | | | | | |
| 62 | 32 | 24/20 | 62-64 | 3-6 8-10 | | Medium dense, brown, fine SAND, some Silt, wet (SM). | | | | |
| 63 | | | | | | | | | | |
| 64 | 33 | 24/18 | 64-66 | 3-5 6-6 | | Medium dense, brown, fine SAND, some | | | | |
| <div>REMARKS</div> <div>3. Rock in tip.</div> | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-11/MW-11D | |

BORING WELL 6233552 WWW.US131.SB-9 THROUGH SB-11.GPJ GZA_CORP.GDT 1/25/18



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US 131

Belmont, Michigan

Boring No.: SB-11/MW-11D

Page: 3 of 5

File No.: 16.0062335.52

Check: Jim Cai

| Sample Information | | | | | | Bentonite, Michigan | | Check: | | Jim Cai | | | |
|---|-----|------------------|-------------|---------------|-----------|--|---------------|---------|---------------------|---------|--------------------------|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | | | |
| | | | | | | | | | | | | | |
| 66 | 34 | 24/22 | 66-68 | 3-7 13-11 | | Silt, wet (SM). | SAND (SM) | Grout | | | | | |
| 67 | | | | | | Medium dense, brown, fine SAND, some Silt, wet (SM). Changing at 67.1 feet to: | 67.1' | | | | | | |
| 68 | 35 | 24/22 | 68-70 | 3-5 8-6 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | SAND (SP) | | | | | | |
| 69 | | | | | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). Changing at 68.8 feet to: Medium dense, brown, fine SAND, little Silt, wet (SM). | 68.8' | | | | | | |
| 70 | 36 | 24/23 | 70-72 | 2-3 4-5 | | Loose, brown, fine SAND, trace Silt, wet (SP). | SAND (SM) | | | | | | |
| 71 | | | | | | Loose, brown, fine SAND, trace Silt, wet (SP). | 70' | | | | | | |
| 72 | 37 | 24/20 | 72-74 | 3-4 6-8 | | Loose, brown, fine SAND, trace Silt, wet (SP). | SAND (SP) | | | | | | |
| 73 | | | | | | Loose, brown, fine SAND, trace Silt, wet (SP). | | | | | | | |
| 74 | 38 | 24/24 | 74-76 | 3-3 5-9 | | Loose, brown, fine SAND, trace Silt, wet (SP). | | | | | | | |
| 75 | | | | | | Loose, brown, fine SAND, trace Silt, wet (SP). | | | | | | | |
| 76 | 39 | 24/0 | 76-78 | 6-10 15-13 | | NO RECOVERY. | 76' | | | | | | |
| 77 | | | | | | NO RECOVERY. | NO RECOVERY | | | | | | |
| 78 | 40 | 24/17 | 78-80 | 2-2 5-11 | | Loose, brown, fine SAND, trace Silt, wet (SP). | 78' | | | | | | |
| 79 | | | | | | SAND (SP) | | | | | | | |
| 80 | 41 | 24/12 | 80-82 | 2-4 9-10 | | Medium dense, brown, fine SAND, trace Silt, wet (SP). | | | | | | | |
| 81 | | | | | | Medium dense, brown, fine SAND, trace Silt, wet (SP). | | | | | | | |
| 82 | 42 | 24/24 | 82-84 | 3-3 5-6 | | Loose, brown, fine SAND, trace Silt, wet (SP). | | | | | | | |
| 83 | | | | | | Loose, brown, fine SAND, trace Silt, wet (SP). | | | | | | | |
| 84 | 43 | 24/0 | 84-86 | 2-4 5-9 | | NO RECOVERY. | 84' | | | | | | |
| 85 | | | | | | NO RECOVERY. | NO RECOVERY | | | | | | |
| 86 | 44 | 24/18 | 86-88 | 1-2 5-12 | | Loose, brown, fine SAND, trace Silt, wet (SP). | 86' | | | | | | |
| 87 | | | | | | Loose, brown, fine SAND, trace Silt, wet (SP). | SAND (SP) | | | | | | |
| 88 | 45 | 24/8 | 88-90 | 6-5 8-11 | | Medium dense, brown, fine SAND, trace Silt, wet (SP). | | | | | | | |
| 89 | | | | | | Medium dense, brown, fine SAND, trace Silt, wet (SP). | | | | | | | |
| 90 | 46 | 24/18 | 90-92 | 2-4 7-11 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | | | | |
| 91 | | | | | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | | | | |
| 92 | 47 | 24/0 | 92-94 | 2-3 6-10 | | NO RECOVERY. | 92' | | | | | | |
| 93 | | | | | | NO RECOVERY. | NO RECOVERY | | | | | | |
| 94 | 48 | 24/16 | 94-96 | 2-4 4-8 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). Changing at 95.8 feet to: | 94' | | | | | | |
| 95 | | | | | | Loose, brown fine SAND, little Silt, wet (SM). | SAND (SP) | | | | | | |
| 96 | 49 | 24/12 | 96-98 | 2-3 4-5 | | Loose, brown fine SAND, little Silt, wet (SM). | 95.8' | | | | | | |
| 97 | | | | | | Loose, brown fine SAND, little Silt, wet (SM). | SAND (SM) | | | | | | |
| 98 | 50 | 24/16 | 98-100 | 2-3 6-8 | | Loose, brown, fine SAND, trace Silt, wet (SP). | 98' | | | | | | |
| 99 | | | | | | Loose, brown, fine SAND, trace Silt, wet (SP). | SAND (SP) | | | | | | |
| REMARKS | | | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | | Boring No.: SB-11/MW-11D | | |

BORING WELL 6233552 WWW.US131.SB-9 THROUGH SB-11.GPJ GZA_CORP.GDT 1/25/18



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US 131

Belmont, Michigan

Boring No.: SB-11/MW-11D

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File No.: 16.0062335.52

Check: Jim Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|------------------------|---|---|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 101 | 51 | 24/4 | 100-102 | 2-5 10-14 | | Medium dense, brown, fine SAND, trace Silt, wet (SP). | SAND (SP) | | | |
| 102 | 52 | 24/12 | 102-104 | 2-7 13-15 | | Medium dense, brown, fine SAND, trace Silt, wet (SP). | | | | |
| 104 | 53 | 24/0 | 104-106 | 7-14 15-20 | | NO RECOVERY. | 104' NO RECOVERY | | | |
| 106 | 54 | 24/19 | 106-108 | 1-3 8-13 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | 106' SAND (SP) | | | |
| 108 | 55 | 24/18 | 108-110 | 2-4 6-8 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 110 | 56 | 24/10 | 110-112 | 7-14 18-17 | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 112 | 57 | 24/0 | 112-114 | 4-8 10-13 | | NO RECOVERY. | 112' NO RECOVERY | | | |
| 114 | 58 | 24/10 | 114-116 | 8-10 11-15 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | 114' SAND (SP) | | | |
| 116 | 59 | 24/10 | 116-118 | 1-2 2-2 | | Very loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 118 | 60 | 24/19 | 118-120 | 2-2 5-7 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 120 | 61 | 24/21 | 120-122 | 2-2 5-7 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 122 | 62 | 24/23 | 122-124 | 2-2 7-8 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 124 | 63 | 24/20 | 124-126 | 6-7 10-13 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 126 | 64 | 24/20 | 126-128 | 3-3 4-4 | | Loose, brown, fine to medium SAND, trace Silt, wet (SP). Changing at 127.5 feet to: | 127.5' CLAY & SILT | | | |
| 128 | 65 | 24/12 | 128-130 | 3-4 12-14 | <0.25 tsf <0.25 tsf | Soft, gray, CLAY & SILT, little fine to medium Sand, moist (CL). Changing at 128.2 feet to: Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | 128.2' CLAY & SILT (CL) SAND (SP) | | | |
| 130 | 66 | 24/9 | 130-132 | 2-5 13-15 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | | |
| 132 | 67 | 24/15 | 132-134 | 4-10 18-21 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). Changing at 133.2 feet to: Soft, gray, CLAY & SILT, some fine to medium Sand, moist (CL). | 133.2' CLAY & SILT (CL) | | | |
| 134 | 68 | 24/16 | 134-136 | 6-13 18-23 | 0.25 tsf | Changing at 133.9 feet to: Medium dense, | 133.9' SAND (SP) | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-11/MW-11D | |

BORING WELL 6233552 WWW.US131.SB-9 THROUGH SB-11.GPJ GZA_CORP.GDT 1/25/18



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Belmont, Michigan

Boring No.: SB-11/MW-11D

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File No.: 16.0062335.52

Check: Jim Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|-------|--------------------|------------------|-------------|----------------|----------------------|--|----------------------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 136 | 69 | 24/14 | 136-138 | 2-4 12-15 | | brown, fine to medium SAND, trace Silt, wet (SP). | SAND (SP) | | |
| 137 | | | | | | Dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 138 | 70 | 24/8 | 138-140 | 3-10 20-21 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 139 | | | | | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 140 | 71 | 24/18 | 140-142 | 3-4 15-18 | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 141 | | | | | | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 142 | 72 | 24/16 | 142-144 | 4-11 19-24 | | Medium dense, brown, fine to medium SAND, trace Silt, trace fine Gravel, wet (SP). | | | |
| 143 | | | | | | Medium dense, brown, fine to medium SAND, trace Silt, trace fine Gravel, wet (SP). | | | |
| 144 | 73 | 24/18 | 144-146 | 11-13 23-33 | | Dense, brown, fine to coarse SAND, trace Silt, trace Gravel, wet (SW). | 144' SAND (SW) | | |
| 145 | | | | | | Dense, brown, fine to coarse SAND, trace Silt, trace Gravel, wet (SW). | | | |
| 146 | 74 | 24/10 | 146-148 | 9-13 30-30 | | Dense, brown, fine to medium SAND, trace Silt, trace coarse Sand, wet (SP). | 146' SAND (SP) | | |
| 147 | | | | | | Dense, brown, fine to medium SAND, trace Silt, trace coarse Sand, wet (SP). | | | |
| 148 | 75 | 24/10 | 148-150 | 9-18 26-34 | | Dense, brown, fine to medium SAND, trace Silt, trace coarse Sand, wet (SP). | | | |
| 149 | | | | | | Dense, brown, fine to medium SAND, trace Silt, trace coarse Sand, wet (SP). | | | |
| 150 | 76 | 24/21 | 150-152 | 9-23 29-40 | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 151 | | | | | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 152 | 77 | 18/18 | 152-153.5 | 25-42-50 | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | 4 | |
| 153 | | | | | | Very dense, brown, fine to medium SAND, trace Silt, wet (SP). | | | |
| 154 | 78 | 24/24 | 154-156 | 11-13 15-18 | | Medium dense, brown, fine to medium SAND, some Silt, wet (SM). | 154' SAND (SM) | | |
| 155 | | | | | | Medium dense, brown, fine to medium SAND, some Silt, wet (SM). | | | |
| 156 | 79 | 24/24 | 156-158 | 7-17 37-30 | | Very dense, brown, fine SAND, some Silt, wet (SM). Changing at 157.7 feet to: Hard, gray, CLAY & SILT, little fine Sand, moist (CL). | 157.7' CLAY & SILT (CL) | | |
| 157 | | | | | | Very dense, brown, fine SAND, some Silt, wet (SM). Changing at 157.7 feet to: Hard, gray, CLAY & SILT, little fine Sand, moist (CL). | | | |
| 158 | 80 | 24/24 | 158-160 | 8-18 27-26 | >4.0 tsf >4.0 tsf | Hard, gray, CLAY & SILT, little fine Sand, moist (CL). Changing at 159.1 feet to: Dense, gray, fine SAND, some Silt, wet (SM). Changing at 159.9 feet to: Hard, gray, CLAY & SILT, little fine Sand, moist (CL). | 159.1' SAND (SM) | | |
| 159 | | | | | | Hard, gray, CLAY & SILT, little fine Sand, moist (CL). Changing at 159.1 feet to: Dense, gray, fine SAND, some Silt, wet (SM). Changing at 159.9 feet to: Hard, gray, CLAY & SILT, little fine Sand, moist (CL). | 159.9' CLAY & SILT (CL) | | |
| 160 | 81 | 24/24 | 160-162 | 6-10 18-20 | >4.0 tsf >4.0 tsf | Hard, gray, CLAY & SILT, some fine Sand, moist (CL). | 162' CLAY & SILT (CL) | | |
| 161 | | | | | | Hard, gray, CLAY & SILT, some fine Sand, moist (CL). | | | |
| 162 | | | | | | Bottom of Borehole at 162.0 Feet | | 5 | |
| 163 | | | | | | | | | |
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- REMARKS**
- Only drove spoon 18 inches due to high blow counts.
 - Monitoring well was installed in borehole upon completion. Well screen set from 150.0 to 155.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-11/MW-11D

BORING WELL 6233552 WWW.US 131 SB-9 THROUGH SB-11.GPJ GZA_CORP.GDT 1/25/18



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US 131

Belmont, Michigan

Boring No.: MW-11M

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File No.: 16.0062335.52

Check: Jim Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Julie Groenleer/Joe Workman

Date Start/Finish: 11-8-17 / 11-9-17

Boring Location:

GS Elev.: 742.30' Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|--|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See SB-11/MW-11D boring log for sample description and classification. | | | | |
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Grout

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-11M



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US 131

Belmont, Michigan

Boring No.: MW-11M

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File No.: 16.0062335.52

Check: Jim Cai

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|-------|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
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| 100 | | | | | | | | | |
| 101 | | | | | | Bottom of Borehole at 100.0 Feet | | | |
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| 112 | | | | | | | | | |

1. Monitoring well was installed in borehole upon completion. Well screen set from 95.0 to 10.0 feet below ground surface.

Top of Well Screen
Silica Sand
Filter Pack
2-Inch Dia.
5-Foot PVC
Screen (0.010" Slot)
Bottom of Well Screen

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-11M



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Engineers and Scientists

Wolverine World Wide, Inc.

US 131

Belmont, Michigan

Boring No.: MW-11S

Page: 1 of 1

File No.: 16.0062335.52

Check: Jim Cai

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Joe Workman

Date Start/Finish: 11-9-17 / 11-9-17

Boring Location:

GS Elev.: 742.10' Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|--|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See SB-11/MW-11D boring log for sample description and classification. | | | | |
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| 31 | | | | | | | | | | |
| 32 | | | | | | Bottom of Borehole at 31.5 Feet | | 1 | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 21.0 to 31.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-11S

BORING WELL 6233552 WWW.US131.SB-9 THROUGH SB-11.GPJ GZA_CORP.GDT 1/25/18



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Wolverine World Wide, Inc.

House Street

Belmont, Michigan

Boring No.: HS-MW-12A

Page: 1 of 1

File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: J. Markosky

Date Start/Finish: _____

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
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| | | | | |

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | | | | | | See HS-MW-12D for detailed soil descriptions. | | | | |
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| 19 | | | | | | | | | | |
| 20 | | | | | | Bottom of Borehole at 20.0 Feet | | | | |
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| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |

Bentonite/Grout

Silica Sand Filter Pack
Top of Well Screen

2-Inch Dia.
5-Foot PVC Screen (0.010" Slot)

Bottom of Well Screen

REMARKS

1. Monitoring well HS-MW-12A was installed in borehole upon completion. Well screen set from approximately 15.0 to 20.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-12A

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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House Street

Belmont, Michigan

Boring No.: HS-MW-12B

Page: 1 of 2

File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: J. Markosky

Date Start/Finish:

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See HS-MW-12D for detailed soil descriptions. | | | | |
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10 Inch Casing

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-12B

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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House Street

Belmont, Michigan

Boring No.: HS-MW-12B

Page: 2 of 2

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|-------|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
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| 55 | | | | | | Bottom of Borehole at 54.5 Feet | | 1 | |
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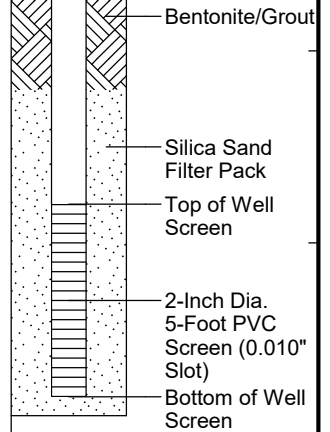
REMARKS

1. Monitoring well HS-MW-12B was installed in borehole upon completion. Well screen set from approximately 49.0 to 54.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-12B

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20





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Belmont, Michigan

Boring No.: HS-MW-12C

Page: 1 of 4

File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: J. Markosky

Date Start/Finish: 9-3-19 / 9-20-19

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 8.0" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: 140lbs NA

Hammer Fall: 30" NA

Other: NA NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------|----------|---|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | PROTECTIVE CASING |
| 1 | | | | | | See HS-MW-12D for detailed soil descriptions. | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-12C

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/19/20



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Wolverine World Wide, Inc.

House Street

Belmont, Michigan

Boring No.: HS-MW-12C

Page: 2 of 4

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|-------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/19/20

Boring No.: HS-MW-12C



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Belmont, Michigan

Boring No.: HS-MW-12C

Page: 3 of 4

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

Boring No.: HS-MW-12C

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/19/20



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Belmont, Michigan

Boring No.: HS-MW-12C

Page: 4 of 4

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | |
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| 131 | | | | | | Bottom of Borehole at 130.4 Feet | | 1 | |
| 132 | | | | | | | | | |
| 133 | | | | | | | | | |
| 134 | | | | | | | | | |
| REMARKS | | | | | | | | | |
| 1. Monitoring well HS-MW-12C was installed in borehole upon completion. Well screen set from approximately 124.0 to 128.8 feet below ground surface. | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |

Boring No.: HS-MW-12C

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/19/20



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Wolverine World Wide, Inc.

House Street

Belmont, Michigan

Boring No.: HS-MW-12D

Page: 1 of 6

File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: J. Markosky

Date Start/Finish: 9-3-19 / 9-20-19

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 8.0" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: 140lbs NA

Hammer Fall: 30" NA

Other: NA NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|--------------|---------|---|-------------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/12 | 0-2 | 1-1 3-3 | 0.0 ppm | Black, TOPSOIL. Changing at 0.5 feet to: Loose, light brown, fine SAND, some Silt, dry. | 0.5' TOPSOIL SAND | 1 | | |
| 2 | 2 | 24/8 | 2-4 | 2-3 2-3 | 0.0 ppm | Loose, light brown, fine to medium SAND, little Silt, dry. | | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/14 | 4-6 | 3-4 4-5 | 0.0 ppm | Loose, light brown, fine to medium SAND, little Silt, dry. | | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/16 | 6-8 | 2-3 3-3 | 0.0 ppm | Loose, light brown, fine to medium SAND, little Silt, moist. | | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/18 | 8-10 | 1-2 2-2 | 0.0 ppm | Loose, brown, fine to medium SAND, little Silt, damp. | | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/22 | 10-12 | 1-3 4-5 | 0.0 ppm | Loose, brown, fine to medium SAND, little Silt, wet. | | | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/14 | 12-14 | 2-2 1-2 | 0.0 ppm | Loose, brown, fine to medium SAND, some Silt, wet. | | | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/11 | 14-16 | WOH-1 5-8 | 0.0 ppm | Loose, brown, fine to medium SAND, little Silt, wet. | | 2 | | |
| 15 | | | | | | | | 3 | | |
| 16 | 9 | 24/16 | 16-18 | 4-5 8-9 | 0.0 ppm | Loose, brown, fine to medium SAND, little Silt, wet. | | | | |
| 17 | | | | | | | | | | |
| 18 | 10 | 24/24 | 18-20 | 1-4 9-10 | 0.0 ppm | Loose, brown, fine to medium SAND, little Silt, wet. | | | | |
| 19 | | | | | | | | | | |
| 20 | 11 | 24/23 | 20-22 | 3-4 7-11 | 0.0 ppm | Loose, brown, fine to medium SAND, little Silt, wet. | | | | |
| 21 | | | | | | | | | | |
| 22 | 12 | 24/20 | 22-24 | 3-6 9-12 | 0.0 ppm | Medium dense, brown, fine to medium SAND, little Silt, trace Gravel, wet. | | | | |
| 23 | | | | | | | | | | |
| 24 | 13 | 24/20 | 24-26 | 4-6 10-9 | 0.0 ppm | Medium dense, brown, fine to medium SAND, little Silt, trace Gravel, wet. | | 4 | | |
| 25 | | | | | | | | | | |
| 26 | 14 | 24/23 | 26-28 | 1-2 2-3 | 0.0 ppm | Loose, brown, fine to medium SAND, little Silt, trace Gravel, wet. | | | | |
| 27 | | | | | | | | | | |
| 28 | 15 | 24/24 | 28-30 | 1-3 3-5 | 0.0 ppm | Loose, brown, fine to medium SAND, some Silt, wet. | | | | |
| 29 | | | | | | | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 2000 photoionization detector equipped with a 10.6 eV lamp. Readings are shown in parts per million (ppm) of isobutylene. Background was measured at 0.0 ppm.
- Groundwater was encountered at approximately 14.0 feet below ground surface.
- Temporary well set at 15.0 to 20.0 feet below ground surface. Purged 55.0 gallons. Groundwater sample submitted for laboratory analysis.
- Temporary well set at 25.0 to 30.0 feet below ground surface. Purged 50.0 gallons. Groundwater sample submitted for laboratory analysis.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-12D

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/19/20



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

Wolverine World Wide, Inc.

House Street

Belmont, Michigan

Boring No.: HS-MW-12D

Page: 2 of 6

File No.: 16.0062335.52

Check: JTM/JMG

| Sample Information | | | | | | | | Check: JTM/JMG | | |
|---|---|------------------|-------------|---------------|---------|--|---------------------|----------------|-----------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 31 | 16 | 24/24 | 30-32 | 1-3 3-5 | 0.0 ppm | Loose, brown, fine to medium SAND, some Silt, wet. | SAND | 5 | | |
| 32 | 17 | 24/20 | 32-34 | 2-5 5-6 | 0.0 ppm | Loose, brown, fine to medium SAND, some Silt, wet. | | | | |
| 33 | | | | | | | | | | |
| 34 | 18 | 24/18 | 34-36 | 1-2 3-5 | 0.0 ppm | Loose, brown, fine to medium SAND, some Silt, wet. | | | | |
| 35 | | | | | | | | | | |
| 36 | 19 | 24/9 | 36-38 | 3-8 12-14 | 0.0 ppm | Medium dense, brown, fine to medium SAND, some Silt, wet. | | 6 | | |
| 37 | | | | | | | | | | |
| 38 | 20 | 24/20 | 38-40 | 2-4 5-10 | 0.0 ppm | Loose, brown and gray, fine to medium SAND, some Silt, wet. | | | | |
| 39 | | | | | | | | | | |
| 40 | 21 | 24/24 | 40-42 | 1-3 5-6 | 0.0 ppm | Loose, brown and gray, fine to medium SAND, some Silt, wet. Changing at 41.6 feet to: Gray, Silty CLAY, some fine Sand, wet. | 41.8' Silty CLAY | | | |
| 41 | | | | | | | | 7 | | |
| 42 | 22 | 24/24 | 42-44 | 4-8 10-13 | 0.0 ppm | Gray, Silty CLAY, some fine to medium Sand, dry. | 44' SILT & CLAY | | | |
| 43 | | | | | | | | | | |
| 44 | 23 | 24/24 | 44-46 | 3-11 11-13 | 0.0 ppm | Very stiff, gray, SILT & CLAY, little fine Sand, wet. | 46' SAND | | | |
| 45 | | | | | | | | 7 | | |
| 46 | 24 | 24/2 | 46-48 | 1-1 1-2 | 0.0 ppm | Very loose, brown and gray, fine to medium SAND, little Silt, wet. | | | | |
| 47 | | | | | | | | | | |
| 48 | 25 | 24/20 | 48-50 | 2-5 8-12 | 0.0 ppm | Medium dense, brown, fine to medium SAND, trace Silt, wet. Changing at 49.0 feet to: Medium dense, brown, fine to medim SAND, trace Silt with layers of interbedded Silty Clay, wet. | | | | |
| 49 | | | | | | | | | | |
| 50 | 26 | 24/14 | 50-52 | 1-7 11-14 | 0.0 ppm | Medium dense, brown, fine to medium SAND, little Silt with interbedded Silty Clay, wet. | | 7 | | |
| 51 | | | | | | | | | | |
| 52 | 27 | 24/0 | 52-54 | 9-30 43-29 | 0.0 ppm | Medium dense, brown, fine to medium SAND, little Silt with interbedded Silty Clay, wet. NO RECOVERY. | | | | |
| 53 | | | | | | | | | | |
| 54 | 28 | 24/24 | 54-56 | 4-9 11-12 | 0.0 ppm | Medium dense, brown, fine to medium SAND, little Silt, wet. Changing at 54.5 feet to: Gray, Silty CLAY, trace fine Sand, dry. | 54.5' Silty CLAY | | | |
| 55 | | | | | | | | 7 | | |
| 56 | 29 | 24/24 | 56-58 | 8-13 13-15 | 0.0 ppm | Very stiff, gray, Silty CLAY, little fine Sand, dry. | | | | |
| 57 | | | | | | | | | | |
| 58 | 30 | 24/24 | 58-60 | 4-8 10-10 | 0.0 ppm | Very stiff, gray, Silty CLAY, little fine Sand, dry. | | | | |
| 59 | | | | | | | | | | |
| 60 | 31 | 24/24 | 60-62 | 6-8 9-11 | 0.0 ppm | Very stiff, gray, Silty CLAY, little fine Sand, dry. | | 7 | | |
| 61 | | | | | | | | | | |
| 62 | 32 | 24/24 | 62-64 | 4-10 10-11 | 0.0 ppm | Very stiff, gray, Silty CLAY, little fine Sand, dry. | | | | |
| 63 | | | | | | | | | | |
| 64 | 33 | 24/24 | 64-66 | 6-11 | 0.0 ppm | Very stiff, gray, Silty CLAY, little fine Sand, | | | | |
| REMARKS | 5. Temporary well set at 35.0 to 40.0 feet below ground surface. Purged 70.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | 6. 10.0 inch casing set to 42.6 feet below ground surface. | | | | | | | | | |
| 7. Temporary well set at 49.0 to 54.0 feet below ground surface. Purged 75.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-12D | |

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/19/20



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Belmont, Michigan

Boring No.: HS-MW-12D

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Check: JTM/JMG

| Sample Information | | | | | | Check: JTM/JMG | | | | |
|-----------------------|---|------------------|-------------|-------|---------|--|---------------|---------|---------------------|-------|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 66 | 34 | 24/24 | 66-68 | 15-16 | | dry. | Silty CLAY | | | |
| 67 | | | | 3-9 | 0.0 ppm | Very stiff, gray, Silty CLAY, trace fine Sand, dry. | | | | |
| 68 | | | | 10-10 | | | | | | |
| 69 | 35 | 24/24 | 68-70 | 6-6 | 0.0 ppm | Very stiff, gray, Silty CLAY, trace fine Sand, dry. | | | | |
| 70 | | | | 9-11 | | | | | | |
| 71 | 36 | 24/24 | 70-72 | 2-2 | 0.0 ppm | Very stiff, gray, Silty CLAY, trace fine Sand, dry. Changing at 71.0 feet to: Gray, fine SAND, some Silt, wet. | 71' | | | |
| 72 | | | | 2-5 | | | | | | |
| 73 | 37 | 24/16 | 72-74 | 1-1 | 0.0 ppm | Very loose, gray and brown, fine to medium SAND, some Silt, wet. | SAND | | | |
| 74 | | | | 2-2 | | | | | | |
| 75 | 38 | 24/20 | 74-76 | 3-3 | 0.0 ppm | Loose, gray and brown, fine SAND, some Silt, wet. | | 8 | | |
| 76 | | | | 7-11 | | | | | | |
| 77 | 39 | 24/24 | 76-78 | 2-3 | 0.0 ppm | Loose, gray and brown, fine SAND, some Silt, wet. | | | | Grout |
| 78 | | | | 5-7 | | | | | | |
| 79 | 40 | 24/13 | 78-80 | 1-1 | 0.0 ppm | Loose, gray and brown, fine SAND, some Silt, wet. | | | | |
| 80 | | | | 4-5 | | | | | | |
| 81 | 41 | 24/24 | 80-82 | 1-1 | 0.0 ppm | Loose, gray and brown, fine SAND, some Silt, wet. | | | | |
| 82 | | | | 3-5 | | | | | | |
| 83 | 42 | 24/18 | 82-84 | 1-3 | 0.0 ppm | Medium dense, gray and brown, fine to medium SAND, some Silt, wet. Changing at 83.3 feet to: Gray and brown, fine to medium SAND, some Silt, little Gravel, wet. | | | | |
| 84 | | | | 8-11 | | | | | | |
| 85 | 43 | 24/20 | 84-86 | 2-5 | 0.0 ppm | Medium dense, brown, fine to coarse SAND, some Gravel, trace Silt, wet. | | 9 | | |
| 86 | | | | 6-7 | | | | | | |
| 87 | 44 | 24/24 | 86-88 | 2-4 | 0.0 ppm | Medium dense, brown, fine to coarse SAND, some Gravel, trace Silt, wet. | | | | |
| 88 | | | | 12-20 | | | | | | |
| 89 | 45 | 24/17 | 88-90 | 3-5 | 0.0 ppm | Medium dense, brown, fine to coarse SAND, little Gravel, little Silt, wet. | | | | |
| 90 | | | | 9-13 | | | | | | |
| 91 | 46 | 24/92 | 90-92 | 1-4 | 0.0 ppm | Medium dense, brown, fine to coarse SAND, little Gravel, little Silt, wet. | | | | |
| 92 | | | | 7-14 | | | | | | |
| 93 | 47 | 24/7 | 92-94 | 1-1 | 0.0 ppm | Very loose, brown, fine to coarse SAND, little Gravel, little Silt, wet. | | | | |
| 94 | | | | 2-8 | | | | | | |
| 95 | 48 | 24/11 | 94-96 | 3-10 | 0.0 ppm | Medium dense, brown, fine to coarse SAND, little Gravel, little Silt, wet. | | 10 | | |
| 96 | | | | 14-22 | | | | | | |
| 97 | 49 | 24/12 | 96-98 | 1-3 | 0.0 ppm | Loose, brown and gray, fine to coarse SAND, little Silt, trace Gravel, wet. | | | | |
| 98 | | | | 6-7 | | | | | | |
| 99 | 50 | 24/15 | 98-100 | 3-3 | 0.0 ppm | Medium dense, brown and gray, fine to coarse SAND, little Silt, trace Gravel, wet. | | | | |
| | | | | 12-17 | | | | | | |
| REMARKS | 8. Temporary well set at 75.0 to 80.0 feet below ground surface. Purged 80.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | 9. Temporary well set at 85.0 to 90.0 feet below ground surface. Purged 55.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | 10. Temporary well set at 95.0 to 100.0 feet below ground surface. Purged 85.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |
| Boring No.: HS-MW-12D | | | | | | | | | | |

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/19/20



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House Street
Belmont, Michigan

Boring No.: HS-MW-12D

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File No.: 16.0062335.52

Check: JTM/JMG

| Sample Information | | | | | | | | Check: JTM/JMG | | |
|---|---|------------------|-------------|----------------|---------|--|---------------|-----------------------|---------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 101 | 51 | 24/5 | 100-102 | 1-4 4-8 | 0.0 ppm | Loose, brown and gray, fine to coarse SAND, little Silt, little Gravel, wet. | SAND | 11 | | |
| 102 | 52 | 24/12 | 102-104 | 3-10 15-15 | 0.0 ppm | Medium dense, brown, fine to coarse SAND, little Silt, little Gravel, wet. | | | | |
| 103 | | | | | | | | | | |
| 104 | 53 | 24/14 | 104-106 | 2-5 10-19 | 0.0 ppm | Medium dense, brown, fine to coarse SAND, little Silt, little Gravel, wet. | | | | |
| 105 | | | | | | | | | | |
| 106 | 54 | 24/8 | 106-108 | 1-3 3-11 | 0.0 ppm | Loose, brown, fine to coarse SAND, little Silt, wet. | | 12 | | |
| 107 | | | | | | | | | | |
| 108 | 55 | 24/16 | 108-110 | 1-2 5-12 | 0.0 ppm | Loose, brown, fine to coarse SAND, little Silt, wet. Changing at 108.4 feet to: Brown, fine to medium SAND, little Silt, wet. | | | | |
| 109 | | | | | | | | | | |
| 110 | 56 | 24/15 | 110-112 | 1-3 3-9 | 0.0 ppm | Loose, brown, fine to medium SAND, little Silt, wet. | | | | |
| 111 | | | | | | | | 13 | | |
| 112 | 57 | 24/16 | 112-114 | 1-12 20-24 | 0.0 ppm | Dense, brown, fine to medium SAND, little Silt, wet. | | | | |
| 113 | | | | | | | | | | |
| 114 | 58 | 24/13 | 114-116 | 1-5 11-16 | 0.0 ppm | Medium dense, brown, fine to medium SAND, little Silt, trace Gravel, wet. | | | | |
| 115 | | | | | | | | | | |
| 116 | 60 | 24/23 | 116-118 | 3-14 25-38 | 0.0 ppm | Dense, brown, fine to medium SAND, little Silt, trace Gravel, wet. Changing at 117.8 feet to: Brown, fine to coarse SAND, some Gravel, little Silt, wet. | | | | |
| 117 | | | | | | | | | | |
| 118 | 61 | 24/9 | 118-120 | 12-19 17-17 | 0.0 ppm | Dense, brown, fine to coarse SAND, some Silt, little Gravel, wet. | | | | |
| 119 | | | | | | | | | | |
| 120 | 62 | 24/8 | 120-122 | 3-5 13-15 | 0.0 ppm | Medium dense, brown, fine to coarse SAND, little Silt, little Gravel, wet. | | | | |
| 121 | | | | | | | | | | |
| 122 | 63 | 24/12 | 122-124 | 5-9 14-22 | 0.0 ppm | Medium dense, brown, fine to coarse SAND, little Silt, little Gravel, wet. | | | | |
| 123 | | | | | | | | | | |
| 124 | 64 | 24/14 | 124-126 | 6-15 23-26 | 0.0 ppm | Dense, brown, fine to coarse SAND, some Gravel, little Silt, wet. | | | | |
| 125 | | | | | | | | | | |
| 126 | 65 | 24/7 | 126-128 | 7-17 24-16 | 0.0 ppm | Dense, brown, fine to coarse SAND, some Gravel, little Siilt, wet. | | | | |
| 127 | | | | | | | | | | |
| 128 | 66 | 24/9 | 128-130 | 7-18 45-41 | 0.0 ppm | Very dense, brown, fine to coarse SAND, some Gravel, little Siilt, wet. | | | | |
| 129 | | | | | | | | | | |
| 130 | 67 | 12/12 | 130-131 | 17-50/6" | 0.0 ppm | Very dense, brown, fine to coarse SAND, some Gravel, little Siilt, wet. | | | | |
| 131 | | | | | | | | | | |
| 132 | 68 | 24/9 | 132-134 | 30-33 14-10 | 0.0 ppm | Dense, brown, fine to coarse SAND, some Gravel, little Silt, wet. | | | | |
| 133 | | | | | | | | | | |
| 134 | 70 | 24/20 | 134-136 | 15-30 | 0.0 ppm | Very dense, brown, fine to coarse SAND, | | | | |
| 135 | | | | | | | | | | |
| REMARKS | 11. Temporary well set at 105.0 to 110.0 feet below ground surface. Purged 65.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | 12. Temporary well set at 115.0 to 120.0 feet below ground surface. Purged 100.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | 13. Temporary well set at 125.0 to 130.0 feet below ground surface. Purged 65.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | 14. Temporary well set at 135.0 to 140.0 feet below ground surface. Purged - gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | Boring No.: HS-MW-12D | | |

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House Street


Belmont, Michigan

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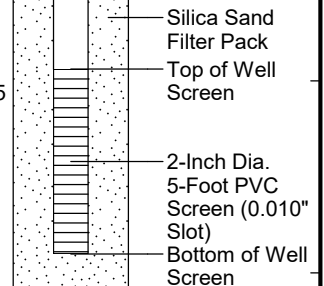
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Check: JTM/JMG

| Sample Information | | | | | | | | Check: JTM/JMG | | |
|---|--|------------------|-------------|------------------|---------|---|---------------|----------------|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 136 | 71 | 24/9 | 136-138 | 30-21 | 0.0 ppm | some Gravel, little Silt, wet. | SAND | 14 |  | |
| 137 | | | | 18-23 21-20 | | Dense, brown, fine to coarse SAND, some Gravel, little Silt, wet. | | | | |
| 138 | 72 | 24/13 | 138-140 | 10-15 | 0.0 ppm | Dense, brown, fine to coarse SAND, some Gravel, little Silt, wet. | | | | |
| 139 | | | | 16-17 | | | | | | |
| 140 | 73 | 17/9 | 140-141.4 | 1-39-50/50 | 0.0 ppm | Very dense, brown, fine to coarse SAND, some Gravel, little Silt, wet. | | | | |
| 141 | | | | | | | | | | |
| 142 | 74 | 17/12 | 142-143.4 | 1-34-50/50 | 0.0 ppm | Very dense, brown, fine to coarse SAND, some Gravel, little Silt, wet. Changing at 142.6 feet to: Brown, fine SAND, some Silt, wet. | | | | |
| 143 | | | | | | | | | | |
| 144 | 75 | 12/12 | 144-145 | 10-50/6" | 0.0 ppm | Very dense, brown, fine SAND, some Silt, trace Gravel, wet. | | | | |
| 145 | | | | | | | | | | |
| 146 | 76 | 18/7 | 146-147.54 | 15-50/6" | 0.0 ppm | Very dense, brown, fine SAND, some Silt, trace Gravel, wet. | | | | |
| 147 | | | | | | | | | | |
| 148 | 77 | 10/2 | 148-148.8 | 20-50/4" | 0.0 ppm | Very dense, brown, fine to medium SAND, little Silt, wet. | | | | |
| 149 | | | | | | | | | | |
| 150 | 78 | 6/6 | 150-150.5 | 50/6" | 0.0 ppm | Very dense, brown, fine to medium SAND, little Silt, wet. | | | | |
| 151 | | | | | | | | | | |
| 152 | 79 | 12/10 | 152-153 | 6-50/6" | 0.0 ppm | Very dense, brown, fine to medium SAND, little Silt, wet. | | | | |
| 153 | | | | | | | | | | |
| 154 | 80 | 11/11 | 154-154.9 | 29-50/5" | 0.0 ppm | Very dense, brown, fine SAND, little Silt, wet. | | 15 | | |
| 155 | | | | | | | | | | |
| 156 | 81 | 11/11 | 156-156.9 | 19-50/5" | 0.0 ppm | Very dense, brown, fine to medium SAND, little Silt, trace Gravel, wet. | | | | |
| 157 | | | | | | | | | | |
| 158 | 82 | 12/11 | 158-159 | 27-50/6" | 0.0 ppm | Very dense, brown, fine to medium SAND, little Silt, trace Gravel, wet. | | | | |
| 159 | | | | | | | | | | |
| 160 | 83 | 18/18 | 160-161.55 | 19-50/6" | 0.0 ppm | Very dense, brown, fine to medium SAND, little Silt, trace Gravel, wet. | | | | |
| 161 | | | | | | | | | | |
| 162 | 84 | 24/20 | 162-164 | 2-8 14-14 | 0.0 ppm | Medium dense, brown, fine to medium SAND, little Silt, wet. | | | | |
| 163 | | | | | | | | | | |
| 164 | 85 | 12/12 | 164-165 | 15-50/6" | 0.0 ppm | Very dense, brown, fine to medium SAND, little Silt, wet. | | | | |
| 165 | | | | | | | | | | |
| 166 | 86 | 23/14 | 166-167.9 | 3-10 30-50/5" | 0.0 ppm | Dense, brown, fine to medium SAND, little Silt, wet. | | 16 | | |
| 167 | | | | | | | | | | |
| 168 | 87 | 23/2 | 168-169.9 | 3-13 37-50/5" | 0.0 ppm | Very dense, brown, fine to medium SAND, little Silt, wet. | | | | |
| 169 | | | | | | | | | | |
| REMARKS | 15. Temporary well set at 155.0 to 160.0 feet below ground surface. Purged 55.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | 16. Temporary well set at 165.0 to 170.0 feet below ground surface. Purged 75.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-12D | |

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Belmont, Michigan

Boring No.: HS-MW-12D

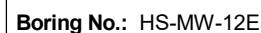
Page: 6 of 6

File No.: 16.0062335.52

Check: JTM/JMG

| Sample Information | | | | | | Check: JTM/JMG | | | |
|---|--|------------------|-------------|----------------|---------|--|--------------------------------------|---------|---------------------|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
| | | | | | | | | | |
| 171 | 88 | 18/14 | 170-171.5 | 16-50/6" | 0.0 ppm | Very dense, brown, fine to medium SAND, little Silt, wet. | SAND | 17 | |
| 172 | 90 | 12/12 | 172-173 | 11-22 | 0.0 ppm | Very dense, brown, fine to medium SAND, little Silt, wet. | | | |
| 173 | | | | | | | | | |
| 174 | 91 | 14/14 | 174-175.2 | 26-49-50/20" | 0.0 ppm | Very dense, brown, fine to medium SAND, little Silt, with small, interbedded Silty Clay layers, wet. | | | |
| 175 | | | | | | | | | |
| 176 | 92 | 12/12 | 176-177 | 16-50/6" | 0.0 ppm | Very dense, brown, fine SAND, some Silt, wet. | | | |
| 177 | | | | | | | | | |
| 178 | 93 | 18/18 | 178-179.5 | 20-27-50/60" | 0.0 ppm | Very dense, brown, fine to medium SAND, little Silt, wet. Changing at 178.9 feet to: Brown, fine SAND, some Silt, wet. | | | |
| 179 | | | | | | | | | |
| 180 | 94 | 16/14 | 180-181.3 | 36-24-50/4" | 0.0 ppm | Very dense, brown, fine to medium SAND, little Silt, wet. | | | |
| 181 | | | | | | | | | |
| 182 | 95 | 21/21 | 182-183.8 | 12-23 44-50/3" | 0.0 ppm | Very dense, brown, fine to medium SAND, little Silt, wet. | | 18 | |
| 183 | | | | | | | | | |
| 184 | 96 | 10/10 | 184-184.8 | 29-50/4" | 0.0 ppm | Hard, gray, Silty CLAY, some fine to medium Sand, wet. Changing at 184.2 feet to: Brown and gray, fine to medium SAND, little Silt, wet. | 184' 184.2' Silty CLAY SAND | | |
| 185 | | | | | | | | | |
| 186 | 97 | 17/17 | 186-187.4 | 8-29-50/50" | 0.0 ppm | Very dense, brown and gray, fine to medium SAND, some Silt, wet. | | | |
| 187 | | | | | | | | | |
| 188 | 98 | 24/24 | 188-190 | 9-34 44-40 | 0.0 ppm | Very dense, brown and gray, fine to medium SAND, some Silt, wet. Changing at 189.0 feet to: Gray, Silty CLAY, little fine Sand, wet. | 189' Silty CLAY | | |
| 189 | | | | | | | | | |
| 190 | 99 | 24/24 | 190-192.1 | 50-21-29-42" | 0.0 ppm | Hard, gray, Silty CLAY, some fine to medium Sand, wet. Changing at 190.5 feet to: Brown and gray, fine to medium SAND, some Silt, wet. | 190.5' SAND | | |
| 191 | | | | | | | | | |
| 192 | 100 | 17/17 | 192-193.4 | 8-30-50/50" | 0.0 ppm | Hard, gray, Silty CLAY, little fine Sand, dry (weathered Bedrock). | 192' Silty CLAY | 19 | |
| 193 | | | | | | | | | |
| 194 | | | | | | Bottom of Borehole at 194.0 Feet | 194' | | |
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| REMARKS | 17. Temporary well set at 175.0 to 180.0 feet below ground surface. Purged 70.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | |
| | 18. Temporary well set at 185.0 to 190.0 feet below ground surface. Purged 60.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | |
| | 19. Monitoring well was installed in borehole upon completion. Well screen set from 154.7 to 159.5 feet below ground surface. | | | | | | | | |
| | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |
| Boring No.: HS-MW-12D | | | | | | | | | |

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/19/20





GZA
GeoEnvironmental, Inc.
Engineers and Scientists

Wolverine World Wide, Inc.

House Street

Belmont, Michigan

Boring No.: HS-MW-12E

Page: 2 of 6

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

Boring No.: HS-MW-12E

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/20/20



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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|----------------|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
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| REMARKS | | | | | | | | | | |

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-12E

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/20/20



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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|--|
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

Bentonite/Grout

Boring No.: HS-MW-12E

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/20/20



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Boring No.: HS-MW-12E

Page: 5 of 6

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

Boring No.: HS-MW-12E

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/20/20



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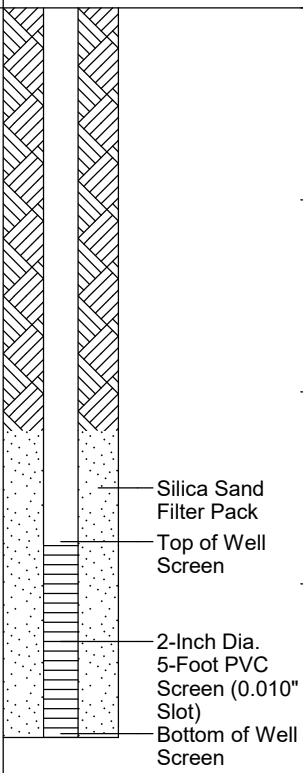
Belmont, Michigan

Boring No.: HS-MW-12E

Page: 6 of 6

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|----------------|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | |
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| REMARKS | | | | | | | | | |

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-12E

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/20/20



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House Street

Belmont, Michigan

Boring No.: HS-MW-13A

Page: 1 of 2

File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 1-14-20 / 1-14-20

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|---|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See HS-MW-13C for detailed soil descriptions. | | | | |
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Bentonite/Grout

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-13A

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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Boring No.: HS-MW-13A

Page: 2 of 2

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|-------|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
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| 85 | | | | | | Bottom of Borehole at 84.5 Feet | | 1 | |
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REMARKS

1. Monitoring well HS-MW-13A was installed in borehole upon completion. Well screen set from approximately 79.2 to 84.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-13A

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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House Street

Belmont, Michigan

Boring No.: HS-MW-13B

Page: 1 of 4

File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 1-13-20 / 1-14-20

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
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Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|---|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See HS-MW-13C for detailed soil descriptions. | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-13B

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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Boring No.: HS-MW-13B

Page: 2 of 4

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-13B | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20

Bentonite/Grout



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Boring No.: HS-MW-13B

Page: 3 of 4

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 87 | | | | | | | | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20

Boring No.: HS-MW-13B



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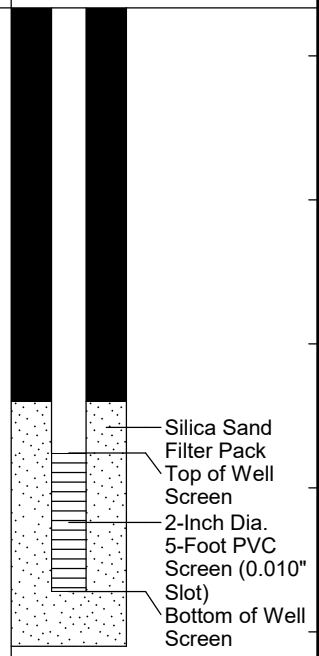
Boring No.: HS-MW-13B

Page: 4 of 4

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|-----------------------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 134 | | | | | | | | | |
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| 156 | | | | | | Bottom of Borehole at 155.5 Feet | | 1 | |
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| 179 | | | | | | | | | |
| <div>REMARKS</div> <div>1. Monitoring well HS-MW-13B was installed in borehole upon completion. Well screen set from approximately 148.8 to 153.6 feet below ground surface.</div> | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | Boring No.: HS-MW-13B | |



BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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Boring No.: HS-MW-13C

Page: 1 of 12

File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 12-16-19 / 12-17-19

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|--------------|-----------|--|---|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/11 | 0-2 | 1-2 2-1 | | Dark brown to dark yellowish brown, fine SAND, some Silt, moist. Changing at 0.2 feet to: Yellowish brown, fine SAND, some Silt, moist. Changing at 0.9 feet to: NO RECOVERY. | SAND 0.9' NO RECOVERY | | | |
| 2 | 2 | 24/1 | 2-4 | 4-2 3-6 | | Yellowish brown, fine SAND, little Silt, moist. Changing at 2.1 feet to: NO RECOVERY. | 2' 2.1' SAND NO RECOVERY | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/11 | 4-6 | 2-4 5-7 | | Light yellowish brown, fine SAND, trace Silt, moist. Changing at 4.9 feet to: NO RECOVERY. | 4' SAND 4.9' NO RECOVERY | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/13 | 6-8 | 5-6 7-8 | | Dark yellowish brown, fine to medium SAND, trace Silt, moist. Changing at 6.7 feet to: Dark yellowish brown, SILT, thin seams of Silty Clay, moist. Changing at 6.9 feet to: Dark yellowish brown, fine to medium SAND, trace Silt, moist. Changing at 7.1 feet to: NO RECOVERY. | 6' SAND 6.7' 6.9' SILT 7.1' SAND NO RECOVERY | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/16 | 8-10 | 6-4 5-6 | | Dark yellowish brown, fine to medium SAND, trace Silt, moist. Changing at 9.3 feet to: NO RECOVERY. | 8' SAND 9.3' NO RECOVERY | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/12 | 10-12 | 4-8 8-10 | | Dark yellowish brown, fine SAND, some Silt, moist. Changing at 10.5 feet to: Yellowish brown, SILT, moist. Changing at 11.6 feet to: Pale brown, fine SAND, trace Silt, moist. Changing at 11.8 feet to: NO RECOVERY. | 10' SAND 10.5' SILT 11.6' SAND 11.8' NO RECOVERY | | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/17 | 12-14 | 6-8 9-11 | | Pale brown, fine SAND, trace Silt, moist. Changing at 13.4 feet to: NO RECOVERY. | 12' NO RECOVERY SAND 13.4' NO RECOVERY | | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/14 | 14-16 | 5-8 10-12 | | Pale brown, fine SAND, trace Silt, moist. Changing at 15.2 feet to: NO RECOVERY. | 14' SAND | | | |

REMARKS

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Boring No.: HS-MW-13C

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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Boring No.: HS-MW-13C

Page: 2 of 12

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|---|-------------------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 16 | 9 | 24/12 | 16-18 | 3-7 7-6 | | Pale brown, fine SAND, trace Silt, moist. Changing at 17.0 feet to: NO RECOVERY. | 15.2' NO RECOVERY 16' SAND | | | |
| 17 | | | | | | | 17' NO RECOVERY | | | |
| 18 | 10 | 24/17 | 18-20 | 5-6 9-10 | | Pale brown, fine SAND, trace Silt, moist. Changing at 18.5 feet to: Pale brown, fine SAND, trace Silt, very thin lenses of Silt, moist. Changing at 19.4 feet to: NO RECOVERY. | 18' SAND | | | |
| 19 | | | | | | | 19.4' NO RECOVERY | | | |
| 20 | 11 | 24/17 | 20-22 | 7-9 11-11 | | Pale brown, fine SAND, trace Silt, moist. Changing at 21.2 feet to: Yellowish brown, fine to medium SAND, trace Silt, moist. Changing at 21.4 feet to: NO RECOVERY. | 20' SAND | | | |
| 21 | | | | | | | 21.4' NO RECOVERY | | | |
| 22 | 12 | 24/18 | 22-24 | 5-8 11-14 | | Yellowish brown, fine SAND, trace Silt, moist. Changing at 23.5 feet to: NO RECOVERY. | 22' SAND | | | |
| 23 | | | | | | | 23.5' NO RECOVERY | | | |
| 24 | 13 | 24/18 | 24-26 | 13-14 12-18 | | Yellowish brown, fine SAND, trace Silt, grading to fine to medium SAND, trace Silt, moist. Changing at 25.5 feet to: NO RECOVERY. | 24' SAND | | | |
| 25 | | | | | | | 25.5' NO RECOVERY | | | |
| 26 | 14 | 24/19 | 26-28 | 6-15 17-18 | | Yellowish brown, fine to medium SAND, trace Silt, moist. Changing at 27.6 feet to: NO RECOVERY. | 26' SAND | | | |
| 27 | | | | | | | 27.6' NO RECOVERY | | | |
| 28 | 15 | 24/16 | 28-30 | 10-22 27-34 | | Yellowish brown, fine to medium SAND, trace Silt, moist. Changing at 28.6 feet to: Yellowish brown, SILT, some fine Sand, moist. Changing at 29.3 feet to: NO RECOVERY. | 28' SAND 28.6' SILT | | | |
| 29 | | | | | | | 29.3' NO RECOVERY | | | |
| 30 | 16 | 24/20 | 30-32 | 15-20 19-20 | | Brownish yellow, fine to medium SAND, trace Silt, moist. Changing at 30.3 feet to: Light yellowish brown, fine SAND, trace Silt, moist. Changing at 31.3 feet to: Brownish yellow, fine to medium SAND, trace Silt, moist. Changing at 31.7 feet to: NO RECOVERY. | 30' SAND | | | |
| 31 | | | | | | | 31.7' NO RECOVERY | | | |
| 32 | 17 | 24/20 | 32-34 | 11-14 17-20 | | Brownish yellow, fine to medium SAND, | 32' SAND | | | |
| REMARKS | | | | | | | | | | |
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File No.: 16.0062335.52

Check: JTM/JMG

| Sample Information | | | | | | Dumont, Michigan | | Check: | JTM/JMG | | | | |
|---|-----|------------------|-------------|----------------|-----------|--|--|---------|---------------------|--|-----------------------|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | | | |
| | | | | | | | | | | | | | |
| 33 | 18 | 24/23 | 34-36 | 13-17 20-24 | | trace Silt, moist. Changing at 33.2 feet to: Yellowish brown, fine to medium SAND, trace Silt, moist. Changing at 33.5 feet to: Brownish yellow, fine to medium SAND, trace Silt, moist. Changing at 33.7 feet to: NO RECOVERY. | SAND | | | | | | |
| 34 | | | | | | Brownish yellow, fine SAND, trace Silt, moist. Changing at 35.9 feet to: NO RECOVERY. | 33.7' 34' NO RECOVERY SAND | | | | | | |
| 35 | | | | | | | | | | | | | |
| 36 | 19 | 24/20 | 36-38 | 9-18 22-27 | | Brownish yellow, fine SAND, trace Silt, moist. Changing at 36.7 to: Yellowish brown, fine to medium SAND, trace Silt, moist. Changing at 36.8 feet to: Yellowish brown, SILT, moist. Changing at 37.7 feet to: NO RECOVERY. | 35.9' 36' NO RECOVERY SAND | | | | | | |
| 37 | | | | | | | 36.8' SILT | | | | | | |
| 38 | | | | | | | 37.7' 38' NO RECOVERY SAND | | | | | | |
| 39 | 20 | 24/22 | 38-40 | 10-10 14-15 | | Brownish yellow, fine SAND, trace Silt, moist. Changing at 38.5 feet to: Yellowish brown, fine SAND, some Silt, moist. Changing at 38.8 feet to: Yellowish brown, SILT, moist. Changing at 39.7 feet to: Yellowish brown, fine SAND, trace Silt, moist. Changing at 39.8 feet to: NO RECOVERY. | 38.8' SILT | | | | | | |
| 40 | | | | | | Dark yellowish brown, medium to coarse SAND, trace Silt, moist. Changing at 41.8 feet to: NO RECOVERY. | 39.7' 39.8' SAND 40' NO RECOVERY SAND | | | | | | |
| 41 | | | | | | | | | | | | | |
| 42 | 22 | 24/16 | 42-44 | 11-22 23-21 | | Dark yellowish brown, medium to coarse SAND, trace Silt, moist. Changing at 42.7 feet to: Yellowish brown, fine SAND, trace Silt, moist. Changing at 43.0 feet to: Yellowish brown, fine SAND, trace Silt, thin lenses of coarse SAND, moist. Changing at 43.3 feet to: NO RECOVERY. | 41.8' 42' NO RECOVERY SAND | | | | | | |
| 43 | | | | | | Yellowish brown, fine SAND, some Silt, moist. Changing at 45.4 feet to: NO RECOVERY. | 43.3' NO RECOVERY | | | | | | |
| 44 | | | | | | | 44' SAND | | | | | | |
| 45 | 24 | 24/17 | 44-46 | 9-20 22-23 | | Yellowish brown, fine SAND, some Silt, moist. Changing at 45.4 feet to: NO RECOVERY. | 45.4' NO RECOVERY | | | | | | |
| 46 | | | | | | | 46' SAND | | | | | | |
| 47 | | | | | | | 47.3' NO RECOVERY | | | | | | |
| 48 | 25 | 18/18 | 48-49.5 | 11-18 20-18 | | Yellowish brown, fine to medium SAND, trace Gravel, trace Silt, moist. Changing at 48.9 feet to: Dark yellowish brown, coarse SAND, trace Silt, moist. Changing at 49.0 feet to: Yellowish brown, fine to medium SAND, trace Gravel, trace Silt, moist. | 48' SAND | | | | | | |
| 49 | | | | | | | 49.6' NO | | | | | | |
| | | | | | | | 50' | | | | | | |
| REMARKS | | | | | | | | | | | | | |
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Page: 4 of 12

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|--|--|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (6") | Test Data | | | | | |
| 51 | 26 | 24/16 | 50-52 | 11-12 12-11 | | Changing at 49.2 feet to: Dark yellowish brown, coarse SAND, trace Silt, moist. Changing at 49.3 feet to: Yellowish brown, fine to medium SAND, trace Gravel, trace Silt, moist. Changing at 49.6 feet to: NO RECOVERY. | RECOVERY SAND 51.1' 51.3' SILT NO RECOVERY | | | |
| 52 | 27 | 24/16 | 52-54 | 6-5 6-6 | | Yellowish brown, fine to medium SAND, trace Gravel, trace Silt, moist. Changing at 50.6 feet to: Yellowish brown, fine to medium SAND, trace Silt, moist. Changing at 51.1 feet to: Yellowish brown, SILT, moist. Changing at 51.3 feet to: NO RECOVERY. | 52' SAND 53.3' NO RECOVERY | | | |
| 53 | | | | | | | | | | |
| 54 | 28 | 24/7 | 54-56 | 3-4 8-15 | | Yellowish brown, fine SAND, trace Silt, wet. Changing at 52.6 feet to: Dark yellowish brown, fine to medium SAND, trace Gravel, trace Silt, wet. Changing at 53.3 feet to: NO RECOVERY. | 54' SAND 54.6' NO RECOVERY | | | |
| 55 | | | | | | | | | | |
| 56 | 29 | 24/17 | 56-58 | 6-10 10-14 | | Dark yellowish brown, fine to medium SAND, trace Gravel, trace Silt, wet. Changing at 54.6 feet to: NO RECOVERY. Dark yellowish brown, fine to coarse SAND, trace Gravel, trace Silt, wet. Changing at 57.4 feet to: NO RECOVERY. | 56' SAND 57.4' NO RECOVERY | | | |
| 57 | | | | | | | | | | |
| 58 | 30 | 24/12 | 58-60 | 2-5 9-9 | | Dark yellowish brown, fine to coarse SAND, trace Gravel, trace Silt, wet. Changing at 59.0 feet to: No RECOVERY. | 58' SAND 59' NO RECOVERY | 1 | | |
| 59 | | | | | | | | | | |
| 60 | 31 | 24/1 | 60-62 | 1-3 8-10 | | Yellowish brown, fine SAND, trace Silt, moist. Changing at 60.1 feet to: NO RECOVERY. | 60' SAND 60.1' NO RECOVERY | | | |
| 61 | | | | | | | | | | |
| 62 | 32 | 24/16 | 62-64 | 3-5 17-16 | | Dark yellowish brown, Silty CLAY, moist. Changing at 62.1 feet to: Dark yellowish brown, fine to coarse SAND, trace Gravel, trace Silt, wet. Changing at 62.3 feet to: Dark yellowish brown, Silty CLAY, moist. Changing at 63.2 feet to: Dark yellowish brown to dark brown, coarse SAND, trace Silt, wet. Changing at 63.3 feet to: NO RECOVERY. | 62' Silty CLAY 63.2' 63.3' SAND NO RECOVERY | 2 | | |
| 63 | | | | | | | | | | |
| 64 | 33 | 24/14 | 64-66 | 2-6 10-13 | | Dark yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 64.4 feet to: Dark yellowish brown, fine to coarse SAND, trace Gravel, trace Silt, wet. Changing at 65.2 feet to: NO RECOVERY. Yellowish brown, fine to coarse SAND, some Gravel, trace Silt, wet. Changing at 66.9 feet to: NO RECOVERY. | 64' SAND 65.2' NO RECOVERY 66' SAND 66.9' NO RECOVERY | | | |
| 65 | | | | | | | | | | |
| 66 | 34 | 24/11 | 66-68 | 4-10 10-12 | | | | | | |
| 67 | | | | | | | | | | |
| REMARKS 1. Temporary well set at 59.0 to 64.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. 2. Groundwater was encountered at approximately 62.1 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-13C | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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| Sample Information | | | | | | Demont, Michigan | Check: | JTM/JMG | | |
|---|--|------------------|-------------|----------------|-----------|--|---------------|---------|---------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 68 | 35 | 24/19 | 68-70 | 14-16 13-14 | | Yellowish brown, fine to medium SAND, trace Gravel, trace Silt, wet. Changing at 68.2 feet to: Dark yellowish brown, coarse SAND, trace Silt, wet. Changing at 68.3 feet to: Yellowish brown, fine to medium SAND, trace Gravel, trace Silt, wet. Changing at 69.2 feet to: Dark yellowish brown, Silty CLAY, trace Gravel, moist. Changing at 69.3 feet to: Yellowish brown, fine to medium SAND, trace Gravel, trace Silt, wet. Changing at 69.6 feet to: NO RECOVERY. Dark yellowish brown, GRAVEL, some fine to coarse Sand, trace Silt, wet. Changing at 70.8 feet to: NO RECOVERY. Yellowish brown, fine to medium SAND, trace Gravel, trace Silt, wet. Changing at 72.7 feet to: NO RECOVERY. | 68' | 3 | | |
| | | | | | | | SAND | | | |
| 69 | | 69.2' | | | | | | | | |
| | Silty CLAY | 69.3' | | | | | | | | |
| | SAND | 69.6' | | | | | | | | |
| 70 | 36 | 24/10 | 70-72 | 3-7 12-12 | | 70' | NO RECOVERY | | | |
| | | | | | | | GRAVEL | | | |
| 71 | | 70.8' | | NO RECOVERY | | | | | | |
| | | | | | | | | | | |
| 72 | 37 | 24/8 | 72-74 | 5-8 16-17 | | 72' | SAND | | | |
| | | | | | | | | | | |
| 73 | | 72.7' | | NO RECOVERY | | | | | | |
| | | | | | | | | | | |
| 74 | 38 | 24/16 | 74-76 | 3-12 19-21 | | 74' | SAND | | | |
| | | | | | | | | | | |
| 75 | | 74.6' | | SILT | | | | | | |
| | | 75.3' | | NO RECOVERY | | | | | | |
| 76 | 39 | 24/19 | 76-78 | 14-16 22-26 | | 76' | SAND | | | |
| | | | | | | | | | | |
| 77 | | 76.7' | | SILT | | | | | | |
| | | 77.4' | | | | | | | | |
| 78 | 40 | 24/6 | 78-80 | 7-9 15-19 | | 77.6' | SAND | | | |
| | | | | | | | | | | |
| 79 | | 78' | | NO RECOVERY | | | | | | |
| | | 78.5' | | SAND | | | | | | |
| | | | | NO RECOVERY | | | | | | |
| 80 | 41 | 24/12 | 80-82 | 0-0 9-20 | | 80' | SAND | | | |
| | | | | | | | | | | |
| 81 | | 81' | | NO RECOVERY | | | | | | |
| 82 | 42 | 24/18 | 82-84 | 2-8 16-22 | | 82' | SAND | | | |
| | | | | | | | | | | |
| 83 | | | | | | 83.5' | NO RECOVERY | | | |
| 84 | 43 | 24/6 | 84-86 | 7-13 15-18 | | 84' | SAND | | | |
| | | | | | | | | | | |
| | | 84.5' | | NO RECOVERY | | | | | | |
| REMARKS | 3. Temporary well set at 69.0 to 74.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | 4. Temporary well set at 79.0 to 84.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |
| Boring No.: HS-MW-13C | | | | | | | | | | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20

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| Sample Information | | | | | | | | Check: | JTM/JMG | |
|--------------------|---|------------------|-------------|------------------|-----------|---|-------------------------------------|---------|-----------------------|-----------------|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 86 | 44 | 24/7 | 86-88 | 5-10 19-28 | | Dark yellowish brown, fine to coarse SAND, some Gravel, trace Silt, wet. Changing at 86.6 feet to: NO RECOVERY. | NO RECOVERY 86' SAND 86.6' | 5 | | |
| 87 | | | | | | | NO RECOVERY | | | |
| 88 | 45 | 24/19 | 88-90 | 11-20 30-45 | | Dark yellowish brown to yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 89.6 feet to: NO RECOVERY. | 88' SAND 89.6' | | | |
| 89 | | | | | | | NO RECOVERY | | | |
| 90 | 46 | 24/17 | 90-92 | 2-11 23-43 | | Dark yellowish brown to yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 91.4 feet to: NO RECOVERY. | 90' NO RECOVERY SAND 91.4' | | | |
| 91 | | | | | | | NO RECOVERY | | | |
| 92 | 47 | 24/18 | 92-94 | 0-1 6-11 | | Dark yellowish brown to yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 93.5 feet to: NO RECOVERY. | 92' SAND 93.5' | | | |
| 93 | | | | | | | NO RECOVERY | | | |
| 94 | 48 | 24/5 | 94-96 | 4-8 16-24 | | Dark yellowish brown to yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 94.4 feet to: NO RECOVERY. | 94' NO RECOVERY SAND 94.4' | | | |
| 95 | | | | | | | NO RECOVERY | | | |
| 96 | 49 | 24/7 | 96-98 | 4-13 19-31 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 96.6 feet to: NO RECOVERY. | 96' SAND 96.6' | 6 | | Bentonite/Grout |
| 97 | | | | | | | NO RECOVERY | | | |
| 98 | 50 | 24/8 | 98-100 | 2-7 15-22 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 98.7 feet to: NO RECOVERY. | 98' SAND 98.7' | | | |
| 99 | | | | | | | NO RECOVERY | | | |
| 100 | 51 | 24/12 | 100-102 | 9-15 25-38 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 101.0 feet to: NO RECOVERY. | 100' SAND 101' | | | |
| 101 | | | | | | | NO RECOVERY | | | |
| 102 | 52 | 24/0 | 102-104 | 7-24 39-50/4" | | NO RECOVERY. | | | | |
| REMARKS | 5. Temporary well set at 89.0 to 94.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. 6. Temporary well set at 99.0 to 104.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |
| | | | | | | | | | Boring No.: HS-MW-13C | |

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------------|-----------|--|------------------------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 103 | | | | | | | NO RECOVERY | | | |
| 104 | 53 | 24/12 | 104-106 | 11-23 32-45 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 105.0 feet to: NO RECOVERY. | 104' SAND | | | |
| 105 | | | | | | | 105' NO RECOVERY | | | |
| 106 | 54 | 24/16 | 106-108 | 5-18 37-50/5" | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 107.3 feet to: NO RECOVERY. | 106' SAND | | | |
| 107 | | | | | | | 107.3' NO RECOVERY | | | |
| 108 | 55 | 24/12 | 108-110 | 4-18 48-50/3" | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 109.0 feet to: NO RECOVERY. | 108' SAND | | | |
| 109 | | | | | | | 109' NO RECOVERY | 7 | | |
| 110 | 56 | 24/2 | 110-112 | 10-22 36-50/5" | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 110.2 feet to: NO RECOVERY. | 110' 110.2' SAND NO RECOVERY | | | |
| 111 | | | | | | | | | | |
| 112 | 57 | 24/14 | 112-114 | 13-27 41-50 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 113.2 feet to: NO RECOVERY. | 112' SAND | | | |
| 113 | | | | | | | 113.2' NO RECOVERY | | | |
| 114 | 58 | 24/20 | 114-116 | 12-27 35-50 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 115.7 feet to: NO RECOVERY. | 114' SAND | | | |
| 115 | | | | | | | | | | |
| 116 | 60 | 24/16 | 116-118 | 3-8 22-48 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 117.3 feet to: NO RECOVERY. | 115.7' 116' NO RECOVERY SAND | | | |
| 117 | | | | | | | 117.3' NO RECOVERY | | | |
| 118 | 61 | 24/0 | 118-120 | 5-9 16-27 | | NO RECOVERY. | | | | |
| 119 | | | | | | | | 8 | | |
| REMARKS 7. Temporary well set at 109.0 to 114.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. 8. Temporary well set at 119.0 to 124.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-13C | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|--|------------------------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (6") | Test Data | | | | | |
| 121 | 62 | 24/0 | 120-122 | 5-10 25-32 | | NO RECOVERY. | NO RECOVERY | | | |
| 122 | 63 | 24/2 | 122-124 | 5-11 18-25 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 122.2 feet to: NO RECOVERY. | 122' 122.2' SAND NO RECOVERY | | | |
| 124 | 64 | 24/0 | 124-126 | 5-12 21-25 | | NO RECOVERY. | | | | |
| 126 | 65 | 24/5 | 126-128 | 4-9 19-27 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 126.4 feet to: NO RECOVERY. | 126' 126.4' SAND NO RECOVERY | | | |
| 128 | 66 | 24/12 | 128-130 | 15-23 40-47 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 129.0 feet to: NO RECOVERY. | 128' SAND 129' NO RECOVERY | 9 | | |
| 130 | 67 | 24/5 | 130-132 | 7-9 19-33 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 130.4 feet to: NO RECOVERY. | 130' SAND 130.4' NO RECOVERY | | | |
| 132 | 68 | 24/6 | 132-134 | 3-9 22-43 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 133.1 feet to: NO RECOVERY. | 132' SAND 133.1' NO RECOVERY | | | |
| 134 | 70 | 24/0 | 134-136 | 2-4 14-25 | | NO RECOVERY. | | | | |
| 136 | 71 | 24/13 | 136-138 | 8-25 36-45 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 137.1 feet to: NO RECOVERY. | 136' SAND 137.1' | | | |
| REMARKS 9. Temporary well set at 129.0 to 134.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-13C | |

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| Benton, Michigan | | | | | | | | | | | Check: | | JTM/JMG | |
|-----------------------|---|------------------|-------------|-------------------|-----------|--|----------------------------|---------|---------------------|--|--------|--|---------|--|
| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | | | | |
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | | | | | |
| 138 | 72 | 24/13 | 138-140 | 6-5 7-11 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 139.1 feet to: NO RECOVERY. | NO 138'RECOVERY SAND | 10 | | | | | | |
| 139 | | | | | | | 139.1' NO RECOVERY | | | | | | | |
| 140 | 73 | 24/13 | 140-142 | 1-4 9-17 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 141.1 feet to: NO RECOVERY. | 140' SAND | | | | | | | |
| 141 | | | | | | | 141.1' NO RECOVERY | | | | | | | |
| 142 | 74 | 24/0 | 142-144 | 2-8 18-26 | | NO RECOVERY. | | | | | | | | |
| 143 | | | | | | | | | | | | | | |
| 144 | 75 | 24/13 | 144-146 | 1-6 13-28 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 145.1 feet to: NO RECOVERY. | 144' SAND | | | | | | | |
| 145 | | | | | | | 145.1' NO RECOVERY | | | | | | | |
| 146 | 76 | 24/17 | 146-148 | 7-13 32-50 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 174.4 feet to: NO RECOVERY. | 146' SAND | | | | | | | |
| 147 | | | | | | | 147.4' NO RECOVERY | | | | | | | |
| 148 | 77 | 24/14 | 148-150 | 6-15 28-50 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 149.2 feet to: NO RECOVERY. | 148' SAND | 11 | | | | | | |
| 149 | | | | | | | 149.2' NO RECOVERY | | | | | | | |
| 150 | 78 | 24/7 | 150-152 | 6-15 25-44 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 150.6 feet to: NO RECOVERY. | 150' SAND | | | | | | | |
| 151 | | | | | | | 150.6' NO RECOVERY | | | | | | | |
| 152 | 79 | 24/11 | 152-154 | 14-28 63-50/4" | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 152.9 feet to: NO RECOVERY. | 152' SAND | | | | | | | |
| 153 | | | | | | | 152.9' NO RECOVERY | | | | | | | |
| 154 | 80 | 24/6 | 154-156 | 8-19 32-50 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 154.5 feet to: NO RECOVERY. | 154' SAND | | | | | | | |
| | | | | | | | 154.5' NO RECOVERY | | | | | | | |
| REMARKS | 10. Temporary well set at 139.0 to 144.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. 11. Temporary well set at 149.0 to 154.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | | | | |
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| Sample Information | | | | | | Check: | | JTM/JMG | | |
|-----------------------|---|------------------|-------------|------------------|-----------|---|--|---------|---------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 156 | 81 | 24/8 | 156-158 | 9-18 30-50/2" | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 156.7 feet to: NO RECOVERY. | NO RECOVERY 156' SAND 156.7' | 12 | | |
| 157 | | | | | | | NO RECOVERY | | | |
| 158 | 82 | 24/2 | 158-160 | 3-12 25-37 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 158.2 feet to: NO RECOVERY. | 158' 158.2' SAND NO RECOVERY | | | |
| 159 | | | | | | | | | | |
| 160 | 83 | 18/5 | 160-161.5 | 15-13-27 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 160.4 feet to: NO RECOVERY. | 160' SAND 160.4' | | | |
| 161 | | | | | | | NO RECOVERY | | | |
| 162 | 84 | 24/8 | 162-164 | 6-19 32-32 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 162.7 feet to: NO RECOVERY. | 162' SAND 162.7' | | | |
| 163 | | | | | | | NO RECOVERY | | | |
| 164 | 85 | 24/16 | 164-166 | 3-12 28-46 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 165.3 feet to: NO RECOVERY. | 164' SAND | | | |
| 165 | | | | | | | 165.3' | | | |
| 166 | 86 | 18/8 | 166-167.5 | 8-22-40 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 166.7 feet to: NO RECOVERY. | NO RECOVERY 166' SAND 166.7' | | | |
| 167 | | | | | | | NO RECOVERY | | | |
| 168 | 87 | 24/10 | 168-170 | 5-19 25-42 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 168.8 feet to: NO RECOVERY. | 168' SAND 168.8' | 13 | | |
| 169 | | | | | | | NO RECOVERY | | | |
| 170 | 88 | 24/20 | 170-172 | 33-30 32-34 | | Yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 171.3 feet to: Very dark brown, Silty CLAY, moist. Changing at 171.7 feet to: NO RECOVERY. | 170' SAND | | | |
| 171 | | | | | | | 171.3' | | | |
| 172 | 89 | 24/8 | 172-174 | 33-43 45-47 | | Brown, fine to coarse SAND, some Gravel, | 171.6' Silty CLAY 171.7' SAND 172' NO RECOVERY | | | |
| REMARKS | 12. Temporary well set at 159.0 to 164.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. 13. Temporary well set at 169.0 to 174.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |
| Boring No.: HS-MW-13C | | | | | | | | | | |

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------------|-----------|--|--|---------|---------------------|-----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 173 | | | | | | trace Silt, wet. Changing at 172.7 feet to: NO RECOVERY. | 172.7' SAND NO RECOVERY | | | |
| 174 | 90 | 24/5 | 174-176 | 2-6 27-50/3" | | Brown, fine to coarse SAND, some Gravel, trace Silt, wet. Changing at 174.3 feet to: NO RECOVERY. | 174' 174.3' SAND NO RECOVERY | | | |
| 175 | | | | | | | | | | |
| 176 | 91 | 24/0 | 176-178 | 14-50/5" | | NO RECOVERY. | | | | |
| 177 | | | | | | | | | | |
| 178 | 92 | 18/4 | 178-179.5 | 6-31-50 | | Brown, fine to coarse SAND, some Gravel, trace Silt, wet. Changing at 178.3 feet to: NO RECOVERY. | 178' 178.3' SAND NO RECOVERY | 14 | | |
| 179 | | | | | | | | | | |
| 180 | 93 | 12/2 | 180-181 | 18-50 | | Brown, fine to coarse SAND, some Gravel, trace Silt, wet. Changing at 180.2 feet to: NO RECOVERY. | 180' 180.2' SAND NO RECOVERY | | | |
| 181 | | | | | | | | | | |
| 182 | 94 | 24/7 | 182-184 | 13-50/2" | | Dark grayish brown, CLAY, some Sand, little Silt, trace Gravel, moist. Changing at 182.6 feet to: NO RECOVERY. | 182' CLAY 182.6' NO RECOVERY | | | |
| 183 | | | | | | | | | | |
| 184 | 95 | 24/19 | 184-186 | 19-43 42-50/5" | | Dark yellowish brown, fine to medium SAND, trace Silt, wet. Changing at 184.7 feet to: Dark yellowish brown, fine to coarse SAND, little Gravel, trace Silt, wet. Changing at 184.9 feet to: Grayish brown, GRAVEL, some Sand, trace Silt, wet. Changing at 185.6 feet to: NO RECOVERY. Grayish-brown, GRAVEL, some Sand, trace Silt, wet. Changing at 186.5 feet to: NO RECOVERY. | 184' SAND 184.9' GRAVEL 185.6' NO RECOVERY 186' GRAVEL 186.5' NO RECOVERY | | | |
| 185 | | | | | | | | | | |
| 186 | 96 | 12/6 | 186-187 | 23-50 | | | | | | |
| 187 | | | | | | | | | | |
| 188 | 97 | 12/11 | 188-189 | 40-50/4" | | Dark yellowish brown, fine to medium SAND, trace Gravel, trace Silt, wet. Changing at 188.3 feet to: Brown to dark brown, medium to coarse SAND, trace Gravel, trace Silt, wet. Changing at 188.9 feet to: NO RECOVERY. | 188' SAND 188.9' NO RECOVERY | 15 | | |
| 189 | | | | | | | 190' | | | |
| REMARKS 14. Temporary well set at 179.0 to 184.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. 15. Temporary well set at 189.0 to 194.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | Boring No.: HS-MW-13C |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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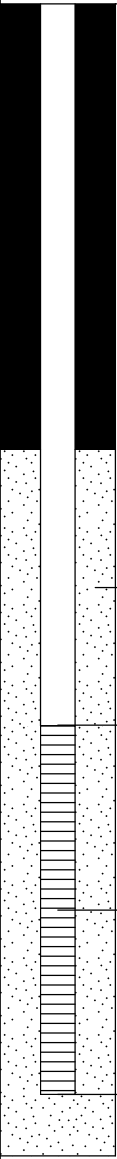
House Street
Belmont, Michigan

Boring No.: HS-MW-13C

Page: 12 of 12

File No.: 16.0062335.52

Check: JTM/JMG

| Sample Information | | | | | | Stratum Desc. | | Remarks | Equipment Installed | |
|---|-----|------------------|-------------|-------------|-----------|---|--|--|--|-----------------------|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (6") | Test Data | Sample Description & Classification | | | | |
| 191 | 98 | 12/10 | 190-191 | 26-50/3" | | Dark yellowish-brown, fine to medium SAND, trace Gravel, trace Silt, wet. Changing at 190.6 feet to: Brown, fine to medium SAND, trace Silt, wet. Changing at 190.8 feet to: NO RECOVERY. | | 190.8' NO RECOVERY |  | |
| 192 | 99 | 12/12 | 192-193 | 25-50/3" | | Brown, fine to medium SAND, trace Silt, wet. Changing at 192.6 feet to: NO RECOVERY. | | | | |
| 194 | 100 | 12/7 | 194-195 | 29-50/2" | | Brown, fine to medium SAND, trace Gravel, trace Silt, wet. Changing at 194.6 feet to: Grayish-brown, SILT, little Clay, moist. Changing at 194.7 feet to: NO RECOVERY. | | 194' SAND 194.6' 194.7' SILT NO RECOVERY | | |
| 196 | 101 | 6/6 | 196-196.5 | 50/3" | | Brown, fine to medium SAND, trace Silt, wet. Changing at 196.6 feet to: NO RECOVERY. | | 196' SAND 196.6' NO RECOVERY | | |
| 198 | 102 | 12/7 | 198-199 | 30-50/3" | | Yellowish-brown, fine to medium SAND, trace Gravel, trace Silt, wet. Changing at 198.6 feet to: NO RECOVERY. | | 198' SAND 198.6' NO RECOVERY | | |
| 200 | 103 | 18/17 | 200-201.5 | 37-33-50/2" | | Yellowish-brown, fine to medium SAND, trace Gravel, trace Silt, wet. Changing at 201.2 feet to: NO RECOVERY. | | 200' SAND 201.2' NO RECOVERY | | |
| 202 | 104 | 12/11 | 202-203 | 37-50/2" | | Yellowish-brown, fine to medium SAND, trace Gravel, trace Silt, wet. Changing at 202.1 feet to: Grayish-brown, GRAVEL, some coarse Sand, trace Silt, wet. Changing at 202.2 feet to: Brown, SILT, some fine Sand, wet. Changing at 202.3 feet to: Grayish-brown, GRAVEL, some coarse Sand, trace Silt, wet. Changing at 202.5 feet to: Brown, fine SAND, some Silt, moist. Changing at 202.7 feet to: Brown, Silty CLAY, trace Gravel, moist. | | 202' SAND 202.1' SAND 202.2' GRAVEL 202.3' SILT 202.5' GRAVEL 202.7' SAND Silty CLAY | | |
| 204 | 105 | 12/11 | 204-205 | 37-50/2" | | Dark grayish-brown, Silty CLAY, trace Gravel, moist. Changing at 204.9 feet to: NO RECOVERY. Bottom of Borehole at 205.0 Feet | | 204.9' 205' NO RECOVERY | | |
| 205 | | | | | | | | 16 | | |
| 206 | | | | | | | | | | |
| 207 | | | | | | | | | | |
| 16. Monitoring well was installed in borehole upon completion. Well screen set from 199.4 to 204.2 feet below ground surface. | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | Boring No.: HS-MW-13C |

Boring No.: HS-MW-13C

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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Boring No.: MW-14D

Page: 1 of 4

File No.: 16.0062335.52

Check: John Morehouse

Contractor: Stearns Drilling Company

Foreman: Bert Graham

Logged by: Christopher Melby

Date Start/Finish: 3-15-18 / 3-15-18

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|--------------|-----------|---|--------------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/24 | 0-2 | 11-5 9-10 | | Black, TOPSOIL. Changing at 0.3 feet to: Medium brown, fine SAND, trace, Silt. | SAND | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | 2 | 24/24 | 8-10 | 2-2 2-1 | | Loose, brown, fine to medium SAND, trace Silt. | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | 3 | 24/12 | 18-20 | 2-3 5-3 | | Loose, brown and gray, coarse SAND, trace Gravel, wet. | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | 4 | 24/12 | 23-25 | 3-1 1-2 | | Very loose, brown and gray, fine to coarse SAND, wet. | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | 5 | 24/16 | 28-30 | 2-4 4-5 | | Loose, brown, fine to medium SAND, trace Silt. Changing at 29.0 feet to: Brown, Clayey SILT, little fine Sand, wet. | 29' Clayey SAND | | | |
| 29 | | | | | | | | | | |

REMARKS

1. Groundwater encountered at approximately 14.5 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-14D

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 3/1/19



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Belmont, Michigan

Boring No.: MW-14D

Page: 2 of 4

File No.: 16.0062335.52

Check: John Morehouse

| Bentonite, Michigan | | | | | | | | | | Check: John Morehouse | |
|---|--------------------|------------------|-------------|---------------|-----------|--|---------------|---------|---------------------|-----------------------|--|
| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | | |
| 31 | 6 | 24/20 | 33-35 | 2-2 5-5 | | Medium stiff, Clayey SILT, little to trace fine to medium Sand, wet. | Clayey SAND | | | | |
| 32 | | | | | | | | | | | |
| 33 | | | | | | | | | | | |
| 34 | | | | | | | | | | | |
| 35 | | | | | | | | | | | |
| 36 | 7 | 24/10 | 38-40 | 1-1 1-1 | | Loose, gray, fine SAND, little Clayey Silt, wet. | 38' | | | | |
| 37 | | | | | | | SAND | | | | |
| 38 | | | | | | | | | | | |
| 39 | | | | | | | | | | | |
| 40 | | | | | | | | | | | |
| 41 | 8 | 24/16 | 43-45 | 4-4 5-7 | | Loose, gray, fine to medium SAND, little Silt, wet. | | | | | |
| 42 | | | | | | | | | | | |
| 43 | | | | | | | | | | | |
| 44 | | | | | | | | | | | |
| 45 | | | | | | | | | | | |
| 46 | 9 | 24/14 | 48-50 | 3-7 8-7 | | Medium dense, gray, fine to medium SAND, little Silt, wet. | | | | | |
| 47 | | | | | | | | | | | |
| 48 | | | | | | | | | | | |
| 49 | | | | | | | | | | | |
| 50 | | | | | | | | | | | |
| 51 | 10 | 24/24 | 53-55 | 2-3 3-5 | | Gray, fine to medium SAND, little Silt, wet. Changing at 53.5 feet to: Gray, Clayey SILT, some fine Sand, wet. | 53.5' | | | | |
| 52 | | | | | | | Clayey SILT | | | | |
| 53 | | | | | | | | | | | |
| 54 | | | | | | | | | | | |
| 55 | | | | | | | | | | | |
| 56 | 11 | 24/14 | 58-60 | 1-1 1-1 | | Soft, gray, Clayey SILT, little fine Sand, wet. | | | | | |
| 57 | | | | | | | | | | | |
| 58 | | | | | | | | | | | |
| 59 | | | | | | | | | | | |
| 60 | | | | | | | | | | | |
| 61 | 12 | 24/24 | 63-65 | 3-12 23-24 | | Hard, gray and brown, Clayey SILT, some fine to coarse Sand, wet. | | | | | |
| 62 | | | | | | | | | | | |
| 63 | | | | | | | | | | | |
| 64 | | | | | | | | | | | |
| | | | | | | | | | | | |
| REMARKS | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-14D | | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 3/1/19



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House Street
Belmont, Michigan

Boring No.: MW-14D
Page: 3 of 4
File No.: 16.0062335.52
Check: John Morehouse

| Sample Information | | | | | | Check: John Morehouse | | | | |
|---|-----|------------------|-------------|----------------|-----------|--|---------------|---------|---------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 66 | 13 | 24/24 | 68-70 | 5-13 17-18 | | Fine to medium SAND, trace Silt, wet. Changing at 69.2 feet to: Fine to coarse SAND, trace Gravel, trace Silt, wet. | Clayey SILT | | | |
| 67 | | | | | | | | | | |
| 68 | | | | | | | 68' | | | |
| 69 | | | | | | | SAND | | | |
| 70 | | | | | | | | | | |
| 71 | 14 | 24/20 | 73-75 | 31-19 24-30 | | Hard, gray and brown, Clayey SILT, some fine to medium Sand, wet. Changing at 74.5 feet to: Gray and brown, fine to medium SAND, little Silt, wet. | 73' | | | |
| 72 | | | | | | | Clayey SILT | | | |
| 73 | | | | | | | 74.5' | | | |
| 74 | | | | | | | SAND | | | |
| 75 | | | | | | | | | | |
| 76 | 15 | 24/24 | 78-80 | 4-8 20-53 | | Medium dense, brown and gray, fine to medium SAND, trace Silt, wet. | | | | |
| 77 | | | | | | | | | | |
| 78 | | | | | | | | | | |
| 79 | | | | | | | | | | |
| 80 | | | | | | | | | | |
| 81 | 16 | 24/18 | 83-85 | 2-4 8-26 | | Medium dense, brown and gray, fine to medium SAND, trace Silt, wet. | | | | |
| 82 | | | | | | | | | | |
| 83 | | | | | | | | | | |
| 84 | | | | | | | | | | |
| 85 | | | | | | | | | | |
| 86 | 17 | 24/24 | 88-90 | 3-7 13-34 | | Medium dense, brown and gray, fine to coarse SAND, trace Silt, wet. | | | | |
| 87 | | | | | | | | | | |
| 88 | | | | | | | | | | |
| 89 | | | | | | | | | | |
| 90 | | | | | | | | | | |
| 91 | 18 | 24/24 | 93-95 | 4-10 18-25 | | Medium dense, fine to medium SAND, trace Silt, wet. | | | | |
| 92 | | | | | | | | | | |
| 93 | | | | | | | | | | |
| 94 | | | | | | | | | | |
| 95 | | | | | | | | | | |
| 96 | 19 | 24/24 | 98-100 | 4-6 10-12 | | Medium dense, brown, fine to medium SAND, trace Silt, wet. | | | | |
| 97 | | | | | | | | | | |
| 98 | | | | | | | | | | |
| 99 | | | | | | | | | | |
| | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-14D | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 3/1/19

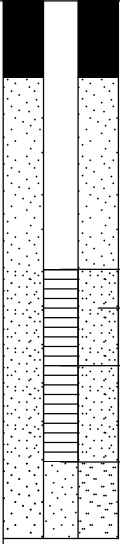


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Boring No.: MW-14D
Page: 4 of 4
File No.: 16.0062335.52
Check: John Morehouse

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|----------------|-----------|--|-----------------------------|--------------------|---|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 101 | 20 | 24/24 | 103-105 | 19-12 19-25 | | Dense, fine to coarse SAND, little to trace Silt, wet. | SAND | | |
| 102 | | | | | | | | | |
| 103 | | | | | | | | | |
| 104 | | | | | | | | | |
| 105 | | | | | | | | | |
| 106 | 21 | 24/20 | 108-110 | 5-7 25-30 | | Dense, brown and gray, medium to coarse SAND, trace Silt, wet. | | | |
| 107 | | | | | | | | | |
| 108 | | | | | | | | | |
| 109 | | | | | | | | | |
| 110 | | | | | | | | | |
| 111 | 22 | 4/6 | 113-113.3 | 12-75/3" | | Hard, brown and gray, CLAY & SILT, some medium to coarse Sand embedded in Clay, wet. Bottom of Borehole at 114.0 Feet | 113' CLAY & SILT 114' | 2 |  <p>Top of Well Screen Silica Sand Filter Pack 2-Inch Dia. 5-Foot PVC Screen (0.010" Slot) Bottom of Well Screen</p> |
| 112 | | | | | | | | | |
| 113 | | | | | | | | | |
| 114 | | | | | | | | | |
| 115 | | | | | | | | | |
| 116 | | | | | | | | | |
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| 132 | | | | | | | | | |
| 133 | | | | | | | | | |
| 134 | | | | | | | | | |
| 2. Monitoring well was installed in borehole upon completion. Well screen set from approximately 107.0 to 112.0 feet below ground surface. | | | | | | | | | |
| REMARKS | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | Boring No.: MW-14D | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 3/1/19



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House Street

Belmont, Michigan

Boring No.: MW-14M

Page: 1 of 3

File No.: 16.0062335.52

Check: John Morehouse

Contractor: Stearns Drilling Company

Foreman: Bert Graham

Logged by: Christopher Melby

Date Start/Finish: 3-15-18 / 3-15-18

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|---|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See PMW-14D boring log for detailed soil descriptions for the first 48.0 feet.. | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
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| 28 | | | | | | | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-14M

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 3/1/19



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Belmont, Michigan

Boring No.: MW-14M

Page: 2 of 3

File No.: 16.0062335.52

Check: John Morehouse

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|----------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 31 | | | | | | | | | | |
| 32 | | | | | | | | | | |
| 33 | | | | | | | | | | |
| 34 | | | | | | | | | | |
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| 45 | | | | | | | | | | |
| 46 | | | | | | | | | | |
| 47 | | | | | | | | | | |
| 48 | 1 | 24/12 | 48-50 | 2-2 3-2 | | Loose, brown and gray, fine to medium SAND, trace Silt, wet. | SAND | | | |
| 49 | | | | | | | | | | |
| 50 | 2 | 24/24 | 50-52 | 1-2 1-2 | | Very loose, brown and gray, fine to medium SAND, trace Silt, wet. | | | | |
| 51 | | | | | | | | | | |
| 52 | 3 | 24/24 | 52-54 | 2-2 3-5 | | Medium stiff, gray and brown, Clayey SILT, some fine to medium Sand, wet. | 52.5' Clayey SILT | | | |
| 53 | | | | | | | | | | |
| 54 | | | | | | | | | | |
| 55 | | | | | | | | | | |
| 56 | | | | | | | | | | |
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| 64 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-14M | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 3/1/19



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Wolverine World Wide, Inc.

House Street

Belmont, Michigan

Boring No.: MW-14M

Page: 3 of 3

File No.: 16.0062335.52

Check: John Morehouse

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|---------------|-----------|---|--------------------|--------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 66 | | | | | | | Clayey SILT | | |
| 67 | | | | | | | | | |
| 68 | 4 | 24/20 | 68-70 | 7-8 10-12 | | Medium dense, gray and brown, fine to coarse SAND, some Silt, wet. | 68' Silty SAND | | |
| 69 | | | | | | | | | |
| 70 | 5 | 24/24 | 70-72 | 2-2 6-15 | | Loose, gray and brown, fine to medium SAND, little Silt, wet. | | | |
| 71 | | | | | | | | | |
| 72 | 6 | 24/18 | 72-74 | 9-12 25-35 | | Brown and gray, fine to medium SAND, some Silt, wet. Changing at 73.0 feet to: Brown and gray, Clayey SILT, some medium to coarse Sand, embedded in Clayey Silt, wet. | 73' Clayey SILT | | |
| 73 | | | | | | | | | |
| 74 | | | | | | Bottom of Borehole at 74.0 Feet | 74' | 1 | Top of Well Screen Silica Sand Filter Pack 2-Inch Dia. 10-Foot PVC Screen (0.010" Slot) Bottom of Well Screen |
| 75 | | | | | | | | | |
| 76 | | | | | | | | | |
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| 98 | | | | | | | | | |
| 99 | | | | | | | | | |
| REMARKS 1. Monitoring well was installed in borehole upon completion. Well screen set from approximately 68.0 to 73.0 feet below ground surface. | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | Boring No.: MW-14M | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 3/1/19



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House Street

Belmont, Michigan

Boring No.: MW-14S

Page: 1 of 1

File No.: 16.0062335.52

Check: John Morehouse

Contractor: Stearns Drilling Company

Foreman: Bert Graham

Logged by: Christopher Melby

Date Start/Finish: 3-15-18 / 3-15-18

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

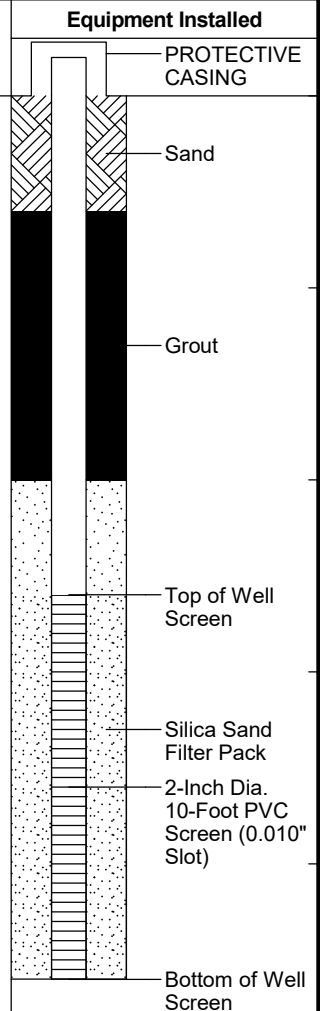
NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|--|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | | | | | | See PMW-14D boring log for detailed soil descriptions. | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
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| 23 | | | | | | | | | | |
| 24 | | | | | | Bottom of Borehole at 23.0 Feet | | | | |
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| 28 | | | | | | | | | | |
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REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from approximately 13.0 to 23.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-14S

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 3/1/19



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Packer Drive

Plainfield, Michigan

Boring No.: MW-15D

Page: 1 of 4

File No.: 16.0062335.52

Check: _____

Contractor: Cascade Drilling

Foreman: Jason

Logged by: Ken Oanes

Date Start/Finish: 12-19-18 / 12-21-17

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Sonic

NA

O.D. / I.D.: NA

NA

Hammer Wt.: NA

NA

Hammer Fall: NA

NA

TOC Elev.: NA

NA

Date Time Depth Casing Stab

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|--|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 60/60 | 0-5 | | 0.4 ppm | Loose, dark brown, Silty SAND with Organics (plant roots), moist (SM). Changing at 1.4 feet to: Loose, light brown, poorly graded, fine to medium SAND and GRAVEL, with Lithics, moist (SP). | SAND (SM) 1.4' SAND (SW) | 1 | | |
| 2 | | | | | 0.3 ppm | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | 2 | 60/42 | 5-10 | | 0.2 ppm | Loose, light brown, well graded, fine to medium SAND with GRAVEL, sub-angular to sub-rounded, moist (SW). Changing at 7.5 feet to: Loose, light brown, well graded, SAND with coarse GRAVEL, sub-rounded, moist (SW). | | | | |
| 6 | | | | | 0.3 ppm | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | 3 | 60/60 | 10-15 | | 0.4 ppm | Loose, light brown, Silty SAND with Gravel, wet (SM). Changing at 11.7 feet to: Loose, light brown, well graded, medium to coarse SAND and GRAVEL, sub-angular to sub-rounded, moist (SW). | 10' SAND (SM) 11.7' SAND (SW) | 2 | | |
| 11 | | | | | 0.4 ppm | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | 4 | 60/60 | 15-20 | | 0.4 ppm | Loose, light brown, poorly graded, medium SAND, some Lithics, trace Gravel, moist (SP). | 15' SAND (SP) | | | |
| 16 | | | | | 0.5 ppm | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | 5 | 60/60 | 20-25 | | 0.5 ppm | Loose, light brown, poorly graded, medium SAND, some Lithics, trace Gravel, moist (SP). | | | | |
| 21 | | | | | 0.3 ppm | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | 6 | 60/60 | 25-30 | | 0.3 ppm | Loose, tan, poorly graded, medium to coarse SAND, with lithics, sub-angular, moist (SP). | | 3 | | |
| 26 | | | | | 0.1 ppm | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 2000 photoionization detector equipped with a 10.6 eV lamp. Readings are shown in parts per million (ppm) of isobutylene. Background was measured at 0.0 ppm.
- Groundwater was encountered at approximately 10.0 feet below ground surface.
- Temporary well set at 25.0 to 30.0 feet below ground surface. Groundwater sample submitted for laboratory analysis.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-15D

BORING WELL 6233552 WWW.PACKER DR PLAINFIELD MI.GPJ GZA CORP.GDT 1/25/18



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Packer Drive

Plainfield, Michigan

Boring No.: MW-15D

Page: 2 of 4

File No.: 16.0062335.52

Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|--|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 31 | 7 | 60/60 | 30-35 | | | Loose, tan, poorly graded, medium to coarse SAND, with lithics, sub-angular, moist (SP). | SAND (SP) | | | |
| 32 | | | | | 0.4 ppm | | | | | |
| 33 | | | | | | | | | | |
| 34 | | | | | | | | | | |
| 35 | 8 | 60/60 | 35-40 | | 0.3 ppm | Loose, brown, Silty fine SAND, sub-rounded, wet (SM). Changing at 35.5 feet to: Loose, brown, well graded, medium to coarse SAND and GRAVEL, sub-rounded to sub-angular, wet (SW). Changing at 37.5 feet: Loose, brown, well graded, coarse SAND, some fine to coarse Gravel, with Clay layers, wet (SW). | 35' 35.5' SAND (SM) SAND (SW) | | | |
| 36 | | | | | 0.5 ppm | | | | | |
| 37 | | | | | | | | | | |
| 38 | | | | | | | | | | |
| 39 | | | | | | | | | | |
| 40 | 9 | 60/60 | 40-45 | | 0.5 ppm | Loose, brown, well graded, fine to coarse SAND with fine GRAVEL, sub-angular, wet (SW). Changing at 43.3 feet to: Loose, light brown, poorly graded, medium SAND, some lithics, sub-angular, wet (SP). | 43.3' SAND (SP) | | | |
| 41 | | | | | 0.5 ppm | | | | | |
| 42 | | | | | | | | | | |
| 43 | | | | | | | | | | |
| 44 | | | | | | | | | | |
| 45 | 10 | 60/60 | 45-50 | | 0.3 ppm | Loose, brown, well graded, medium SAND with Gravel, with layers of Silt and Cobbles, wet (SW). | 45' SAND (SW) | 4 | | |
| 46 | | | | | 0.3 ppm | | | | | |
| 47 | | | | | | | | | | |
| 48 | | | | | | | | | | |
| 49 | | | | | | | | | | |
| 50 | 11 | 60/60 | 50-55 | | | Loose, coarse GRAVEL and COBBLES up to 6.0 inch diameter, wet (GP). Changing at 51.0 feet to: Stiff, dark brown, SILT, little fine to coarse Gravel, rounded, moist (ML). | 50' GRAVEL/COBBLES 51' (GP) SILT (ML) | | | |
| 51 | | | | | 2.1 ppm | | | | | |
| 52 | | | | | | | | | | |
| 53 | | | | | | | | | | |
| 54 | | | | | | | | | | |
| 55 | 12 | 60/60 | 55-60 | | 3.7 ppm | Stiff, dark brown, SILT, little fine to coarse Gravel, rounded, moist (ML). | | | | |
| 56 | | | | | 2.7 ppm | | | | | |
| 57 | | | | | | | | | | |
| 58 | | | | | | | | | | |
| 59 | | | | | | | | | | |
| 60 | 13 | 60/60 | 60-65 | | 1.6 ppm | Stiff, dark brown, SILT, little fine to coarse Gravel, rounded, moist (ML). | | 5 | | |
| 61 | | | | | 2.7 ppm | | | | | |
| 62 | | | | | | | | | | |
| 63 | | | | | | | | | | |
| 64 | | | | | | | 65' | | | |
| REMARKS 4. Temporary well set at 45.0 to 50.0 feet below ground surface. Heaving sands pushed casing to 47.5 feet only exposing lower 2.0 feet of well screen. Left overnight to purge after pumping dry. 5. Insufficient groundwater yield. No temporary well or sample. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-15D | |

BORING WELL 6233552 WWW.PACKERDR.PLAINFOIELD MI.GPJ GZA CORP.GDT 1/25/18

Grout



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Wolverine World Wide, Inc.

Packer Drive

Plainfield, Michigan

Boring No.: MW-15D

Page: 3 of 4

File No.: 16.0062335.52

Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|--|-----------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 66 | 14 | 60/60 | 65-70 | | 1.4 ppm | Stiff, dark gray, Silty fine SAND, trace fine Gravel, moist (SM). | Silty SAND (SM) | | | |
| 67 | | | | | | | | | | |
| 68 | | | | | 0.7 ppm | | | | | |
| 69 | | | | | | | | | | |
| 70 | 15 | 60/60 | 70-75 | | 1.5 ppm | Stiff, dark gray, Silty fine SAND, moist (SM). | | | | |
| 71 | | | | | | | | | | |
| 72 | | | | | 1.2 ppm | | | | | |
| 73 | | | | | | | | | | |
| 74 | 16 | 60/60 | 75-80 | | | Stiff, dark gray, Silty fine SAND, moist (SM). | | | | |
| 75 | | | | | 1.2 ppm | | | | | |
| 76 | | | | | | | | | | |
| 77 | | | | | 1.4 ppm | | | | | |
| 78 | 17 | 60/60 | 80-85 | | | Stiff, dark gray, Silty fine SAND, moist (SM). | | | | |
| 79 | | | | | 0.7 ppm | | | | | |
| 80 | | | | | | | | | | |
| 81 | | | | | 0.5 ppm | | | | | |
| 82 | 18 | 60/60 | 85-90 | | | Very stiff, dark gray, Silty fine SAND, trace medium to coarse Sand, trace coarse Gravel, moist (SM). | | | | |
| 83 | | | | | 0.1 ppm | | | | | |
| 84 | | | | | | | | | | |
| 85 | | | | | 0.1 ppm | | | | | |
| 86 | 19 | 60/60 | 90-95 | | | Stiff, dark gray, SILT, trace Sand, moist (ML). Changing at 92.5 feet to: Stiff, dark gray, SILT transitioning to lean CLAY, moist (CL). | 90' | | | |
| 87 | | | | | 0.7 ppm | | SILT (ML) | | | |
| 88 | | | | | | | | | | |
| 89 | | | | | 0.9 ppm | | 92.5' | | | |
| 90 | 20 | 60/60 | 95-100 | | | Stiff, dark gray, lean CLAY, trace fine Gravel, sub-rounded, moist (CL). | Lean CLAY (CL) | | | |
| 91 | | | | | 1.3 ppm | | | | | |
| 92 | | | | | | | | | | |
| 93 | | | | | 1.1 ppm | | | | | |
| 94 | | | | | | | | | | |
| 95 | | | | | | | | | | |
| 96 | | | | | | | | | | |
| 97 | | | | | | | | | | |
| 98 | | | | | | | | | | |
| 99 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-15D | |

BORING WELL 6233552 WWW.PACKERDR.PLAINFOIELD.MI.GPJ GZA CORP.GDT 1/25/18



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Wolverine World Wide, Inc.

Packer Drive

Plainfield, Michigan

Boring No.: MW-15D

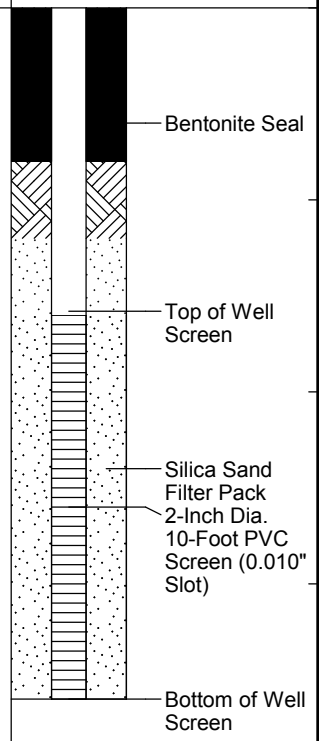
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File No.: 16.0062335.52

Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------------|-----------|--|----------------|--------------------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 101 | 21 | 60/60 | 100-105 | | 0.2 ppm | Stiff, dark gray, lean CLAY, trace fine Gravel, sub-rounded, moist (CL). Changing at 104.0 feet to: Stiff, dark gray, SILT, wet (ML). | Lean CLAY (CL) | | |
| 102 | | | | | 0.3 ppm | | | | |
| 103 | | | | | | | | | |
| 104 | | | | | | | 104' | | |
| 105 | 22 | 60/60 | 105-110 | | 1.0 ppm | Stiff, SILT with Gravel, small lenses (3-8mm) of white chystaline mineral, dry (ML). Changing at 107 feet to: Loose, dark brown, SILT with coarse Gravel, sub-rounded, wet (ML). | SILT (ML) | | |
| 106 | | | | | 0.8 ppm | | | | |
| 107 | | | | | | | | | |
| 108 | | | | | | | | | |
| 109 | | | | | | | | | |
| 110 | 23 | 60/60 | 110-115 | | 112.5 ppm | Loose, SILT with coarse Gravel and Cobbles, sub-rounded, small lenses of white crystalline mineral, wet (ML). | | 6 | |
| 111 | | | | | | | | | |
| 112 | | | | | | | | | |
| 113 | | | | | | | | | |
| 114 | | | | | | | | | |
| 115 | 24 | 24/24 | 115-117 | | 0.5 ppm | Loose, SILT with GRAVEL and COBBLES, sub-rounded, small lenses of white crystalline mineral, wet (ML). | | | |
| 116 | | | | | | | | | |
| 117 | | | | | | Bottom of Borehole at 117.0 Feet | 117' | 7 | |
| 118 | | | | | | | | | |
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| 134 | | | | | | | | | |
| REMARKS 6. Temporary well set at 110.0 to 115.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. 7. Monitoring well was installed in borehole upon completion. Well screen set from 108.0 to 118.0 feet below ground surface. | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | Boring No.: MW-15D | |

BORING WELL 6233552 WWW.PACKERDR.PLAINFOIELD MI.GPJ GZA.CORP.GDT 1/25/18





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Wolverine World Wide, Inc.

Packer Drive

Plainfield, Michigan

Boring No.: MW-15M

Page: 1 of 2

File No.: 16.0062335.52

Check: _____

Contractor: Cascade Drilling

Foreman: Jason

Logged by: John Morehouse

Date Start/Finish: 1-17-18 / 1-17-18

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Sonic

NA

O.D. / I.D.: NA

NA

Hammer Wt.: NA

NA

Hammer Fall: NA

NA

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|--|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See MW-15D boring log for sample description and classification. | | | | |
| 2 | | | | | | | | | | |
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| 29 | | | | | | | | | | |

Grout

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-15M

BORING WELL 6233552 WWW.PACKER DR PLAINFIELD MI.GPJ GZA CORP.GDT 1/25/18



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Packer Drive

Plainfield, Michigan

Boring No.: MW-15M

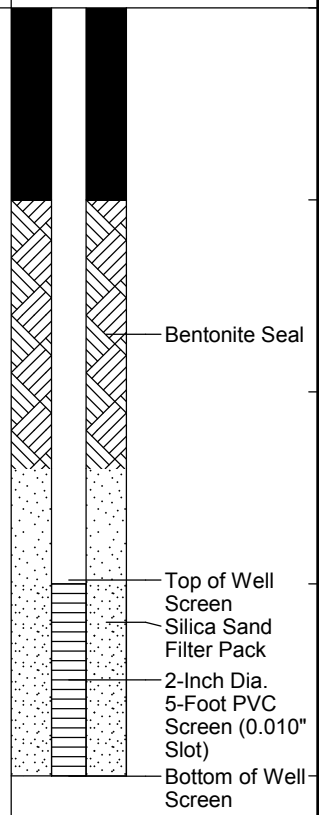
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File No.: 16.0062335.52

Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 31 | | | | | | | | | | |
| 32 | | | | | | | | | | |
| 33 | | | | | | | | | | |
| 34 | | | | | | | | | | |
| 35 | | | | | | | | | | |
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| 45 | | | | | | | | | | |
| 46 | | | | | | | | | | |
| 47 | | | | | | | | | | |
| 48 | | | | | | | | | | |
| 49 | | | | | | | | | | |
| 50 | | | | | | Bottom of Borehole at 50.0 Feet | | 1 | | |
| 51 | | | | | | | | | | |
| 52 | | | | | | | | | | |
| 53 | | | | | | | | | | |
| 54 | | | | | | | | | | |
| 55 | | | | | | | | | | |
| 56 | | | | | | | | | | |
| 57 | | | | | | | | | | |
| 58 | | | | | | | | | | |
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| 60 | | | | | | | | | | |
| 61 | | | | | | | | | | |
| 62 | | | | | | | | | | |
| 63 | | | | | | | | | | |
| 64 | | | | | | | | | | |
| 1. Monitoring well was installed in borehole upon completion. Well screen set from 45.0 to 50.0 feet below ground surface. | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-15M | |

BORING WELL 6233552 WWW.PACKER DR. PLAINFIELD MI.GPJ GZA CORP.GDT 1/25/18





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Packer Drive

Plainfield, Michigan

Boring No.: MW-15S

Page: 1 of 1

File No.: 16.0062335.52

Check: _____

Contractor: Cascade Drilling

Foreman: Jason

Logged by: John Morehouse

Date Start/Finish: 1-17-18 / 1-17-18

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

Type: Sonic

NA

O.D. / I.D.: NA

NA

Hammer Wt.: NA

NA

Hammer Fall: NA

NA

TOC Elev.: NA

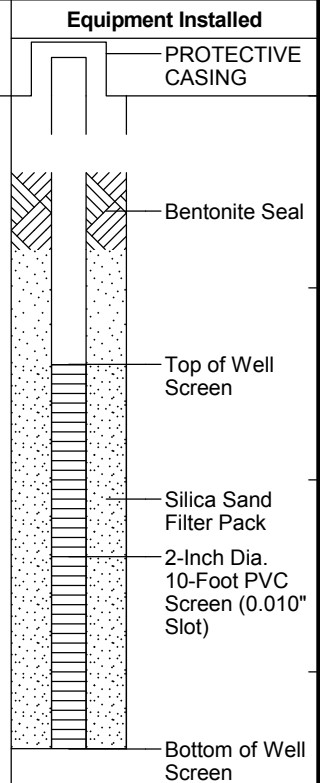
NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|--|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | | | | | | See MW-15D boring log for sample description and classification. | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | Bottom of Borehole at 17.0 Feet | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |



REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 7.0 to 17.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-15S

BORING WELL 6233552 WWW.PACKERDR.PLAINFOIELD MI.GPJ GZA CORP.GDT 1/25/18



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Boring No.: HS-MW-17D

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File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Christopher Melby / John Morehouse

Date Start/Finish: 1-29-18 / 2-26-18

Boring Location: 583,275.2942 N; 12,789,270.2772 E

GS Elev.: 784.6' Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 8.0" / 4.25" 2.0"

Hammer Wt.: 140lbs 1 3/8"

Hammer Fall: 30.0" NA

Other: NA NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-------|---|---------------|---------|---------------------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | PROTECTIVE CASING | Backfill/Cement Pad |
| 1 | 1 | 24/24 | 0-2 | 2-3 2-3 | | Dark brown, decaying LEAVES (FILL). Changing at 0.3 feet to: Very dark brown, well sorted, fine grained SAND, some Silt, some decaying Vegetation, moist (SM). Changing at 0.5 feet to: Dark yellowish brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, grading coarser, moist (SP). | | | | |
| 2 | 2 | 24/24 | 2-4 | 2-2 2-3 | | Dark yellowish brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, grading coarser, moist (SP). | | | | |
| 3 | | | | | | Dark yellowish brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, grading coarser, moist (SP). | | | | |
| 4 | 3 | 24/24 | 4-6 | 2-2 3-3 | | Changing at 4.5 feet to: Pale brown, very well sorted, fine grained SAND, trace Silt, moist (SP). Changing at 4.6 feet to: Yellowish brown, very well sorted, SILT, little fine grained Sand, slightly cohesive, non-plastic, moist (ML). Changing at 4.7 feet to: Pale brown, very well sorted, fine grained SAND, trace Silt, moist (SP). Changing at 4.8 feet to: Yellowish brown, very well sorted, SILT, little fine grained Sand, slightly cohesive, non-plastic, moist (ML). Changing at 4.9 feet to: Pale brown, very well sorted, fine grained, SAND, trace Silt, moist (SP). Changing at 5.0 feet to: Yellowish brown, very well sorted, SILT, little fine grained Sand, slightly cohesive, non-plastic, moist. | | | | |
| 5 | | | | | | Changing at 5.1 feet to: Pale brown, very well sorted, fine grained SAND, trace Silt, moist (SP). Changing at 5.2 feet to: Yellowish brown, very well sorted, SILT, little fine grained Sand, slightly cohesive, non-plastic, moist (ML). | | | | |
| 6 | 4 | 24/24 | 6-8 | 3-5 8-9 | | Light yellowish brown to pale brown, poorly sorted, fine to coarse grained SAND, little Gravel, trace Silt, moist (SW). | | | | |
| 7 | | | | | | Light yellowish brown, well sorted, fine to medium grained SAND, trace Silt, moist (SP). Changing at 9.1 feet to: Dark yellowish brown, well sorted, fine to medium grained SAND, trace Silt, moist (SP). | | | | |
| 8 | 5 | 24/24 | 8-10 | 5-5 5-5 | | Light yellowish brown, well sorted, fine to medium grained SAND, trace Silt, moist (SP). | | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/24 | 10-12 | 3-4 4-4 | | | | | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/24 | 12-14 | 5-10 9-6 | | | | | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/24 | 14-16 | 3-4 4-4 | | | | | | |
| 15 | | | | | | | | | | |
| 16 | 9 | 24/24 | 16-18 | 3-3 4-4 | | | | | | |
| 17 | | | | | | | | | | |
| 18 | 10 | 24/24 | 18-20 | 3-3 3-4 | | | | | | |
| 19 | | | | | | | | | | |

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-17D

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/15/20



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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-------|--|---------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 21 | 11 | 24/24 | 20-22 | 3-3 4-5 | | poorly sorted, medium to coarse grained SAND, little Gravel, trace Silt, moist (SW). Light yellowish brown, very well sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist (SP). | | | | |
| 22 | 12 | 24/24 | 22-24 | 3-6 8-8 | | Light yellowish brown, very well sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist (SP). | | | | |
| 23 | | | | | | Light yellowish brown, very well sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist (SP). | | | | |
| 24 | 13 | 24/24 | 24-26 | 6-10 11-11 | | Light yellowish brown, very well sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist (SP). | | | | |
| 25 | | | | | | Light yellowish brown, very well sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist (SP). | | | | |
| 26 | 14 | 24/24 | 26-28 | 5-10 12-16 | | Light yellowish brown, very well sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist (SP). Changing at 22.8 feet to: Brown, poorly sorted, GRAVEL, trace coarse grained Sand, moist (GP). Changing at 22.9 feet to: Light yellowish brown, very well sorted, fine to medium grained SAND, trace Silt, moist (SP). Changing at 23.4 feet to: Brown, very poorly sorted, GRAVEL, trace coarse grained Sand, moist (GP). | | | | |
| 27 | | | | | | Light yellowish brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist (SP). | | | | |
| 28 | 15 | 24/24 | 28-30 | 5-12 14-20 | | Light yellowish brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist (SP). | | | | |
| 29 | | | | | | Light yellowish brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist (SP). | | | | |
| 30 | 16 | 24/24 | 30-32 | 15-12 14-20 | | Light yellowish brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist (SP). | | | | |
| 31 | | | | | | Light yellowish brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist (SP). | | | | |
| 32 | 17 | 24/24 | 32-34 | 5-7 8-8 | | Light yellowish brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist (SP). | | | | |
| 33 | | | | | | Light yellowish brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist (SP). | | | | |
| 34 | 18 | 24/24 | 34-36 | 7-8 10-11 | | Light yellowish brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist (SP). | | | | |
| 35 | | | | | | Light yellowish brown to pale brown, very well sorted, fine to medium grained SAND, trace Silt, moist (SP). | | | | |
| 36 | 19 | 24/24 | 36-38 | 7-10 9-14 | | Light yellowish brown to pale brown, very well sorted, fine to medium grained SAND, trace Silt, moist (SP). | | | | |
| 37 | | | | | | Light yellowish brown to pale brown, very well sorted, fine to medium grained SAND, trace Silt, moist (SP). | | | | |
| 38 | 20 | 24/24 | 38-40 | 10-10 12-12 | | Pale to very pale brown, very well sorted, fine grained SAND, trace Silt, moist (SP). | | | | |
| 39 | | | | | | Changing at 39.5 feet to: Brown to yellowish brown, very well sorted, SILT, some fine grained Sand, slightly cohesive, moist (ML). | | | | |
| 40 | 21 | 24/24 | 40-42 | 11-11 11-10 | | Pale to very pale brown, very well sorted, fine grained SAND, trace Silt, bedded, moist (SP). | | | | |
| 41 | | | | | | | | | | |
| 42 | 22 | 24/24 | 42-44 | 6-6 7-9 | | Pale to very pale brown, very well sorted, fine grained SAND, trace Silt, bedded, moist (SP). | | | | |
| 43 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-17D | |

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/15/20



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Boring No.: HS-MW-17D

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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-------|--|---------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 44 | 23 | 24/24 | 44-46 | 6-6 8-9 | | Pale to very pale brown, very well sorted, fine grained SAND, trace Silt, bedded, moist (SP). | | | | |
| 45 | | | | | | | | | | |
| 46 | 24 | 24/24 | 46-48 | 7-9 10-10 | | Pale to very pale brown, very well sorted, fine grained SAND, trace Silt, bedded, moist (SP). | | | | |
| 47 | | | | | | | | | | |
| 48 | 25 | 24/24 | 48-50 | 7-4 9-9 | | Pale to very pale brown, very well sorted, fine grained SAND, trace Silt, bedded, moist (SP). | | | | |
| 49 | | | | | | | | | | |
| 50 | 26 | 24/24 | 50-52 | 5-6 8-10 | | Pale to very pale brown, very well sorted, fine grained SAND, trace Silt, bedded, moist (SP). | | | | |
| 51 | | | | | | | | | | |
| 52 | 27 | 24/24 | 52-54 | 6-8 13-18 | | Pale to very pale brown, very well sorted, fine grained SAND, trace Silt, bedded, moist (SP). | | | | |
| 53 | | | | | | | | | | |
| 54 | 28 | 24/24 | 54-56 | 9-12 13-17 | | Pale to very pale brown, very well sorted, fine grained SAND, trace Silt, bedded, moist (SP). | | | | |
| 55 | | | | | | | | | | |
| 56 | 29 | 24/24 | 56-58 | 10-14 25-22 | | Pale to very pale brown, very well sorted, fine grained SAND, trace Silt, bedded, moist (SP). Changing at 57.6 feet to: Brown to yellowish brown, very well sorted, SILT, some fine grained Sand, slightly cohesive, non-plastic, moist to wet (ML). | | | | |
| 57 | | | | | | | | | | |
| 58 | 30 | 24/24 | 58-60 | 17-21 31-32 | | Pale to very pale brown, very well sorted, fine grained SAND, trace Silt, bedded, moist (SP). Changing at 59.0 feet to: Very dark grayish brown, well sorted, fine grained SAND, trace Silt, moist (SP). Changing at 59.1 feet to: Pale brown, very well sorted, fine to medium grained SAND, some Silt, bedded, moist (SM). | | | | |
| 59 | | | | | | | | | | |
| 60 | 31 | 24/24 | 60-62 | 13-22 27-27 | | Pale brown, very well sorted, fine to medium grained SAND, some Silt, bedded, moist (SM). | | | | |
| 61 | | | | | | | | | | |
| 62 | 32 | 24/24 | 62-64 | 12-21 25-33 | | Pale brown, very well sorted, fine to medium grained SAND, some Silt, bedded, moist (SM). | | | | |
| 63 | | | | | | | | | | |
| 64 | 33 | 24/24 | 64-66 | 2-6 9-13 | | Pale brown, very well sorted, fine to medium grained SAND, some Silt, bedded, moist (SM). | | | | |
| 65 | | | | | | | | | | |
| 66 | 34 | 24/24 | 66-68 | 3-10 | | Pale brown, very well sorted, fine to medium | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-17D | |

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Boring No.: HS-MW-17D

Page: 4 of 10

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------------|----------------|---------------|----------|---|------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 67 | | | | 11-18 | | grained SAND, some Silt, bedded, moist (SM). | | | | |
| 68 | 35 | 24/24 | 68-70 | 7-17 21-23 | | Pale brown, very well sorted, fine to medium grained SAND, some Silt, bedded, moist (SM). Changing at 68.3 feet to: Dark yellowish brown, well sorted, fine to medium grained SAND, trace Silt, moist (SP). | | | | |
| 69 | | | | | | Changing at 68.4 feet to: Pale brown, very well sorted, fine to medium grained SAND, some Silt, bedded, moist (SM). | | | | |
| 70 | 36 | 24/24 | 70-72 | 5-14 22-28 | | Pale brown, very well sorted, fine to medium grained SAND, some Silt, bedded, moist (SM). | | | | |
| 71 | | | | | | Pale brown, very well sorted, fine to medium grained SAND, some Silt, bedded, moist (SM). | | | | |
| 72 | 37 | 24/24 | 72-74 | 8-20 22-35 | | Pale brown, very well sorted, fine to medium grained SAND, some Silt, bedded, moist (SM). | | | | |
| 73 | | | | | | Pale brown, very well sorted, fine to medium grained SAND, some Silt, bedded, moist (SM). | | | | |
| 74 | 38 | 24/24 | 74-76 | 5-16 28-41 | | Pale brown, very well sorted, fine to medium grained SAND, some Silt, bedded, moist (SM). | | | | |
| 75 | | | | | | | | | | |
| 76 | 39 | 24/24 | 76-78 | 9-21 29-44 | | Pale brown, very well sorted, fine to medium grained SAND, some Silt, bedded, moist (SM). Changing at 76.8 feet to: Light yellowish brown, well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 77 | | | | | | Light yellowish brown, well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 78 | 40 | 24/24 | 78-80 | 2-10 22-24 | | Light yellowish brown, well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 79 | | | | | | | | | | |
| 80 | 41 | 24/24 | 80-82 | 2-8 14-24 | | Light yellowish brown, well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 81 | | | | | | | | | | |
| 82 | 42 | 24/24 | 82-84 | 1-3 6-12 | | Light yellowish brown, well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 83 | | | | | | | | | | |
| 84 | 43 | 24/24 | 84-86 | 1-1 3-8 | | Light yellowish brown, well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 85 | | | | | | | | | | |
| 86 | 44 | 24/24 | 86-88 | 1-2 5-12 | | Light yellowish brown, well sorted, fine to medium grained SAND, trace Silt, wet (SP). Changing at 87.6 feet to: Brown, moderately sorted, coarse grained SAND, some Gravel, wet (SW). | | | | |
| 87 | | | | | | Yellowish brown to brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, wet (SP). | | | | |
| 88 | 45 | 24/24 | 88-90 | 1-2 9-14 | | | | | | |
| 89 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-17D | |

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/15/20



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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------------|----------------|--------------|----------|---|------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 91 | 46 | 24/24 | 90-92 | 1-2 3-5 | | Yellowish brown to brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, wet (SP). | | | | |
| 92 | 47 | 24/24 | 92-94 | 1-2 4-11 | | Yellowish brown to brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, wet (SP). | | | | |
| 94 | 48 | 24/24 | 94-96 | 1-3 5-9 | | Yellowish brown to brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, wet (SP). | | | | |
| 96 | 49 | 24/24 | 96-98 | 1-4 6-12 | | Yellowish brown to brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, wet (SP). | | | | |
| 98 | 50 | 24/24 | 98-100 | 3-4 8-15 | | Yellowish brown to brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, wet (SP). | | | | |
| 100 | 51 | 24/24 | 100-102 | 2-2 3-10 | | Yellowish brown to brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, wet (SP). | | | | |
| 102 | 52 | 24/24 | 102-104 | 2-7 14-21 | | Yellowish brown to brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, wet (SP). Changing at 103.2 feet to: Brown to yellowish brown, very well sorted, SILT, some fine grained Sand, slightly cohesive, wet (ML). Changing at 103.5 feet to: Brown to yellowish brown, well sorted SILT, some fine grained Sand, trace Clay, moderately cohesive, non to slightly plastic, bedded, moist to wet (ML). Changing at 103.6 feet to: Brown to yellowish brown, very well sorted, SILT, some fine grained Sand, slightly cohesive, wet (ML). | | | | |
| 104 | 53 | 24/24 | 104-106 | 2-2 3-6 | | Yellowish brown to brown, very well sorted, fine grained SAND, trace Silt, wet (SP). | | | | |
| 106 | 54 | 24/24 | 106-108 | 1-1 3-5 | | Yellowish brown to brown, very well sorted, fine grained SAND, trace Silt, wet (SP). Changing at 108.9 feet to: Yellowish brown to brown, well sorted, SILT, some fine grained Sand, wet (ML). Changing at 109.0 feet to: Yellowish brown to brown, very well sorted, fine to medium grained SAND, trace Silt, wet (SP). Changing at 109.5 feet to: Dark yellowish brown, well sorted, fine to medium SAND, trace Silt, wet (SP). Changing at 109.7 feet to: Yellowish brown | | | | |
| 108 | 55 | 24/24 | 108-110 | 3-4 8-12 | | | | | | |
| 110 | 56 | 24/24 | 110-112 | 1-1 3-7 | | | | | | |
| 112 | 57 | 24/24 | 112-114 | 1-3 5-8 | | | | | | |
| 113 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-17D | |

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/15/20

Bentonite/Grout



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Boring No.: HS-MW-17D

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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-------|--|---------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 114 | 58 | 24/24 | 114-116 | 1-4 12-18 | | to brown, very well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 115 | | | | | | Yellowish brown to brown, very well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 116 | 59 | 24/24 | 116-118 | 1-5 12-22 | | Yellowish brown to brown, very well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 117 | | | | | | Yellowish brown to brown, very well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 118 | 60 | 24/24 | 118-120 | 1-1 1-4 | | Yellowish brown to brown, very well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 119 | | | | | | Changing at 116.2 feet to: Dark yellowish brown, well sorted, Silty CLAY, plastic, cohesive, moist (CL). | | | | |
| 120 | 61 | 24/24 | 120-122 | 7-10 14-20 | | Changing at 116.3 feet: Yellowish brown to brown, very well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 121 | | | | | | Changing at 116.8 feet to: Dark yellowish brown, well sorted, Silty CLAY, plastic, cohesive, moist (CL). | | | | |
| 122 | 62 | 24/24 | 122-124 | 4-7 13-15 | | Changing at 116.9 feet to: Yellowish brown to brown, very well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 123 | | | | | | Yellowish brown to brown, very well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 124 | 63 | 24/24 | 124-126 | 5-10 12-20 | | Changing at 119.0 feet to: Dark yellowish brown, well sorted SILT, some fine grained Sand, slightly cohesive, wet (ML). | | | | |
| 125 | | | | | | Changing at 119.1 feet to: Yellowish brown to brown, very well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 126 | 64 | 24/24 | 126-128 | 4-10 11-10 | | Yellowish brown, well sorted, fine to medium grained SAND, trace Silt, wet (SP). | | | | |
| 127 | | | | | | Changing at 121.3 feet to: Grayish brown to to light grayish brown, well sorted, SILT, some fine grained Sand, non-plastic, moderately cohesive, wet (ML). | | | | |
| 128 | 65 | 24/24 | 128-130 | 7-12 9-15 | | Grayish brown to to light grayish brown, well sorted, SILT, some fine grained Sand, non-plastic, moderately cohesive, wet (ML). | | | | |
| 129 | | | | | | Changing at 122.9 feet to: Brown, well sorted, fine grained SAND, some Silt, trace Clay, cohesive, slightly to moderately plastic, moist (SM). | | | | |
| 130 | 66 | 24/24 | 130-132 | 2-4 7-9 | | Brown, well sorted, fine grained SAND, some Silt, trace Clay, cohesive, slightly to moderately plastic, moist (SM). | | | | |
| 131 | | | | | | Gray to grayish brown, well sorted, fine grained SAND, some Silt, trace Clay, cohesive, slightly to moderately plastic, moist (SM). | | | | |
| 132 | 67 | 24/24 | 132-134 | 1-4 5-6 | | Gray to grayish brown, well sorted, fine grained SAND, some Silt, trace Clay, cohesive, slightly to moderately plastic, moist (SM). | | | | |
| 133 | | | | | | Changing at 126.6 feet to: Gray to grayish brown, well sorted, CLAY & SILT, little fine grained Sand, plastic, cohesive, moist (CL). | | | | |
| 134 | 68 | 24/24 | 134-136 | 1-3 5-6 | | Gray to grayish brown, well sorted, fine grained SAND, some Silt, trace Clay, cohesive, slightly to moderately plastic, moist (CL). | | | | |
| 135 | | | | | | Gray to grayish brown, well sorted, fine grained SAND, some Silt, trace Clay, cohesive, slightly to moderately plastic, moist (CL). | | | | |
| 136 | 69 | 24/24 | 136-138 | 1-1 | | Gray to grayish brown, well sorted, fine grained SAND, some Silt, trace Clay, cohesive, slightly to moderately plastic, moist (CL). | | | | |
| 1. Groundwater was encountered at approximately 132.4 feet below ground surface. | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-17D | |

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/15/20



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Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|---------------|----------|--|------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 137 | 70 | 24/24 | 138-140 | 2-6 | | moist (SM). Gray to grayish brown, well sorted, fine grained SAND, some Silt, trace Clay, cohesive, slightly to moderately plastic, moist (SM). | | | | |
| 138 | | | | 0-1 1-5 | | Gray to grayish brown, well sorted, fine grained SAND, some Silt, trace Clay, cohesive, slightly to moderately plastic, moist (SM). Changing at 132.4 feet to: Grayish brown to brown, very well sorted, SILT, trace Clay, moderately cohesive, non to slightly plastic, wet | | | | |
| 139 | | | | | | Varved, grayish brown, very well sorted, SILT, some Clay, some fine grained Sand, cohesive and slightly to moderately plastic, moist to wet (ML). | | | | |
| 140 | 71 | 24/24 | 140-142 | 0-4 8-14 | | Brown, well sorted, SILT, little Clay, moderately plastic, cohesive, moist to wet (ML). Changing at 136.3 feet to: Grayish brown, very well sorted, SILT, trace Clay, cohesive, slightly plastic, moist to wet (ML). Changing at 136.4 feet to: Grayish brown, very well sorted, fine grained SAND, little Silt, slightly cohesive, wet (SM). | | | | |
| 141 | | | | | | Grayish brown, very well sorted, fine grained SAND, little Silt, slightly cohesive, wet (SM). Changing 138.9 feet to: Grayish brown, very well sorted, fine grained SAND, trace Silt, wet (SP). Changing at 139.0 feet to: Grayish brown, very well sorted, fine grained SAND, little Silt, slightly cohesive, wet (SM). | | | | |
| 142 | | | | 6-10 12-16 | | Yellowish brown, very well sorted, fine grained SAND, little Silt, wet (SM). Changing at 143.5 feet to: Grayish brown, very well sorted, SILT, trace fine grained Sand, moderately cohesive, wet (ML). | | | | |
| 143 | 72 | 24/24 | 142-144 | | | Grayish brown, very well sorted, fine grained SAND, trace Silt, wet (SP). Grayish brown to brown, very well sorted, fine grained SAND, little Silt, wet (SM). Changing at 146.6 feet to: Yellowish brown, well sorted, fine grained SAND, trace Silt, wet (SP). Changing at 146.7 feet to: Grayish brown to brown, very well sorted, SILT, little fine grained SAND, wet (ML). | | | | |
| 144 | | | | | | Grayish brown to brown, very well sorted, SILT, little fine grained SAND, wet (ML). Grayish brown to brown, very well sorted, fine grained SAND, little Silt, slightly cohesive, wet (SM). Changing at 150.5 feet to: Grayish brown to brown, very well sorted, SILT, moderately cohesive, wet (ML). | | | | |
| 145 | | | | | | Changing at 151.9 feet to: Grayish brown to brown, very well sorted, SILT, moderately cohesive, wet (ML). Brown to yellowish brown, very well sorted, | | | | |
| 146 | 73 | 24/24 | 144-146 | | | | | | | |
| 147 | | | | | | | | | | |
| 148 | | | | | | | | | | |
| 149 | 74 | 24/24 | 146-148 | 3-6 14-20 | | | | | | |
| 150 | | | | | | | | | | |
| 151 | | | | | | | | | | |
| 152 | 75 | 24/24 | 148-150 | 1-2 5-15 | | | | | | |
| 153 | | | | | | | | | | |
| 154 | | | | | | | | | | |
| 155 | 76 | 24/24 | 150-152 | 6-12 25-33 | | | | | | |
| 156 | | | | | | | | | | |
| 157 | | | | | | | | | | |
| 158 | 77 | 24/24 | 152-154 | 1-1 3-7 | | | | | | |
| 159 | | | | | | | | | | |
| | | | | | | | | | | |
| | 78 | 24/24 | 154-156 | 1-4 14-18 | | | | | | |
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| | 79 | 24/24 | 156-158 | 1-8 24-35 | | | | | | |
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| | | | | | | | | | | |
| | 80 | 24/24 | 158-160 | 4-8 9-22 | | | | | | |
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REMARKS

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| Sample Information | | | | | | Demont, Michigan | | Check: JTM/JMG | | |
|---|-----|------------------|-------------|------------------|-------|---|---------------|----------------|-----------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 161 | 81 | 17/17 | 160-161.4 | 7-31-87/5" | | fine grained SAND, little Silt, wet (SM). Brown to yellowish brown, very well sorted, fine grained SAND, little Silt, wet (SM). Brown to yellowish brown, very well sorted, fine grained SAND, little Silt, wet (SM). Changing at 156.6 feet to: Dark grayish brown to dark brown, very well sorted, fine grained SAND, little Silt, wet (SM). Dark grayish brown to dark brown, very well sorted, fine grained SAND, little Silt, wet (SM). Very dense, light brown, fine SAND, little to trace Silt, wet (SM). NO RECOVERY. Bailer soil is fine Sand, little to trace Silt. | | | | |
| 162 | 82 | 24/0 | 162-164 | 4-8 15-10 | | Very dense, brown, fine SAND, little to trace Silt, wet (SM). Very dense, brown, fine SAND, little to trace Silt wet (SM). | | | | |
| 163 | | | | | | | | | | |
| 164 | 83 | 12/6 | 164-165 | 13-50\6" | | Very dense, brown, fine SAND, little to trace Silt, wet (SM). Very dense, brown, fine SAND, little to trace Silt wet (SM). | | | | |
| 165 | | | | | | | | | | |
| 166 | 84 | 24/8 | 166-168 | 6-20 35-50 | | Very dense, brown, fine SAND, little to trace Silt, wet (SM). Very dense, brown, fine SAND, little to trace Silt wet (SM). | | | | |
| 167 | | | | | | | | | | |
| 168 | 85 | 17/10 | 168-169.45 | 23-50/5" | | Very dense, brown, fine SAND, little to trace Silt, wet (SM). | | | | |
| 169 | | | | | | | | | | |
| 170 | 86 | 16/0 | 170-171.36 | 23-50/4" | | NO RECOVERY. Bailer soil is fine Sand, little to trace Silt. | | | | |
| 171 | | | | | | | | | | |
| 172 | 87 | 23/12 | 172-173.9 | 3-10 35-50/5" | | Very dense, brown, fine SAND, little to trace Silt, wet (SM). | | | | |
| 173 | | | | | | | | | | |
| 174 | 88 | 17/0 | 174-175.46 | 31-50/5" | | NO RECOVERY. Bailer soil is fine Sand, little to trace Silt. | | | | |
| 175 | | | | | | | | | | |
| 176 | 89 | 17/0 | 176-177.44 | 40-50/5" | | NO RECOVERY. Bailer soil is fine Sand, little to trace Silt. | | | | |
| 177 | | | | | | | | | | |
| 178 | 90 | 12/0 | 178-179 | 15-67 | | NO RECOVERY. Bailer soils is fine Sand, little to trace Silt. | | | | |
| 179 | | | | | | | | | | |
| 180 | 91 | 18/0 | 180-181.5 | 7-3-90/6" | | NO RECOVERY. Bailer soil is fine Sand, little to trace Silt. | | | | |
| 181 | | | | | | | | | | |
| 182 | 92 | 24/24 | 182-184 | 11-16 27-33 | | Dense, light brown, fine SAND, little to trace Silt, wet (SM). | | | | |
| 183 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------------|----------------|----------------|----------|---|------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 184 | 93 | 24/8 | 184-186 | 9-18 30-52 | | Dense, light brown, fine SAND, little to trace Silt, wet (SM). | | | | |
| 185 | | | | | | | | | | |
| 186 | 94 | 24/6 | 186-188 | 16-23 48-55 | | Very dense, light brown, fine SAND, little to trace Silt, wet (SM). | | | | |
| 187 | | | | | | | | | | |
| 188 | 95 | 24/6 | 188-190 | 8-12 35-58 | | Dense, light brown, fine SAND, little to trace Silt, wet (SM). | | | | |
| 189 | | | | | | | | | | |
| 190 | 96 | 24/8 | 190-192 | 5-13 19-25 | | Dense, light brown, gray, fine SAND, little to trace Silt, wet (SM). | | | | |
| 191 | | | | | | | | | | |
| 192 | 97 | 24/10 | 192-194 | 13-26 35-41 | | Very dense, brown, fine to medium SAND, little to trace Silt, wet (SM). | | | | |
| 193 | | | | | | | | | | |
| 194 | 98 | 24/10 | 194-196 | 9-20 42-50 | | Very dense, light brown, fine to medium SAND, little to trace Silt, wet (SM). | | | | |
| 195 | | | | | | | | | | |
| 196 | 99 | 24/0 | 196-198 | 7-22-62/6" | | NO RECOVERY. Bailer soil is light brown gray, fine to medium Sand, little to trace Silt, wet. | | | | |
| 197 | | | | | | | | | | |
| 198 | 100 | 24/1 | 198-200 | 10-12 32-44 | | Dense, gray to light brown, fine SAND, little to trace Silt, wet (SM). | | | | |
| 199 | | | | | | | | | | |
| 200 | 101 | 24/10 | 200-202 | 10-18 32-48 | | Very dense, gray to light brown, fine to medium SAND, little to trace Silt, wet (SM). | | | | |
| 201 | | | | | | | | | | |
| 202 | 102 | 24/6 | 202-204 | 5-9 20-28 | | Medium dense, gray to light brown, fine to medium SAND, little to trace Silt, wet (ML). | | | | |
| 203 | | | | | | | | | | |
| 204 | 103 | 24/16 | 204-206 | 7-14 20-33 | | Dense, gray to light brown, medium SAND, little to trace Silt, wet (SM). | | | | |
| 205 | | | | | | | | | | |
| 206 | 104 | 24/14 | 206-208 | 6-17 | | Very dense, gray, medium to coarse SAND, | | | | |
| REMARKS | | | | | | | | | | |
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| Sample Information | | | | | | | | Check: JTM/JMG | |
|---|-----|------------------|-------------|----------------|-------|---|---------------|----------------|---|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
| | | | | | | | | | |
| 207 | | | | 27-40 | | trace Silt, wet (SW). | | | |
| 208 | 105 | 24/16 | 208-210 | 9-23 32-59 | | Very dense, gray, medium to coarse SAND, trace Silt, wet (SW). Changing at 208.8 feet to: Very dense, gray, fine SAND, little Silt, wet (SM). | | | |
| 209 | | | | | | | | | |
| 210 | 106 | 24/6 | 210-212 | 9-11 14-17 | | Medium dense, gray and brown, fine SAND, little to trace Silt, wet (SM). | | | |
| 211 | | | | | | | | | |
| 212 | 107 | 24/0 | 212-214 | 4-7 26-33 | | NO RECOVERY. Bailer soil is fine to coarse Sand, little to trace Silt, wet. | | | |
| 213 | | | | | | | | | |
| 214 | 108 | 24/12 | 214-216 | 4-7 26-33 | | Dense, gray, fine to coarse SAND, little Silt, wet (SM). | | | |
| 215 | | | | | | | | | |
| 216 | 109 | 24/10 | 216-218 | 4-8 8-30 | | Medium dense, gray and brown, fine to medium SAND, little to trace Silt, wet (SM). | | | |
| 217 | | | | | | | | | Top of Well Screen |
| 218 | 110 | 24/12 | 218-220 | 5-14 34-30 | | Dense, gray and brown, fine to medium SAND, little to trace Silt, wet (SM). | | | Silica Sand Filter Pack |
| 219 | | | | | | | | | |
| 220 | 111 | 24/0 | 220-222 | 5-7 22-33 | | NO RECOVERY. | | | 2-Inch Dia. 5-Foot PVC Screen (0.010" Slot) |
| 221 | | | | | | | | | |
| 222 | 112 | 24/12 | 222-224 | 4-6 33-33 | | Dense, brown, fine SAND, little Silt, wet (SM). Changing at 223.7 feet to: GRAVEL (potential Bedrock). | | | Bottom of Well Screen |
| 223 | | | | | | | | | |
| 224 | 113 | 24/14 | 224-226 | 41-35 45-48 | | Gray, potential weathered BEDROCK. Changing at 13.2 feet to: Brown, Clayey SILT, trace fine to coarse Sand, wet (ML). | | | |
| 225 | | | | | | | | | |
| 226 | | | | | | Bottom of Borehole at 226.0 Feet | | | |
| 227 | | | | | | | | | |
| 228 | | | | | | | | | |
| 229 | | | | | | | | | |
| REMARKS | | | | | | | | | |
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Top of Well Screen
Silica Sand Filter Pack
2-Inch Dia. 5-Foot PVC Screen (0.010" Slot)
Bottom of Well Screen



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Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Christopher Melby

Date Start/Finish: 3-2-18 / 3-5-18

Boring Location: 583,270.5304 N; 12,789,269.7897 E

GS Elev.: 784.2' Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 8.0" / 4.25" 2.0"


Hammer Wt.: 140lbs 1 3/8"

Hammer Fall: 30.0" NA

Other: NA NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------|----------|--|------------------|---------|--|------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | PROTECTIVE CASING | Backfill/Cement Pad |
| 1 | | | | | | See PMW-17D/MW-1D boring log for detailed soil descriptions. | SAND | |  | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
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REMARKS

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 21 | | | | | | | SAND | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
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| 43 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

Boring No.: HS-MW-17M

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/15/20



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Boring No.: HS-MW-17M

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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|-------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

Boring No.: HS-MW-17M

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Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
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| <div>REMARKS</div> <div>Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.</div> | | | | | | | | | | |

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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

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Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------|-------|---|---------------|---------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | |
| 161 | | | | | | | SAND | | |
| 162 | | | | | | | | | |
| 163 | | | | | | | | | |
| 164 | | | | | | | | | |
| 165 | | | | | | | | | |
| 166 | 1 | 24 | 166-168 | | | Brown, fine SAND, little to trace Silt. | | 1 | Top of Well Screen Silica Sand Filter Pack 2-Inch Dia. 5-Foot PVC Screen (0.010" Slot) |
| 167 | | | | | | | | | |
| 168 | | | | | | Bottom of Borehole at 168.0 Feet | 168' | 2 | Bottom of Well Screen |
| 169 | | | | | | | | | |
| 170 | | | | | | | | | |
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| 183 | | | | | | | | | |
| <div>REMARKS</div> <div>1. Soil descriptions based on auger cuttings. 2. Monitoring well was installed in borehole upon completion. Well screen set from approximately 163.0 to 168.0 feet below ground surface.</div> | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-17M |

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File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Christopher Melby

Date Start/Finish: 2-27-18 / 2-28-18

Boring Location: 583,273.6951 N; 12,789,266.1009 E

GS Elev.: 784.8' Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 8.0" / 4.25" 2.0"

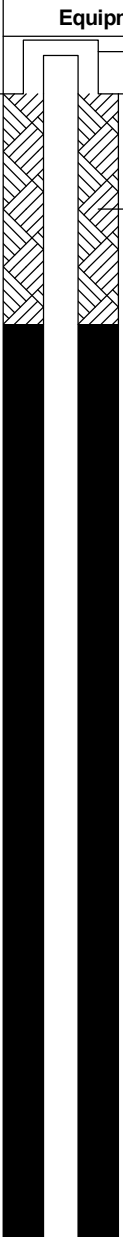
Hammer Wt.: 140lbs 1 3/8"

Hammer Fall: 30.0" NA

Other: NA NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------|----------|--|--|---------|--|----------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | PROTECTIVE CASING | Backfill |
| 1 | | | | | | See PMW-17D/MW-1D boring log for detailed soil descriptions. | See PMW-17D/MW-1D for Stratum Descriptions | |  | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-17S

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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|--|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 21 | | | | | | | See PMW-17D/MW-1D for Stratum Descriptions | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

Boring No.: HS-MW-17S

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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|--|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | |
| 44 | | | | | | | See PMW-17D/MW-1D for Stratum Descriptions | | |
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| REMARKS | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |

Boring No.: HS-MW-17S

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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|--|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 67 | | | | | | | See PMW-17D/MW-1D for Stratum Descriptions | | | |
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| <div>REMARKS</div> <div>Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.</div> | | | | | | | | | | |

Boring No.: HS-MW-17S

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/15/20



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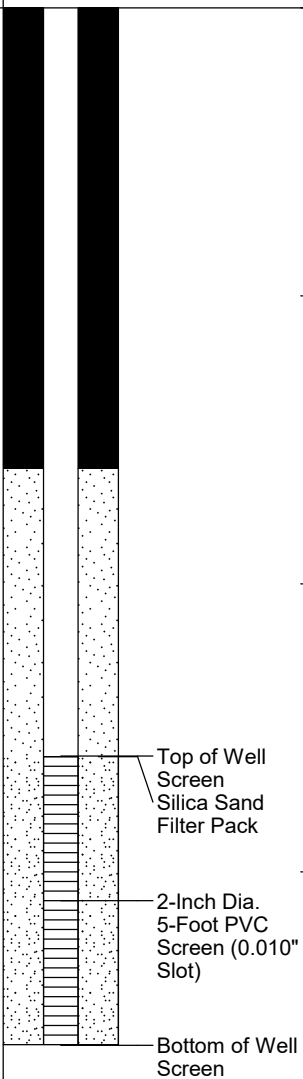
Belmont, Michigan

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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|-------|--------------------|------------------|-------------|-------|-------|---|--|---------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | |
| 91 | | | | | | | See PMW-17D/MW-1D for Stratum Descriptions | 1 |  |
| 92 | | | | | | | | | |
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| 103 | | | | | | | | | |
| 104 | 1 | 24/16 | 104-106 | 11-5 | 10-10 | Medium dense, brown, fine to medium SAND, trace Silt, wet (SP). | 104' SAND (SP) | | |
| 105 | | | | | | | | | |
| 106 | | | | | | Bottom of Borehole at 106.0 Feet | | | |
| 107 | | | | | | | | | |
| 108 | | | | | | | 108' | | |
| 109 | | | | | | | | | |
| 110 | | | | | | | | | |
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| 112 | | | | | | | | | |
| 113 | | | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from approximately 103.0 to 108.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Burt

Logged by: Kevin Hedinger

Date Start/Finish: 5-14-18 / 5-16-18

Boring Location: 582,018.9901 N; 12,791,903.6374 E

GS Elev.: 683.9' Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 8.0" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: 140lbs NA

Hammer Fall: 30" NA

Other: NA NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------|-------|--|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | PROTECTIVE CASING |
| 1 | | | | | | See SB-18/MW-18D boring log for sample description and classification. | | | | |
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| 12 | | | | | | | | | | |
| 13 | | | | | | Bottom of Borehole at 23.5 Feet | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |

Grout

Top of Well Screen

Silica Sand Filter Pack

2-Inch Dia. 10-Foot PVC Screen (0.010" Slot)

Bottom of Well Screen

1

1. Monitoring well was installed in borehole upon completion. Well screen set from 13.0 to 23.0 feet below ground surface.

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-18S

BORING WI 62355.52 HOUSE STREET COMPLETE.GPJ WI DNR.GDT 4/15/20



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Packer Drive

Plainfield, Michigan

Boring No.: MW-19D

Page: 1 of 4

File No.: 16.0062335.52

Check: _____

Contractor: Cascade Drilling

Foreman: Jason

Logged by: Ken Oanes

Date Start/Finish: 1-8-18 / 1-8-18

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Type: Sonic NA

O.D. / I.D.: NA NA

Hammer Wt.: NA NA

Hammer Fall: NA NA

TOC Elev.: NA NA

Sampler

GROUNDWATER READINGS

Date Time Depth Casing Stab

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|----------------------|--|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 60/60 | 0-5 | | 0.7 ppm <0.25 tsf | Very soft, black, SILT, contains Organics (topsoil), trace Gravel, moist (ML). Changing at 2.0 feet to: Loose, light brown, Silty fine to coarse GRAVEL, sub-angular, some Sand, moist (GM). | SILT (ML) | 1 | | |
| 2 | | | | | | | | 2 | | |
| 3 | | | | | 1.6 ppm | | GRAVEL (GM) | | | |
| 4 | | | | | | | | | | |
| 5 | 2 | 60/60 | 5-10 | | 1.6 ppm | Loose, brown, well graded, fine to coarse SAND and GRAVEL, sub-angular to sub-rounded, some lithics, trace Silt, moist (SW). | SAND (SW) | | | |
| 6 | | | | | 1.5 ppm | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | 3 | 60/60 | 10-15 | | 2.8 ppm | Loose, brown, well graded, fine to coarse SAND and GRAVEL, sub-angular to sub-rounded, some lithics, trace Silt, moist (SW). | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | 2.7 ppm | | | | | |
| 14 | | | | | | | | | | |
| 15 | 4 | 60/60 | 15-20 | | 3.9 ppm | Stiff, light brown, Silty fine SAND, trace fine Gravel, moist (SM). | SAND (SM) | | | |
| 16 | | | | | 4.3 ppm | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | 5 | 60/60 | 20-25 | | 5.8 ppm | Stiff, light brown, Silty fine SAND, trace fine Gravel, moist (SM). | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | 4.2 ppm | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | 6 | 60/60 | 25-30 | | 3.5 ppm >4.5 tsf | Stiff, dark gray, Silty CLAY, trace fine Sand, trace fine Gravel, moist (CL). | CLAY (CL) | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | 2.5 ppm | | | | | |
| 29 | | | | | | | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 2000 photoionization detector equipped with a 10.6 eV lamp. Readings are shown in parts per million (ppm) of isobutylene. Background was measured at 0.0 ppm.
- Pocket penetrometer readings were measured in tons per square foot (tsf) and are used to evaluate consistency of cohesive soil.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-19D

BORING WELL 6233552 WWW.PACKER DR. PLAINFIELD MI.GPJ GZA CORP.GDT 1/25/18



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Packer Drive

Plainfield, Michigan

Boring No.: MW-19D

Page: 2 of 4

File No.: 16.0062335.52

Check:

| Sample Information | | | | | | Check: | | | | |
|--------------------|---|------------------|-------------|-------------|----------------------|---|------------------|---------|---------------------|-------|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 31 | 7 | 60/60 | 30-35 | | 5.4 ppm >4.0 tsf | Stiff, dark gray, Silty CLAY, trace fine Sand, trace fine Gravel, moist (CL). | CLAY (CL) | 3 4 | | Grout |
| 32 | | | | | 3.3 ppm | | | | | |
| 33 | | | | | | | | | | |
| 34 | | | | | | | | | | |
| 35 | 8 | 60 | 35-40 | | 5.8 ppm >4.0 tsf | Stiff, dark gray, Silty CLAY, trace fine Sand, trace fine Gravel, moist (CL). | | | | |
| 36 | | | | | | | | | | |
| 37 | | | | | | | | | | |
| 38 | | | | | 5.6 ppm | | | | | |
| 39 | | | | | | | | | | |
| 40 | 9 | 60/60 | 40-45 | | 11.8 ppm >4.0 tsf | Stiff, dark gray, Silty CLAY, trace fine Sand, trace fine Gravel, moist (CL). | | | | |
| 41 | | | | | | | | | | |
| 42 | | | | | | | | | | |
| 43 | | | | | 10.7 ppm | | | | | |
| 44 | | | | | | | | | | |
| 45 | 10 | 60/60 | 45-50 | | 7.2 ppm >4.0 tsf | Stiff, dark gray, Silty CLAY, trace fine Sand, trace fine Gravel, moist (CL). | | | | |
| 46 | | | | | | | | | | |
| 47 | | | | | | | | | | |
| 48 | | | | | 11.9 ppm | | | | | |
| 49 | | | | | | | | | | |
| 50 | 11 | 60/60 | 50-55 | | 2.6 ppm >4.5 tsf | Stiff, dark gray, Silty CLAY, trace fine Sand, trace fine Gravel, moist (CL). | | | | |
| 51 | | | | | | | | | | |
| 52 | | | | | | | | | | |
| 53 | | | | | 10.1 ppm | | | | | |
| 54 | | | | | | | | | | |
| 55 | 12 | 60/60 | 55-60 | | 0.7 ppm >4.0 tsf | Hard, light gray, Silty CLAY, trace coarse Sand, trace fine Gravel, moist (CL). Changing at 57.0 feet to: Loose, gray, poorly graded, fine SAND, some lithics, sub-rounded, little Silt, wet (SM). Changing at 59.0 feet to: Stiff, gray, SILT, trace fine Sand, trace fine Gravel, wet (ML). | 57' SAND (SM) | | | |
| 56 | | | | | | | | | | |
| 57 | | | | | | | | | | |
| 58 | | | | | | | | | | |
| 59 | | | | | 1.5 tsf | | 59' SILT (ML) | | | |
| 60 | 13 | 60/60 | 60-65 | | 3.0 ppm >4.0 tsf | Hard, gray, Silty CLAY, trace coarse Sand, trace fine Gravel, sub-angular, moist (CL). | 60' CLAY (CL) | | | |
| 61 | | | | | | | | | | |
| 62 | | | | | | | | | | |
| 63 | | | | | 4.8 ppm | | | | | |
| 64 | | | | | | | | | | |
| REMARKS | 3. Groundwater was encountered 55.0 feet below ground surface. 4. Temporary well set at 55.0 to 60.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |
| Boring No.: MW-19D | | | | | | | | | | |

BORING WELL 6233552 WWW.PACKER DR. PLAINFIELD MI.GPJ GZA CORP.GDT 1/25/18



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Plainfield, Michigan

Boring No.: MW-19D

Page: 3 of 4

File No.: 16.0062335.52

Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|-------|--------------------|------------------|-------------|-------------|----------------------|---|--------------------------------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 66 | 14 | 60/60 | 65-70 | | 4.2 ppm >4.0 tsf | Hard, gray, Silty CLAY, trace coarse Sand, trace fine Gravel, sub-angular, moist (CL). | CLAY (CL) | | |
| 67 | | | | | | | | | |
| 68 | | | | | 2.9 ppm | | | | |
| 69 | | | | | | | | | |
| 70 | 15 | 60/60 | 70-75 | | 7.0 ppm >4.0 tsf | Hard, gray, Silty CLAY, trace coarse Sand, trace fine Gravel with confinement increasing with depth, sub-angular, moist (CL). | | | |
| 71 | | | | | | | | | |
| 72 | | | | | 6.5 ppm | | | | |
| 73 | | | | | | | | | |
| 74 | 16 | 60/60 | 75-80 | | 10.8 ppm >4.0 tsf | Hard, gray, Silty CLAY, trace coarse Sand, trace fine Gravel with confinement increasing with depth, sub-angular, moist (CL). | | | |
| 75 | | | | | | | | | |
| 76 | | | | | 4.0 ppm | | | | |
| 77 | | | | | | | | | |
| 78 | 17 | 60/60 | 80-85 | | 2.0 ppm | Loose, brown, Silty fine SAND, some medium to coarse Sand, trace Gravel, sub-angular, wet (SM). Changing at 81.0 feet to: Loose, brown, well graded, fine to coarse SAND and fine to coarse GRAVEL, sub-angular to agular gravel content increasing with depth, wet (SW). | 80' SAND (SM) 81' SAND (SW) | 5 6 | |
| 80 | | | | | | | | | |
| 81 | | | | | 0.3 ppm | | | | |
| 82 | | | | | | | | | |
| 83 | 18 | 60/60 | 85-90 | | 8.2 ppm | Loose, brown, well graded, fine to coarse SAND and fine to coarse GRAVEL, sub-angular to agular gravel content increasing with depth, wet (SW). | | | |
| 84 | | | | | | | | | |
| 85 | | | | | 0.2 ppm | | | | |
| 86 | | | | | | | | | |
| 87 | 19 | 60 | 90-95 | | 0.4 ppm | Loose, dark gray, fine to coarse SAND and fine to coare GRAVEL, sub-angular, trace Silt, wet with 3 inch Cobble at 91.3 feet (SW). | | 7 | |
| 88 | | | | | | | | | |
| 89 | | | | | 0.3 ppm | | | | |
| 90 | | | | | | | | | |
| 91 | 20 | 60/60 | 95-100 | | 0.1 ppm >4.5 tsf | Hard, dark gray, CLAY, trace fine Sand, trace Gravel, easily rolls 1/8" ribbon, moist (CL). | 95' CLAY (CL) | | |
| 92 | | | | | | | | | |
| 93 | | | | | 0.1 ppm | | | | |
| 94 | | | | | | | | | |
| 95 | | | | | | | | | |
| 96 | | | | | | | | | |
| 97 | | | | | | | | | |
| 98 | | | | | | | | | |
| 99 | | | | | | | | | |

REMARKS

- Groundwater was encountered at approximately 80.0 feet below ground surface.
- Temporary well set at 80.0 to 85.0 feet below ground surface. Groundwater sample submitted for laboratory analysis.
- Temporary well set at 90.0 to 95.0 feet below ground surface. Groundwater sample submitted for laboratory analysis.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-19D

BORING WELL 6233552 WWW.PACKER DR. PLAINFIELD MI.GPJ GZA CORP.GDT 1/25/18



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Plainfield, Michigan

Boring No.: MW-19D

Page: 4 of 4

File No.: 16.0062335.52

Check:

| Sample Information | | | | | | Check: | | | |
|--------------------|---|------------------------|----------------|----------------|---------------------|--|---------------------|---------|---------------------|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
| | | | | | | | | | |
| 101 | 21 | 60/60 | 100-105 | | 0.3 ppm >4.5 tsf | Hard, dark gray, lean CLAY, low plasticity, moist (CL). Changing at 104.0 feet to: Stiff, dark gray, SILT with Clay, low plasticity, wet (ML). | CLAY (CL) | 8 | |
| 102 | | | | | | | | | |
| 103 | | | | | 0.4 ppm 1.5 tsf | | | | |
| 104 | | | | | | | 104' SILT (ML) | | |
| 105 | 22 | 60/60 | 105-110 | | 0.8 ppm 1.0 tsf | Stiff, dark gray, SILT with Clay, low plasticity, trace fine Sand increasing with depth, wet (ML). | | | |
| 106 | | | | | | | | | |
| 107 | | | | | 0.7 ppm | | | | |
| 108 | | | | | | | | | |
| 109 | | | | | | | | | |
| 110 | 23 | 60/60 | 110-115 | | 0.4 ppm 0.5 tsf | Soft, gray, poorly graded, fine SAND, trace Silt, wet (SP). Changing at 111.3 feet to: Hard, dark gray, CLAY with some Silt, moist (CL). | 110' SAND (SP) | | |
| 111 | | | | | | | 111.3' CLAY (CL) | | |
| 112 | | | | | | | | | |
| 113 | | | | | 0.7 ppm >4.5 tsf | | | | |
| 114 | | | | | | | | | |
| 115 | 24 | 60/60 | 115-120 | | 0.7 ppm 1.0 tsf | Medium stiff, dark gray, Silty CLAY, moist (CL). | | | |
| 116 | | | | | | | | | |
| 117 | | | | | 0.5 ppm | | | | |
| 118 | | | | | | | | | |
| 119 | | | | | | | | | |
| 120 | 25 | 60/60 | 120-125 | | 0.8 ppm 4.0 tsf | Hard, gray, CLAY, some Silt, trace Gravel, moist (CL). Changing at 121.3 feet to: Hard, red, CLAY, some Silt, Gypsum inclusions, dry (CL). | | | |
| 121 | | | | | | | | | |
| 122 | | | | | | | | | |
| 123 | | | | | 1.0 ppm >4.5 tsf | | | | |
| 124 | | | | | | | 125' | 9 | |
| 125 | | | | | | Bottom of Borehole at 125.0 Feet | | | |
| 126 | | | | | | | | | |
| 127 | | | | | | | | | |
| 128 | | | | | | | | | |
| 129 | | | | | | | | | |
| 130 | | | | | | | | | |
| 131 | | | | | | | | | |
| 132 | | | | | | | | | |
| 133 | | | | | | | | | |
| 134 | | | | | | | | | |
| REMARKS | 8. Insufficient groundwater yeild for temporary well. 9. Monitoring well was installed in borehole upon completion. Well screen set from 85.0 to 95.0 feet below ground surface. | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | |
| Boring No.: MW-19D | | | | | | | | | |

BORING WELL 6233552 WWW.PACKERDR.PLAINFOIELD MI.GPJ GZA.CORP.GDT 1/25/18



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Packer Drive

Plainfield, Michigan

Boring No.: MW-19S

Page: 1 of 2

File No.: 16.0062335.52

Check: _____

Contractor: Cascade Drilling

Foreman: Jason

Logged by: John Morehouse

Date Start/Finish: 1-16-18 / 1-16-18

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Sonic NA
O.D. / I.D.: NA NA
Hammer Wt.: NA NA
Hammer Fall: NA NA
TOC Elev.: NA NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|--|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See MW-19D boring log for sample description and classification. | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
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| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |

Grout

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-19S

BORING WELL 6233552 WWW.PACKER DR. PLAINFIELD MI.GPJ GZA CORP.GDT 1/25/18



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Wolverine World Wide, Inc.

Packer Drive

Plainfield, Michigan

Boring No.: MW-19S

Page: 2 of 2

File No.: 16.0062335.52

Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|-------|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 31 | | | | | | | | | |
| 32 | | | | | | | | | |
| 33 | | | | | | | | | |
| 34 | | | | | | | | | |
| 35 | | | | | | | | | |
| 36 | | | | | | | | | |
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| 56 | | | | | | | | | |
| 57 | | | | | | | | | |
| 58 | | | | | | | | | |
| 59 | | | | | | | | | |
| 60 | | | | | | | | | |
| 61 | | | | | | Bottom of Borehole at 61.0 Feet | | 1 | |
| 62 | | | | | | | | | |
| 63 | | | | | | | | | |
| 64 | | | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 58.0 to 61.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-19S

BORING WELL 6233552 WWW.PACKERDR.PLAINFOIELD.MI.GPJ GZA_CORP.GDT 1/25/18



GZA
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Engineers and Scientists

1855 House Street: Off-Site Borings

6868 Wild Wood Creek Road, NE

Belmont, Michigan

Boring No.: SB-20/MW-20D

Page: 1 of 16

File No.: 16.0062335.52

Check: Julie Groenleer

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 11-15-18 / 11-17-18

Boring Location:

GS Elev.: Datum:

**Auger/
Casing**

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

NA

Hammer Wt.: 140 lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/10.8 | 0-2 | 0-0 1-1 | 0.0 ppm | Very dark brown, well sorted SILT and fine grained Sand, moist. Changing at 0.4 feet to: Yellowish-brown, moderately sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist. Changing at 0.9 feet to: NO RECOVERY. | SILT 0.4' SAND 0.9' NO RECOVERY | 1 | | |
| 2 | 2 | 24/1.2 | 2-4 | 2-3 3-3 | 0.0 ppm | Yellowish-brown, moderately sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist. Changing at 2.1 feet to: NO RECOVERY. | 2' 2.1' SAND NO RECOVERY | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/15.6 | 4-6 | 3-4 5-5 | 0.0 ppm | Yellowish-brown, moderately sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist. Changing at 4.5 feet to: Dark yellowish-brown, poorly sorted, SILT, some fine grained Sand, trace Gravel, trace Clay, non to slightly plastic, moderately cohesive, moist. Changing at 4.8 feet to: Yellowish-brown, moderately sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist. Changing at 5.3 feet to: NO RECOVERY. | 4' SAND 4.5' SILT 4.8' SAND 5.3' NO RECOVERY | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/16.8 | 6-8 | 2-3 3-3 | 0.0 ppm | Dark yellowish-brown, poorly sorted, fine to coarse grained SAND, trace Gravel, trace Silt, moist. Changing at 6.6 feet to: Light yellowish-brown, well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 7.4 feet to: NO RECOVERY. | 6' SAND 7.4' NO RECOVERY 8' | | | |
| 7 | | | | | | | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 2000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million (ppm) of isobutylene. Groundwater was measured at 0.0 ppm.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-20/MW-20D

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS WILD WOOD CREEK GPJ GZA CORP GDT 2/27/19



GZA
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Engineers and Scientists

1855 House Street: Off-Site Borings

6868 Wild Wood Creek Road, NE

Belmont, Michigan

Boring No.: SB-20/MW-20D

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File No.: 16.0062335.52

Check: Julie Groenleer

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|--|--|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 8 | 5 | 24/8.4 | 8-10 | 3-4 4-5 | 0.0 ppm | Light yellowish-brown, well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 8.6 feet to: Light yellowish-brown to pale brown, poorly sorted, fine to coarse grained SAND, some Gravel, trace Silt, moist. Changing at 8.7 feet to: NO RECOVERY. | SAND 8.7' NO RECOVERY | | | |
| 10 | 6 | 24/13.2 | 10-12 | 4-5 5-6 | 0.0 ppm | Light yellowish-brown to pale brown, moderately sorted fine to medium grained SAND, little coarse grained Sand, trace Silt, moist. Changing at 10.2 feet to: Light yellowish-brown to pale brown, poorly sorted, fine to coarse grained SAND, some Gravel, trace Silt, moist. Changing at 11.1 feet to: NO RECOVERY. | 10' SAND 11.1' NO RECOVERY | | | |
| 12 | 7 | 24/12 | 12-14 | 6-10 8-8 | 0.0 ppm | Yellowish-brown, poorly sorted, fine to coarse grained SAND, little Gravel, trace Silt, moist. Changing at 12.5 feet to: Yellowish-brown, poorly sorted, medium to coarse grained SAND, trace Gravel, trace Silt, moist. Changing at 13.0 feet to: NO RECOVERY. | 12' SAND 13' NO RECOVERY | | | |
| 14 | 8 | 24/14.4 | 14-16 | 4-5 9-14 | 0.0 ppm | Yellowish-brown, poorly sorted, medium to coarse grained SAND, trace Gravel, trace Silt, moist. Changing at 15.0 feet to: GRAVEL, fractured Cobble. Changing at 15.2 feet to: NO RECOVERY. | 14' SAND 15' GRAVEL 15.2' NO RECOVERY | | | |
| 16 | 9 | 24/14.4 | 16-18 | 8-14 14-14 | 0.0 ppm | Yellowish-brown, poorly sorted, medium to coarse SAND, little Gravel, trace Silt, moist. Changing at 17.2 feet to: NO RECOVERY. | 16' SAND 17.2' | | | |
| 17 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-20/MW-20D | |

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS WILD WOOD CREEK GPJ GZA CORP GDT 2/27/19



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Engineers and Scientists

1855 House Street: Off-Site Borings

6868 Wild Wood Creek Road, NE

Belmont, Michigan

Boring No.: SB-20/MW-20D

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Check: Julie Groenleer

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|---|----------------------|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 18 | 10 | 24/14.4 | 18-20 | 9-11 11-14 | 0.0 ppm | Yellowish-brown, poorly sorted, medium to coarse grained SAND, little Gravel, trace Silt, moist. Changing at 19.2 feet to: NO RECOVERY. | NO RECOVERY | | | |
| | | | | | | | 18' SAND | | | |
| 19 | 11 | 24/14.4 | 20-22 | 11-22 23-19 | 0.0 ppm | Yellowish-brown, poorly sorted, medium to coarse grained SAND, little Gravel, trace Silt, moist. Changing at 21.2 feet to: NO RECOVERY. | 19.2' NO RECOVERY | | | |
| 20 | | | | | | | 20' SAND | | | |
| 21 | | | | | | | 21.2' NO RECOVERY | | | |
| 22 | 12 | 24/15.6 | 22-24 | 5-13 15-14 | 0.0 ppm | Yellowish-brown, poorly sorted, coarse grained SAND, some Gravel, trace Silt, moist. Changing at 23.3 feet to: NO RECOVERY. | 22' SAND | | | |
| 23 | | | | | | | 23.3' NO RECOVERY | | | |
| 24 | | | | | | | 24' SAND | | | |
| 25 | 13 | 24/14.4 | 24-26 | 5-9 10-11 | 0.0 ppm | Yellowish-brown, poorly sorted, medium to coarse grained SAND, little Gravel, trace Silt, moist. Changing at 25.2 feet to: NO RECOVERY. | 25.2' NO RECOVERY | | | |
| 26 | | | | | | | 26' SAND | | | |
| 26 | 14 | 24/12 | 26-28 | 4-7 47-17 | 0.0 ppm | Yellowish-brown, poorly sorted, medium to coarse grained SAND, little Gravel, trace Silt, moist. Changing at 26.9 feet to: Very pale brown to pale brown, well sorted, fine | | | | |
| REMARKS | | | | | | | | | | |
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| Benton, Michigan | | | | | | | | | | Check: Julie Groenleer | |
|---|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|---------------------|--------------------------|-------------|
| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | | |
| 27 | 15 | 24/19.2 | 28-30 | 3-6 8-15 | 0.0 ppm | to medium grained SAND, trace Silt, moist. Changing at 27.0 feet to: NO RECOVERY. | SAND | | | | |
| | | | | | | 27' | NO RECOVERY | | | | |
| 28 | 15 | 24/19.2 | 28-30 | 3-6 8-15 | 0.0 ppm | Very pale brown to pale brown, well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 28.1 feet to: Very pale brown to pale brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 29.6 feet to: NO RECOVERY. | 28' | | | | |
| | | | | | | | SAND | | | | |
| 29 | | | | | | | | | | | |
| | 16 | 24/16.8 | 30-32 | 4-7 9-11 | 0.0 ppm | Very pale brown to pale brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 31.4 feet to: NO RECOVERY. | 29.6' | | | | |
| | | | | | | | NO RECOVERY | | | | |
| 30 | | | | | | | 30' | | | | SAND |
| | 16 | 24/16.8 | 30-32 | 4-7 9-11 | 0.0 ppm | Very pale brown to pale brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 31.4 feet to: NO RECOVERY. | | | | | |
| 31 | | | | | | | | | | | |
| | | | | | | | 31.4' | | | | NO RECOVERY |
| | 17 | 24/15.6 | 32-34 | 3-6 9-10 | 0.0 ppm | Very pale brown to pale brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 33.3 feet to: NO RECOVERY. | 32' | | | | |
| | | | | | | | SAND | | | | |
| 33 | | | | | | | | | | | |
| | 17 | 24/15.6 | 32-34 | 3-6 9-10 | 0.0 ppm | Very pale brown to pale brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 33.3 feet to: NO RECOVERY. | 33.3' | | | | |
| | | | | | | | NO RECOVERY | | | | |
| 34 | | | | | | | 34' | | | | SAND |
| | 18 | 24/18 | 34-36 | 3-6 7-9 | 0.0 ppm | Very pale brown to pale brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 35.5 feet to: NO RECOVERY. | | | | | |
| 35 | | | | | | | | | | | |
| | | | | | | | 35.5' | | | | NO RECOVERY |
| | | | | | | | 36' | | | | |
| REMARKS | | | | | | | | | | | |
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BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS WILD WOOD CREEK GPJ GZA CORP.GDT 2/27/19



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6868 Wild Wood Creek Road, NE

Belmont, Michigan

Boring No.: SB-20/MW-20D

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File No.: 16.0062335.52

Check: Julie Groenleer

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|---------------|-------------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 37 | 19 | 24/18 | 36-38 | 3-6 8-8 | 0.0 ppm | Very pale brown to pale brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 37.5 feet to: NO RECOVERY. | SAND | | | |
| | | | | | | | 37.5' | NO RECOVERY | | |
| 38 | 20 | 24/16.8 | 38-40 | 3-6 8-10 | 0.0 ppm | Light yellowish-brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 39.4 feet to: NO RECOVERY. | SAND | | | |
| 39 | | | | | | | 39.4' | NO RECOVERY | | |
| 40 | 21 | 24/19.2 | 40-42 | 3-4 6-7 | 0.0 ppm | Light yellowish-brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 41.6 feet to: NO RECOVERY. | SAND | | | |
| 41 | | | | | | | 41.6' | NO RECOVERY | | |
| 42 | 22 | 24/15.6 | 42-44 | 4-5 7-8 | 0.0 ppm | Light yellowish-brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 43.3 feet to: NO RECOVERY. | SAND | | | |
| 43 | | | | | | | 43.3' | NO RECOVERY | | |
| 44 | 23 | 24/19.2 | 44-46 | 3-7 8-11 | 0.0 ppm | Light yellowish-brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 45.6 feet to: NO RECOVERY. | SAND | | | |
| 45 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-20/MW-20D | |

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS WILD WOOD CREEK.GPJ GZA CORP.GDT 2/27/19



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Check: Julie Groenleer

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|--------------|-----------|--|---|---------|--------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 46 | 24 | 24/16.8 | 46-48 | 4-5 8-10 | 0.0 ppm | Light yellowish-brown, very well sorted fine to medium grained SAND, trace Silt, moist. Changing at 47.4 feet to: NO RECOVERY. | SAND 45.6' NO RECOVERY 46' SAND | | |
| 47 | | | | | | | 47.4' NO RECOVERY | | |
| 48 | 25 | 24/21.6 | 48-50 | 4-6 7-11 | 0.0 ppm | Light yellowish-brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 49.8 feet to: NO RECOVERY. | 48' SAND | | |
| 49 | | | | | | | | | |
| 50 | 26 | 24/21.6 | 50-52 | 4-6 8-12 | 0.0 ppm | Light yellowish-brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 51.8 feet to: NO RECOVERY. | 49.8' NO RECOVERY 50' SAND | | |
| 51 | | | | | | | | | |
| 52 | 27 | 24/20.4 | 52-54 | 6-9 10-11 | 0.0 ppm | Light yellowish-brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 53.7 feet to: NO RECOVERY. | 51.8' NO RECOVERY 52' SAND | | |
| 53 | | | | | | | | | |
| 54 | 28 | 24/19.2 | 54-56 | 2-4 6-8 | 0.0 ppm | Light yellowish-brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 54.3 feet to: Brown, very well sorted, fine to medium grained SAND, trace | 53.7' NO RECOVERY 54' SAND | 2 | |
| REMARKS 2. Groundwater was encountered at approximately 54.3 feet below ground surface. | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-20/MW-20D |

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS WILD WOOD CREEK GPJ GZA CORP.GDT 2/27/19



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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|----------------------|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 55 | 29 | 24/21.6 | 56-58 | 2-4 6-8 | 0.0 ppm | Silt, wet. Changing at 55.6 feet: NO RECOVERY. | SAND | | | |
| | | | | | | | 55.6' NO RECOVERY | | | |
| 56 | | | | | | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 57.8 feet to: NO RECOVERY. | SAND | | | |
| 57 | 30 | 24/22.8 | 58-60 | 1-1 2-4 | 0.0 ppm | | | | | |
| | | | | | | | 57.8' NO RECOVERY | | | |
| 58 | | | | | | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 59.9 feet to: NO RECOVERY. | SAND | | | |
| 59 | 31 | 24/21.6 | 60-62 | 0-1 1-3 | 0.0 ppm | | | | | |
| | | | | | | | 59.9' NO RECOVERY | | | |
| 60 | | | | | | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 61.8 feet to: NO RECOVERY. | SAND | | | |
| 61 | 32 | 24/16.8 | 62-64 | 1-2 2-6 | 0.0 ppm | | | | | |
| | | | | | | | 61.8' NO RECOVERY | | | |
| 62 | | | | | | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 63.4 feet to: NO RECOVERY. | SAND | | | |
| 63 | | | | | | | 63.4' NO RECOVERY | | | |
| | | | | | | | 64' | | | |
| REMARKS | | | | | | | | | | |
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BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS WILD WOOD CREEK GPJ GZA CORP.GDT 2/27/19

Bentonite / Grout



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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|-------------------------------|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 65 | 33 | 24/22.8 | 64-66 | 2-4 4-7 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 65.9 feet to: NO RECOVERY. | SAND | | | |
| 66 | 34 | 24/18 | 66-68 | 2-2 4-6 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 67.5 feet to: NO RECOVERY. | 65.9' 66' NO RECOVERY SAND | | | |
| 67 | | | | | | | 67.5' NO RECOVERY | | | |
| 68 | 35 | 24/19.2 | 68-70 | 8-9 7-10 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 69.6 feet to: NO RECOVERY. | 68' SAND | | | |
| 69 | | | | | | | 69.6' NO RECOVERY | | | |
| 70 | 36 | 24/4.8 | 70-72 | 2-3 5-8 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 70.4 feet to: NO RECOVERY. | 70' SAND 70.4' NO RECOVERY | | | |
| 71 | | | | | | | 72' SAND | | | |
| 72 | 37 | 24/24 | 72-74 | 2-2 3-6 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. | | | | |
| 73 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|-------------------------------------|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 74 | 38 | 24/13.2 | 74-76 | 1-0 0-0 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 75.1 feet to: NO RECOVERY. | SAND | | | |
| 75 | | | | | | | 75.1' NO RECOVERY | | | |
| 76 | 39 | 24/21.6 | 76-78 | 1-2 5-7 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 77.8 feet to: NO RECOVERY. | 76' SAND | | | |
| 77 | | | | | | | | | | |
| 78 | 40 | 24/9.6 | 78-80 | 3-5 6-9 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 78.8 feet to: NO RECOVERY. | 77.8' 78' NO RECOVERY SAND | | | |
| 79 | | | | | | | 78.8' NO RECOVERY | | | |
| 80 | 41 | 24/19.2 | 80-82 | 1-3 7-12 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 81.6 feet to: NO RECOVERY. | 80' SAND | | | |
| 81 | | | | | | | | | | |
| 82 | 42 | 24/10.8 | 82-84 | 1-2 5-7 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 82.9 feet to: NO RECOVERY. | 81.6' NO RECOVERY 82' SAND | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|-------------------|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 83 | 43 | 24/22.8 | 84-86 | 3-4 9-15 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 85.9 feet to: NO RECOVERY. | 82.9' SAND | | | |
| | | | | | | | NO RECOVERY | | | |
| 84 | 44 | 24/10.8 | 86-88 | 1-1 3-6 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 86.9 feet to: NO RECOVERY. | 84' SAND | | | |
| | | | | | | | 85.9' NO RECOVERY | | | |
| 85 | 45 | 24/13.2 | 88-90 | 2-3 5-10 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 89.1 feet to: NO RECOVERY. | 86' SAND | | | |
| | | | | | | | 86.9' NO RECOVERY | | | |
| 86 | 46 | 24/22.8 | 90-92 | 1-2 4-10 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 91.9 feet to: NO RECOVERY. | 88' SAND | | | |
| | | | | | | | 89.1' NO RECOVERY | | | |
| 87 | | | | | | | 90' SAND | | | |
| 88 | | | | | | | 91.9' SAND | | | |
| 89 | | | | | | | 92' | | | |
| 90 | | | | | | | | | | |
| 91 | | | | | | | | | | |
| 92 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------------|-----------|---|---------------------------|---------|--------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 92 | 47 | 24/6 | 92-94 | 1-2 5-7 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 92.5 feet to: NO RECOVERY. | 92.5' NO RECOVERY SAND | | |
| 93 | | | | | | | 94' NO RECOVERY | | |
| 94 | 48 | 24/18 | 94-96 | 2-1 4-8 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 95.5 feet to: NO RECOVERY. | 95.5' SAND | | |
| 95 | | | | | | | 96' NO RECOVERY | | |
| 96 | 49 | 24/15.6 | 96-98 | 0-1 2-4 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 97.3 feet to: NO RECOVERY. | 97.3' SAND | | |
| 97 | | | | | | | 98' NO RECOVERY | | |
| 98 | 50 | 24/18 | 98-100 | 1-0 2-4 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 99.5 feet to: NO RECOVERY. | 99.5' SAND | | |
| 99 | | | | | | | 100' NO RECOVERY | | |
| 100 | 51 | 24/21.6 | 100-102 | 2-3 6-10 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 101.8 feet to: NO RECOVERY. | 101.8' SAND | | |
| 101 | | | | | | | | | |
| REMARKS | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-20/MW-20D |

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS WILD WOOD CREEK GPJ GZA CORP GDT 2/27/19



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

1855 House Street: Off-Site Borings

6868 Wild Wood Creek Road, NE

Belmont, Michigan

Boring No.: SB-20/MW-20D

Page: 12 of 16

File No.: 16.0062335.52

Check: Julie Groenleer

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|---|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 102 | 52 | 24/20.4 | 102-104 | 0-1 3-4 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 103.7 feet to: NO RECOVERY. | SAND 101.8' 102' NO RECOVERY SAND | | | |
| 104 | 53 | 24/24 | 104-106 | 2-3 8-15 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. | 103.7' 104' NO RECOVERY SAND | | | |
| 106 | 54 | 24/22.8 | 106-108 | 3-3 7-10 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 107.9 feet to: NO RECOVERY. | | | | |
| 108 | 55 | 24/22.8 | 108-110 | 1-1 2-4 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 109.9 feet to: NO RECOVERY. | 107.9' 108' NO RECOVERY SAND | | | |
| 110 | 56 | 24/13.2 | 110-112 | 1-3 4-9 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 111.1 feet to: NO RECOVERY. | 109.9' 110' NO RECOVERY SAND | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-20/MW-20D | |

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS WILD WOOD CREEK GPJ GZA CORP.GDT 2/27/19



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

1855 House Street: Off-Site Borings

6868 Wild Wood Creek Road, NE

Belmont, Michigan

Boring No.: SB-20/MW-20D

Page: 13 of 16

File No.: 16.0062335.52

Check: Julie Groenleer

| Benton, Michigan | | | | | | | | | | Check: Julie Groenleer | |
|---|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|--------------------------|------------------------|-------------|
| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | | |
| 111 | 57 | 24/19.2 | 112-114 | 2-3 7-11 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 113.6 feet to: NO RECOVERY. | SAND | | | | |
| | | | | | | | 111.1' | | | | NO RECOVERY |
| 112 | | | | | | | 112' | | | | SAND |
| 113 | 58 | 24/24 | 114-116 | 1-3 5-11 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. | 113.6' | | | | |
| | | | | | | | NO RECOVERY | | | | |
| 114 | | | | | | | 114' | | | | SAND |
| 115 | 59 | 24/9.6 | 116-118 | 1-1 3-8 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 116.8 feet to: NO RECOVERY. | 116.8' | | | | |
| | | | | | | | NO RECOVERY | | | | |
| 117 | | | | | | | 118' | | | | SAND |
| 118 | 60 | 24/20.4 | 118-120 | 1-2 5-9 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 119.7 feet to: NO RECOVERY. | 119.7' | | | | |
| | | | | | | | NO RECOVERY | | | | |
| 119 | | | | | | | 120' | | | | |
| REMARKS | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-20/MW-20D | | |

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS WILD WOOD CREEK.GPJ GZA_CORP.GDT 2/27/19



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GeoEnvironmental, Inc.
Engineers and Scientists

1855 House Street: Off-Site Borings

6868 Wild Wood Creek Road, NE

Belmont, Michigan

Boring No.: SB-20/MW-20D

Page: 14 of 16

File No.: 16.0062335.52

Check: Julie Groenleer

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|--------------------|-----------|---|---|---------|---------------------|---|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 120 | 61 | 24/10.8 | 120-122 | 2-3 6-10 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 120.9 feet to: NO RECOVERY. | SAND | | | |
| 121 | | | | | | | 120.9' NO RECOVERY | | | |
| 122 | 62 | 24/22.8 | 122-124 | 3-4 9-15 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 123.5 feet to: Dark grayish-brown to dark brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 123.9 feet to: NO RECOVERY. | 122' SAND | | | |
| 123 | | | | | | | 123.5' Silty CLAY | | | |
| 124 | 63 | 24/18 | 124-126 | 2-4 6-11 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 125.4 feet to: Dark grayish-brown to dark brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 125.5 feet to: NO RECOVERY. | 123.9' 124' NO RECOVERY SAND | | | |
| 125 | | | | | | | 125.4' 125.5' Silty CLAY NO RECOVERY | | | Top of Well Screen |
| 126 | 64 | 24/16.8 | 126-128 | 1-1 3-6 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 127.4 feet to: NO RECOVERY. | 126' SAND | | | Silica Sand Filter Pack |
| 127 | | | | | | | 127.4' NO RECOVERY | | | 2-Inch Dia. 5-Foot PVC Screen (0.010" Slot) |
| 128 | 65 | 24/22.8 | 128-130 | 7-23 36-50/4.5" | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 129.5 feet to: Dark gray to dark grayish-brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, moist. Changing at 129.9 feet to: NO RECOVERY. | 128' SAND | | | |
| 129 | | | | | | | | | | |
| REMARKS Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS WILD WOOD CREEK GPJ GZA CORP GDT 2/27/19

Boring No.: SB-20/MW-20D



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Engineers and Scientists

1855 House Street: Off-Site Borings

6868 Wild Wood Creek Road, NE

Belmont, Michigan

Boring No.: SB-20/MW-20D

Page: 15 of 16

File No.: 16.0062335.52

Check: Julie Groenleer

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---------|--------------------|------------------|-------------|--------------|-----------|--|--|-----------------------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 130 | 66 | 24/24 | 130-132 | 4-3 23-46 | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 130.9 feet to: Dark gray to dark grayish-brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, moist. Changing at 131.1 feet to: Dark gray, poorly sorted, GRAVEL, some Sand, trace Silt, wet. Changing at 131.3 feet to: Dark gray to dark grayish-brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, moist. Changing at 131.5 feet to: Brown, well sorted, fine to coarse SAND, trace Silt, wet. Changing at 131.8 feet to: Dark grayish-brown, poorly sorted, coarse SAND, some Gravel, trace Silt, wet. | 129.5' SAND CLAY & SILT 129.9' 130' NO RECOVERY SAND 130.9' 131.1' CLAY & SILT 131.3' GRAVEL 131.5' CLAY & SILT SAND 132.3' CLAY & SILT 132.9' NO RECOVERY | Bottom of Well Screen | |
| 131 | | | | | | | | | |
| 132 | 67 | 24/10.8 | 132-134 | 17-50/5.5" | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 132.3 feet to: Dark gray to dark grayish-brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, moist. Changing at 132.9 feet to: NO RECOVERY. | 134' SAND 134.2' GRAVEL 134.5' NO RECOVERY | | |
| 133 | | | | | | | | | |
| 134 | 68 | 24/6 | 134-136 | 50/6" | 0.0 ppm | Brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 134.2 feet to: Dark brown, poorly sorted, GRAVEL, fractured Cobble. Changing at 134.5 feet to: NO RECOVERY. | 136' GRAVEL 136.1' NO RECOVERY | | |
| 135 | | | | | | | | | |
| 136 | 69 | 24/1.2 | 136-138 | 50/5.5" | 0.0 ppm | Dark grayish-brown, poorly sorted, GRAVEL, some Clay & Silt, moist. Changing at 136.1 feet to: NO RECOVERY. | 138' CLAY & SILT NO RECOVERY | | |
| 137 | | | | | | | | | |
| 138 | 70 | 24/1.2 | 138-140 | 48-50/2" | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, little Gravel, trace Sand, plastic, cohesive, moist. Changing at 138.1 feet to: NO RECOVERY. | | | |
| REMARKS | | | | | | | | | |

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-20/MW-20D

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS WILD WOOD CREEK GPJ GZA CORP GDT 2/27/19



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Engineers and Scientists

1855 House Street: Off-Site Borings

6868 Wild Wood Creek Road, NE

Belmont, Michigan

Boring No.: SB-20/MW-20D

Page: 16 of 16

File No.: 16.0062335.52

Check: Julie Groenleer

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------------|-----------|--|-----------------------|---------|--------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 139 | 71 | 24/9.6 | 140-142 | 37-50/4" | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, little Gravel, trace Sand, plastic, cohesive, moist. Changing at 140.8 feet to: NO RECOVERY. | NO RECOVERY | | |
| 140 | | | | | | | 140' CLAY & SILT | | |
| 141 | | | | | | | 140.8' NO RECOVERY | | |
| 142 | | | | | | | 142' | | |
| 143 | | | | | | Bottom of Borehole at 142.0 Feet | | 3 | |
| 144 | | | | | | | | | |
| 145 | | | | | | | | | |
| 146 | | | | | | | | | |
| 147 | | | | | | | | | |
| 3. Monitoring well MW-20D was installed in borehole upon completion. Well screen set from 124.5 to 129.5 feet below ground surface. | | | | | | | | | |
| REMARKS | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-20/MW-20D |

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS WILD WOOD CREEK.GPJ GZA_CORP.GDT 2/27/19



GZA
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1855 House Street: Off-Site Borings

6868 Wild Wood Creek Road, NE

Belmont, Michigan

Boring No.: MW-20M

Page: 1 of 2

File No.: 16.0062335.52

Check: Julie Groenleer

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 11-5-18 / 11-6-18

Boring Location:

GS Elev.: Datum:

**Auger/
Casing**

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

NA

Hammer Wt.: 140 lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
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Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|---|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | | 0 | | | See SB-20/MW-20D boring log for detailed soil descriptions. | | | | |
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Bentonite /
Grout

**R
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Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-20M

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS WILD WOOD CREEK.GPJ GZA_CORP.GDT 2/27/19



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1855 House Street: Off-Site Borings

6868 Wild Wood Creek Road, NE

Belmont, Michigan

Boring No.: MW-20M

Page: 2 of 2

File No.: 16.0062335.52

Check: Julie Groenleer

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
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| 106 | | | | | | Bottom of Borehole at 105.0 Feet | | 1 | | |
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| REMARKS | | | | | | | | | | |
| 1. Monitoring well was installed in borehole upon completion. Well screen set from approximately 100.0 to 105.0 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-20M | |

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS WILD WOOD CREEK GPJ GZA CORP GDT 2/27/19

Top of Well Screen
Silica Sand Filter Pack
2-Inch Dia.
5-Foot PVC Screen (0.010" Slot)
Bottom of Well Screen



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Engineers and Scientists

1855 House Street: Off-Site Borings

6868 Wild Wood Creek Road, NE

Belmont, Michigan

Boring No.: MW-20S

Page: 1 of 2

File No.: 16.0062335.52

Check: Julie Groenleer

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 11-5-18 / 11-6-18

Boring Location:

GS Elev.: Datum:

**Auger/
Casing**

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

NA

Hammer Wt.: 140 lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|---|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | | 0 | | | See SB-20/MW-20D boring log for detailed soil descriptions. | | | | |
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Bentonite /
Grout

**R
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Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-20S

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS WILD WOOD CREEK GPJ GZA CORP GDT 2/27/19



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Engineers and Scientists

1855 House Street: Off-Site Borings

6868 Wild Wood Creek Road, NE

Belmont, Michigan

Boring No.: MW-20S

Page: 2 of 2

File No.: 16.0062335.52

Check: Julie Groenleer

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
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| 63 | | | | | | | | | | |
| 64 | | | | | | | | | | |
| 65 | | | | | | Bottom of Borehole at 65.0 Feet | | 1 | | |
| 66 | | | | | | | | | | |
| 67 | | | | | | | | | | |
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| 86 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| 1. Monitoring well was intalled in borehole upon completion. Well screen set from approximately 60.0 to 65.0 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-20S | |

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS WILD WOOD CREEK GPJ GZA CORP GDT 2/27/19

Top of Well Screen
Silica Sand Filter Pack
2-Inch Dia. 5-Foot PVC Screen (0.010" Slot)
Bottom of Well Screen



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Plainfield, Michigan

Boring No.: MW-21D

Page: 1 of 3

File No.: 16.0062335.52

Check: _____

Contractor: Cascade Drilling

Foreman: Jason

Logged by: Ken Oanes

Date Start/Finish: 1-2-18 / 1-2-18

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Type: Sonic NA

O.D. / I.D.: NA NA

Hammer Wt.: NA NA

Hammer Fall: NA NA

TOC Elev.: NA NA

Sampler

GROUNDWATER READINGS

Date Time Depth Casing Stab

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|--|---------------------------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 60/60 | 0-5 | | 1.7 ppm | Loose, black, Silty SAND with Organic Matter (roots), moist (SM). Changing at 1.3 feet to: Loose, light brown, well graded, SAND, trace Gravel, sub-angular to sub-rounded, coarser at 4.5 feet (SM). | SAND (SM) 1.3' | 1 | | |
| 2 | | | | | 0.8 ppm | | SAND (SW) | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | 2 | 60/60 | 5-10 | | 1.0 ppm | Loose, light brown, poorly graded, SAND, some Silty Clumps, sub-angular to sub-rounded, moist (SM). Changing at 8.5 feet to: Loose, brown, well graded, SAND and Gravel, sub-angular to sub-rounded, wet (SW). | 5' SAND (SP) | | | |
| 6 | | | | | 0.9 ppm | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | 8.5' SAND and GRAVEL (GW) | | | |
| 10 | 3 | 60/60 | 10-15 | | 1.0 ppm | Loose, brown, well graded, SAND with Gravel, sub-rounded, wet (SW). | 10' SAND (SW) | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | 0.5 ppm | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | 4 | 60/60 | 15-20 | | 0.7 ppm | Loose, brown, well graded, SAND with Gravel, sub-rounded, wet (SW). | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | 0.7 ppm | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | 5 | 60/60 | 20-25 | | 0.6 ppm | Loose, brown, well graded, SAND, sub-angular, wet (SW). | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | 0.7 ppm | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | 6 | 60/60 | 25-30 | | 0.5 ppm | Loose, brown, well graded, SAND, sub-angular, wet (SW). Changing at 27.0 feet to: Loose, brown, well graded, SAND, with Gravel and Cobble, sub-angular, wet (SW). Changing at 27.6 feet to: Soft, brown, SILT with Sand, wet (ML). Changing at 28.3 feet to: Loose, brown, poorly graded, SAND, little lithics, sub-rounded, wet (SP). | 27.6' 28.3' SILT (ML) SAND (SP) | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | 1.0 ppm | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 2000 photoionization detector equipped with a 10.6 eV lamp. Readings are shown in parts per million (ppm) of isobutylene. Background was measured at 0.0 ppm.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-21D

BORING WELL 6233552 WWW.PACKERDR.PLAINFOIELD.MI.GPJ GZA CORP.GDT 1/25/18



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Packer Drive

Plainfield, Michigan

Boring No.: MW-21D

Page: 2 of 3

File No.: 16.0062335.52

Check:

| Plainfield, Michigan | | | | | | | | | | Check: | | | | | | |
|---|--|------------------|-------------|-------------|---------------------|--|------------------|---------|---------------------|--------|---------------------|-----------|-----|-------------------------------|--|--------------------|
| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | | | | | | |
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | | | | | | | |
| 31 | 7 | 60/60 | 30-35 | | 0.8 ppm | Loose, brown, poorly graded, SAND, trace Gravel, little lithics, sub-angular, wet (SP). | SAND (SP) | 2 | | | | | | | | |
| 32 | | | | | 0.6 ppm | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | | | |
| 35 | 8 | 60/60 | 35-40 | | 0.4 ppm | Loose, brown, well graded, SAND with Gravel, sub-angular, some lithics, wet (SW). Changing at 37.5 feet to: Stiff, brown, SILT with Sand, trace Gravel, moist (ML). | 35' SAND (SW) | | | | Grout | | | | | |
| 36 | | | | | 37.5' | | | | | | | | | | | |
| 37 | | | | | | | | | | | | | | | | |
| 38 | | | | | 0.4 ppm 2.0 tsf | | SILT (ML) | | | | | | | | | |
| 39 | 9 | 60/60 | 40-45 | | 1.3 ppm | Hard, brown, Silty CLAY with Gravel, sub-rounded, becoming more Clay than Silt towards bottom, moist (OL). | 40' CLAY (OL) | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | | |
| 41 | | | | | | | 1.7 ppm | | | | | | | | | |
| 42 | | | | | | | | | | | | | | | | |
| 43 | 10 | 60/60 | 45-50 | | 1.1 ppm 3.5 tsf | Very stiff, brown, Silty CLAY with Gravel, sub-rounded, trace Sand, moist (CL). | | | | | | | | | | |
| 44 | | | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | 3.9 ppm | | | | | |
| 46 | | | | | | | | | | | | | | | | |
| 47 | 11 | 60/60 | 50-55 | | 1.1 ppm 0.5 tsf | Soft, brown, Silty CLAY with Gravel, little Sand, sub-rounded, moist (OL). Changing at 51.0 feet to: Very stiff, brown, lean CLAY, trace Gravel, moist (CL). Changing at 53.5 feet to: Stiff, brown, SILT, trace Gravel, moist (ML). | 51' CLAY (CL) | | | | | | | | | |
| 48 | | | | | | | 53.5' | | | | | | | | | |
| 49 | | | | | | | | | | | | | | | | |
| 50 | | | | | | | 12 | | | | 60/60 | 55-60 | | 1.3 ppm 3.0 tsf 2.0 tsf | Hard, brown, SILT, little Sand, trace Gravel, moist (ML). Changing at 56.8 feet to: Loose, brown, poorly graded SAND, sub-rounded, some lithetics, 2.0 " Cobbles at 58.9 feet, Wet (SP). | 53.5' SILT (ML) |
| 51 | 56.8' | | | | | | | | | | | | | | | |
| 52 | | | | | | | | | | | | | | | | |
| 53 | 13 | 60/60 | 60-65 | | 0.9 ppm >4.0 tsf | Loose, brown, poorly graded, SAND, trace Gravel, sub-rounded, some lithics, wet (SP). Changing at 64.0 feet to: Hard, dark gray, SILT, trace Gravel, grading to Clay, wet (ML). | | | | | | | | | | 56.8' SAND (SP) |
| 54 | | | | | | | 64' | | | | | | | | | |
| 55 | | | | | | | | | | | | | | | | |
| 56 | | | | | | | 1.1 ppm | | | | >4.0 tsf 1.0 ppm | SILT (SM) | 65' | | | |
| 57 | | | | | | | | | | | | | | | | |
| 58 | | | | | | | | | | | | | | | | |
| 59 | | | | | | | | | | | | | | | | |
| 60 | 2. Pocket penetrometer readings were measured in tons per square foot (tsf) and are used to evaluate consistency of cohesive soil. | | | | | | | | | | | | | | | |
| 61 | REMARKS | | | | | | | | | | | | | | | |
| 62 | | | | | | | | | | | | | | | | |
| 63 | | | | | | | | | | | | | | | | |
| 64 | | | | | | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-21D | | | | | | | |

BORING WELL 6233552 WWW.PACKERDR.PLAINFOIELD.MI.GPJ GZA CORP.GDT 1/25/18



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Packer Drive

Plainfield, Michigan

Boring No.: MW-21D

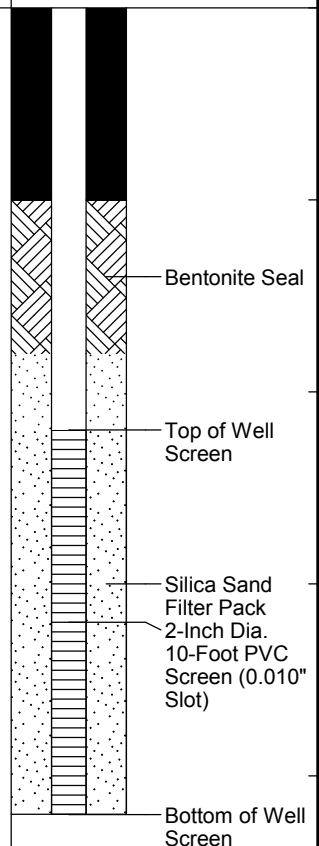
Page: 3 of 3

File No.: 16.0062335.52

Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------------|---------------------|--|--------------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 66 | 14 | 60/60 | 65-70 | | 3.0 ppm 3.5 tsf | Very stiff, dark gray, CLAY, trace Gravel, trace Sand, moist (CL). | CLAY (CL) | | |
| 67 | | | | | 1.7 ppm | | | | |
| 68 | | | | | | | | | |
| 69 | | | | | | | | | |
| 70 | 15 | 60/60 | 70-75 | | 0.3 ppm >4.0 tsf | Hard, dark brown, Clayey Gravel, dark brown, sub-round, moist (GL). | 70' GRAVEL (GL) | | |
| 71 | | | | | 0.7 ppm | | | | |
| 72 | | | | | | | | | |
| 73 | | | | | | | | | |
| 74 | | | | | | | | | |
| 75 | 16 | 60/60 | 75-80 | | 1.2 ppm >4.0 tsf | Hard, dark brown, lean CLAY, little Gravel, moist (CL). Changing at 79.0 feet to: Very stiff, dark brown, Clayey GRAVEL, some Sand, trace Cobbles, moist (GC). | 75' CLAY (CL) | | |
| 76 | | | | | 1.7 ppm | | | | |
| 77 | | | | | | | | | |
| 78 | | | | | | | | | |
| 79 | | | | | | | 79' GRAVEL (GL) | | |
| 80 | 17 | 60/60 | 80-85 | | 1.6 ppm | Medium dense, dark brown, Clayey SAND with Gravel, Cobbles at 81.0 feet, moist (SC). | 80' SAND (SC) | | |
| 81 | | | | | 2.3 ppm | | | | |
| 82 | | | | | | | | | |
| 83 | | | | | | | | | |
| 84 | | | | | | | | | |
| 85 | 18 | 60/60 | 85-90 | | 1.1 ppm | Loose, dark brown, SAND, trace Gravel, wet (SW). Changing at 85.8 feet to: Hard, dark gray, lean CLAY, low plasticity, moist (CL). | 85' SAND (SW) | | |
| 86 | | | | | | | CLAY (CL) | | |
| 87 | | | | | 1.0 ppm | Changing at 86.6 feet to: Hard, dark red with gray mottles, lean CLAY, small inclusions of white precipitate in gray mottles, possible gypsum Wet (CL). | 86.6' CLAY (CL) | | |
| 88 | | | | | | | | | |
| 89 | | | | | | | | | |
| 90 | 19 | 60/60 | 90-95 | | 1.9 ppm | Hard, dark reddish brown with gray mottles, lean CLAY, small inclusions of white precipitate material inclusions, dry to moist (CL). | | | |
| 91 | | | | | 1.3 ppm | | | | |
| 92 | | | | | | | | | |
| 93 | | | | | | | | | |
| 94 | | | | | | | | | |
| 95 | 20 | 48/48 | 95-99 | | 1.1 ppm >4.0 tsf | Hard, dark reddish brown with gray mottles, lean CLAY, small inclusions of white precipitate material inclusions, dry to moist (CL). | | | |
| 96 | | | | | 1.2 ppm | | | | |
| 97 | | | | | | | | | |
| 98 | | | | | | | | | |
| 99 | | | | | | Bottom of Borehole at 99.0 Feet | 99' | 3 4 | |
| REMARKS 3. Groundwater was not encountered during drilling or upon completion. 4. Monitoring well was installed in borehole upon completion. Well screen set from 76.0 to 86.0 feet below ground surface. | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-21D |

BORING WELL 6233552 WWW.PACKER DR. PLAINFIELD MI.GPJ GZA CORP.GDT 1/25/18





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Packer Drive

Plainfield, Michigan

Boring No.: MW-21M

Page: 1 of 2

File No.: 16.0062335.52

Check: _____

Contractor: Cascade Drilling

Foreman: Jason

Logged by: John Morehouse

Date Start/Finish: 1-18-18 / 1-18-18

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Sonic

NA

O.D. / I.D.: NA

NA

Hammer Wt.: NA

NA

Hammer Fall: NA

NA

TOC Elev.: NA

NA

Date Time Depth Casing Stab

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|--|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See MW-21D boring log for sample description and classification. | | | | |
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Grout

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-21M

BORING WELL 6233552 WWW.PACKER DR. PLAINFIELD MI.GPJ GZA_CORP.GDT 1/25/18



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Plainfield, Michigan

Boring No.: MW-21M

Page: 2 of 2

File No.: 16.0062335.52

Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|-------|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 31 | | | | | | | | | |
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| 63 | | | | | | | | | |
| 64 | | | | | | Bottom of Borehole at 64.0 Feet | | 1 | |

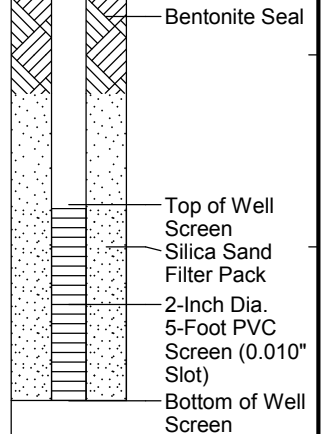
REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 59.0 to 64.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-21M

BORING WELL 6233552 WWW.PACKERDR.PLAINFOIELD MI.GPJ GZA CORP.GDT 1/25/18





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Packer Drive

Plainfield, Michigan

Boring No.: MW-21S

Page: 1 of 1

File No.: 16.0062335.52

Check: _____

Contractor: Cascade Drilling

Foreman: Jason

Logged by: John Morehouse

Date Start/Finish: 1-18-18 / 1-18-18

Boring Location: _____

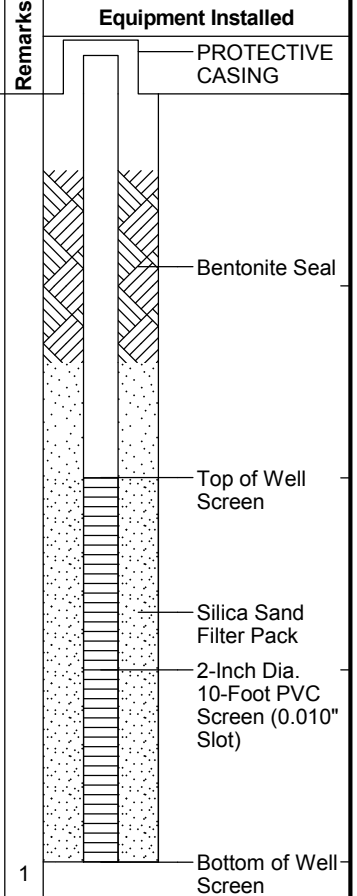
GS Elev.: _____ Datum: _____

| | Auger/ Casing | Sampler |
|--------------|------------------|---------|
| Type: | Sonic | NA |
| O.D. / I.D.: | NA | NA |
| Hammer Wt.: | NA | NA |
| Hammer Fall: | NA | NA |
| TOC Elev.: | NA | NA |

| GROUNDWATER READINGS | | | | |
|----------------------|------|-------|--------|------|
| Date | Time | Depth | Casing | Stab |
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|--|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See MW-21D boring log for sample description and classification. | | | | |
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| 19 | | | | | | | | | | |
| 20 | | | | | | Bottom of Borehole at 20.0 Feet | | | | |
| 21 | | | | | | | | | | |
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REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 10.0 to 20.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-21S

BORING WELL 6233552 WWW.PACKER DR. PLAINFIELD MI.GPJ GZA CORP.GDT 1/25/18



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Engineers and Scientists

Wolverine World Wide, Inc.

House Street

Belmont, Michigan

Boring No.: HS-MW-23A

Page: 1 of 2

File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: S. Stephenson

Date Start/Finish: 6-20-19 / 6-20-19

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| NA | | | | |
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Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See HS-MW-23D boring log for sample description and classification. | | | | |
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Bentonite/Grout

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-23A

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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Page: 2 of 2

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|-------|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
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REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 70.0 to 75.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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Boring No.: HS-MW-23B

Page: 1 of 3

File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 7-31-19 / 8-1-19

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|---|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See HS-MW-23D boring log for sample description and classification. | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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Boring No.: HS-MW-23B

Page: 2 of 3

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

Bentonite / Grout

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Boring No.: HS-MW-23B

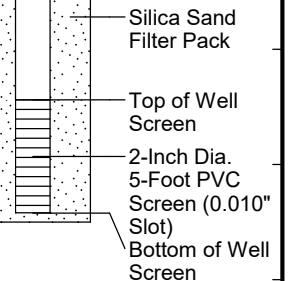
Page: 3 of 3

File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
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| REMARKS | | | | | | | | | | |
| 1. Monitoring well was installed in borehole upon completion. Well screen set from 137.2 to 142.1 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-23B | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20





GZA
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House Street

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Boring No.: HS-MW-23C

Page: 1 of 4

File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 7-30-19 / 7-31-19

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|---|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See HS-MW-23D boring log for sample description and classification. | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-23C

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File No.: 16.0062335.52

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-23C | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20

Bentonite / Grout



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File No.: 16.0062335.52

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

Boring No.: HS-MW-23C

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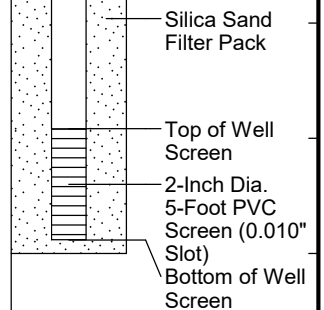
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
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| 215 | | | | | | | | | | |
| 216 | | | | | | Bottom of Borehole at 215 Feet | | 1 | | |
| 217 | | | | | | | | | | |
| 218 | | | | | | | | | | |
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| 224 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| 1. Monitoring well was installed in borehole upon completion. Well screen set from 209.6 to 214.4 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-23C | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20





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Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: S. Stephenson

Date Start/Finish: 6-10-19 / 6-18-19

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| NA | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|--|--|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/24 | 0-2 | 3-4 5-7 | | TOPSOIL, dry. Changing at 0.4 feet to: Loose, tan, fine SAND, little Silt, moist. | 0.4' TOPSOIL SAND | | | |
| 2 | 2 | 24/24 | 2-4 | 3-5 8-11 | | Loose, tan, fine SAND, little Silt, moist. Changing at 3.0 feet to: Medium dense, tan, fine to medium SAND, trace Silt, moist. | | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/24 | 4-6 | 1-4 5-7 | | Medium dense, tan, fine to medium SAND, trace Silt, moist. Changing at 5.3 feet to: Stiff, brown, CLAY & SILT, trace fine Sand, dry. | 4.8' CLAY & SILT | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/20 | 6-8 | 2-6 7-6 | | Medium dense, tan, fine to medium SAND, trace Silt, moist. | 6' SAND | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/12 | 8-10 | 5-6 5-5 | | Medium dense, tan, fine to medium SAND, trace Silt, moist. | | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/12 | 10-12 | 3-4 4-6 | | Medium dense, tan, fine to medium SAND, trace Silt, moist. | | 1 | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/12 | 12-14 | 7-4 4-2 | | Medium dense, tan, fine to medium SAND, trace Silt, moist. | | | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/12 | 14-16 | 2-4 3-3 | | Loose, brown, fine to medium SAND, little Silt, wet. | | 2 | | |
| 15 | | | | | | | | | | |
| 16 | 9 | 24/15 | 16-18 | 5-1 1-2 | | Loose, brown, fine to medium SAND, little Silt, wet. Changing at 16.4 feet to: Loose, brown, SILT, wet. Changing at 16.6 feet to: Loose, brown, fine to medium SAND, wet. Changing at 17.6 feet to: Brown, Silty CLAY, | 16.4' SILT 16.6' SAND 17.6' SILTY CLAY 17.8' Silty CLAY | | | |
| 17 | | | | | | | | | | |

REMARKS

1. Temporary well set at 10.0 to 20.0 feet below ground surface. Purged 15.0 gallons. Groundwater sample submitted for laboratory analysis.
2. Groundwater was encountered at approximately 14.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-23D

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|--|----------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 19 | 10 | 24/20 | 18-20 | 3-2 1-1 | | wet. Changing at 17.8 feet to: Brown, fine to coarse SAND, some Silt, wet. Brown, fine to coarse SAND, some Silt, trace fine Gravel, wet. | SAND | | | |
| 20 | 11 | 24/19 | 20-22 | 1-1 1-3 | | Brown, fine to coarse SAND, some Silt, trace fine Gravel, wet. Changing at 21.5 feet to: Brown, CLAY & SILT, little fine to coarse Sand, trace fine Gravel, dry. | 21.4' CLAY & SILT | | | |
| 22 | 12 | 24/20 | 22-24 | 8-4 5-6 | | Brown, CLAY & SILT, little fine to coarse Sand, trace fine Gravel, dry (wet on outside). | | | | |
| 24 | 13 | 24/19 | 24-26 | 3-4 5-6 | | Brown, CLAY & SILT, little fine to coarse Sand, trace fine Gravel, dry (wet on outer layer). | | | | |
| 26 | 14 | 24/0 | 26-28 | 7-8 12-13 | | NO RECOVERY. | 26' NO RECOVERY | | | |
| 28 | 15 | 24/20 | 28-30 | 4-7 7-7 | | Stiff, brown, CLAY & SILT, little fine to medium Sand, dry (wet on outer layer). | 28' CLAY & SILT | | | |
| 30 | 16 | 24/12 | 30-32 | 6-6 10-10 | | Stiff, brown, CLAY & SILT, little fine to medium Sand, dry (wet on outer layer). | | | | |
| 32 | 17 | 24/17 | 32-34 | 4-5 7-8 | | Stiff, brown, CLAY & SILT, little fine to medium Sand, dry (wet on outer layer). Changing at 33.0 feet to: Brown, fine to medium SAND, little Silt, trace fine Gravel, wet. | 32.4' SAND | | | |
| 34 | 18 | 24/6 | 34-36 | 10-16 18-24 | | Brown, CLAY & SILT, some fine to medium Sand, wet. | 34' CLAY & SILT | | | |
| 36 | 19 | 24/24 | 36-38 | 3-5 9-12 | | Stiff, brown, CLAY & SILT, some fine to medium Sand, trace fine Gravel (wet on outer layer). | | | | |
| 38 | 20 | 24/12 | 38-40 | 7-10 17-14 | | Stiff, brown, CLAY & SILT, some fine to medium Sand, trace fine Gravel (wet on | 38.7' SAND | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-23D | |

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|---|---------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 40 | 21 | 24/12 | 40-42 | 10-22 22-29 | | outer layer). Changing at 38.7 feet to: Light brown, fine to medium SAND, little Silt, trace fine Gravel, moist to dry. Light brown, fine to medium SAND, little Silt, trace fine Gravel, dry. | SAND | | | |
| 41 | | | | | | | | | | |
| 42 | 22 | 24/12 | 42-44 | 19-21 22-20 | | Very dense, light brown, fine to medium SAND, trace Silt, dry. | | | | |
| 43 | | | | | | | | | | |
| 44 | 23 | 24/12 | 44-46 | 9-15 21-21 | | Very dense, brown, fine SAND, little Silt, moist. | | | | |
| 45 | | | | | | | | | | |
| 46 | 24 | 24/12 | 46-48 | 12-14 21-18 | | Very dense, brown, fine SAND, little Silt, moist. | | | | |
| 47 | | | | | | | | | | |
| 48 | 25 | 24/17 | 48-50 | 22-43-50/5" | | Very dense, brown, fine SAND, little Silt, moist (sluff). | | | | |
| 49 | | | | | | | | | | |
| 50 | 26 | 24/12 | 50-52 | 13-24 24-42 | | Very dense, light brown, fine to coarse SAND, some fine to coarse Gravel, little Silt & Clay, dry with large clumps of Clay. | | | | |
| 51 | | | | | | | | | | |
| 52 | 27 | 24/12 | 52-54 | 11-18 27-29 | | Very dense, light brown, fine to coarse SAND, some fine to coarse Gravel, little Silt & Clay, dry, with Clay lenses from 6.0 to 6.9" feet and wet. | | | | |
| 53 | | | | | | | | | | |
| 54 | 28 | 24/12 | 54-56 | 12-20 23-30 | | Very dense, light brown, fine to coarse SAND, some fine to coarse Gravel, little Silt & Clay, dry. Changing at 54.2 feet to: Light brown, CLAY, dry. Changing at 54.7 feet to: Light brown, fine to coarse SAND, some Clay, dry. Changing at 54.8 feet to: Tan, fine to coarse SAND, trace Silt, dry. | | | | |
| 55 | | | | | | | | | | |
| 56 | 29 | 24/8 | 56-58 | 29-21 17-19 | | Tan, fine to coarse SAND, trace Silt, dry. | | | | |
| 57 | | | | | | | | | | |
| 58 | 30 | 24/12 | 58-60 | 7-11 16-17 | | Tan, fine to coarse SAND, trace Silt, dry. | | | | |
| 59 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-23D | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|--|--------------------|------------------|-------------|----------------|-----------|---|---------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 61 | 31 | 24/12 | 60-62 | 18-17 16-19 | | Tan, fine to coarse SAND, trace Silt, dry. | SAND | | | |
| 62 | 32 | 24/19 | 62-64 | 6-12 13-17 | | Tan, fine to coarse SAND, trace Silt, dry. | | | | |
| 63 | | | | | | | | | | |
| 64 | 33 | 24/18 | 64-66 | 8-14 19-22 | | Dense, tan, fine to coarse SAND, trace Silt, moist. | | | | |
| 65 | | | | | | | | | | |
| 66 | 34 | 24/17 | 66-68 | 5-11 12-13 | | Dense, tan, fine to coarse SAND, trace Silt, moist. | | | | |
| 67 | | | | | | | | | | |
| 68 | 35 | 24/2 | 68-70 | 8-15 18-17 | | Dense, tan, fine to medium SAND, trace Silt, moist. | | | | |
| 69 | | | | | | | | | | |
| 70 | 36 | 24/20 | 70-72 | 8-8 9-10 | | Medium dense, tan, fine to medium SAND, little Silt, wet. | | 3 | | |
| 71 | | | | | | | | | | |
| 72 | 37 | 24/20 | 72-74 | 5-7 12-10 | | Medium dense, gray and light brown, fine to coarse SAND, trace Silt, wet. | | | | |
| 73 | | | | | | | | | | |
| 74 | 38 | 24/22 | 74-76 | 8-10 13-15 | | Medium dense, gray and light brown, fine to coarse SAND, trace Silt, wet. | | | | |
| 75 | | | | | | | | | | |
| 76 | 39 | 24/12 | 76-78 | 6-13 18-24 | | Medium dense, gray and light brown, fine to coarse SAND, trace Silt, wet. | | | | |
| 77 | | | | | | | | | | |
| 78 | 40 | 24/24 | 78-80 | 9-17 24-30 | | Medium dense, gray and light brown, fine to coarse SAND, trace Silt, wet. | | | | |
| 79 | | | | | | | | | | |
| 80 | 41 | 24/20 | 80-82 | 3-13 24-31 | | Medium dense, gray and light brown, fine to coarse SAND, trace Silt, wet. | | 4 5 | | |
| REMARKS 3. Temporary well set at 70.0 to 80.0 feet below ground surface. Purged 35.0 gallons. Groundwater sample submitted for laboratory analysis. 4. 2.0 inch sampler used from 80.0 to 82.0 feet. 5. Temporary well set at 80.0 to 90.0 feet below ground surface. Purged 35.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-23D | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|--------------|-----------|---|---------------|-----------------------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 82 | 42 | 24/18 | 82-84 | 5-6 10-10 | | Medium dense, gray and light brown, fine to coarse SAND, trace Silt, wet. | SAND | | | |
| 83 | | | | | | | | | | |
| 84 | 43 | 24/12 | 84-86 | 2-5 10-14 | | Medium dense, gray and light brown, fine SAND, trace Silt, wet. | | | | |
| 85 | | | | | | | | | | |
| 86 | 44 | 24/20 | 86-88 | 3-6 14-15 | | Medium dense, gray and light brown, fine SAND, trace Silt, wet. | | | | |
| 87 | | | | | | | | | | |
| 88 | 45 | 24/20 | 88-90 | 2-4 7-8 | | Medium dense, gray and light brown, fine SAND, trace Silt, wet. | | | | |
| 89 | | | | | | | | | | |
| 90 | 46 | 24/12 | 90-92 | 1-2 5-6 | | Medium dense, gray and light brown, fine SAND, trace Silt, wet. | | 6 | | |
| 91 | | | | | | | | | | |
| 92 | 47 | 24/5 | 92-94 | 3-3 6-6 | | Medium dense, gray and light brown, fine SAND, trace Silt, wet. | | | | |
| 93 | | | | | | | | | | |
| 94 | 48 | 24/20 | 94-96 | 6-2 4-8 | | Medium dense, gray and light brown, fine SAND, trace Silt, wet. | | | | |
| 95 | | | | | | | | | | |
| 96 | 49 | 24/20 | 96-98 | 3-2 7-13 | | Medium dense, gray and light brown, fine SAND, trace Silt, wet. | | | | |
| 97 | | | | | | | | | | |
| 98 | 50 | 24/20 | 98-100 | 2-2 5-10 | | Loose, brown, fine SAND, trace Silt, wet. | | | | |
| 99 | | | | | | | | | | |
| 100 | 51 | 24/20 | 100-102 | 1-2 3-5 | | Loose, brown, fine SAND, trace Silt, wet. | | 7 | | |
| 101 | | | | | | | | | | |
| REMARKS 6. Temporary well set at 90.0 to 100.0 feet below ground surface. Purged 40.0 gallons. Groundwater sample submitted for laboratory analysis. 7. Temporary well set at 100.0 to 110.0 feet below ground surface. Purged 40.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | Boring No.: HS-MW-23D | | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|---|------------------|-------------|---------------|-----------|---|---------------|-----------------------|---------------------|-----------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 103 | 52 | 24/8 | 102-104 | 1-2 3-5 | | Loose, brown, fine SAND, trace Silt, wet. | SAND | | | |
| 104 | 53 | 24/12 | 104-106 | 1-1 4-7 | | Loose, tan, fine to medium SAND, trace Silt, wet. | | | | |
| 106 | 54 | 24/12 | 106-108 | 1-1 7-11 | | Loose, tan, fine to medium SAND, trace Silt, wet. | | | | |
| 108 | 55 | 24/20 | 108-110 | 1-2 4-5 | | Loose, tan, fine to medium SAND, trace Silt, wet. | | | | |
| 110 | 56 | 24/7 | 110-112 | 1-1 3-6 | | Loose, tan, fine to medium SAND, trace Silt, wet. | | 8 | | |
| 112 | 57 | 24/12 | 112-114 | 3-10 17-11 | | Loose, tan, fine to medium SAND, trace Silt, wet. | | | | |
| 114 | 58 | 24/12 | 114-116 | 1-2 5-9 | | Loose, tan, fine to medium SAND, trace Silt, wet. | | | | |
| 116 | 60 | 24/15 | 116-118 | 3-7 12-10 | | Loose, tan, fine to medium SAND, trace Silt, wet. | | | | Bentonite/Grout |
| 118 | 61 | 24/8 | 118-120 | 2-3 7-8 | | Loose, tan, fine to medium SAND, trace Silt, wet. | | | | |
| 120 | 62 | 24/5 | 120-122 | 2-4 5-6 | | Loose, tan, fine to medium SAND, trace Silt, wet. | | 9 | | |
| 122 | 63 | 24/8 | 122-124 | 1-1 2-1 | | Loose, tan, fine to medium SAND, trace Silt, wet. | | | | |
| REMARKS | 8. Temporary well set at 110.0 to 120.0 feet below ground surface. Purged 40.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | 9. Temporary well set at 120.0 to 130.0 feet below ground surface. Purged 40.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | Boring No.: HS-MW-23D | | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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| Sample Information | | | | | | Check: JTM/JMG | | | | |
|-----------------------|--|------------------|-------------|-------------|-----------|---|---------------------|---------|---------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 124 | 64 | 24/14 | 124-126 | 1-1 3-4 | | Loose, tan, fine to medium SAND, trace Silt, wet. | SAND | 10 | | |
| 125 | | | | | | | | | | |
| 126 | 65 | 24/8 | 126-128 | 1-2 3-6 | | Loose, tan, fine to medium SAND, trace Silt, wet. | | | | |
| 127 | | | | | | | | | | |
| 128 | 66 | 24/8 | 128-130 | 1-4 3-5 | | Loose, tan, fine to medium SAND, trace Silt, wet. | | | | |
| 129 | | | | | | | | | | |
| 130 | 67 | 24/1 | 130-132 | 1-1 5-5 | | Loose, tan, fine to medium SAND, trace Silt, wet. | | | | |
| 131 | | | | | | | | | | |
| 132 | 68 | 24/0 | 132-134 | 1-2 2-3 | | NO RECOVERY. | 132' NO RECOVERY | | | |
| 133 | | | | | | | | | | |
| 134 | 70 | 24/6 | 134-136 | 1-3 4-5 | | Loose, brown, fine to medium SAND, trace Silt, wet. | 134' SAND | 11 | | |
| 135 | | | | | | | | | | |
| 136 | 71 | 24/12 | 136-138 | 1-1 3-4 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | |
| 137 | | | | | | | | | | |
| 138 | 72 | 24/12 | 138-140 | 1-4 4-7 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | |
| 139 | | | | | | | | | | |
| 140 | 73 | 24/20 | 140-142 | 4-4 6-7 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | |
| 141 | | | | | | | | | | |
| 142 | 74 | 24/20 | 142-144 | 3-7 13-8 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | |
| 143 | | | | | | | | | | |
| REMARKS | 10. Temporary well set at 130.0 to 140.0 feet below ground surface. Purged 45.0 gallons. Groundwater sample submitted for laboratory analysis. 11. Temporary well set at 140.0 to 150.0 feet below ground surface. Purged 45.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |
| Boring No.: HS-MW-23D | | | | | | | | | | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|--|--------------------|------------------|-------------|---------------|-----------|---|---------------|-----------------------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 145 | 75 | 24/20 | 144-146 | 2-2 2-4 | | Loose, brown, fine to medium SAND, trace Silt, wet. | SAND | 12 | | |
| 146 | 76 | 24/18 | 146-148 | 0-2 3-5 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | |
| 148 | 77 | 24/20 | 148-150 | 1-2 4-5 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | |
| 150 | 78 | 24/20 | 150-152 | 1-3 7-11 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | |
| 152 | 79 | 24/10 | 152-154 | 3-3 7-7 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | |
| 154 | 80 | 24/6 | 154-156 | 2-3 5-6 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | 13 | | |
| 156 | 81 | 24/10 | 156-158 | 4-9 12-10 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | |
| 158 | 82 | 24/3 | 158-160 | 3-6 6-9 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | |
| 160 | 83 | 24/5 | 160-162 | 1-1 5-5 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | |
| 162 | 84 | 24/2 | 162-164 | 6-11 12-13 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | |
| 164 | 85 | 24/5 | 164-166 | 1-2 5-7 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | |
| REMARKS 12. Temporary well set at 150.0 to 160.0 feet below ground surface. Purged 40.0 gallons. Groundwater sample submitted for laboratory analysis. 13. Temporary well set at 160.0 to 170.0 feet below ground surface. Purged 70.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | Boring No.: HS-MW-23D | | |

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| Benton, Michigan | | | | | | | | | | Check: | | JTM/JMG | |
|-----------------------|---|------------------|-------------|---------------|-----------|--|---------------|---------|---------------------|--------|--|---------|--|
| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | | | |
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | | | | |
| 166 | 86 | 24/6 | 166-168 | 2-7 9-8 | | Loose, brown, fine to medium SAND, trace Silt, wet. | SAND | 14 | | | | | |
| 167 | | | | | | | | | | | | | |
| 168 | 87 | 24/12 | 168-170 | 2-3 7-8 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | | | | |
| 169 | | | | | | | | | | | | | |
| 170 | 88 | 24/1 | 170-172 | 1-2 3-3 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | | | | |
| 171 | | | | | | | | 15 | | | | | |
| 172 | 90 | 24/12 | 172-174 | 1-1 4-4 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | | | | |
| 173 | | | | | | | | | | | | | |
| 174 | 91 | 24 | 174-176 | 3-7 10-12 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | | | | |
| 175 | | | | | | | | | | | | | |
| 176 | 92 | 24/12 | 176-178 | 5-9 12-13 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | | | | |
| 177 | | | | | | | | | | | | | |
| 178 | 93 | 24/12 | 178-180 | 1-1 3-8 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | | | | |
| 179 | | | | | | | | | | | | | |
| 180 | 94 | 24/12 | 180-182 | 2-4 6-7 | | Loose, brown, fine to medium SAND, trace Silt, wet. Changing at 181.9 feet to: Brown, fine to coarse SAND, trace Silt,wet. | | | | | | | |
| 181 | | | | | | | | | | | | | |
| 182 | 95 | 24/21 | 182-184 | 5-10 10-11 | | Medium dense, brown, fine to coarse SAND, trace Silt, wet. Changing at 183.8 feet to: Medium dense, brown, fine to coarse SAND, some fine Gravel, trace Silt, wet. | | | | | | | |
| 183 | | | | | | | | | | | | | |
| 184 | 96 | 24/12 | 184-186 | 4-7 8-11 | | Medium dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | | | | |
| 185 | | | | | | | | | | | | | |
| REMARKS | 14. Temporary well set at 170.0 to 180.0 feet below ground surface. Purged 80.0 gallons. Groundwater sample submitted for laboratory analysis. 15. Temporary well set at 180.0 to 190.0 feet below ground surface. Purged 100.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | | | |
| Boring No.: HS-MW-23D | | | | | | | | | | | | | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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| Sample Information | | | | | | Check: JTM/JMG | | | | |
|---|-----|------------------|-------------|---------------|-----------|--|---------------------|---------|-----------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 187 | 97 | 24/12 | 186-188 | 3-6 8-11 | | Medium dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | SAND | 16 | | |
| 188 | 98 | 24/4 | 188-190 | 3-5 6-8 | | Medium dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 189 | | | | | | | | | | |
| 190 | 99 | 24/1 | 190-192 | 1-2 3-7 | | Medium dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 191 | | | | | | | | | | |
| 192 | 100 | 24/8 | 192-194 | 2-3 5-8 | | Medium dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | 17 | | |
| 193 | | | | | | | | | | |
| 194 | 101 | 24/10 | 194-196 | 2-13 27-31 | | Medium dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 195 | | | | | | | | | | |
| 196 | 102 | 24/18 | 196-198 | 0-12 28-21 | | Dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 197 | | | | | | | | | | |
| 198 | 104 | 24/0 | 198-200 | 3-20-50/5" | | NO RECOVERY. | 198' NO RECOVERY | | | |
| 199 | | | | | | | | | | |
| 200 | 105 | 24/10 | 200-202 | 8-20-50/5" | | Dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | 200' SAND | | | |
| 201 | | | | | | | | | | |
| 202 | 106 | 24/6 | 202-204 | 18-50/5" | | Dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | 18 | | |
| 203 | | | | | | | | | | |
| 204 | 107 | 24/7 | 204-206 | 3-30-50/4" | | Dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 205 | | | | | | | | | | |
| 206 | 108 | 24/0 | 206-208 | 3-6 11-18 | | NO RECOVERY. | 206' NO RECOVERY | | | |
| <div>REMARKS</div> <div>16. Temporary well set at 190.0 to 200.0 feet below ground surface. Purged 100.0 gallons. Groundwater sample submitted for laboratory analysis. 17. Temporary well set at 200.0 to 210.0 feet below ground surface. Purged 100.0 gallons. Groundwater sample submitted for laboratory analysis.</div> | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-23D | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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| Sample Information | | | | | | Check: JTM/JMG | | | | |
|-----------------------|---|------------------|-------------|-------------------|-----------|---|-----------------------------|---------|---------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 208 | 109 | 24/12 | 208-210 | 0-6 27-50/4" | | Dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | NO RECOVERY 208' SAND | 18 | | |
| 209 | | | | | | | | | | |
| 210 | 110 | 24/4 | 210-212 | 3-13 26-22 | | Dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 211 | | | | | | | | | | |
| 212 | 111 | 24/0 | 212-214 | 6-11 18-26/3" | | NO RECOVERY. | 212' NO RECOVERY | | | |
| 213 | | | | | | | | | | |
| 214 | 112 | 24/10 | 214-216 | 6-23-50/4" | | Dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | 214' SAND | | | |
| 215 | | | | | | | | | | |
| 216 | 113 | 24/0 | 216-218 | 4-16 31-29/2" | | NO RECOVERY. | 216' NO RECOVERY | | | |
| 217 | | | | | | | | | | |
| 218 | 114 | 24/0 | 218-220 | 19-50/3" | | NO RECOVERY with some fine to medium SAND in bailer. | | | | |
| 219 | | | | | | | | | | |
| 220 | 115 | 24/18 | 220-222 | 9-22 24-25 | | Dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | 220' SAND | | | |
| 221 | | | | | | | | | | |
| 222 | 116 | 24/8 | 222-224 | 4-10 20-28 | | Dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 223 | | | | | | | | | | |
| 224 | 117 | 24/20 | 224-226 | 10-25 37-50/5" | | Dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 225 | | | | | | | | | | |
| 226 | 118 | 24/6 | 226-228 | 12-44/5" | | Dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 227 | | | | | | | | | | |
| REMARKS | 18. Temporary well set at 210.0 to 220.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |
| Boring No.: HS-MW-23D | | | | | | | | | | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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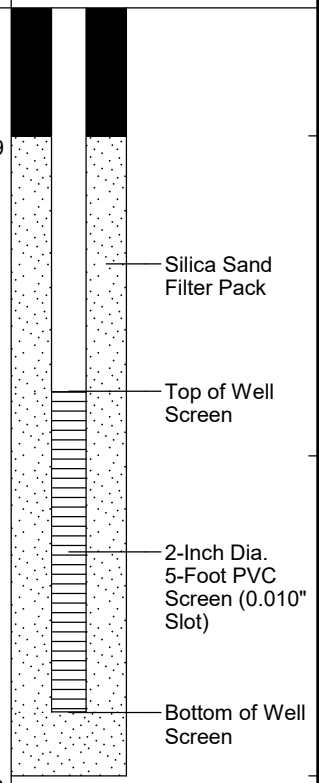
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|--|--------------------|------------------|-------------|---------------|-----------|---|-----------------------|-----------------------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 229 | 119 | 24/6 | 228-230 | 44-6" | | Dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | SAND | | |
| 230 | 120 | 24/6 | 230-232 | 19-39/4" | | Very dense, brown, fine to coarse SAND, trace Silt, trace Gravel, wet. | | 19 | |
| 231 | | | | | | | | | |
| 232 | | | | | | | | | |
| 233 | | | | | | | | | |
| 234 | | | | | | | | | |
| 235 | | | | | | | | | |
| 236 | 121 | 24/11 | 236-238 | 20-36/5" | | Very dense, brown, fine to coarse SAND, trace Silt, trace Gravel, wet. | | | |
| 237 | | | | | | | | | |
| 238 | 122 | 24/24 | 238-240 | 0-11 19-26 | | Very dense, brown, fine to coarse SAND, trace Silt, trace Gravel, wet. Changing at 238.8 feet to: Very stiff, Clayey SILT, little fine Sand, dry. | 238.8' Clayey SILT | | |
| 239 | | | | | | | | | |
| 240 | | | | | | Bottom of Borehole at 240.0 Feet | 240' | 20 | |
| 241 | | | | | | | | | |
| 242 | | | | | | | | | |
| 243 | | | | | | | | | |
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| 247 | | | | | | | | | |
| 248 | | | | | | | | | |
| <div>REMARKS</div> <div>19. Temporary well set at 230.0 to 240.0 feet below ground surface. Purged 100.0 gallons. Groundwater sample submitted for laboratory analysis.</div> <div>20. Monitoring well was installed in borehole upon completion. Well screen set from 234.0 to 239.0 feet below ground surface.</div> | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | Boring No.: HS-MW-23D | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20





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Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Christine Cano

Date Start/Finish: 10-1-19 / 10-2-19

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|---|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See HS-MW-24D for detailed soil descriptions. | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
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Bentonite
Slurry / Grout

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|-------|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 31 | | | | | | | | | |
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| 54 | | | | | | | | | |
| 55 | | | | | | | | | |
| 56 | | | | | | | | | |
| 57 | | | | | | | | | |
| 58 | | | | | | | | | |
| 59 | | | | | | | | | |
| 60 | | | | | | Bottom of Borehole at 60.0 Feet | | 1 | |
| 61 | | | | | | | | | |
| 62 | | | | | | | | | |
| 63 | | | | | | | | | |
| 64 | | | | | | | | | |

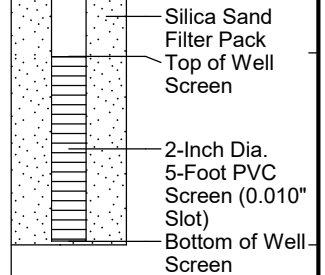
REMARKS

1. Monitoring well HS-MW-24A was installed in borehole upon completion. Well screen set from approximately 55.1 to 59.9 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-24A

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20





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Wolverine World Wide, Inc.

House Street

Belmont, Michigan

Boring No.: HS-MW-24B

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File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Christine Cano/John Morehouse

Date Start/Finish: 9-23-19 / 10-1-19

Boring Location:

GS Elev.: Datum:

**Auger/
Casing**

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|---------------|-----------|--|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/16 | 0-2 | 1-1 1-2 | 0.0 ppm | Very loose, brown, fine SAND, some Silt, moist. Changing at 0.3 feet to: Very loose, light brown to tan, fine SAND, trace Silt, moist. | SAND | 1 | | |
| 2 | 2 | 24/16 | 2-4 | 2-2 3-8 | 0.0 ppm | Loose, light tan, very fine SAND, trace Silt, moist. | | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/20 | 4-6 | 9-10 12-9 | 0.0 ppm | Medium dense, light tan, very fine SAND and SILT, moist. | | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/24 | 6-8 | 5-7 10-10 | 0.0 ppm | Medium dense, light brown, fine SAND, trace Clay, moist. | | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/24 | 8-10 | 7-12 13-12 | 0.0 ppm | Medium dense, light brown, fine SAND, trace Clay, moist. | | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/24 | 10-12 | 6-3 4-4 | 0.0 ppm | Loose, light brown, fine SAND, trace Clay, moist. Changing at 11.0 feet to: Loose, tan, fine to medium SAND, trace Silt, moist. | | | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/12 | 12-14 | 1-3 2-2 | 0.0 ppm | Loose, tan, fine to coarse SAND, trace Silt, moist. | | | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/20 | 14-16 | 2-3 4-5 | 0.0 ppm | Loose, brown, fine SAND, trace Clay, moist. Changing at 15.0 feet to: Loose, tan, fine to medium SAND, trace Silt, moist. | | | | |
| 15 | | | | | | | | | | |
| 16 | 9 | 24/10 | 16-18 | 3-6 5-4 | 0.0 ppm | Medium dense, tan, fine to medium SAND, trace Silt, moist. | | | | |
| 17 | | | | | | | | | | |
| 18 | 10 | 24/12 | 18-20 | 2-3 3-2 | 0.0 ppm | Loose, tan, fine to medium SAND, trace Silt, moist. | | | | |
| 19 | | | | | | | | | | |
| 20 | 11 | 24/14 | 20-22 | 1-2 2-3 | 0.0 ppm | Very loose, tan, fine to medium SAND, trace Silt, moist. | | | | |
| 21 | | | | | | | | | | |
| 22 | 12 | 24/14 | 22-24 | 1-2 2-3 | 0.0 ppm | Very loose, tan, fine to medium SAND, trace Silt, moist. | | | | |
| 23 | | | | | | | | | | |
| 24 | 13 | 24/14 | 24-26 | 3-4 4-4 | 0.0 ppm | Loose, light tan, fine to medium SAND, trace Silt, moist. | | | | |
| 25 | | | | | | | | | | |
| 26 | 14 | 24/14 | 26-28 | 1-3 3-3 | 0.0 ppm | Loose, light tan, fine to medium SAND, trace Silt, moist. | | | | |
| 27 | | | | | | | | | | |
| 28 | 15 | 24/20 | 28-30 | 1-4 3-3 | 0.0 ppm | Loose, light tan, fine to medium SAND, trace Silt, moist. | | | | |
| 29 | | | | | | | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings are shown in parts per million (ppm) of isobutylene. Background was measured at 0.0 ppm.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-24B

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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House Street
Belmont, Michigan

Boring No.: HS-MW-24B

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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|---|--------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (6") | Test Data | | | | | |
| 31 | 16 | 24/19 | 30-32 | 3-2 3-4 | 0.0 ppm | Loose, light tan, fine to medium SAND, trace Silt, moist. | SAND | | | |
| 32 | 17 | 24/14 | 32-34 | 4-5 7-4 | 0.0 ppm | Medium dense, light tan, fine to medium SAND, trace Silt, moist. | | | | |
| 34 | 18 | 24/22 | 34-36 | 4-5 7-8 | 0.0 ppm | Medium dense, light tan, fine to medium SAND, trace Silt, trace Gravel, moist. | | | | |
| 36 | 19 | 24/17 | 36-38 | 4-5 5-6 | 0.0 ppm | Loose, tan, fine to medium SAND, trace Silt, moist. Changing at 37.5 feet to: Loose, tan, fine to coarse SAND, trace Silt, moist. | | | | |
| 38 | 20 | 24/16 | 38-40 | 5-7 7-9 | 0.0 ppm | Medium dense, tan, fine to coarse SAND, trace Silt, moist. | | | | |
| 40 | 21 | 24/14 | 40-42 | 4-7 7-9 | 0.0 ppm | Medium dense, tan, Silty fine to medium SAND, trace Gravel, moist. | | | | |
| 42 | 22 | 24/13 | 42-44 | 5-9 9-10 | 0.0 ppm | Medium dense, tan, Silty fine to coarse SAND, some Gravel, moist. | | | | |
| 44 | 23 | 24/5 | 44-46 | 6-10 20-20 | 0.0 ppm | Medium dense, tan, Silty fine to coarse SAND, trace Gravel, moist. | | | | |
| 46 | 24 | 24/12 | 46-48 | 5-16 33-16 | 0.0 ppm | Dense, tan, Sandy GRAVEL, trace Silt, moist. | 46' GRAVEL | | | |
| 48 | 25 | 24/4 | 48-50 | 11-23 21-13 | 0.0 ppm | Dense, tan, Sandy GRAVEL, trace Silt, moist. | | | | |
| 50 | 26 | 24/0 | 50-52 | 17-11 10-9 | | NO RECOVERY. | 50' NO RECOVERY | | | |
| 52 | 27 | 24/1 | 52-54 | 18-15 12-9 | 0.0 ppm | Medium dense, tan, coarse SAND, wet. | 52' SAND | 2 | | |
| 54 | 28 | 24/4 | 54-56 | 15-9 7-7 | 0.0 ppm | Medium dense, tan, fine to coarse SAND, trace Gravel, wet. | | 3 | | |
| 56 | 29 | 24/18 | 56-58 | 2-2 2-4 | 0.0 ppm | Loose, tan, fine to coarse SAND, trace Silt, wet. | | | | |
| 58 | 30 | 24/17 | 58-60 | 1-1 2-3 | 0.0 ppm | Very loose, tan, fine to coarse SAND, trace Silt, wet. | | | | |
| 60 | 31 | 24/0 | 60-62 | 1-2 4-6 | | NO RECOVERY. | 60' NO RECOVERY | | | |
| 62 | 32 | 24/5 | 62-64 | 2-2 4-4 | 0.0 ppm | Loose, tan, fine to coarse SAND, trace Silt, wet. | 62' SAND | | | |
| 64 | 33 | 24/8 | 64-66 | 3-3 4-5 | 0.0 ppm | Loose, tan, fine to coarse SAND, trace Silt, | | | | |
| REMARKS 2. Groundwater was encountered at approximately 52.0 feet below ground surface. 3. Temporary well set at 55.0 to 60.0 feet below ground surface. Purged 70.0 gallons. Groundwater sample submitted for laboratory analysis. 4. Temporary well set at 65.0 to 70.0 feet below ground surface. Purged 35.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-24B | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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Belmont, Michigan

Boring No.: HS-MW-24B

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Check: JTM/JMG

| Sample Information | | | | | | Check: | | JTM/JMG | | |
|-----------------------|--|------------------|-------------|-------------|-----------|--|---------------|---------|---------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 66 | 34 | 24/14 | 66-68 | 1-2 | 0.0 ppm | wet. | SAND | 4 | | |
| 67 | | | | 2-3 | | Loose, tan, fine to coarse SAND, trace Silt, wet. | | | | |
| 68 | 35 | 24/14 | 68-70 | 1-2 | 0.0 ppm | Loose, tan, fine to coarse SAND, trace Silt, wet. | | | | |
| 69 | | | | 3-10 | | | | | | |
| 70 | 36 | 24/24 | 70-72 | 7-9 | 0.0 ppm | Medium dense, tan, fine to coarse SAND, trace Silt, wet. | | | | |
| 71 | | | | 10-12 | | | | | | |
| 72 | 37 | 24/15 | 72-74 | 4-3 | 0.0 ppm | Loose, tan, fine to coarse SAND, trace Silt, wet. Changing at 73.5 feet to: Loose, brown, Sandy GRAVEL, wet. | 73.5' | | | |
| 73 | | | | 2-2 | | | 74' GRAVEL | | | |
| 74 | 38 | 24/14 | 74-76 | 6-8 | 0.0 ppm | Medium dense, brown, fine to coarse SAND and Gravel, trace Silt, wet. | SAND | 5 | | |
| 75 | | | | 8-8 | | | | | | |
| 76 | 39 | 24/2 | 76-78 | 2-3 | 0.0 ppm | Loose, brown, fine to coarse SAND and Gravel, trace Silt, wet. | | | | |
| 77 | | | | 3-4 | | | | | | |
| 78 | 40 | 24/14 | 78-80 | 4-5 | 0.0 ppm | Medium dense, brown to gray, GRAVEL, some fine to coarse Sand, wet. | 78' | | | |
| 79 | | | | 5-5 | | | GRAVEL | | | |
| 80 | 41 | 24/3 | 80-82 | 5-5 | 0.0 ppm | Medium dense, brown to gray, GRAVEL, some fine to coarse Sand, wet. | | | | |
| 81 | | | | 5-7 | | | | | | |
| 82 | 42 | 24/16 | 82-84 | 2-3 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | 82' | | | |
| 83 | | | | 4-4 | | | SAND | | | |
| 84 | 43 | 24/24 | 84-86 | 2-2 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | 6 | | |
| 85 | | | | 2-4 | | | | | | |
| 86 | 44 | 24/16 | 86-88 | 2-1 | 0.0 ppm | Very loose, brown and gray, coarse SAND, some Gravel, wet. | | | | |
| 87 | | | | 2-2 | | | | | | |
| 88 | 45 | 24/12 | 88-90 | 3-3 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | | | |
| 89 | | | | 3-5 | | | | | | |
| 90 | 46 | 24/8 | 90-92 | 2-3 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | | | |
| 91 | | | | 6-7 | | | | | | |
| 92 | 47 | 24/16 | 92-94 | 1-1 | 0.0 ppm | Very loose, brown and gray, coarse SAND, some Gravel, wet. | | | | |
| 93 | | | | 2-3 | | | | | | |
| 94 | 48 | 24/7 | 94-96 | 1-2 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | 7 | | |
| 95 | | | | 3-4 | | | | | | |
| 96 | 49 | 24/20 | 96-98 | 2-2 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | | | |
| 97 | | | | 5-6 | | | | | | |
| 98 | 50 | 24/16 | 98-100 | 4-2 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | | | |
| 99 | | | | 4-5 | | | | | | |
| REMARKS | 5. Temporary well set at 75.0 to 80.0 feet below ground surface. Purged 45.0 gallons. Groundwater sample submitted for laboratory analysis. 6. Temporary well set at 85.0 to 90.0 feet below ground surface. Purged 75.0 gallons. Groundwater sample submitted for laboratory analysis. 7. Temporary well set at 95.0 to 100.0 feet below ground surface. Purged 90.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |
| Boring No.: HS-MW-24B | | | | | | | | | | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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Belmont, Michigan

Boring No.: HS-MW-24B

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File No.: 16.0062335.52

Check: JTM/JMG

| Sample Information | | | | | | | | Check: | | JTM/JMG | | | | |
|---|--|------------------|-------------|----------------|-----------|--|---------------|---------|-----------------------|--------------------------|--|--|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | | | | |
| | | | | | | | | | | | | | | |
| 101 | 51 | 24/10 | 100-102 | 3-7 11-13 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | SAND | 8 | | Bentonite Slurry / Grout | | | | |
| 102 | 52 | 24/12 | 102-104 | 2-2 3-7 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | | | | | | | |
| 103 | | | | | | | | | | | | | | |
| 104 | 53 | 24/10 | 104-106 | 3-4 5-7 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | | | | | | | |
| 105 | | | | | | | | | | | | | | |
| 106 | 54 | 24/14 | 106-108 | 3-9 10-10 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | | | | |
| 107 | | | | | | | | 9 | | | | | | |
| 108 | 55 | 24/16 | 108-110 | 2-4 8-9 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | | | | |
| 109 | | | | | | | | | | | | | | |
| 110 | 56 | 24/3 | 110-112 | 3-7 9-11 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | | | | |
| 111 | | | | | | | | | | | | | | |
| 112 | 57 | 24/4 | 112-114 | 1-4 5-5 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | | | | | | | |
| 113 | | | | | | | | 10 | | | | | | |
| 114 | 58 | 24/14 | 114-116 | 6-12 19-23 | 0.0 ppm | Dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | | | | |
| 115 | | | | | | | | | | | | | | |
| 116 | 60 | 24/18 | 116-118 | 2-4 12-15 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | | | | |
| 117 | | | | | | | | | | | | | | |
| 118 | 61 | 24/10 | 118-120 | 11-17 13-10 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | | | | |
| 119 | | | | | | | | 134' | | | | | | |
| 120 | 62 | 24/12 | 120-122 | 4-7 11-13 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | | | | |
| 121 | | | | | | | | | | | | | | |
| 122 | 63 | 24/10 | 122-124 | 2-12 20-13 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | | | | |
| 123 | | | | | | | | | | | | | | |
| 124 | 64 | 24/8 | 124-126 | 9-15 15-13 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | | | | |
| 125 | | | | | | | | GRAVEL | | | | | | |
| 126 | 65 | 24/13 | 126-128 | 3-11 16-17 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | | | | |
| 127 | | | | | | | | | | | | | | |
| 128 | 66 | 24/10 | 128-130 | 11-20 20-21 | 0.0 ppm | Dense, brown and gray, coarse SAND, some Gravel, trace Silt, wet. | | | | | | | | |
| 129 | | | | | | | | | | | | | | |
| 130 | 67 | 24/12 | 130-132 | 5-18 28-30 | 0.0 ppm | Dense, brown and gray, coarse SAND, some Gravel, trace Silt, wet. | | | | | | | | |
| 131 | | | | | | | | | | | | | | |
| 132 | 68 | 24/5 | 132-134 | 9-16 21-24 | 0.0 ppm | Dense, brown and gray, coarse SAND, some reddish brown, fine Sand, some Gravel, trace Silt, wet. | | | | | | | | |
| 133 | | | | | | | | | | | | | | |
| 134 | 70 | 24/4 | 134-136 | 5-13 20-31 | 0.0 ppm | Dense, brown and gray, GRAVEL, some | | | | | | | | |
| REMARKS | 8. Temporary well set at 105.0 to 110.0 feet below ground surface. Purged 60.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | | | | |
| | 9. Temporary well set at 115.0 to 120.0 feet below ground surface. Purged 55.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | | | | |
| | 10. Temporary well set at 125.0 to 130.0 feet below ground surface. Purged 55.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | | | | |
| | 11. Temporary well set at 135.0 to 140.0 feet below ground surface. Purged 65.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-24B | | | | | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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House Street

Belmont, Michigan

Boring No.: HS-MW-24B

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File No.: 16.0062335.52

Check: JTM/JMG

| Sample Information | | | | | | Check: JTM/JMG | | | | |
|-----------------------|---|------------------|-------------|---------------|-----------|---|---------------------|---------|---------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 136 | 71 | 24/7 | 136-138 | 4-12 16-23 | 0.0 ppm | medium to coarse Sand, wet. | GRAVEL | 11 | | |
| 137 | | | | | | Medium dense, brown and gray, GRAVEL, some medium to coarse Sand, wet. | | | | |
| 138 | 72 | 24/8 | 138-140 | 4-7 18-32 | 0.0 ppm | Medium dense, brown and gray, GRAVEL, some medium to coarse Sand, wet. | | | | |
| 139 | | | | | | Medium dense, brown and gray, GRAVEL, some medium to coarse Sand, wet. | | | | |
| 140 | 73 | 24/7 | 140-142 | 5-11 21-22 | 0.0 ppm | Dense, brown and gray, GRAVEL, some medium to coarse Sand, wet. | 142' | | | |
| 141 | | | | | | Medium dense, brown and gray, GRAVEL, some medium to coarse Sand, wet. | | | | |
| 142 | 74 | 24/12 | 142-144 | 7-13 21-23 | 0.0 ppm | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | SAND | | | |
| 143 | | | | | | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 144 | 75 | 24/10 | 144-146 | 6-17 21-22 | 0.0 ppm | Dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | 12 | | |
| 145 | | | | | | Dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 146 | 76 | 24/10 | 146-148 | 8-15 16-21 | 0.0 ppm | Dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 147 | | | | | | Dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 148 | 77 | 24/8 | 148-150 | 5-16 21-24 | 0.0 ppm | Dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 149 | | | | | | Dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 150 | 78 | 24/14 | 150-152 | 4-9 16-14 | 0.0 ppm | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 151 | | | | | | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 152 | 79 | 24/4 | 152-154 | 6-10 8-8 | 0.0 ppm | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 153 | | | | | | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 154 | 80 | 24/18 | 154-156 | 4-12 21-20 | 0.0 ppm | Dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | 13 | | |
| 155 | | | | | | Dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 156 | 81 | 24/6 | 156-158 | 5-8 13-10 | 0.0 ppm | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 157 | | | | | | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 158 | 82 | 24/6 | 158-160 | 7-11 11-12 | 0.0 ppm | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 159 | | | | | | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 160 | 83 | 24/7 | 160-162 | 5-8 9-9 | 0.0 ppm | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 161 | | | | | | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 162 | 84 | 24/5 | 162-164 | 5-10 19-26 | 0.0 ppm | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 163 | | | | | | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 164 | 85 | 24/0 | 164-166 | 5-13 22-36 | | NO RECOVERY. | 164' NO RECOVERY | 14 | | |
| 165 | | | | | | NO RECOVERY. | | | | |
| 166 | 86 | 24/0 | 166-168 | 7-19 25-39 | | NO RECOVERY; Switched to bailer for recovery. Bailer: brown and gray, fine to medium SAND, wet. | | | | |
| 167 | | | | | | NO RECOVERY; Switched to bailer for recovery. Bailer: brown and gray, fine to medium SAND, wet. | | | | |
| 168 | 87 | 24/0 | 168-170 | 2-8 16-22 | | NO RECOVERY; Bailer: brown and gray, fine to medium SAND, wet. | | | | |
| 169 | | | | | | NO RECOVERY; Bailer: brown and gray, fine to medium SAND, wet. | | | | |
| REMARKS | 12. Temporary well set at 145.0 to 150.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | 13. Temporary well set at 155.0 to 160.0 feet below ground surface. Purged 120.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | 14. Temporary well set at 165.0 to 170.0 feet below ground surface. Purged 80.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |
| Boring No.: HS-MW-24B | | | | | | | | | | |

Boring No.: HS-MW-24B



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Belmont, Michigan

Boring No.: HS-MW-24B

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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|--|--------------------|------------------|-------------|---------------|-----------|--|------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (6") | Test Data | | | | | |
| 171 | 88 | 24/0 | 170-172 | 7-11 19-22 | | NO RECOVERY: Bailer: brown and gray, fine to medium SAND, wet. | NO RECOVERY | 15 | | |
| 172 | 89 | 24/5 | 172-174 | 2-4 7-10 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | 172' SAND | | | |
| 173 | | | | | | | | | | |
| 174 | 90 | 24/0 | 174-176 | 5-7 11-16 | | NO RECOVERY; Bailer: brown and gray, fine to medium SAND, wet. | 174' NO RECOVERY | 16 | | |
| 175 | | | | | | | | | | |
| 176 | 91 | 24/10 | 176-178 | 4-7 17-21 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | 176' SAND | | | |
| 177 | | | | | | | | 17 | | |
| 178 | 92 | 24/20 | 178-180 | 4-10 28-35 | 0.0 ppm | Dense, brown and gray, fine to medium SAND, wet. | | | | |
| 179 | | | | | | | | | | |
| 180 | 93 | 24/16 | 180-182 | 3-10 17-23 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | 18 | | |
| 181 | | | | | | | | | | |
| 182 | 94 | 24/7 | 182-184 | 3-8 12-17 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | | | |
| 183 | | | | | | | | 19 | | |
| 184 | 95 | 24/6 | 184-186 | 8-10 13-31 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | | | |
| 185 | | | | | | | | | | |
| 186 | 96 | 24/0 | 186-188 | 5-8 19-20 | | NO RECOVERY; Bailer: brown and gray, fine to medium SAND, wet. | 186' NO RECOVERY | 20 | | |
| 187 | | | | | | | | | | |
| 188 | 97 | 24/3 | 188-190 | 5-5 12-14 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | 188' SAND | | | |
| 189 | | | | | | | | 21 | | |
| 190 | 98 | 24/10 | 190-192 | 3-12 20-28 | 0.0 ppm | Dense, brown and gray, fine to medium SAND, wet. | | | | |
| 191 | | | | | | | | | | |
| 192 | 99 | 24/4 | 192-194 | 2-5 9-13 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | 22 | | |
| 193 | | | | | | | | | | |
| 194 | 100 | 24/2 | 194-196 | 2-6 9-11 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | | | |
| 195 | | | | | | | | 23 | | |
| 196 | 101 | 24/6 | 196-198 | 5-11 17-21 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | | | |
| 197 | | | | | | | | | | |
| 198 | 102 | 24/4 | 198-200 | 3-3 8-9 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | 24 | | |
| 199 | | | | | | | | | | |
| 200 | 103 | 24/6 | 200-202 | 4-12 15-22 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | | | |
| 201 | | | | | | | | 25 | | |
| 202 | 104 | 24/16 | 202-204 | 4-4 7-12 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | | | |
| 203 | | | | | | | | | | |
| 204 | 105 | 24/16 | 204-206 | 4-9 17-24 | 0.0 ppm | Medium dense, brown and gray, fine to | | 26 | | |
| REMARKS 15. Temporary well set at 175.0 to 180.0 feet below ground surface. Purged 125.0 gallons. Groundwater sample submitted for laboratory analysis. 16. Temporary well set at 185.0 to 190.0 feet below ground surface. Purged 135.0 gallons. Groundwater sample submitted for laboratory analysis. 17. Temporary well set at 195.0 to 200.0 feet below ground surface. Purged 135.0 gallons. Groundwater sample submitted for laboratory analysis. 18. Temporary well set at 205.0 to 210.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-24B | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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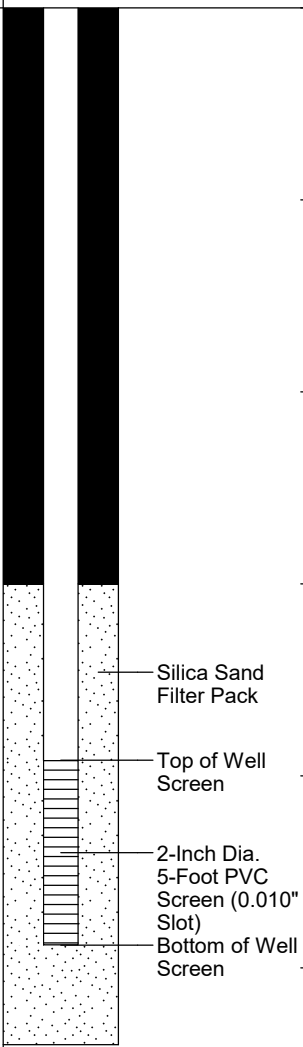
Belmont, Michigan

Boring No.: HS-MW-24B

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Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|---------------|-----------|--|---------------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 206 | 106 | 24/10 | 206-208 | 5-11 25-27 | 0.0 ppm | medium SAND, wet. | SAND | 18 |  |
| 207 | | | | | | Dense, brown and gray, fine to medium SAND, wet. | | | |
| 208 | 107 | 24/14 | 208-210 | 6-15 34-37 | 0.0 ppm | Dense, brown and gray, fine to medium SAND, wet. | | | |
| 209 | | | | | | Dense, brown and gray, fine to medium SAND, wet. | | | |
| 210 | 108 | 24/18 | 210-212 | 7-24 35-50 | 0.0 ppm | Very dense, brown and gray, fine to medium SAND, wet. | | | |
| 211 | | | | | | Very dense, brown and gray, fine to medium SAND, wet. | | | |
| 212 | 109 | 24/22 | 212-214 | 2-9 17-30 | 0.0 ppm | Medium dense, brown, fine to medium SAND, trace Gravel, trace Silt, wet. | | | |
| 213 | | | | | | Medium dense, brown, fine to medium SAND, trace Gravel, trace Silt, wet. | | | |
| 214 | 110 | 24/6 | 214-216 | 5-22-42/5" | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 215 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 216 | 111 | 24/16 | 216-218 | 9-34-50/4" | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 217 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 218 | 112 | 18/6 | 218-219.5 | 3-17-41 | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 219 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 220 | 113 | 24/12 | 220-222 | 10-41-50/5" | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 221 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 222 | 114 | 18/6 | 222-223.5 | 9-20-33 | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 223 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 224 | 115 | 24/10 | 224-226 | 6-24-50/5" | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 225 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 226 | 116 | 18/5 | 226-227.5 | 4-17-35 | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 227 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 228 | 117 | 18/12 | 228-229.5 | 8-18-43 | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 229 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 230 | 118 | 24/12 | 230-232 | 16-35-50/5" | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 231 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | |
| 232 | | | | | | Bottom of Borehole at 232.0 Feet | 232' | 21 | |
| 233 | | | | | | | | | |
| 234 | | | | | | | | | |
| 235 | | | | | | | | | |
| 236 | | | | | | | | | |
| 237 | | | | | | | | | |
| 238 | | | | | | | | | |
| 239 | | | | | | | | | |
| REMARKS 19. Temporary well set at 215.0 to 220.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. 20. Temporary well set at 225.0 to 230.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. 21. Monitoring well was installed in borehole upon completion. Well screen set from 224.6 to 229.4 feet below ground surface. | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | Boring No.: HS-MW-24B | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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Belmont, Michigan

Boring No.: HS-MW-24D

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File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Christine Cano/John Morehouse

Date Start/Finish: 9-23-19 / 10-1-19

Boring Location:

GS Elev.: Datum:

**Auger/
Casing**

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|---------------|-----------|--|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/16 | 0-2 | 1-1 1-2 | 0.0 ppm | Very loose, brown, fine SAND, some Silt, moist. Changing at 0.3 feet to: Very loose, light brown to tan, fine SAND, trace Silt, moist. | SAND | 1 | | |
| 2 | 2 | 24/16 | 2-4 | 2-2 3-8 | 0.0 ppm | Loose, light tan, very fine SAND, trace Silt, moist. | | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/20 | 4-6 | 9-10 12-9 | 0.0 ppm | Medium dense, light tan, very fine SAND and SILT, moist. | | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/24 | 6-8 | 5-7 10-10 | 0.0 ppm | Medium dense, light brown, fine SAND, trace Clay, moist. | | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/24 | 8-10 | 7-12 13-12 | 0.0 ppm | Medium dense, light brown, fine SAND, trace Clay, moist. | | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/24 | 10-12 | 6-3 4-4 | 0.0 ppm | Loose, light brown, fine SAND, trace Clay, moist. Changing at 11.0 feet to: Loose, tan, fine to medium SAND, trace Silt, moist. | | | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/12 | 12-14 | 1-3 2-2 | 0.0 ppm | Loose, tan, fine to coarse SAND, trace Silt, moist. | | | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/20 | 14-16 | 2-3 4-5 | 0.0 ppm | Loose, brown, fine SAND, trace Clay, moist. Changing at 15.0 feet to: Loose, tan, fine to medium SAND, trace Silt, moist. | | | | |
| 15 | | | | | | | | | | |
| 16 | 9 | 24/10 | 16-18 | 3-6 5-4 | 0.0 ppm | Medium dense, tan, fine to medium SAND, trace Silt, moist. | | | | |
| 17 | | | | | | | | | | |
| 18 | 10 | 24/12 | 18-20 | 2-3 3-2 | 0.0 ppm | Loose, tan, fine to medium SAND, trace Silt, moist. | | | | |
| 19 | | | | | | | | | | |
| 20 | 11 | 24/14 | 20-22 | 1-2 2-3 | 0.0 ppm | Very loose, tan, fine to medium SAND, trace Silt, moist. | | | | |
| 21 | | | | | | | | | | |
| 22 | 12 | 24/14 | 22-24 | 1-2 2-3 | 0.0 ppm | Very loose, tan, fine to medium SAND, trace Silt, moist. | | | | |
| 23 | | | | | | | | | | |
| 24 | 13 | 24/14 | 24-26 | 3-4 4-4 | 0.0 ppm | Loose, light tan, fine to medium SAND, trace Silt, moist. | | | | |
| 25 | | | | | | | | | | |
| 26 | 14 | 24/14 | 26-28 | 1-3 3-3 | 0.0 ppm | Loose, light tan, fine to medium SAND, trace Silt, moist. | | | | |
| 27 | | | | | | | | | | |
| 28 | 15 | 24/20 | 28-30 | 1-4 3-3 | 0.0 ppm | Loose, light tan, fine to medium SAND, trace Silt, moist. | | | | |
| 29 | | | | | | | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings are shown in parts per million (ppm) of isobutylene. Background was measured at 0.0 ppm.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-24D

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/3/20



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House Street
Belmont, Michigan

Boring No.: HS-MW-24D

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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|---|--------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (6") | Test Data | | | | | |
| 31 | 16 | 24/19 | 30-32 | 3-2 3-4 | 0.0 ppm | Loose, light tan, fine to medium SAND, trace Silt, moist. | SAND | | | |
| 32 | 17 | 24/14 | 32-34 | 4-5 7-4 | 0.0 ppm | Medium dense, light tan, fine to medium SAND, trace Silt, moist. | | | | |
| 34 | 18 | 24/22 | 34-36 | 4-5 7-8 | 0.0 ppm | Medium dense, light tan, fine to medium SAND, trace Silt, trace Gravel, moist. | | | | |
| 36 | 19 | 24/17 | 36-38 | 4-5 5-6 | 0.0 ppm | Loose, tan, fine to medium SAND, trace Silt, moist. Changing at 37.5 feet to: Loose, tan, fine to coarse SAND, trace Silt, moist. | | | | |
| 38 | 20 | 24/16 | 38-40 | 5-7 7-9 | 0.0 ppm | Medium dense, tan, fine to coarse SAND, trace Silt, moist. | | | | |
| 40 | 21 | 24/14 | 40-42 | 4-7 7-9 | 0.0 ppm | Medium dense, tan, Silty fine to medium SAND, trace Gravel, moist. | | | | |
| 42 | 22 | 24/13 | 42-44 | 5-9 9-10 | 0.0 ppm | Medium dense, tan, Silty fine to coarse SAND, some Gravel, moist. | | | | |
| 44 | 23 | 24/5 | 44-46 | 6-10 20-20 | 0.0 ppm | Medium dense, tan, Silty fine to coarse SAND, trace Gravel, moist. | | | | |
| 46 | 24 | 24/12 | 46-48 | 5-16 33-16 | 0.0 ppm | Dense, tan, Sandy GRAVEL, trace Silt, moist. | 46' GRAVEL | | | |
| 48 | 25 | 24/4 | 48-50 | 11-23 21-13 | 0.0 ppm | Dense, tan, Sandy GRAVEL, trace Silt, moist. | | | | |
| 50 | 26 | 24/0 | 50-52 | 17-11 10-9 | | NO RECOVERY. | 50' NO RECOVERY | | | |
| 52 | 27 | 24/1 | 52-54 | 18-15 12-9 | 0.0 ppm | Medium dense, tan, coarse SAND, wet. | 52' SAND | 2 | | |
| 54 | 28 | 24/4 | 54-56 | 15-9 7-7 | 0.0 ppm | Medium dense, tan, fine to coarse SAND, trace Gravel, wet. | | 3 | | |
| 56 | 29 | 24/18 | 56-58 | 2-2 2-4 | 0.0 ppm | Loose, tan, fine to coarse SAND, trace Silt, wet. | | | | |
| 58 | 30 | 24/17 | 58-60 | 1-1 2-3 | 0.0 ppm | Very loose, tan, fine to coarse SAND, trace Silt, wet. | | | | |
| 60 | 31 | 24/0 | 60-62 | 1-2 4-6 | | NO RECOVERY. | 60' NO RECOVERY | | | |
| 62 | 32 | 24/5 | 62-64 | 2-2 4-4 | 0.0 ppm | Loose, tan, fine to coarse SAND, trace Silt, wet. | 62' SAND | | | |
| 64 | 33 | 24/8 | 64-66 | 3-3 4-5 | 0.0 ppm | Loose, tan, fine to coarse SAND, trace Silt, | | | | |
| REMARKS 2. Groundwater was encountered at approximately 52.0 feet below ground surface. 3. Temporary well set at 55.0 to 60.0 feet below ground surface. Purged 70.0 gallons. Groundwater sample submitted for laboratory analysis. 4. Temporary well set at 65.0 to 70.0 feet below ground surface. Purged 35.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-24D | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/3/20



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House Street
Belmont, Michigan

Boring No.: HS-MW-24D

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File No.: 16.0062335.52

Check: JTM/JMG

| Sample Information | | | | | | Check: JTM/JMG | | | | |
|--------------------|--|------------------|-------------|-------------|-----------|--|---------------|---------|---------------------|-----------------------|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 66 | 34 | 24/14 | 66-68 | 1-2 | 0.0 ppm | wet. | SAND | 4 | | |
| 67 | | | | 2-3 | | Loose, tan, fine to coarse SAND, trace Silt, wet. | | | | |
| 68 | 35 | 24/14 | 68-70 | 1-2 | 0.0 ppm | Loose, tan, fine to coarse SAND, trace Silt, wet. | | | | |
| 69 | | | | 3-10 | | | | | | |
| 70 | 36 | 24/24 | 70-72 | 7-9 | 0.0 ppm | Medium dense, tan, fine to coarse SAND, trace Silt, wet. | | | | |
| 71 | | | | 10-12 | | | | | | |
| 72 | 37 | 24/15 | 72-74 | 4-3 | 0.0 ppm | Loose, tan, fine to coarse SAND, trace Silt, wet. Changing at 73.5 feet to: Loose, brown, Sandy GRAVEL, wet. | 73.5' | | | |
| 73 | | | | 2-2 | | | 74' GRAVEL | | | |
| 74 | 38 | 24/14 | 74-76 | 6-8 | 0.0 ppm | Medium dense, brown, fine to coarse SAND and Gravel, trace Silt, wet. | SAND | 5 | | |
| 75 | | | | 8-8 | | | | | | |
| 76 | 39 | 24/2 | 76-78 | 2-3 | 0.0 ppm | Loose, brown, fine to coarse SAND and Gravel, trace Silt, wet. | | | | |
| 77 | | | | 3-4 | | | | | | |
| 78 | 40 | 24/14 | 78-80 | 4-5 | 0.0 ppm | Medium dense, brown to gray, GRAVEL, some fine to coarse Sand, wet. | 78' | | | |
| 79 | | | | 5-5 | | | GRAVEL | | | |
| 80 | 41 | 24/3 | 80-82 | 5-5 | 0.0 ppm | Medium dense, brown to gray, GRAVEL, some fine to coarse Sand, wet. | | | | |
| 81 | | | | 5-7 | | | | | | |
| 82 | 42 | 24/16 | 82-84 | 2-3 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | 82' | | | |
| 83 | | | | 4-4 | | | SAND | | | |
| 84 | 43 | 24/24 | 84-86 | 2-2 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | 6 | | |
| 85 | | | | 2-4 | | | | | | |
| 86 | 44 | 24/16 | 86-88 | 2-1 | 0.0 ppm | Very loose, brown and gray, coarse SAND, some Gravel, wet. | | | | |
| 87 | | | | 2-2 | | | | | | |
| 88 | 45 | 24/12 | 88-90 | 3-3 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | | | |
| 89 | | | | 3-5 | | | | | | |
| 90 | 46 | 24/8 | 90-92 | 2-3 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | | | |
| 91 | | | | 6-7 | | | | | | |
| 92 | 47 | 24/16 | 92-94 | 1-1 | 0.0 ppm | Very loose, brown and gray, coarse SAND, some Gravel, wet. | | | | |
| 93 | | | | 2-3 | | | | | | |
| 94 | 48 | 24/7 | 94-96 | 1-2 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | 7 | | |
| 95 | | | | 3-4 | | | | | | |
| 96 | 49 | 24/20 | 96-98 | 2-2 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | | | |
| 97 | | | | 5-6 | | | | | | |
| 98 | 50 | 24/16 | 98-100 | 4-2 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | | | |
| 99 | | | | 4-5 | | | | | | |
| REMARKS | 5. Temporary well set at 75.0 to 80.0 feet below ground surface. Purged 45.0 gallons. Groundwater sample submitted for laboratory analysis. 6. Temporary well set at 85.0 to 90.0 feet below ground surface. Purged 75.0 gallons. Groundwater sample submitted for laboratory analysis. 7. Temporary well set at 95.0 to 100.0 feet below ground surface. Purged 90.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-24D |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/3/20



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House Street
Belmont, Michigan

Boring No.: HS-MW-24D

Page: 4 of 7

File No.: 16.0062335.52

Check: JTM/JMG

| Sample Information | | | | | | Demont, Michigan | | Check: | | JTM/JMG | |
|---|--|------------------|-------------|----------------|-----------|--|---------------|-----------------------|--|--------------------------|----|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | | | | | | | | | | | |
| 101 | 51 | 24/10 | 100-102 | 3-7 11-13 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | SAND | 8 |  | Bentonite Slurry / Grout | |
| 102 | 52 | 24/12 | 102-104 | 2-2 3-7 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | | | | |
| 103 | | | | | | | | | | | |
| 104 | 53 | 24/10 | 104-106 | 3-4 5-7 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | | | | |
| 105 | | | | | | | | | | | |
| 106 | 54 | 24/14 | 106-108 | 3-9 10-10 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | |
| 107 | | | | | | | | | | | |
| 108 | 55 | 24/16 | 108-110 | 2-4 8-9 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | |
| 109 | | | | | | | | | | | |
| 110 | 56 | 24/3 | 110-112 | 3-7 9-11 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | |
| 111 | | | | | | | | | | | |
| 112 | 57 | 24/4 | 112-114 | 1-4 5-5 | 0.0 ppm | Loose, brown and gray, coarse SAND, some Gravel, wet. | | 9 | | | |
| 113 | | | | | | | | | | | |
| 114 | 58 | 24/14 | 114-116 | 6-12 19-23 | 0.0 ppm | Dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | |
| 115 | | | | | | | | | | | |
| 116 | 60 | 24/18 | 116-118 | 2-4 12-15 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | |
| 117 | | | | | | | | | | | |
| 118 | 61 | 24/10 | 118-120 | 11-17 13-10 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | |
| 119 | | | | | | | | | | | |
| 120 | 62 | 24/12 | 120-122 | 4-7 11-13 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | |
| 121 | | | | | | | | | | | |
| 122 | 63 | 24/10 | 122-124 | 2-12 20-13 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | 10 |
| 123 | | | | | | | | | | | |
| 124 | 64 | 24/8 | 124-126 | 9-15 15-13 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | |
| 125 | | | | | | | | | | | |
| 126 | 65 | 24/13 | 126-128 | 3-11 16-17 | 0.0 ppm | Medium dense, brown and gray, coarse SAND, some Gravel, wet. | | | | | |
| 127 | | | | | | | | | | | |
| 128 | 66 | 24/10 | 128-130 | 11-20 20-21 | 0.0 ppm | Dense, brown and gray, coarse SAND, some Gravel, trace Silt, wet. | | | | | |
| 129 | | | | | | | | | | | |
| 130 | 67 | 24/12 | 130-132 | 5-18 28-30 | 0.0 ppm | Dense, brown and gray, coarse SAND, some Gravel, trace Silt, wet. | | | | | |
| 131 | | | | | | | | | | | |
| 132 | 68 | 24/5 | 132-134 | 9-16 21-24 | 0.0 ppm | Dense, brown and gray, coarse SAND, some reddish brown, fine Sand, some Gravel, trace Silt, wet. | 134' | | | | |
| 133 | | | | | | | GRAVEL | | | | |
| 134 | 70 | 24/4 | 134-136 | 5-13 20-31 | 0.0 ppm | Dense, brown and gray, GRAVEL, some | | | | | |
| REMARKS | 8. Temporary well set at 105.0 to 110.0 feet below ground surface. Purged 60.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | |
| | 9. Temporary well set at 115.0 to 120.0 feet below ground surface. Purged 55.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | |
| | 10. Temporary well set at 125.0 to 130.0 feet below ground surface. Purged 55.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | |
| | 11. Temporary well set at 135.0 to 140.0 feet below ground surface. Purged 65.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | |
| | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | Boring No.: HS-MW-24D | | | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/3/20



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

Wolverine World Wide, Inc.

House Street
Belmont, Michigan

Boring No.: HS-MW-24D

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File No.: 16.0062335.52

Check: JTM/JMG

| Sample Information | | | | | | Check: | | JTM/JMG | | |
|---|---|------------------|-------------|---------------|-----------|---|---------------------|---------|-----------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 136 | 71 | 24/7 | 136-138 | 4-12 16-23 | 0.0 ppm | medium to coarse Sand, wet. | GRAVEL | 11 | | |
| 137 | | | | | | Medium dense, brown and gray, GRAVEL, some medium to coarse Sand, wet. | | | | |
| 138 | 72 | 24/8 | 138-140 | 4-7 18-32 | 0.0 ppm | Medium dense, brown and gray, GRAVEL, some medium to coarse Sand, wet. | | | | |
| 139 | | | | | | | | | | |
| 140 | 73 | 24/7 | 140-142 | 5-11 21-22 | 0.0 ppm | Dense, brown and gray, GRAVEL, some medium to coarse Sand, wet. | 142' | | | |
| 141 | | | | | | | | | | |
| 142 | 74 | 24/12 | 142-144 | 7-13 21-23 | 0.0 ppm | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | SAND | | | |
| 143 | | | | | | | | | | |
| 144 | 75 | 24/10 | 144-146 | 6-17 21-22 | 0.0 ppm | Dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | 12 | | |
| 145 | | | | | | | | | | |
| 146 | 76 | 24/10 | 146-148 | 8-15 16-21 | 0.0 ppm | Dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 147 | | | | | | | | | | |
| 148 | 77 | 24/8 | 148-150 | 5-16 21-24 | 0.0 ppm | Dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 149 | | | | | | | | | | |
| 150 | 78 | 24/14 | 150-152 | 4-9 16-14 | 0.0 ppm | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 151 | | | | | | | | | | |
| 152 | 79 | 24/4 | 152-154 | 6-10 8-8 | 0.0 ppm | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 153 | | | | | | | | | | |
| 154 | 80 | 24/18 | 154-156 | 4-12 21-20 | 0.0 ppm | Dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | 13 | | |
| 155 | | | | | | | | | | |
| 156 | 81 | 24/6 | 156-158 | 5-8 13-10 | 0.0 ppm | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 157 | | | | | | | | | | |
| 158 | 82 | 24/6 | 158-160 | 7-11 11-12 | 0.0 ppm | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 159 | | | | | | | | | | |
| 160 | 83 | 24/7 | 160-162 | 5-8 9-9 | 0.0 ppm | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 161 | | | | | | | | | | |
| 162 | 84 | 24/5 | 162-164 | 5-10 19-26 | 0.0 ppm | Medium dense, brown and gray, fine to coarse SAND, some Gravel, wet. | | | | |
| 163 | | | | | | | | | | |
| 164 | 85 | 24/0 | 164-166 | 5-13 22-36 | | NO RECOVERY. | 164' NO RECOVERY | 14 | | |
| 165 | | | | | | | | | | |
| 166 | 86 | 24/0 | 166-168 | 7-19 25-39 | | NO RECOVERY; Switched to bailer for recovery. Bailer: brown and gray, fine to medium SAND, wet. | | | | |
| 167 | | | | | | | | | | |
| 168 | 87 | 24/0 | 168-170 | 2-8 16-22 | | NO RECOVERY; Bailer: brown and gray, fine to medium SAND, wet. | | | | |
| 169 | | | | | | | | | | |
| REMARKS | 12. Temporary well set at 145.0 to 150.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| | 13. Temporary well set at 155.0 to 160.0 feet below ground surface. Purged 120.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | |
| 14. Temporary well set at 165.0 to 170.0 feet below ground surface. Purged 80.0 gallons. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-24D | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/3/20



GZA
GeoEnvironmental, Inc.
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Wolverine World Wide, Inc.

House Street

Belmont, Michigan

Boring No.: HS-MW-24D

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File No.: 16.0062335.52

Check: JTM/JMG

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|--|--------------------|------------------|-------------|---------------|-----------|--|---------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (6") | Test Data | | | | | |
| 171 | 88 | 24/0 | 170-172 | 7-11 19-22 | | NO RECOVERY: Bailer: brown and gray, fine to medium SAND, wet. | NO RECOVERY | 15 | | |
| 172 | 89 | 24/5 | 172-174 | 2-4 7-10 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | 172' SAND | | | |
| 173 | | | | | | | | | | |
| 174 | 90 | 24/0 | 174-176 | 5-7 11-16 | | NO RECOVERY; Bailer: brown and gray, fine to medium SAND, wet. | 174' NO RECOVERY | 16 | | |
| 175 | | | | | | | | | | |
| 176 | 91 | 24/10 | 176-178 | 4-7 17-21 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | 176' SAND | | | |
| 177 | | | | | | | | 17 | | |
| 178 | 92 | 24/20 | 178-180 | 4-10 28-35 | 0.0 ppm | Dense, brown and gray, fine to medium SAND, wet. | | | | |
| 179 | | | | | | | | | | |
| 180 | 93 | 24/16 | 180-182 | 3-10 17-23 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | 18 | | |
| 181 | | | | | | | | | | |
| 182 | 94 | 24/7 | 182-184 | 3-8 12-17 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | | | |
| 183 | | | | | | | | 19 | | |
| 184 | 95 | 24/6 | 184-186 | 8-10 13-31 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | | | |
| 185 | | | | | | | | | | |
| 186 | 96 | 24/0 | 186-188 | 5-8 19-20 | | NO RECOVERY; Bailer: brown and gray, fine to medium SAND, wet. | 186' NO RECOVERY | 20 | | |
| 187 | | | | | | | | | | |
| 188 | 97 | 24/3 | 188-190 | 5-5 12-14 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | 188' SAND | | | |
| 189 | | | | | | | | 21 | | |
| 190 | 98 | 24/10 | 190-192 | 3-12 20-28 | 0.0 ppm | Dense, brown and gray, fine to medium SAND, wet. | | | | |
| 191 | | | | | | | | | | |
| 192 | 99 | 24/4 | 192-194 | 2-5 9-13 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | 22 | | |
| 193 | | | | | | | | | | |
| 194 | 100 | 24/2 | 194-196 | 2-6 9-11 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | | | |
| 195 | | | | | | | | 23 | | |
| 196 | 101 | 24/6 | 196-198 | 5-11 17-21 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | | | |
| 197 | | | | | | | | | | |
| 198 | 102 | 24/4 | 198-200 | 3-3 8-9 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | 24 | | |
| 199 | | | | | | | | | | |
| 200 | 103 | 24/6 | 200-202 | 4-12 15-22 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | | | |
| 201 | | | | | | | | 25 | | |
| 202 | 104 | 24/16 | 202-204 | 4-4 7-12 | 0.0 ppm | Medium dense, brown and gray, fine to medium SAND, wet. | | | | |
| 203 | | | | | | | | | | |
| 204 | 105 | 24/16 | 204-206 | 4-9 17-24 | 0.0 ppm | Medium dense, brown and gray, fine to | | 26 | | |
| | | | | | | | | | | |
| REMARKS 15. Temporary well set at 175.0 to 180.0 feet below ground surface. Purged 125.0 gallons. Groundwater sample submitted for laboratory analysis. 16. Temporary well set at 185.0 to 190.0 feet below ground surface. Purged 135.0 gallons. Groundwater sample submitted for laboratory analysis. 17. Temporary well set at 195.0 to 200.0 feet below ground surface. Purged 135.0 gallons. Groundwater sample submitted for laboratory analysis. 18. Temporary well set at 205.0 to 210.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-24D | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/3/20



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

Wolverine World Wide, Inc.

House Street


Belmont, Michigan

Boring No.: HS-MW-24D

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File No.: 16.0062335.52

Check: JTM/JMG

| Sample Information | | | | | | Check: JTM/JMG | | | | |
|-----------------------|---|------------------|-------------|---------------|-----------|--|---------------|---------|--|----|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 206 | 106 | 24/10 | 206-208 | 5-11 25-27 | 0.0 ppm | medium SAND, wet. | SAND | 18 |  | |
| 207 | | | | | | Dense, brown and gray, fine to medium SAND, wet. | | | | |
| 208 | 107 | 24/14 | 208-210 | 6-15 34-37 | 0.0 ppm | Dense, brown and gray, fine to medium SAND, wet. | | | | |
| 209 | | | | | | Dense, brown and gray, fine to medium SAND, wet. | | | | |
| 210 | 108 | 24/18 | 210-212 | 7-24 35-50 | 0.0 ppm | Very dense, brown and gray, fine to medium SAND, wet. | | | | |
| 211 | | | | | | Very dense, brown and gray, fine to medium SAND, wet. | | | | |
| 212 | 109 | 24/22 | 212-214 | 2-9 17-30 | 0.0 ppm | Medium dense, brown, fine to medium SAND, trace Gravel, trace Silt, wet. | | | | |
| 213 | | | | | | Medium dense, brown, fine to medium SAND, trace Gravel, trace Silt, wet. | | | | |
| 214 | 110 | 24/6 | 214-216 | 5-22-42/5" | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | 19 |
| 215 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 216 | 111 | 24/16 | 216-218 | 9-34-50/4" | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 217 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 218 | 112 | 18/6 | 218-219.5 | 3-17-41 | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 219 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 220 | 113 | 24/12 | 220-222 | 10-41-50/5" | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 221 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 222 | 114 | 18/6 | 222-223.5 | 9-20-33 | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 223 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 224 | 115 | 24/10 | 224-226 | 6-24-50/5" | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | 20 |
| 225 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 226 | 116 | 18/5 | 226-227.5 | 4-17-35 | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 227 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 228 | 117 | 18/12 | 228-229.5 | 8-18-43 | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 229 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 230 | 118 | 24/12 | 230-232 | 16-35-50/5" | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 231 | | | | | | Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 232 | | | | | | Bottom of Borehole at 232.0 Feet | 232' | 21 | | |
| 233 | | | | | | | | | | |
| 234 | | | | | | | | | | |
| 235 | | | | | | | | | | |
| 236 | | | | | | | | | | |
| 237 | | | | | | | | | | |
| 238 | | | | | | | | | | |
| 239 | | | | | | | | | | |
| REMARKS | 19. Temporary well set at 215.0 to 220.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. 20. Temporary well set at 225.0 to 230.0 feet below ground surface. Groundwater sample submitted for laboratory analysis. 21. Monitoring well was installed in borehole upon completion. Well screen set from 224.6 to 229.4 feet below ground surface. | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |
| Boring No.: HS-MW-24D | | | | | | | | | | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/3/20



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

1855 House Street: Off-Site Borings

2805 Rogue River Road, NE

Belmont, Michigan

Boring No.: SB-25/MW-25M

Page: 1 of 9

File No.: 16.0062335.52

Check: Julie Groenleer

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 11-1-18 / 11-9-18

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 8.0" / 4.25"

Hammer Wt.: 140 lbs

Hammer Fall: 30"

TOC Elev.: NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|----------------|-----------|--|--|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/14.4 | 0-2 | 1-2 1-1 | 0.0 ppm | Very dark grayish-brown, moderately sorted, fine to medium grained SAND, some Silt, trace Gravel, moist; grading at 1.0 feet to: Dark yellowish-brown, well sorted, fine to medium grained SAND, trace Silt, grading coarser, moist. Changing at 1.2 feet to: NO RECOVERY. | SAND 1.2' NO RECOVERY | 1 | | |
| 2 | 2 | 24/6 | 2-4 | 2-2 1-2 | 0.0 ppm | Dark yellowish-brown, well sorted, fine to medium grained SAND, trace Silt, trace Gravel, moist. Changing at 2.4 feet to: Yellowish-brown, poorly sorted, fine to coarse grained SAND, little Gravel, trace Silt, moist. Changing at 2.5 feet to: NO RECOVERY. | 2' SAND 2.5' NO RECOVERY | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/6 | 4-6 | 3-1 2-2 | 0.0 ppm | Yellowish-brown, poorly sorted, fine to coarse grained SAND, little Gravel, trace Silt, moist. Changing at 4.4 feet to: Dark yellowish-brown, poorly sorted, SILT, trace Clay, trace Gravel, slightly plastic, moderately cohesive, moist. Changing at 4.5 feet to: NO RECOVERY. | 4' SAND 4.4' SILT 4.5' NO RECOVERY | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/7.2 | 6-8 | 11-16 29-23 | 0.0 ppm | Pale brown to light yellowish-brown to grayish-brown to brown to dark yellowish-brown, poorly sorted, medium to coarse grained SAND, some Gravel, trace Silt, moist. Changing at 6.6 feet to: NO RECOVERY. | 6' SAND 6.6' NO RECOVERY | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/0 | 8-10 | 50/6" | 0.0 ppm | NO RECOVERY. | | | | |
| 9 | | | | | | | | | | |
| | | | | | | | 10' | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 2000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million (ppm) of isobutylene. groundwater was measured at 0.0 ppm.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-25/MW-25M

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS ROGUE RIVER RD.GPJ GZA CORP.GDT 2/27/19



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

1855 House Street: Off-Site Borings

2805 Rogue River Road, NE

Belmont, Michigan

Boring No.: SB-25/MW-25M

Page: 2 of 9

File No.: 16.0062335.52

Check: Julie Groenleer

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|--|---|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 11 | 6 | 24/10.8 | 10-12 | 10-19 20-13 | 0.0 ppm | Grayish-brown to brown, poorly sorted, coarse to medium grained SAND, some Gravel, trace Silt, moist. Changing at 10.8 feet to: Pale brown to light yellowish-brown, moderately sorted, coarse to medium grained SAND, trace Silt, moist. Changing at 10.9 feet to: NO RECOVERY. | SAND 10.9' NO RECOVERY | | | |
| 12 | 7 | 24/9.6 | 12-14 | 11-10 12-11 | 0.0 ppm | Pale brown to light yellowish-brown, poorly sorted, coarse to medium grained SAND, some Gravel, trace Silt, moist. Changing at 12.8 feet to: NO RECOVERY. | 12' SAND 12.8' NO RECOVERY | | | |
| 14 | 8 | 24/6 | 14-16 | 11-12 8-8 | 0.0 ppm | Pale brown to light yellowish-brown, poorly sorted, coarse to medium grained SAND, some Gravel, trace Silt, moist. Changing at 14.5 feet to: NO RECOVERY. | 14' SAND 14.5' NO RECOVERY | | | |
| 16 | 9 | 24/10.8 | 16-18 | 13-15 13-13 | 0.0 ppm | Pale brown to light yellowish-brown, poorly sorted, coarse to medium grained SAND, some Gravel, trace Silt, moist. Changing at 16.9 feet to: NO RECOVERY. | 16' SAND 16.9' NO RECOVERY | | | |
| 18 | 10 | 24/8.4 | 18-20 | 9-29 24-23 | 0.0 ppm | Pale brown to light yellowish-brown, poorly sorted, coarse to medium grained SAND, some Gravel, trace Silt, moist. Changing at 18.7 feet to: NO RECOVERY. | 18' SAND 18.7' NO RECOVERY | | | |
| 20 | 11 | 24/8.4 | 20-22 | 21-19 14-16 | 0.0 ppm | Pale brown to light yellowish-brown, poorly sorted, coarse to medium grained SAND, some Gravel, trace Silt, moist. Changing at 20.7 feet to: NO RECOVERY. | 20' SAND 20.7' NO RECOVERY | | | |
| 21 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-25/MW-25M | |

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS ROGUE RIVER RD.GPJ GZA_CORP.GDT 2/27/19



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

1855 House Street: Off-Site Borings

2805 Rogue River Road, NE

Belmont, Michigan

Boring No.: SB-25/MW-25M

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File No.: 16.0062335.52

Check: Julie Groenleer

| Bentonite / Grout | | | | | | | | | | | |
|---|--------------------|------------------|-------------|----------------|-----------|---|---------------|---------|--------------------------|--|-------------|
| Check: Julie Groenleer | | | | | | | | | | | |
| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | | |
| 22 | 12 | 24/9.6 | 22-24 | 6-15 12-12 | 0.0 ppm | Pale brown to light yellowish-brown, poorly sorted, coarse to medium grained SAND, some Gravel, trace Silt, moist. Changing at 22.3 feet to: Very pale brown, very well sorted, fine grained SAND, trace Silt, moist. Changing at 22.4 feet to: Pale brown to light yellowish-brown, poorly sorted, coarse to medium grained SAND, some Gravel, trace Silt, moist. Changing at 22.8 feet to: NO RECOVERY. | 22' | | | | |
| | | | | | | | SAND | | | | |
| 23 | 13 | 24/4.8 | 24-26 | 14-5 5-8 | 0.0 ppm | Pale brown to light yellowish-brown, poorly sorted, coarse to medium grained SAND, some Gravel, trace Silt, moist. Changing at 24.4 feet to: NO RECOVERY. | 22.8' | | | | |
| | | | | | | | NO RECOVERY | | | | |
| 24 | | | | | | | 24' | | | | |
| | | | | | | | SAND | | | | |
| 25 | 14 | 24/18 | 26-28 | 4-6 6-5 | 0.0 ppm | Dark reddish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 26.3 feet to: Dark brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 27.5 feet to: NO RECOVERY. | 24.4' | | | | |
| | | | | | | | NO RECOVERY | | | | |
| 26 | | | | | | | 26' | | | | |
| | | | | | | | CLAY & SILT | | | | |
| 27 | 15 | 24/19.2 | 28-30 | 4-3 3-5 | 0.0 ppm | Dark brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 29.6 feet to: NO RECOVERY. | 27.5' | | | | |
| | | | | | | | NO RECOVERY | | | | |
| 28 | | | | | | | 28' | | | | |
| | | | | | | | CLAY & SILT | | | | |
| 29 | 16 | 24/21.6 | 30-32 | 14-21 16-25 | 0.0 ppm | Strong brown, poorly sorted, SILT & CLAY, little Sand, trace Gravel, moderately plastic, moderately cohesive, moist. Changing at 31.7 feet to: Dark yellowish-brown, poorly sorted, fine grained SAND, some Silt, trace Gravel, non-plastic, moderately cohesive, moist to wet. Changing at 31.8 feet to: NO RECOVERY. | 29.6' | | | | |
| | | | | | | | NO RECOVERY | | | | |
| 30 | | | | | | | 30' | | | | |
| | | | | | | | SILT & CLAY | | | | |
| 31 | 17 | 24/15.6 | 32-34 | 7-10 15-22 | 0.0 ppm | Strong brown, poorly sorted, SILT & CLAY, little Sand, trace Gravel, moderately plastic, moderately cohesive, moist. Changing 33.2 feet to: Dark yellowish-brown, moderately sorted, fine to coarse grained SAND, trace Silt, wet. Changing at 33.3 feet to: NO | 31.7' | | | | |
| | | | | | | | 31.8' | | | | |
| 32 | | | | | | | SAND | | | | |
| | | | | | | | 32' | | | | |
| 33 | | | | | | | | | | | NO RECOVERY |
| | | | | | | | | | | | SILT & CLAY |
| | | | | | | | 33.2' | | | | |
| | | | | | | | 33.3' | | | | |
| REMARKS | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-25/MW-25M | | |

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS ROGUE RIVER RD.GPJ GZA CORP.GDT 2/27/19



GZA
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Engineers and Scientists

1855 House Street: Off-Site Borings

2805 Rogue River Road, NE

Belmont, Michigan

Boring No.: SB-25/MW-25M

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File No.: 16.0062335.52

Check: Julie Groenleer

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|------------------|-----------|---|--|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 34 | 18 | 24/19.2 | 34-36 | 15-32-50/5" | 0.0 ppm | RECOVERY. Strong brown, poorly sorted, SILT & CLAY, little Sand, trace Gravel, moderately plastic, moderately cohesive, moist. Changing at 34.2 feet to: Dark yellowish-brown, poorly sorted SILT & CLAY, some Sand, trace Gravel, slightly plastic, cohesive, moist. Changing at 35.6 feet to: NO RECOVERY. | SAND NO RECOVERY 34' | | | |
| 35 | | | | | | | SILT & CLAY 35.6' | | | |
| 36 | 19 | 24/10.8 | 36-38 | 1-9 21-19 | 0.0 ppm | Dark yellowish-brown, poorly sorted, SILT & CLAY, some Sand, trace Gravel, slightly plastic, cohesive, moist. Changing at 36.9 feet to: NO RECOVERY. | NO RECOVERY 36' | | | |
| 37 | | | | | | | SILT & CLAY 36.9' | | | |
| 38 | 20 | 24/15.6 | 38-40 | 22-37 38-37 | 0.0 ppm | Brown to yellowish-brown, very well sorted, fine to medium grained SAND, trace Silt, moist to wet. Changing at 38.3 feet to: Dark yellowish-brown, poorly sorted, SILT & CLAY, some Sand, trace Gravel, occasional very thin Sand partings, slightly plastic, cohesive, moist. Changing at 39.3 feet to: NO RECOVERY. | NO RECOVERY 38' | | | |
| 39 | | | | | | | SAND 38.3' | | | |
| 40 | 21 | 24/21.6 | 40-42 | 13-29 39-50 | 0.0 ppm | Dark yellowish-brown to brown, well sorted, Silty CLAY, plastic, cohesive, bedding, moist. Changing at 40.6 feet to: Yellowish-brown to brown, well sorted, fine to medium grained, SAND, trace Silt, wet. Changing at 40.7 feet to: Dark yellowish-brown, well sorted, Silty CLAY, plastic, cohesive, bedded, moist. Changing at 40.8 feet to: Yellowish-brown to brown, well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 41.8 feet to: NO RECOVERY. | SILT & CLAY 39.3' | | | |
| 41 | | | | | | | NO RECOVERY 40' | | | |
| 42 | 22 | 24/20.4 | 42-44 | 1-2 12-21 | 0.0 ppm | Yellowish-brown to brown, well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 43.4 feet to: Dark yellowish-brown, well sorted, Silty CLAY, plastic, cohesive, bedded, moist. Changing at 43.7 feet to: NO RECOVERY. | Silty CLAY 40.6' | | | |
| 43 | | | | | | | 40.7' SAND 40.8' Silty CLAY SAND | | | |
| 44 | 23 | 24/24 | 44-46 | 5-19 41-50/3" | 0.0 ppm | Dark yellowish-brown, well sorted, Silty CLAY, plastic, cohesive, bedded, moist. Changing at 45.6 feet to: Dark yellowish-brown, very well sorted, fine grained SAND, some Silt, slightly cohesive, | 41.8' | | | |
| | | | | | | | 42' NO RECOVERY SAND | | | |
| | | | | | | | 43.4' | | | |
| | | | | | | | Silty CLAY 43.7' | | | |
| | | | | | | | NO RECOVERY Silty CLAY | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-25/MW-25M | |

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS ROGUE RIVER RD.GPJ GZA CORP.GDT 2/27/19



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1855 House Street: Off-Site Borings

2805 Rogue River Road, NE

Belmont, Michigan

Boring No.: SB-25/MW-25M

Page: 5 of 9

File No.: 16.0062335.52

Check: Julie Groenleer

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|---|---|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 46 | 24 | 24/21.6 | 46-48 | 14-37-50/5" | 0.0 ppm | wet. Dark yellowish-brown, very well sorted, fine grained SAND, some Silt, slightly cohesive, wet. Changing at 46.6 feet to: Dark brown to yellowish-brown, well sorted, Silty CLAY, plastic, cohesive, varved with Silt & Clay, wet. Changing at 47.6 feet to: Dark yellowish-brown, very well sorted, fine grained SAND, some Silt, slightly cohesive, wet. Changing at 47.8 feet to: NO RECOVERY. | Silty CLAY 45.6' SAND 46.6' Silty CLAY 47.6' 47.8' SAND 48' NO RECOVERY 48.4' SAND SILT 49' SAND 49.4' NO RECOVERY 50' SAND 51.3' NO RECOVERY 52' SAND 53.5' NO RECOVERY 54' SAND 55.6' NO RECOVERY 56' SAND | 2 | | |
| 47 | | | | | | | | | | |
| 48 | 25 | 24/16.8 | 48-50 | 8-22 27-35 | 0.0 ppm | Dark yellowish-brown, very well sorted, fine grained SAND, some Silt, slightly cohesive, wet. Changing at 48.4 feet to: Dark yellowish-brown, well sorted, SILT, some Sand, moist to wet. Changing at 49.0 feet to: Dark yellowish-brown, very well sorted, fine grained SAND, some Silt, slightly cohesive, wet. Changing at 49.4 feet to: NO RECOVERY. | | | | |
| 49 | | | | | | | | | | |
| 50 | 26 | 24/15.6 | 50-52 | 8-23 32-37 | 0.0 ppm | Dark yellowish-brown, very well sorted, fine grained SAND, some Silt, lightly cohesive, wet. Changing at 51.3 feet to: NO RECOVERY. | | | | |
| 51 | | | | | | | | | | |
| 52 | 27 | 24/18 | 52-54 | 6-14 21-35 | 0.0 ppm | Dark yellowish-brown, very well sorted, fine grained SAND, some Silt, slightly cohesive, wet. Changing at 53.5 feet to: NO RECOVERY. | | | | |
| 53 | | | | | | | | | | |
| 54 | 28 | 24/19.2 | 54-56 | 4-14 21-33 | 0.0 ppm | Dark yellowish-brown, very well sorted, fine grained SAND, some Silt, slightly cohesive, wet. Changing at 55.6 feet to: NO RECOVERY. | | | | |
| 55 | | | | | | | | | | |
| 56 | 29 | 24/19.2 | 56-58 | 4-12 17-21 | 0.0 ppm | Dark yellowish-brown, very well sorted, fine grained SAND, some Silt, slightly cohesive, wet. Changing at 56.5 feet to: Dark | | | | |
| REMARKS 2. Groundwater was encountered at approximately 45.6 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-25/MW-25M | |

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS ROGUE RIVER RD.GPJ GZA CORP.GDT 2/27/19



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1855 House Street: Off-Site Borings

2805 Rogue River Road, NE

Belmont, Michigan

Boring No.: SB-25/MW-25M

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File No.: 16.0062335.52

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| Sample Information | | | | | | BIRMINGHAM, ALABAMA | | Check: Julie Groenleer | | | | |
|---|-------------------|------------------|-------------|---------------|-----------|--|-----------------|------------------------|---------------------|--------------------------|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | | |
| | | | | | | | | | | | | |
| 57 | 30 | 24/22.8 | 58-60 | 5-10 13-18 | 0.0 ppm | yellowish-brown, moderately sorted, fine to coarse grained SAND, little Silt, trace Gravel, wet, with occasional lenses discontinuous Silty Clay, plastic, cohesive, moist. Changing at 56.8 feet to: Dark yellowish-brown, moderately sorted, fine to medium grained SAND, little Silt, wet, with occasional lenses of Silty Clay. Changing at 57.6 feet to: NO RECOVERY. | SAND | | | | | |
| 58 | | | | | | 57.6' NO RECOVERY | | | | | | |
| 59 | | | | | | 58' SAND | | | | | | |
| 60 | 59.9' NO RECOVERY | | | | | | | | | | | |
| 61 | 60' SAND | | | | | | | | | | | |
| 62 | 61.2' NO RECOVERY | | | | | | | | | | | |
| 63 | 62' SAND | | | | | | | | | | | |
| 64 | 33 | 24/24 | 64-66 | 3-7 23-31 | 0.0 ppm | Dark yellowish-brown, well sorted, fine to medium grained SAND, little Silt, wet. | 67' NO RECOVERY | | | | | |
| 65 | | | | | | | | | | | | |
| 66 | | | | | | | | | | | | |
| 67 | 34 | 24/12 | 66-68 | 3-13 29-35 | 0.0 ppm | Dark yellowish-brown, well sorted, fine to medium grained SAND, little Silt, wet. Changing at 66.9 feet to: Dark brown to dark yellowish-brown, very well sorted, fine grained SAND, trace Silt, wet with Silty Clay varves, plastic, cohesive, moist. Changing at 67.0 feet to: NO RECOVERY. | 68' SAND | | | | | |
| 68 | 35 | 24/22.8 | 68-70 | 5-20-50/6" | 0.0 ppm | Dark yellowish-brown, well sorted, fine to | | | | | | |
| REMARKS | | | | | | | | | | | | |
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BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS ROGUE RIVER RD.GPJ GZA CORP.GDT 2/27/19



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Engineers and Scientists

1855 House Street: Off-Site Borings

2805 Rogue River Road, NE

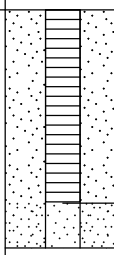
Belmont, Michigan

Boring No.: SB-25/MW-25M

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| Sample Information | | | | | | | | Check: Julie Groenleer | | |
|---|-----|------------------|-------------|-------------------|-----------|--|---|---|--------------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 69 | 36 | 24/20.4 | 70-72 | 13-19 31-50/3" | 0.0 ppm | medium grained SAND, little Silt, wet. Changing at 68.5 feet to: Dark brown to dark yellowish-brown, very well sorted, fine grained SAND, trace Silt, wet with Silty Clay varves, plastic, cohesive, moist. Changing at 68.6 feet to: Dark yellowish-brown, well sorted, fine to medium grained SAND, little Silt, wet. Changing at 69.9 feet to: NO RECOVERY. | SAND |  | Bottom of Well Screen | |
| 70 | | | | | | Dark yellowish-brown, well sorted, fine to medium grained SAND, little Silt, wet. Changing at 70.4 feet to: Very dark grayish-brown to dark grayish-brown, well sorted, varved Silty CLAY, plastic, cohesive, moist. Changing at 71.7 feet to: NO RECOVERY. | 69.9' NO RECOVERY 70' SAND 70.4' Silty CLAY | | | |
| 71 | | | | | | | 71.7' NO RECOVERY 72' SILT | | | |
| 72 | 37 | 24/16.8 | 72-74 | 42-20 19-24 | 0.0 ppm | Brown to grayish-brown, very well sorted, SILT, trace Clay, slightly plastic, cohesive, moist. Changing at 72.6 feet to: Dark yellowish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 73.0 feet to: Brown to yellowish-brown, poorly sorted, fine to coarse grained SAND, some Gravel, moist to wet. Changing at 73.2 feet to: Mottled yellowish-red to light gray to light grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 73.4 feet to: NO RECOVERY. | 72.6' CLAY & SILT | | | |
| 73 | | | | | | Mottled yellowish-red to light gray to light grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 74.8 feet to: NO RECOVERY. | 73' SAND 73.2' Silty CLAY 73.4' NO RECOVERY | | | |
| 74 | | | | | | | 74' Silty CLAY | | | |
| 75 | 38 | 24/13.2 | 74-76 | 16-22 45-50/4" | 0.0 ppm | Mottled yellowish-red to light gray to light grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 74.8 feet to: NO RECOVERY. | 74.8' NO RECOVERY | | | |
| 76 | | | | | | Yellowish-red, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 76.6 feet to: NO RECOVERY. | 76' Silty CLAY 76.6' NO RECOVERY | | | |
| 77 | | | | | | | | | | |
| 78 | 40 | 24/7.2 | 78-80 | 43-50/4" | 0.0 ppm | Yellowish-red, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 78.6 feet to: NO RECOVERY. | 78' Silty CLAY 78.6' NO RECOVERY | | | |
| 79 | | | | | | | | | | |
| | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-25/MW-25M | |

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS ROGUE RIVER RD.GPJ GZA CORP.GDT 2/27/19

Boring No.: SB-25/MW-25M



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1855 House Street: Off-Site Borings

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Boring No.: SB-25/MW-25M

Page: 8 of 9

File No.: 16.0062335.52

Check: Julie Groenleer

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------------|-----------|---|-------------------------------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 81 | 41 | 24/3.6 | 80-82 | 50/5" | 0.0 ppm | Yellowish-red, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 80.3 feet to: NO RECOVERY. | 80.3' Silty CLAY NO RECOVERY | | |
| 82 | 42 | 24/7.2 | 82-84 | 20-50 | 0.0 ppm | Yellowish-red, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 82.6 feet to: NO RECOVERY. | 82' Silty CLAY 82.6' NO RECOVERY | | |
| 84 | 43 | 24/21.6 | 84-86 | 12-33-50/4" | 0.0 ppm | Yellowish-red, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 85.6 feet to: NO RECOVERY. | 84' Silty CLAY 85.6' NO RECOVERY | | |
| 86 | 44 | 24/10.8 | 86-88 | 20-50/5" | 0.0 ppm | Yellowish-red, well sorted, Silty CLAY, plastic, cohesive, moist. Changing 86.9 feet to: NO RECOVERY. | 86' Silty CLAY 86.9' NO RECOVERY | | |
| 88 | 45 | 24/4.8 | 88-90 | 50/5" | 0.0 ppm | Mottled yellowish-red to light gray to light grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 88.9 feet to: NO RECOVERY. | 88' Silty CLAY 88.9' NO RECOVERY | | |
| 90 | 46 | 24/10.8 | 90-92 | 23-50/5" | 0.0 ppm | Mottled yellowish-red to light gray to light grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 90.9 feet to: NO RECOVERY. | 90' Silty CLAY 90.9' NO RECOVERY | | |
| REMARKS STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED. FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE. | | | | | | | | | |

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS ROGUE RIVER RD.GPJ GZA CORP.GDT 2/27/19

Boring No.: SB-25/MW-25M



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Boring No.: SB-25/MW-25M

Page: 9 of 9

File No.: 16.0062335.52

Check: Julie Groenleer

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------------|-----------|---|----------------------|---------|--------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 92 | 47 | 24/8.4 | 92-94 | 25-50 | 0.0 ppm | Mottled yellowish-red to light gray to light grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 92.7 feet to: NO RECOVERY. | 92' Silty CLAY | | |
| | | | | | | | 92.7' NO RECOVERY | | |
| 93 | 48 | 24/3.6 | 94-96 | 36-50/2" | 0.0 ppm | Mottled yellowish-red to light gray to light grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 94.3 feet to: NO RECOVERY. | 94' | | |
| 94 | | | | | | | 94.3' Silty CLAY | | |
| 95 | | | | | | | NO RECOVERY | | |
| 96 | | | | | | Bottom of Borehole at 96.0 Feet | 96' | 3 | |
| 97 | | | | | | | | | |
| 98 | | | | | | | | | |
| 99 | | | | | | | | | |
| 100 | | | | | | | | | |
| 101 | | | | | | | | | |
| 102 | | | | | | | | | |
| 103 | | | | | | | | | |
| 3. Monitoring well MW-25M was installed in borehole upon completion. Well screen set from 65.0 to 70.0 feet below ground surface. | | | | | | | | | |
| REMARKS | | | | | | | | | |
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BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS ROGUE RIVER RD.GPJ GZA CORP.GDT 2/27/19



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1855 House Street: Off-Site Borings

2805 Rogue River Road, NE

Belmont, Michigan

Boring No.: MW-25S

Page: 1 of 2

File No.: 16.0062335.52

Check: Julie Groenleer

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 11-1-18 / 11-9-18

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

NA

Hammer Wt.: 140 lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|--|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See SB-25/MW-25M for detailed soil descriptions. | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
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| 29 | | | | | | | | | | |

Bentonite /
Grout

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-25S

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS ROGUE RIVER RD.GPJ GZA CORP.GDT 2/27/19



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Engineers and Scientists

1855 House Street: Off-Site Borings

2805 Rogue River Road, NE

Belmont, Michigan

Boring No.: MW-25S

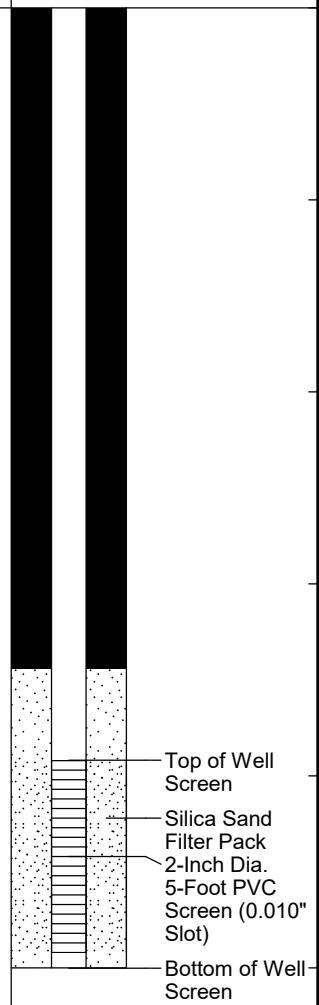
Page: 2 of 2

File No.: 16.0062335.52

Check: Julie Groenleer

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|--------------------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 31 | | | | | | | | | |
| 32 | | | | | | | | | |
| 33 | | | | | | | | | |
| 34 | | | | | | | | | |
| 35 | | | | | | | | | |
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| 52 | | | | | | | | | |
| 53 | | | | | | | | | |
| 54 | | | | | | | | | |
| 55 | | | | | | Bottom of Borehole at 55.0 Feet | | 1 | |
| 56 | | | | | | | | | |
| 57 | | | | | | | | | |
| 58 | | | | | | | | | |
| 59 | | | | | | | | | |
| 60 | | | | | | | | | |
| 61 | | | | | | | | | |
| 62 | | | | | | | | | |
| 63 | | | | | | | | | |
| 64 | | | | | | | | | |
| REMARKS | | | | | | | | | |
| 1. Monitoring well MW-25S was installed in borehole upon completion. Well screen set from 49.6 to 54.6 feet below ground surface. | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | Boring No.: MW-25S | |

BORING WELL 6233552 HOUSE STREET OFF SITE BORINGS ROGUE RIVER RD.GPJ GZA CORP.GDT 2/27/19





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House Street

Belmont, Michigan

Boring No.: SB-26/MW-26D

Page: 1 of 8

File No.: 16.0062335.52

Check: John Morehouse

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 11-8-18 / 11-15-18

Boring Location: NW Corner of Rogue River & Jupiter Intersection

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|--------------|-----------|---|---|---------|---------------------|-------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | PROTECTIVE CASING | Filter Sand |
| 1 | 1 | 24/16 | 0-2 | 2-1 2-1 | 0.0 ppm | Very dark brown, moderately sorted, fine-grained SAND, some Silt, non to slightly cohesive, moist. Changing at 0.7 feet to: Dark yellowish-brown, moderately sorted, fine to medium-grained SAND, some Silt, moist. Changing at 1.3 feet to: NO RECOVERY. | SAND 1.3' NO RECOVERY | | | |
| 2 | 2 | 24/12 | 2-4 | 2-2 3-5 | 0.0 ppm | Dark yellowish-brown, moderately sorted, fine to medium-grained SAND, some Silt, moist. Changing at 2.7 feet to: Brown to pale brown, poorly sorted, GRAVEL, little to some coarse to medium-grained Sand, trace Silt, moist. Changing at 3.0 feet to: NO RECOVERY. | 2' SAND 2.7' GRAVEL 3' NO RECOVERY | | | |
| 4 | 3 | 24/11 | 4-6 | 4-3 2-2 | 0.0 ppm | Brown to pale brown, poorly sorted, GRAVEL, little to some coarse to medium-grained Sand, trace Silt, moist. Changing at 4.4 feet to: Brownish-yellow, poorly sorted, fine to medium-grained SAND, trace Silt, moist. Changing at 4.6 feet to: Dark yellowish-brown, poorly sorted, fine to medium-grained SAND, trace Silt, moist. Changing at 4.9 feet to: NO RECOVERY. | 4' GRAVEL 4.4' SAND 4.9' NO RECOVERY | | | |
| 6 | 4 | 24/12 | 6-8 | 2-4 10-13 | 0.0 ppm | Dark yellowish-brown, poorly sorted, fine to medium-grained SAND, trace Silt, moist. Changing at 7.0 feet to: NO RECOVERY. | 6' SAND 7' NO RECOVERY | | | |
| 8 | 5 | 24/16 | 8-10 | 9-11 9-8 | 0.0 ppm | Dark yellowish-brown, poorly sorted, medium to coarse-grained SAND, little Gravel, trace Silt, moist. Changing at 9.3 feet to: NO RECOVERY. | 8' SAND 9.3' NO RECOVERY 10' | | | |

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: SB-26/MW-26D

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 2/27/19



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 Belmont, Michigan

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File No.: 16.0062335.52

Check: John Morehouse

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------------|-----------|---|---|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 11 | 6 | 24/14 | 10-12 | 5-7 5-6 | 0.0 ppm | Dark yellowish-brown, poorly sorted, medium to coarse-grained SAND, little Gravel, trace Silt, moist. Changing at 10.9 feet to: Brown to pale brown, moderately sorted, coarse-grained SAND, some Gravel, trace Silt, moist. Changing at 11.2 feet to: NO RECOVERY. | SAND 11.2' NO RECOVERY | | | |
| 12 | 7 | 24/14 | 12-14 | 5-13 23-24 | 0.0 ppm | Dark yellowish-brown, poorly sorted, coarse to medium-grained SAND, little to some Gravel, trace Silt, moist. Changing at 13.2 feet to: NO RECOVERY. | 12' SAND 13.2' NO RECOVERY | | | |
| 14 | 8 | 24/18 | 14-16 | 12-19 10-8 | 0.0 ppm | Dark yellowish-brown, poorly sorted, coarse to medium-grained SAND, little to some Gravel, trace Silt, moist. Changing at 15.5 feet to: NO RECOVERY. | 14' SAND 15.5' NO RECOVERY | | | |
| 16 | 9 | 24/16 | 16-18 | 12-19 21-50/5.5" | 0.0 ppm | Dark yellowish-brown, poorly sorted, coarse to medium-grained SAND, little to some Gravel, trace Silt, moist. Changing at 17.2 feet to: Dark yellowish-brown, poorly sorted, coarse to medium-grained SAND, little to some Gravel, trace Silt, wet. Changing at 17.3 feet to: NO RECOVERY. | 16' SAND 17.3' NO RECOVERY | | | |
| 18 | 10 | 24/17 | 18-20 | 12-18 17-15 | 0.0 ppm | Dark yellowish-brown, poorly sorted, coarse to medium-grained SAND, little to some Gravel, trace Silt, wet. Changing at 18.4 feet to: Strong, brown, poorly sorted, SILT & CLAY, some Sand, non to slightly plastic, cohesive, grading to reddish-brown, moderately well sorted, CLAY & SILT, little Sand, plastic, cohesive, moist. Changing at 19.4 feet to: NO RECOVERY. | 18' SAND 18.4' SILT & CLAY grading to CLAY & SILT 19.4' NO RECOVERY | | | |
| 20 | 11 | 24/18 | 20-22 | 12-20 20-26 | 0.0 ppm | Dark yellowish-brown, poorly sorted, coarse to medium-grained SAND, little to some Gravel, trace Silt, wet. Changing at 20.6 feet to: Reddish-brown, well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 20.9 feet to: Dark gray, well sorted, Silty CLAY, laminated, plastic, cohesive, moist. Changing at 21.5 feet to: | 20' SAND 20.9' Silty CLAY 21.5' | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-26/MW-26D | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 2/27/19



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House Street
Belmont, Michigan

Boring No.: SB-26/MW-26D

Page: 3 of 8

File No.: 16.0062335.52

Check: John Morehouse

| Sample Information | | | | | | Benihart, Michigan | | Check: John Morehouse | | | | | |
|---|-----|------------------|-------------|----------------|-----------|---|--|-----------------------|--|--|--------------------------|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | | | |
| | | | | | | | | | | | | | |
| 22 | 12 | 24/20 | 22-24 | 11-13 17-20 | 0.0 ppm | NO RECOVERY. Dark grayish-brown, poorly sorted, Clayey SAND, little Silt, trace Gravel, slightly plastic, cohesive, moist. Changing at 23.2 feet to: Brown, well sorted, fine to medium-grained SAND, trace Silt, moist to wet. Changing at 23.3 feet to: Dark grayish-brown, poorly sorted, Clayey SAND, little Silt, trace Gravel, slightly plastic, coheisve, moist. Changing at 23.6 feet to: NO RECOVERY. | NO 22' RECOVERY SAND | 1 |  |  | | | |
| 23 | | | | | | | 23.6' | | | | | | |
| 24 | 13 | 24/17 | 24-26 | 4-13 20-25 | 0.0 ppm | Grayish-brown to dark grayish-brown, well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 25.2 feet to: Dark grayish-brown to grayish-brown, very well sorted, SILT, some fine-grained Sand, slightly cohesive, wet. Changing at 25.4 feet to: NO RECOVERY. | NO 24' RECOVERY SAND | | | | | | |
| 25 | | | | | | | 25.2' 25.4' SILT | | | | | | |
| 26 | 14 | 24/18 | 26-28 | 14-22 23-19 | 0.0 ppm | Dark grayish-brown to grayish-brown, very well sorted, SILT, some fine-grained Sand, slightly cohesive, wet with occuring thin, layers of Silty CLAY, plastic, cohesive, moist. Changing at 27.5 feet to: NO RECOVERY. | NO 26' RECOVERY Silty CLAY | | | | | | |
| 27 | | | | | | | 27.5' | | | | | | |
| 28 | 15 | 24/24 | 28-30 | 10-16 23-20 | 0.0 ppm | Grayish-brown to dark grayish-brown, well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 28.3 feet to: Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 28.9 feet to: Grayish-brown to dark grayish-brown, well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 29.2 feet to: Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 29.3 feet to: Grayish-brown to dark grayish-brown, well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 29.6 feet to: Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 29.8 feet to: Grayish-brown to dark grayish-brown, well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 29.9 feet to: Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist. | NO 28' RECOVERY SAND Silty CLAY | | | | | | |
| 29 | | | | | | | 28.9' 29.2' SAND 29.3' Silty CLAY | | | | | | |
| 30 | 16 | 24/22 | 30-32 | 8-20 20-27 | 0.0 ppm | Grayish-brown to dark grayish-brown, well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 29.6 feet to: Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 29.8 feet to: Grayish-brown to dark grayish-brown, well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 29.9 feet to: Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist. | 29.6' SAND 29.8' Silty CLAY 29.9' SAND 30' Silty CLAY CLAY & SILT | | | | | | |
| 31 | | | | | | | | | | | | | |
| 32 | 17 | 24/23 | 32-34 | 9-16 24-34 | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, plastic, cohesive, moist. Changing at 31.8 feet to: NO RECOVERY. Dark gray, poorly sorted, SILT & CLAY, some Sand, plastic, cohesive, moist. changing at 32.4 feet to: Grayish-brown to | 31.8' 32' NO RECOVERY SILT & CLAY 32.4' SAND 32.5' SILT & CLAY 32.9' SAND 33.2' | | | | | | |
| 33 | | | | | | | | | | | | | |
| REMARKS | | | | | | | | | | | | | |
| 1. Groundwater was encountered at approximately 24.0 feet below ground surface. | | | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | | Boring No.: SB-26/MW-26D | | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 2/27/19



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Boring No.: SB-26/MW-26D

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File No.: 16.0062335.52

Check: John Morehouse

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------------|-----------|---|---|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 34 | 18 | 24/18 | 34-36 | 12-14 27-42 | 0.0 ppm | dark grayish-brown, well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 32.5 feet to: Dark gray, poorly sorted, SILT & CLAY, some Sand, plastic, cohesive, moist. Changing at 32.9 feet to: Grayish-brown to dark grayish-brown, well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 33.2 feet to: Dark gray, poorly sorted, SILT & CLAY, some Sand, plastic, cohesive, moist. Changing at 33.9 feet to: NO RECOVERY. | SILT & CLAY 33.9' 34' NO RECOVERY SILT 34.8' Silty CLAY 35.5' SAND 35.9' 36' NO RECOVERY 36.4' Silty CLAY 36.6' Alternating Silty CLAY and SAND SAND 37.5' Silty CLAY 37.8' 38' NO RECOVERY Silty CLAY | | | |
| 35 | | | | | | | | | | |
| 36 | 19 | 24/22 | 36-38 | 2-13 23-19 | 0.0 ppm | Dark grayish-brown to brown, well sorted, SILT, little fine-grained Sand, non-plastic, cohesive, wet. Changing at 34.8 feet to: Dark brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 35.5 feet to: Dark grayish-brown to grayish-brown, well sorted, fine-grained SAND, some Silt, non-plastic, cohesive, wet. Changing at 35.9 feet to: NO RECOVERY. | | | | |
| 37 | | | | | | | | | | |
| 38 | 20 | 24/24 | 38-40 | 8-14 19-23 | 0.0 ppm | Dark brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 36.4 feet to: Alternating seams of dark brown, well sorted, fine-grained SAND, moist. Changing at 36.6 feet to: Dark grayish-brown to grayish-brown, well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 37.5 feet to: Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 37.8 feet to: NO RECOVERY. | | | | |
| 39 | | | | | | | | | | |
| 40 | 21 | 24/24 | 40-42 | 5-13 21-36 | 0.0 ppm | Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. | | | | |
| 41 | | | | | | | | | | |
| 42 | 22 | 24/24 | 42-44 | 9-19 27-45 | 0.0 ppm | Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. | | | | |
| 43 | | | | | | | | | | |
| 44 | 23 | 24/24 | 44-46 | 11-17 30-50/5.5" | 0.0 ppm | Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-26/MW-26D | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 2/27/19



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Belmont, Michigan

Boring No.: SB-26/MW-26D
Page: 5 of 8
File No.: 16.0062335.52
Check: John Morehouse

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|--|---|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 46 | 24 | 24/18 | 46-48 | 3-16 29-27 | 0.0 ppm | Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 47.3 feet to: Dark yellowish-brown, poorly sorted, SILT & CLAY, some Sand, moderately plastic, cohesive, moist. Changing at 47.4 feet to: Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 47.5 feet to: NO RECOVERY. | Silty CLAY | | | |
| 47 | | | | | | | 47.3' NO RECOVERY | | | |
| 48 | 25 | 24/24 | 48-50 | 10-15 28-29 | 0.0 ppm | Alternating seams of dark yellowish-brown, well sorted, fine to medium-grained Sand, trace Silt, wet, and dark yellowish-brown, poorly sorted, SILT & CLAY, some Sand, moderately plastic, cohesive, moist. Changing at 49.8 feet to: Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. | 47.5' SILT & CLAY 47.5' Silty CLAY NO RECOVERY Alternating SAND and Silty CLAY | | | |
| 49 | | | | | | | 49.8' Silty CLAY | | | |
| 50 | 26 | 24/23 | 50-52 | 11-25 37-48 | 0.0 ppm | Dark yellowish-brown, well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 50.4 feet to: Dark yellowish-brown, moderately well sorted, fine to medium-grained SAND, some Silt, wet. Changing at 50.5 feet to: Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 50.7 feet to: Dark yellowish-brown, moderately well sorted, fine to medium-grained SAND, some Silt, wet. Changing at 51.3 feet to: Grayish-brown to light grayish-brown, well sorted, fine-grained SAND, some Silt, wet. Changing at 51.9 feet to: NO RECOVERY. Grayish-brown to light grayish-brown, well sorted, fine-grained SAND, some Silt, wet; very thin lenses of Silty Clay at 52.5 feet and 52.9 feet. Changing at 53.0 feet to: NO RECOVERY. | 50' SAND 50.5' Silty CLAY 50.7' SAND | | | |
| 51 | | | | | | | 51.9' NO RECOVERY | | | |
| 52 | 27 | 24/12 | 52-54 | 7-8 9-18 | 0.0 ppm | Grayish-brown to light grayish-brown, well sorted, fine-grained SAND, some Silt, wet. Changing at 51.9 feet to: NO RECOVERY. Grayish-brown to light grayish-brown, well sorted, fine-grained SAND, some Silt, wet; very thin lenses of Silty Clay at 52.5 feet and 52.9 feet. Changing at 53.0 feet to: NO RECOVERY. | 52' SAND/lenses of Silty Clay | | | |
| 53 | | | | | | | 53' NO RECOVERY | | | |
| 54 | 28 | 24/20 | 54-56 | 45-36-50/6" | 0.0 ppm | Grayish-brown to light grayish-brown, well sorted, fine-grained SAND, some Silt, wet. Changing at 54.8 feet to: Dark grayish-brown to light grayish-brown, poorly sorted, SILT & CLAY, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 55.7 feet to: NO RECOVERY. | 54' SAND 54.8' SILT & CLAY | | | |
| 55 | | | | | | | 55.7' NO RECOVERY | | | |
| 56 | 29 | 24/20 | 56-58 | 3-11 20-21 | 0.0 ppm | Dark yellowish-brown to grayish-brown, poorly sorted, SILT & CLAY, little Sand, trace Gravel, plastic, cohesive, moist. | 56' SILT & CLAY 56.2' SAND | | | |
| REMARKS | | | | | | | | | | |
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BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 2/27/19



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Boring No.: SB-26/MW-26D
Page: 6 of 8
File No.: 16.0062335.52
Check: John Morehouse

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------------|-----------|--|----------------------|---------|--------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 57 | 30 | 24/13 | 58-60 | 5-1 7-34 | 0.0 ppm | Changing at 56.2 feet to: Yellowish-brown, poorly sorted, fine to coarse-grained SAND, some Gravel, trace Silt, wet. Changing at 57.6 feet to: NO RECOVERY. | SAND | | | |
| | | | | | | | 57.6' NO RECOVERY | | | |
| 58 | 31 | 24/22 | 60-62 | 31-44 44-42 | 0.0 ppm | Yellowish-brown, poorly sorted, fine to coarse-grained SAND, some Gravel, trace Silt, wet. Changing at 58.8 feet to: Brown, poorly sorted, fine to coarse-grained SAND, little Gravel, trace Silt, wet. Changing at 59.1 feet to: NO RECOVERY. | SAND | | | |
| 59 | | | | | | | 59.1' NO RECOVERY | | | |
| 60 | 32 | 24/20 | 62-64 | 3-16 36-50 | 0.0 ppm | Brown to dark yellowish-brown to yellowish-brown, poorly sorted, fine to coarse-grained SAND, little Gravel, trace Silt, wet. Changing at 61.8 feet to: NO RECOVERY. | SAND | | | |
| 61 | | | | | | | 61.8' NO RECOVERY | | | |
| 62 | 33 | 24/16 | 64-66 | 11-30 39-50/5.5" | 0.0 ppm | Brown to dark yellowish-brown to yellowish-brown, poorly sorted, fine to coarse-grained SAND, little Gravel, trace Silt, wet. Changing at 62.2 feet to: Dark yellowish-brown, well sorted, fine-grained SAND, some Silt, slightly cohesive, moist to wet. Changing at 62.8 feet to: Brown to dark yellowish-brown to yellowish-brown, poorly sorted, fine to coarse-grained SAND, little Gravel, trace Silt, wet. Changing at 63.7 feet to: NO RECOVERY. | SAND | | | |
| 63 | | | | | | | 62' NO RECOVERY | | | |
| 64 | 34 | 24/7 | 66-68 | 3-18-50/5" | 0.0 ppm | Dark yellowish-brown, moderately well sorted, fine to medium-grained SAND, trace Silt, trace Gravel, wet. Changing at 65.3 feet to: NO RECOVERY. | SAND | | | |
| 65 | | | | | | | 63.7' NO RECOVERY | | | |
| 66 | 35 | 24/12 | 68-70 | 26-50/5.5" | 0.0 ppm | Dark yellowish-brown, moderately well sorted, fine to medium-grained SAND, trace Silt, trace Gravel, wet. Changing at 66.6 feet to: NO RECOVERY. | SAND | | | |
| 67 | | | | | | | 65.3' NO RECOVERY | | | |
| 68 | | | | | | Yellowish-brown, moderately well sorted, | SAND | | | |
| | | | | | | | 66' NO RECOVERY | | | |
| | | | | | | | 66.6' NO RECOVERY | | | |
| | | | | | | | 68' SAND | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-26/MW-26D | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 2/27/19

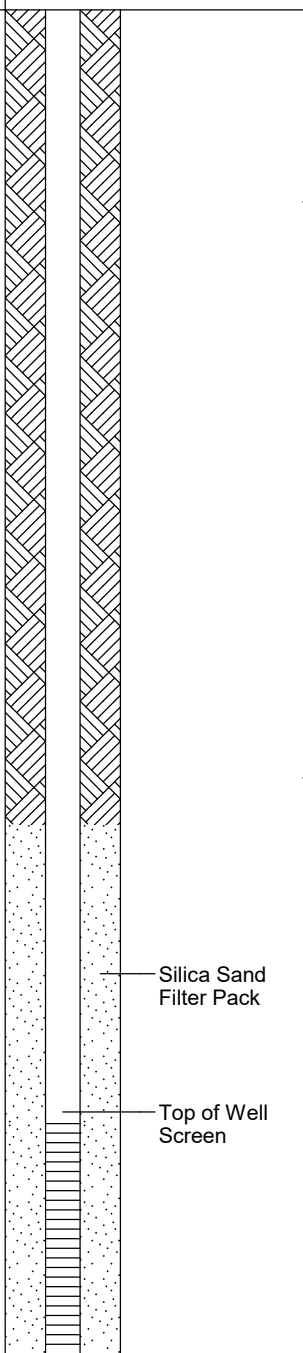


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Engineers and Scientists

Wolverine World Wide, Inc.

House Street
Belmont, Michigan

Boring No.: SB-26/MW-26D
Page: 7 of 8
File No.: 16.0062335.52
Check: John Morehouse

| Sample Information | | | | | | Check: John Morehouse | | | | | |
|---|-----|------------------|-------------|-------------------|-----------|---|-------------------|--|---------------------|--------------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | | | | | | | | | | | |
| 69 | 36 | 24/10 | 70-72 | 18-38 45-50/5" | 0.0 ppm | fine to medium-grained SAND, trace Silt, trace Gravel, wet. Changing at 68.4 feet to: Yellowish-brown, moderately well sorted, coarse-grained SAND, trace Silt, wet. Changing at 68.5 feet to: Dark yellowish-brown, moderately well sorted, fine to medium-grained SAND, trace Silt, trace Gravel, wet. Changing at 68.6 feet to: NO RECOVERY. | 68.6' SAND |  | | | |
| 70 | | | | | | Dark yellowish-brown, poorly sorted, fine to coarse-grained SAND, trace Gravel, trace Silt, wet. Changing at 70.8 feet to: NO RECOVERY. | NO RECOVERY | | | | |
| 71 | | | | | | | 70' SAND | | | | |
| 72 | | | | | | | 70.8' NO RECOVERY | | | | |
| 73 | 37 | 24/22 | 72-74 | 17-34 36-40 | 0.0 ppm | Dark yellowish-brown, poorly sorted, fine to coarse-grained SAND, trace Gravel, trace Silt, wet. Changing at 72.7 feet to: Yellowish-brown, poorly sorted, fine to coarse-grained SAND, some Silt, trace Gravel, moist. Changing at 72.8 feet to: Dark yellowish-brown, poorly sorted, fine to coarse-grained SAND, trace Gravel, trace Silt, grading coarser, wet. Changing 73.8 feet to: NO RECOVERY. | 72' SAND | | | | |
| 74 | | | | | | | 73.8' NO RECOVERY | | | | |
| 75 | | | | | | | 74' SAND | | | | |
| 76 | | | | | | | 75.9' NO RECOVERY | | | | |
| 77 | 38 | 24/23 | 74-76 | 13-20 28-33 | 0.0 ppm | Dark grayish-brown, poorly sorted, coarse to medium-grained SAND, trace Gravel, trace Silt, wet. Changing at 75.7 feet to: Dark grayish-brown to dark brown, poorly sorted, fine-grained SAND, some Silt, trace Clay, non to slightly plastic, cohesive, moist. Changing at 75.8 feet to: Dark grayish-brown, poorly sorted, coarse to medium-grained SAND, trace Gravel, trace Silt, wet. Changing at 75.9 feet to: NO RECOVERY. | 76' SAND | | | | |
| 78 | | | | | | | 77.4' NO RECOVERY | | | | |
| 79 | | | | | | | 78' SAND | | | | |
| | | | | | | | 79.8' NO | | | | |
| REMARKS | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | Boring No.: SB-26/MW-26D | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 2/27/19

Boring No.: SB-26/MW-26D

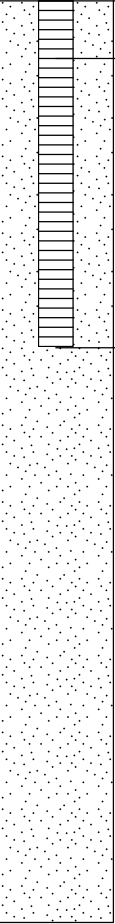


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House Street
Belmont, Michigan

Boring No.: SB-26/MW-26D
Page: 8 of 8
File No.: 16.0062335.52
Check: John Morehouse

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------------------|-----------|---|---------------------------------------|--|--------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 81 | 41 | 24/17 | 80-82 | 10-32-50 | 0.0 ppm | RECOVERY. Dark grayish-brown, moderately well sorted, fine to medium-grained SAND, trace Silt, moist to wet. Changing at 81.4 feet to: NO RECOVERY. | RECOVERY SAND 81.4' NO RECOVERY |  | |
| 82 | 42 | 24/14 | 82-84 | 12-27 45-50/3" | 0.0 ppm | Light yellowish-brown, poorly sorted, fine to medium-grained SAND, some Silt, little Gravel, little Clay, cohesive, moist. Changing at 83.2 feet to: NO RECOVERY. | 82' SAND | | |
| 83 | | | | | | | 83.2' NO RECOVERY | | |
| 84 | 43 | 24/10 | 84-86 | 26-50/3" | 0.0 ppm | Dark yellowish-brown, poorly sorted, fine to medium-grained SAND, some Silt, little Gravel, little Clay, cohesive, moist. Changing at 84.8 feet to: NO RECOVERY. | 84' SAND | | |
| 85 | | | | | | | 84.8' NO RECOVERY | | |
| 86 | 44 | 24/12 | 86-88 | 30-50/3" | 0.0 ppm | Dark grayish-brown, poorly sorted, SILT & CLAY, some Sand, trace Gravel, moderately plastic, cohesive, moist. Changing at 87.0 feet to: NO RECOVERY. | 86' SILT & CLAY | | |
| 87 | | | | | | | 87' NO RECOVERY | | |
| 88 | | | | | | Bottom of Borehole at 88.0 Feet | 88' | | |
| 89 | | | | | | | | 2 | |
| 90 | | | | | | | | | |
| 91 | | | | | | | | | |
| 2. Monitoring well was installed in borehole upon completion. Well screen set from approximately 78.0 to 83.0 feet below ground surface. | | | | | | | | | |
| REMARKS | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: SB-26/MW-26D |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 2/27/19



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Belmont, Michigan

Boring No.: MW-26M

Page: 1 of 2

File No.: 16.0062335.52

Check: John Morehouse

Contractor: Stearns Drilling Company

Foreman: Darrell Krause

Logged by: John Morehouse

Date Start/Finish: 12-10-18 / 12-11-18

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|--|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | | | | | | See SB-26/MW-26D boring log for sample description and classification. | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-26M

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 3/1/19



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House Street

Belmont, Michigan

Boring No.: MW-26M

Page: 2 of 2

File No.: 16.0062335.52

Check: John Morehouse

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|-------|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 36 | | | | | | | | | |
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| 65 | | | | | | Bottom of Borehole at 65.0 Feet | | 1 | |
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REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 60.0 to 65.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-26M

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 3/1/19

Silica Sand Filter Pack
Top of Well Screen
2-Inch Dia. 5-Foot PVC Screen (0.010" Slot)
Bottom of Well Screen



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Belmont, Michigan

Boring No.: MW-26S

Page: 1 of 1

File No.: 16.0062335.52

Check: John Morehouse

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 11-12-18 / 11-12-18

Boring Location: NW Corner of Intersection

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|--|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | | | | | | See SB-26/MW-26D boring log for sample description and classification. | | | | |
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| 31 | | | | | | Bottom of Borehole at 30.0 Feet | | 1 | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 25.0 to 30.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-26S

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 2/27/19



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MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW27A

Page: 1 of 1

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 6-20-19 / 6-20-19

Boring Location: 6390 Belmont Ave. NE, Belmont, MI

GS Elev.: Datum:

Auger/Casing: Sonic

Sampler: NA

Type: NA

O.D. / I.D.: NA

Hammer Wt.: NA

Hammer Fall: NA

TOC Elev.:

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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Surveyed By: Survey Date:

| Depth Elevation (ft.) | | Sample Information | | | | TOC Elev.: _____ | | Surveyed By: _____ | | Survey Date: _____ | | |
|------------------------------|--|--------------------|------------------------|----------------|--------------|--|------------------|--------------------|----------------|--------------------|--------------|------------------------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | Well Diagram | |
| 1 | | | | | | See HS-MW27E boring log for sample description and classification. | | | | | | <div>PROTECTIVE CASING</div> |
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| 26 | | | | | | Bottom of Borehole at 26.0 Feet | | 1 | | | | |
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Bottom of Borehole at 26.0 Feet

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REMARKS

- Monitoring well was installed in borehole upon completion. Well screen set from 21.1 to 25.7 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW27A



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MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW27B

Page: 1 of 1

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 6-20-19 / 6-20-19

Boring Location: 6390 Belmont Ave. NE, Belmont, MI

GS Elev.: Datum:

Auger/
Casing

Type: Sonic NA

O.D. / I.D.: NA NA

Hammer Wt.: NA NA

Hammer Fall: NA NA

TOC Elev.:

Sampler

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
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Surveyed By: Survey Date:

| | | TOC Elev.: _____ Surveyed By: _____ Survey Date: _____ | | | | | | | | | | | | | | |
|-------|---------------------|--|------------------------|----------------|--------------|---|------------------|---------|----------------|--|--|--|----------------------|--|--|--|
| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | Well Diagram | | | |
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | 0 20 40 60 80 | | | | PROTECTIVE CASING | | | |
| 1 | | | | | | See HS-MW27E boring log for sample description and classification. | | | | | | | | | | |
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| 38 | | | | | | Bottom of Borehole at 37.5 Feet | | 1 | | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 34.8 to 37.4 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW27B

COPY OF GAMMA LOG 62335.52 MDEQ WWW.GPJ GZA CORP.GDT 4/17/20



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MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW27C

Page: 1 of 1

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 6-20-19 / 6-20-19

Boring Location: 6390 Belmont Ave. NE, Belmont, MI

GS Elev.: Datum:

Auger/Casing

Sampler

Type: Sonic NA

O.D. / I.D.: NA NA

Hammer Wt.: NA NA


Hammer Fall: NA NA

TOC Elev.:

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: Survey Date:

| | | TOC Elev.: _____ | | Surveyed By: _____ | | Survey Date: _____ | | | | | | | | |
|-------|---------------------|--------------------|------------------------|--------------------|---|--|------------------|---------|----------------------|----|----|----|--|--|
| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | Well Diagram | |
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | PROTECTIVE CASING | | | | | |
| 1 | | | | | See HS-MW27E boring log for sample description and classification. | | | 0 | 20 | 40 | 60 | 80 |  | |
| 2 | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | |
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| 35 | | | | | | | | | | | | | | |
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| 43 | | | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | |
| | | | | | Bottom of Borehole at 45.5 Feet | | 1 | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 40.8 to 45.4 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW27C



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Rockford, Michigan

Boring No.: HS-MW27D

Page: 1 of 2

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 6-19-19 / 6-19-19

Boring Location: 6390 Belmont Ave. NE, Belmont, MI

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Sonic NA

O.D. / I.D.: NA NA

Hammer Wt.: NA NA

Hammer Fall: NA NA

TOC Elev.:

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: Survey Date:

| Depth | Elevation (ft.) | Sample Information | | | | TOC Elev.: _____ | | Surveyed By: _____ | | Survey Date: _____ | |
|-------|---------------------|--------------------|------------------------|----------------|--------------|---|------------------|--------------------|--|--------------------|----------------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | Well Diagram |
| | | | | | | See HS-MW27E boring log for sample description and classification. | | | <div><div></div><div></div><div></div><div></div><div></div></div> | | PROTECTIVE CASING |
| 1 | | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | | | | | | | | | | | |
| 4 | | | | | | | | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW27D



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Boring No.: HS-MW27D

Page: 2 of 2

File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|----------------|----|----|----|----|-----|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | 0 | 20 | 40 | 60 | 80 | 100 | |
| 31 | | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | | |
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| 61 | | | | | | | | | | | | | | | |
| 62 | | | | | | | | | | | | | | | |
| 63 | | | | | | Bottom of Borehole at 63 Feet | | 1 | | | | | | | |
| 64 | | | | | | | | | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 59.0 to 63.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW27D

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Rockford, Michigan

Boring No.: HS-MW27E

Page: 1 of 4

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 6-17-19 / 6-19-19

Boring Location: 6390 Belmont Ave. NE, Belmont, MI

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Sonic

O.D. / I.D.: NA

Hammer Wt.: NA

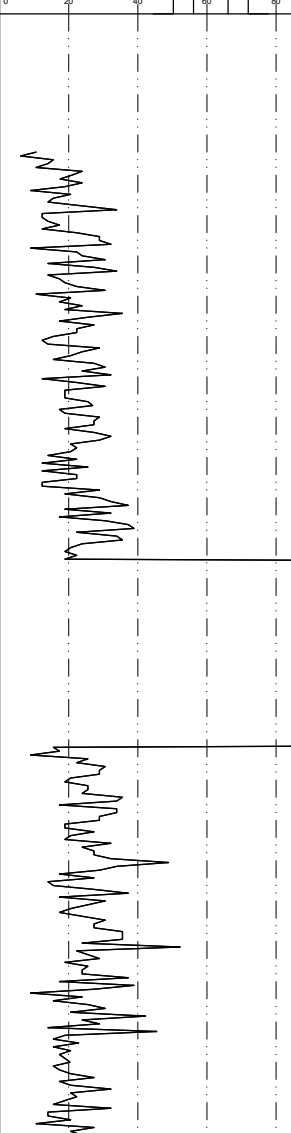

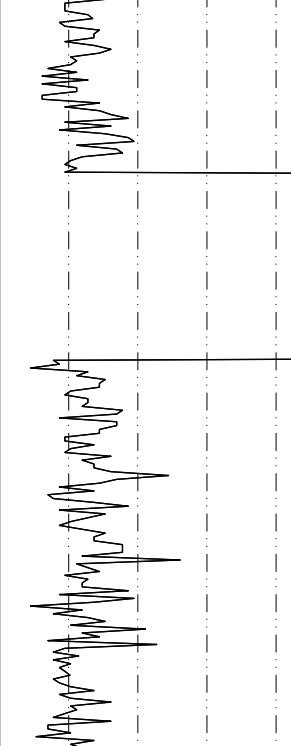

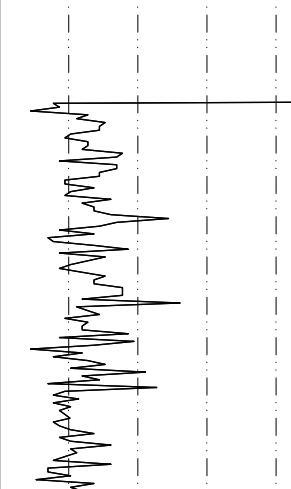

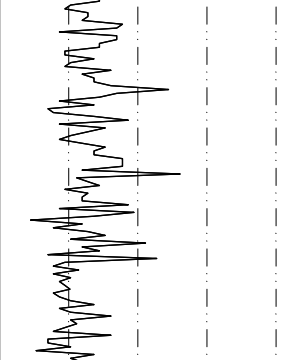



Hammer Fall: NA

TOC Elev.:

GROUNDWATER READINGS

Date Time Depth Casing Stab

Surveyed By: Survey Date:

| | | Sample Information | | | | | | TOC Elev.: | | Surveyed By: | | Survey Date: | | | |
|-------|--------------------|--------------------|------------------------|----------------|--------------|---|---------------------------------------|------------|--|---|--|--------------|--|---|--|
| Depth | Elevation (ft.) | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | Well Diagram | | |
| | | | | | | | | | PROTECTIVE CASING | | | | | | |
| 1 | | 1 | 120/89 | | | Very dark, grayish-brown, poorly sorted, SILT, some fine Sand, trace Gravel, moist. Changing at 1.0 feet to: Dark yellowish-brown, poorly sorted, SILT, some fine Sand, trace Clay, slightly plastic, slightly coheisve, moist. Changing at 1.5 feet to: Dark brown to dark yellowish-brown, moderately sorted, fine to medium SAND, little Silt, trace Gravel, moist. Changing at 6.0 feet to: Dark yellowish-brown, moderately sorted, fine to medium SAND, trace Silt, trace Gravel, moist. Changing at 7.0 feet to: Yellowish-brown, well sorted, fine to medium SAND, trace Silt, moist. Changing at 7.4 feet to: NO RECOVERY. | SILT 1.5' SAND | 1 |  | | | |  | | |
| 2 | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | |
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| 8 | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | |
| 10 | | 2 | 120/70 | | | Dark yellowish-brown, poorly sorted, fine to coarse SAND, some Gravel, trace Silt, moist. Changing at 15.0 feet to: Yellowish-brown, moderately well sorted, fine to medium SAND, trace Silt, trace Gravel (silty clay on large gravel), moist. Changing at 15.8 feet to: NO RECOVERY. | 7.4' NO RECOVERY 10' SAND | | |  | | | |  | |
| 11 | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | |
| 16 | | | | | | | 15.8' NO RECOVERY | | |  | | | |  | |
| 17 | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | |
| 20 | | 3 | 120/115 | | | Yellowish-brown, moderately well sorted, fine to medium SAND, trace Silt, trace Gravel (silty clay on large gravel), moist. Changing at 25.4 feet to: Yellowish-brown, poorly sorted, fine to coarse SAND, some Gravel, trace Silt, wet. Changing at 27.1 feet to: Hard, dark yellowish-brown, poorly sorted, Silty CLAY, trace Gravel, plastic, cohesive, moist. Changing at 28.6 feet to: Hard, dark grayish-brown, poorly sorted, Silty CLAY, trace Gravel, plastic, cohesive, moist. Changing at 29.6 feet to: NO RECOVERY. | 20' SAND 27.1' Silty CLAY | | |  | | | |  | |
| 21 | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | | | |
| 29 | | | | | | | 29.6' 30' | | |  | | | |  | |

1. Groundwater sample was collected from approximately 21.0 to 25.0 feet below ground surface and submitted for analytical laboratory testing.

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW27E

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Rockford, Michigan

Boring No.: HS-MW27E

Page: 2 of 4

File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|---|---|---------|----------------|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | |
| 31 | | 4 | 120/120 | | | Hard, dark grayish-brown, poorly sorted, Silty CLAY, trace Gravel, plastic, cohesive, moist. Changing at 33.7 feet to: Grayish-brown to brown, poorly sorted, fine to coarse SAND, little Silt, trace Gravel, moist to wet. Changing at 36.4 feet to: Hard, dark grayish-brown, poorly sorted, Silty CLAY, trace Gravel, plastic, cohesive, moist. Changing at 36.9 feet to: Grayish-brown to brown, poorly sorted, fine to medium SAND, little Silt, trace Gravel, moist to wet. Changing at 37.0 feet to: Dark grayish-brown, poorly sorted, Silty CLAY, trace Gravel, plastic, cohesive, moist. Changing at 39.8 feet to: NO RECOVERY. | NO RECOVERY Silty CLAY 33.7' SAND 36.4' 36.9' Silty CLAY 37.0' SAND Silty CLAY 39.8' 40' NO RECOVERY SAND | 2 | | |
| 32 | | | | | | | | | | |
| 33 | | | | | | | | | | |
| 34 | | | | | | | | | | |
| 35 | | | | | | | | | | |
| 36 | | | | | | | | | | |
| 37 | | | | | | | | | | |
| 38 | | | | | | | | | | |
| 39 | | | | | | | | | | |
| 40 | | 5 | 120/120 | | | Brown, well sorted, fine to medium SAND, little Silt, lightly cohesive, wet. Changing at 45.6 feet to: Hard, dark grayish-brown, poorly sorted, Silty CLAY, trace Gravel, plastic, cohesive, moist. Changing at 48.8 feet to: Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist, occasional very thin fine Sand, moist. | 45.6' Silty CLAY | 3 | | |
| 41 | | | | | | | | | | |
| 42 | | | | | | | | | | |
| 43 | | | | | | | | | | |
| 44 | | | | | | | | | | |
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| 46 | | | | | | | | | | |
| 47 | | | | | | | | | | |
| 48 | | | | | | | | | | |
| 49 | | | | | | | | | | |
| 50 | | 6 | 120/120 | | | Brown, well sorted, fine to medium SAND, little Silt, lightly cohesive, wet. Changing at 51.1 feet to: Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 51.5 feet to: Brown, well sorted, fine to medium SAND, little Silt, lightly cohesive, wet. Changing at 52.9 feet to: Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 53.5 feet to: Brown, well sorted, fine to medium SAND, little Silt, lightly cohesive, wet. Changing at 54.8 feet to: Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. | 50' SAND 51.1' 51.55' Silty CLAY 52.9' SAND 53.5' Silty CLAY 54.8' Silty CLAY | 4 | | |
| 51 | | | | | | | | | | |
| 52 | | | | | | | | | | |
| 53 | | | | | | | | | | |
| 54 | | | | | | | | | | |
| 55 | | | | | | | | | | |
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| 57 | | | | | | | | | | |
| 58 | | | | | | | | | | |
| 59 | | | | | | | | | | |
| 60 | | 7 | 120/112 | | | Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 60.6 feet to: Brown, well sorted, fine to medium SAND, little Silt, lightly cohesive, wet. Changing at 63.8 feet to: Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 67.8 feet to: Alternating layers of dark | 60.6' SAND 63.8' Silty CLAY | 5 | | |
| 61 | | | | | | | | | | |
| 62 | | | | | | | | | | |
| 63 | | | | | | | | | | |
| 64 | | | | | | | | | | |

REMARKS

- Groundwater sample was collected from approximately 34.0 to 38.0 feet below ground surface and submitted for analytical laboratory testing.
- Groundwater sample was collected from approximately 41.0 to 45.0 feet below ground surface and submitted for analytical laboratory testing.
- Groundwater sample was collected from approximately 52.0 to 56.0 feet below ground surface and submitted for analytical laboratory testing.
- Groundwater sample was collected from approximately 60.0 to 64.0 feet below ground surface and submitted for analytical laboratory testing.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW27E



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MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW27E

Page: 3 of 4

File No.: 16.0062335.52

Check: Lori Powers

| Sample Information | | | | | | Check: | | Lori Powers | | | | | | |
|--------------------|----------------------|-----|------------------------|----------------|--------------|---|------------------|-------------|----------------|----|----|----|----|--------------|
| Depth | Elevation (ft.,) | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | Well Diagram |
| | | | | | | | | | 0 | 20 | 40 | 60 | 80 | |
| 66 | | 8 | 120/112 | | | grayish-brown, well sorted, Silty CLAY, plastic, cohesive, and brown moderate sorted fine to medium SAND, little Silt, moist. Changing at 68.1 feet to: Dark grayish-brown, well sorted, Silty CLAY, well sorted, Silty CLAY, plastic, cohesive moist. Changing at 69.3 feet to: NO RECOVERY. | Silty CLAY | | | | | | | |
| 67 | | | | | | | | | | | | | | |
| 68 | | | | | | | | | | | | | | |
| 69 | | | | | | 69.3' NO RECOVERY | | | | | | | | |
| 70 | | | | | | Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 79.3 feet to: NO RECOVERY. | Silty CLAY | | | | | | | |
| 71 | | 9 | 120/120 | | | | | | | | | | | |
| 72 | | | | | | | | | | | | | | |
| 73 | | | | | | | | | | | | | | |
| 74 | | | | | | | | | | | | | | |
| 75 | | | | | | | | | | | | | | |
| 76 | | 10 | 120/120 | | | | | | | | | | | |
| 77 | | | | | | | | | | | | | | |
| 78 | | | | | | | | | | | | | | |
| 79 | | | | | | 79.3' NO RECOVERY | | | | | | | | |
| 80 | | | | | | Brown, well sorted, fine to medium SAND, little Silt, lightly cohesive, moist. Changing at 80.3 feet to: Dark brown to dark yellowish-brown, poorly sorted, Silty CLAY, plastic, cohesive, moist. | SAND | | | | | | | |
| 81 | | 10 | 120/120 | | | | | | | | | | | |
| 82 | | | | | | | | | | | | | | |
| 83 | | | | | | | | | | | | | | |
| 84 | | | | | | | | | | | | | | |
| 85 | | | | | | | | | | | | | | |
| 86 | | 10 | 120/120 | | | | | | | | | | | |
| 87 | | | | | | | | | | | | | | |
| 88 | | | | | | | | | | | | | | |
| 89 | | | | | | | | | | | | | | |
| 90 | | | | | | Reddish-brown, moderately sorted, Silty CLAY (possible Red Beds), plastic, cohesive, moist. | | | | | | | | |
| 91 | | 10 | 120/120 | | | | | | | | | | | |
| 92 | | | | | | | | | | | | | | |
| 93 | | | | | | | | | | | | | | |
| 94 | | | | | | | | | | | | | | |
| 95 | | | | | | | | | | | | | | |
| 96 | | 10 | 120/120 | | | | | | | | | | | |
| 97 | | | | | | | | | | | | | | |
| 98 | | | | | | | | | | | | | | |
| 99 | | | | | | | | | | | | | | |
| REMARKS | | | | | | | | | | | | | | |

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW27E

COPY OF GAMMA LOG 62335.52 MDEQ WWW.GPJ GZA CORP.GDT 4/20/20



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

Wolverine World Wide

MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW27E

Page: 4 of 4

File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | Well Diagram |
|---|--------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|----------------------|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | |
| 101 | | 11 | 60/60 | | | Reddish-brown, moderately sorted, Silty CLAY (possible Red Beds), plastic, cohesive, moist. Changing at 103.8 feet to: White GYPSUM, fractured. | Silty CLAY | | | |
| 102 | | | | | | | | | | |
| 103 | | | | | | | | | | |
| 104 | | | | | | | 103.8' GYPSUM | | | |
| 105 | | | | | | Bottom of Borehole at 105.0 Feet | 105' | 6 | | |
| 106 | | | | | | | | | | |
| 107 | | | | | | | | | | |
| 108 | | | | | | | | | | |
| 109 | | | | | | | | | | |
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| 132 | | | | | | | | | | |
| 133 | | | | | | | | | | |
| 134 | | | | | | | | | | |
| 6. Monitoring well was installed in borehole upon completion. Well screen set from 59.0 to 63.0 feet below surface. | | | | | | | | | | |
| R E M A R K S | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW27E | |

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MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW28A

Page: 1 of 1

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 6-11-19 / 6-12-19

Boring Location: 6272 Belshire Ave. NE, Belmont, MI

GS Elev.: Datum:

Auger/Casing

Sampler

Type: Sonic NA

O.D. / I.D.: NA NA

Hammer Wt.: NA NA

Hammer Fall: NA NA

TOC Elev.:

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: Survey Date:

| TOC Elev.: _____ | | | | | | | | | | | | Surveyed By: _____ | | Survey Date: _____ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | Well Diagram | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | 0 20 40 60 80 | | | | PROTECTIVE CASING | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | | | | | See HS-MW28E boring log for sample description and classification. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 37.5 to 42.1 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW28A

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MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW28B

Page: 1 of 1

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 6-25-19 / 6-25-19

Boring Location: 6272 Belshire Ave. NE, Belmont, MI

GS Elev.: Datum:

Auger/
Casing

Type: Sonic

O.D. / I.D.: NA

Hammer Wt.: NA

Hammer Fall: NA

TOC Elev.:

Sampler

NA

NA

NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
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Surveyed By: Survey Date:

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|----------------|--|--|--|--|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | | | | | |
| 1 | | | | | | See HS-MW28E boring log for sample description and classification. | | | | | | | | |
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| 47 | | | | | | | | | | | | | | |
| 48 | | | | | | Bottom of Borehole at 47.0 Feet | | 1 | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 41.9 to 46.5 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW28B

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MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW28C

Page: 1 of 1

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 6-25-19 / 6-25-19

Boring Location: 6272 Belshire Ave. NE, Belmont, MI

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Sonic NA

O.D. / I.D.: NA NA

Hammer Wt.: NA NA

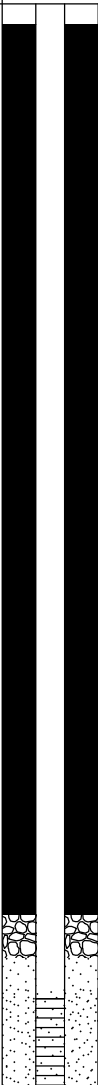
Hammer Fall: NA NA

TOC Elev.:

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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Surveyed By: Survey Date:

| | | Sample Information | | | | | | | | | | | | |
|-------|---------------------|--------------------|------------------------|----------------|---|--|------------------|---------|----------------------|----|----|----|--|--|
| Depth | Elevation (ft.) | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | Well Diagram | |
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | PROTECTIVE CASING | | | | | |
| 1 | | | | | See HS-MW28E boring log for sample description and classification. | | | 0 | 20 | 40 | 60 | 80 |  | |
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| 54 | | | | | | | | | | | | | | |
| | | | | | Bottom of Borehole at 52.5 Feet | | 1 | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 47.5 to 52.1 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW28C

COPY OF GAMMA LOG 62335.52 MDEQ WWW.GPJ GZA CORP.GDT 4/17/20



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MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW28D

Page: 1 of 3

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 6-11-19 / 6-11-19

Boring Location: 6272 Belshire Ave. NE, Belmont, MI

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Sonic NA

O.D. / I.D.: NA NA

Hammer Wt.: NA NA

Hammer Fall: NA NA

TOC Elev.:

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: Survey Date:

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|---|------------------|---------|----------------|--|--|--|--|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | | | | | |
| 1 | | | | | | See HS-MW-28E boring log for sample description and classification. | | | | | | | | |
| 2 | | | | | | | | | | | | | | |
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| 43 | | | | | | | | | | | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW28D



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Boring No.: HS-MW28D

Page: 2 of 3

File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | | Well Diagram |
|---------|--------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|----------------|----|----|----|----|-----|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | 0 | 20 | 40 | 60 | 80 | 100 | |
| 46 | | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | | |
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| 95 | | | | | | | | | | | | | | | |
| 96 | | | | | | | | | | | | | | | |
| 97 | | | | | | | | | | | | | | | |
| REMARKS | | | | | | | | | | | | | | | |

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW28D

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Rockford, Michigan

Boring No.: HS-MW28D

Page: 3 of 3

File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | Well Diagram |
|---|--------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|----------------|----|----|----|----|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | 0 | 20 | 40 | 60 | 80 | |
| 98 | | | | | | | | | | | | | | |
| 99 | | | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | | | |
| 101 | | | | | | | | | | | | | | |
| 102 | | | | | | | | | | | | | | |
| 103 | | | | | | | | | | | | | | |
| 104 | | | | | | | | | | | | | | |
| 105 | | | | | | | | | | | | | | |
| 106 | | | | | | | | | | | | | | |
| 107 | | | | | | | | | | | | | | |
| 108 | | | | | | | | | | | | | | |
| 109 | | | | | | | | | | | | | | |
| 110 | | | | | | | | | | | | | | |
| 111 | | | | | | Bottom of Borehole at 110.0 Feet | | 1 | | | | | | |
| 112 | | | | | | | | | | | | | | |
| 113 | | | | | | | | | | | | | | |
| 114 | | | | | | | | | | | | | | |
| 115 | | | | | | | | | | | | | | |
| 116 | | | | | | | | | | | | | | |
| 117 | | | | | | | | | | | | | | |
| 118 | | | | | | | | | | | | | | |
| 119 | | | | | | | | | | | | | | |
| 120 | | | | | | | | | | | | | | |
| 121 | | | | | | | | | | | | | | |
| 122 | | | | | | | | | | | | | | |
| 123 | | | | | | | | | | | | | | |
| 124 | | | | | | | | | | | | | | |
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| 126 | | | | | | | | | | | | | | |
| 127 | | | | | | | | | | | | | | |
| 128 | | | | | | | | | | | | | | |
| 129 | | | | | | | | | | | | | | |
| 130 | | | | | | | | | | | | | | |
| 131 | | | | | | | | | | | | | | |
| 132 | | | | | | | | | | | | | | |
| 133 | | | | | | | | | | | | | | |
| 134 | | | | | | | | | | | | | | |
| 135 | | | | | | | | | | | | | | |
| 136 | | | | | | | | | | | | | | |
| 137 | | | | | | | | | | | | | | |
| 138 | | | | | | | | | | | | | | |
| 139 | | | | | | | | | | | | | | |
| 140 | | | | | | | | | | | | | | |
| 141 | | | | | | | | | | | | | | |
| 142 | | | | | | | | | | | | | | |
| 143 | | | | | | | | | | | | | | |
| 144 | | | | | | | | | | | | | | |
| 145 | | | | | | | | | | | | | | |
| 146 | | | | | | | | | | | | | | |
| 147 | | | | | | | | | | | | | | |
| 148 | | | | | | | | | | | | | | |
| 149 | | | | | | | | | | | | | | |
| REMARKS 1. Monitoring well was installed in borehole upon completion. Well screen set from 80.6 to 85.2 feet below ground surface. | | | | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | | | | | |

Boring No.: HS-MW28D

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Rockford, Michigan

Boring No.: HS-MW28E

Page: 1 of 6

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 6-5-19 / 6-11-19

Boring Location: 6272 Belshire Ave. NE, Belmont, MI

GS Elev.: Datum:

Auger/
Casing

Type: Sonic

O.D. / I.D.: NA

Hammer Wt.: NA

Hammer Fall: NA

TOC Elev.:

Sampler

NA

NA





NA

NA

GROUNDWATER READINGS

Date Time Depth Casing Stab

Surveyed By: Survey Date:

| Depth Elevation (ft.) | | Sample Information | | | | TOC Elev.: | | Surveyed By: | | Survey Date: | |
|------------------------------|--|--------------------|------------------------|----------------|--|--|---------------------------|--|---|----------------------|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | Well Diagram |
| 1 | | 1 | 120/30 | | Dark yellowish-brown, poorly sorted, fine to coarse SAND, some Gravel, trace Silt, moist. Changing at 1.2 feet to: Dark yellowish-brown, well sorted, fine to medium SAND, trace Silt, moist. Changing at 1.4 feet to: Yellowish-brown, poorly sorted, fine to coarse SAND, some Gravel, trace Silt, moist. Changing at 2.5 feet to: NO RECOVERY. | SAND | 2.5' NO RECOVERY |  |  | PROTECTIVE CASING | |
| 2 | | | | | | | | | | | |
| 3 | | | | | | | | | | | |
| 4 | | | | | | | | | | | |
| 5 | | | | | | | | | | | |
| 6 | | | | | | | | | | | |
| 7 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |
| 9 | | | | | | | | | | | |
| 10 | | 2 | 120/118 | | Yellowish-brown grading to dark yellowish-brown, moderately sorted, fine to medium SAND, trace Gravel, trace Silt, grading coarser, moist. Changing at 12.6 feet to: Dark yellowish-brown, poorly sorted, fine to coarse SAND, little Gravel, trace Silt, moist. Changing at 14.6 feet to: Dark grayish-brown, poorly sorted, SILT, little Sand, trace Clay, trace Gravel, non-plastic, slightly cohesive, moist around cobble. Changing at 15.0 feet to: Yellowish-brown, well sorted, brown, well sorted, fine to medium SAND, trace Silt, moist. Changing at 19.8 feet to: NO RECOVERY. | 10' SAND | 14.6' 15' SILT SAND |  |  | PROTECTIVE CASING | |
| 11 | | | | | | | | | | | |
| 12 | | | | | | | | | | | |
| 13 | | | | | | | | | | | |
| 14 | | | | | | | | | | | |
| 15 | | | | | | | | | | | |
| 16 | | | | | | | | | | | |

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW28E

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Rockford, Michigan

Boring No.: HS-MW28E

Page: 2 of 6

File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | | Well Diagram |
|---|--------------------|--------------------|------------------------|----------------|--------------|--|-------------------------------------|---------|----------------|--|--|--|--|----------------------|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | | | | | | |
| 18 | | | | | | | SAND | | | | | | | | |
| 19 | | | | | | | | | | | | | | | |
| 20 | | 3 | 120/101 | | | Yellowish-brown, well sorted, fine to medium SAND, trace Silt, trace Gravel, moist. Changing at 28.4 feet to: NO RECOVERY. | 19.8' 20' NO RECOVERY SAND | | | | | | | | |
| 21 | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | | |
| 28 | | | | | | | 28.4' NO RECOVERY | | | | | | | | |
| 29 | | | | | | | | | | | | | | | |
| 30 | | 4 | 120/118 | | | Pale brown to light yellowish-brown, well sorted, fine to medium SAND, trace Silt, moist. Changing at 39.8 feet to: NO RECOVERY. | 30' SAND | | | | | | | | |
| 31 | | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | | |
| REMARKS | | | | | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | | | | | Boring No.: HS-MW28E | |

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Rockford, Michigan

Boring No.: HS-MW28E

Page: 3 of 6

File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|--|---------------------------------|---------|----------------|--|--|--|--|--|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | | | | | | |
| 37 | | | | | | | SAND | | | | | | | | |
| 38 | | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | | |
| 40 | | 5 | 120/41 | | | Pale brown to light yellowish-brown, well sorted, fine to medium SAND, trace Silt, trace Gravel, moist. Changing at 40.5 feet to: Yellowish-brown, poorly sorted, fine to coarse SAND, some Gravel, trace Silt, moist to wet. Changing at 41.5 feet to: Yellowish-brown, well sorted, fine to medium SAND, trace Silt, wet. Changing at 42.0 feet to: Dark yellowish-brown, poorly sorted, GRAVEL, little coarse Sand, trace Silt, wet. Changing at 43.4 feet to: NO RECOVERY. | 39.8' 40' NO RECOVERY SAND | | | | | | | | |
| 41 | | | | | | | | | | | | | | | |
| 42 | | | | | | | 42' GRAVEL | 1 | | | | | | | |
| 43 | | | | | | | 42.9' SAND 43.4' NO RECOVERY | | | | | | | | |
| 44 | | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | | |
| 50 | | 6 | 120/115 | | | Yellowish-brown, well sorted, fine to medium SAND, trace Silt, wet. Changing at 52.5 feet to: Grayish-brown, poorly sorted, Sandy CLAY, little Silt, moderately plastic, cohesive, moist to wet. Changing at 59.6 feet to: NO RECOVERY. | 50' SAND | 2 | | | | | | | |
| 51 | | | | | | | | | | | | | | | |
| 52 | | | | | | | 52.5' CLAY & SILT | | | | | | | | |
| 53 | | | | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | | | | |
| 56 | | | | | | | 56.4' | | | | | | | | |

REMARKS

1. Groundwater sample was collected from approximately 42.0 to 44.0 feet below ground surface and submitted for analytical laboratory testing.
2. Groundwater sample was collected from approximately 51.0 to 53.0 feet below ground surface and submitted for analytical laboratory testing.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW28E



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Rockford, Michigan

Boring No.: HS-MW28E

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File No.: 16.0062335.52

Check: Lori Powers

| Rockford, Michigan | | | | | | | | | | Check: | | Lori Powers | | |
|---|--------------------|--------------------|------------------------|----------------|--|--|------------------|--------------|----------------|--------|----|-------------|----|--------------|
| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | Well Diagram |
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | 0 | 20 | 40 | 60 | 80 | |
| 57 | | 7 | 120/74 | | | Brown, well sorted, fine to medium SAND, trace Silt, wet. Changing at 60.7 feet to: Brown, moderately well sorted, SILT, some fine Sand, non-plastic, moderately cohesive, wet. Changing at 60.9 feet to: Brown, well sorted, fine to medium SAND, trace Silt, wet. Changing at 61.7 feet to: Brown, moderately well sorted, SILT, some fine Sand, non-plastic, moderately cohesive, wet. Changing at 62.0 feet to: Brown, well sorted, fine to medium SAND, trace Silt, wet. Changing at 62.5 feet to: Dark yellowish-brown, poorly sorted, fine to coarse SAND, little Gravel, trace Silt, wet. Changing at 63.3 feet to: Brown, well sorted, fine to medium SAND, trace Silt, wet. Changing at 63.8 feet to: Dark yellowish-brown, poorly sorted, GRAVEL, little fine to coarse Sand, trace Silt, wet. Changing at 63.9 feet to: Brown, well sorted, fine to medium SAND, trace Silt, wet. Changing at 64.6 feet to: Dark yellowish-brown, poorly sorted, GRAVEL, little fine to coarse Sand, trace Silt, wet. Changing at 65.1 feet to: Brown, well sorted, fine to medium SAND, trace Gravel, trace Silt, wet. Changing at 66.2 feet to: NO RECOVERY. | Sandy CLAY | <div>3</div> | | | | | | |
| 58 | | | | | | | | | | | | | | |
| 59 | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | |
| 61 | | | | | | | | | | | | | | |
| 62 | | | | | | | | | | | | | | |
| 63 | | | | | | | | | | | | | | |
| 64 | | | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | | | |
| 66 | | | | | | | | | | | | | | |
| 67 | | 8 | 120/83 | | Brown, well sorted, fine to medium SAND, trace Gravel, trace Silt, wet. Changing at 76.9 feet to: NO RECOVERY. | 59.6' 60' NO RECOVERY SAND | | | | | | | | |
| 60 | | | | | | | | | | | | | | |
| 61 | | | | | | | | | | | | | | |
| 62 | | | | | | | | | | | | | | |
| 63 | | | | | | | | | | | | | | |
| 64 | | | | | | | | | | | | | | |
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| 74 | | | | | | | | | | | | | | |
| 75 | | | | | | | | | | | | | | |
| 76 | | | | | | | | | | | | | | |
| REMARKS | | | | | | | | | | | | | | |
| 3. Groundwater sample was collected from approximately 70.5 to 72.5 feet below ground surface and submitted for analytical laboratory testing. | | | | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | | | | | |
| Boring No.: HS-MW28E | | | | | | | | | | | | | | |

COPY OF GAMMA LOG 62335.52 MDEQ WWW.GPJ GZA CORP.GDT 4/20/20

Boring No.: HS-MW28E



GZA
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Engineers and Scientists

Wolverine World Wide

MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW28E

Page: 5 of 6

File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | Well Diagram |
|---|--------------------|--------------------|------------------------|----------------|--------------|--|------------------------------|---------|----------------|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | |
| 77 | | | | | | | 76.9' SAND NO RECOVERY | | | |
| 78 | | | | | | | | | | |
| 79 | | | | | | | | | | |
| 80 | | 9 | 120/120 | | | Brown, well sorted, fine to medium SAND, trace Gravel, trace Silt, wet. Changing at 85.0 feet to: Dark grayish-brown, poorly sorted, Silty CLAY, trace Sand, trace Gravel, plastic, cohesive, moist. | 80' SAND | 4 | | |
| 81 | | | | | | | | | | |
| 82 | | | | | | | | | | |
| 83 | | | | | | | | | | |
| 84 | | | | | | | | | | |
| 85 | | | | | | | 85' Silty CLAY | | | |
| 86 | | | | | | | | | | |
| 87 | | | | | | | | | | |
| 88 | | | | | | | | | | |
| 89 | | | | | | | | | | |
| 90 | | 10 | 120/120 | | | Dark grayish-brown, poorly sorted, Silty CLAY, trace Sand, trace Gravel, plastic, cohesive, moist. | | | | |
| 91 | | | | | | | | | | |
| 92 | | | | | | | | | | |
| 93 | | | | | | | | | | |
| 94 | | | | | | | | | | |
| 95 | | | | | | | | | | |
| 96 | | | | | | | | | | |
| 4. Groundwater sample was collected from approximately 81.0 to 85.0 feet below ground surface and submitted for analytical laboratory testing. | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

COPY OF GAMMA LOG 62335.52 MDEQ WWW.GPJ GZA CORP.GDT 4/20/20

Boring No.: HS-MW28E



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MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW28E

Page: 6 of 6

File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|----------------|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | |
| 97 | | | | | | | Silty CLAY | | | |
| 98 | | | | | | | | | | |
| 99 | | | | | | | | | | |
| 100 | | 11 | 120/120 | | | Dark grayish-brown, poorly sorted, Silty CLAY, trace Sand, trace Gravel, plastic, cohesive, moist. Changing at 102.7 feet to: Brownish-red, poorly consolidated, weathered SHALE, some gypsum, trace Gravel, moist. | | | | |
| 101 | | | | | | | | | | |
| 102 | | | | | | | | | | |
| 103 | | | | | | | 102.7' SHALE | | | |
| 104 | | | | | | | | | | |
| 105 | | | | | | | | | | |
| 106 | | | | | | | | | | |
| 107 | | | | | | | | | | |
| 108 | | | | | | | | | | |
| 109 | | | | | | | | | | |
| 110 | | | | | | Bottom of Borehole at 110.0 Feet | 110' | 5 | | |
| 111 | | | | | | | | | | |
| 112 | | | | | | | | | | |
| 113 | | | | | | | | | | |
| 114 | | | | | | | | | -999.25 | |
| 115 | | | | | | | | | | |
| 116 | | | | | | | | | | |

REMARKS

5. Monitoring well was installed in borehole upon completion. Well screen set from 80.6 to 85.2 feet below surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW28E

COPY OF GAMMA LOG 62335.52 MDEQ WWW.GPJ GZA CORP.GDT 4/20/20



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Wolverine World Wide, Inc.

House Street

Belmont, Michigan

Boring No.: HS-MW-29A

Page: 1 of 1

File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Gary Geerligns

Logged by: Christopher Melby

Date Start/Finish: 10-4-19 / 10-4-19

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

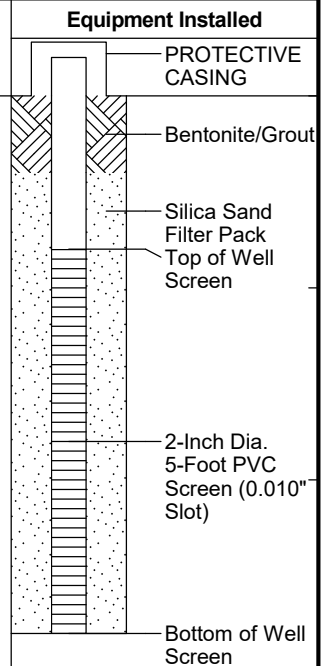
TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | | | | | | See HS-MW-29D for detailed soil descriptions. | | | | |
| 2 | | | | | | | | | | |
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| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | Bottom of Borehole at 14.0 Feet | | | | |
| 16 | | | | | | | | | | |
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REMARKS

1. Monitoring well HS-MW-29A was installed in borehole upon completion. Well screen set from approximately 4.0 to 14.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-29A

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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Engineers and Scientists

Wolverine World Wide, Inc.

House Street

Belmont, Michigan

Boring No.: HS-MW-29B

Page: 1 of 1

File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Gary Geerligns

Logged by: Christopher Melby

Date Start/Finish: 10-4-19 / 10-4-19

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See HS-MW-29D for detailed soil descriptions. | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
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| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | Bottom of Borehole at 22.0 Feet | | 1 | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |

Bentonite/Grout

Silica Sand Filter Pack

Top of Well Screen

2-Inch Dia. 5-Foot PVC Screen (0.010" Slot)

Bottom of Well Screen

REMARKS

1. Monitoring well HS-MW-29A was installed in borehole upon completion. Well screen set from approximately 17.0 to 22.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-29B

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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Wolverine World Wide, Inc.

House Street

Belmont, Michigan

Boring No.: HS-MW-29C

Page: 1 of 1

File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Gary Geerlign

Logged by: Christopher Melby

Date Start/Finish: 10-2-19 / 10-3-19

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 8.0" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: 140lbs

NA

Hammer Fall: 30"

NA

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See HS-MW-29D for detailed soil descriptions. | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
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| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |
| 31 | | | | | | | | | | |
| 32 | | | | | | | | | | |
| 33 | | | | | | Bottom of Borehole at 32.0 Feet | | 1 | | |

REMARKS

1. Monitoring well HS-MW-29A was installed in borehole upon completion. Well screen set from approximately 27.0 to 32.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-29C

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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Wolverine World Wide, Inc.

House Street

Belmont, Michigan

Boring No.: HS-MW-29D

Page: 1 of 2

File No.: 16.0062335.52

Check: JTM/JMG

Contractor: Stearns Drilling Company

Foreman: Gary Geerlign

Logged by: Christopher Melby

Date Start/Finish: 10-1-19 / 10-2-19

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 8.0" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: 140lbs NA

Hammer Fall: 30" NA

TOC Elev.: NA NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|--------------------------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 60/33 | 0-5 | | 0.0 ppm | Dark brown, fine to medium SAND, little Organic Matter (TOPSOIL). Changing at 1.2 feet to: Brown and gray, CLAY & SILT, little fine Sand, wet with Gravel in tip of sleeve at 2.7 feet. | SAND (TOPSOIL) 1.2' SAND | 1 | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | 2 | 60/48 | 5-10 | | 0.0 ppm | Brown and gray, fine to medium SAND, little Silt, wet. | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | 3 | 60/60 | 10-15 | | 0.0 ppm | Brown, fine to medium SAND, little Silt, wet. | | 2 | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | 4 | 60/57 | 15-20 | | 0.0 ppm | Brown, fine to medium SAND, little to trace Silt, wet (SM). | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | 5 | 60/60 | 20-25 | | 0.0 ppm | Brown, fine to medium SAND, trace Silt, wet. | | 3 | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | 6 | 60/60 | 25-30 | | 0.0 ppm | Brown, fine to medium SAND, trace Silt, wet. | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |

Bentonite/Grout

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 2000 photoionization detector equipped with a 10.6 eV lamp. Readings are shown in parts per million (ppm) of isobutylene. Background was measured at 0.0 ppm.
- Soil sample was collected from approximately 11.0 to 15.0 feet below ground surface and submitted for analytical laboratory testing.
- Groundwater sample was collected from approximately 21.0 to 25.0 feet below ground surface and submitted for analytical laboratory analysis.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-29D

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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Wolverine World Wide, Inc.

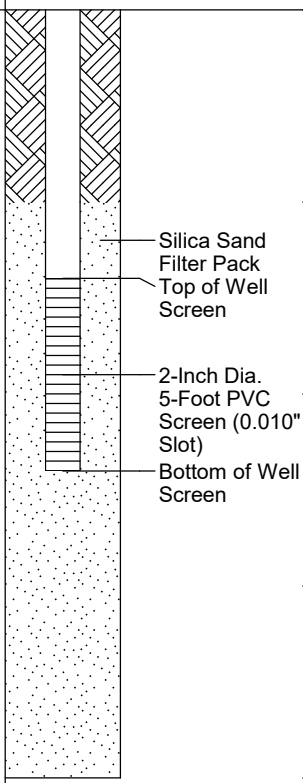
House Street
Belmont, Michigan

Boring No.: HS-MW-29D

Page: 2 of 2

File No.: 16.0062335.52

Check: JTM/JMG

| Sample Information | | | | | | | | Check: | JTM/JMG |
|-----------------------|---|------------------|-------------|-------------|-----------|---|---------------|---------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
| | | | | | | | | | |
| 31 | 7 | 60/60 | 30-35 | | 0.0 ppm | Brown, fine to medium SAND, trace Silt, wet with small Gravel layer from 33.0 to 33.4 feet. | SAND | 4 |  <p>Silica Sand Filter Pack Top of Well Screen 2-Inch Dia. 5-Foot PVC Screen (0.010" Slot) Bottom of Well Screen</p> |
| 32 | | | | | | | | | |
| 33 | | | | | | | | | |
| 34 | | | | | | | | | |
| 35 | 8 | 60/60 | 35-40 | | 0.0 ppm | Brown, fine to medium SAND, trace Silt, wet. | | | |
| 36 | | | | | | | | | |
| 37 | | | | | | | | | |
| 38 | | | | | | | | | |
| 39 | | | | | | | | | |
| 40 | 9 | 60/60 | 40-45 | | 0.0 ppm | Brown, fine to medium SAND, trace Silt, wet. | | 5 | |
| 41 | | | | | | | | | |
| 42 | | | | | | | | | |
| 43 | | | | | | | | | |
| 44 | | | | | | | | | |
| 45 | 10 | 60/60 | 45-50 | | 0.0ppm | Brown, fine to medium SAND, trace Silt, wet. | | 6 | |
| 46 | | | | | | | | | |
| 47 | | | | | | | | | |
| 48 | | | | | | | | | |
| 49 | | | | | | | | | |
| 50 | | | | | | Bottom of Borehole at 50.0 Feet | 50' | 7 | |
| 51 | | | | | | | | | |
| 52 | | | | | | | | | |
| 53 | | | | | | | | | |
| 54 | | | | | | | | | |
| 55 | | | | | | | | | |
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| 63 | | | | | | | | | |
| 64 | | | | | | | | | |
| REMARKS | 4. Groundwater sample was collected from approximately 31.0 to 35.0 feet below ground surface and submitted for analytical laboratory analysis. 5. Groundwater sample was collected from approximately 41.0 to 45.0 feet below ground surface and submitted for analytical laboratory analysis. 6. Soil sample was collected from approximately 46.0 to 50.0 feet below ground surface and submitted for analytical laboratory testing. 7. Monitoring well was installed in borehole upon completion. Well screen set from 76.0 to 86.0 feet below ground surface. | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | |
| Boring No.: HS-MW-29D | | | | | | | | | |

BORING WELL 62355.52 HOUSE STREET COMPLETE.GPJ GZA CORP.GDT 4/15/20



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Wolverine World Wide

MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW30A

Page: 1 of 2

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 5-22-19 / 5-22-19

Boring Location: 6205 Packer Drive, NE, Belmont, MI

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Sonic

NA

O.D. / I.D.: NA

NA

Hammer Wt.: NA

NA

Hammer Fall: NA

NA

TOC Elev.:

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |

Surveyed By: Survey Date:

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | Well Diagram | | |
|-------|---------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|----------------|--|--|--|--|----------------------|--|--|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | 0 20 40 60 80 | | | | | PROTECTIVE CASING | | |
| 1 | | | | | | See HS-MW-30E boring log for sample description and classification. | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW30A



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Wolverine World Wide

MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW30A

Page: 2 of 2

File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|----------------|----|----|----|----|-----|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | 0 | 20 | 40 | 60 | 80 | 100 | |
| 29 | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | | | |
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| 47 | | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | | |
| 50 | | | | | | Bottom of Borehole at 50.0 Feet | | 1 | | | | | | | |
| 51 | | | | | | | | | | | | | | | |
| 52 | | | | | | | | | | | | | | | |
| 53 | | | | | | | | | | | | | | | |
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| 59 | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 45.1 to 49.7 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW30A



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MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW30B

Page: 1 of 2

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 5-30-19 / 5-30-19

Boring Location: 6205 Packer Drive, NE, Belmont, MI

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Sonic NA

O.D. / I.D.: NA NA

Hammer Wt.: NA NA

Hammer Fall: NA NA

TOC Elev.:

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: Survey Date:

| Depth | Elevation (ft.) | Sample Information | | | | TOC Elev.: _____ | | Surveyed By: _____ | | Survey Date: _____ | |
|-------|---------------------|--------------------|------------------------|----------------|--------------|--|------------------|--------------------|--|--------------------|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | Well Diagram |
| | | | | | | See HS-MW-30E boring log for sample description and classification. | | | <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW30B

COPY OF GAMMA LOG 62335.52 MDEQ WWW.GPJ.GZA.CORP.GDT 4/17/20



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MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW30B

Page: 2 of 2

File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|----------------|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | |
| 31 | | | | | | | | | | |
| 32 | | | | | | | | | | |
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| 52 | | | | | | | | | | |
| 53 | | | | | | | | | | |
| 54 | | | | | | | | | | |
| 55 | | | | | | Bottom of Borehole at 55.0 Feet | | 1 | | |
| 56 | | | | | | | | | | |
| 57 | | | | | | | | | | |
| 58 | | | | | | | | | | |
| 59 | | | | | | | | | | |
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| 64 | | | | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 49.3 to 53.9 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW30B

COPY OF GAMMA LOG 62335.52 MDEQ WWW.GPJ GZA CORP.GDT 4/17/20



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MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW30C

Page: 1 of 2

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 5-29-19 / 5-29-19

Boring Location: 6205 Packer Drive, NE, Belmont, MI

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Sonic NA

O.D. / I.D.: NA NA

Hammer Wt.: NA NA

Hammer Fall: NA NA

TOC Elev.:

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: Survey Date:

| Depth | Elevation (ft.) | Sample Information | | | | TOC Elev.: _____ | | Surveyed By: _____ | | Survey Date: _____ | |
|-------|---------------------|--------------------|------------------------|----------------|--------------|--|------------------|--------------------|---|--------------------|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | Well Diagram |
| | | | | | | See HS-MW-30E boring log for sample description and classification. | | | <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW30C



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Engineers and Scientists

Wolverine World Wide

MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW30C

Page: 2 of 2

File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|----------------|----|----|----|----|-----|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | 0 | 20 | 40 | 60 | 80 | 100 | |
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| 79 | | | | | | | | | | | | | | | |
| 80 | | | | | | Bottom of Borehole at 80.0 Feet | | 1 | | | | | | | |
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REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 74.3 to 78.9 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW30C

COPY OF GAMMA LOG 62335.52 MDEQ WWW.GPJ GZA CORP.GDT 4/17/20



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Boring No.: HS-MW30D

Page: 1 of 2

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 5-31-19 / 6-3-19

Boring Location: 6205 Packer Drive, NE, Belmont, MI

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Sonic

NA

O.D. / I.D.: NA

NA

Hammer Wt.: NA

NA

Hammer Fall: NA

NA

TOC Elev.:

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: Survey Date:

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | Well Diagram | |
|-------|---------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|--|----|----|----|----|----------------------|--|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | <div><div></div><div></div><div></div><div></div><div></div></div> | | | | | PROTECTIVE CASING | |
| 1 | | | | | | See HS-MW-30E boring log for sample description and classification. | | | 0 | 20 | 40 | 60 | 80 | | |
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REMARKS

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Boring No.: HS-MW30D



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Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | | Well Diagram |
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| 58 | | | | | | | | | | | | | | | |
| 59 | | | | | | | | | | | | | | | |
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| 93 | | | | | | | | | | | | | | | |
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| 100 | | | | | | | | | | | | | | | |
| 101 | | | | | | | | | | | | | | | |
| 102 | | | | | | | | | | | | | | | |
| 103 | | | | | | | | | | | | | | | |
| 104 | | | | | | | | | | | | | | | |
| 105 | | | | | | | | | | | | | | | |
| 106 | | | | | | | | | | | | | | | |
| 107 | | | | | | | | | | | | | | | |
| 108 | | | | | | | | | | | | | | | |
| 109 | | | | | | | | | | | | | | | |
| 110 | | | | | | | | | | | | | | | |
| 111 | | | | | | | | | | | | | | | |
| 112 | | | | | | | | | | | | | | | |
| 113 | | | | | | | | | | | | | | | |
| 114 | | | | | | | | | | | | | | | |
| 115 | | | | | | | | | | | | | | | |
| 116 | | | | | | Bottom of Borehole at 115.0 Feet | | 1 | | | | | | | |
| 117 | | | | | | | | | | | | | | | |
| 118 | | | | | | | | | | | | | | | |
| 119 | | | | | | | | | | | | | | | |
| 120 | | | | | | | | | | | | | | | |
| 121 | | | | | | | | | | | | | | | |
| 122 | | | | | | | | | | | | | | | |
| 123 | | | | | | | | | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 109.5 to 114.1 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW30D



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Rockford, Michigan

Boring No.: HS-MW30E

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File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 5-13-19 / 5-28-19

Boring Location: 6205 Packer Drive, NE, Belmont, MI

GS Elev.: Datum:

Auger/Casing: Sonic

Sampler: NA

Type: NA

O.D. / I.D.: NA

Hammer Wt.: NA

Hammer Fall: NA

TOC Elev.:

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |

Surveyed By: Survey Date:

| | | Sample Information | | | | TOC Elev.: | Surveyed By: | Survey Date: | | | | | | |
|-------|--------------------|--------------------|------------------------|----------------|---------------------|--|------------------|--------------|-------------------|--|--|--|--------------|--|
| Depth | Elevation (ft.) | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | Well Diagram | |
| | | | | | | | | | PROTECTIVE CASING | | | | | |
| 1 | | 1 | 120/56 | | 0.0 ppm | Very dark brown to dark brown, moderately well sorted, fine to medium SAND, some Silt, moist. Changing at 1.0 feet to: Dark yellowish-brown, moderately sorted, fine to medium SAND, little Silt, moist. Changing at 3.0 feet to: Yellowish-brown, poorly sorted, fine to coarse SAND, trace Gravel, trace Silt, moist. Changing at 4.7 feet to: NO RECOVERY. | SAND | 1 | | | | | | |
| 2 | | | | | 4.7' NO RECOVERY | | | | | | | | | |
| 3 | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | | 2 | 120/48 | | 0.0 ppm | Brown to yellowish-brown, poorly sorted, coarse to medium SAND, some Gravel, trace Silt, moist. Changing at 10.8 feet to: Brown to yellowish-brown, poorly sorted, coarse to medium SAND, some Gravel, some Silt, non-plastic, cohesive, moist. Changing at 11.0 feet to: Brown to yellowish-brown, poorly sorted, coarse to medium SAND, some Gravel, trace Silt, moist. Changing at 11.4 feet to: Light yellowish-brown, moderately well sorted, fine to medium SAND, trace Silt, moist. Changing at 12.4 feet to: Yellowish-brown, poorly sorted, fine to coarse SAND, little Gravel, trace Silt, moist. Changing at 14.0 feet to: NO RECOVERY. | 10' SAND | | | | | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | |
| 15 | | | | | | 14' NO RECOVERY | | | | | | | | |
| 16 | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | |
| 20 | | 3 | 120/65 | | 0.0 ppm | Yellowish-brown to dark yellowish-brown, poorly sorted, fine to coarse SAND, little Gravel, moist. Changing at 21.7 feet to: Yellowish-brown to brown, poorly sorted, fine to medium SAND, trace Gravel, trace Silt, moist. Changing at 22.8 feet to: Dark yellowish-brown to dark brown, poorly sorted, fine to coarse SAND, some gravel, | 20' SAND | | | | | | | |
| 21 | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings above levels are shown in parts per million (ppm) isobutylene. Background was measured at 0.0 ppm.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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Boring No.: HS-MW30E

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File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | Well Diagram |
|---|--------------------|--------------------|------------------------|----------------|--------------|--|-------------------------|---------|----------------------|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | |
| 25 | | | | | | trace Silt, moist. Changing at 25.4 feet to: NO RECOVERY. | SAND | | | |
| 26 | | | | | | | 25.4' NO RECOVERY | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | 4 | 120/58 | | 0.0 ppm | Yellowish-brown to dark yellowish-brown, poorly sorted, fine to coarse SAND, little Gravel, trace Silt, moist. Changing at 31.3 feet to: Light yellowish-brown, moderately well sorted, fine to medium SAND, trace Silt, moist. Changing at 34.8 feet to: NO RECOVERY. | 30' SAND | | | |
| 31 | | | | | | | | | | |
| 32 | | | | | | | | | | |
| 33 | | | | | | | | | | |
| 34 | | | | | | | | | | |
| 35 | | | | | | | 34.8' NO RECOVERY | | | |
| 36 | | | | | | | | | | |
| 37 | | | | | | | | | | |
| 38 | | | | | | | | | | |
| 39 | | | | | | | | | | |
| 40 | | 5 | 120/0 | | | NO RECOVERY. | | | | |
| 41 | | | | | | | | | | |
| 42 | | | | | | | | | | |
| 43 | | | | | | | | | | |
| 44 | | | | | | | | | | |
| 45 | | | | | | | | | | |
| 46 | | | | | | | | | | |
| 47 | | | | | | | | | | |
| 48 | | | | | | | | | | |
| 49 | | | | | | | | | | |
| 50 | | 6 | 120/19 | | 0.0 ppm | Yellowish-brown, poorly sorted, medium to coarse SAND, some Gravel, trace Silt, wet. Changing at 50.9 feet to: Dark yellowish-brown, poorly sorted, medium to | 50' SAND | | | |
| 51 | | | | | | | 51.6' | | | |
| REMARKS 2. Groundwater sample collected from 52.0 to 54.0 feet and submitted for analytical laboratory testing. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW30E | |

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Boring No.: HS-MW30E

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File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|--|----------------------|---------|----------------|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | |
| 53 | | | | | | coarse SAND, some Gravel, trace Silt, wet. Changing at 51.6 feet to: NO RECOVERY. | NO RECOVERY | 2 | | |
| 54 | | | | | | | | | | |
| 55 | | | | | | | | | | |
| 56 | | | | | | | | | | |
| 57 | | | | | | | | | | |
| 58 | | | | | | | | | | |
| 59 | | | | | | | | | | |
| 60 | | 7 | 120/97 | | 0.0 ppm | Yellowish-brown, poorly sorted, GRAVEL, some fine to coarse grained Sand, trace Silt, wet. Changing at 60.5 feet to: | 60' GRAVEL | 3 | | |
| 61 | | | | | | Yellowish-brown, moderately well sorted, fine to medium SAND, trace Silt, wet. | 60.5' SAND | | | |
| 62 | | | | | | Changing at 62.5 feet to: Grayish-brown to dark brown, poorly sorted, Silty CLAY, little Sand, plastic, cohesive, moist. Changing at 63.5 feet to: Grayish-brown to dark grayish-brown, poorly sorted, Silty CLAY, trace Gravel, trace Sand, plastic, cohesive, moist. Changing at 68.1 feet to: NO RECOVERY. | 62.5' CLAY | | | |
| 63 | | | | | | | | | | |
| 64 | | | | | | | | | | |
| 65 | | | | | | | | | | |
| 66 | | | | | | | | | | |
| 67 | | | | | | | | | | |
| 68 | | | | | | | 68.1' NO RECOVERY | | | |
| 69 | | | | | | | | | | |
| 70 | | 8 | 120/119 | | 0.0 ppm | Grayish-brown to dark grayish-brown, poorly sorted, Silty CLAY, trace Gravel, trace Sand, plastic, cohesive, moist. Changing at 72.6 feet to: Dark yellowish-brown to dark red, poorly sorted, coarse SAND, little Gravel, trace Silt, wet. Changing at 77.9 feet to: Brown to yellowish-brown, well sorted, fine SAND, little Silt, wet. Changing at 79.9 feet to: NO RECOVERY. | 70' Silty CLAY | 4 | | |
| 71 | | | | | | | | | | |
| 72 | | | | | | | 72.6' SAND | | | |
| 73 | | | | | | | | | | |
| 74 | | | | | | | | | | |
| 75 | | | | | | | | | | |
| 76 | | | | | | | | | | |
| 77 | | | | | | | | | | |
| 78 | | | | | | | | | | |
| 79 | | | | | | | 79.9' | | | |

REMARKS

- Groundwater sample collected from 61.0 to 63.0 feet and submitted for analytical laboratory testing.
- Groundwater sample collected from 75.0 to 77.0 feet and submitted for analytical laboratory testing.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|---|------------------------|---------|----------------|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | |
| 81 | | 9 | 120/114 | | 0.0 ppm | Brown to yellowish-brown, well sorted, fine SAND, little Silt, wet. Changing at 83.7 feet to: Dark red, very well sorted, fine SAND, trace Silt, wet. Changing at 83.8 feet to: Dark grayish-brown to dark brown, poorly sorted, Silty CLAY, trace Gravel, trace Sand, plastic, cohesive, moist. Changing at 84.2 feet to: Dark grayish-brown to dark brown, very well sorted, SILT, wet. Changing at 85.2 feet to: Dark grayish-brown to dark brown, poorly sorted, Silty CLAY, trace Gravel, trace Sand, plastic, cohesive, moist. Changing at 86.9 feet to: Yellowish-brown, moderately sorted, SILT, wet, with thin dark brown, Silty Clay stringers, moist. Changing at 87.2 feet to: Brown, very well sorted, SILT, some fine grained Sand, wet. Changing at 89.5 feet to: NO RECOVERY. | 80' NO RECOVERY SAND | | | |
| 82 | | | | | | | 83.8' | | | |
| 83 | | | | | | | 84.2' Silty CLAY | | | |
| 84 | | | | | | | 85.2' SILT | | | |
| 85 | | | | | | | Silty CLAY | | | |
| 86 | | | | | | | 86.9' | | | |
| 87 | | | | | | | SILT | | | |
| 88 | | | | | | | | | | |
| 89 | | | | | | | | | | |
| 90 | | 10 | 120/108 | | 0.0 ppm | Yellowish-brown, very well sorted, fine SAND, little Silt, wet. Changing at 99.0 feet to: NO RECOVERY. | 89.5' NO RECOVERY SAND | | | |
| 91 | | | | | | | | | | |
| 92 | | | | | | | | | | |
| 93 | | | | | | | | | | |
| 94 | | | | | | | | | | |
| 95 | | | | | | | | | | |
| 96 | | | | | | | | | | |
| 97 | | | | | | | | | | |
| 98 | | | | | | | | | | |
| 99 | | | | | | | 99' NO RECOVERY | | | |
| 100 | | 11 | 120/96 | | 0.0 ppm | Yellowish-brown, very well sorted, fine SAND, little Silt, wet. Changing at 108.0 feet to: NO RECOVERY. | 100' SAND | 5 | | |
| 101 | | | | | | | | | | |
| 102 | | | | | | | | | | |
| 103 | | | | | | | | | | |
| 104 | | | | | | | | | | |
| 105 | | | | | | | | | | |
| 106 | | | | | | | | | | |
| 107 | | | | | | | 108' | | | |

REMARKS

5. Groundwater sample collected from 100.0 to 102.0 feet and submitted for analytical laboratory testing.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|---|--------------------------|---------|----------------|--|--|--|--|--|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | | | | | | |
| 109 | | | | | | | NO RECOVERY | | | | | | | | |
| 110 | | 12 | 120/95 | | 0.0 ppm | Yellowish-brown, very well sorted, fine SAND, little Silt, wet. Changing at 111.3 feet to: Yellowish-brown, very well sorted SILT, little fine grained Sand, slightly cohesive, wet. Changing at 111.8 feet to: Yellowish-brown, very well sorted, fine SAND, little Silt, wet. Changing at 117.9 feet to: NO RECOVERY. | 110' SAND | 6 | | | | | | | |
| 111 | | | | | | | 111.3' SILT | | | | | | | | |
| 112 | | | | | | | 111.8' SAND | | | | | | | | |
| 113 | | | | | | | | | | | | | | | |
| 114 | | | | | | | | | | | | | | | |
| 115 | | | | | | | | | | | | | | | |
| 116 | | | | | | | | | | | | | | | |
| 117 | | | | | | | | | | | | | | | |
| 118 | | | | | | | | | | | | | | | |
| 119 | | | | | | | | | | | | | | | |
| 120 | | 13 | 120/76 | | 0.0 ppm | Yellowish-brown, very well sorted, fine SAND, little Silt, grading slightly coarser (fine to medium grained SAND, trace Gravel, little Silt), wet. Changing at 126.3 feet to: NO RECOVERY. | | 7 | | | | | | | |
| 121 | | | | | | | | | | | | | | | |
| 122 | | | | | | | | | | | | | | | |
| 123 | | | | | | | | | | | | | | | |
| 124 | | | | | | | | | | | | | | | |
| 125 | | | | | | | | | | | | | | | |
| 126 | | | | | | | 126.3' NO RECOVERY | 8 | | | | | | | |
| 127 | | | | | | | | | | | | | | | |
| 128 | | | | | | | | | | | | | | | |
| 129 | | | | | | | | | | | | | | | |
| 130 | | 14 | 120/77 | | 0.0 ppm | Yellowish-brown, moderately sorted, fine to medium SAND, little Silt, trace Gravel, wet. Changing at 131.0 feet to: Dark yellowish-brown, moderately sorted, fine to medium SAND, little Silt, trace Gravel, wet. Changing at 131.6 feet to: Yellowish-brown, moderately sorted, fine to medium SAND, little Silt, wet. Changing at 136.4 feet to: NO RECOVERY. | 130' SAND | | | | | | | | |
| 131 | | | | | | | | | | | | | | | |
| 132 | | | | | | | | | | | | | | | |
| 133 | | | | | | | | | | | | | | | |
| 134 | | | | | | | | | | | | | | | |
| 135 | | | | | | | | | | | | | | | |

REMARKS

6. Groundwater sample collected from 111.0 to 113.0 feet and submitted for analytical laboratory testing.
7. Groundwater sample collected from 121.0 to 123.0 feet and submitted for analytical laboratory testing.
8. Groundwater sample collected from 128.0 to 130.0 feet and submitted for analytical laboratory testing.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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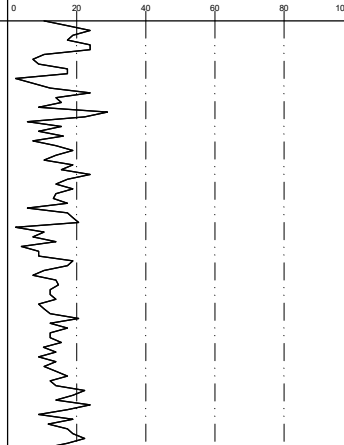
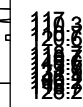
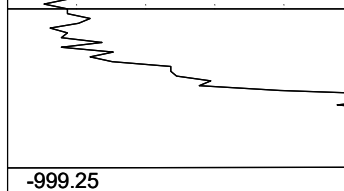
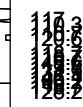
Rockford, Michigan

Boring No.: HS-MW30E

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File No.: 16.0062335.52

Check: Lori Powers

| Rockford, Michigan | | | | | | Check: Lori Powers | | | | |
|----------------------|---|----------------------------------|------------------------|----------------|--------------|--|---------------------------|---------|---|---|
| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | Well Diagram |
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | |
| 137 | | 15 | 60/34 | | 0.0 ppm | Dark gray, with some dark red iron staining, SHALE. Changing at 142.8 feet to: NO RECOVERY | 136.4' NO RECOVERY | 9 |  |  |
| 138 | | | | | | | | | | |
| 139 | | | | | | | | | | |
| 140 | | | | | | | 140' SHALE | | | |
| 141 | | | | | | | | | | |
| 142 | | | | | | | | | | |
| 143 | | | | | | | 142.8' NO RECOVERY. | | | |
| 144 | | | | | | | | | | |
| 145 | | | | | | | 145' | | | |
| 146 | | Bottom of Borehole at 145.0 Feet | | | | | | 10 |  |  |
| 147 | | | | | | | | | | |
| 148 | | | | | | | | | | |
| 149 | | | | | | | | | | |
| 150 | | | | | | | | | | |
| 151 | | | | | | | | | | |
| 152 | | | | | | | | | | |
| 153 | | | | | | | | | | |
| 154 | | | | | | | | | | |
| 155 | | | | | | | | | | |
| 156 | | | | | | | | | | |
| 157 | | | | | | | | | | |
| 158 | | | | | | | | | | |
| 159 | | | | | | | | | | |
| 160 | | | | | | | | | | |
| 161 | | | | | | | | | | |
| 162 | | | | | | | | | | |
| 163 | | | | | | | | | | |
| REMARKS | 9. Groundwater sample collected from 138.0 to 140.0 feet and submitted for analytical laboratory testing. 10. Monitoring well HS-MW30E was installed in borehole upon completion. Well screen set from 120.7 to 125.2 feet below ground surface. | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |
| Boring No.: HS-MW30E | | | | | | | | | | |

COPY OF GAMMA LOG 62335.52 MDEQ WWW.GPJ GZA CORP GDT 4/20/20



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Wolverine World Wide

MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW31A

Page: 1 of 1

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 6-4-19 / 6-4-19

Boring Location: 6205 Packer Drive, NE, Belmont, MI

GS Elev.: Datum:

Auger/Casing: Sonic

Sampler: NA

Type: NA

O.D. / I.D.: NA

Hammer Wt.: NA

Hammer Fall: NA

TOC Elev.:

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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Surveyed By: Survey Date:

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|---|------------------|---------|----------------|--|--|--|--|-----------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | | | | | |
| 1 | | | | | | See HS-MW-31E boring log for sample description and classification. | | | | | | | | |
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| 21 | | | | | | | | | | | | | | |
| 22 | | | | | | Bottom of Borehole at 21.0 Feet | | | | | | | | |
| 23 | | | | | | | | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 16.1 to 20.6 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW31A

COPY OF GAMMA LOG 62335.52 MDEQ WWW.GPJ GZA CORP.GDT 4/15/20



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Rockford, Michigan

Boring No.: HS-MW-31B

Page: 1 of 1

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 5-20-19 / 5-20-19

Boring Location: 6205 Packer Drive, NE, Belmont, MI

GS Elev.: Datum:

Auger/
Casing

Type: 254125 NA

O.D. / I.D.: NA NA

Hammer Wt.: NA NA

Hammer Fall: NA NA

TOC Elev.:

Sampler

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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Surveyed By: Survey Date:

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|-------------------|--|--|--|-----------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | | | | |
| 1 | | | | | | See HS-MW31E boring log for sample description and classification. | | | | | | | |
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| 30 | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| | | | | | | Bottom of Borehole at 30.0 Feet | | 1 | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 24.2 to 28.7 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-31B

COPY OF GAMMA LOG 62335.52 MDEQ WWW.GPJ GZA CORP GDT 4/15/20



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Rockford, Michigan

Boring No.: HS-MW-31C

Page: 1 of 2

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 6-4-19 / 6-4-19

Boring Location: 6205 Packer Drive, NE, Belmont, MI

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Sonic

NA

O.D. / I.D.: NA

NA

Hammer Wt.: NA

NA

Hammer Fall: NA

NA

TOC Elev.:

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
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Surveyed By: Survey Date:

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|-------------------|--|--|--|--|-----------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | | | | | |
| 1 | | | | | | See HS-MW31E boring log for sample description and classification. | | | | | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-31C



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Rockford, Michigan

Boring No.: HS-MW-31C

Page: 2 of 2

File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|-------------------|--|--|--|--|-----------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | | | | | |
| 31 | | | | | | | | | | | | | | |
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| 44 | | | | | | | | | | | | | | |
| 45 | | | | | | Bottom of Borehole at 45.0 Feet | | 1 | | | | | | |
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REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 39.4 to 43.9 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-31C

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MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW-31D

Page: 1 of 2

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 6-3-19 / 6-4-19

Boring Location: 6205 Packer Drive, NE, Belmont, MI

GS Elev.: Datum:

Auger/
Casing

Type: Sonic NA

O.D. / I.D.: NA NA

Hammer Wt.: NA NA

Hammer Fall: NA NA

TOC Elev.:

Sampler

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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Surveyed By: Survey Date:

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|-------------------|--|--|--|--|-----------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | | | | | |
| 1 | | | | | | See HS-MW31E boring log for sample description and classification. | | | | | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-31D



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Rockford, Michigan

Boring No.: HS-MW-31D

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File No.: 16.0062335.52

Check: Lori Powers

| ROCKFORD, MICHIGAN | | | | | | | | | | Check: Lori Powers | | | | | |
|--------------------|---------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|-------------------|--------------------|----|----|----|-----------------|-----|
| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | Well Diagram | |
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | 0 | 20 | 40 | 60 | 80 | | 100 |
| 41 | | | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | | |
| 43 | | | | | | | | | | | | | | | |
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| 66 | | | | | | | | | | | | | | | |
| 67 | | | | | | | | | | | | | | | |
| 68 | | | | | | Bottom of Borehole at 68.0 Feet | | 1 | | | | | | | |
| 69 | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | |
| 71 | | | | | | | | | | | | | | | |
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| 81 | | | | | | | | | | | | | | | |
| 82 | | | | | | | | | | | | | | | |
| 83 | | | | | | | | | | | | | | | |
| 84 | | | | | | | | | | | | | | | |
| 85 | | | | | | | | | | | | | | | |
| 86 | | | | | | | | | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 61.8 to 66.4 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-31D



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Rockford, Michigan

Boring No.: HS-MW-31E

Page: 1 of 3

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 5-16-19 / 5-21-19

Boring Location: 6205 Packer Drive, NE, Belmont, MI

GS Elev.: Datum:

Auger/Casing: Sonic

Sampler: NA

Type: NA

O.D. / I.D.: NA

Hammer Wt.: NA

Hammer Fall: NA

TOC Elev.:

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |

Surveyed By: Survey Date:

| Depth | Elevation (ft.) | Sample Information | | | | Stratum Desc. | Remarks | Gamma (API-GR) | PROTECTIVE CASING | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|-------------------------|---------|-------------------|----------------------|-----------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | |
| 1 | | 1 | 120/71 | | 0.0 ppm | SILT | | | | |
| 2 | | | | | | 2.5' SAND | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | 5.9' NO RECOVERY | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | 2 | 120/78 | | 0.0 pm | 10' SAND | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | 16.5' NO RECOVERY | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | 3 | 120/67 | | 0.0 ppm | 20' SAND | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | 25.6' NO RECOVERY | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | 30' | | | | |

REMARKS

1. Groundwater sample collected from 21.0 to 22.5 feet and submitted for analytical laboratory testing.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-31E



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Rockford, Michigan

Boring No.: HS-MW-31E

Page: 2 of 3

File No.: 16.0062335.52

Check: Lori Powers

| Sample Information | | | | | Check: Lori Powers | | | | | |
|---|-----------------|-----|------------------|-------------|--------------------|---|---------------|---------|----------------|--------------|
| Depth | Elevation (ft.) | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | Well Diagram |
| 31 | | 4 | 120/76 | | 0.0 ppm | Dark yellowish-brown, well sorted, fine to medium SAND, trace Silt, moist to wet. Changing at 36.3 feet to: NO RECOVERY. | SAND | 2 | | |
| 32 | | | | | | | | | | |
| 33 | | | | | | | | | | |
| 34 | | | | | | | | | | |
| 35 | | | | | | | | | | |
| 36 | | | | | | | 36.3' | | | |
| 37 | | | | | | | NO RECOVERY | | | |
| 38 | | | | | | | | | | |
| 39 | | | | | | | | | | |
| 40 | | 5 | 120/85 | | 0.0 ppm | Dark yellowish-brown, well sorted, fine to medium SAND, trace Silt, moist to wet. Changing at 47.1 feet to: NO RECOVERY. | 40' SAND | 3 | | |
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| 47 | | | | | | | 47.1' | | | |
| 48 | | | | | | | NO RECOVERY | | | |
| 49 | | | | | | | | | | |
| 50 | | 6 | 120/108 | | 0.0 ppm | Dark yellowish-brown, well sorted, fine to medium SAND, trace Silt, moist to wet. Changing at 53.3 feet to: Very dark grayish-brown, poorly sorted, Silty CLAY, trace Gravel, trace Sand, plastic, cohesive, moist. Changing at 57.4 feet to: Dark grayish-brown to dark brown, well sorted, fine to medium SAND, trace Silt, wet. Changing at 57.9 feet to: Very dark grayish-brown, poorly sorted, Silty CLAY, trace Gravel, trace Sand, plastic, cohesive, moist. Changing at 59.0 feet to: NO RECOVERY. | 50' SAND | 4 | | |
| 51 | | | | | | | | | | |
| 52 | | | | | | | | | | |
| 53 | | | | | | | 53' | | | |
| 54 | | | | | | | Silty CLAY | | | |
| 55 | | | | | | | | | | |
| 56 | | | | | | | | | | |
| 57 | | | | | | | 57.4' | | | |
| 58 | | | | | | | 57.9' SAND | | | |
| 59 | | | | | | | Silty CLAY | | | |
| 60 | | | | | | | NO RECOVERY | | | |
| 61 | | 7 | 120/120 | | 0.0 ppm | Very dark, grayish brown to dark grayish-brown, poorly sorted, Silty CLAY, trace Gravel, trace Sand, plastic, cohesive, moist. Changing at 62.7 feet to: Grayish-brown to brown, moderately well sorted, fine to medium SAND, trace Silt, moist to wet. Changing at 63.4 feet to: Dark brown, poorly sorted, fine to coarse SAND, | Silty CLAY | | | |
| 62 | | | | | | | | | | |
| 63 | | | | | | | 62.7' | | | |
| 64 | | | | | | | SAND | | | |
| <div>REMARKS</div> <div>2. Groundwater sample collected from 31.0 to 32.5 feet and submitted for analytical laboratory testing.</div> <div>3. Groundwater sample collected from 41.0 to 42.5 feet and submitted for analytical laboratory testing.</div> <div>4. Groundwater sample collected from 51.0 to 52.5 feet and submitted for analytical laboratory testing.</div> | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |
| Boring No.: HS-MW-31E | | | | | | | | | | |

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MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW-31E

Page: 3 of 3

File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | Well Diagram |
|---|--------------------|---|------------------------|----------------|--------------|--|---|---------|-----------------------|-----------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | |
| 66 | | | | | | some Gravel, little Silt, trace Clay, non-plastic, moderately cohesive, moist to wet. Changing at 66.5 feet to: Hard, dark brown, poorly sorted, Silty CLAY, trace Gravel, plastic, cohesive, moist. Changing at 68.3 feet to: Very hard, brown, poorly sorted, Silty CLAY, trace Gravel, possible red Bedrock, dry to moist. | SAND 66.5' Silty CLAY 68.3' | | | |
| 67 | | | | | | | | | | |
| 68 | | | | | | | | | | |
| 69 | | | | | | | | | | |
| 70 | | | | | | Bottom of Borehole at 70.0 Feet | | 5 | | |
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| | | REMARKS 5. Monitoring well HS-MW31B was installed in borehole upon completion. Well screen set from 24.2 to 28.8 feet below ground surface. | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-31E | |

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MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW-32A

Page: 1 of 2

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 5-9-19 / 5-9-19

Boring Location: 1332 10 Mile Road NE, Comstock Park, MI

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Sonic NA

O.D. / I.D.: NA NA

Hammer Wt.: NA NA

Hammer Fall: NA NA

TOC Elev.:

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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Surveyed By: Survey Date:

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|---|------------------|---------|-------------------|--|--|--|--|-----------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | | | | | |
| 1 | | | | | | See HS-MW-32D boring log for sample description and classification. | | | | | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-32A



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Rockford, Michigan

Boring No.: HS-MW-32A

Page: 2 of 2

File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | Well Diagram |
|---|--------------------|--------------------|------------------------|----------------|---------------------------------|--|------------------|---------|-------------------|-----------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | |
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| 66 | | | | | Bottom of Borehole at 65.0 Feet | | 1 | | | |
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| REMARKS 1. Monitoring well was installed in borehole upon completion. Well screen set from 57.8 to 62.4 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

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Boring No.: HS-MW-32A



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MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW-32B

Page: 1 of 2

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 5-8-19 / 5-8-19

Boring Location: 1332 10 Mile Road NE, Comstock Park, MI

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Sonic NA

O.D. / I.D.: NA NA

Hammer Wt.: NA NA

Hammer Fall: NA NA

TOC Elev.:

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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Surveyed By: Survey Date:

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|---|------------------|---------|-------------------|--|--|--|--|-----------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | | | | | |
| 1 | | | | | | See HS-MW-32D boring log for sample description and classification. | | | | | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-32B

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MDEQ Drilling

Rockford, Michigan

Boring No.: HS-MW-32B

Page: 2 of 2

File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|-------------------|-----------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | |
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| 84 | | | | | | Bottom of Borehole at 83.0 Feet | | 1 | | |
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REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 78.2 to 82.8 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-32B

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Rockford, Michigan

Boring No.: HS-MW-32C

Page: 1 of 2

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: JTM

Date Start/Finish: 5-8-19 / 5-8-19

Boring Location: 1332 10 Mile Road NE, Comstock Park, MI

GS Elev.: Datum:

Auger/
Casing

Sampler

Type: Sonic NA

O.D. / I.D.: NA NA

Hammer Wt.: NA NA

Hammer Fall: NA NA

TOC Elev.:

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
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Surveyed By: Survey Date:

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|---|------------------|---------|-------------------|--|--|--|--|-----------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | | | | | |
| 1 | | | | | | See HS-MW-32D boring log for sample description and classification. | | | | | | | | |
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| 45 | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | | |
| 52 | | | | | | | | | | | | | | |
| 53 | | | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | | | |

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-32C



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Boring No.: HS-MW-32C

Page: 2 of 2

File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Check: | | | | | Well Diagram | |
|-------|---------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|-------------------|----|----|----|----|-----------------|--|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | Gamma (API-GR) | | | | | | |
| 56 | | | | | | | | | 0 | 20 | 40 | 60 | 80 | 100 | |
| 57 | | | | | | | | | | | | | | | |
| 58 | | | | | | | | | | | | | | | |
| 59 | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | |
| 61 | | | | | | | | | | | | | | | |
| 62 | | | | | | | | | | | | | | | |
| 63 | | | | | | | | | | | | | | | |
| 64 | | | | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | | | | |
| 66 | | | | | | | | | | | | | | | |
| 67 | | | | | | | | | | | | | | | |
| 68 | | | | | | | | | | | | | | | |
| 69 | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | |
| 71 | | | | | | | | | | | | | | | |
| 72 | | | | | | | | | | | | | | | |
| 73 | | | | | | | | | | | | | | | |
| 74 | | | | | | | | | | | | | | | |
| 75 | | | | | | | | | | | | | | | |
| 76 | | | | | | | | | | | | | | | |
| 77 | | | | | | | | | | | | | | | |
| 78 | | | | | | | | | | | | | | | |
| 79 | | | | | | | | | | | | | | | |
| 80 | | | | | | | | | | | | | | | |
| 81 | | | | | | | | | | | | | | | |
| 82 | | | | | | | | | | | | | | | |
| 83 | | | | | | | | | | | | | | | |
| 84 | | | | | | | | | | | | | | | |
| 85 | | | | | | | | | | | | | | | |
| 86 | | | | | | | | | | | | | | | |
| 87 | | | | | | | | | | | | | | | |
| 88 | | | | | | | | | | | | | | | |
| 89 | | | | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | | | | |
| 91 | | | | | | | | | | | | | | | |
| 92 | | | | | | | | | | | | | | | |
| 93 | | | | | | | | | | | | | | | |
| 94 | | | | | | | | | | | | | | | |
| 95 | | | | | | | | | | | | | | | |
| 96 | | | | | | | | | | | | | | | |
| 97 | | | | | | | | | | | | | | | |
| 98 | | | | | | | | | | | | | | | |
| 99 | | | | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | | | | |
| 101 | | | | | | | | | | | | | | | |
| 102 | | | | | | | | | | | | | | | |
| 103 | | | | | | | | | | | | | | | |
| 104 | | | | | | | | | | | | | | | |
| 105 | | | | | | | | | | | | | | | |
| 106 | | | | | | | | | | | | | | | |
| 107 | | | | | | | | | | | | | | | |
| 108 | | | | | | | | | | | | | | | |
| 109 | | | | | | | | | | | | | | | |
| 110 | | | | | | | | | | | | | | | |
| 111 | | | | | | | | | | | | | | | |
| 112 | | | | | | Bottom of Borehole at 112.0 Feet | | 1 | | | | | | | |
| 113 | | | | | | | | | | | | | | | |
| 114 | | | | | | | | | | | | | | | |
| 115 | | | | | | | | | | | | | | | |
| 116 | | | | | | | | | | | | | | | |
| 117 | | | | | | | | | | | | | | | |
| 118 | | | | | | | | | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 107.2 to 111.8 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-32C

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Rockford, Michigan

Boring No.: HS-MW-32D

Page: 1 of 6

File No.: 16.0062335.52

Check: Lori Powers

Contractor: Stock

Foreman: Ryan

Logged by: MJS/KWO

Date Start/Finish: 5-6-19 / 5-6-19

Boring Location: 1332 10 Mile Road NE, Comstock Park, MI

GS Elev.: Datum:

Auger/
Casing

Type: Sonic NA

O.D. / I.D.: NA NA

Hammer Wt.: NA NA

Hammer Fall: NA NA

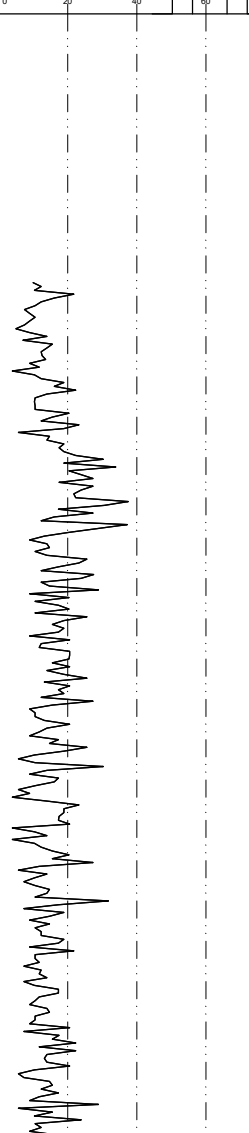
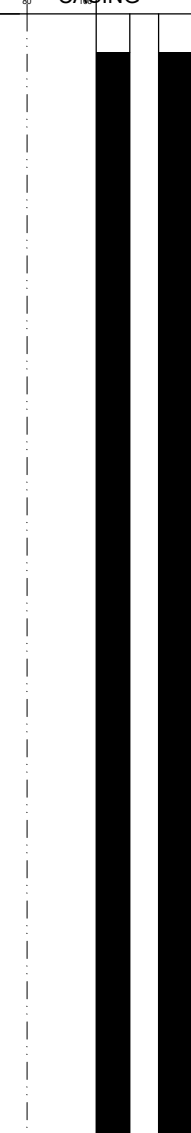

TOC Elev.:

Sampler

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|--------|-------|-------|--------|----------|
| 3-2-99 | 17:00 | 7.2 | 5 | 5 min. |
| 3-3-99 | 08:00 | 6.5 | 5 | 15 hours |
| 3-3-99 | 12:00 | 6.8 | --- | 20 min. |

Surveyed By: Survey Date:

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | | Well Diagram | |
|-------|---------------------|--------------------|------------------------|----------------|---|--|-------------------|---------|--|--|--|--|--------------|--|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | PROTECTIVE CASING | | | | | |
| 1 | | 1 | 24/24 | | | Black, TOPSOIL with Roots and Grass. Changing at 0.5 feet to: Loose, brown, fine to medium SAND, trace fine Gravel, moist. | 0.5' TOPSOIL SAND | 1 |  |  |  | | | |
| 2 | | 2 | 96/48 | 0.0 ppm | Loose, brown, fine to medium SAND, trace Silt, moist. Changing at 3.5 feet to: Loose, brown, fine to medium SAND and GRAVEL, moist. | 3.5' SAND and GRAVEL | | | | | | | | |
| 3 | | | | 0.0 ppm | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | | 3 | 120/72 | 1.0 ppm | Loose, brown, fine to coarse SAND, trace Gravel, trace Silt, moist. | 10' SAND | | | | | | | | |
| 11 | | | | 1.3 ppm | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | |
| 20 | | 4 | 120/90 | 1.7 ppm | Loose, brown, fine to coarse SAND and GRAVEL, trace Clay & Silt, moist. | 20' SAND and GRAVEL | | | | | | | | |
| 21 | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | |
| 24 | | | | 1.6 ppm | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings above levels are shown in parts per million (ppm) isobutylene. Background was measured at 0.0 ppm.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-32D



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File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | ROCKFORD, Michigan | | | | | Check: | Lori Powers | | |
|-------|---------------------|--------------------|------------------------|----------------|--------------------|--|------------------|---------|----------------|--|--------|--------------|--|--|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | | | Well Diagram | | |
| 31 | | 5 | 120/120 | | 0.4 ppm | Loose, gray, fine to coarse SAND and GRAVEL, moist. Changing at 38.0 feet to: Soft, gray, Silty SAND, moist. Changing at 35.0 feet to: Loose, gray, fine to medium SAND, moist to wet. | SAND and GRAVEL | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | |
| 35 | | | | | 0.5 ppm | | | | | | | | | |
| 36 | | | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | | | |
| 38 | | | | | | | 38' SAND | | | | | | | |
| 39 | | | | | | | | | | | | | | |
| 40 | | 6 | 120/120 | | 1.5 ppm 1.8 ppm | Loose, gray, Silty SAND, moist. | | | | | | | | |
| 41 | | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | |
| 43 | | | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | |
| 50 | | 7 | 120/120 | | 0.4 ppm | Loose, gray, Silty SAND, moist. | | | 2 | | | | | |
| 51 | | | | | | | | | | | | | | |
| 52 | | | | | | | | | | | | | | |
| 53 | | | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | | | |
| 55 | | | | | 0.3 ppm | | | | | | | | | |
| 56 | | | | | | | | | | | | | | |
| 57 | | | | | | | | | | | | | | |
| 58 | | | | | | | | | | | | | | |
| 59 | | | | | | | | | | | | | | |
| 60 | | 8 | 120/120 | | 1.4 ppm | Loose, brown, fine to coarse SAND and Gravel, wet. Changing at 65.0 feet to: Loose, gray, fine to medium SAND, wet. | | | | | | | | |
| 61 | | | | | | | | | | | | | | |
| 62 | | | | | | | | | | | | | | |
| 63 | | | | | | | | | | | | | | |
| 64 | | | | | | | | | | | | | | |

REMARKS

2. Temporary well pushed to 64.0 feet below ground surface. Groundwater collected for laboratory analytical testing.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: HS-MW-32D

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Rockford, Michigan

Boring No.: HS-MW-32D

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File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Stratum Desc. | Remarks | Gamma (API-GR) | Well Diagram |
|-------|--------------------|--------------------|------------------------|----------------|--------------|------------------|---------|----------------|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | |
| 66 | | | | | 2.2 ppm | SAND | | | |
| 67 | | | | | | | | | |
| 68 | | | | | | | | | |
| 69 | | | | | | | | | |
| 70 | | 9 | 120/120 | | 1.5 ppm | 70' SILT | | | |
| 71 | | | | | | | | | |
| 72 | | | | | | 72.5' SAND | | | |
| 73 | | | | | | | | | |
| 74 | | | | | | | 3 | | |
| 75 | | | | | 2.0 ppm | | | | |
| 76 | | | | | | | | | |
| 77 | | | | | | | | | |
| 78 | | | | | | | | | |
| 79 | | | | | | | | | |
| 80 | | 10 | 120/120 | | 1.0 ppm | | | | |
| 81 | | | | | | | | | |
| 82 | | | | | | | | | |
| 83 | | | | | | 83.3' SILT | | | |
| 84 | | | | | | | | | |
| 85 | | | | | 4.5 ppm | | | | |
| 86 | | | | | | | | | |
| 87 | | | | | | | | | |
| 88 | | | | | | | | | |
| 89 | | | | | | | | | |
| 90 | | 11 | 120/120 | | 2.5 ppm | | | | |
| 91 | | | | | | | | | |
| 92 | | | | | | | | | |
| 93 | | | | | | | | | |
| 94 | | | | | | | | | |
| 95 | | | | | 3.0 ppm | | | | |
| 96 | | | | | | | | | |
| 97 | | | | | | | | | |
| 98 | | | | | | | | | |
| 99 | | | | | | | | | |

3. Temporary well pushed to 74.0 feet below ground surface. Groundwater collected for laboratory analytical testing.

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Stratum Desc. | Remarks | Gamma (API-GR) | Well Diagram |
|---------|--------------------|---|------------------------|----------------|--------------|------------------|---------|----------------|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | |
| 101 | | 12 | 120/120 | | 0.6 ppm | SILT | | | |
| 102 | | | | | | | | | |
| 103 | | | | | | | | | |
| 104 | | | | | | | | | |
| 105 | | | | | 1.2 ppm | | | | |
| 106 | | | | | | | | | |
| 107 | | | | | | 107' SAND | | | |
| 108 | | | | | | | | | |
| 109 | | | | | | | | | |
| 110 | | 13 | 60/60 | | 5.1 ppm | | | | |
| 111 | | | | | | | | | |
| 112 | | | | | | | 4 | | |
| 113 | | | | | | | | | |
| 114 | | | | | | | | | |
| 115 | | 14 | 60/60 | | 7.1 ppm | | | | |
| 116 | | | | | | | | | |
| 117 | | | | | | | | | |
| 118 | | | | | | | | | |
| 119 | | | | | | | | | |
| 120 | | 15 | 120/120 | | 0.5 ppm | | | | |
| 121 | | | | | | | | | |
| 122 | | | | | | | 5 | | |
| 123 | | | | | | | | | |
| 124 | | | | | | | | | |
| 125 | | | | | 0.4 ppm | | | | |
| 126 | | | | | | | | | |
| 127 | | | | | | | | | |
| 128 | | | | | | | | | |
| 129 | | | | | | | | | |
| 130 | | 16 | 120/120 | | 1.0 ppm | | | | |
| 131 | | | | | | | | | |
| 132 | | | | | | | | | |
| 133 | | | | | | | | | |
| 134 | | | | | | | | | |
| REMARKS | | 4. Temporary well pushed to 112.0 feet below ground surface. Groundwater collected for laboratory analytical testing. | | | | | | | |
| | | 5. Temporary well pushed to 122.0 feet below ground surface. Groundwater collected for laboratory analytical testing. | | | | | | | |
| | | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | |

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File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | Well Diagram |
|---|--------------------|--------------------|------------------------|----------------|--------------|--|------------------|---------|-----------------------|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | |
| 136 | | | | | 0. ppm | | SAND | | | |
| 137 | | | | | | | | | | |
| 138 | | | | | | | | | | |
| 139 | | | | | | | | | | |
| 140 | | 17 | 120/120 | | 0.9 ppm | Loose, gray, fine to coarse SAND, black and gray, some Silt, moist. Changing at 145.0 feet to: Dense, gray and black, SAND and SILT, trace coarse Gravel, , moist. | | 6 | | |
| 141 | | | | | | | | | | |
| 142 | | | | | | | | | | |
| 143 | | | | | | | | | | |
| 144 | | | | | | | | | | |
| 145 | | | | | 0.5 ppm | | | | | |
| 146 | | | | | | | | | | |
| 147 | | | | | | | | | | |
| 148 | | | | | | | | | | |
| 149 | | | | | | | | | | |
| 150 | | 18 | 120/120 | | 1.7 ppm | Dense, gray, CLAY, some fine to coarse SAND, moist. Changing at 151.7 feet to: Loose, gray, fine to coarse SAND, some Silt, wet. | 150' CLAY | | | |
| 151 | | | | | | | 151.7' SAND | | | |
| 152 | | | | | | | | | | |
| 153 | | | | | | | | | | |
| 154 | | | | | | | | | | |
| 155 | | | | | 1.5 ppm | | | | | |
| 156 | | | | | | | | | | |
| 157 | | | | | | | | | | |
| 158 | | | | | | | | | | |
| 159 | | | | | | | | | | |
| 160 | | 19 | 120/120 | | 1.4 ppm | Loose, gray, Silty SAND, moist. Changing at 165.0 feet to: Dense, gray, CLAY, some fine Sand, moist. | | | | |
| 161 | | | | | | | | | | |
| 162 | | | | | | | | | | |
| 163 | | | | | | | | | | |
| 164 | | | | | | | | | | |
| 165 | | | | | 3.9 ppm | | 165' CLAY | | | |
| 166 | | | | | | | | | | |
| 167 | | | | | | | | | | |
| 168 | | | | | | | | | | |
| 169 | | | | | | | | | | |
| REMARKS 6. Temporary well pushed to 140.0 feet below ground surface. Groundwater collected for laboratory analytical testing. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: HS-MW-32D | |

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Boring No.: HS-MW-32D

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File No.: 16.0062335.52

Check: Lori Powers

| Depth | Elevation (ft.) | Sample Information | | | | Sample Description & Classification | Stratum Desc. | Remarks | Gamma (API-GR) | Well Diagram |
|----------------|--------------------|---|------------------------|----------------|--------------|--|------------------|---------|----------------|--------------|
| | | No. | Pen./ Rec. (in.) | Blows (/6") | Test Data | | | | | |
| 171 | | 20 | 120/120 | | 2.9 ppm | Dense, gray, CLAY, trace fine Sand, moist. | CLAY | | | |
| 172 | | | | | | | | | | |
| 173 | | | | | | | | | | |
| 174 | | | | | | | | | | |
| 175 | | | | | 1.7 ppm | | | | | |
| 176 | | | | | | | | | | |
| 177 | | | | | | | | | | |
| 178 | | | | | | | | | | |
| 179 | | | | | | | | | | |
| 180 | | 21 | 120/120 | | 1.9 ppm | Dense, gray CLAY, moist. | | | | |
| 181 | | | | | | | | | | |
| 182 | | | | | | | | | | |
| 183 | | | | | | | | | | |
| 184 | | | | | | | | | | |
| 185 | | | | | 2.3 ppm | | | | | |
| 186 | | | | | | | | | | |
| 187 | | | | | | | | | | |
| 188 | | | | | | | | | | |
| 189 | | | | | | | | | | |
| 190 | | 22 | 60/60 | | 2.1 ppm | Dense, gray, CLAY, moist. | | 7 | | |
| 191 | | | | | | | | | | |
| 192 | | | | | | | | | | |
| 193 | | | | | 2.8 ppm | | | | | |
| 194 | | | | | | | | | | |
| 195 | | | | | | Bottom of Borehole at 195.0 Feet | 195' | | | |
| 196 | | | | | | | | | | |
| 197 | | | | | | | | | | |
| 198 | | | | | | | | | | |
| 199 | | | | | | | | | | |
| 200 | | | | | | | | | | |
| 201 | | | | | | | | | | |
| 202 | | | | | | | | | | |
| 203 | | | | | | | | | | |
| 204 | | | | | | | | | | |
| REMARKS | | 7. Driller mentioned possible bedrock at 195.0 feet. Monitoring well was installed in borehole upon completion. Well screen set from 137.6 to 142.2 feet below ground surface. | | | | | | | | |
| | | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | |

COPY OF GAMMA LOG 62335.52 MDEQ WWW.GPJ GZA CORP.GDT 4/20/20

Boring No.: HS-MW-32D



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Engineers and Scientists

Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV1

Page: 1 of 5

File No.: 16.0062677.81

Check: _____

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: SAC / JTM

Date Start/Finish: 1-29-18 / 2-5-18

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|----------------|-----------|--|---|---------|---------------------|----------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | PROTECTIVE CASING | Concrete |
| 1 | 1 | 24/24 | 0-2 | 8-7 3-3 | ND | SAND, TOPSOIL and ORGANIC MATTER (roots)(FILL). Changing at 0.2 feet to: Loose, orange, fine SAND, moist (FILL). Loose, brown, SILT and SAND, moist. | 0.2' SAND / TOPSOIL / ORGANIC MATTER (FILL) 2' SAND (FILL) SAND | 1 | | |
| 2 | 2 | 24/18 | 2-4 | 4-3 3-4 | ND | | | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/24 | 4-6 | 2-2 2-2 | ND | Very loose, brown, fine SAND, some Silt, moist. | | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/24 | 6-8 | 6-9 11-15 | ND | Medium dense, brown, fine SAND, some Silt, trace small Gravel, dry. | | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/24 | 8-10 | 4-7 10-3 | ND | Medium dense, brown, fine SAND, some Silt, trace small Gravel, dry. (1.0 inch Gravel at 9.0 feet) | | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/24 | 10-12 | 2-4 10-12 | ND | Medium dense, brown, SILT, some fine Sand, trace Gravel, dry. | 10' SILT | | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/24 | 12-14 | 2-4 14-17 | ND | Medium dense, brown, SILT, some fine Sand, trace Gravel, Iron staining in fractures, dry. | | | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/24 | 14-16 | 6-12 20-21 | ND | Dense, brown, SILT, some fine Sand, trace Gravel, Iron staining in fractures, dry. | | | | |
| 15 | | | | | | | | | | |
| 16 | 9 | 24/24 | 16-18 | 6-10 15-19 | ND | Medium dense, brown, SILT, some fine Sand, trace Gravel, Iron staining in fractures, dry. | | | | |
| 17 | | | | | | | | | | |
| 18 | 10 | 24/24 | 18-20 | 3-8 15-17 | ND | Medium dense, brown, SILT, some fine Sand, trace Gravel, dry. (1.0 inch Gravel at 19.0 feet) | | | | |
| 19 | | | | | | | | | | |
| 20 | 11 | 24/24 | 20-22 | 4-13 16-18 | ND | Medium dense, brown, SILT, some fine Sand, trace Gravel, Iron staining in fractures, dry. | | | | |
| 21 | | | | | | | | | | |
| 22 | 12 | 24/24 | 22-24 | 28-10 19-20 | ND | Medium dense, brown grading to grayish brown at 23.5 feet, SILT, some very fine Sand, trace Gravel, dry. | | | | |
| 23 | | | | | | | | | | |
| 24 | 13 | 24/24 | 24-26 | 5-8 11-12 | ND | Medium dense, grayish brown, SILT, some fine Sand (Gray, Clay from 24.5 to 24.75 feet, dry). | | | | |
| 25 | | | | | | | | | | |
| 26 | 14 | 24/24 | 26-28 | 5-7 11-13 | ND | Medium dense, gray, SILT, some Clay, trace fine Sand, trace Gravel, dry. | | | | |
| 27 | | | | | | | | | | |
| 28 | 15 | 24/24 | 28-30 | 3-4 6-7 | ND | Medium dense, gray, SILT, some Clay, moist to wet. | | | | |
| 29 | | | | | | | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million by volume (ppmv) of isobutylene. ND indicates nothing detected (<0.1 ppmv).

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV1

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 8/1/18



GZA
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Engineers and Scientists

Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV1
Page: 2 of 5
File No.: 16.0062677.81
Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|---|------------------|-------------|----------------|-----------|---|---------------|---------|---------------------|-----------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 31 | 16 | 24/24 | 30-32 | 2-3 6-0 | ND | Loose, gray, SILT, some Clay, moist. | SILT | 2 | | |
| 32 | 18 | 24/0 | 32-34 | 27-37 41-27 | - | Rock stuck in tip of split spoon. | | | | |
| 33 | | | | | | | | | | |
| 34 | 19 | 24/24 | 34-36 | 2-5 12-12 | ND | Medium dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 35 | | | | | | | | | | |
| 36 | 20 | 24/24 | 36-38 | 4-7 11-12 | ND | Medium dense, gray, SILT, some Clay, moist. (1.0 inch Gravel at 36.5 feet) | | | | |
| 37 | | | | | | | | | | |
| 38 | 21 | 24/24 | 38-40 | 3-9 12-13 | ND | Medium dense, gray, SILT, some Clay, some Gravel, moist. | | | | |
| 39 | | | | | | | | | | |
| 40 | 22 | 24/24 | 40-42 | 5-9 11-16 | ND | Medium dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 41 | | | | | | | | | | |
| 42 | 23 | 24/24 | 42-44 | 4-8 10-13 | ND | Medium dense, gray, SILT, some Clay, trace Gravel, moist. (Sand from 43.0 to 43.25 feet) | | | | |
| 43 | | | | | | | | | | |
| 44 | 24 | 24/24 | 44-46 | 5-11 15-18 | ND | Medium dense, gray, SILT, some Clay, trace Gravel. (1.0-inch Sand seam at 45.0 feet) | | | | |
| 45 | | | | | | | | | | |
| 46 | 25 | 24/24 | 46-48 | 4-7 14-15 | ND | Medium dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 47 | | | | | | | | | | |
| 48 | 26 | 24/24 | 48-50 | 6-4 14-15 | ND | Medium dense, gray, SILT, some Clay, moist. (very moist to wet ground Rock at 49.0 feet) | | | | |
| 49 | | | | | | | | | | |
| 50 | 27 | 24/24 | 50-52 | 2-2 5-9 | ND | Loose, gray, SILT, some Clay, trace Gravel, moist. (very moist Sand seams from 51.0 to 51.2 feet) | | | | |
| 51 | | | | | | | | | | |
| 52 | 28 | 24/24 | 52-54 | 2-8 11-14 | ND | Medium dense, gray, SILT, some Clay, moist. (trace Gravel at 53.5 feet) | | | | |
| 53 | | | | | | | | | | |
| 54 | 30 | 24/24 | 54-56 | 6-10 14-15 | ND | Medium dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 55 | | | | | | | | | | |
| 56 | 31 | 24/24 | 56-58 | 5-8 14-16 | ND | Medium dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 57 | | | | | | | | | | |
| 58 | 32 | 24/24 | 58-60 | 5-11 16-17 | ND | Medium dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 59 | | | | | | | | | | |
| 60 | 33 | 24/24 | 60-62 | 3-8 13-13 | ND | Loose, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 61 | | | | | | | | | | |
| 62 | 34 | 24/24 | 62-64 | 5-7 14-15 | ND | Medium dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 63 | | | | | | | | | | |
| 64 | 35 | 24/24 | 64-66 | 6-11 15-18 | ND | Medium dense, gray, SILT, some Clay, | | | | |
| | | | | | | | | | | Bentonite Grout |
| REMARKS | 2. Groundwater was encountered at approximately 31.0 feet below ground surface. | | | | | | | | | |
| | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV1 | |

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 8/1/18



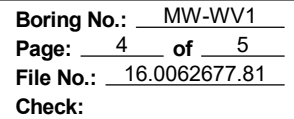
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Engineers and Scientists

Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV1
Page: 3 of 5
File No.: 16.0062677.81
Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|--|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 66 | 36 | 24/24 | 66-68 | 4-10 14-15 | ND | trace Gravel, moist. Changing at 64.5 feet to: Gray, SILT, some Clay, trace Gravel, moist. | SILT | | | |
| 67 | | | | | | Medium dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 68 | 37 | 24/24 | 68-70 | 4-5 11-14 | ND | Medium dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 69 | | | | | | Medium dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 70 | 38 | 24/24 | 70-72 | 6-12 10-21 | ND | Medium dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 71 | | | | | | | | | | |
| 72 | 39 | 24/24 | 72-74 | 5-8 22-17 | ND | Medium dense, gray, SILT, some Clay, trace Gravel, moist. (loose, wet seam at 73.0 feet) | | | | |
| 73 | | | | | | | | | | |
| 74 | 40 | 24/24 | 74-76 | 12-20 21-24 | ND | Dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 75 | | | | | | | | | | |
| 76 | 41 | 24/24 | 76-78 | 6-11 16-22 | ND | Medium dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 77 | | | | | | | | | | |
| 78 | 42 | 24/24 | 78-80 | 5-13 17-20 | ND | Medium dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 79 | | | | | | | | | | |
| 80 | 43 | 24/24 | 80-82 | 8-12 15-21 | ND | Medium dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 81 | | | | | | | | | | |
| 82 | 44 | 24/24 | 82-84 | 4-9 13-18 | ND | Medium dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 83 | | | | | | | | | | |
| 84 | 45 | 24/24 | 84-86 | 6-13 17-26 | ND | Medium dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 85 | | | | | | | | | | |
| 86 | 46 | 24/24 | 86-88 | 7-14 22-28 | ND | Dense, gray, SILT, some Clay, trace Gravel, moist. (1.0-inch Gravel at 87.5 feet) | | | | |
| 87 | | | | | | | | | | |
| 88 | 47 | 24/24 | 88-90 | 7-15 26-27 | ND | Dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 89 | | | | | | | | | | |
| 90 | 48 | 24/24 | 90-92 | 10-18 26-29 | ND | Dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 91 | | | | | | | | | | |
| 92 | 49 | 24/12 | 92-94 | 8-16 24-31 | ND | Dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 93 | | | | | | | | | | |
| 94 | 50 | 24/24 | 94-96 | 11-27 33-37 | ND | Dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 95 | | | | | | | | | | |
| 96 | 51 | 24/24 | 96-98 | 10-24 36-39 | ND | Dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 97 | | | | | | | | | | |
| 98 | 52 | 24/24 | 98-100 | 7-17 26-27 | ND | Dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 99 | | | | | | | | | | |
| <div style="display: flex;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold; margin-right: 10px;">REMARKS</div> <div style="flex-grow: 1;"></div> </div> | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV1 | |

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 8/1/18




| Sample Information | | | | | | Check: | | | | |
|--------------------|---|------------------|-------------|----------------|-----------|---|---------------|---------|---------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 101 | 53 | 24/24 | 100-102 | 8-20 25-28 | ND | Dense, gray, SILT, some Clay, trace Gravel, moist. | SILT | | | |
| 102 | 54 | 24/24 | 102-104 | 10-21 27-39 | ND | Dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 103 | | | | | | | | | | |
| 104 | 55 | 24/21 | 104-106 | 8-17 23-27 | ND | Dense, gray, SILT, some Clay, trace Gravel, moist. (0.5-inch sand seam at 105.3 feet) | | | | |
| 105 | | | | | | | | | | |
| 106 | 56 | 24/24 | 106-108 | 9-18 27-35 | ND | Dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 107 | | | | | | | | | | |
| 108 | 58 | 24/12 | 108-110 | 10-28 36-45 | ND | Dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 109 | | | | | | | | | | |
| 110 | 59 | 24/24 | 110-112 | 15-23 31-47 | ND | Very dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 111 | | | | | | | | | | |
| 112 | 60 | 24/24 | 112-114 | 10-22 29-44 | ND | Very dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 113 | | | | | | | | | | |
| 114 | 61 | 24/24 | 114-116 | 7-24 27-35 | ND | Very dense, gray, SILT, some Clay, trace Gravel, moist. (1.0 inch gravel piece at 115.0 feet) | | | | |
| 115 | | | | | | | | | | |
| 116 | 62 | 24/24 | 116-118 | 18-28 34-40 | ND | Very dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 117 | | | | | | | | | | |
| 118 | 63 | 24/18 | 118-120 | 10-12 15-27 | ND | Medium dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 119 | | | | | | | | | | |
| 120 | 64 | 24/24 | 120-122 | 14-23 27-35 | ND | Dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 121 | | | | | | | | | | |
| 122 | 65 | 24/24 | 122-124 | 13-19 25-32 | ND | Dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 123 | | | | | | | | | | |
| 124 | 65 | 24/24 | 124-126 | 9-14 21-27 | ND | Dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 125 | | | | | | | | | | |
| 126 | 66 | 24/24 | 126-128 | 11-15 22-30 | ND | Dense, gray, SILT, some Clay, trace Gravel, moist. | | | | |
| 127 | | | | | | | | | | |
| 128 | 67 | 24/24 | 128-130 | 6-10 16-24 | ND | Medium dense, grayish brown, SILT, some Clay, little fine Sand, trace Gravel, moist. | | | | |
| 129 | | | | | | Changing at 129.0 feet to: Grayish brown, SILT, some Clay, little fine Sand, trace Gravel, moist to wet. | | | | |
| 130 | 68 | 24/24 | 130-132 | 6-8 9-9 | ND | Medium dense, grayish brown, SILT, some Clay, little fine Sand, trace Gravel, moist to wet. | 131' | | | |
| 131 | | | | | | Medium dense, grayish brown, SILT, some Clay, little fine Sand, trace Gravel, moist to wet. Changing at 131.0 feet to: Tan, fine SAND, wet. | SAND | | | |
| 132 | 70 | 24/0 | 132-134 | 6-7 8-11 | - | NO RECOVERY. | | | | |
| 133 | | | | | | | | | | |
| 134 | 71 | 24/12 | 134-136 | 18-25 42-50 | ND | Very dense, tan, fine SAND, wet. | | | | |
| REMARKS | | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | Boring No.: MW-WV1 | |



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV1
Page: 5 of 5
File No.: 16.0062677.81
Check:

| Sample Information | | | | | | Check: | | | | |
|--------------------|---|------------------|-------------|------------------|-----------|--|---------------|---------|---|---------------------------------------|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 136 | 72 | 24/24 | 136-138 | 4-50/3" | ND | Very dense, tan, fine SAND, wet. | SAND | |  | Filter Sand 2-Inch PVC Well Screen |
| 137 | | | | | | | | | | |
| 138 | | | | | | | | | | |
| 139 | | | | | | | | | | |
| 140 | 73 | 24/12 | 140-142 | 42-50/5" | 3.2 ppmv | Very dense, Grayish brown, well sorted, fine to medium SAND, trace Silt, trace Clay, moist to wet. | 142' | | | |
| 141 | | | | | | | SILT & CLAY | | | |
| 142 | 74 | 24/18 | 142-144 | 23-37 20/6"-- | 3.4 ppmv | Hard, dark gray, SILT & CLAY, trace Sand, trace Gravel, moist. | | | | |
| 143 | | | | | | | | | | |
| 144 | | | | | | | | | | |
| 145 | 75 | 24/18 | 144-146 | 22-41-50->50 | 4.1 ppmv | Hard, dark gray, SILT & CLAY, trace Sand, trace Gravel, moist. | | | | |
| 146 | | | | | | | | | | |
| 147 | | | | | | | | | | |
| 148 | | | | | | | | | | |
| 149 | 76 | 24/18 | 148-150 | 23-31-50->50 | 4.3 ppmv | Hard, dark gray, poorly sorted, SILT & CLAY, trace Sand, trace Gravel, plastic, cohesive, moist. | 150' | | | |
| 150 | | | | | | | | | | |
| 151 | | | | | | Bottom of Borehole at 150.0 Feet | | 3 | | |
| 152 | | | | | | | | | | |
| 153 | | | | | | | | | | |
| 154 | | | | | | | | | | |
| 155 | | | | | | | | | | |
| 156 | | | | | | | | | | |
| 157 | | | | | | | | | | |
| 158 | | | | | | | | | | |
| 159 | | | | | | | | | | |
| 160 | | | | | | | | | | |
| 161 | | | | | | | | | | |
| 162 | | | | | | | | | | |
| 163 | | | | | | | | | | |
| 164 | | | | | | | | | | |
| 165 | | | | | | | | | | |
| 166 | | | | | | | | | | |
| 167 | | | | | | | | | | |
| 168 | | | | | | | | | | |
| 169 | | | | | | | | | | |
| REMARKS | 3. Monitoring well was installed in borehole upon completion. Well screen set from 135.0 to 140.0 feet below ground surface. | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |
| Boring No.: MW-WV1 | | | | | | | | | | |

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV2

Page: 1 of 2

File No.: 16.0062677.81

Check: _____

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 2-14-18 / 2-14-18

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger Split Spoon
O.D. / I.D.: 12.25" / 4.25" 2.0" / 1 3/8"
Hammer Wt.: NA 140lbs
Hammer Fall: NA 30.0"
TOC Elev.: NA NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---------------------|---------|---------------------|----------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | PROTECTIVE CASING | |
| 1 | 1 | 24/24 | 0-2 | 1-1 1-1 | ND | Very loose, black, fine to medium SAND and SILT, trace Clay. | SAND and SILT | 1 | | Concrete |
| 2 | 2 | 24/18 | 2-4 | 1-1 1-1 | ND | Very loose, black, fine to medium SAND and SILT, some Wood Fragments. | | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/4 | 4-6 | 0-1 1-1 | ND | Very loose, black, SILT and fibrous PEAT. | 4' SILT and PEAT | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/12 | 6-8 | 0-0 1-1 | ND | Very loose, black, SILT and fibrous PEAT, wet. | | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/18 | 8-10 | 1-0 1-1 | ND | Very loose, brown, fine SAND, some Silt, wet. | 8' SAND and SILT | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/18 | 10-12 | 2-2 1-1 | ND | Very loose, brown, fine SAND and SILT, wet. | | | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/24 | 12-14 | 1-4 4-4 | ND | Loose, brown, fine to medium SAND and SILT, some Gravel, Some Clay lenses, wet. | | | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/17 | 14-16 | 1-2 3-2 | ND | Loose, brown, fine to medium SAND and SILT, some Gravel, wet. | | | | |
| 15 | | | | | | | | | | |
| 16 | 9 | 24/12 | 16-18 | 1-1 3-3 | ND | Loose, brown, fine SAND and SILT, wet. | | | | |
| 17 | | | | | | | | | | |
| 18 | 10 | 24/18 | 18-20 | 1-2 2-3 | ND | Loose, brown, fine SAND and SILT, trace Clay, wet. | | | | |
| 19 | | | | | | | | | | |
| 20 | 11 | 24/12 | 20-22 | 1-2 2-2 | ND | Loose, brown, fine SAND and SILT, trace Clay, wet. | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 2000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million by volume (ppmv) of isobutylene. ND indicates nothing detected (<0.1 ppmv).
- A groundwater sample was collected from a temporary monitoring with a well screen set at approximately 13.0 to 18.0 feet below ground surface and submitted for analytical laboratory testing.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV2

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 8/1/18



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Engineers and Scientists

Wolverine World Wide
Wolver Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV2
Page: 2 of 2
File No.: 16.0062677.81
Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|----------------|-----------|--|---------------------|---------|---------------------|------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 22 | 12 | 24/12 | 22-24 | 1-1 1-1 | ND | Very loose, brown, fine SAND and SILT, wet. | SAND and SILT | | | |
| 23 | | | | | | | | | | |
| 24 | 13 | 24/24 | 24-26 | 2-3 2-3 | ND | Loose, brown, fine to medium SAND and SILT, wet. Changing at 25.5 feet to: Tan, CLAY, wet. | | | | |
| 25 | | | | | | | 25.5' | | | |
| 26 | 14 | 24/18 | 26-28 | 2-2 2-2 | ND | Soft, tan, CLAY, wet (CL). | CLAY | | | 2-Inch PVC Riser |
| 27 | | | | | | | | | | |
| 28 | 15 | 24/12 | 28-30 | 2-3 11-10 | ND | Stiff, tan, CLAY, wet. Changing at 28.5 feet to: Fine to coarse SAND and GRAVEL, wet. | | | | Bentonite |
| 29 | | | | | | | 28.5' | 3 | | |
| 30 | 16 | 24/0 | 30-32 | 8-17 18-21 | ND | NO RECOVERY. | SAND and GRAVEL | | | |
| 31 | | | | | | | | 4 | | |
| 32 | 17 | 24/13 | 32-34 | 6-8 9-12 | ND | Medium dense, brown, fine to coarse SAND and Gravel, trace Silt, wet. | | | | Filter Sand |
| 33 | | | | | | | | | | 2-Inch PVC Well Screen |
| 34 | 18 | 24/6 | 34-36 | 7-9 10-21 | ND | Medium dense, gray, SILT, trace fine to medium Sand, wet. | | | | |
| 35 | | | | | | | 34' | | | |
| 36 | 19 | 24/15 | 36-38 | 10-16 22-45 | ND | Hard, gray, CLAY, some Silt, some fine to medium Sand, wet. | SILT | | | |
| 37 | | | | | | | 36' | | | |
| 38 | 20 | 18/18 | 38-39.5 | 12-32-75/6" | ND | Very dense, gray, fine to medium SAND and SILT, some Gravel, wet (GLACIAL TILL). | CLAY | | | |
| 39 | | | | | | | 38' | | | Bentonite and Sand |
| 40 | | | | | | Bottom of Borehole at 39.5 Feet | SAND (GLACIAL TILL) | | | |
| 41 | | | | | | | 39.5' | | | |
| 42 | | | | | | | | | | |
| 43 | | | | | | | | | | |
| 44 | | | | | | | | | | |
| 45 | | | | | | | | | | |

- REMARKS**
- Gravel stuck in tip of split spoon.
 - Groundwater sample was collected from temporary monitoring well with screen set at approximately 31.0 to 36.0 feet below ground surface and submitted for analytical laboratory testing.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV2

BORING WELL 6267781 WWW.WOLVERAVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV2S

Page: 1 of 1

File No.: 16.0062677.81

Check: _____

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 2-14-18 / 2-14-18

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|--|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | PROTECTIVE CASING | |
| 1 | | | | | | See MW-WV2 boring log for soil descriptions. | | | | |
| 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 | | | | | | | | | | |
| | | | | | | Bottom of Borehole at 25.0 Feet | | 1 | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 20.0 to 25.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV2S

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV3

Page: 1 of 3

File No.: 16.0062677.81

Check: _____

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse/Anthony Leonido

Date Start/Finish: _____

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|----------------------------------|---------|---------------------|----------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | PROTECTIVE CASING | Concrete |
| 1 | 1 | 24/24 | 0-2 | 1-1 3-3 | ND | Very loose, dark brown, fine to medium SAND, little Clay, little Silt, little Organic Matter (wood, leaves), moist. Changing at 0.3 feet to: Brown, fine to medium SAND, little Silt, moist. Changing at 1.5 feet to: Brown and gray, CLAY & SILT, little fine to medium Sand, trace Organic Matter (roots), moist. Changing at 1.8 feet to: Brown, fine to medium SAND, trace Silt, wet. | SAND | 1 | | |
| 2 | 2 | 24/19 | 2-4 | 3-4 5-6 | ND | Very loose, brown, fine to medium SAND, trace Silt, trace Organic Matter (wood fragments, leaves), trace Hair, wet. | 1.5' 1.8' CLAY & SILT SAND | 2 | | |
| 3 | 3 | 24/15 | 4-6 | 1-1 2-2 | ND | Very loose, gray, fine to medium SAND, trace Silt, trace fine Gravel, wet. | | 3 | | |
| 4 | 4 | 24/16 | 6-8 | 0-1 1-2 | ND | Very loose, brown, fine to medium SAND, trace Silt, trace Organic Matter (wood fragments, leaves), trace Hair, wet. | | | | |
| 5 | 5 | 24/19 | 8-10 | 0-0 1-1 | ND | Very loose, brown, fine to medium SAND, trace Silt, trace Organic Matter (leaves), trace Hair, wet. | | | | |
| 6 | 6 | 24/21 | 10-12 | 2-3 3-3 | ND | Loose, gray, fine to medium SAND, trace Silt, wet. | | | | |
| 7 | 7 | 24/16 | 12-14 | 0-1 1-2 | ND | Very loose, brown, fine to medium SAND, trace Silt, trace fine Gravel, wet. | | | | |
| 8 | 8 | 24/16 | 14-16 | 2-3 3-4 | ND | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | |
| 9 | 9 | 24/24 | 16-18 | 4-6 9-10 | ND | Medium dense, fine to medium SAND, trace Silt, wet. Changing at 17.0 feet to: Gray, Silty CLAY, trace fine to coarse Sand, moist. | 17' Silty CLAY | | | |
| 10 | 10 | 24/18 | 18-20 | 4-8 8-9 | ND | Very stiff, gray, Silty CLAY, trace fine to coarse Sand, moist. | | | | |
| 11 | 11 | 24/18 | 20-22 | 4-8 9-9 | ND | Very stiff, gray, SILT, trace Gravel, trace Clay, wet. | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 2000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million by volume (ppmv) of isobutylene. ND indicates nothing detected (<0.1 ppmv).
- Groundwater was encountered at approximately 1.8 feet below ground surface.
- A groundwater sample was collected from a temporary well with a well screen set at approximately 5.0 to 10.0 feet below ground surface and submitted for laboratory analytical testing.
- A groundwater sample was collected from a temporary well with a well screen set at approximately 15.0 to 20.0 feet below ground surface and submitted for laboratory analytical testing.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV3

BORING WELL 6267781 WWW.WOLVEN AVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolverine World Wide
Wolver Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV3
Page: 2 of 3
File No.: 16.0062677.81
Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|--|--------------------|------------------|-------------|----------------|-----------|--|----------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 23 | 12 | 24/18 | 22-24 | 3-5 6-9 | ND | Stiff, gray, Silty CLAY, trace fine Sand, wet. | Silty CLAY | | | |
| 24 | 13 | 24/18 | 24-26 | 3-8 9-10 | ND | Very stiff, brown to gray bands, Silty CLAY, trace fine Sand, wet. | | | | |
| 25 | | | | | | | | | | |
| 26 | 14 | 24/17 | 26-28 | 5-6 9-7 | ND | Stiff, gray, SILT, trace medium Sand, wet. | 26' SILT | | | |
| 27 | | | | | | | | | | |
| 28 | 15 | 24/15 | 28-30 | 2-3 4-4 | ND | Loose, gray, fine SAND and SILT, trace Clay, wet. | 28' SAND and SILT | | | |
| 29 | | | | | | | | | | |
| 30 | 16 | 24/8 | 30-32 | 1-2 2-3 | ND | Very loose, brown, fine SAND, trace Silt, wet. | 30' SAND | | | |
| 31 | | | | | | | | | | |
| 32 | 17 | 24/8 | 32-34 | 1-2 2-4 | ND | Very loose, brown, fine SAND, trace Silt, wet. | | | | |
| 33 | | | | | | | | | | |
| 34 | 18 | 24/12 | 34-36 | 1-3 3-5 | ND | Loose, brown, fine SAND, trace Silt, wet. | | 5 | | |
| 35 | | | | | | | | | | |
| 36 | 19 | 24/9 | 36-38 | 1-2 4-5 | ND | Loose, brown, fine SAND, trace Silt, wet. | | | | |
| 37 | | | | | | | | | | |
| 38 | 20 | 24/10 | 38-40 | 1-1 2-6 | ND | Very loose, brown, fine to medium SAND, trace Silt, wet. | | | | |
| 39 | | | | | | | | | | |
| 40 | 21 | 24/11 | 40-42 | 3-8 10-11 | ND | Medium dense, brown, fine SAND, trace Gravel, trace Silt, wet. | | | | |
| 41 | | | | | | | | | | |
| 42 | 22 | 24/12 | 42-44 | 15-19 21-20 | ND | Dense, brown, fine to medium SAND, trace Silt, wet. | | | | |
| 43 | | | | | | | | | | |
| 44 | 23 | 24/15 | 44-46 | 6-14 21-25 | ND | Dense, brown, fine to medium SAND, trace Silt, wet. | | 6 | | |
| 45 | | | | | | | | | | |
| 46 | 24 | 24/20 | 46-48 | 4-16 23-24 | ND | Dense, brown, fine to medium SAND, trace Silt, wet. | | | | |
| 47 | | | | | | | | | | |
| REMARKS 5. A groundwater sample was collected from a temporary well with a well screen from approximately 34.0 to 39.0 feet below ground surface and submitted for laboratory analytical testing. 6. A groundwater sample was collected from a temporary well with a well screen from approximately 44.0 to 49.0 feet below ground surface and submitted for laboratory analytical testing. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV3 | |

BORING WELL 6267781 WWW.WOLVERAVENUE.GPJ GZA CORP.GDT 8/1/18

Bentonite Grout



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Wolver Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV3
Page: 3 of 3
File No.: 16.0062677.81
Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|---------------|-----------|---|------------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 48 | 25 | 24/15 | 48-50 | 4-8 11-15 | ND | Medium dense, brown, fine SAND, wet. | SAND | | | |
| 49 | | | | | | | | | | |
| 50 | 26 | 24/15 | 50-52 | 8-18 22-35 | ND | Dense, fine to medium SAND, trace Silt, wet. | | | | |
| 51 | | | | | | | | | | |
| 52 | 27 | 24/20 | 52-54 | 4-9 21-29 | ND | Dense, brown, fine SAND, trace Silt, wet. | | | | |
| 53 | | | | | | | | | | |
| 54 | 28 | 24/20 | 54-56 | 2-6 17-21 | ND | Medium dense, brown, fine to medium SAND, trace Silt, wet. | | 7 | | |
| 55 | | | | | | | | | | |
| 56 | 29 | 24/3 | 56-58 | 3-8 12-15 | ND | Medium dense, gray and brown, fine to coarse SAND and GRAVEL, wet. | 56' SAND and GRAVEL | 8 | | |
| 57 | | | | | | | | | | |
| 58 | 30 | 24/12 | 58-60 | 3-4 13-16 | ND | Medium dense, brown, fine to coarse SAND and GRAVEL, wet. | | | | |
| 59 | | | | | | | | | | |
| 60 | 31 | 24/18 | 60-62 | 4-6 8-9 | ND | Medium dense, brown, fine to coarse SAND and Gravel, trace Silt, wet. Changing at 61.0 feet to: Tan, CLAY, wet. | 61' CLAY | | | |
| 61 | | | | | | | | | | |
| 62 | 32 | 24/20 | 62-64 | 8-11 11-12 | ND | Very stiff, tan, CLAY, wet. | | | | |
| 63 | | | | | | | | | | |
| 64 | | | | | | Bottom of Borehole at 64.0 Feet | 64' | 8 | | |
| 65 | | | | | | | | | | |
| 66 | | | | | | | | | | |
| 67 | | | | | | | | | | |
| 68 | | | | | | | | | | |
| 69 | | | | | | | | | | |
| 70 | | | | | | | | | | |
| 71 | | | | | | | | | | |
| 72 | | | | | | | | | | |
| 73 | | | | | | | | | | |

REMARKS

7. A groundwater sample was collected from a temporary well with a well screen from approximately 54.0 to 59.0 feet below ground surface and submitted for laboratory analytical testing.

8. Gravel stuck in tip of split spoon.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV3

BORING WELL 6267781 WWW.WOLVER AVENUE.GPJ GZA CORP.GDT 8/1/18



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Engineers and Scientists

Wolverine World Wide

Wolver Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV3S

Page: 1 of 1

File No.: 16.0062677.81

Check: _____

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Anthony Leonido

Date Start/Finish: _____

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|--|---------------|---------|------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | PROTECTIVE CASING | |
| 1 | | | | | | See MW-WV3 boring log for soil descriptions. | | | Concrete | |
| 2 | | | | | | | | | Bentonite Grout | |
| 3 | | | | | | | | | 2-Inch PVC Riser | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | Filter Sand | |
| 9 | | | | | | | | | 2-Inch PVC Well Screen | |
| 10 | | | | | | | | | | |
| 11 | | | | | | Bottom of Borehole at 10.1 Feet | | 1 | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 5.0 to 10.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV3S

BORING WELL 6267781 WWW.WOLVERAVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolverine World Wide

Wolver Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV4

Page: 1 of 6

File No.: 16.0062677.81

Check: _____

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Anthony Leonido

Date Start/Finish: 3-12-18 / 3-12-18

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger Split Spoon
O.D. / I.D.: 12.25" / 4.25" 2.0" / 1 3/8"
Hammer Wt.: NA 140lbs
Hammer Fall: NA 30.0"
TOC Elev.: NA NA

| Date | Time | Depth | Casing | Stab |
|---------|------|-------|--------|------|
| 3/16/18 | 1600 | 84.0' | Open | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|---------------|-----------|---|-----------------------------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/24 | 0-2 | 1-1 1-1 | ND | TOPSOIL. Changing at 0.5 feet to: Very loose, brown and black, fine to medium SAND and SILT, dry. | 0.5' TOPSOIL (LOAM) SAND and SILT | | | Concrete |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | 2 | 24/18 | 4-6 | 1-1 2-3 | 0.1 | Very loose, brown, fine SAND, little Silt, dry. | | 1 | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | 3 | 24/20 | 9-11 | 3-4 6-6 | ND | Loose, brown, fine SAND, trace Silt, dry. | 9' SAND | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | 13' SAND and SILT | | | |
| 14 | 4 | 24/18 | 14-16 | 4-5 5-7 | ND | Loose, brown, fine SAND, dry. Changing at 15.0 feet to: Tan, fine SAND and SILT, dry (SM). | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | 5 | 24/20 | 19-21 | 5-10 19-21 | ND | Medium dense, brown, SILT, trace fine Sand, dry. | 19' SILT | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million per volume (ppmv) of isobutylene. ND indicates nothing detected (<0.1 ppmv).

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV4

BORING WELL 6267781 WWW.WOLVER AVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV4
Page: 2 of 6
File No.: 16.0062677.81
Check:

| Sample Information | | | | | | Check: | | | | |
|---|-----|------------------|-------------|---------------|-----------|--|---------------|---------|---------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 23 | 6 | 24/20 | 24-26 | 8-13 13-17 | 0.1 | Medium dense, brown, fine SAND, trace Silt, dry. | SILT | | | |
| 24 | | | | | | | 24' | | | |
| 25 | | | | | | | SAND | | | |
| 26 | | | | | | | | | | |
| 27 | 7 | 24/22 | 29-31 | 2-5 8-12 | ND | Medium dense, brown, fine SAND, trace Silt, dry. | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |
| 31 | 8 | 24/20 | 34-36 | 3-10 14-15 | ND | Medium dense, brown, fine SAND, trace Silt, dry. | | | | |
| 32 | | | | | | | | | | |
| 33 | | | | | | | | | | |
| 34 | | | | | | | | | | |
| 35 | 9 | 24/24 | 39-41 | 5-12 17-21 | ND | Medium dense, brown, fine SAND, trace Silt, dry. | | | | |
| 36 | | | | | | | | | | |
| 37 | | | | | | | | | | |
| 38 | | | | | | | | | | |
| 39 | 10 | 24/22 | 44-46 | 8-21 22-30 | ND | Dense, brown, fine SAND and fine GRAVEL, trace Silt. | | | | |
| 40 | | | | | | | | | | |
| 41 | | | | | | | | | | |
| 42 | | | | | | | | | | |
| 43 | | | | | | | | | | |
| 44 | | | | | | | | | | |
| 45 | | | | | | | | | | |
| 46 | | | | | | | | | | |
| 47 | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV4 | |

BORING WELL 6267781 WWW.WOLVEN AVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolverine World Wide
 Woven Avenue Area
 Algoma Twp, Kent County, Michigan

Boring No.: MW-WV4
 Page: 3 of 6
 File No.: 16.0062677.81
 Check:

| Algoma Twp, Kent County, Michigan | | | | | | | | | | Check: | |
|---|--------------------|--|-------------|----------------|-----------|---|---------------|---------|---------------------|--------------------|------------------------------|
| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | | |
| 48 | 11 | 24/21 | 49-51 | 3-11 22-28 | ND | Dense, brown, fine to medium SAND and SILT, dry. | SAND | 2 | | | |
| 49 | | | | | | | 49' | | | | SAND and SILT |
| 50 | | | | | | | | | | | |
| 51 | | | | | | | | | | | |
| 52 | 12 | 11/11 | 54-54.9 | 16-50/5" | ND | Very dense, brown, fine SAND and SILT, some medium Gravel, dry. | | | | | |
| 53 | | | | | | | | | | | |
| 54 | | | | | | | | | | | |
| 55 | | | | | | | | | | | |
| 56 | 13 | 24/24 | 59-61 | 21-30 39-50 | ND | Very dense, brown, fine to coarse SAND and SILT, trace medium Gravel, dry (GLACIAL TILL). | 59' | | | Bentonite Grout | |
| 57 | | | | | | | | | | | SAND and SILT (GLACIAL TILL) |
| 58 | | | | | | | | | | | |
| 59 | | | | | | | | | | | |
| 60 | 14 | 24/24 | 64-66 | 11-21 24-27 | ND | Hard, gray, Silty CLAY, dry. | 64' | | | | |
| 61 | | | | | | | | | | | Silty CLAY |
| 62 | | | | | | | | | | | |
| 63 | | | | | | | | | | | |
| 64 | 15 | 24/19 | 69-71 | 19-43 38-46 | ND | Very dense, gray, fine SAND and SILT with Clay lenses, trace medium Sand, dry (GLACIAL TILL). | 69' | | | | |
| 65 | | | | | | | | | | | SAND and SILT (GLACIAL TILL) |
| 66 | | | | | | | | | | | |
| 67 | | | | | | | | | | | |
| 68 | REMARKS | 2. Split spoon refusal at approximately 55.0 feet. | | | | | | | | | |
| 69 | | | | | | | | | | | |
| 70 | | | | | | | | | | | |
| 71 | | | | | | | | | | | |
| 72 | | | | | | | | | | | |
| 73 | | | | | | | | | | Boring No.: MW-WV4 | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | | |

BORING WELL 6267781 WWW.WOVLEN AVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV4
Page: 4 of 6
File No.: 16.0062677.81
Check:

| Algoma Twp, Kent County, Michigan | | | | | | | | | | Check: | |
|-----------------------------------|---|------------------|-------------|----------------|-----------|---|------------------------------|---------|---------------------|--------------------|--|
| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | | |
| 74 | 16 | 24/24 | 74-76 | 8-14 24-31 | ND | Dense, gray, fine to medium SAND and SILT, some Clay, damp (GLACIAL TILL). | SAND and SILT (GLACIAL TILL) | | | | |
| 75 | | | | | | | | | | | |
| 76 | | | | | | | | | | | |
| 77 | | | | | | | | | | | |
| 78 | | | | | | | | | | | |
| 79 | 17 | 18/18 | 79-80.5 | 13-27 37-0 | ND | Dense, gray, fine to medium SAND and SILT, some Clay, damp (GLACIAL TILL). | | 4 | | | |
| 80 | | | | | | | | | | | |
| 81 | | | | | | | | | | | |
| 82 | | | | | | | | | | | |
| 83 | | | | | | | | | | | |
| 84 | 18 | 10/0 | 84-84.8 | 28-50/4" | ND | NO RECOVERY. | | 3 | | | |
| 85 | | | | | | | | | | | |
| 86 | | | | | | | | | | | |
| 87 | | | | | | | | | | | |
| 88 | | | | | | | | | | | |
| 89 | 19 | 24/24 | 89-91 | 8-13 19-25 | ND | Dense, gray, fine SAND and SILT, some medium Gravel, moist (GLACIAL TILL). | | | | | |
| 90 | | | | | | | | | | | |
| 91 | | | | | | | | | | | |
| 92 | | | | | | | | | | | |
| 93 | | | | | | | | | | | |
| 94 | 20 | 24/24 | 94-96 | 14-24 28-41 | ND | Very dense, gray, fine SAND and SILT, some medium Gravel, moist (GLACIAL TILL). | | | | | |
| 95 | | | | | | | | | | | |
| 96 | | | | | | | | | | | |
| 97 | | | | | | | | | | | |
| 98 | | | | | | | | | | | |
| REMARKS | 4. Split spoon refusal at approximately 80.5 feet. 3. Gravel stuck in tip of split spoon. | | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV4 | |

BORING WELL 6267781 WWW.WOLVEN AVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolver Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV4
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Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|---|------------------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 100 | 21 | 24/24 | 99-101 | 19-18 20-31 | ND | Dense, gray, fine SAND and SILT, some medium Gravel, dry (GLACIAL TILL). | SAND and SILT (GLACIAL TILL) | | | |
| 101 | | | | | | | | | | |
| 102 | | | | | | | | | | |
| 103 | | | | | | | | | | |
| 104 | 22 | 24/24 | 104-106 | 13-20 30-50 | ND | Very dense, gray, fine SAND and SILT, some medium Gravel, dry (GLACIAL TILL). | | | | |
| 105 | | | | | | | | | | |
| 106 | | | | | | | | | | |
| 107 | | | | | | | | | | |
| 108 | | | | | | | | | | |
| 109 | 23 | 24/24 | 109-111 | 9-12 24-42 | ND | Dense, gray, fine SAND and SILT, some medium Gravel, damp (GLACIAL TILL). | | | | |
| 110 | | | | | | | | | | |
| 111 | | | | | | | | | | |
| 112 | | | | | | | | | | |
| 113 | | | | | | | | | | |
| 114 | 24 | 24/24 | 114-116 | 9-17 28-41 | ND | Dense, gray, fine SAND and SILT, some medium Gravel, damp (GLACIAL TILL). | | | | |
| 115 | | | | | | | | | | |
| 116 | | | | | | | | | | |
| 117 | | | | | | | | | | |
| 118 | | | | | | | | | | |
| 119 | 25 | 24/24 | 119-121 | 8-15 31-50 | ND | Dense, gray, fine SAND and SILT, some medium Gravel, damp (GLACIAL TILL). | | | | |
| 120 | | | | | | | | | | |
| 121 | | | | | | | | | | |
| 122 | | | | | | | | | | |
| 123 | | | | | | | | | | |
| 124 | 26 | 18/18 | 124-125.5 | 9-27-50/6" | 10.7 | Very dense, gray, fine SAND and SILT, | | 5 | | |
| <div>REMARKS</div> <div>5. Groundwater was encountered at approximately 123.5 feet below ground surface.</div> | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV4 | |

BORING WELL 6267781 WWW.WOLVERAVENUE.GPJ GZA CORP.GDT 8/1/18

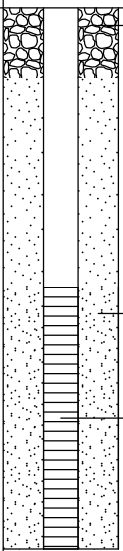
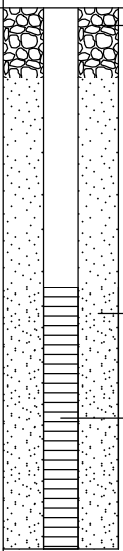
2-Inch PVC Riser



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Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV4
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Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|--|--------------------|------------------|-------------|-------------|-----------|---|------------------------------|---------|---|-------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 125 | 27 | 15/12 | 128-129.3 | 15-35-50/3" | 5.0 | some medium Gravel, damp, with green, fine Sand and Silt lenses and blue, fine Sand and Silt lenses, damp (GLACIAL TILL). | SAND and SILT (GLACIAL TILL) | 6 |  | Bentonite |
| 126 | | | | | | | | | | |
| 127 | | | | | | | | | | |
| 128 | | | | | | Very dense, brown, fine to medium SAND, trace Silt, wet, with layer of green, fine SAND. | 128' SAND | | | |
| 129 | | | | | | | | | | |
| 130 | 28 | 12/12 | 134-135 | 17-50+ | ND | | | 7 |  | Filter Sand |
| 131 | | | | | | | | | | |
| 132 | | | | | | | | | | |
| 133 | | | | | | | 133' Silty SAND and CLAY | | | |
| 134 | | | | | | Very dense, red and green, fine Silty SAND, some Silty Clay, wet. | 135' | | | |
| 135 | | | | | | Bottom of Borehole at 135.0 Feet | | | | |
| 136 | | | | | | | | | | |
| 137 | | | | | | | | | | |
| 138 | | | | | | | | | | |
| 139 | | | | | | | | | | |
| 140 | | | | | | | | | | |
| 141 | | | | | | | | | | |
| 142 | | | | | | | | | | |
| 143 | | | | | | | | | | |
| 144 | | | | | | | | | | |
| 145 | | | | | | | | | | |
| 146 | | | | | | | | | | |
| 147 | | | | | | | | | | |
| 148 | | | | | | | | | | |
| 149 | | | | | | | | | | |
| 150 | | | | | | | | | | |
| REMARKS 6. A temporary well screen was set from 125.0 to 130.0 below ground surface. Groundwater sample was collected and submitted for laboratory analytical testing. 7. Monitoring well was installed in the borehole upon completion. Well screen set from 130.0 to 135.0 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV4 | |

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV5D

Page: 1 of 3

File No.: 16.0062677.81

Check:

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Joe Workman

Date Start/Finish: 3-14-18 / 3-14-18

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|---------|------|-------|------------|------|
| 3/14/18 | 1005 | 64.4' | Top of PVC | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|---------------|-----------|--|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/13 | 0-2 | 2-3 5-6 | 9.0 | Loose, dark brown, fine to medium SAND, trace Organic Matter (roots), trace Clay, trace Silt, damp. Changing at 1.0 foot to: Brown, fine to medium SAND, trace Silt, damp. | SAND | 1 | | |
| 2 | 2 | 24/11 | 2-4 | 3-4 4-5 | 3.0 | Loose, brown, fine to medium SAND, trace Silt, damp (rock fragment in tip of spoon). | | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/21 | 4-6 | 2-2 3-3 | 10.0 | Loose, tan, fine to medium SAND, trace Silt, damp. | | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/15 | 6-8 | 2-2 3-3 | ND | Loose, brown, fine to medium SAND, trace fine to coarse Gravel, moist. | | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/18 | 8-10 | 2-2 3-4 | ND | Loose, brown, fine to medium SAND, trace Silt, moist. | | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/22 | 10-12 | 3-2 2-2 | 3.0 | Loose, brown, fine to medium SAND, trace Silt, moist. | | | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/23 | 12-14 | 2-1 2-3 | ND | Loose, brown, fine to medium SAND, trace Silt, moist. | | | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/24 | 14-16 | 2-3 3-3 | ND | Loose, tan, fine to medium SAND, trace Silt, moist. Changing at approximately 15.8 feet to: Loose, brown, fine to coarse SAND, trace Silt, moist. | | | | |
| 15 | | | | | | | | | | |
| 16 | 9 | 24/24 | 16-18 | 4-5 8-10 | ND | Medium dense, brown, fine to medium SAND, trace Silt, damp. | | | | |
| 17 | | | | | | | | | | |
| 18 | 10 | 24/22 | 18-20 | 5-10 11-11 | ND | Medium dense, brown, fine to coarse SAND, trace Silt, damp. Changing at approximately 19.7 feet to: Brown, fine to coarse SAND, trace Silt, damp. | | | | |
| 19 | | | | | | | | | | |
| 20 | 11 | 24/20 | 20-22 | 10-9 13-12 | ND | Medium dense, brown, fine to medium SAND, trace Silt, damp. Changing at approximately 21.5 feet to: Medium dense, brown, fine to coarse SAND, trace fine to coarse Gravel, trace Silt, damp with 1.0 inch layer of CLAY and SILT at approximately 21.7 feet. | | | | |
| 21 | | | | | | | | | | |
| 22 | 12 | 24/20 | 22-24 | 4-5 10-9 | ND | Medium dense, tan, fine to medium SAND, | | | | |
| 23 | | | | | | | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million by volume (ppmv) of isobutylene. ND indicates nothing detected (<0.1 ppmv).

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV5D

BORING WELL 6267781 WWW.WOLVEN AVENUE.GPJ GZA CORP.GDT 8/1/18



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Algoma Twp, Kent County, Michigan

Boring No.: MW-WV5D
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Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|----------------|-----------|--|---------------------|---------|---------------------|-----------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 25 | 13 | 24/21 | 24-26 | 5-5 9-13 | ND | trace Silt, damp. Medium dense, tan, fine to medium SAND, trace Silt, damp. | SAND | 3 | | Bentonite Grout |
| 26 | 14 | 24/18 | 26-28 | 3-7 7-7 | ND | Loose, brown, fine to coarse SAND, trace Silt, trace fine Gravel, damp. Changing at approximately 27.0 feet to: Medium dense, brown, fine to medium SAND, trace Silt, damp. | | | | |
| 28 | 15 | 24/19 | 28-30 | 2-3 4-4 | ND | Loose, brown, fine to coarse SAND, trace fine Gravel, trace Silt, damp. | | | | |
| 30 | 16 | 24/17 | 30-32 | 2-3 4-4 | ND | Loose, brown, fine to coarse SAND, trace fine Gravel, trace Silt, damp. | | 4 | | |
| 32 | 17 | 24/19 | 32-34 | 2-2 2-2 | ND | Loose, brown, fine to coarse SAND, trace fine Gravel, trace Silt, damp. | | | | |
| 34 | 18 | 24/24 | 34-36 | 2-3 4-7 | ND | Loose, brown, fine to coarse SAND, trace fine Gravel, trace Silt, moist. Changing at approximately 34.2 feet to: Brown, Silty CLAY, little fine to coarse Sand, trace fine Gravel, damp. | 34.2' Silty CLAY | | | |
| 36 | 19 | 24/24 | 36-38 | 1-4 3-3 | ND | Medium, brown, CLAY & SILT, some fine Sand, moist. Changing at approximately 36.4 feet to: Brown, fine to medium SAND, trace Silt, wet. Changing at approximately 36.6 feet to: Brown, CLAY & SILT, some fine to medium Sand, moist. | 36' CLAY & SILT | 40' | | |
| 38 | 20 | 24/20 | 38-40 | 1-2 5-5 | ND | Medium, brown, CLAY & SILT, some fine to medium Sand, moist. Changing at approximately 39.2 feet to: Medium SAND, trace Silt, damp. | | | | |
| 40 | 21 | 24/24 | 40-42 | 4-9 9-11 | ND | Medium dense, brown, fine SAND, trace Silt, wet. | 40' SAND | | | |
| 42 | 22 | 24/22 | 42-44 | 10-13 18-19 | ND | Medium dense, brown, fine SAND, trace Silt, wet. | | | | |
| 44 | 23 | 24/24 | 44-46 | 6-10 10-13 | ND | Medium dense, brown, fine SAND, trace Silt, wet. | | | | |
| 46 | 24 | 24/20 | 46-48 | 5-12 17-22 | ND | Medium dense, brown, fine SAND, trace Silt, wet. | | | | |
| 48 | 25 | 24/22 | 48-50 | 7-16 21-22 | ND | Medium dense, brown, fine SAND, trace Silt, wet. | | | | |
| 50 | 26 | 24/24 | 50-52 | 10-11 16-21 | ND | Medium dense, brown, fine SAND, trace Silt, wet. | | | | |
| 51 | | | | | | | | | | |

REMARKS

- Driller noted some clay present in tip of spoon.
- Groundwater was encountered at approximately 36.4 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

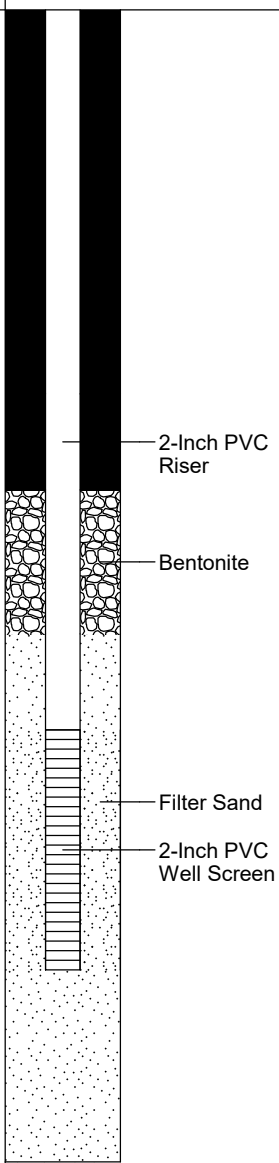
Boring No.: MW-WV5D



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Wolver Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV5D
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Check:

| Sample Information | | | | | | Check: | | | | |
|---------------------|---|------------------|-------------|----------------|-----------|---|---------------|--|---------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 53 | 27 | 24/24 | 52-54 | 4-11 14-14 | ND | Medium dense, brown, fine SAND, trace Silt, wet. | SAND |  | | |
| 54 | 28 | 24/24 | 54-56 | 5-8 13-19 | ND | Medium dense, brown, fine SAND, trace Silt, wet. | | | | |
| 55 | | | | | | | | | | |
| 56 | 29 | 24/24 | 56-58 | 3-5 13-27 | ND | Medium dense, brown, fine SAND, trace Silt, wet. | | | | |
| 57 | | | | | | | | | | |
| 58 | 30 | 24/21 | 58-60 | 9-18 10-16 | ND | Medium dense, brown, fine SAND, trace Silt, wet. Changing at approximately 58.5 feet to: Brown, fine to coarse SAND, some fine Gravel, wet. | | | | |
| 59 | | | | | | | | | | |
| 60 | 31 | 24/24 | 60-62 | 12-18 19-12 | ND | Dense, brown, medium to coarse SAND, some fine Gravel, trace Silt, wet. | | | | |
| 61 | | | | | | | | | | |
| 62 | 32 | 24/15 | 62-64 | 2-3 6-9 | ND | Loose, brown, medium to coarse SAND, some fine Gravel, trace Silt, wet. | | | | |
| 63 | | | | | | | | | | |
| 64 | 33 | 24/18 | 64-66 | 1-2 5-9 | ND | Loose, brown and gray, fine SAND, trace Silt, wet. | | | | |
| 65 | | | | | | | | | | |
| 66 | 34 | 24/12 | 66-68 | 2-4 7-12 | ND | Medium dense, brown and gray, fine SAND, trace Silt, wet. | | | | |
| 67 | | | | | | | | | | |
| 68 | 35 | 24/10 | 68-70 | 1-4 7-10 | ND | Medium dense, brown and gray, fine SAND, trace Silt, wet. | | | | |
| 69 | | | | | | | | | | |
| 70 | 36 | 24/15 | 70-72 | 2-4 7-14 | ND | Medium dense, brown and gray, fine SAND, trace Silt, wet. | | | | |
| 71 | | | | | | | | | | |
| 72 | 37 | 24/24 | 72-74 | 2-5 10-13 | ND | Medium dense, brownish gray, fine SAND, trace Silt, wet. Changing at approximately 73.0 feet to: Brown, CLAY. | 73' | CLAY | | |
| 73 | | | | | | | | | | |
| 74 | 38 | 24/24 | 74-76 | 11-14 26-27 | ND | Hard, brown, CLAY. Changing at approximately 75.5 feet to: Gray, CLAY. | 76' | 5 | | |
| 75 | | | | | | | | | | |
| 76 | | | | | | Bottom of Borehole at 76.0 Feet | | | | |
| 77 | | | | | | | | | | |
| 78 | | | | | | | | | | |
| 79 | | | | | | | | | | |
| REMARKS | 5. Monitoring well was installed in borehole upon completion. Well screen set from 67.0 to 72.0 feet below ground surface. | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |
| Boring No.: MW-WV5D | | | | | | | | | | |

BORING WELL 6267781 WWW.WOLVERAVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV5S

Page: 1 of 2

File No.: 16.0062677.81

Check:

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Joe Workman/Anthony Leonido

Date Start/Finish: 3-14-18 / 3-14-18

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------------|--------------|---|------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | | | | | | See MW-WV5D boring log for soil descriptions. | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV5S

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 8/1/18

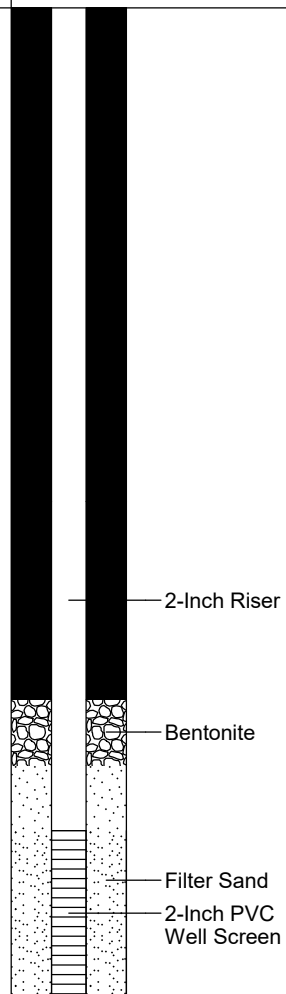


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Wolverine World Wide
 Woven Avenue Area
 Algoma Twp, Kent County, Michigan

Boring No.: MW-WV5S
 Page: 2 of 2
 File No.: 16.0062677.81
 Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------------------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 36 | | | | | | | | | |
| 37 | | | | | | | | | |
| 38 | | | | | | | | | |
| 39 | | | | | | | | | |
| 40 | | | | | | | | | |
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| 63 | | | | | | | | | |
| 64 | | | | | | | | | |
| 65 | | | | | | | | | |
| 66 | | | | | | Bottom of Borehole at 65.0 Feet | | 1 | |
| 67 | | | | | | | | | |
| 68 | | | | | | | | | |
| 69 | | | | | | | | | |
| 70 | | | | | | | | | |
| 71 | | | | | | | | | |
| 72 | | | | | | | | | |
| 73 | | | | | | | | | |
| 74 | | | | | | | | | |
| 75 | | | | | | | | | |
| <div> <div>REMARKS</div> <div>1. Monitoring well was installed in borehole upon completion. Well screen set from 60.0 to 65.0 feet below ground surface.</div> </div> | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | Boring No.: MW-WV5S | |



BORING WELL 6267781 WWW.WOVLEN AVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV6D

Page: 1 of 3

File No.: 16.0062677.81

Check: _____

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: Anthony Leonido

Date Start/Finish: 3-19-18 / 3-20-18

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|----------------|-----------|--|-----------------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | 1 | 24/8 | 0-2 | 1-1 2-2 | ND | Top 2.0 inches LOAM. Changing to: Loose, brown, fine to medium SAND and SILT, dry. | SAND and SILT | 1 | | PROTECTIVE CASING |
| 2 | | | | | | | | | | Concrete |
| 3 | | | | | | | | | | |
| 4 | 2 | 24/12 | 4-6 | 2-2 1-1 | ND | Loose, brown, fine SAND, trace Silt, dry. | 4' SAND and GRAVEL | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | 3 | 24/12 | 9-11 | 2-5 7-7 | ND | Medium dense, brown, fine SAND and fine GRAVEL, trace Silt, wet. | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | 4 | 24/15 | 14-16 | 2-5 7-7 | ND | Medium dense, brown, fine to coarse SAND and fine GRAVEL, some Silt, wet. | | 2 | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | 5 | 24/18 | 19-21 | 2-3 5-16 | ND | Medium, brown, SILT, wet. | 19' SILT | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | 6 | 24/18 | 24-26 | 4-10 20-11 | ND | Very stiff, brown, SILT, trace fine Sand, wet. | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | 7 | 24/19 | 29-31 | 11-25 25-32 | ND | Very dense, brown, SAND and SILT, some Clay, wet (GLACIAL TILL). | 29' GLACIAL TILL | | | |
| 30 | | | | | | | | | | |
| 31 | | | | | | | | | | |
| 32 | | | | | | | | | | |
| 33 | | | | | | | | | | |
| 34 | 8 | 24/19 | 34-36 | 4-14 25-34 | ND | Very dense, brown, fine Silty SAND and | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million by volume (ppmv) of isobutylene. ND indicates nothing detected (<0.1 ppmv).
- A groundwater sample was collected from a temporary monitoring with well screen set at approximately 13.0 to 18.0 feet below ground surface and submitted for analytical laboratory testing.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV6D

BORING WELL 6267781 WWW.WOLVEN AVENUE.GPJ GZA CORP.GDT 8/1/18



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Engineers and Scientists

Wolverine World Wide
Wolver Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV6D
Page: 2 of 3
File No.: 16.0062677.81
Check:

| Sample Information | | | | | | | | Check: | | | | | | |
|---|-----|------------------|-------------|----------------|-----------|--|---------------|---------|---------------------|-----------------|---------------------|--|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | | | | |
| | | | | | | | | | | | | | | |
| 36 | 9 | 12/12 | 39-40 | 21-97 | ND | SILT, some Clay, wet (GLACIAL TILL). | GLACIAL TILL | | | Bentonite Grout | | | | |
| 37 | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | |
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| 46 | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | |
| 49 | 10 | 24/18 | 49-51 | 21-38 44-53 | ND | Very dense, brown, SAND and SILT, some Clay, wet (GLACIAL TILL). | | | | | | | | |
| 50 | | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | | |
| 52 | | | | | | | | | | | | | | |
| 53 | | | | | | | | | | | | | | |
| 54 | 11 | 24/16 | 54-56 | 20-27 44-50 | ND | Very dense, brown, SAND and SILT, some Clay, wet (GLACIAL TILL). | | | | | | | | |
| 55 | | | | | | | | | | | | | | |
| 56 | | | | | | | | | | | | | | |
| 57 | | | | | | | | | | | | | | |
| 58 | | | | | | | | | | | | | | |
| 59 | 12 | 24/17 | 59-61 | 20-24 30-46 | ND | Very dense, brown, SAND and SILT, some Clay, wet (GLACIAL TILL). | | | | | | | | |
| 60 | | | | | | | | | | | | | | |
| 61 | | | | | | | | | | | | | | |
| 62 | | | | | | | | | | | | | | |
| 63 | | | | | | | | | | | | | | |
| 64 | 13 | 16/16 | 64-65.3 | 45-32-50/4" | ND | Very dense, brown, SAND and SILT, some Clay, wet (GLACIAL TILL). | | | | | | | | |
| 65 | | | | | | | | | | | | | | |
| 66 | | | | | | | | | | | | | | |
| 67 | | | | | | | | | | | | | | |
| 68 | | | | | | | | | | | | | | |
| 69 | 14 | 16/14 | 69-70.3 | 28-46-50/4" | ND | Very dense, brown, SAND and SILT, some Clay, wet (GLACIAL TILL). | | | | | | | | |
| 70 | | | | | | | | | | | | | | |
| 71 | | | | | | | | | | | | | | |
| 72 | | | | | | | | | | | | | | |
| 73 | | | | | | | | | | | | | | |
| 74 | 15 | 12/10 | 74-75 | 35-68 | ND | Very dense, brown, SAND and SILT, some Clay, wet (GLACIAL TILL). | | | | | | | | |
| 75 | | | | | | | | | | | | | | |
| REMARKS | | | | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | | Boring No.: MW-WV6D | | | |

BORING WELL 6267781 WWW.WOLVERAVENUE.GPJ GZA CORP.GDT 8/1/18



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Engineers and Scientists

Wolverine World Wide
Wolver Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV6D
Page: 3 of 3
File No.: 16.0062677.81
Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---------|---|------------------|-------------|-------------------|-----------|---|----------------------|---------|---------------------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 77 | 16 | 17/15 | 79-80.4 | 14-25-50/5" | ND | Very dense, brown, SAND and SILT, some Clay, wet (GLACIAL TILL). | GLACIAL TILL | | |
| 78 | | | | | | | | | |
| 79 | | | | | | | | | |
| 80 | | | | | | | | | |
| 81 | | | | | | | | | |
| 82 | 17 | 6/6 | 84-84.5 | 50-100/0" | ND | Very dense, brown, SAND and SILT, some Clay, wet (GLACIAL TILL). | | | |
| 83 | | | | | | | | | |
| 84 | | | | | | | | | |
| 85 | | | | | | | | | |
| 86 | | | | | | | | | |
| 87 | 18 | 14/10 | 89-90.2 | 20-40-50/4" | ND | Very dense, brown, SAND and SILT, some Clay, wet (GLACIAL TILL). | | | |
| 88 | | | | | | | | | |
| 89 | | | | | | | | | |
| 90 | | | | | | | | | |
| 91 | | | | | | | | | |
| 92 | 19 | 19/17 | 94-95.6 | 40-48 50-40/1" | ND | Very dense, brown, fine SAND, trace Silt, wet. | 94' SAND | | 2-Inch PVC Riser Bentonite |
| 93 | | | | | | | | | |
| 94 | | | | | | | | | |
| 95 | | | | | | | | | |
| 96 | | | | | | | | | |
| 97 | 20 | 24/20 | 99-101 | 2-11 26-33 | ND | Very dense, brown, fine SAND, trace Silt, wet. | | | Filter Sand 2-Inch PVC Well Screen |
| 98 | | | | | | | | | |
| 99 | | | | | | | | | |
| 100 | | | | | | | | | |
| 101 | | | | | | | | | |
| 102 | 21 | 24/18 | 104-106 | 16-16 21-21 | ND | Dense, brown, fine SAND, trace Silt, wet. Changing at approximately 105.0 feet to: Gray, CLAY, wet. | 105' CLAY 106' | 3 | |
| 103 | | | | | | | | | |
| 104 | | | | | | | | | |
| 105 | | | | | | | | | |
| 106 | | | | | | | | | |
| 107 | | | | | | Bottom of Borehole at 106.0 Feet | | 4 | |
| 108 | | | | | | | | | |
| 109 | | | | | | | | | |
| 110 | | | | | | | | | |
| 111 | | | | | | | | | |
| 112 | | | | | | | | | |
| 113 | | | | | | | | | |
| 114 | | | | | | | | | |
| 115 | | | | | | | | | |
| 116 | | | | | | | | | |
| REMARKS | 3. Groundwater was encountered at approximately 104.0 feet below ground surface. 4. Monitoring well was installed in borehole upon completion. Well screen set from 98.0 to 103.0 feet below ground surface. | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | |

BORING WELL 6267781 WWW.WOLVERAVENUE.GPJ GZA CORP.GDT 8/1/18

Boring No.: MW-WV6D



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Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV6S

Page: 1 of 1

File No.: 16.0062677.81

Check: _____

Contractor: Stearns Drilling Company

Foreman: Burt Graham

Logged by: Christopher Melby

Date Start/Finish: _____

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger Split Spoon
O.D. / I.D.: 12.25" / 4.25" 2.0" / 1 3/8"
Hammer Wt.: NA 140lbs
Hammer Fall: NA 30.0"
TOC Elev.: NA NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | PROTECTIVE CASING | |
| 1 | | | | | | See MW-WV6D boring log for soil descriptions. | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
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| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | Bottom of Borehole at 18.0 Feet | | 1 | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 13.0 to 18.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV6S

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: PMW-WV-7/MW-WV-7D

Page: 1 of 6

File No.: 16.0062677.81

Check: Leslie Nelson

Contractor: Stearns Drilling Company

Foreman: Jerry Zach/Travis

Logged by: John Morehouse

Date Start/Finish: 10-23-18 / 10-25-18

Boring Location:

GS Elev.: Datum: NAD 83

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| NM | NM | NM | NM | NM |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|--------------------------------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/20.4 | 0-2 | 2-2 2-2 | ND | Very dark brown, fine grained SAND, some Silt, trace Gravel, moist. Changing at 0.4 feet to: Dark yellowish-brown to yellowish-brown, very fine grained SAND and SILT, moist. Changing at 1.7 feet to: NO RECOVERY. | 0.4' SAND SAND and SILT | 1 | | |
| 2 | 2 | 24/15.6 | 2-4 | 1-2 1-1 | ND | Yellowish-brown, very fine grained SAND and SILT, moist. Changing at 3.3 feet to: NO RECOVERY. | 1.7' NO RECOVERY 2' SAND and SILT | | | |
| 3 | | | | | | | 3.3' NO RECOVERY | | | |
| 4 | 3 | 24/19.2 | 4-6 | 1-4 3-2 | ND | Yellowish-brown to brown, CLAY & SILT, moist. Changing at 4.6 feet to: Yellowish-brown, fine to medium grained SAND, trace Silt, moist. Changing at 5.6 feet to: NO RECOVERY. | 4' CLAY & SILT 4.6' SAND | | | |
| 5 | | | | | | | 5.6' NO RECOVERY | | | |
| 6 | 4 | 24/12 | 6-8 | 1-1 1-1 | ND | Yellowish-brown, fine to coarse grained SAND, little Gravel, trace Silt, moist. Changing at 7.0 feet to: NO RECOVERY. | 6' NO RECOVERY SAND | | | |
| 7 | | | | | | | 7' NO RECOVERY | | | |
| 8 | 5 | 24/6 | 8-10 | 1-1 1-1 | ND | Yellowish-brown, fine to coarse grained SAND, little Gravel, trace Silt, moist. Changing at 8.5 feet to: NO RECOVERY. | 8' SAND 8.5' NO RECOVERY | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/12 | 10-12 | 1-1 2-2 | ND | Yellowish-brown, fine to coarse grained SAND, little Gravel, trace Silt, moist. Changing at 10.6 feet to: Pale brown to light yellowish-brown, fine SAND, trace Silt, moist. Changing at 11.0 feet to: NO RECOVERY. | 10' SAND 11' NO RECOVERY | | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/16.8 | 12-14 | 2-3 3-3 | ND | Pale brown to light yellowish-brown, fine SAND, trace Silt, moist. Changing at 12.7 feet to: Brown, fine to medium SAND, trace Silt, wet. Changing at 13.4 feet to: NO RECOVERY. | 12' SAND 13.4' NO RECOVERY | 2 | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/15.6 | 14-16 | 3-2 3-4 | ND | Brown, fine to medium SAND, trace Silt, wet. Changing at 15.3 feet to: NO RECOVERY. | 14' SAND | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million by volume (ppmv) of isobutylene. ND indicates nothing detected (<0.1 ppmv).
- Groundwater was encountered at approximately 12.7 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: PMW-WV-7/MW-WV-7D

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 3/25/19



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: PMW-WV-7/MW-WV-7D
Page: 2 of 6
File No.: 16.0062677.81
Check: Leslie Nelson

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|---|---------------------------|---------|-------------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 16 | 9 | 24/16.8 | 16-18 | 2-2 3-4 | ND | Brown, fine to medium SAND, trace Silt, wet. Changing at 17.4 feet to: NO RECOVERY. | 15.3' SAND NO RECOVERY | | | |
| 17 | | | | | | | 16' SAND | | | |
| 18 | 10 | 24/19.2 | 18-20 | 0-2 3-6 | ND | | 17.4' NO RECOVERY | | | |
| 19 | | | | | | Brown, fine to medium SAND, trace Silt, wet. Changing at 19.6 feet to: NO RECOVERY. | 18' SAND | | | |
| 20 | 11 | 24/16.8 | 20-22 | 5-6 5-11 | ND | | 19.6' NO RECOVERY | | | |
| 21 | | | | | | | 20' SAND | | | |
| 22 | 12 | 24/19.2 | 22-24 | 8-12 13-11 | ND | Brown, fine to medium SAND, trace Silt, trace Gravel, wet. Changing at 23.6 feet to: NO RECOVERY. | 21.4' NO RECOVERY | | | |
| 23 | | | | | | | 22' SAND | | | |
| 24 | 13 | 24/15.6 | 24-26 | 1-1 1-1 | ND | | 23.6' NO RECOVERY | | | |
| 25 | | | | | | Brown, fine to medium SAND, trace Silt, trace Gravel, wet. Changing at 25.3 feet to: NO RECOVERY. | 24' SAND | | | |
| 26 | 14 | 24/14.4 | 26-28 | 1-1 2-0 | ND | | 25.3' NO RECOVERY | | | |
| 27 | | | | | | | 26' SAND | | | |
| 28 | 15 | 24/21.6 | 28-30 | 1-1 1-2 | ND | Brown, fine to medium SAND, trace Silt, trace Gravel, wet. Changing at 29.8 feet to: NO RECOVERY. | 27.2' NO RECOVERY | | | |
| 29 | | | | | | | 28' SAND | | | |
| 30 | 16 | 24/16.8 | 30-32 | 0-0 1-1 | ND | | 29.8' NO RECOVERY | | | |
| 31 | | | | | | Brown, fine to medium SAND, trace Silt, | 30' SAND | | | |
| 32 | 17 | 24/20.4 | 32-34 | 0-1 3-4 | ND | | 31.4' NO RECOVERY | | | |
| | | | | | | | 32' SAND | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: PMW-WV-7/MW-WV-7D | |

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 3/25/19



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: PMW-WV-7/MW-WV-7D
Page: 3 of 6
File No.: 16.0062677.81
Check: Leslie Nelson

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|----------------|--------------------|------------------|-------------|-------------|-----------|--|-----------------------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 33 | | | | | | trace Gravel, wet. Changing at 33.7 feet to: NO RECOVERY. | SAND | | | |
| 34 | 18 | 24/22.8 | 34-36 | 1-2 4-5 | ND | Brown, fine to medium SAND, trace Silt, trace Gravel, wet. Changing at 35.9 feet to: NO RECOVERY. | 33.7' 34' NO RECOVERY SAND | | | |
| 35 | | | | | | | | | | |
| 36 | 19 | 24/10.8 | 36-38 | 1-2 1-4 | ND | Brown, fine to medium SAND, trace Silt, trace Gravel, wet. Changing at 36.9 feet to: NO RECOVERY. | 35.9' 36' NO RECOVERY SAND | | | |
| 37 | | | | | | | 36.9' NO RECOVERY | | | |
| 38 | 20 | 24/12 | 38-40 | 1-0 4-4 | ND | Brown, fine to medium SAND, trace Silt, trace Gravel, wet. Changing at 38.9 feet to: Brown, GRAVEL, some fine to coarse grained Sand, trace Silt, wet. Changing at 38.9 feet to: NO RECOVERY. | 38' SAND | | | |
| 39 | | | | | | | 38.9' 39' GRAVEL NO RECOVERY | | | |
| 40 | 21 | 24/15.6 | 40-42 | 1-1 1-2 | ND | Brown, fine to medium SAND, trace Silt, trace Gravel, wet. Changing at 41.3 feet to: NO RECOVERY. | 40' SAND | | | |
| 41 | | | | | | | 41.3' NO RECOVERY | | | |
| 42 | 22 | 24/15.6 | 42-44 | 1-1 1-1 | ND | Brown, fine to medium SAND, trace Silt, trace Gravel, wet. Changing at 43.3 feet to: NO RECOVERY. | 42' SAND | | | |
| 43 | | | | | | | 43.3' NO RECOVERY | | | |
| 44 | 23 | 24/6 | 44-46 | 1-1 1-1 | ND | Brown, fine to medium SAND, trace Silt, wet. Changing at 44.3 feet to: Brown, fine to medium SAND, little coarse grained Sand, little Gravel, trace Silt, wet. Changing at 44.5 feet to: NO RECOVERY. | 44' SAND | | | |
| 45 | | | | | | | 44.5' NO RECOVERY | | | |
| 46 | 24 | 24/9.6 | 46-48 | 1-1 3-5 | ND | Brown, fine to medium SAND, little coarse grained Sand, little Gravel, trace Silt, wet. Changing at 46.6 feet to: Brown, GRAVEL and fine to coarse grained Sand, trace Silt, wet. Changing at 46.8 feet to: NO RECOVERY. | 46' SAND | | | |
| 47 | | | | | | | 46.6' 46.8' GRAVEL NO RECOVERY | | | |
| 48 | 25 | 24/10.8 | 48-50 | 2-3 4-7 | ND | Brown, fine to medium SAND, trace coarse grained Sand, trace Gravel, trace Silt, wet. Changing at 48.9 feet to: NO RECOVERY. | 48' SAND | | | |
| 49 | | | | | | | 48.9' NO RECOVERY | | | |
| | | | | | | | 50' | | | |
| REMARKS | | | | | | | | | | |
| | | | | | | | | | | |

Bentonite Grout

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 3/25/19

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: PMW-WV-7/MW-WV-7D



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: PMW-WV-7/MW-WV-7D
Page: 4 of 6
File No.: 16.0062677.81
Check: Leslie Nelson

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|--|---|---------|-------------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 51 | 26 | 24/15.6 | 50-52 | 1-1 2-2 | ND | Brown, fine to medium grained SAND, trace coarse grained Sand, trace Gravel, trace Silt, wet; with thin lenses of yellowish-brown, Silty Clay, moist. Changing at 51.3 feet to: NO RECOVERY. | SAND 51.3' NO RECOVERY | | | |
| 52 | 27 | 24/15.6 | 52-54 | 0-0 2-9 | ND | Brown, fine to medium grained SAND, trace coarse grained Sand, trace Gravel, trace Silt, wet. Changing at 53.2 feet to: Brown, GRAVEL and fine to coarse grained Sand, trace Silt, wet. Changing at 53.3 feet to: NO RECOVERY. | SAND 52' 53.2' 53.3' GRAVEL NO RECOVERY | | | |
| 54 | 28 | 24/10.8 | 54-56 | 1-1 2-3 | ND | Brown, fine to medium grained SAND, trace coarse grained Sand, trace Silt, wet. Changing at 54.9 feet to: NO RECOVERY. | SAND 54.9' NO RECOVERY | | | |
| 56 | 29 | 24/4.8 | 56-58 | 1-0 2-4 | ND | Brown, fine to medium grained SAND, trace coarse grained Sand, trace Gravel, trace Silt, wet. Changing at 56.3 feet to: Brown, GRAVEL, trace Silt, wet. Changing at 56.4 feet to: NO RECOVERY. | 56' 56.3' SAND 56.4' GRAVEL NO RECOVERY | | | |
| 58 | 30 | 24/13.2 | 58-60 | 1-2 2-3 | ND | Brown, fine to medium grained SAND, trace coarse grained Sand, trace Gravel, trace Silt, wet. Changing at 59.1 feet to: NO RECOVERY. | 58' SAND 59.1' NO RECOVERY | | | |
| 60 | 31 | 24/9.6 | 60-62 | 1-2 6-11 | ND | Brown, fine to medium grained SAND, trace coarse grained Sand, trace Gravel, trace Silt, wet. Changing at 60.8 feet to: NO RECOVERY. | 60' SAND 60.8' NO RECOVERY | | | |
| 62 | 32 | 24/18 | 62-64 | 1-4 7-11 | ND | Brown, fine to medium grained SAND, trace coarse grained Sand, trace Gravel, trace Silt, wet. Changing at 63.5 feet to: NO RECOVERY. | 62' SAND 63.5' NO RECOVERY | | | |
| 64 | 33 | 24/13.2 | 64-66 | 1-2 3-6 | ND | Brown, fine to medium grained SAND, trace coarse grained Sand, trace Gravel, trace Silt, wet. Changing at 65.1 feet to: NO RECOVERY. | 64' SAND 65.1' NO RECOVERY | | | |
| 66 | 34 | 24/16.8 | 66-68 | 2-3 5-8 | ND | Brown, fine to medium grained SAND, trace coarse grained Sand, trace Gravel, trace Silt, wet. Changing at 67.4 feet to: NO RECOVERY. | 66' SAND 67.4' | | | |
| REMARKS | | | | | | | | | | |
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BORING WELL 6267781 WWW.WOLVEN AVENUE.GPJ GZA CORP.GDT 3/25/19



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Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: PMW-WV-7/MW-WV-7D
Page: 5 of 6
File No.: 16.0062677.81
Check: Leslie Nelson

| Argonia Twp, Kent County, Michigan | | | | | | | | | | Check: Leslie Nelson | |
|---|--------------------|------------------|-------------|----------------|-----------|--|-------------------------------------|---------|-------------------------------|----------------------|--|
| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | | |
| 68 | 35 | 24/21.6 | 68-70 | 1-1 2-3 | ND | Brown, fine to medium grained SAND, trace coarse grained Sand, trace Gravel, trace Silt, wet. Changing at 69.8 feet to: NO RECOVERY. | NO 68' RECOVERY SAND | | | | |
| 69 | | | | | | | | | | | |
| 70 | 36 | 24/21.6 | 70-72 | 1-2 2-4 | ND | Brown, fine to medium grained SAND, trace coarse grained Sand, trace Gravel, trace Silt, wet. Changing at 71.8 feet to: NO RECOVERY. | 69.8' 70' NO RECOVERY SAND | | | | |
| 71 | | | | | | | | | | | |
| 72 | 37 | 24/12 | 72-74 | 1-0 0-1 | ND | Brown, fine to medium grained SAND, trace coarse grained Sand, trace Gravel, trace Silt, wet. Changing at 73.0 feet to: NO RECOVERY. | 71.8' 72' NO RECOVERY SAND | | | | |
| 73 | | | | | | | 73' NO RECOVERY | | | | |
| 74 | 38 | 24/15.6 | 74-76 | 2-3 4-9 | ND | Brown, fine to medium grained SAND, trace coarse grained Sand, trace Gravel, trace Silt, wet. Changing at 75.3 feet to: NO RECOVERY. | 74' SAND | | | | |
| 75 | | | | | | | 75.3' NO RECOVERY | | | | |
| 76 | 39 | 24/19.2 | 76-78 | 1-2 5-6 | ND | Brown, fine to medium grained SAND, trace coarse grained Sand, trace Gravel, trace Silt, wet. Changing at 77.2 feet to: Brown, fine to coarse grained SAND, some Gravel, trace Silt, wet. Changing at 77.6 feet to: NO RECOVERY. | 76' SAND | | | | |
| 77 | | | | | | | 77.6' NO RECOVERY | | | | |
| 78 | 40 | 24/12 | 78-80 | 2-1 4-5 | ND | Brown, fine to coarse grained SAND, some Gravel, trace Silt, wet. Changing at 79.0 feet to: NO RECOVERY. | 78' NO RECOVERY SAND | | | | |
| 79 | | | | | | | 79' NO RECOVERY | | | | |
| 80 | 41 | 24/24 | 80-82 | 2-3 5-18 | ND | Brown, fine to medium grained SAND, some Gravel, trace Silt, wet. | 80' SAND | | | | |
| 81 | | | | | | | | | | | |
| 82 | 42 | 24/10.8 | 82-84 | 7-11 15-27 | ND | Brown, GRAVEL, some fine to coarse grained SAND, wet. Changing at 82.9 feet to: NO RECOVERY. | 82' GRAVEL | | | | |
| 83 | | | | | | | 82.9' NO RECOVERY | | | | |
| 84 | 43 | 24/19.2 | 84-86 | 23-27 35-25 | ND | Yellowish-brown, GRAVEL, some Silty Sand, wet. Changing at 85.5 feet to: Yellowish-brown, GRAVEL, trace Silt, wet. | 84' GRAVEL | | | | |
| | | | | | | | | | | | |
| REMARKS | | | | | | | | | | | |
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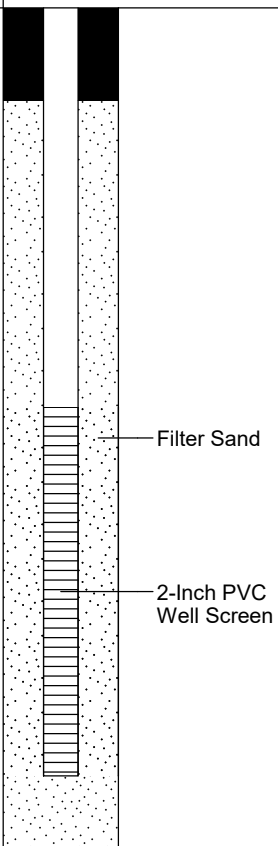
BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 3/25/19



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Wolverine World Wide
Wolver Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: PMW-WV-7/MW-WV-7D
Page: 6 of 6
File No.: 16.0062677.81
Check: Leslie Nelson

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------------------|-----------|--|---|--|--------------------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 86 | 44 | 24/8.4 | 86-88 | 6-8 19-29 | ND | Changing at 85.6 feet to: NO RECOVERY. Brown, fine to coarse grained SAND, some Gravel, trace Silt, wet. Changing at 86.7 feet to: NO RECOVERY. | 85.6' GRAVEL 86' NO RECOVERY 86.7' SAND NO RECOVERY |  | |
| 87 | | | | | | | | | |
| 88 | 45 | 24/24 | 88-90 | 3-4 10-17 | ND | Brown, fine to coarse grained SAND, some Gravel, trace Silt, wet. Changing at 88.8 feet to: Yellowish-brown, GRAVEL, trace Silt, wet. | 88' SAND 88.8' GRAVEL | | |
| 89 | | | | | | | | | |
| 90 | 46 | 24/7.2 | 90-92 | 14-35 40-50/5" | ND | Yellowish-brown, GRAVEL and fine to coarse grained SAND, little Silt, moist to wet. Changing at 90.6 feet to: NO RECOVERY. | 90.6' NO RECOVERY | | |
| 91 | | | | | | | | | |
| 92 | 47 | 24/14.4 | 92-94 | 4-8 12-10 | ND | Yellowish-brown, GRAVEL and fine to coarse grained SAND, little Silt, moist to wet. Changing at 93.0 feet to: Very dark grayish-brown, Silty CLAY, moist. Changing at 93.2 feet to: NO RECOVERY. | 92' GRAVEL 93' 93.2' CLAY NO RECOVERY | | |
| 93 | | | | | | | | | |
| 94 | 48 | 24/24 | 94-96 | 17-24 26-50 | ND | Very dark grayish-brown, Silty CLAY, moist. | 94' Silty CLAY | | |
| 95 | | | | | | | | | |
| 96 | | | | | | Bottom of Borehole at 96.0 Feet | 96' | 3 | |
| 97 | | | | | | | | | |
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| 101 | | | | | | | | | |
| 102 | | | | | | | | | |
| REMARKS 3. Monitoring well was installed in borehole upon completion. Well screen set from 90.2 to 95.0 feet below ground surface. | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: PMW-WV-7/MW-WV-7D |

BORING WELL 6267781 WWW.WOLVER AVENUE.GPJ GZA CORP.GDT 3/25/19



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Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-7M

Page: 1 of 2

File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry H.

Logged by: John Morehouse

Date Start/Finish: 3-18-19 / 3-18-19

Boring Location:

GS Elev.: Datum

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Direct Push

MacroCore

O.D. / I.D.: NA

2.25"

Hammer Wt.: NA

NA

Hammer Fall: NA

NA

Other: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------|----------|---|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | PROTECTIVE CASING |
| 1 | | | | | | See MW-WV7D boring log for soil descriptions. | | | | |
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Bentonite
Grout

Filter Sand
2-Inch PVC
Well Screen

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV-7M



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-7M
Page: 2 of 2
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | |
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| REMARKS | | | | | | | | | |
| 1. Monitoring well was installed in borehole upon completion. Well screen set from 50.0 to 55.0 feet below ground surface. | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |

Boring No.: MW-WV-7M

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/15/20



GZA
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Engineers and Scientists

Wolverine World Wide

Wolver Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV7S

Page: 1 of 1

File No.: 16.0062677.81

Check: Leslie Nelson

Contractor: Stearns Drilling Company

Foreman: Jerry Zach/Travis

Logged by: John Morehouse

Date Start/Finish: 10-25-18 / 10-25-18

Boring Location:

GS Elev.: Datum: NAD 83

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| NM | NM | NM | NM | NM |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See boring log PMW-WV-7/MW-WV-7D for soil descriptions. | | | | |
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| 21 | | | | | | | | | | |
| 22 | | | | | | Bottom of Borehole at 21.5 Feet | | 1 | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 15.7 to 20.5 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV7S

BORING WELL 6267781 WWW.WOLVERAVENUE.GPJ GZA CORP.GDT 3/25/19



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Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV8D

Page: 1 of 8

File No.: 16.0062677.81

Check: _____

Contractor: Stearns Drilling Company

Foreman: Burt Graham

Logged by: Christopher Melby

Date Start/Finish: / 5-9-18

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---------------------------------------|---------|---------------------|----------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | PROTECTIVE CASING | Concrete |
| 1 | 1 | 24/21 | 0-2 | 3-4 4-3 | | Dark, yellowish brown, moderately well sorted fine to medium grained SAND, little Silt, slightly cohesive, moist (FILL). Changing at 1.2 feet to: Yellowish brown with occasional dark grayish brown, moderately well sorted fine to medium grained SAND, little Silt, moist. | SAND (FILL) 1.2' SAND | | | |
| 2 | 2 | 24/14 | 2-4 | 1-1 1-3 | | Yellowish brown, well sorted fine to medium grained SAND, trace Silt, moist. | | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/17 | 4-6 | 1-2 2-2 | | Yellowish brown, well sorted fine to medium grained SAND, trace Silt, moist. | | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/17 | 6-8 | 2-3 2-3 | | Yellowish brown, well sorted fine to medium grained SAND, trace Silt, moist. | | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/24 | 8-10 | 3-2 3-4 | | Yellowish brown, well sorted fine to medium grained SAND, trace Silt, moist. | | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/19 | 10-12 | 4-4 4-4 | | Yellowish brown, well sorted fine to medium grained SAND, trace Silt, moist. Changing at 11.2 feet to: Brown tho yellowish brown, moderately sorted CLAY & SILT, little Sand, plastic, cohesive, moist. | 11.2' 11.4' CLAY & SILT SAND | | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/19 | 12-14 | 1-5 5-5 | | Brown to yellowish brown, moderately sorted CLAY & SILT, little Sand, plastic, cohesive, moist. Changing at 13.0 feet to: Brown to yellowish brown, very well sorted SILT, cohesive, non plastic, moist. | 13' 13.2' SILT SAND | | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/21 | 14-16 | 3-4 5-7 | | Brown to yellowish brown, very well sorted SILT, cohesive, non plastic, moist. Changing at 15.3 feet to: Pale brown to | | | | |

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV8D

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV8D
Page: 2 of 8
File No.: 16.0062677.81
Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|--------------|-----------|--|-------------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 16 | 9 | 24/17 | 16-18 | 2-3 7-7 | | brown, moderately sorted, fine to coarse grained SAND, trace Silt, moist. Pale brown to light yellowish brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 17 feet o: | SAND | | | |
| 17 | | | | | | Yellowish brown, well sorted, CLAY & SILT, trace Sand, plastic, cohesive, moist. Changing at 17.1 feet o: Pale brown to light yellowish brown, very well sorted, fine to medium grained SAND, trace Silt, moist. | 17' CLAY & SILT SAND | | | |
| 18 | 10 | 24/20 | 18-20 | 5-5 6-7 | | Pale brown to light yellowish brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Pale brown to light yellowish brown, very well sorted, fine to medium grained SAND, trace Silt, moist. | | | | |
| 19 | | | | | | | | | | |
| 20 | 11 | 24/20 | 20-22 | 7-7 8-10 | | Pale brown to light yellowish brown, very well sorted, fine to medium grained SAND, trace Silt, moist. Changing at 21.1 feet to: | | | | |
| 21 | | | | | | Pale brown to brown, moderately well sorted, fine to coarse grained SAND, trace Silt, moist. | | | | |
| 22 | 12 | 24/19 | 22-24 | 4-7 9-12 | | Pale brown to brown, moderately well sorted, fine to coarse grained SAND, trace Silt, moist. Changing at 23.3 feet to: | | | | |
| 23 | | | | | | Yellowish brown to brown, moderately sorted, fine to coarse grained SAND, some Gravel, trace Silt, moist to wet. | | 1 | | |
| 24 | 13 | 24/14 | 24-26 | 11-12 8-9 | | Yellowish brown to brown, moderately sorted, fine to coarse grained SAND, some Gravel, trace Silt, moist to wet. | | | | |
| 25 | | | | | | | | | | |
| 26 | 14 | 24/20 | 26-28 | 3-4 6-7 | | Brown to dark brown, poorly sorted, medium to coarse grained SAND, some Gravel, trace Silt, wet; grains finer. | | | | |
| 27 | | | | | | | | | | |
| 28 | 15 | 24/19 | 28-30 | 4-4 7-8 | | Brown to dark brown, moderately well sorted, fine to medium SAND, trace Silt, wet. | | | | |
| 29 | | | | | | | | | | |
| 30 | 16 | 24/19 | 30-32 | 3-5 5-8 | | Brown to dark brown, moderately well sorted, fine to medium SAND, trace Silt, wet. Changing at 30.5 feet to: Brown, poorly sorted, coarse grained SAND, some Gravel, trace Silt, wet. Changing at 30.6 feet to: | | | | |
| 31 | | | | | | Brown to dark brown, moderately well sorted, fine to medium SAND, trace Silt, wet. | | | | |
| 32 | 17 | 24/14 | 32-34 | 6-5 7-6 | | | | | | |
| <div style="display: flex;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold; margin-right: 10px;">REMARKS</div> <div> <p>1. Groundwater was encountered at approximately 23.3 feet below ground surface.</p> </div> </div> | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV8D | |

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV8D
Page: 3 of 8
File No.: 16.0062677.81
Check:

| Sample Information | | | | | | Algonia Twp, Kent County, Michigan | | Check: | | |
|--------------------|-----|------------------|-------------|-------------|-----------|---|---------------|---------|---------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 33 | 18 | 24/18 | 34-36 | 1-2 2-5 | | Brown to dark brown, moderately well sorted, fine to medium SAND, trace Silt, wet. Changing at 33.2 feet to: Brown, well sorted, fine to medium grained SAND, trace Silt, wet. | SAND | | | |
| 34 | | | | | | Brown, well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 34.3 feet to: Brown, poorly sorted, fine to coarse grained SAND, little Gravel, trace Silt, wet. | | | | |
| 35 | | | | | | Changing at 34.4 feet to: Brown, well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 34.8 feet to: Brown, poorly sorted, fine to coarse grained SAND, little Gravel trace Silt, wet. Changing at 35.5 feet to: Brown, well sorted, fine to medium grained SAND, trace Silt, wet. | | | | |
| 36 | 19 | 24/18 | 36-38 | 5-7 9-10 | | Brown, well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 36.2 feet to: Dark brown, poorly sorted, medium to coarse grained SAND, some Gravel, trace Silt, wet. | | | | |
| 37 | | | | | | Dark brown, poorly sorted, medium to coarse grained SAND, some Gravel, trace Silt, wet. | | | | |
| 38 | | | | | | | | | | |
| 39 | 20 | 24/21 | 38-40 | 7-7 8-9 | | | | | | |
| 40 | | | | | | | | | | |
| 41 | | | | | | | | | | |
| 42 | 21 | 24/12 | 40-42 | 6-6 6-6 | | Brown, well sorted, fine to medium grained SAND, trace Silt, wet. | | | | |
| 43 | | | | | | | | | | |
| 44 | | | | | | | | | | |
| 45 | 22 | 24/2 | 42-44 | 1-1 1-1 | | Brown, well sorted, fine to medium grained SAND, trace Silt, wet. | | | | |
| 46 | | | | | | | | | | |
| 47 | | | | | | | | | | |
| 48 | 23 | 24/14 | 44-46 | 3-5 6-9 | | Brown, well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 44.5 feet to: Dark brown, poorly sorted, medium to coarse grained SAND, some Gravel, trace Silt, wet. Changing at 44.6 feet to: Brown, well sorted, fine to medium grained SAND, trace Silt, wet. | | | | |
| 49 | | | | | | Dark yellowish brown, moderately well sorted, fine to coarse grained SAND, little Gravel, trace Silt, wet; grading coarser. | | | | |
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| 50 | 24 | 24/15 | 46-48 | 2-4 6-6 | | | | | | |
| 51 | | | | | | | | | | |
| 52 | | | | | | | | | | |
| 53 | 25 | 24/12 | 48-50 | 4-7 6-7 | | Dark yellowish brown, moderately well sorted, fine to coarse grained SAND, little Gravel, trace Silt, wet; grading coarser. | | | | |
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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV8D
Page: 4 of 8
File No.: 16.0062677.81
Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-----------------|-----------|--|---|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 51 | 26 | 24/24 | 50-52 | 3-10 15-18 | | Brown, moderately well sorted, fine to coarse grained SAND, little Silt, trace Gravel, trace Silt, wet. Changing at 51.9 feet to: Brown, poorly sorted, fine to coarse SAND, little Silt, trace Gravel, moist to wet. | SAND | | | |
| 52 | 27 | 24/7 | 52-54 | 3-7-50/4" | | Dark brown, poorly sorted, medium to coarse grained SAND, some Gravel, trace Silt, wet. Changing at 52.6 feet to: Brown, moderately well sorted, fine to coarse SAND, trace Gravel, trace Silt, wet. | | | | |
| 54 | 28 | 24/24 | 54-56 | 4-7 23-50 | | Brown, moderately well sorted, fine to coarse SAND, trace Gravel, trace Silt, wet. Changing at 55.2 feet to: Yellowish brown to dark yellowish brown, very well sorted, fine grained SAND, some Silt, bedded, wet. Changing at 55.7 feet to: Brown, very well sorted, SILT, little fine grained Sand, moderately cohesive, wet; grades coarser. | 55.7' 56' SILT SAND | | | |
| 56 | 29 | 24/14 | 56-58 | 4-17-50/6" | | Yellowish brown, very well sorted, fine grained SAND and Silt, moderately cohesive, wet. Yellowish brown, very well sorted, fine grained SAND and Silt, moderately cohesive, wet. | | | | |
| 58 | 30 | 24/23 | 58-60 | 16-27 33-45 | | Yellowish brown, very well sorted, fine grained SAND and Silt, moderately cohesive, wet. Changing at 58.5 feet to: Yellowish brown, very well sorted, SILT, moderately cohesive, non plastic, wet. Changing at 58.6 feet to: Yellowish brown, very well sorted, fine grained SAND and Silt, moderately cohesive, wet. | 58.5' 58.6' SILT SAND | | | |
| 60 | 31 | 24/9 | 60-62 | 5-8 38-50/3" | | Yellowish brown, very well sorted, fine grained SAND and Silt, moderately cohesive, wet. | | | | |
| 62 | 32 | 24/13 | 62-64 | 3-14 42-41 | | Yellowish brown, very well sorted, fine grained SAND and Silt, moderately cohesive, wet. | | | | |
| 64 | 33 | 24/11 | 64-66 | 38-50/4.5" | | Yellowish brown, very well sorted, fine grained SAND and Silt, moderately cohesive, wet. Changing at 64.5 feet to: Light yellowish brown, very well sorted, SILT, moderately cohesive, non plastic, wet. Changing at 64.7 feet to: Light yellowish brown, well sorted, SILT & CLAY, slightly plastic, moderately cohesive, moist. Changing at 64.9 feet to: Yellowish brown, very well sorted, fine grained SAND and Silt, moderately cohesive, wet. | 64.5' 64.7' SILT 64.9' SILT & CLAY SAND 66' 66.5' SILT SAND | | | |
| 66 | 34 | 24/9 | 66-68 | 4-15 34-40 | | | | | | |
| 67 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV8D | |

BORING WELL 6267781 WWW.WOLVEN AVENUE.GPJ GZA CORP.GDT 8/1/18

Bentonite Grout



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GeoEnvironmental, Inc.
Engineers and Scientists

Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV8D
Page: 5 of 8
File No.: 16.0062677.81
Check:

| Sample Information | | | | | | Check: | | | | | | | |
|---|-----|------------------|-------------|------------------|---|---|---------------|---------|---------------------|--|---------------------|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | | | |
| | | | | | | | | | | | | | |
| 68 | 35 | 24/11 | 68-70 | 8-14 44-50/4" | | Grayish brown very well sorted, SILT, trace fine grained Sand, cohesive, non plastic, bedded, moist. Changing at 66.5 feet to: Grayish brown, very well sorted, fine grained SAND, trace Silt, moist. | SAND | | | | | | |
| 69 | | | | | | | | | | | | | |
| 70 | 36 | 24/9 | 70-72 | 49-50/4" | Grayish brown, very well sorted, fine grained SAND, trace Silt, moist. Changing at 68.3 feet to: Grayish brown, moderately sorted, fine to medium SAND, some Silt, trace Gravel, slightly cohesive, moist to wet. | 70' SILT & CLAY | | | | | | | |
| 71 | | | | | | | | | | | | | |
| 72 | 37 | 24/24 | 72-74 | 8-10 20-29 | Dark grayish brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. | 72' CLAY & SILT | | | | | | | |
| 73 | | | | | | | | | | | | | |
| 74 | 38 | 24/24 | 74-76 | 13-24 35-45 | Hard, brown, Clayey SILT, some medium Sand, trace Gravel (embedded in Clayey SILT), wet. | 74' Clayey SILT | | | | | | | |
| 75 | | | | | | | | | | | | | |
| 76 | | | | | | | | | | | | | |
| 77 | | | | | | | | | | | | | |
| 78 | | | | | | | | | | | | | |
| 79 | 39 | 24/24 | 79-81 | 6-13 27-41 | Hard, brown, Clayey SILT, some medium Sand (embedded in Clayey Silt), wet. | | | | | | | | |
| 80 | | | | | | | | | | | | | |
| 81 | | | | | | | | | | | | | |
| 82 | | | | | | | | | | | | | |
| 83 | | | | | | | | | | | | | |
| 84 | 40 | 24/18 | 84-86 | 2-2 5-6 | Medium stiff, brown, Clayey SILT, some medium Sand, wet. | | | | | | | | |
| | | | | | | | | | | | | | |
| REMARKS | | | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | | Boring No.: MW-WV8D | | |

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolverine World Wide
Wolver Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV8D
Page: 6 of 8
File No.: 16.0062677.81
Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|--|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 86 | | | | | | | Clayey SILT | | | |
| 87 | | | | | | | | | | |
| 88 | | | | | | | | | | |
| 89 | 41 | 24/24 | 89-91 | 9-16 44-45 | | Hard, brown, Clayey SILT, some medium Sand, wet. | | | | |
| 90 | | | | | | | | | | |
| 91 | | | | | | | | | | |
| 92 | | | | | | | | | | |
| 93 | | | | | | | | | | |
| 94 | 42 | 24/24 | 94-96 | 8-16 30-55 | | Hard, brown, Clayey SILT, some medium Sand, wet. | | | | |
| 95 | | | | | | | | | | |
| 96 | | | | | | | | | | |
| 97 | | | | | | | | | | |
| 98 | | | | | | | | | | |
| 99 | 43 | 24/24 | 99-101 | 8-19 34-42 | | Hard, brown, Clayey SILT, some medium Sand, wet. | | | | |
| 100 | | | | | | | | | | |
| 101 | | | | | | | | | | |
| 102 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV8D | |

BORING WELL 6267781 WWW.WOLVER AVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolverine World Wide
Wolver Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV8D
Page: 7 of 8
File No.: 16.0062677.81
Check:

| Sample Information | | | | | | Check: | | | | | |
|---|-----|------------------|-------------|-----------------|-----------|---|---------------|---------|---------------------|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | | | | | | | | | | | |
| 103 | 44 | 24/24 | 104-106 | 6-14 20-20 | | Hard, brown, Clayey SILT, some medium to coarse Sand, wet. Changing at 105.0 feet to: Brown, fine to medium SAND, little Silt, wet. | Clayey SILT | | | | |
| 104 | | | | | | | | | | | |
| 105 | | | | | | | 105' SAND | | | | |
| 106 | | | | | | | | | | | |
| 107 | 45 | 24/20 | 109-111 | 7-10 15-37 | | Medium dense, brown, fine to coarse SAND, little Silt, wet. | | | | | |
| 108 | | | | | | | | | | | |
| 109 | | | | | | | | | | | |
| 110 | | | | | | | | | | | |
| 111 | 46 | 22/22 | 114-115.8 | 3-5 24-50/4" | | Medium dense, brown, fine to medium SAND, trace Silt, wet. | | | | | |
| 112 | | | | | | | | | | | |
| 113 | | | | | | | | | | | |
| 114 | | | | | | | | | | | |
| 115 | 47 | 11/11 | 119-119.9 | 6-63/5" | | Very dense, brown, fine to medium SAND, trace Silt, wet. Changing at 119.6 feet to: Very dense, gray, fine to medium SAND and | | | | | |
| 116 | | | | | | | | | | | |
| 117 | | | | | | | | | | | |
| 118 | | | | | | | | | | | |
| 119 | | | | | | | | | | | |
| REMARKS | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV8D | | |

BORING WELL 6267781 WWW.WOLVERAVENUE.GPJ GZA CORP.GDT 8/1/18

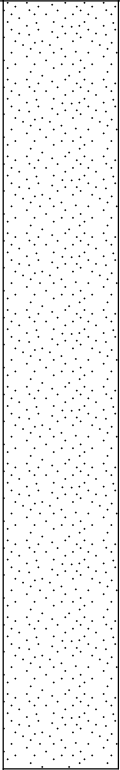
Filter Sand
2-Inch PVC Well Screen



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV8D
Page: 8 of 8
File No.: 16.0062677.81
Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|---------------------|---------|--|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 121 | 48 | 6/6 | 121-121.5 | 74 | | Silt, wet. | SAND | 2 |  | |
| 122 | | | | | | Very dense, gray, fine to medium SAND and Silt, wet. | | | | |
| 123 | | | | | | | | | | |
| 124 | 49 | 9/9 | 124-124.8 | 35-50/3" | | Very dense, gray, fine to medium SAND and Silt. | | | | |
| 125 | | | | | | | | | | |
| 126 | | | | | | | | | | |
| 127 | | | | | | | | | | |
| 128 | | | | | | | | | | |
| 129 | 50 | 16/16 | 129-130.3 | 17-42-50/4" | | Hard, gray, SILT & CLAY, some fine to medium Sand, wet. | 129' SILT & CLAY | | | |
| 130 | | | | | | Bottom of Borehole at 130.3 Feet | 130.3' | 3 | | |
| 131 | | | | | | | | | | |
| 132 | | | | | | | | | | |
| 133 | | | | | | | | | | |
| 134 | | | | | | | | | | |
| 135 | | | | | | | | | | |
| 136 | | | | | | | | | | |
| 137 | | | | | | | | | | |
| REMARKS 2. Auger advancement slows at 120.0 fee below ground surface. Harder material. Collected in spoon. 3. Monitoring well was installed in borehole upon completion. Well screen set from 115.0 to 120.0 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV8D | |

BORING WELL 6267781 WWW.WOLVEN AVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV8M

Page: 1 of 2

File No.: 16.0062677.81

Check:

Contractor: Stearns Drilling Company

Foreman: Burt Graham

Logged by: Christopher Melby

Date Start/Finish: 5-9-18 / 5-10-18

Boring Location:

GS Elev.: Datum:

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | | | | | | See MW-WV8D boring log for soil descriptions from 0.0 to 63.0 feet. | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV8M

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV8M
Page: 2 of 2
File No.: 16.0062677.81
Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|-------|--------------------|------------------|-------------|-------------|-----------|--|---------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 37 | | | | | | | | | |
| 38 | | | | | | | | | |
| 39 | | | | | | | | | |
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| 60 | | | | | | | | | |
| 61 | | | | | | | | | |
| 62 | | | | | | | | | |
| 63 | S-1 | 24/24 | 63-65 | 15-23 | | Very dense, brown, fine to medium SAND, trace Silt, wet. | SAND | | |
| 64 | | | | 36-51 | | | | | |
| 65 | | | | | | Bottom of Borehole at 65.0 Feet | 65' | 1 | |
| 66 | | | | | | | | | |
| 67 | | | | | | | | | |
| 68 | | | | | | | | | |
| 69 | | | | | | | | | |
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| 77 | | | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 60.0 to 65.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV8M

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 8/1/18

Filter Sand
2-Inch PVC Well Screen



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Wolverine World Wide

Wolver Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV8S

Page: 1 of 1

File No.: 16.0062677.81

Check: _____

Contractor: Stearns Drilling Company

Foreman: Burt Graham

Logged by: Christopher Melby

Date Start/Finish: 5-9-18 / 5-9-18

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | | | | | | See MW-WV8D boring log for soil descriptions from 0.0 to 33.0 feet. | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
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| 30 | | | | | | | | | | |
| 31 | | | | | | | | | | |
| 32 | | | | | | | | | | |
| 33 | S-1 | 24/12 | 33-35 | 2-3 | | Loose, brown and gray, fine to coarse SAND, trace Silt. | SAND | | | |
| 34 | | | | 4-6 | | | | | | |
| 35 | | | | | | Bottom of Borehole at 35.0 Feet | 35' | 1 | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 30.0 to 35.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV8S

BORING WELL 6267781 WWW.WOLVERAVENUE.GPJ GZA CORP.GDT 8/1/18



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Wolverine World Wide

Wolver Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV9D

Page: 1 of 8

File No.: 16.0062677.81

Check: _____

Contractor: Stearns Drilling Company

Foreman: Jerry Zach/Travis

Logged by: John Morehouse

Date Start/Finish: _____

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|--|---------------|---------|---------------------|-----------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | PROTECTIVE CASING | |
| 1 | 1 | 24/21 | 0-2 | 2-2 2-3 | | Very dark grayish brown, moderately well sorted, SILT, some fine to medium grained Sand, trace Gravel, moist. | SILT | | | |
| 2 | 2 | 24/19 | 2-4 | 2-1 1-1 | | Dark yellowish brown, poorly sorted, fine grained SAND, some Silt, trace Clay, slightly plastic, moderately cohesive, moist. | 2' SAND | | | Sand |
| 3 | 3 | 24/20 | 4-6 | 3-2 2-3 | | Yellowish brown, well sorted, fine to medium grained SAND, trace Silt, moist. | | | | Hole Plug |
| 4 | 4 | 24/17 | 6-8 | 2-2 2-3 | | Yellowish brown, well sorted, fine to medium grained SAND, trace Silt, moist. | | | | |
| 5 | 5 | 24/18 | 8-10 | 2-3 2-2 | | Yellowish brown, well sorted, fine to medium grained SAND, trace Silt, moist. | | | | |
| 6 | 6 | 24/23 | 10-12 | 2-2 3-3 | | Yellowish brown, well sorted, fine to medium grained SAND, trace Silt, moist. | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV9D

BORING WELL 6267781 WWW.WOLVER AVENUE.GPJ GZA CORP.GDT 8/1/18



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GeoEnvironmental, Inc.
Engineers and Scientists

Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV9D
Page: 2 of 8
File No.: 16.0062677.81
Check:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|--|------------------------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 13 | 7 | 24/17 | 12-14 | 3-4 5-4 | | Pale brown, well sorted, fine to medium grained SAND, bedded, moist. | SAND | | | |
| 14 | 8 | 24/19 | 14-16 | 3-4 5-5 | | Pale brown, well sorted, fine to medium grained SAND, bedded, moist. | | | | |
| 16 | 9 | 24/23 | 16-18 | 3-7 7-7 | | Pale brown, well sorted, fine to medium grained SAND, bedded, moist. | | | | |
| 18 | 10 | 24/17 | 18-20 | 3-4 6-7 | | Pale brown, well sorted, fine to medium grained SAND, bedded, moist. | | | | |
| 20 | 11 | 24/23 | 20-22 | 3-5 5-7 | | Pale brown, well sorted, fine to medium grained SAND, bedded, moist. Changing at 21.2 feet to: Yellowish brown, very well sorted, SILT & CLAY, moderately plastic, moderately cohesive, moist. Changing at 21.3 feet to: Pale brown grading to very pale brown, well sorted, fine to medium grained SAND, bedded, moist. | 21.2' 21.3' SILT & CLAY SAND | | | |
| 22 | 12 | 24/17 | 22-24 | 8-13 17-22 | | Pale brown grading to very pale brown, well sorted, fine to medium grained SAND, bedded, moist. | | | | |
| 24 | 13 | 24/23 | 24-26 | 15-20 18-21 | | Pale brown grading to very pale brown, well sorted, fine to medium grained SAND, bedded, moist. Changing at 25.1 feet to: Yellowish brown, moderately sorted, fine to coarse grained SAND, some Silt, trace Clay, trace Gravel, slightly to moderately plastic, cohesive, moist. | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV9D | |

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| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 27 | 14 | 24/23 | 26-28 | 6-11 14-17 | | Yellowish brown, moderately sorted, fine to coarse grained SAND, some Silt, trace Clay, trace Gravel, slightly to moderately plastic, cohesive, moist. | SAND | | | |
| 28 | 15 | 24/22 | 28-30 | 10-18 17-18 | | Yellowish brown, moderately sorted, fine to coarse grained SAND, some Silt, trace Clay, trace Gravel, slightly to moderately plastic, cohesive, moist. | | | | |
| 30 | 16 | 24/18 | 30-32 | 11-16 19-22 | | Yellowish brown, moderately sorted, fine to coarse grained SAND, some Silt, trace Clay, trace Gravel, slightly to moderately plastic, cohesive, moist. | | | | |
| 32 | 17 | 24/23 | 32-34 | 11-14 15-16 | | Yellowish brown, moderately sorted, fine to coarse grained SAND, some Silt, trace Clay, trace Gravel, slightly to moderately plastic, cohesive, moist. Changing at 32.6 feet to: Yellowish brown to brown, very well sorted, fine grained SAND, trace Silt, moist to wet. Changing at 33.2 feet to: Yellowish brown, moderately sorted, fine to coarse grained SAND, some Silt, trace Clay, trace Gravel, slightly to moderately plastic, cohesive, moist. | | | | |
| 34 | 18 | 24/24 | 34-36 | 13-17 21-25 | | Yellowish brown, moderately sorted, fine to coarse grained SAND, some Silt, trace Clay, trace Gravel, slightly to moderately plastic, cohesive, moist. | | | | |
| 36 | 19 | 24/24 | 36-38 | 8-12 22-24 | | Yellowish brown, moderately sorted, fine to coarse grained SAND, some Silt, trace Clay, trace Gravel, slightly to moderately plastic, cohesive, moist. | | | | |
| 38 | 20 | 24/23 | 38-40 | 17-18 23-25 | | Yellowish brown, moderately sorted, fine to coarse grained SAND, some Silt, trace Clay, trace Gravel, slightly to moderately plastic, cohesive, moist. | 38' CLAY & SILT | | | |
| REMARKS | | | | | | | | | | |
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| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 41 | 21 | 24/19 | 40-42 | 6-13 21-28 | | Yellowish brown, moderately sorted, fine to coarse grained SAND, some Silt, trace Clay, trace Gravel, slightly to moderately plastic, cohesive, moist. | CLAY & SILT | | Bentonite Grout | |
| 42 | 22 | 24/19 | 42-44 | 5-11 17-20 | | Yellowish brown, moderately sorted, fine to coarse grained SAND, some Silt, trace Clay, trace Gravel, slightly to moderately plastic, cohesive, moist. | | | | |
| 43 | | | | | | | | | | |
| 44 | 23 | 24/22 | 44-46 | 7-15 20-23 | | Yellowish brown, moderately sorted, fine to coarse grained SAND, some Silt, trace Clay, trace Gravel, slightly to moderately plastic, cohesive, moist. | | | | |
| 45 | | | | | | | | | | |
| 46 | 24 | 24/20 | 46-48 | 5-6 9-13 | | Yellowish brown, moderately sorted, fine to coarse grained SAND, some Silt, trace Clay, trace Gravel, slightly to moderately plastic, cohesive, moist. Changing at 46.3 feet to: Brown, well sorted, fine to medium grained SAND, trace Silt, moist to wet. | 46.3' SAND | | | |
| 47 | | | | | | Changing at 46.9 feet to: Dark grayish brown, moderately sorted, CLAY & SILT, some Sand, trace Gravel, slightly to moderately plastic, cohesive, moist. | 46.9' CLAY & SILT | | | |
| 48 | 25 | 24/24 | 48-50 | 8-16 24-30 | | Dark grayish brown, moderately sorted, CLAY & SILT, some Sand, trace Gravel, slightly to moderately plastic, cohesive, moist. | | | | |
| 49 | | | | | | | | | | |
| 50 | 26 | 24/11 | 50-52 | 5-11 19-25 | | Dark grayish brown, moderately sorted, CLAY & SILT, some Sand, trace Gravel, slightly to moderately plastic, cohesive, moist. | | | | |
| 51 | | | | | | | | | | |
| 52 | 27 | 24/24 | 52-54 | 7-17 23-32 | | Dark grayish brown, moderately sorted, CLAY & SILT, some Sand, trace Gravel, slightly to moderately plastic, cohesive, moist. | | | | |
| 53 | | | | | | | | | | |
| REMARKS Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

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|---|--------------------|------------------|-------------|----------------|-----------|---|------------------------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 55 | 28 | 24/24 | 54-56 | 7-16 25-26 | | Dark grayish brown, moderately sorted, CLAY & SILT, some Sand, trace Gravel, slightly to moderately plastic, cohesive, moist. Changing at 55.5 feet to: Brown, poorly sorted, fine to coarse grained SAND, little Gravel, little Silt, moist to wet. | CLAY & SILT | | | |
| 56 | 29 | 24/24 | 56-58 | 5-13 19-25 | | Changing at 55.6 feet to: Dark grayish brown, moderately sorted, CLAY & SILT, some Sand, trace Gravel, slightly to moderately plastic, cohesive, moist. Dark grayish brown, moderately sorted, CLAY & SILT, some Sand, trace Gravel, slightly to moderately plastic, cohesive, moist. | 55.5' 55.6' SAND CLAY & SILT | | | |
| 58 | 30 | 24/24 | 58-60 | 9-15 31-43 | | Dark grayish brown, moderately sorted, CLAY & SILT, some Sand, trace Gravel, slightly to moderately plastic, cohesive, moist. Changing at 59.5 feet to: Dark yellowish brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, moist. Changing at 59.7 feet to: Yellowish brown, well sorted, SILT, trace Sand, non plastic, moderately cohesive, moist. | 59.7' 60' SILT CLAY & SILT | | | |
| 60 | 31 | 24/24 | 60-62 | 11-15-50/5" | | Dark grayish brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, moist. Changing at 60.6 feet to: Brown, poorly sorted, fine to medium grained SAND, little Silt, trace Clay, soft, moist to wet. Changing at 60.7 feet to: Dark yellowish brown grading to dark grayish brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, moist. | 60.6' 60.7' SAND CLAY & SILT | | | |
| 62 | 32 | 24/24 | 62-64 | 5-13 23-22 | | Dark yellowish brown grading to dark grayish brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, moist. Changing at 62.4 feet to: Dark yellowish brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, moist. Changing at 62.7 feet to: Brown, poorly sorted, fine to medium grained, SAND, little Silt, trace Clay, slightly plastic, moist to wet. Changing at 62.8 feet to: Dark yellowish brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, moist. Changing at 63.5 feet to: Dark grayish brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, grades softer, moist. | 62.7' 62.8' SAND CLAY & SILT | | | |
| 64 | 33 | 24/24 | 64-66 | 8-16 30-45 | | Dark grayish brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, grades softer, moist. | | | | |
| 66 | 34 | 24/24 | 66-68 | 13-23 32-35 | | Dark grayish brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, grades softer, moist. | | | | |
| 67 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 69 | 35 | 24/24 | 68-70 | 11-18 24-32 | | Dark grayish brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, grades softer, moist. | CLAY & SILT | | | |
| 70 | 36 | 24/24 | 70-72 | 12-10 11-18 | | Dark grayish brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, grades softer, moist. | | | | |
| 71 | | | | | | | | | | |
| 72 | 37 | 24/24 | 72-74 | 12-14 17-20 | | Dark grayish brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, grades softer, moist. | | | | |
| 73 | | | | | | | | | | |
| 74 | 38 | 24/11 | 74-76 | 0-2 3-5 | | Yellowish brown, moderately sorted, fine to coarse grained SAND, little Silt trace Gravel, moist to wet. | 74' SAND | | | |
| 75 | | | | | | | | | | |
| 76 | 39 | 24/15 | 76-78 | 8-15 23-26 | | Yellowish brown, moderately sorted, fine to coarse grained SAND, little Silt trace Gravel, moist to wet. Changing at 76.9 feet to: | | | | |
| 77 | | | | | | Yellowish brown, moderately well sorted, fine to medium grained SAND, little Silt, moderately cohesisve, moist to wet. | | 1 | | |
| 78 | 40 | 24/15 | 78-80 | 8-20 29-37 | | Yellowish brown, moderately well sorted, fine to medium grained SAND, little Silt, moderately cohesisve, moist to wet. | | | | |
| 79 | | | | | | | | | | |
| 80 | 41 | 24/9 | 80-82 | 14-33-50/3" | | Yellowish brown, moderately well sorted, fine to medium grained SAND, little Silt, moderately cohesisve, moist to wet. | | | | |
| 81 | | | | | | | | | | |
| <div>REMARKS</div> <div>1. Groundwater was encountered at approximately 76.9 feet below ground surface.</div> | | | | | | | | | | |
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|---|--------------------|------------------|-------------|------------------|-----------|---|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 82 | 42 | 24/3 | 82-84 | 21-44-50/3" | | Yellowish brown, moderately well sorted, fine to medium grained SAND, little Silt, moderately cohesive, moist to wet. | SAND | | | |
| 83 | | | | | | | | | | |
| 84 | 43 | 24/8 | 84-86 | 50/5" | | Yellowish brown, poorly sorted, fine to medium grained SAND, little Silt, trace Gravel, trace Clay, non to slightly plastic, slightly cohesive, moist to wet. | | | | |
| 85 | | | | | | | | | | |
| 86 | 44 | 24/7 | 86-88 | 12-35-50/6" | | Yellowish brown, poorly sorted, fine to medium grained SAND, little Silt, trace Gravel, trace Clay, non to slightly plastic, slightly cohesive, moist to wet. | | | | |
| 87 | | | | | | | | | | |
| 88 | 47 | 24/7 | 88-90 | 21-50/3" | | Light yellowish brown to pale brown, very well sorted, fine to medium grained SAND, trace Silt, wet. | | | | |
| 89 | | | | | | | | | | |
| 90 | 48 | 24/2 | 90-92 | 13-34-50/3" | | Yellowish brown, poorly sorted, fine to medium grained SAND, little Silt, trace Gravel, trace Clay, non to slightly plastic, slightly cohesive, moist to wet. | | | | |
| 91 | | | | | | | | | | |
| 92 | 49 | 24/17 | 92-94 | 5-14 30-50/3" | | Yellowish brown, poorly sorted, fine to medium grained SAND, little Silt, trace Gravel, trace Clay, non to slightly plastic, slightly cohesive, moist to wet. | | | | |
| 93 | | | | | | | | | | |
| 94 | 50 | 24/13 | 94-96 | 35-34 32-30 | | Light yellowish brown to pale brown, very well sorted, fine to medium grained SAND, trace Silt, occasional very thin Silt seams, wet. | | | | |
| 95 | | | | | | | | | | |
| <div>REMARKS</div> <div>Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.</div> | | | | | | | | | | |
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Filter Sand
2-Inch PVC Well Screen



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| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 97 | 51 | 24/24 | 96-98 | 7-12 9-11 | | Light yellowish brown to pale brown, very well sorted, fine to medium grained SAND, trace Silt, occasional very thin Silt seams, wet. Changing at 96.6 feet to: Dark grayish brown, poorly sorted, SILT & CLAY, little Sand, trace Gravel, slightly plastic, moderately cohesive, moist. Changing at 96.8 feet to: Light yellowish brown to pale brown, very well sorted, fine to medium grained SAND, trace Silt, wet. Changing at 97.3 feet to: Dark grayish brown, poorly sorted, medium to coarse grained SAND, trace Gravel, trace Silt, wet. Changing at 97.8 feet to: Dark grayish brown, poorly sorted, medium to coarse grained SAND, trace Gravel, moderately plastic, cohesive, hard, moist. | SAND 96.6' 96.8' SILT & CLAY SAND 97.8' SILT & CLAY | 2 | |
| 98 | 52 | 24/15 | 98-100 | 8-16 21-28 | | Dark grayish brown, poorly sorted, medium to coarse grained SAND, trace Gravel, moderately plastic, cohesive, hard, moist. Bottom of Borehole at 100.0 Feet | 100' | | |
| 99 | | | | | | | | | |
| 100 | | | | | | | | | |
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| 109 | | | | | | | | | |
| <div>REMARKS</div> <div>2. Monitoring well was installed in borehole upon completion. Well screen set from 92.3 to 97.3 feet below ground surface.</div> | | | | | | | | | |
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Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry H.

Logged by: John Morehouse

Date Start/Finish: 3-5-19 / 3-13-19

Boring Location:

GS Elev.: Datum

Auger/

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 12.25" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: NA 140lbs

Hammer Fall: NA 30.0"

Other: NA NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------|-------|--|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | PROTECTIVE CASING |
| 1 | | | | | | See MW-WV-10S for soil descriptions from 0.0 to 78.8 feet. | BLIND DRILL | 1 | | |
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REMARKS

1. Blind drilled from 0.0 to 78.0 feet below ground surface.

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|---|--------------------|------------------|-------------|----------|----------|---|-------------------------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 41 | | | | | | | BLIND DRILL | | | |
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| 77 | | | | | | | | | | |
| 78 | 1 | 24/22 | 78-80 | 11-24 | 2.3 ppmv | Gray, CLAY, moist. Changing at 78.2 feet to: Very dense, brown, fine to coarse SAND, moist. | 78' 78.2' CLAY SAND | | | |
| 79 | | | | 36-50 | | | | | | |
| 80 | 2 | 24/24 | 80-82 | 12-48-50 | 1.7 ppmv | Very dense, fine to coarse SAND, moist. Changing at 80.2 feet to: Hard, gray, CLAY, wet. | 80.2' CLAY | | | |
| 81 | | | | | | | | | | |
| 82 | 3 | 24/24 | 82-84 | 42-50 | 0.1 ppmv | Hard, gray, Clayey SILT, wet. Changing at 83.8 feet to: Very dense, gray, fine to coarse SAND, wet. | 82' Clayey SILT | | | |
| 83 | | | | | | | | | | |
| 84 | 4 | 24/12 | 84-86 | 19-50 | 1.7 ppmv | Hard, gray, Clayey SILT, trace fine to | 83.8' 84' SAND Clayey SILT | | | |
| 85 | | | | | | | | | | |
| 86 | | | | | | | 86' CLAY | | | |
| Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million by volume (ppmv) of isobutylene. ND indicates nothing detected (<0.1 ppmv). | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

REMARKS

Boring No.: MW-WV-10D

BORING: WI 6267781 WWW.WOLVEN AVENUE.GPJ WI_DNR.GDT 4/17/20



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-10D
Page: 3 of 4
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|----------|--|--------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 87 | 5 | 24/24 | 86-88 | 3-10 | 2.3 ppmv | coarse Sand, wet. | CLAY | | | |
| 88 | 6 | 24/24 | 88-90 | 28-45 | 1.5 ppmv | Hard, gray, CLAY, trace Silt, trace Rock fragments, moist. Changing at 86.2 feet to: | 88' Clayey SILT | | | |
| 89 | | | | 19-29 | | Gray, SAND, moist. Changing at 87.2 feet to: | 90' Silty CLAY | | | |
| 90 | 7 | 24/24 | 90-92 | 38-50 | 2.3 ppmv | Stiff, gray, Silty CLAY, wet. | | | | |
| 91 | | | | 10-18 | | Hard, gray, Clayey SILT, trace fine to coarse Sand, moist. | | | | |
| 92 | 8 | 24/24 | 92-94 | 32-41 | 2.5 ppmv | Hard, gray, Silty CLAY, little fine to coarse Sand, moist. | | | | |
| 93 | | | | 3-8 | | Hard, gray, Silty CLAY, trace Rock fragments, wet. | | | | |
| 94 | 9 | 24/24 | 94-96 | 21-27 | 1.9 ppmv | Hard, gray, Silty CLAY, trace Rock fragments, wet. | | | | |
| 95 | | | | 3-8 | | Hard, gray, Silty CLAY, trace Rock fragments, wet. | | | | |
| 96 | 10 | 24/24 | 96-98 | 20-21 | 0.9 ppmv | Hard, gray, Silty CLAY, trace fine to coarse Sand, wet. | | | | |
| 97 | | | | 26-38 | | Hard, gray, Silty CLAY, trace fine to coarse Sand, wet. | | | | |
| 98 | 11 | 24/24 | 98-100 | 27-32 | 7.1 ppmv | Hard, gray, Silty CLAY, wet. | | | | |
| 99 | | | | 40-80 | | Hard, gray, Silty CLAY, wet. | | | | |
| 100 | 12 | 24/24 | 100-102 | 1-2 | 1.6 ppmv | Hard, gray, Silty CLAY, trace fine to coarse Sand, wet. | | | | |
| 101 | | | | 11-22 | | Hard, gray, Silty CLAY, wet. | | | | |
| 102 | 13 | 24/12 | 102-104 | 5-40 | 0.9 ppmv | Hard, gray, Silty CLAY, wet. | | | | |
| 103 | | | | 48-50 | | Hard, gray, Silty CLAY, trace Gravel, wet. | | | | |
| 104 | 14 | 24/24 | 104-106 | 5-19 | 1.7 ppmv | Hard, gray, Silty CLAY, trace fine to coarse Sand, wet. | | | | |
| 105 | | | | 18-26 | | Hard, gray, Silty CLAY, trace fine to coarse Sand, wet. | | | | |
| 106 | 15 | 24/24 | 106-108 | 2-2 | 1.6 ppmv | Hard, gray, Silty CLAY, moist. | | | | |
| 107 | | | | 18-24 | | Hard, gray, Silty CLAY, wet. | | | | |
| 108 | 16 | 24/24 | 108-110 | 6-13 | 1.8 ppmv | Hard, gray, Silty CLAY, wet. | | | | |
| 109 | | | | 25-46 | | Hard, gray, Silty CLAY, wet. | | | | |
| 110 | 17 | 24/20 | 110-112 | 7-28-50 | 0.6 ppmv | Hard, gray, Silty CLAY, wet. | | | | |
| 111 | | | | | | Hard, gray, Silty CLAY, moist. Changing at 113.7 feet to: Very loose, fine to coarse SAND, trace Gravel, moist. | 114' SAND | | | |
| 112 | 18 | 24/24 | 112-114 | 3-19 | 1.4 ppmv | Medium dense, gray, fine to coarse SAND, trace Silt, wet. | 116.5' Clayey SAND | | | |
| 113 | | | | 50-21 | | Medium dense, gray, fine to coarse SAND, trace Silt, wet. | 118' SAND | | | |
| 114 | 19 | 24/24 | 114-116 | 2-4 | 2.2 ppmv | Medium dense, gray, fine to coarse SAND, trace Silt, wet. | 119.8' CLAY | | | |
| 115 | | | | 10-16 | | Medium dense, gray, fine to coarse SAND, trace Silt, wet. | 120' Silty CLAY | | | |
| 116 | 20 | 24/10 | 116-118 | 6-27-50/40 | 0.7 ppmv | Dense, gray, SAND, wet. Changing at 119.8 feet to: Hard, gray, CLAY, little fine to coarse Sand, trace Gravel, moist. | | | | |
| 117 | | | | 5-26 | | Hard, gray, Silty CLAY, trace Rock fragments, wet. | | | | |
| 118 | 21 | 24/23 | 118-120 | 29-32 | 0.5 ppmv | Hard, gray, Silty CLAY, trace Gravel, wet. | 124' SAND | | | |
| 119 | | | | | | Medium dense, gray and brown, SAND, wet. Changing at 123.8 feet to: Hard, gray, Silty CLAY, trace Gravel, wet. | | | | |
| 120 | 22 | 24/10 | 120-122 | 24-50 | 0.4 ppmv | Dense, gray and brown, SAND, trace Gravel, wet. Changing at 127.5 feet to: Hard, gray, Silty CLAY, trace fine to coarse Sand, wet. | | | | |
| 121 | | | | 6-27-50 | | Hard, gray, Silty CLAY, trace fine to coarse Sand, wet. | | | | |
| 122 | 23 | 24/24 | 122-124 | 6-27-50 | 0.4 ppmv | Hard, gray, Silty CLAY, trace fine to coarse Sand, wet. | | | | |
| 123 | | | | | | Gray and brown, fine to coarse SAND, wet. | | | | |
| 124 | 24 | 24/24 | 124-126 | 23-50/6" | 0.6 ppmv | Hard, gray, Silty CLAY, trace fine to coarse Sand, wet. | | | | |
| 125 | | | | | | Hard, gray, Silty CLAY, trace fine to coarse Sand, wet. | | | | |
| 126 | 25 | 24/24 | 126-128 | 9-30-50/60 | 0.4 ppmv | Hard, gray, Silty CLAY, trace fine to coarse Sand, wet. | | | | |
| 127 | | | | | | Hard, gray, Silty CLAY, trace fine to coarse Sand, wet. | | | | |
| 128 | 26 | 24/4 | 128-130 | 4-40-50/60 | 0.4 ppmv | Hard, gray, Silty CLAY, trace fine to coarse Sand, wet. | | | | |
| 129 | | | | | | Hard, gray, Silty CLAY, trace fine to coarse Sand, wet. | | | | |
| 130 | 27 | 24/24 | 130-132 | 13-31-52/60 | 0.4 ppmv | Hard, gray, Silty CLAY, trace fine to coarse Sand, wet. | | | | |
| 131 | | | | | | Hard, gray, Silty CLAY, trace fine to coarse Sand, wet. | | | | |
| 132 | 28 | 24/24 | 132-134 | 11-26 | 0.4 ppmv | Hard, gray, Silty CLAY, trace fine to coarse | | | | |
| 133 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV-10D | |

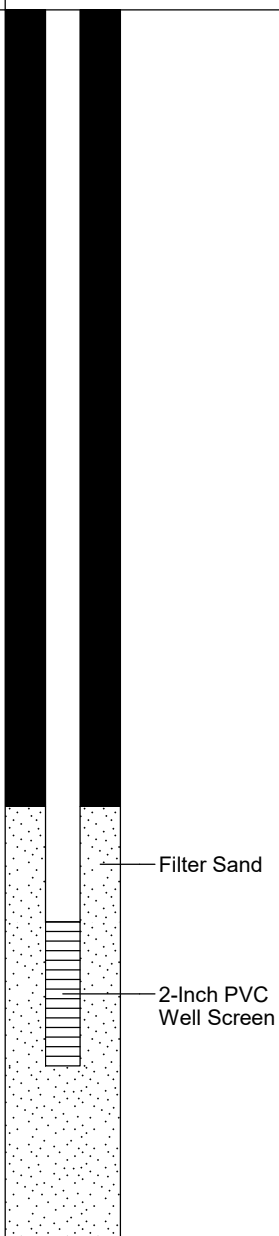
BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



GZA
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Engineers and Scientists

Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-10D
Page: 4 of 4
File No.: 16.0062677.81
Check: Kate McDonald

| Sample Information | | | | | | Stratum Desc. | | Remarks | Equipment Installed | |
|---|--|------------------|-------------|------------|----------|---|-----------------|---------|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | Sample Description & Classification | | | | |
| 134 | 29 | 24/24 | 134-136 | 29-50/6" | 6.3 ppmv | SAND, wet. | Silty CLAY | 2 |  | |
| 135 | | | | 6-34-50/6" | | Hard, gray, Silty CLAY, trace fine to coarse SAND, wet. | 136' | | | |
| 136 | 30 | 24/14 | 136-138 | 5-17 | 1.5 ppmv | Very stiff, Clayey SILT, little fine to coarse Sand, wet. Changing at 137.8 feet to: Hard, gray, Silty CLAY, wet. | Clayey SILT | | | |
| 137 | | | | 28-33 | | | 138' | | | |
| 138 | 31 | 24/22 | 138-140 | 14-50/6" | 1.1 ppmv | Hard, gray, Silty CLAY, wet with Rock fragments at top of spoon. | Silty CLAY | | | |
| 139 | | | | | | | | | | |
| 140 | 32 | 24/24 | 140-142 | 8-20 | 1.2 ppmv | Hard, gray, Silty CLAY, wet. | | | | |
| 141 | | | | 25-34 | | | | | | |
| 142 | 33 | 24/24 | 142-144 | 22-27 | 2.0 ppmv | Hard, gray, Silty CLAY, wet with fine Sand at bottom of spoon. | | | | |
| 143 | | | | 40-45 | | | | | | |
| 144 | 34 | 24/24 | 144-146 | 9-22 | 0.8 ppmv | Hard, gray, Silty CLAY, little Gravel, wet with 2-inch of Gravel at top of spoon. | | | | |
| 145 | | | | 44-50/3" | | | | | | |
| 146 | 35 | 24/24 | 146-148 | 9-38-50/3" | 1.6 ppmv | Hard, gray, Silty CLAY, wet. | | | | |
| 147 | | | | | | | | | | |
| 148 | 36 | 24/24 | 148-150 | 2-22 | 1.2 ppmv | Hard, gray, Silty CLAY, wet. | | | | |
| 149 | | | | 29-32 | | | | | | |
| 150 | 37 | 24/24 | 150-152 | 2-7 | 2.3 ppmv | Very stiff, gray, Silty CLAY, wet. | | | | |
| 151 | | | | 19-31 | | | | | | |
| 152 | 38 | 24/24 | 152-154 | 18-30 | 1.9 ppmv | Hard, gray, Silty CLAY, trace Gravel, wet. | | | | |
| 153 | | | | 44-50/6" | | | 154' | | | |
| 154 | 39 | 24/24 | 154-156 | 8-14 | 1.5 ppmv | Very dense, gray, Clayey fine to coarse SAND, some Gravel, wet. | SAND | | | |
| 155 | | | | 45-50/6" | | | | | | |
| 156 | 40 | 24/18 | 156-158 | 22-50/4" | 1.5 ppmv | Very dense, gray, Clayey fine to coarse SAND, some Gravel, wet. | | | | |
| 157 | | | | | | | 158' | | | |
| 158 | 41 | 24/15 | 158-160 | 24-50/3" | 1.0 ppmv | Very dense, gray, Clayey fine to coarse SAND and GRAVEL, wet. | SAND and GRAVEL | | | |
| 159 | | | | | | | | | | |
| 160 | 42 | 24/24 | 160-162 | 50/4" | 0.4 ppmv | Very dense, gray, Clayey fine to coarse SAND and GRAVEL, wet. | | | | |
| 161 | | | | | | | | | | |
| 162 | 43 | 24/24 | 162-164 | 14-50/4" | 0.2 ppmv | Very dense, gray, Clayey fine to coarse SAND and GRAVEL, wet. | | | | |
| 163 | | | | | | | 164' | | | |
| 164 | 44 | 24/10 | 164-166 | 50/3" | 0.4 ppmv | Hard, Silty CLAY, some Gravel, some fine to coarse Sand, wet. | CLAY | | | |
| 165 | | | | | | | 166' | | | |
| 166 | 45 | 24/12 | 166-168 | 50/6" | 0.9 ppmv | Very dense, red, Clayey fine to coarse SAND, some Gravel, wet. | SAND | | | |
| 167 | | | | | | | | | | |
| 168 | 46 | 24/12 | 168-170 | 50 | 0.7 ppmv | Very dense, red, Clayey fine to coarse SAND, some Gravel, trace Shells, wet. | | | | |
| 169 | | | | | | | 170' | | | |
| 170 | 47 | 24/0 | 170-172 | 50/3" | NA | NO RECOVERY. | NO RECOVERY | 3 | | |
| 171 | | | | | | | | | | |
| 172 | 48 | 24/0 | 172-174 | 50/3" | NA | NO RECOVERY. | | | | |
| 173 | | | | | | | | | | |
| 174 | 49 | 24/0 | 174-176 | 50/3" | NA | NO RECOVERY. | | | | |
| 175 | | | | | | | | | | |
| 176 | | | | | | Bottom of Borehole at 176.0 Feet | 176' | 4 | | |
| 177 | | | | | | | | | | |
| 178 | | | | | | | | | | |
| 179 | | | | | | | | | | |
| REMARKS | 2. Temporary well installed from 158.0 to 168.0 feet below ground surface. Well screen interval from 163.0 to 168.0 feet below ground surface. Purged 80.0 gallons of water. | | | | | | | | | |
| | 3. Likely encountered sandstone bedrock at 170.0 feet below ground surface with a well screen set from 165.0 to 170.0 feet below ground surface. | | | | | | | | | |
| | 4. Monitoring well was installed in borehole upon completion. Well screen set from approximately 165.0 to 170.0 feet below ground surface. | | | | | | | | | |
| | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |
| Boring No.: MW-WV-10D | | | | | | | | | | |

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide

Wolver Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-10M

Page: 1 of 2

File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry H.

Logged by: John Morehouse

Date Start/Finish: 3-5-19 / 3-13-19

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 12.25" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: NA 140lbs

Hammer Fall: NA 30.0"

TOC Elev.: NA NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date: _____

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|----------------|-----------|--|----------------------|---------|---------------------|-----------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (#/ft) | Test Data | | | | PROTECTIVE CASING | Filter Sand Bentonite/Grout |
| 1 | 1 | 24/12 | 0-2 | 3-1 1-4 | ND | Very loose, dark brown, TOPSOIL. Changing at 0.5 feet to: Brown, fine SAND, some Silt, trace Gravel, dry. | 0.5' TOPSOIL SAND | 1 | | |
| 2 | 2 | 24/0 | 2-4 | 3-2 2-4 | NA | NO RECOVERY. | 2' NO RECOVERY | 2 | | |
| 3 | | | | | | | 4' SAND | | | |
| 4 | 3 | 24/24 | 4-6 | 1-2 2-4 | ND | Loose, light brown, fine to medium SAND, little Silt, moist. | 6' NO RECOVERY | | | |
| 5 | 4 | 24/0 | 6-8 | 3-2 4-4 | NA | NO RECOVERY. | 8' SAND | 3 | | |
| 6 | | | | | | | | 4 | | |
| 7 | 5 | 24/18 | 8-10 | 2-3 3-3 | ND | Loose, light brown, fine SAND, some Silt, wet. | | | | |
| 8 | 6 | 24/24 | 10-12 | 1-1 1-1 | ND | Very loose, light brown, fine SAND, some Silt, wet. Changing at 11.5 feet to: Brown, fine to coarse SAND, some Silt, wet. | | | | |
| 9 | 7 | 24/24 | 12-14 | 3-7 4-6 | ND | Medium dense, brown, fine to coarse SAND, some Silt, trace Rock fragments, wet. | | | | |
| 10 | 8 | 24/24 | 14-16 | 1-3 5-8 | ND | Loose, brown, fine to coarse SAND, little Silt, trace Rock fragments, wet. | | | | |
| 11 | 9 | 24/24 | 16-18 | 7-11 13-36 | ND | Medium dense, fine to coarse SAND, little Silt, wet. | | | | |
| 12 | 10 | 24/24 | 18-20 | 4-10 9-11 | ND | Medium dense, brown, fine to coarse SAND, little fine Gravel, little Silt, wet. | | 5 | | |
| 13 | 11 | 24/24 | 20-22 | 6-19 21-18 | ND | Dense, brown, fine to coarse SAND, little Gravel, little Silt, wet. | | | | |
| 14 | 12 | 24/24 | 22-24 | 6-16 15-15 | ND | Dense, brown, fine to coarse SAND, little Gravel, little Silt, wet. | | | | |
| 15 | 13 | 24/24 | 24-26 | 10-17 18-16 | ND | Dense, brown, fine to coarse SAND, little Gravel, little Silt, wet. | | | | |
| 16 | 14 | 24/24 | 26-28 | 2-6 10-9 | ND | Dense, brown, fine to coarse SAND, little Gravel, little Silt, wet. Changing at 26.5 feet to: Brown, fine SAND and Silt with 17 to 18-inch brown, Silty CLAY lenses. | 28.8' Silty CLAY | 6 | | |
| 17 | 15 | 24/24 | 28-30 | 4-6 6-15 | ND | Medium dense, brown, fine to coarse SAND, little Silt, wet. Changing at 28.8 feet to: Brown, Silty CLAY, little fine Sand, wet. | 30.5' CLAY & SILT | | | |
| 18 | 16 | 24/24 | 30-32 | 5-8 8-10 | ND | Medium dense, brown, fine to coarse SAND, little Silt, wet. Changing at 30.5 feet to: Brown, CLAY & SILT, little fine Sand, wet. | 32' Clayey SILT | | | |
| 19 | 17 | 24/12 | 32-34 | 2-4 10-13 | ND | Stiff, brown, Clayey SILT, little fine Sand, wet. | 34' SAND | 7 | | |
| 20 | 18 | 24/24 | 34-36 | 8-9 22-40 | ND | Dense, brown, fine SAND and SILT, wet. | 36' Silty CLAY | | | |
| 21 | 19 | 24/24 | 36-38 | 7-16 26-21 | ND | Hard, gray, Silty CLAY, wet. | | | | |
| 22 | 20 | 24/24 | 38-40 | 4-9 15-17 | ND | Very stiff, brown and gray, Silty CLAY, wet. | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million by volume (ppmv) of isobutylene. ND indicates nothing detected (<0.1 ppmv).
- During drilling to 4.0 feet below ground surface, sediment appeared to be Sand.
- Groundwater was encountered at approximately 8.0 feet below ground surface.
- Temporary well installed from 8.0 to 18.0 feet below ground surface. Well screen interval from 13.0 to 18.0 feet below ground surface. Purged 30.0 gallons of water.
- Temporary well installed from 18.0 to 28.0 feet below ground surface. Well screen interval from 23.0 to 28.0 feet below ground surface. Purged 20.0-25.0 gallons of water.
- Temporary well installed from 26.0 to 36.0 feet below ground surface. Well screen interval from 31.0 to 36.0 feet below ground surface. Purged 20.0-25.0 gallons of water.

Stratification was noted from 18.0 feet below ground surface. Types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV-10M


BORING WELL 6267781 WWW.WOLVER AVENUE.GPJ GZA CORP.GDT 4/20/20



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Engineers and Scientists

Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-10M
Page: 2 of 2
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|-------|--------------------|------------------|-------------|-----------------|-----------|---|---|--|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 41 | 21 | 24/24 | 40-42 | 5-10 14-15 | ND | Very stiff, brown and gray, Silty CLAY, wet. | Silty CLAY |  | |
| 42 | 22 | 24/24 | 42-44 | 3-6 8-13 | ND | Stiff, brown and gray, Silty CLAY, wet. | | | |
| 43 | | | | | | | | | |
| 44 | 23 | 24/24 | 44-46 | 3-3 6-11 | ND | Stiff, brown and gray, Silty CLAY, wet. | | | |
| 45 | | | | | | | | | |
| 46 | 24 | 24/24 | 46-48 | 2-5 10-15 | ND | Stiff, brown and gray, Silty CLAY, wet. | | | |
| 47 | | | | | | Changing at 47.5 feet to: Stiff, brown and gray, Silty CLAY, trace fine Sand, wet. | | | |
| 48 | 25 | 24/24 | 48-50 | 6-7 11-16 | ND | Very stiff, brown and gray, Silty CLAY, trace Fine Sand, wet. | | | |
| 49 | | | | | | | | | |
| 50 | 26 | 24/24 | 50-52 | 12-17 <1-21 | ND | Hard, brown and gray, Silty CLAY, trace fine Sand, wet. | | | |
| 51 | | | | | | | | | |
| 52 | 27 | 24/24 | 52-54 | 4-15 21-19 | ND | Hard, brown and gray, Silty CLAY, trace fine Sand, wet. Changing at 53.5 feet to: Brown and gray, fine SAND and Silt, little Clay, wet. | 53.5' 54' SAND Silty CLAY | | |
| 53 | | | | | | | | | |
| 54 | 28 | 24/24 | 54-56 | 5-11 17-20 | ND | Very stiff, brown and gray, Silty CLAY with Sandy lenses 12-18 inches and black smear at 18 inches. | 57.2' 58' CLAY & SILT Silty CLAY | | |
| 55 | | | | | | | | | |
| 56 | 29 | 24/24 | 56-58 | 8-16 20-27 | ND | Hard, brown and gray, Silty CLAY, wet. Changing at 57.2 feet to: Brown and gray, CLAY & SILT, trace fine to coarse Sand, wet. | 59.5' 60' CLAY & SILT Clayey SILT | | |
| 57 | | | | | | | | | |
| 58 | 30 | 24/24 | 58-60 | 4-8 17-22 | ND | Very stiff, brown and gray, Silty CLAY, trace fine Sand, wet. Changing at 59.5 feet to: Brown and gray, CLAY & SILT, trace fine to coarse Sand, wet. | 62' 63.6' 64.3' SAND 65' Silty CLAY 65.5' SAND Clayey SILT | | |
| 59 | | | | | | | | | |
| 60 | 31 | 24/24 | 60-62 | 8-14 15-22 | ND | Very stiff, Clayey SILT, little fine to coarse Sand, wet. | | | |
| 61 | | | | | | | | | |
| 62 | 32 | 24/24 | 62-64 | 3-7 22-27 | ND | Very stiff, Silty CLAY, trace fine Sand, wet. Changing at 63.6 feet to: Brown, fine to coarse SAND and Silt, little fine Gravel, wet. | 68' SAND | | |
| 63 | | | | | | | | | |
| 64 | 33 | 24/24 | 64-66 | 6-44-50/6" | ND | Very dense, brown, fine to medium SAND, some Silt, wet. Changing at 64.3 feet to: Brown and gray, Silty CLAY, trace fine to coarse Sand, wet. Changing at 65.0 feet to: Brown, fine to coarse SAND, little Gravel, some Silt, wet. Changing at 65.5 feet to: Brown, Clayey SILT, little fine to coarse Sand, wet. | | | |
| 65 | | | | | | | | | |
| 66 | 34 | 24/6 | 66-68 | 22-50/4" | ND | Hard, brown, Clayey SILT, little fine to coarse Sand, wet. | | | |
| 67 | | | | | | | | | |
| 68 | 35 | 24/18 | 68-70 | 17-35-50/6" | ND | Very dense, gray and brown, fine to medium SAND, little Silt, trace Gravel, wet. Dense, gray and brown, fine to medium SAND, little Silt, wet. Dense, gray and brown, fine to medium SAND, little Silt, wet with Silty Clay 15 to 16 inches. Very dense, gray and brown, fine to medium SAND, little Silt, wet. | | | |
| 69 | | | | | | | | | |
| 70 | 36 | 24/21 | 70-72 | 3-8 22-50/3" | ND | Bottom of Borehole at 75 Feet | | | |
| 71 | | | | | | | | | |
| 72 | 37 | 24/18 | 72-74 | 2-14-50/6" | ND | | | | |
| 73 | | | | | | | | | |
| 74 | 38 | 24/18 | 74-76 | 8-29-50/6" | ND | | | | |
| 75 | | | | | | | | | |
| 76 | 39 | 24/15 | 76-78 | 17-30-50/3" | ND | | | | |
| 77 | | | | | | | | | |
| 78 | | | | | | | | | |
| 79 | | | | | | | | | |
| 80 | | | | | | | | | |
| 81 | | | | | | | | | |
| 82 | | | | | | | | | |
| 83 | | | | | | | | | |
| 84 | | | | | | | | | |
| 85 | | | | | | | | | |
| 86 | | | | | | | | | |

REMARKS

8. Switched to 3.0-inch split spoon at 64.0 feet below ground surface.
9. Temporary well installed from 66.0 to 76.0 feet below ground surface. Well screen interval from 71.0 to 66.0 feet below ground surface. Purged 34.0 gallons of water.
10. Switched to 2.0-inch split spoon at 68.0 feet below ground surface.
11. Monitoring well was installed in borehole upon completion. Well screen set from approximately 71.0 to 75.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV-10M

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 4/20/20



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Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-10S

Page: 1 of 5

File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry Zach/Travis

Logged by: C. Melby

Date Start/Finish: 3-5-19 / 3-9-19

Boring Location: _____

GS Elev.: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 12.25" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: NA 140lbs

Hammer Fall: NA 30.0"

Other: NA NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|------------|-------|---|-------------------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/12 | 0-2 | 3-1 1-4 | ND | Very loose, dark brown, TOPSOIL. Changing at 0.5 feet to: Brown, fine SAND, some Silt, trace Gravel, dry. | TOPSOIL 0.5' SAND | 1 | | |
| 2 | 2 | 24/0 | 2-4 | 3-2 2-4 | NA | NO RECOVERY. | 2' NO RECOVERY | 2 | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/24 | 4-6 | 1-2 2-4 | ND | Loose, light brown, fine to medium SAND, little Silt, moist. | 4' SAND | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/0 | 6-8 | 3-2 4-4 | NA | NO RECOVERY. | 6' NO RECOVERY | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/18 | 8-10 | 2-3 3-3 | ND | Loose, light brown, fine SAND, some Silt, wet. | 8' SAND | 3 | | |
| 9 | | | | | | | | 4 | | |
| 10 | 6 | 24/24 | 10-12 | 1-1 1-1 | ND | Very loose, light brown, fine SAND, some Silt, wet. Changing at 11.5 feet to: Brown, fine to coarse SAND, some Silt, wet. | | | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/24 | 12-14 | 3-7 4-6 | ND | Medium dense, brown, fine to coarse SAND, some Silt, trace Rock fragments, wet. | | | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/24 | 14-16 | 1-3 5-8 | ND | Loose, brown, fine to coarse SAND, little Silt, trace Rock fragments, wet. | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million by volume (ppmv) of isobutylene. ND indicates nothing detected (<0.1 ppmv).
- During drilling to 4.0 feet below ground surface, sediment appeared to be Sand.
- Groundwater was encountered at approximately 8.0 feet below ground surface.
- Temporary well installed from 8.0 to 18.0 feet below ground surface. Well screen interval from 13.0 to 18.0 feet below ground surface. Purged 30.0 gallons of water.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV-10S

BORING: WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-10S
Page: 2 of 5
File No.: 16.0062677.81
Check: Kate McDonald

| Sample Information | | | | | | Check: Kate McDonald | | | | | |
|---|---|------------------|-------------|----------------|-------|--|----------------------|---------|-----------------------|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | | | | | | | | | | | |
| 16 | 9 | 24/24 | 16-18 | 7-11 13-36 | ND | Medium dense, fine to coarse SAND, little Silt, wet. | SAND | 5 | | | |
| 17 | | | | | | | | | | | |
| 18 | 10 | 24/24 | 18-20 | 4-10 9-11 | ND | Medium dense, brown, fine to coarse SAND, little fine Gravel, little Silt, wet. | | | | | |
| 19 | | | | | | | | | | | |
| 20 | 11 | 24/24 | 20-22 | 6-19 21-18 | ND | Dense, brown, fine to coarse SAND, little Gravel, little Silt, wet. | | | | | |
| 21 | | | | | | | | | | | |
| 22 | 12 | 24/24 | 22-24 | 6-16 15-15 | ND | Dense, brown, fine to coarse SAND, little Gravel, little Silt, wet. | | | | | |
| 23 | | | | | | | | | | | |
| 24 | 13 | 24/24 | 24-26 | 10-17 18-16 | ND | Dense, brown, fine to coarse SAND, little Gravel, little Silt, wet. | | | | | |
| 25 | | | | | | | | | | | |
| 26 | 14 | 24/24 | 26-28 | 2-6 10-9 | ND | Dense, brown, fine to coarse SAND, little Gravel, little Silt, wet. Changing at 26.5 feet to: Brown, fine SAND and Silt with 17 to 18-inch brown, Silty CLAY lenses. | | 6 | | | |
| 27 | | | | | | | | | | | |
| 28 | 15 | 24/24 | 28-30 | 4-6 6-15 | ND | Medium dense, brown, fine to coarse SAND, little Silt, wet. Changing at 28.8 feet to: Brown, Silty CLAY, little fine Sand, wet. | 28.8' Silty CLAY | | | | |
| 29 | | | | | | | | | | | |
| 30 | 16 | 24/24 | 30-32 | 5-8 8-10 | ND | Medium dense, brown, fine to coarse SAND, little Silt, wet. Changing at 30.5 feet to: Brown, CLAY & SILT, little fine Sand, wet. | 30.5' CLAY & SILT | | | | |
| 31 | | | | | | | | | | | |
| 32 | 17 | 24/12 | 32-34 | 2-4 | ND | Stiff, brown, Clayey SILT, little fine Sand, | 32' Clayey SILT | | | | |
| REMARKS | 5. Temporary well installed from 18.0 to 28.0 feet below ground surface. Well screen interval from 23.0 to 28.0 feet below ground surface. Purged 20.0-25.0 gallons of water. | | | | | | | | | | |
| | 6. Temporary well installed from 26.0 to 36.0 feet below ground surface. Well screen interval from 31.0 to 36.0 feet below ground surface. Purged 20.0-25.0 gallons of water. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV-10S | | |

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide
Wolver Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-10S
Page: 3 of 5
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-------|---|-------------------|---------|-----------------------|-----------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 33 | | | | 10-13 | | wet. | Clayey SILT | | | |
| 34 | 18 | 24/24 | 34-36 | 8-9 22-40 | ND | Dense, brown, fine SAND and SILT, wet. | 34' SAND | | | Bentonite/Grout |
| 35 | | | | | | | | 7 | | |
| 36 | 19 | 24/24 | 36-38 | 7-16 26-21 | ND | Hard, gray, Silty CLAY, wet. | 36' Silty CLAY | | | |
| 37 | | | | | | | | | | |
| 38 | 20 | 24/24 | 38-40 | 4-9 15-17 | ND | Very stiff, brown and gray, Silty CLAY, wet. | | | | |
| 39 | | | | | | | | | | |
| 40 | 21 | 24/24 | 40-42 | 5-10 14-15 | ND | Very stiff, brown and gray, Silty CLAY, wet. | | | | |
| 41 | | | | | | | | | | |
| 42 | 22 | 24/24 | 42-44 | 3-6 8-13 | ND | Stiff, brown and gray, Silty CLAY, wet. | | | | |
| 43 | | | | | | | | | | |
| 44 | 23 | 24/24 | 44-46 | 3-3 6-11 | ND | Stiff, brown and gray, Silty CLAY, wet. | | | | |
| 45 | | | | | | | | | | |
| 46 | 24 | 24/24 | 46-48 | 2-5 10-15 | ND | Stiff, brown and gray, Silty CLAY, wet. Changing at 47.5 feet to: Stiff, brown and gray, Silty CLAY, trace fine Sand, wet. | | | | |
| 47 | | | | | | | | | | |
| 48 | 25 | 24/24 | 48-50 | 6-7 11-16 | ND | Very stiff, brown and gray, Silty CLAY, trace Fine Sand, wet. | | | | |
| 49 | | | | | | | | | | |
| 7. Casing was set at 36.0 feet below ground surface. | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-10S
Page: 4 of 5
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Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-------|---|----------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 51 | 26 | 24/24 | 50-52 | 12-17 <1-21 | ND | Hard, brown and gray, Silty CLAY, trace fine Sand, wet. | Silty CLAY | | | |
| 52 | 27 | 24/24 | 52-54 | 4-15 21-19 | ND | Hard, brown and gray, Silty CLAY, trace fine Sand, wet. Changing at 53.5 feet to: Brown and gray, fine SAND and Silt, little Clay, wet. | 53.5' SAND | | | |
| 54 | 28 | 24/24 | 54-56 | 5-11 17-20 | ND | Very stiff, brown and gray, Silty CLAY with Sandy lenses 12-18 inches and black smear at 18 inches. | 54' Silty CLAY | | | |
| 56 | 29 | 24/24 | 56-58 | 8-16 20-27 | ND | Hard, brown and gray, Silty CLAY, wet. Changing at 57.2 feet to: Brown and gray, CLAY & SILT, trace fine to coarse Sand, wet. | 57.2' CLAY & SILT | | | |
| 58 | 30 | 24/24 | 58-60 | 4-8 17-22 | ND | Very stiff, brown and gray, Silty CLAY, trace fine Sand, wet. Changing at 59.5 feet to: Brown and gray, CLAY & SILT, trace fine to coarse Sand, wet. | 58' Silty CLAY | | | |
| 60 | 31 | 24/24 | 60-62 | 8-14 15-22 | ND | Very stiff, Clayey SILT, little fine to coarse Sand, wet. | 59.5' CLAY & SILT | | | |
| 62 | 32 | 24/24 | 62-64 | 3-7 22-27 | ND | Very stiff, Silty CLAY, trace fine Sand, wet. Changing at 63.6 feet to: Brown, fine to coarse SAND and Silt, little fine Gravel, wet. | 60' Clayey SILT | | | |
| 64 | 33 | 24/24 | 64-66 | 6-44-50/6" | ND | Very dense, brown, fine to medium SAND, some Silt, wet. Changing at 64.3 feet to: Brown and gray, Silty CLAY, trace fine to coarse Sand, wet. Changing at 65.0 feet to: Brown, fine to coarse SAND, little Gravel, some Silt, wet. Changing at 65.5 feet to: Brown, Clayey SILT, little fine to coarse Sand, wet. | 62' Silty CLAY | 8 | | |
| 66 | 34 | 24/6 | 66-68 | 22-50/4" | ND | Hard, brown, Clayey SILT, little fine to coarse Sand, wet. | 63.6' SAND | 9 | | |
| 67 | | | | | | | 64.3' Silty CLAY | | | |
| | | | | | | | 65' SAND | | | |
| | | | | | | | 65.5' Clayey SILT | | | |
| REMARKS 8. Switched to 3.0-inch split spoon at 64.0 feet below ground surface. 9. Temporary well installed from 66.0 to 76.0 feet below ground surface. Well screen interval from 71.0 to 66.0 feet below ground surface. Purged 34.0 gallons of water. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV-10S | |

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-10S
Page: 5 of 5
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|-------|--------------------|------------------|-------------|-----------------|-------|---|-------------------------|---------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | |
| 68 | 35 | 24/18 | 68-70 | 17-35-50/6" | ND | Very dense, gray and brown, fine to coarse SAND, little Silt, trace Gravel, wet. | 68' Clayey SILT SAND | 10 | <p>Filter Sand</p> <p>2-Inch PVC Well Screen</p> |
| 69 | | | | | | | | | |
| 70 | 36 | 24/21 | 70-72 | 3-8 22-50/3" | ND | Dense, gray and brown, fine to medium SAND, little Silt, wet. | | | |
| 71 | | | | | | | | | |
| 72 | 37 | 24/18 | 72-74 | 2-14-50/6" | ND | Dense, gray and brown, fine to medium SAND, little Silt, wet with Silty Clay 15 to 16 inches. | | | |
| 73 | | | | | | | | | |
| 74 | 38 | 24/18 | 74-76 | 8-29-50/6" | ND | Very dense, gray and brown, fine to medium SAND, little Silt, wet. | | | |
| 75 | | | | | | | | | |
| 76 | 39 | 24/15 | 76-78 | 17-30-50/3" | ND | Hard, gray, Silty CLAY, wet. | | | |
| 77 | | | | | | | | | |
| 78 | | | | | | Bottom of Borehole at 78.8 Feet | 78' | 11 | |
| 79 | | | | | | | | | |
| 80 | | | | | | | | | |
| 81 | | | | | | | | | |
| 82 | | | | | | | | | |
| 83 | | | | | | | | | |
| 84 | | | | | | | | | |

REMARKS

10. Switched to 2.0-inch split spoon at 68.0 feet below ground surface.
11. Monitoring well was installed in borehole upon completion. Well screen set from approximately 71.0 to 75.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV-10S

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-11/MW-WV-11D

Page: 1 of 15

File No.: 16.0062677.81

Check: Leslie Nelson

Contractor: Stearns Drilling Company

Foreman: Jerry H., Travis & Zach/Gary

Logged by: John Morehouse

Date Start/Finish: 1-3-19 / 1-9-19

Boring Location: 11 Mile Rd & Algoma Ave NE, Rockford, MI

GS Elev.: No Surveyed Datum: NAD 83

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| NM | NM | NM | NM | NM |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/20.4 | 0-2 | 1-0 1-2 | ND | Black, fine to medium-grained SAND, little Silt, slightly cohesive, moist. Changing at 0.7 feet to: Dark yellowish-brown, CLAY & SILT, plastic, cohesive, moist. Changing at 1.7 feet to: NO RECOVERY. | SAND 0.7' CLAY & SILT 1.7' NO RECOVERY 2' CLAY & SILT | 1 | | |
| 2 | 2 | 24/24 | 2-4 | 2-3 3-5 | ND | Dark yellowish-brown, CLAY & SILT, plastic, cohesive, moist. Changing at 2.7 feet to: Mottled, yellowish-brown, CLAY & SILT, little Sand, plastic, cohesive, moist. Changing at 3.5 feet to: Light brownish-gray, SILT, little Clay, moderately plastic, cohesive, moist. Changing at 3.8 feet to: Yellowish-brown, fine to medium grained SAND, little Silt. wet. | 3.5' SILT 3.8' SAND | 2 | | |
| 3 | 3 | 24/15.6 | 4-6 | 1-2 3-3 | ND | Yellowish-brown, fine to medium grained SAND, little Silt. wet. Changing at 5.3 feet to: NO RECOVERY. | 5.3' NO RECOVERY 6' CLAY & SILT 6.2' SAND 6.4' CLAY & SILT | | | |
| 4 | 4 | 24/24 | 6-8 | 3-2 4-5 | ND | Brown, CLAY & SILT, plastic, cohesive, moist. Changing at 6.2 feet to: Yellowish-brown, fine to medium grained SAND, little Silt, wet. Changing at 6.4 feet to: Brown, CLAY & SILT, plastic, cohesive, moist. Changing at 7.5 feet to: Yellowish-brown, CLAY & SILT, plastic, cohesive, moist. Changing at 7.6 feet to: Brown, CLAY & SILT, plastic, cohesive, moist. Changing at 7.8 feet to: Yellowish-brown, fine to medium grained SAND, little Silt, wet. Changing at 7.9 feet to: Brown, CLAY & SILT, plastic, cohesive, moist. | 7.5' SAND 7.6' CLAY & SILT 7.8' SAND 7.9' CLAY & SILT 8.5' SAND 8.6' CLAY & SILT | | | |
| 5 | 5 | 24/16.8 | 8-10 | 2-3 3-5 | ND | Yellowish-brown, fine to medium grained SAND, little Silt, wet. Changing at 7.9 feet to: Brown, CLAY & SILT, plastic, cohesive, moist. Changing at 8.5 feet to: Yellowish-brown, fine to medium grained SAND, trace Silt, wet. Changing at 8.6 feet to: Brown, CLAY & SILT, plastic, cohesive, moist. Changing at 9.4 feet to: NO | 9.4' NO RECOVERY 10' | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million by volume (ppmv) of isobutylene. ND indicates nothing detected (<0.1 ppmv).
- Groundwater was encountered at approximately 3.8 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: PMW-WV-11/MW-WV-11D

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 3/25/19



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Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-11/MW-WV-11D
Page: 2 of 15
File No.: 16.0062677.81
Check: Leslie Nelson

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|--|---|---------|---------------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 11 | 6 | 24/24 | 10-12 | | ND | RECOVERY. Yellowish-brown, fine to medium grained SAND, trace Silt, wet. Changing at 10.4 feet to: Grayish-brown, CLAY & SILT, plastic, cohesive, moist. Changing at 11.5 feet to: Light brownish-gray, fine grained SAND, some Silt, little Clay, moderately plastic, cohesive, wet. Changing at 11.6 feet to: Grayish-brown, CLAY & SILT, plastic, cohesive, moist. | SAND 10.4' CLAY & SILT 11.5' 11.6' SAND CLAY & SILT | | | |
| 12 | 7 | 24/18 | 12-14 | 3-1 2-3 | ND | Grayish-brown, CLAY & SILT, plastic, cohesive, moist. Changing at 12.2 feet to: Brown, fine to medium grained SAND, trace Silt, wet. Changing at 12.4 feet to: Grayish-brown, CLAY & SILT, plastic, cohesive, moist. Changing at 13.5 feet to: NO RECOVERY. | 12.2' 12.4' SAND CLAY & SILT 13.5' NO RECOVERY 14' CLAY & SILT | | | |
| 14 | 8 | 24/14.4 | 14-16 | 1-2 3-5 | ND | Grayish-brown, CLAY & SILT, plastic, cohesive, moist. Changing at 15.2 feet to: NO RECOVERY. | 15.2' NO RECOVERY 16' PEAT 16.4' SAND 17.1' 17.2' CLAY & SILT NO RECOVERY | | | |
| 16 | 9 | 24/14.4 | 16-18 | 2-4-2 | ND | Very dark brown, PEAT, some Silt, little Clay, plastic, cohesive, moist. Changing at 16.4 feet to: Dark yellowish-brown to yellowish-brown, fine to medium grained SAND, trace Silt, moist. Changing at 17.1 feet to: Yellowish-brown to brown, CLAY & SILT, plastic, cohesive, moist. Changing at 17.2 feet to: NO RECOVERY. | 18' CLAY & SILT 18.5' GRAVEL 18.8' CLAY & SILT 19.1' NO RECOVERY | | | |
| 18 | 10 | 24/13.2 | 18-20 | 1-2 3-6 | ND | Yellowish-brown to brown, CLAY & SILT, plastic, cohesive, moist. Changing at 18.5 feet to: Dark brown, GRAVEL, some coarse to medium grained Sand, trace Silt, wet. Changing at 18.8 feet to: Yellowish-brown, CLAY & SILT, plastic, cohesive, moist. Changing at 19.1 feet to: NO RECOVERY. | 20' SAND 21.5' | | | |
| 20 | 11 | 24/18 | 20-22 | 2-2 3-5 | ND | Yellowish-brown, fine grained SAND, trace Silt, wet. Changing at 20.5 feet to: Dark brown to yellowish-brown, medium to coarse grained SAND, some Gravel, trace Silt, wet; occasional very thin seams of Silty Clay, trace Gravel. Changing at 21.5 feet to: NO RECOVERY. | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: PMW-WV-11/MW-WV-11D | |

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 3/25/19



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Wolver Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-11/MW-WV-11D
Page: 3 of 15
File No.: 16.0062677.81
Check: Leslie Nelson

| Sample Information | | | | | | Argonia Twp, Kent County, Michigan | | Check: Leslie Nelson | | | |
|---|-----|------------------|-------------|----------------|-----------|---|---------------------------------------|----------------------|---------------------------------|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | | | | | | | | | | | |
| 22 | 12 | 24/12 | 22-24 | 3-5 4-3 | ND | Dark brown to yellowish-brown, medium to coarse grained SAND, some Gravel, trace Silt, moist. Changing at 23.0 feet to: NO RECOVERY. | NO 22' RECOVERY SAND | | | | |
| 23 | | | | | | | 23' NO RECOVERY | | | | |
| 24 | 13 | 24/13.2 | 24-26 | 1-0 2-3 | ND | Yellowish-brown, medium grained SAND, trace Silt, wet. Changing at 24.9 feet to: Dark brown to yellowish-brown, medium to coarse grained SAND, some Gravel, trace Silt, wet. Changing at 25.1 feet to: NO RECOVERY. | 24' SAND | | | | |
| 25 | | | | | | | 25.1' NO RECOVERY | | | | |
| 26 | 14 | 24/8.4 | 26-28 | 2-4 4-4 | ND | Brown, fine to coarse grained SAND, little Gravel, trace Silt, wet. Changing at 26.7 feet to: NO RECOVERY. | 26' SAND | | | | |
| 27 | | | | | | | 26.7' NO RECOVERY | | | | |
| 28 | 15 | 24/15.6 | 28-30 | 3-4 3-4 | ND | Brown, fine to coarse grained SAND, little Gravel, trace Silt, wet. Changing at 29.3 feet to: No RECOVERY. | 28' SAND | | | | |
| 29 | | | | | | | 29.3' NO RECOVERY | | | | |
| 30 | 16 | 24/15.6 | 30-32 | 2-2 6-5 | ND | Brown, fine to coarse grained SAND, little Gravel, trace Silt, wet. Changing at 31.1 feet to: Brown, Silty CLAY, plastic, cohesive, moist. Changing at 31.3 feet to: NO RECOVERY. | 30' SAND | | | | |
| 31 | | | | | | | 31.1' 31.3' CLAY NO RECOVERY | | | | |
| 32 | 17 | 24/16.8 | 32-34 | 28-18 13-16 | ND | Brown, medium to coarse grained SAND, trace Silt, wet. Changing at 32.9 feet to: NO RECOVERY. | 32' SAND | | | | |
| 33 | | | | | | | 32.9' NO RECOVERY | | | | |
| REMARKS | | | | | | | | | | | |
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BORING WELL 6267781 WWW.WOLVER AVENUE.GPJ GZA CORP.GDT 3/25/19



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No. MW-WV-11/MW-WV-11D
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Check: Leslie Nelson

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|--|--|---------|---------------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 34 | 18 | 24/18 | 34-36 | 3-4 7-8 | ND | Dark gray, Silty CLAY, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 35.5 feet to: NO RECOVERY. | NO RECOVERY 34' Silty CLAY | | | |
| 35 | | | | | | | | | | |
| 36 | 19 | 24/22.8 | 36-38 | 2-4 6-8 | ND | Dark grayish-brown, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 37.9 feet to: NO RECOVERY. | 35.5' NO RECOVERY 36' CLAY & SILT | | | |
| 37 | | | | | | | | | | |
| 38 | 20 | 24/24 | 38-40 | 2-7 6-5 | ND | Dark grayish-brown, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. | 37.9' 38' NO RECOVERY CLAY & SILT | | | |
| 39 | | | | | | | | | | |
| 40 | 21 | 24/21.6 | 40-42 | 4-5 7-10 | ND | Dark grayish-brown, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 41.8 feet to: NO RECOVERY. | | | | |
| 41 | | | | | | | | | | |
| 42 | 22 | 24/22.8 | 42-44 | 3-6 8-10 | ND | Dark grayish-brown, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 43.9 feet to: NO RECOVERY. | 41.8' 42' NO RECOVERY CLAY & SILT | | | |
| 43 | | | | | | | | | | |
| 44 | 23 | 24/24 | 44-46 | 3-5 7-10 | ND | Dark grayish-brown, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. | 43.9' 44' NO RECOVERY CLAY & SILT | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|--|---|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 46 | 24 | 24/21.6 | 46-48 | 2-4 5-9 | ND | Dark grayish-brown, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 47.8 feet to: NO RECOVERY. | CLAY & SILT | | | |
| 47 | | | | | | | | | | |
| 48 | 25 | 24/21.6 | 48-50 | 8-14 11-15 | ND | Dark grayish-brown, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 49.4 feet to: Brown, SILT & CLAY, some Sand, little Gravel, plastic, cohesive, moist. Changing at 49.6 feet to: Dark grayish-brown, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 49.8 feet to: NO RECOVERY. | 47.8' 48' NO RECOVERY CLAY & SILT | | | |
| 49 | | | | | | | 49.4' 49.6' SILT & CLAY 49.8' CLAY & SILT | | | |
| 50 | 26 | 24/14.4 | 50-52 | 2-2 6-9 | ND | Dark grayish-brown, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 51.2 feet to: NO RECOVERY. | 50' NO RECOVERY CLAY & SILT | | | |
| 51 | | | | | | | 51.2' NO RECOVERY | | | |
| 52 | 27 | 24/21.6 | 52-54 | 2-7 11-14 | ND | Dark grayish-brown, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 53.8 feet to: NO RECOVERY. | 52' CLAY & SILT | | | |
| 53 | | | | | | | | | | |
| 54 | 28 | 24/18 | 54-56 | 4-21-22 | ND | Dark grayish-brown, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 55.4 feet to: Brown, fine to medium grained SAND, little Silt, moist to wet. Changing at 55.5 feet to: NO RECOVERY. | 53.8' 54' NO RECOVERY CLAY & SILT | | | |
| 55 | | | | | | | 55.4' 55.5' SAND | | | |
| 56 | 29 | 24/21.6 | 56-58 | 3-9 13-20 | ND | Dark grayish-brown, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 57.4 feet to: Dark | 56' NO RECOVERY CLAY & SILT | | | |
| REMARKS Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

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| Sample Information | | | | | | Argonia Twp, Kent County, Michigan | | Check: | Leslie Nelson | |
|---|-----|------------------|-------------|----------------|-----------|---|---------------|---------|---------------------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 57 | 30 | 24/20.4 | 58-60 | 4-10 13-16 | ND | grayish-brown, fine to medium grained SAND, little Silt, little Clay, slightly plastic, cohesive, moist. Changing at 57.8 feet to: NO RECOVERY. | CLAY & SILT | | | |
| | | | | | | 57.4' | SAND | | | |
| | | | | | | 57.8' | NO RECOVERY | | | |
| 58 | | | | | | 58' | CLAY & SILT | | | |
| | 31 | 24/14.4 | 60-62 | 3-10 24-15 | ND | Dark grayish-brown, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 59.7 feet to: NO RECOVERY. | | | | |
| | | | | | | 59.7' | NO RECOVERY | | | |
| 60 | | | | | | 60' | CLAY & SILT | | | |
| | | | | | | 61.2' | NO RECOVERY | | | |
| | 32 | 24/21.6 | 62-64 | 25-8-10 | ND | Dark grayish-brown, CLAY & SILT, some Sand, trace Gravel, moderately plastic, cohesive, moist. Changing at 63.8 feet to: NO RECOVERY. | 62' | | | |
| | | | | | | | SILT & CLAY | | | |
| 63 | | | | | | | | | | |
| | | | | | | 63.8' | NO RECOVERY | | | |
| 64 | 33 | 24/22.8 | 64-66 | 6-10 15-26 | ND | Dark grayish-brown, Silty CLAY, plastic, cohesive, moist. Changing at 65.3 feet to: Dark grayish-brown, medium grained SAND, trace Silt, wet. Changing at 65.9 feet to: NO RECOVERY. | 64' | | | |
| | | | | | | | Silty CLAY | | | |
| | | | | | | 65.3' | SAND | | | |
| 65 | | | | | | 65.9' | NO RECOVERY | | | |
| | 34 | 24/20.4 | 66-68 | 27-28 21-30 | ND | Dark grayish-brown, fine to medium grained SAND, trace Silt, wet. Changing at 66.1 feet to: Dark grayish-brown, SILT, little fine grained Sand, non-plastic, cohesive, wet. Changing at 66.4 feet to: Dark grayish-brown, SILT & CLAY, some Sand, trace Gravel, moderately plastic, cohesive, moist. Changing at 66.7 feet to: Dark grayish-brown, fine to medium grained SAND, trace Silt, wet. Changing at 67.4 feet to: Dark grayish-brown, SILT, little Clay, | 66.1' | | | |
| | | | | | | 66.4' | SAND | | | |
| | | | | | | 66.7' | SILT | | | |
| | | | | | | 66.7' | SILT & CLAY | | | |
| 67 | | | | | | | SAND | | | |
| | | | | | | 67.4' | SILT | | | |
| | | | | | | 67.7' | NO RECOVERY | | | |
| 68 | | | | | | 68.2' | SAND | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|---|--|---------|---------------------|---------------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 69 | 36 | 24/22.8 | 70-72 | 33-48-50/3" | ND | plastic, cohesive, moist to wet. Changing at 67.7 feet to: NO RECOVERY. | SILT & CLAY | | | |
| | | | | | | Dark grayish-brown, fine to medium grained SAND, trace Silt. wet. Changing at 68.2 feet to: Dark grayish-brown, SILT & CLAY, some Sand, trace Gravel, moderately plastic, cohesive, moist. Changing at 69.4 feet to: Dark grayish-brown, CLAY & SILT, little Sand, trace Gravel, moderately plastic, cohesive, moist. Changing at 69.6 feet to: Varved, dark grayish-brown, SILT, with alternating layers of Silty Clay, plastic, cohesive, moist. Changing at 69.8 feet to: NO RECOVERY. | 69.4' CLAY & SILT | | | |
| 70 | | | | | | | 69.8' NO RECOVERY SAND | | | |
| 71 | | | | | | | 70' NO RECOVERY SAND | | | |
| 72 | 37 | 24/2.4 | 72-74 | 55/3" | ND | Brown, fine to medium grained SAND, trace Silt, wet. Changing at 71.4 feet to: Grayish-brown, SILT, trace Clay, trace fine grained Sand, moderately plastic, cohesive, moist to wet. Changing at 71.7 feet to: Brown, fine to medium grained SAND, trace Silt, wet. Changing at 71.9 feet to: NO RECOVERY. | 71.4' SILT | | | |
| | | | | | | Dark grayish-brown, Silty CLAY, plastic, cohesive, moist. Changing at 72.2 feet to: NO RECOVERY. | 71.7' SAND | | | |
| 73 | | | | | | | 71.9' NO RECOVERY Silty CLAY NO RECOVERY | | | |
| 74 | | | | | | | 72' NO RECOVERY | | | |
| 75 | 38 | 24/2.4 | 74-76 | 57/2" | ND | Dark grayish-brown, SILT & CLAY, some Sand, plastic, cohesive, moist. Changing at 74.2 feet to: NO RECOVERY. | 74' SILT & CLAY | | | |
| | | | | | | | 74.2' NO RECOVERY | | | |
| 76 | | | | | | | 76' CLAY & SILT | | | |
| 77 | | | | | | Grayish-brown to dark grayish-brown, CLAY & SILT, little Gravel, little Sand, plastic, cohesive, moist. Changing at 77.1 feet to: Varved grayish-brown to dark grayish-brown, SILT, some fine grained Sand, trace Clay, with fine grained SAND, slightly plastic, cohesive, moist. Changing at 77.4 feet to: Dark gray, Silty CLAY, plastic, cohesive, moist. Changing at 77.9 feet to: NO RECOVERY. | 77.1' SILT | | | |
| 78 | 40 | 24/18 | 78-80 | 7-11 14-30 | ND | Dark gray, Silty CLAY, plastic, cohesive, bedded, moist. Changing at 78.4 feet to: Brown, fine to medium grained SAND, little Silt, moist. Changing 78.8 feet to: Dark gray, Silty CLAY, plastic, cohesive, bedded, moist. Changing at 79.5 feet to: NO RECOVERY. | 77.4' Silty CLAY | | | |
| | | | | | | | 77.9' NO RECOVERY | | | |
| 79 | | | | | | | 78' NO RECOVERY Silty CLAY SAND | | | |
| | | | | | | | 78.4' Silty CLAY SAND | | | |
| | | | | | | | 78.8' Silty CLAY | | | |
| | | | | | | | 79.5' NO RECOVERY | | | |
| | | | | | | | 80' | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|--|--|---------|---------------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 81 | 41 | 24/21.6 | 80-82 | 12-25 33-40 | ND | Dark gray, Silty CLAY, plastic, cohesive, bedded, moist. Changing at 80.4 feet to: Brown, fine to medium grained SAND, little Silt, wet. Changing at 80.5 feet to: Dark gray, Silty CLAY, plastic, cohesive, bedded, moist. Changing at 80.8 feet to: Brown, fine to medium grained SAND, little Silt, wet. Changing at 81.0 feet to: Dark gray, Silty CLAY, plastic, cohesive, bedded, moist. Changing at 81.4 feet to: Brown, fine to medium grained SAND, little Silt, wet. Changing at 81.6 feet to: Dark gray, Silty CLAY, plastic, cohesive, bedded, moist. Changing at 81.8 feet to: NO RECOVERY. Brown, fine to medium grained SAND, trace Silt, wet. Changing at 83.2 feet to: NO RECOVERY. | Silty CLAY 80.4' 80.5' SAND 80.8' Silty CLAY 81' SAND Silty CLAY 81.4' 81.6' SAND 81.8' Silty CLAY 82' NO RECOVERY SAND 83.2' NO RECOVERY 84' SAND 85.4' GRAVEL 85.8' 86' NO RECOVERY Fractured 86.5' COBBLE SAND 87.4' 87.6' Silty CLAY NO RECOVERY 88' SILT & CLAY 88.7' NO RECOVERY 90' 90.1' SILT & CLAY NO RECOVERY | | | |
| 82 | 42 | 24/14.4 | 82-84 | 0-0 2-6 | ND | Brown, fine to medium SAND, trace Silt, wet. Changing at 85.4 feet to: Brown, GRAVEL, some coarse Sand, trace Silt, wet. Changing at 85.8 feet to: NO RECOVERY. | | | | |
| 86 | 44 | 24/21.6 | 86-88 | 49-28 39-50 | ND | Brown, fractured COBBLE. Changing at 86.5 feet to: Brown, fine to medium SAND, some Silt, slightly cohesive, moist to wet. Changing at 87.4 feet to: Brown, Silty CLAY, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 87.6 feet to: NO RECOVERY. | | | | |
| 88 | 45 | 24/8.4 | 88-90 | 19-39-50/3" | ND | Dark grayish-brown, SILT & CLAY, some Sand, trace Gravel, plastic, cohesive, moist. Changing at 88.7 feet to: NO RECOVERY. | | | | |
| 90 | 46 | 24/1.2 | 90-92 | 56/4" | ND | Dark grayish-brown, SILT & CLAY, some Sand, trace Gravel, plastic, cohesive, moist. Changing at 90.1 feet to: NO RECOVERY. | | | | |
| REMARKS | | | | | | | | | | |
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| Sample Information | | | | | | Equipment Installed | | | | |
|---|-------------|------------------|-------------|----------------|-----------|---|---------------|------------|---------------------|------------|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| 92 | 47 | 24/18 | 92-94 | 20-50-24 | ND | Dark grayish-brown, SILT & CLAY, some Sand, trace Gravel, plastic, cohesive, moist. Changing at 92.7 feet to: Dark brown, GRAVEL, some fine to coarse grained Sand, wet. Changing at 92.9 feet to: Dark grayish-brown, SILT & CLAY, some Sand, trace Gravel, plastic, cohesive, moist. Changing at 93.5 feet to: NO RECOVERY. | 92' | [REDACTED] | [REDACTED] | [REDACTED] |
| | | | | | | | SILT & CLAY | | | |
| 93 | | | | | | | 92.7' | | | |
| | | | | | | | 92.9' GRAVEL | | | |
| | SILT & CLAY | | | | | | | | | |
| 94 | 48 | 24/20.4 | 94-96 | 14-24 39-44 | ND | Dark grayish-brown, SILT & CLAY, some Sand, trace Gravel, plastic, cohesive, moist. Changing at 95.7 feet to: NO RECOVERY. | 93.5' | | | |
| | | | | | | | NO RECOVERY | | | |
| 94' | | | | | | | | | | |
| SILT & CLAY | | | | | | | | | | |
| 95 | 49 | 24/24 | 96-98 | 9-27 31-33 | ND | Dark grayish-brown to dark gray, SILT & CLAY, some Sand, trace Gravel, moderately plastic, cohesive, moist; very thin Sand, seam at 98.9 feet. | 95.7' | | | |
| NO RECOVERY | | | | | | | | | | |
| 96' | | | | | | | | | | |
| SILT & CLAY | | | | | | | | | | |
| 97 | 50 | 24/20.4 | 98-100 | 8-28-47 | ND | Dark grayish-brown to dark gray, SILT & CLAY, some Sand, trace Gravel, moderately plastic, cohesive, moist; very thin Sand, seam at 98.9 feet. Changing at 99.7 feet to: NO RECOVERY. | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 98 | 51 | 24/24 | 100-102 | 8-22 29-36 | ND | Dark grayish-brown to dark gray, SILT & CLAY, some Sand, trace Gravel, moderately plastic, cohesive, moist. | 99.7' | | | |
| NO RECOVERY | | | | | | | | | | |
| 100' | | | | | | | | | | |
| SILT & CLAY | | | | | | | | | | |
| 99 | 52 | 24/20.4 | 102-104 | 13-31 46-50/5" | ND | Dark grayish-brown to dark gray, SILT & CLAY, some Sand, trace Gravel, moderately plastic, cohesive, moist. Changing at 103.3 feet to: Brown, fine to medium grained SAND, trace Silt, wet. Changing at 103.7 feet to: NO RECOVERY. | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 100 | REMARKS | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|--|---|---------|---------------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 104 | 53 | 24/6 | 104-106 | 50/5.5" | ND | Dark gray, GRAVEL, some fine to coarse grained SAND, trace Silt, wet. Changing at 104.5 feet to: NO RECOVERY. | SAND 103.7' NO 104' RECOVERY GRAVEL 104.5' NO RECOVERY | | | |
| 105 | | | | | | | | | | |
| 106 | 54 | 24/13.2 | 106-108 | 1-2 6-15 | ND | Dark grayish-brown, GRAVEL, some fine to coarse grained Sand, trace Silt, wet. Changing at 107.1 feet to: NO RECOVERY. | 106' GRAVEL | | | |
| 107 | | | | | | | 107.1' NO RECOVERY | | | |
| 108 | 55 | 24/6 | 108-110 | 2-2 6-9 | ND | Dark grayish-brown, GRAVEL, some fine to coarse grained Sand, trace Silt, wet. Changing at 108.5 feet to: NO RECOVERY. | 108' GRAVEL 108.5' NO RECOVERY | | | |
| 109 | | | | | | | | | | |
| 110 | 56 | 24/15.6 | 110-112 | 14-15 | ND | Dark grayish-brown, GRAVEL, some fine to coarse grained Sand, trace Silt, wet. Changing at 111.3 feet to: NO RECOVERY. | 110' GRAVEL | | | |
| 111 | | | | | | | 111.3' NO RECOVERY | | | |
| 112 | 57 | 24 | 112-114 | | | No sampling attempts. | 112' NO SAMPLING ATTEMPTS | | | |
| 113 | | | | | | | | | | |
| 114 | 58 | 24 | 114-116 | | | No sampling attempts. | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: PMW-WV-11/MW-WV-11D | |

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 3/25/19



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No. MW-WV-11/MW-WV-11D
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File No.: 16.0062677.81
Check: Leslie Nelson

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|----------------------|---------|---------------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 116 | 59 | 24 | 116-118 | | | No sampling attempts. | NO SAMPLING ATTEMPTS | | | |
| 117 | | | | | | | | | | |
| 118 | 60 | 24 | 118-120 | | | No sampling attempts. | | | | |
| 119 | | | | | | | | | | |
| 120 | 61 | 24 | 120-122 | | | No sampling attempts. | | | | |
| 121 | | | | | | | | | | |
| 122 | 62 | 24 | 122-124 | | | No sampling attempts. | | | | |
| 123 | | | | | | | | | | |
| 124 | 63 | 24 | 124-126 | | | No sampling attempts. | | | | |
| 125 | | | | | | | | | | |
| 126 | 64 | 24 | 126-128 | | | No sampling attempts. | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: PMW-WV-11/MW-WV-11D | |

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 3/25/19



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No. MW-WV-11/MW-WV-11D
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Check: Leslie Nelson

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|----------------------|---------|---------------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 127 | | | | | | | NO SAMPLING ATTEMPTS | | | |
| 128 | 65 | 24 | 128-130 | | | No sampling attempts. | | | | |
| 129 | | | | | | | | | | |
| 130 | 66 | 24 | 130-132 | | | No sampling attempts. | | | | |
| 131 | | | | | | | | | | |
| 132 | 67 | 24 | 132-134 | | | No sampling attempts. | | | | |
| 133 | | | | | | | | | | |
| 134 | 68 | 24 | 134-136 | | | No sampling attempts. | | | | |
| 135 | | | | | | | | | | |
| 136 | 69 | 24 | 136-138 | | | No sampling attempts. | | | | |
| 137 | | | | | | | | | | |
| 138 | 70 | 24 | 138-140 | | | No sampling attempts. | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: PMW-WV-11/MW-WV-11D | |

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 3/25/19



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Algoma Twp, Kent County, Michigan

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Check: Leslie Nelson

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|----------------------|---------|---------------------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 139 | | | | | | | NO SAMPLING ATTEMPTS | | | |
| 140 | 71 | 24 | 140-142 | | | No sampling attempts. | | | | |
| 141 | | | | | | | | | | |
| 142 | 72 | 24 | 142-144 | | | No sampling attempts. | | | | |
| 143 | | | | | | | | | | |
| 144 | 73 | 24 | 144-146 | | | No sampling attempts. | | | | |
| 145 | | | | | | | | | | |
| 146 | 74 | 24 | 146-148 | | | No sampling attempts. | | | | |
| 147 | | | | | | | | | | |
| 148 | 75 | 24 | 148-150 | | | No sampling attempts. | | | | |
| 149 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: PMW-WV-11/MW-WV-11D | |

BORING WELL 6267781 WWW.WOLVEN AVENUE.GPJ GZA CORP.GDT 3/25/19



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Wolver Avenue Area
Algoma Twp, Kent County, Michigan

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Check: Leslie Nelson

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|----------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 151 | 76 | 24 | 150-152 | | | No sampling attempts. | NO SAMPLING ATTEMPTS | | | |
| 152 | 77 | 24 | 152-154 | | | No sampling attempts. | | | | |
| 154 | 78 | 24 | 154-156 | | | No sampling attempts. | | | | |
| 156 | 79 | 24 | 156-158 | | | No sampling attempts. | | | | |
| 158 | 80 | 24 | 158-160 | | | No sampling attempts. | | | | |
| 160 | 81 | 24 | 160-162 | | | No sampling attempts. | | | | |
| REMARKS | | | | | | | | | | |
| | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | Boring No.: PMW-WV-11/MW-WV-11D |

BORING WELL 6267781 WWW.WOLVER AVENUE.GPJ GZA CORP.GDT 3/25/19

Filter Sand

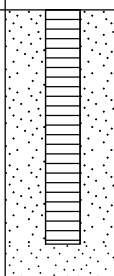
2-Inch PVC Well Screen



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No. MW-WV-11/MW-WV-11D
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File No.: 16.0062677.81
Check: Leslie Nelson

| Sample Information | | | | | | Algonia Twp, Kent County, Michigan | | | | Check: Leslie Nelson | |
|---------------------------------|---|------------------|-------------|-------------|-----------|--|----------------------|---------|---|----------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | | | | | | | | | | | |
| 162 | 82 | 24 | 162-164 | | | No sampling attempts. | NO SAMPLING ATTEMPTS | 3 |  | | |
| 163 | | | | | | | | | | | |
| 164 | 83 | 24/9.6 | 164-166 | 25-50/3 | ND | Dark grayish-brown, SILT, trace fine grained SAND, non-plastic, cohesive, moist. | 164' SILT | | | | |
| 165 | | | | | | | | | | | |
| 166 | | | | | | Bottom of Borehole at 166.0 Feet | 166' | | | | |
| 167 | | | | | | | | | | | |
| 168 | | | | | | | | | | | |
| 169 | | | | | | | | | | | |
| 170 | | | | | | | | | | | |
| 171 | | | | | | | | | | | |
| 172 | | | | | | | | | | | |
| 173 | | | | | | | | | | | |
| REMARKS | 3. Monitoring well was installed in borehole upon completion. Well screen set from 158.9 to 163.7 feet below ground surface. | | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |
| Boring No.: PMW-WV-11/MW-WV-11D | | | | | | | | | | | |

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 3/25/19



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Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV11S

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File No.: 16.0062677.81

Check: Leslie Nelson

Contractor: Stearns Drilling Company

Foreman: Jerry H., Travis & Zach/Gary

Logged by: John Morehouse

Date Start/Finish: 1-3-19 / 1-3-19

Boring Location:

GS Elev.: Datum: NAD 83

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger Split Spoon
O.D. / I.D.: 12.25" / 4.25" 2.0" / 1 3/8"
Hammer Wt.: NA 140lbs
Hammer Fall: NA 30.0"
TOC Elev.: NA NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See boring log PMW-WV-11/MW-WV-11D for soil descriptions. | | 1 | Bentonite Grout | Filter Sand |
| 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 | | | | | | Bottom of Borehole at 34.0 Feet | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 28.8 to 33.6 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV11S

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 3/25/19



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Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV12D

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File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry H.

Logged by: John Morehouse

Date Start/Finish: 10-26-18 / 11-29-18

Boring Location: _____

GS Elev.: _____ Datum: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 12.25" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: NA 140lbs

Hammer Fall: NA 30.0"

Other: NA NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Sample Information | | | | | | Other: | NA | NA | | | | | | |
|--------------------|-----|------------------|-------------|-------------|---------|--|---|---------|---------------------|--|--|-------------------|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | | | | |
| | | | | | | | | | | | | PROTECTIVE CASING | | |
| 1 | 1 | 24 | 0-2 | 3-3 3-3 | 0.0 ppm | Dark brown, poorly sorted, fine to medium-grained SAND, some Silt, trace Clay, trace Gravel, non to slightly plastic, slightly cohesive, moist. Changing at 1.6 feet to: NO RECOVERY. | SAND | 1 | | | | | | |
| 2 | 2 | 24 | 2-4 | 2-2 1-1 | 0.0 ppm | Dark brown, poorly sorted, fine to medium-grained SAND, some Silt, trace Clay, trace Gravel, non to slightly plastic, slightly cohesive, moist. Changing at 2.3 feet to: Dark yellowish-brown, poorly sorted, SILT, little Clay, trace Gravel, moderately plastic, cohesive, moist. Changing at 2.6 feet to: Dark yellowish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plstic, cohesive, moist. Changing at 2.8 feet to: NO RECOVERY. | 1.6' NO 2' RECOVERY SAND 2.3' SILT 2.6' 2.8' CLAY & SILT | | | | | | | |
| 3 | | | | | | | NO RECOVERY | | | | | | | |
| 4 | 3 | 24 | 4-6 | 0-0 1-2 | 0.0 ppm | Dark yellowish-brown, poorly sorted, Silty CLAY, trce Gravel, plastic, cohesive, moist. Changing at 5.6 feet to: NO RECOVERY. | 4' Silty CLAY | | | | | | | |
| 5 | | | | | | | 5.6' NO RECOVERY | | | | | | | |
| 6 | 4 | 24 | 6-8 | 0-1 5-6 | 0.0 ppm | Dark yellowish-brown, poorly sorted, Silty CLAY, trace Gravel, plastic, cohesive, moist. Changing at 7.6 feet to: Yellowish-brown, poorly sorted, fine to medium-grained SAND, little Silt, little Clay, trace Gravel, slightly plastic, slightly cohesive, moist. Changing 7.8 feet to: NO RECOVERY. | 6' Silty CLAY | | | | | | | |
| 7 | | | | | | | 7.6' 7.8' SAND | | | | | | | |
| 8 | 5 | 24 | 8-10 | 4-7 9-8 | 0.0 ppm | Yellowish-brown, poorly sorted, fine to medium-grained SAND, little Silt, little Clay, trace Gravel, slightly plastic, slightly cohesive, moist. Changing at 8.6 feet to: Yellowish-brown, poorly sorted, fine to medium-grained SAND, little Silt, little Clay, trace Gravel, slightly plastic, slightly cohesive, moist. Changing at 9.5 feet to: NO RECOVERY. | 8' NO RECOVERY SAND | | | | | | | |
| 9 | | | | | | | 9.5' NO RECOVERY | | | | | | | |
| 10 | 6 | 24 | 10-12 | 5-8 8-10 | 0.0 ppm | Yellowish-brown, poorly sorted, fine to medium-grained SAND, little Silt, little Clay, trace Gravel, slightly plastic, slightly cohesive, moist. Changing at 11.5 feet to: NO RECOVERY. | 10' SAND | | | | | | | |
| 11 | | | | | | | 11.5' NO RECOVERY | | | | | | | |
| | | | | | | | 12' | | | | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million by volume (ppmv) of isobutylene. ND indicates nothing detected (<0.1 ppmv).

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV12D

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV12D
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File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|---------|--|-------------------------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 13 | 7 | 24 | 12-14 | 2-7 13-24 | 0.0 ppm | Yellowish-brown, poorly sorted, fine to medium-grained SAND, little Silt, little Clay, trace Gravel, slightly plastic, slightly cohesive, moist. Changing at 13.0 feet to: Yellowish-brown, poorly sorted, fine to coarse-grained SAND, some Gravel, little Silt, slightly cohesive, moist. Changing at 13.9 feet to: NO RECOVERY. | SAND | | | |
| 14 | 8 | 24 | 14-16 | 14-11 10-14 | 0.0 ppm | Yellowish-brown, poorly sorted, fine to coarse-grained SAND, some Gravel, little Silt, slightly cohesive, moist. Changing at 14.5 feet to: Yellowish-brown, poorly sorted, fine to medium-grained SAND, little Silt, little Clay, trace Gravel, slightly plastic, slightly cohesive, moist. Changing at 15.7 feet to: NO RECOVERY. | 13.9' 14' NO RECOVERY SAND | | | |
| 16 | 9 | 24 | 16-18 | 6-8 9-13 | 0.0 ppm | Dark gray, poorly sorted, Silty CLAY, plastic, cohesive, moist. Changing at 17.8 feet to: NO RECOVERY. | 15.7' 16' NO RECOVERY Silty CLAY | | | |
| 18 | 10 | 24 | 18-20 | 6-10 11-16 | 0.0 ppm | Brown, moderately well sorted, fine to medium-grained SAND, little Silt, moist to wet. Changing at 18.3 feet to: Yellowish-brown, poorly sorted, fine to medium-grained SAND, little Silt, little Clay, trace Gravel, slightly plastic, slightly cohesive, moist with occasional fine Sand partings. Changing at 18.8 feet to: Brown, moderately well sorted, fine to medium-grained SAND, little Silt, moist to wet. Changing at 18.9 feet to: Yellowish-brown, poorly sorted, fine to medium-grained SAND, little Silt, little Clay, trace Gravel, slightly plastic, slightly cohesive, moist with occasional fine Sand partings. Changing at 19.8 feet to: NO RECOVERY. | 17.8' 18' NO RECOVERY SAND | 2 | | |
| 20 | 11 | 24 | 20-22 | 2-6 10-16 | 0.0 ppm | Brown, moderately well sorted, fine to medium-grained SAND, little Silt, moist to wet. Changing at 18.9 feet to: Yellowish-brown, poorly sorted, fine to medium-grained SAND, little Silt, little Clay, trace Gravel, slightly plastic, slightly cohesive, moist with occasional fine Sand partings. Changing at 19.8 feet to: NO RECOVERY. | 19.8' 20' NO RECOVERY SAND | | | |
| 22 | 12 | 24 | 22-24 | 6-8 12-10 | 0.0 ppm | Brown, moderately well sorted, fine to medium-grained SAND, little Silt, moist to wet. Changing at 20.4 feet to: Yellowish-brown, poorly sorted, fine to medium-grained SAND, little Silt, little Clay, trace Gravel, slightly plastic, slightly cohesive, moist with occasional fine Sand partings. Changing at 20.8 feet to: Brown, moderately well sorted, fine to medium-grained SAND, little Silt, moist to wet. Changing at 20.9 feet to: Yellowish-brown, poorly sorted, fine to medium-grained SAND, little Silt, little Clay, trace Gravel, slightly plastic, slightly cohesive, moist with occasional fine Sand partings. Changing at 21.4 feet to: Brown, | 21.8' 22' NO RECOVERY Silty CLAY | | | |
| 24 | 13 | 24 | 24-26 | 4-8 12-15 | 0.0 ppm | Yellowish-brown, poorly sorted, fine to medium-grained SAND, little Silt, little Clay, trace Gravel, slightly plastic, slightly cohesive, moist with occasional fine Sand partings. Changing at 21.4 feet to: Brown, | 23.7' 24' NO RECOVERY Silty CLAY | | | |
| 2. Groundwater was encountered at approximately 18.0 feet below ground surface. | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20

Boring No.: MW-WV12D



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

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Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|---------------|---------------|---------|---|--|---------|----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 14 | 24 | 26-28 | 6-13 15-16 | 0.0 ppm | | moderately well sorted, fine to medium-grained SAND, little Silt, moist to wet. Changing at 21.5 feet to: Yellowish-brown, poorly sorted, fine to medium-grained SAND, little Silt, little Clay, trace Gravel, slightly plastic, slightly cohesive, moist with occasional fine Sand partings. Changing at 21.8 feet to: NO RECOVERY. | Silty CLAY | | | |
| 27 | | | | | | | 27' 27.2' SAND Silty CLAY | | | |
| 28 | 15 | 24 | 28-30 | 5-7 10-14 | 0.0 ppm | Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 23.7 feet to: NO RECOVERY. | 27.8' 28' NO RECOVERY Silty CLAY | | | |
| 29 | | | | | | Dark grayish-brown, well sorted, Silty CLAY, trace Gravel, plastic, cohesive, moist with fine Sand partings at 24.7 feet. Changing at 25.4 feet to: Dark grayish-brown, poorly sorted, Silty CLAY, trace Gravel, plastic, cohesive, moist with fine Sand partings at 25.4 feet and 25.7 feet. | | | | |
| 30 | 16 | 24 | 30-32 | 5-7 11-16 | 0.0 ppm | Dark grayish-brown, poorly sorted, Silty CLAY, trace Gravel, plastic, cohesive, moist with fine Sand partings at 26.7 feet. Changing at 27.0 feet to: Brown, very well sorted, fine-grained SAND, trace Silt, moist. Changing at 27.2 feet to: Dark grayish-brown, poorly sorted, Silty CLAY, trace Gravel, plastic, cohesive, moist with fine Sand partings at 27.4 feet. Changing at 27.8 feet to: NO RECOVERY. | 31.9' 32' NO RECOVERY Silty CLAY | | | |
| 31 | | | | | | Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist. | | | | |
| 32 | 17 | 24 | 32-34 | 4-9 11-17 | 0.0 ppm | Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 31.9 feet to: NO RECOVERY. | | | | |
| 33 | | | | | | Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist. | | | | |
| 34 | 18 | 24 | 34-36 | 5-11 13-13 | 0.0 ppm | Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist. | | | | |
| 35 | | | | | | Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist. | | | | |
| 36 | 19 | 24 | 36-38 | 3-7 12-12 | 0.0 ppm | Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist. | | | | |
| 37 | | | | | | | | | | |
| 38 | 20 | 24 | 38-40 | 3-8 11-13 | 0.0 ppm | Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist. | 38' CLAY & SILT | | | |
| 39 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV12D | |

BORING: WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV12D
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File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|---------|---|--|---------|----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 41 | 21 | 24 | 40-42 | 3-7 89-10 | 0.0 ppm | Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 41.2 feet to: Dark gray, poorly sorted, SILT & CLAY, some Sand, trace Gravel, moderately plastic, cohesive, moist. Changing at 41.4 feet to: Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist with occasional fine Sand partings. | CLAY & SILT 41.2' 41.4' SILT & CLAY Silty CLAY 42' | | | |
| 42 | 22 | 24 | 42-44 | 3-8 10-13 | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, trace Gravel, plastic, cohesive, moist. Changing at 43.6 feet to: Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 43.9 feet to: Dark grayish-brown, poorly sorted, CLAY & SILT, trace Gravel, plastic, cohesive, moist. | CLAY & SILT 43.6' 43.9' Silty CLAY | | | |
| 43 | | | | | | | | | | |
| 44 | 23 | 24 | 44-46 | 2-8 12-12 | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, trace Gravel, plastic, cohesive, moist. Changing at 44.9 feet to: Dark grayish-brown, poorly sorted, SILT & CLAY, little Sand, trace Gravel, slightly plastic, cohesive, moist. Changing at 45.8 feet to: NO RECOVERY. | CLAY & SILT 44.9' SILT & CLAY 45.8' 46' NO RECOVERY SILT & CLAY Silty CLAY | | | |
| 45 | | | | | | | | | | |
| 46 | 24 | 24 | 46-48 | 4-6 11-16 | 0.0 ppm | Dark grayish-brown, poorly sorted, SILT & CLAY, little Sand, trace Gravel, slightly plastic, cohesive, moist. Changing at 46.2 feet to: Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 47.8 feet to: NO RECOVERY. | 46.2' SILT & CLAY Silty CLAY 47.8' 48' NO RECOVERY Silty CLAY | | | |
| 47 | | | | | | | | | | |
| 48 | 25 | 24 | 48-50 | 3-7 14-23 | 0.0 ppm | Dark gray, well sorted, Silty CLAY, plastic, cohesive, moist with fine Sand parting at 48.6 feet. Changing at 49.8 feet to: Brown, well sorted, fine to medium -grained SAND, trace Silt, moist to wet. Changing at 49.9 feet to: NO RECOVERY. | 49.8' 49.9' SAND NO RECOVERY SAND | | | |
| 49 | | | | | | | | | | |
| 50 | 26 | 24 | 50-52 | 2-9 14-22 | 0.0 ppm | Grayish-brown to brown, poorly sorted, fine to coarse-grained SAND, trace Gravel, trace Silt, wet. Changing at 50.7 feet to: Dark gray, very well sorted, fine-grained SAND, some Silt, wet. Changing at 51.0 feet to: Dark yellowish-brown, moderately sorted, fine-grained SAND, some Silt, trace Clay, slightly plastic, cohesive, wet. Changing at 51.3 feet to: Yellowish-brown, well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 51.5 feet to: NO RECOVERY. | 51.0' NO RECOVERY SAND 51.5' NO RECOVERY SAND 52' SAND 52.8' SILT | | | |
| 51 | | | | | | | | | | |
| 52 | 27 | 24 | 52-54 | 10-15 17-27 | 0.0 ppm | Yellowish-brown, well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 52.8 feet to: Dark grayish-brown, very well sorted, SILT, trace | 53.7' NO 54' | | | |
| 53 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV12D | |

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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|---------|---|---|---------|----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 55 | 28 | 24 | 54-56 | 13-17 17-32 | 0.0 ppm | Clay, slightly plastic, cohesive, moist. Changing at 53.7 feet to: NO RECOVERY. Dark grayish-brown, poorly sorted, SILT & CLAY, little Sand, trace Gravel, moderately plastic, cohesive, moist. Changing at 55.2 feet to: Dark grayish-brown to grayish-brown, well sorted, fine to medium-grained SAND, trace Silt, wet. | RECOVERY SILT & CLAY 55.2' 55.4' SAND CLAY & SILT | | | |
| 56 | 29 | 24 | 56-58 | 3-13 16-20 | 0.0 ppm | Changing at 55.4 feet to: Varved dark grayish-brown, very well sorted, Silty CLAY & SILT, plastic, cohesive, moist. Changing at 55.9 feet to: Dark gray, poorly sorted, CLAY & SILT, trace Gravel, plastic, cohesive, moist. | 56' SILT | | | |
| 58 | 30 | 24 | 58-60 | 3-13 21-47 | 0.0 ppm | Dark grayish-brown to brown, well sorted, SILT with very thin Clay varves, plastic (Clay), cohesive, moist to wet. Changing at 57.7 feet to: NO RECOVERY. Dark grayish-brown, moderately sorted, CLAY & SILT, trace fine-grained Sand, plastic, cohesive, moist. Changing at 59.0 feet to: Dark gray to dark grayish-brown, moderately well sorted, fine to medium SAND, little Silt, moist to wet. Changing at 59.3 feet to: Dark grayish-brown, moderately sorted, CLAY & SILT, trace fine-grained Sand, plastic, cohesive, moist. Changing at 59.6 feet to: NO RECOVERY. | 57.7' NO RECOVERY CLAY & SILT 59' SAND 59.3' CLAY & SILT 59.6' | | | |
| 60 | 31 | 24 | 60-62 | 3-10 15-37 | 0.0 ppm | Varved dark grayish-brown, moderately well sorted, Silty CLAY and fine SAND, plastic, cohesive, moist to wet. Changing at 61.1 feet to: Dark grayish-brown, moderately well sorted, Silty CLAY, trace Gravel, plastic, cohesive, moist with occasional fine Sand partings. | 60' RECOVERY Silty CLAY and SAND 61.1' Silty CLAY 61.7' | | | |
| 62 | 32 | 24 | 62-64 | 5-10 12-44 | 0.0 ppm | Changing at 61.7 feet to: NO RECOVERY. Varved dark grayish-brown, well sorted, Silty CLAY and fine-grained SAND, plastic, cohesive, moist to wet with fine Sand partings from 62.0 to 63.0 feet. Changing at 63.0 feet to: Dark grayish-brown, poorly sorted, CLAY & SILT, trace Gravel, trace Sand, plastic, cohesive, moist. Changing at 63.6 feet to: NO RECOVERY. | 62' RECOVERY Silty CLAY and SAND 63' CLAY & SILT 63.6' | | | |
| 64 | 33 | 24 | 64-66 | 6-12 16-34 | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, trace Gravel, trace Sand, plastic, cohesive, moist. Changing at 64.6 feet to: Dark grayish-brown, well sorted, fine to medium SAND, trace Silt, wet. Changing at 64.7 feet to: Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. | 64' RECOVERY CLAY & SILT 64.6' SAND 64.7' Silty CLAY 65.1' SAND 65.3' CLAY & SILT 65.6' | | | |
| 66 | 34 | 24 | 66-68 | 7-17 22-45 | 0.0 ppm | Changing at 64.7 feet to: Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 65.1 feet to: Dark grayish-brown, moderately well sorted, fine to medium-grained SAND, little Clay, little Silt, slightly plastic, moist to wet. Changing at 65.3 feet to: Dark grayish-brown, moderately sorted, CLAY & SILT, trace Gravel, trace Sand, plastic, cohesive, moist. Changing at 65.6 feet to: NO RECOVERY. | 66' RECOVERY Silty CLAY and SAND 67.9' | | | |
| 67 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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Wolven Avenue Area
Algoma Twp, Kent County, Michigan

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| Sample Information | | | | | | Argonia Twp., Kent County, Michigan | | Check: Kate McDonald | | |
|---|-----|------------------|-------------|---------------|---------|---|---|----------------------|----------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 69 | 35 | 24 | 68-70 | 3-4 12-25 | 0.0 ppm | Varved dark grayish-brown, well sorted, Silty CLAY and fine-grained SAND, plastic, cohesive, moist. Changing at 67.9 feet to: Brown, moderately well sorted, fine to coarse-grained SAND, little Silt, grace Gravel, moist to wet. | 68' SAND 68.5' Silty CLAY SAND 69' NO RECOVERY | | | |
| 70 | 36 | 24 | 70-72 | 6-13-50/6 | 0.0 ppm | Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 68.5 feet to: Brown, well sorted, fine to medium-grained SAND, trace Silt, moist to wet. Changing at 69.0 feet to: Varved dark grayish-brown, well sorted, Silty CLAY and fine-grained SAND, plastic, cohesive, moist. Changing at 69.1 feet to: Varved dark grayish-brown, well sorted, Silty CLAY and SILT, plastic, cohesive, moist. Changing at 69.2 feet to: NO RECOVERY. | 70' CLAY & SILT 71' Silty CLAY 71.4' SAND 71.6' Silty CLAY 71.8' SAND | | | |
| 72 | 37 | 24 | 72-74 | 2-7 17-40 | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, trace Gravel, plastic, cohesive, moist. Grading to 71.0 feet: Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 71.4 feet to: Brown, very well sorted, fine to medium-grained SAND, trace Silt, moist to wet. Changing at 71.6 feet to: Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 71.8 feet to: Brown, very well sorted, fine to medium SAND, trace Silt, moist to wet. | 73.5' NO RECOVERY 74' SAND 74.5' NO RECOVERY | | | |
| 74 | 38 | 24 | 74-76 | 1-10 33-50 | 0.0 ppm | Brown, very well sorted, fine to medium SAND, trace Silt, moist to wet. Changing at 73.5 feet to: NO RECOVERY. | 76' SAND 76.3' NO RECOVERY | | | |
| 76 | 39 | 24 | 76-78 | 1-4 16-26 | 0.0 ppm | Brown, very well sorted, fine to medium-grained SAND, trace Silt, moist to wet. Changing at 74.5 feet to: NO RECOVERY. | 78' SAND | | | |
| 78 | 40 | 24 | 78-80 | 5-22 31-38 | 0.0 ppm | Brown, very well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at Changing at 79.6 feet to: NO RECOVERY. | 79.6' NO RECOVERY 80' SAND | | | |
| 80 | 41 | 24 | 80-82 | 1-11 14-43 | 0.0 ppm | Brown, very well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 81.6 feet to: NO RECOVERY. | 81.6' NO RECOVERY 82' SAND | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------------|---------|--|----------------------|---------|----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 82 | 42 | 24 | 82-84 | 10-26 40-50 | 0.0 ppm | Brown, very well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 83.3 feet to: NO RECOVERY. | SAND | | | |
| 83 | | | | | | | 83.3' NO RECOVERY | | | |
| 84 | 43 | 24 | 84-86 | 4-10 17-20 | 0.0 ppm | Brown, very well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 85.2 feet to: Dark grayish-brown poorly sorted, SAND, little Clay, little Silt, slightly plastic, moderately cohesive, moist. Changing at 85.2 feet to: NO RECOVERY. | 84' SAND | | | |
| 85 | | | | | | | 85.3' NO RECOVERY | | | |
| 86 | 44 | 24 | 86-88 | 15-28 33-50/4.5" | 0.0 ppm | Dark grayish-brown, poorly sorted SAND, some Silt, trace Clay, slightly plastic, moderately cohesive, moist. Changing at 87.4 feet to: NO RECOVERY. | 86' SAND | | | |
| 87 | | | | | | | 87.4' NO RECOVERY | | | |
| 88 | 45 | 24 | 88-90 | 11-21 20-25 | 0.0 ppm | Dark grayish-brown, poorly sorted SAND, some Silt, trace Clay, trace Gravel, slightly plastic, moderately cohesive, moist. Changing at 88.9 feet to: Dark grayish-brown, poorly sorted, CLAY & SILT, some Sand, slightly plastic, cohesive, moist. Changing at 89.2 feet to: NO RECOVERY. | 88' SAND | | | |
| 89 | | | | | | | 88.9' CLAY & SILT | | | |
| 90 | 46 | 24 | 90-92 | 14-23 19-22 | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, some Sand, slightly plastic, cohesive, moist. Changing at 90.6 feet to: Dark grayish-brown, well sorted, SILT, non plastic, moderately cohesive, moist to wet. Changing at 91.5 feet to: Dark grayish-brown to dark gray, poorly sorted, SILT & CLAY, trace Gravel, plastic, cohesive, moist. Changing at 91.9 feet to: NO RECOVERY. | 89.2' NO RECOVERY | | | |
| 91 | | | | | | | 90' CLAY & SILT | | | |
| 92 | 47 | 24 | 92-94 | 9-31-50/6" | 0.0 ppm | Dark grayish-brown to dark gray, poorly sorted, SILT & CLAY, trace Gravel, plastic, cohesive, moist. Changing at 91.9 feet to: NO RECOVERY. | 90.6' SILT | | | |
| 93 | | | | | | | 91.5' SILT & CLAY | | | |
| 94 | 48 | 24 | 94-96 | 31-50/4.5" | 0.0 ppm | Varved dark grayish-brown, well sorted, Silty CLAY and Silt, plastic, cohesive, moist. Changing at 93.2 feet to: NO RECOVERY. | 91.9' NO RECOVERY | | | |
| 95 | | | | | | | 92' SILT & CLAY | | | |
| | | | | | | | 93.1' CLAY & SILT | | | |
| | | | | | | | 93.2' NO RECOVERY | | | |
| | | | | | | | 94' CLAY & SILT | | | |
| | | | | | | | 95.3' NO RECOVERY | | | |
| | | | | | | | 96' | | | |
| REMARKS | | | | | | | | | | |
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Bentonite Grout



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Algoma Twp, Kent County, Michigan

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|---------|--|-------------------------------------|---------|----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 49 | 24 | | 96-98 | 25-48-50/4 | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, some Sand, trace Gravel, plastic, cohesive, moist. Changing at 97.2 feet to: NO RECOVERY. | CLAY & SILT | | | |
| 97 | | | | | 0.0 ppm | | 97.2' NO RECOVERY | | | |
| 98 | 50 | 24 | 98-100 | 27-50/5.5 | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, some Sand, trace Gravel, plastic, cohesive, moist. Changing at 98.3 feet to: Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 98.9 feet to: NO RECOVERY. | 98' CLAY & SILT 98.3' Silty CLAY | | | |
| 99 | | | | | | | 98.9' NO RECOVERY | | | |
| 100 | 51 | 24 | 100-102 | 8-23 37-32 | 0.0 ppm | Brown, well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 100.5 feet to: Brown, very well sorted, SILT, trace Clay, slightly plastic, cohesive, varved with very thin layers of Silty CLAY, moist. Changing at 101.2 feet to: NO RECOVERY. | 100' SAND | | | |
| 101 | | | | | | | 100.5' SILT | | | |
| 102 | 52 | 24 | 102-104 | 27-28 44-45 | 0.0 ppm | Light grayish-brown to pale brown, very well sorted, SILT, cohesive, moist. Changing at 102.2 feet to: Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 103.2 feet to: NO RECOVERY. | 101.2' NO RECOVERY | | | |
| 103 | | | | | | | 102' NO RECOVERY | | | |
| 104 | 53 | 24 | 104-106 | 11-27-50/5 | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 105.4 feet to: NO RECOVERY. | 102.2' SILT CLAY & SILT | | | |
| 105 | | | | | | | 103.2' NO RECOVERY | | | |
| 106 | 54 | 24 | 106-108 | 31-50/5.5 | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 107.4 feet to: NO RECOVERY. | 104' CLAY & SILT | | | |
| 107 | | | | | | | 105.4' NO RECOVERY | | | |
| 108 | 55 | 24 | 108-110 | 26-50/4" | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 108.8 feet to: NO RECOVERY. | 106' CLAY & SILT | | | |
| 109 | | | | | | | 107.4' NO RECOVERY | | | |
| | | | | | | | 108' CLAY & SILT | | | |
| | | | | | | | 108.8' NO RECOVERY | | | |
| | | | | | | | 110' | | | |
| REMARKS | | | | | | | | | | |
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|---|--------------------|------------------|-------------|---------------------|---------|--|---|---------|----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 111 | 56 | 24 | 110-112 | 11-22 37-50/5" | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 111.9 feet to: NO RECOVERY. | CLAY & SILT | | | |
| 112 | 57 | 24 | 112-114 | 31-50/3.5" | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 112.7 feet to: NO RECOVERY. | 111.9' 112' NO RECOVERY CLAY & SILT 112.6' 112.7' SAND NO RECOVERY | | | |
| 114 | 58 | 24 | 114-116 | 18-38-50 | 0.0 ppm | Dark grayish-brown, very well sorted, SILT, trace Clay, slightly plastic, cohesive, varved with very thin layers of Silty CLAY, moist. Changing at 114.7 feet to: Dark grayish-brown, well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 114.8 feet to: Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 115.5 feet to: NO RECOVERY. | 114' SILT 114.7' 114.8' SAND CLAY & SILT 115.5' NO RECOVERY | | | |
| 116 | 59 | 24 | 116-118 | 4-13 25-50 | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 116.4 feet to: Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 117.8 feet to: NO RECOVERY. | 116' CLAY & SILT 117.8' 118' NO RECOVERY CLAY & SILT | | | |
| 118 | 60 | 24 | 118-120 | 5-27 34-39 | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 121.9 feet to: NO RECOVERY. | 121.9' 122' NO RECOVERY CLAY & SILT | | | |
| 122 | 62 | 24 | 122-124 | 17-23 46-50/3.5" | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 123.5 feet to: Dark grayish-brown, very well sorted, SILT, trace Clay, slightly plastic, cohesive, varved with very thin layers of Silty CLAY, moist. Changing at 123.8 feet to: NO RECOVERY. | 123.5' 123.8' SILT 124' NO | | | |
| REMARKS | | | | | | | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------------|---------|--|--|---------|----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 125 | 63 | 24 | 124-126 | 8-24 44-50/4" | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 125.8 feet to: NO RECOVERY. | RECOVERY CLAY & SILT | | | |
| 126 | 64 | 24 | 126-128 | 10-25 47-50/4" | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 127.8 feet to: NO RECOVERY. | 125.8' 126' NO RECOVERY CLAY & SILT | | | |
| 128 | 65 | 24 | 128-130 | 27-34-50/50" | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 129.4 feet to: NO RECOVERY. | 127.8' 128' NO RECOVERY CLAY & SILT | | | |
| 130 | 66 | 24 | 130-132 | 9-21 35-50/5" | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand trace Gravel, plastic, cohesive, moist. Changing at 131.9 feet to: NO RECOVERY. | 129.4' NO RECOVERY 130' CLAY & SILT | | | |
| 132 | 67 | 24 | 132-134 | 7-9 10-17 | 0.0 ppm | Dark grayish-brown poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 132.8 feet to: Dark grayish-brown, very well sorted, SILT, non plastic, cohesive, moist. Changing at 133.1 feet to: Dark grayish-brown, well sorted, Silty CLAY, plastic, cohesive, moist. Changing at 133.4 feet to: Dark grayish-brown, well sorted, SILT, some fine-grained SAND, non plastic, cohesive, moist to wet. Changing at 133.8 feet to: NO RECOVERY. | 131.9' 132' NO RECOVERY CLAY & SILT | | | |
| 134 | 68 | 24 | 134-136 | 19-33-50/40" | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, little Sand, trace Gravel, plastic, cohesive, moist. Changing at 134.3 feet to: Dark grayish-brown, very well sorted, SILT, non plastic, cohesive, moist. Changing at 134.6 feet to: Dark grayish-brown, moderately sorted, SILT, little Clay, slightly plastic, cohesive, moist. Changing at 134.8 feet to: Dark grayish-brown, very well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 135.4 feet to: NO RECOVERY. | 132.8' 133.1' SILT 133.4' Silty CLAY SILT 133.8' NO RECOVERY 134.3' CLAY & SILT SILT 134.8' SILT & CLAY (CL) | | | |
| 136 | 69 | 24 | 136-138 | 50/4.5" | 0.0 ppm | Dark grayish-brown, well sorted, | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV12D | |

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV12D
Page: 11 of 14
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|--------------------|---------|--|---|---------|----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 139 | 70 | 24 | 138-140 | 30-50/2" | 0.0 ppm | fine-grained SAND with layers of well sorted, Silty CLAY, moist. Chaging at 136.4 feet to: NO RECOVERY. Dark grayish-brown, well sorted, fine-grained SAND with layers of well sorted Silty CLAY, moist. Changing at 138.4 feet to: Dark grayish-brown, poorly sorted, SILT & CLAY, little Sand, trace Gravel, slightly plastic, cohesive, moist. Changing at 138.6 feet to: NO RECOVERY. | SILT & CLAY (CL) 138.6' | | | |
| 140 | 71 | 24 | 140-142 | 2-1 4-8 | 0.0 ppm | Dark grayish-brown, poorly sorted, SILT & CLAY, little Sand, trace Gravel, slightly plastic, cohesive, moist. Changing at 138.6 feet to: NO RECOVERY. Varved dark grayish-brown, well sorted, SILT and Silty CLAY, plastic, cohesive, moist. Changing at 140.8 feet to: NO RECOVERY. | NO RECOVERY 140' SILT & CLAY 140.8' | | | |
| 142 | 72 | 24 | 142-144 | 7-19 35-50/3.5" | 0.0 ppm | Dark grayish-brown to dark brown, poorly sorted, coarse-grained SAND, some Gravel, trace Silt, moist to wet. Changing at 142.3 feet to: Dark grayish-brown to dark brown, poorly sorted, fine to coarse-grained SAND, little Gravel, trace Silt, moist to wet. Changing at 143.0 feet to: NO RECOVERY. | NO RECOVERY 142' SAND | | | |
| 144 | 73 | 24 | 144-146 | 41-50 | 0.0 ppm | Brown to dark gray, poorly sorted, GRAVEL with coarse-grained SAND, little Silt, wet. Changing at 144.7 feet to: NO RECOVERY. | 143' NO RECOVERY 144' GRAVEL 144.7' | | | |
| 146 | 74 | 24 | 146-148 | 18-50/5" | 0.0 ppm | Brown to dark gray, poorly sorted, GRAVEL with coarse-grained SAND, little Silt, wet. Changing at 146.9 feet to: NO RECOVERY. | NO RECOVERY 146' GRAVEL 146.9' | | | |
| 148 | 75 | 24 | 148-150 | 38-50/5" | 0.0 ppm | Brown to dark gray, poorly sorted, GRAVEL with coarse-grained SAND, little Silt, wet. Changing at 148.9 feet to: NO RECOVERY. | NO RECOVERY 148' GRAVEL 148.9' | | | |
| 150 | 76 | 24 | 150-152 | 50/5" | 0.0 ppm | Brown to dark gray, poorly sorted, GRAVEL with coarse-grained SAND, little Silt, wet. Changing at 150.4 feet to: NO RECOVERY. | NO RECOVERY 150' GRAVEL 150.4' | | | |
| 151 | | | | | | | 152' | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV12D | |

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV12D
Page: 12 of 14
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------|---------|---|--|---------|----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 153 | 77 | 24 | 152-154 | 30-50/3" | 0.0 ppm | Brown to dark gray, poorly sorted, GRAVEL with coarse-grained SAND, little Silt, moderately cohesive, moist to wet. Changing at 152.4 feet to: Very dark gray, poorly sorted, GRAVEL, some Silt, little Sand, trace Clay, non to slightly plastic, cohesive, moist. Changing at 152.5 feet to: Dark yellowish-brown, moderately sorted, coarse to medium-grained SAND, some Gravel, little Silt, moist. Changing at 152.7 feet to: NO RECOVERY. | GRAVEL 152.5' 152.7' SAND NO RECOVERY | | | |
| 154 | 78 | 24 | 154-156 | 50/4" | 0.0 ppm | Dark yellowish-brown, moderately sorted, coarse to medium-grained SAND, some Gravel, little Silt, wet. Changing at 152.7 feet to: NO RECOVERY. | 154' SAND 154.5' NO RECOVERY | | | |
| 155 | | | | | | Dark yellowish-brown, moderately sorted, coarse to medium-grained SAND, some Gravel, little Silt, wet. Changing at 154.2 feet to: Dark yellowish-brown, poorly sorted, fine to coarse-grained, SAND, trace Silt, trace Gravel, wet. Changing at 154.5 feet to: NO RECOVERY. | | | | |
| 156 | 79 | 24 | 156-158 | 50-50/3" | 0.0 ppm | Dark brown to dark yellowish-brown, poorly sorted, fine to coarse-grained SAND, trace Silt, wet. Changing at 156.5 feet to: Dark brown, poorly sorted, GRAVEL, some medium to coarse-grained Sand, little Silt, slightly cohesive, moist to wet. Changing at 156.8 feet to: NO RECOVERY. | 156' SAND 156.5' GRAVEL 156.8' NO RECOVERY | | | |
| 157 | | | | | | Dark brown, poorly sorted, GRAVEL, some medium to coarse-grained Sand, little Silt, slightly cohesive, moist to wet. Changing at 156.8 feet to: NO RECOVERY. | | | | |
| 158 | 80 | 24 | 158-160 | 20-50/6" | 0.0 ppm | Dark brown, poorly sorted, GRAVEL, some medium to coarse-grained SAND, little Silt, slightly cohesive, moist to wet. Changing at 159.0 feet to: NO RECOVERY. | 158' GRAVEL 159' NO RECOVERY | | | |
| 159 | | | | | | | | | | |
| 160 | 81 | 24 | 160-162 | 32-50/3" | 0.0 ppm | Dark brown, poorly sorted, GRAVEL, some medium to coarse-grained SAND, little Silt, slightly cohesive, moist to wet. Changing at 160.8 feet to: NO RECOVERY. | 160' GRAVEL 160.8' NO RECOVERY | | | |
| 161 | | | | | | | | | | |
| 162 | 82 | 24 | 162-164 | 50-64 | 0.0 ppm | Dark yellowish-brown, poorly sorted, fine to coarse-grained SAND, some Silt, little Gravel, moist to wet. Changing at 162.8 feet to: NO RECOVERY. | 162' SAND 162.8' NO RECOVERY | | | |
| 163 | | | | | | | | | | |
| 164 | 83 | 24 | 164-166 | 40-50 | 0.0 ppm | Dark yellowish-brown to dark brown, moderately sorted, GRAVEL, some coarse-grained Sand, trace Silt, wet. Changing at 164.4 feet to: Dark yellowish-brown, poorly sorted, fine to coarse-grained SAND, some Silt, little Gravel, moist to wet. Changing at 165.0 to NO RECOVERY. | 164' GRAVEL 164.4' SAND 165' NO RECOVERY 166' | | | |
| 165 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV12D | |

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV12D
Page: 13 of 14
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|------------|---------|---|--|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 167 | 84 | 24 | 166-168 | 47-50/4" | 0.0 ppm | Dark yellowish-brown to dark brown, moderately sorted, GRAVEL, some coarse-grained Sand, trace Silt, wet. Changing at 166.1 feet to: Dark yellowish-brown, poorly sorted, fine to coarse-grained SAND, some silt, little Gravel, moist to wet. Changing at 166.7 feet to: Yellowish-brown, well sorted, fine to medium-grained SAND, trace Silt, wet. Changing at 166.8 feet to: NO RECOVERY. Dark yellowish-brown, poorly sorted, fine to coarse-grained SAND, some Silt, little Gravel, moist to wet. Changing at 168.8 feet to: NO RECOVERY. | 166.1' GRAVEL SAND 166.8' NO RECOVERY | | | |
| 168 | 85 | 24 | 168-170 | 30-50/4" | 0.0 ppm | Dark yellowish-brown, poorly sorted, fine to coarse-grained SAND, some Silt, little Gravel, moist to wet. Changing at 170.8 feet to: NO RECOVERY. | 168' SAND 168.8' NO RECOVERY | | | |
| 170 | 86 | 24 | 170-172 | 21-50/4" | 0.0 ppm | Dark yellowish-brown, poorly sorted, fine to coarse-grained SAND, some Silt, little Gravel, moist to wet. Changing at 170.8 feet to: NO RECOVERY. | 170' SAND 170.8' NO RECOVERY | | | |
| 172 | 87 | 24 | 172-174 | 20-50/4" | 0.0 ppm | Dark yellowish-brown to dark brown, poorly sorted, GRAVEL, some Silt, little fine to coarse-grained Sand, wet. Changing at 172.9 feet to: NO RECOVERY. | 172' GRAVEL 172.9' NO RECOVERY | | | |
| 174 | 88 | 24 | 174-176 | 45-50/4.5" | 0.0 ppm | Dark yellowish-brown to dark brown, poorly sorted, GRAVEL, some Silt, little fine to coarse-grained Sand, wet. Changing at 174.9 feet to: NO RECOVERY. | 174' GRAVEL 174.9' NO RECOVERY | | | |
| 176 | 89 | 24 | 176-178 | 40-50/2" | 0.0 ppm | Dark yellowish-brown to dark brown, poorly sorted, GRAVEL, some Silt, little fine to coarse-grained Sand, wet. Changing at 176.6 feet to: NO RECOVERY. | 176' GRAVEL 176.6' NO RECOVERY | | | |
| 178 | 90 | 24 | 178-180 | 11-12 9-12 | 0.0 ppm | Dark yellowish-brown to dark brown, poorly sorted, GRAVEL, some Silt, little fine to coarse-grained Sand, wet. Changing at 178.9 feet to: NO RECOVERY. | 178' GRAVEL 178.9' NO RECOVERY | | | |
| 180' | | | | | | | | | | |

Filter Sand

2-Inch PVC Well Screen

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

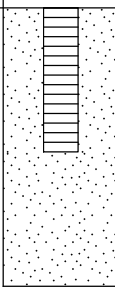
Boring No.: MW-WV12D



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV12D
Page: 14 of 14
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------------|---------|---|--|---|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | |
| 181 | 91 | 24 | 180-182 | 33-50/5" | 0.0 ppm | Dark yellowish-brown to dark brown, poorly sorted, GRAVEL, some Silt, little fine to coarse-grained Sand, wet. Changing at 180.8 feet to: NO RECOVERY. | GRAVEL 180.8' No RECOVERY |  | |
| 182 | 92 | 24 | 182-184 | 33-18 10-27 | 0.0 ppm | Dark yellowish-brown to dark brown, poorly sorted, GRAVEL, some Silt, little fine to coarse-grained Sand, wet. Changing at 182.9 feet to: Dark grayish-brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, moist. Changing at 183.3 feet to: NO RECOVERY. | 182' GRAVEL 182.9' CLAY & SILT 183.3' NO RECOVERY | | |
| 183 | 93 | 24 | 184-186 | 21-33-50/30 | 0.0 ppm | Dark grayish-brown, poorly sorted, CLAY & SILT, trace Sand, trace Gravel, plastic, cohesive, moist. Changing at 185.0 feet to: NO RECOVERY. | 184' CLAY & SILT | | |
| 184 | | | | | | | 185' NO RECOVERY | | |
| 185 | | | | | | | 186' | | |
| 186 | | | | | | | | | |
| 187 | | | | | | Bottom of Borehole at 186.0 Feet | | 3 | |
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| 193 | | | | | | | | | |
| 3. Monitoring well was installed in borehole upon completion. Well screen set from 176.6 to 181.5 feet below ground surface. | | | | | | | | | |
| REMARKS | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | |

BORING: WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20

Boring No.: MW-WV12D



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Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-12M

Page: 1 of 3

File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry H.

Logged by: John Morehouse

Date Start/Finish: 12-5-18 / 12-5-18

Boring Location:

GS Elev.: Datum

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Direct Push

MacroCore

O.D. / I.D.: NA

2.25"

Hammer Wt.: NA

NA

Hammer Fall: NA

NA

Other: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------|----------|---|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | PROTECTIVE CASING |
| 1 | | | | | | See boring log PMW-WV-12/MW-WV-12D for soil descriptions. | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV-12M



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-12M
Page: 2 of 3
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

Bentonite Grout


Boring No.: MW-WV-12M



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-12M
Page: 3 of 3
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---|-----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 109 | | | | | | | | |  <p>Filter Sand</p> <p>2-Inch PVC Well Screen</p> | |
| 110 | | | | | | | | | | |
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| 150 | | | | | | Bottom of Borehole at 150.0 Feet | | 1 | | |
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| REMARKS | | | | | | | | | | |
| 1. Monitoring well was installed in borehole upon completion. Well screen set from 144.5 to 149.4 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | Boring No.: MW-WV-12M |

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-12S

Page: 1 of 2

File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry H.

Logged by: John Morehouse

Date Start/Finish: 12-6-18 / 12-5-18

Boring Location:

GS Elev.: Datum

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Direct Push

MacroCore

O.D. / I.D.: NA

2.25"

Hammer Wt.: NA

NA

Hammer Fall: NA

NA

Other: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------|----------|--|------------------|---------|---------------------|----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | PROTECTIVE CASING |
| 1 | | | | | | See boring log PMW-WV-12/MW-WV-12D for soil descriptions. | | | | |
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Bentonite
Grout

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Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV-12S

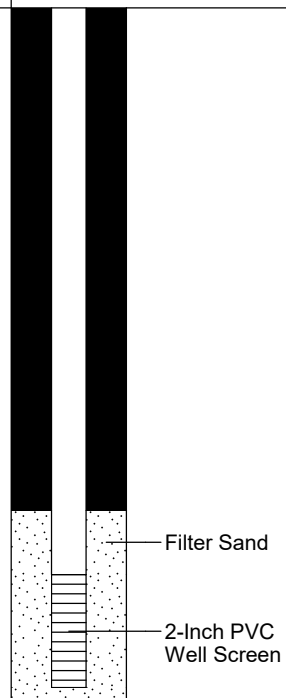


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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-12S
Page: 2 of 2
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
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| 78 | | | | | | | | | | |
| 79 | | | | | | | | | | |
| 80 | | | | | | Bottom of Borehole at 80.0 Feet | | 1 | | |
| 81 | | | | | | | | | | |
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| 108 | | | | | | | | | | |



REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 74.6 to 79.5 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV-12S



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Wolverine World Wide

Wolver Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-13D

Page: 1 of 6

File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry Zach/Travis

Logged by: C. Melby

Date Start/Finish: 2-14-19 / 2-18-19

Boring Location: _____

GS Elev.: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 12.25" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: NA 140lbs

Hammer Fall: NA 30.0"

Other: NA NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-------|---|-----------------------------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/8 | 0-2 | WOH 12"-1-1 | | Very soft, light brown, Clayey SILT, little Organic Matter, Moist. | Clayey SILT | 1 2 | | |
| 2 | 2 | 24/24 | 2-4 | 2-3 4-4 | | Very soft, light brown, Clayey SILT, little Organic Matter, Moist. Changing at 2.5 feet to: Brown, fine to medium SAND and Silt, wet. | 2.5' SAND | 3 | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/12 | 4-6 | 1-3 3-1 | | Loose, light brown, fine to medium SAND and Silt wet. | | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/12 | 6-8 | 1-1 3-3 | | Loose, brown, fine to medium SAND and Silt, wet. | | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/10 | 8-10 | 1-3 4-4 | | Loose, brown, fine to medium SAND and Silt, with tip of spoon at 9.9 feet gray, Silty CLAY, some fine to medium Sand, wet. | | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/10 | 10-12 | 1-4 5-5 | | Loose, brown, fine to medium SAND, trace Silt, wet. | 9.9' 10' Silty CLAY SAND | 4 | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/16 | 12-14 | 4-5 4-4 | | Loose, brown, fine to coarse SAND, little Gravel, trace Silt, wet. | | | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/18 | 14-16 | 1-4 5-5 | | Loose, brown, fine to medium SAND, trace Silt, wet. | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million by volume (ppmv) of isobutylene. ND indicates nothing detected (<0.1 ppmv).
- Installed temporary well from 0.0 to 10.0 feet below ground surface with a 5-foot well screen, and purged 20.0 gallons of water.
- Groundwater was encountered at approximately 2.0 feet below ground surface.
- Installed temporary well from 10.0 to 20.0 feet below ground surface with a 5-foot well screen, and purged 35.0 gallons of water.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV-13D

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-13D
Page: 2 of 6
File No.: 16.0062677.81
Check: Kate McDonald

| Sample Information | | | | | | Check: Kate McDonald | | | | | | | |
|-----------------------|---|------------------|-------------|-------------|-------|--|----------------------|---------|---------------------|--|--|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | | | |
| | | | | | | | | | | | | | |
| 16 | 9 | 24/16 | 16-18 | 3-5 5-10 | | Medium dense, brown, fine to medium SAND, trace Silt, wet. Changing at 16.5 feet to: Brown, Clayey SILT, some fine to medium Sand, wet. | SAND | 5 | | | | | |
| 17 | | | | | | | 16.5' Clayey SILT | | | | | | |
| 18 | 10 | 24/16 | 18-20 | 5-8 9-7 | | Brown, Clayey SILT, some fine to medium Sand, wet. | | | | | | | |
| 19 | | | | | | | | | | | | | |
| 20 | 11 | 24/12 | 20-22 | 5-8 6-9 | | Medium dense, brown, fine to medium SAND, little Silt, wet. | 20' SAND | | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | 12 | 24/16 | 22-24 | 1-6 3-4 | | Loose, brown, fine to medium SAND, little Silt, wet. Changing at 23.0 feet to: Brown, Silty CLAY, some fine Sand, wet. | | | | | | | |
| 23 | | | | | | | 23' Silty CLAY | | | | | | |
| 24 | 13 | 24/21 | 24-26 | 2-6 8-10 | | Stiff, gray, Silty CLAY, trace fine Sand, wet. | | | | | | | |
| 25 | | | | | | | | | | | | | |
| 26 | 14 | 24/12 | 26-28 | 0-0 2-3 | | Soft, brown, Silty CLAY, little fine Sand, wet. | | | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | 15 | 24/24 | 28-30 | 3-5 6-7 | | Stiff, brown, Silty CLAY, some fine Sand, wet. Changing at 28.8 feet to: Medium dense, brown, fine to medium SAND, some Silt, wet. Changing at 29.5 feet to: Soft, Silty CLAY, trace fine Sand, wet. | | | | | | | |
| 29 | | | | | | | 28.8' SAND | | | | | | |
| 30 | 16 | 24/24 | 30-32 | 3-5 8-9 | | Stiff, gray, brown and red, Silty CLAY, trace fine to coarse Sand, wet. | 29.5' Silty CLAY | | | | | | |
| 31 | | | | | | | | | | | | | |
| 32 | 17 | 24/24 | 32-34 | 2-4 | | Stiff, brown, Clayey SILT, little fine to | 32' Clayey SILT | | | | | | |
| REMARKS | 5. Installed 10-inch casing to 25.0 feet below ground surface. 12.25 inch auger advanced to 25.0 feet for 10-inch casing install. | | | | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | | | |
| Boring No.: MW-WV-13D | | | | | | | | | | | | | |

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20

Bentonite/Grout



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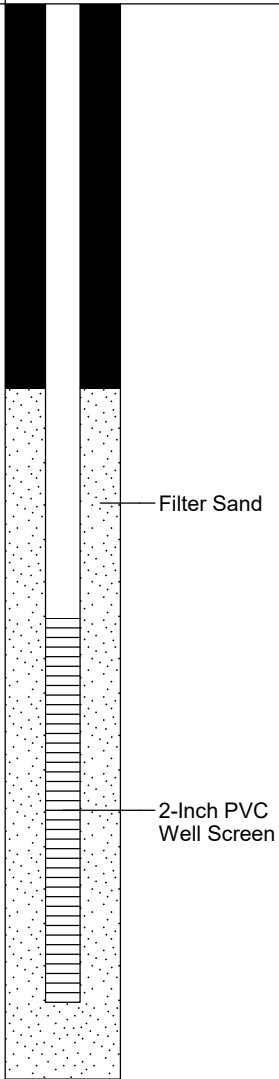
Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-13D
Page: 3 of 6
File No.: 16.0062677.81
Check: Kate McDonald

| Sample Information | | | | | | Algonia Twp, Kent County, Michigan | | Check: Kate McDonald | | |
|---|-----|------------------|-------------|-------|-------|--|-------------------|----------------------|-----------------------|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
| | | | | | | | | | | |
| 33 | 18 | 24/16 | 34-36 | 6-10 | | medium Sand, wet. Changing at 33.8 feet to: Gray and brown, fine SAND, some Silt, wet. | Clayey SILT | 6 | | |
| 34 | | | | 2-3 | | Stiff, brown, Clayey SILT, little fine Sand, wet. Changing at 35.4 feet to: Brown, fine SAND, some Silt, wet. | 33.8' SAND | | | |
| 35 | | | | 7-15 | | | 34' Clayey SILT | | | |
| 36 | 19 | 24/14 | 36-38 | 5-9 | 18-16 | Medium dense, brown, fine SAND and Silt, wet. | 35.4' SAND | | | |
| 37 | | | | | | | | | | |
| 38 | | | | | | | | | | |
| 39 | 20 | 24/24 | 38-40 | 1-3 | 5-10 | Medium dense, brown, fine SAND and Silt, wet. Changing at 38.8 feet to: Brown and gray, Clayey SILT, trace fine Sand, wet. | 38.8' Clayey SILT | 7 | | |
| 40 | | | | | | | 40' SAND | | | |
| 41 | | | | | | | | | | |
| 42 | 22 | 24/24 | 42-44 | 6-16 | 20-28 | Dense, gray and brown, SAND and Silt, wet. | | | | |
| 43 | | | | | | | | | | |
| 44 | | | | | | | | | | |
| 45 | 23 | 24/18 | 44-46 | 3-6 | 15-15 | Medium dense, gray and brown, SAND and Silt, wet. | | | | |
| 46 | | | | | | | | | | |
| 47 | | | | | | | | | | |
| 48 | 24 | 24/18 | 46-48 | 8-3 | 6-10 | Loose, tan and brown, fine to coarse SAND, little Silt, trace Gravel, wet. | | | | |
| 49 | | | | | | | | | | |
| | 25 | 24/18 | 48-50 | 3-6 | 9-25 | Medium dense, fine to coarse SAND, little Silt, wet. | | | | |
| <div>REMARKS</div> <div>6. Installed temporary well from 35.0 to 45.0 feet below ground surface with a 5-foot well screen, and purged 30.0 gallons of water. 7. Installed temporary well from 45.0 to 55.0 feet below ground surface with a 5-foot well screen, and purged 30.0 gallons of water.</div> | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV-13D | |

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



| Algoma Twp, Kent County, Michigan | | | | | | | | | | Check: Kate McDonald | |
|---|--|------------------|-------------|------------------|-------|--|--------------------|------------------------|--|----------------------|--|
| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | | |
| 51 | 26 | 24/14 | 50-52 | 5-3 16-19 | | Medium dense, tan and brown, fine to medium SAND, little Silt, wet. | SAND | 8 |  | | |
| 52 | 27 | 24/24 | 52-54 | 3-5 8-11 | | Medium dense, tan and brown, fine to medium SAND, little Silt, wet. | | | | | |
| 53 | | | | | | | | | | | |
| 54 | 28 | 24/18 | 54-56 | 2-2 3-4 | | Loose, tan and brown, fine to medium SAND, little Silt, trace Gravel, wet. | | | | | |
| 55 | | | | | | | | | | | |
| 56 | 29 | 24/24 | 56-58 | 0-2 3-4 | | Loose, tan and brown, fine to medium SAND, trace Silt, trace Gravel, wet. | | | | | |
| 57 | | | | | | | | | | | |
| 58 | 30 | 24/12 | 58-60 | 2-2 5-5 | | Loose, tan and brown, fine to medium SAND, trace Silt, wet. | | | | | |
| 59 | | | | | | | | | | | |
| 60 | 31 | 24/0 | 60-62 | 1-1 2-3 | | NO RECOVERY. | 60' NO RECOVERY | | | | |
| 61 | | | | | | | | 2-Inch PVC Well Screen | | | |
| 62 | 32 | 24/18 | 62-64 | 3-8 18-19 | | Medium dense, brown, fine to medium SAND, wet. Changing at 63.0 feet to: Brown, Clayey SILT, trace fine to coarse Sand, wet. | 62' SAND | | | | |
| 63 | | | | | | | 63' Clayey SILT | | | | |
| 64 | 33 | 24/12 | 64-66 | 10-16 24-33 | | Hard, gray, Silty CLAY, trace fine Sand, wet. | 64' Silty CLAY | | | | |
| 65 | | | | | | | | | | | |
| 66 | 34 | 24/15 | 66-68 | 7-16 30-50/3" | | Hard, gray, Silty CLAY, trace fine Sand, wet. Changing at 67.7 feet to: Gray, Silty CLAY, some fine to coarse Sand, trace Rock fragments, wet. | | | | | |
| 67 | | | | | | | | | | | |
| REMARKS | 8. Installed temporary well from 53.0 to 63.0 feet below ground surface with a 5-foot well screen, and purged 65.0 gallons of water. | | | | | | | | | | |
| | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV-13D | | |



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Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-13D
Page: 5 of 6
File No.: 16.0062677.81
Check: Kate McDonald

| Sample Information | | | | | | Check: Kate McDonald | | | |
|-----------------------|---|------------------|-------------|----------------|---|---|----------------|---------|---------------------|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
| | | | | | | | | | |
| 68 | 35 | 24/12 | 68-70 | 9-52-50/3" | | Very dense, gray, fine to coarse SAND and Silt, trace Gravel, wet. Changing at 69.8 feet to: Gray, Silty CLAY, some fine to coarse Sand, wet. | 68' Silty CLAY | 9 | |
| 69 | | | | | | | SAND | | |
| 70 | 36 | 24/18 | 70-72 | 13-26 39-45 | Hard, Clayey SILT, some fine to coarse Sand, little Rock fragments, trace Gravel, wet. | 69.8' Silty CLAY | | | |
| 71 | | | | | | 70' Clayey SILT | | | |
| 72 | 37 | 24/24 | 72-74 | 11-18 21-21 | Hard, Clayey SILT, some fine to coarse Sand, little Rock fragments, trace Gravel, wet. | | | | |
| 73 | | | | | | | | | |
| 74 | 38 | 24/24 | 74-76 | 15-22 24-37 | Hard, CLAY & SILT, some fine to coarse Sand, little Rock fragments, wet. | 74' CLAY & SILT | | | |
| 75 | | | | | | | | | |
| 76 | 39 | 24/0 | 76-78 | 15-50/6" | NO RECOVERY. | 76' NO RECOVERY | | | |
| 77 | | | | | | | | | |
| 78 | 40 | 24/24 | 78-80 | 6-26 24-20 | Hard, gray, CLAY & SILT, little fine to coarse Sand, wet. | 78' CLAY & SILT | | | |
| 79 | | | | | | | | | |
| 80 | 42 | 24/18 | 80-82 | 33-27 27-36 | Hard, gray, Clayey SILT, little fine to coarse Sand, trace Rock fragments, wet. | 80' Clayey SILT | | | |
| 81 | | | | | | | | | |
| 82 | 43 | 24/8 | 82-84 | 13-50/2" | Hard, gray, SILT & CLAY, some Rock fragments, little fine to coarse Sand with large Boulder at 82.8 feet. | 82' SILT & CLAY | | | |
| 83 | | | | | | | | | |
| 84 | 44 | 24/24 | 84-86 | 19-29 35-45 | Crushed BOULDER. Changing at 84.5 feet to: Gray, Clayey SILT, litle fine to coarse Sand, wet. | 84' Crushed BOULDER | | | |
| | | | | | | 84.5' BOULDER | | | |
| | | | | | | Clayey SILT | | | |
| REMARKS | 9. Large rock shards. | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | |
| Boring No.: MW-WV-13D | | | | | | | | | |

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-13D
Page: 6 of 6
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|------------------|-------|---|-----------------------------------|---------|-----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | |
| 86 | 45 | 24/0 | 86-88 | 10-50/1" | | NO RECOVERY. | Clayey SILT 86' NO RECOVERY | 10 | |
| 87 | | | | | | | | | |
| 88 | 46 | 24/6 | 88-90 | 21-50/3" | | Hard, gray, Clayey SILT, little fine to coarse Sand with 2-inch Rock fragment at bottom. | 88' Clayey SILT | | |
| 89 | | | | | | | | | |
| 90 | 47 | 24/6 | 90-92 | 50/6" | | Hard, gray, Clayey SILT, little fine to coarse Sand, some Rock fragments, wet. | | | |
| 91 | | | | | | | | | |
| 92 | 48 | 24/18 | 92-94 | 26-48-50/6" | | Hard, gray, Clayey SILT, little fine to coarse Sand, some Rock fragments, wet. | | | |
| 93 | | | | | | | | | |
| 94 | 49 | 24/20 | 94-96 | 5-22 45-50/5" | | Hard, gray, Clayey SILT and fine to coarse Sand, little Gravel, trace Rock fragments, wet. | | | |
| 95 | | | | | | | | | |
| 96 | 50 | 24/11 | 96-98 | 20-50/5" | | Hard, gray, Clayey SILT, some fine to coarse Sand, wet. | | | |
| 97 | | | | | | | | | |
| 98 | 51 | 24/9 | 98-100 | 34-50/3" | | Hard, gray, Clayey SILT, some fine to coarse Sand, wet with 2-inch Rock fragments from 98.5 to 98.8 feet. | | | |
| 99 | | | | | | | | | |
| 100 | 52 | 24/6 | 100-102 | 15-50/0" | | Hard, gray, Clayey SILT, little fine to coarse Sand, trace Rock fragments, wet. | | | |
| 101 | | | | | | Bottom of Borehole at 101.0 Feet | 101' | 11 | |
| 102 | | | | | | | | | |
| REMARKS 10. 1-inch rock fragments. 11. Monitoring well was installed in borehole upon completion. Well screen set from approximately 58.0 to 63.0 feet below ground surface. | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV-13D |

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Engineers and Scientists

Wolverine World Wide

Wolver Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-13M

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File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: J. Muntoon

Logged by: S. Stephenson

Date Start/Finish: 2-22-19 / 2-22-19

Boring Location: _____

GS Elev.: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 12.25" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: NA 140lbs

Hammer Fall: NA 30.0"

Other: NA NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------|-------|--|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | PROTECTIVE CASING |
| 1 | | | | | | See boring log WV-MW-13/WV-MW-13D for soil descriptions. | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | Bottom of Borehole at 23.8 Feet | | 1 | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 18.0 to 23.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV-13M

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolver Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-13S

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File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: C. Melby/ J. Markosky

Date Start/Finish: 3-26-19 / 3-26-19

Boring Location: _____

GS Elev.: _____

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Direct Push

MacroCore

O.D. / I.D.: NA

2.25"

Hammer Wt.: NA

NA

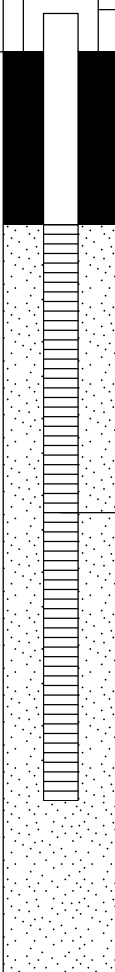
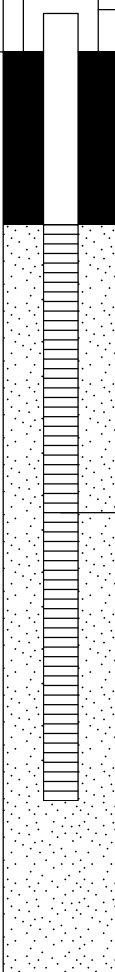
Hammer Fall: NA

NA

Other: NA

NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------|-------|--|---------------|---------|--|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | PROTECTIVE CASING | |
| 1 | | | | | | See boring log WV-MW-13/WV-MW-13D for soil descriptions. | | |  | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | Bottom of Borehole at 8.0 Feet | | |  | |
| 9 | | | | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 1.5 to 6.5 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV-13S



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Wolver Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-14D

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File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: J. Markosky

Date Start/Finish: 4-15-19 / 4-24-19

Boring Location: See Survey

GS Elev.: See Survey Datum: State Plane S Zone NAD 83

Auger/
Casing

Sampler

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 12.25" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: NA 140lbs

Hammer Fall: NA 30.0"

Other: NA NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| TBD | | | | |
| | | | | |
| | | | | |
| | | | | |

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|--------------|---------|---|----------------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 1 | 1 | 24/24 | 0-2 | 1-2 1-2 | 0.0 ppm | Very loose, dark brown, fine to medium SAND, some Organic Matter, dry (TOPSOIL). Changing at 1.0 foot to: Brown, fine to medium SAND, little Silt, dry (TOPSOIL). | SAND | 1 | None | |
| 2 | 2 | 24/12 | 2-4 | 1-2 4-3 | 0.0 ppm | Loose, brown, fine to coarse SAND, little Silt, dry. | | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/12 | 4-6 | 2-2 2-2 | 0.0 ppm | Loose, brown, fine to coarse SAND, little Silt, dry. | | 2 | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/12 | 6-8 | 0-0 1-1 | 0.0 ppm | Very loose, brown, fine to coarse SAND, little Silt, moist. | | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/24 | 8-10 | 1-1 1-1 | 0.0 ppm | Very loose, brown, fine to coarse SAND, little Silt, moist. | | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/24 | 10-12 | 1-3 2-3 | 0.0 ppm | Loose, brown, fine to coarse SAND, little Silt, moist. | | | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/12 | 12-14 | 4-6 8-8 | 0.0 ppm | Loose, brown, fine to coarse SAND, little Silt, wet. | | | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/24 | 14-16 | 7-9 11-14 | 0.0 ppm | Medium dense, brown, fine to coarse SAND, little Silt, wet. Changing at 14.2 feet to: Brown, CLAY & SILT, trace fine Sand, | 14.2' CLAY & SILT | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 2000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million (ppm) of isobutylene. Background was measured at 0.0 ppm.
- Groundwater sample collected from temporary well with well screen set from approximately 4.0 to 14.0 feet below ground surface and submitted for analytical laboratory testing.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: WV-MW-14D

BORING: WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide
Wolver Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-14D
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File No.: 16.0062677.81
Check: Kate McDonald

| Sample Information | | | | | | Check: Kate McDonald | | | |
|-----------------------|---|------------------|-------------|----------------|---------|---|--------------------------------------|---------|---------------------|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
| | | | | | | | | | |
| 16 | 9 | 24/24 | 16-18 | 5-8 13-14 | 0.0 ppm | dry. Very stiff, gray, Silty CLAY, trace fine Sand, dry. | CLAY & SILT 16' Silty CLAY | 3 | |
| 17 | | | | | | | | | |
| 18 | 10 | 24/24 | 18-20 | 8-9 14-15 | 0.0 ppm | Very stiff, gray, Silty CLAY, trace fine Sand, dry. | | | |
| 19 | | | | | | | | | |
| 20 | 11 | 24/24 | 20-22 | 10-13 13-17 | 0.0 ppm | Very stiff, gray, Silty CLAY, trace fine Sand, dry. | | | |
| 21 | | | | | | | | | |
| 22 | 12 | 24/20 | 22-24 | 0-0 4-12 | 0.0 ppm | Very stiff, gray, Silty CLAY, trace fine Sand, dry. Changing at 23.0 feet to: Brown, fine to coarse SAND, little Silt, moist. | | | |
| 23 | | | | | | | 23' SAND | | |
| 24 | 13 | 24/24 | 24-26 | 7-7 12-14 | 0.0 ppm | Very stiff, gray, CLAY, little Silt, dry. | 24' CLAY | | |
| 25 | | | | | | | | | |
| 26 | 14 | 24/24 | 26-28 | 5-9 13-17 | 0.0 ppm | Very stiff, gray, CLAY, little Silt, dry. | | | |
| 27 | | | | | | | | | |
| 28 | 15 | 24/24 | 28-30 | 2-8 12-13 | 0.0 ppm | Very stiff, gray, CLAY, little Silt, dry. | | | |
| 29 | | | | | | | | | |
| 30 | 16 | 24/24 | 30-32 | 5-7 12-17 | 0.0 ppm | Very stiff, gray, CLAY, little Silt, dry. | | | |
| 31 | | | | | | | | | |
| 32 | 17 | 24/24 | 32-34 | 5-8 | 0.0 ppm | Very stiff, gray, CLAY, little Silt, dry with 1.0 | | | |
| REMARKS | 3. Sand bailer used at 26.0 feet below ground surface. Not enough water for installation of a temporary well. | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | |
| Boring No.: WV-MW-14D | | | | | | | | | |

BORING: WI 6267781 WWW.WOLVER AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolver Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-14D
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File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|---------------|---------|---|-------------------|---------|-----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | |
| 33 | | | | 10-12 | | inch Sand seam at 33.2 feet. | CLAY | | |
| 34 | 18 | 24/24 | 34-36 | 5-9 12-13 | 0.0 ppm | Very stiff, gray, CLAY, little Silt, dry. | | | |
| 35 | | | | | | | | | |
| 36 | 19 | 24/24 | 36-38 | 4-8 13-15 | 0.0 ppm | Very stiff, gray, CLAY, little Silt, dry. | | | |
| 37 | | | | | | | | | |
| 38 | 20 | 24/24 | 38-40 | 5-10 13-17 | 0.0 ppm | Very stiff, gray, CLAY, little Silt, dry. | | | |
| 39 | | | | | | | | | |
| 40 | 21 | 24/18 | 40-42 | 2-8 13-14 | 0.0 ppm | Very stiff, gray, CLAY, little Silt, dry. | | | |
| 41 | | | | | | | | | |
| 42 | 22 | 24/24 | 42-44 | 4-10 13-18 | 0.0 ppm | Very stiff, gray, Silty CLAY, dry. | 42' Silty CLAY | | |
| 43 | | | | | | | | | |
| 44 | 23 | 24/24 | 44-46 | 5-9 7-9 | 0.0 ppm | Very stiff, gray, Silty CLAY, dry with 1.0 inch Sand seam at 45.8 feet. | | | |
| 45 | | | | | | | | | |
| 46 | 24 | 24/24 | 46-48 | 7-11 11-19 | 0.0 ppm | Very stiff, gray, Silty CLAY, dry. | | | |
| 47 | | | | | | | | | |
| 48 | 25 | 24/24 | 48-50 | 2-11 31-23 | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. | | | |
| 49 | | | | | | | | | |
| REMARKS | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: WV-MW-14D |

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Wolverine World Wide
Wolver Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-14D
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Check: Kate McDonald

| Algoma Twp, Kent County, Michigan | | | | | | | | | | Check: Kate McDonald | |
|-----------------------------------|---|------------------|-------------|----------------|---------|--|---------------|---------|---------------------|-----------------------|--|
| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | |
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | | |
| 51 | 26 | 24/24 | 50-52 | 4-7 8-10 | 0.0 ppm | Very stiff, gray, Silty CLAY, little fine Sand, dry. | Silty CLAY | 4 | | | |
| 52 | 27 | 24/24 | 52-54 | 6-10 9-14 | 0.0 ppm | Very stiff, gray, Silty CLAY, little fine Sand, dry. | | | | | |
| 54 | 28 | 24/24 | 54-56 | 9-17 27-41 | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. | | | | | |
| 56 | 29 | 24/24 | 56-58 | 5-8 11-11 | 0.0 ppm | Very stiff, gray, Silty CLAY, little fine to coarse Sand, dry. | | | | | |
| 58 | 30 | 24/24 | 58-60 | 4-7 9-11 | 0.0 ppm | Very stiff, gray, Silty CLAY, trace fine to coarse Sand, dry. | | | | | |
| 60 | 31 | 24/12 | 60-62 | 12-12 14-15 | 0.0 ppm | Very stiff, gray, Silty CLAY, little fine to medium Sand, dry. | | | | | |
| 62 | 32 | 24/24 | 62-64 | 2-4 7-7 | 0.0 ppm | Stiff, gray, Silty CLAY, little fine to medium Sand, dry. | | | | | |
| 64 | 33 | 24/20 | 64-66 | 5-6 10-12 | 0.0 ppm | Very stiff, gray, Silty CLAY little fine Sand, dry. | | | | | |
| 66 | 34 | 24/24 | 66-68 | 10-13 18-23 | 0.0 ppm | Hard, gray, Silty CLAY little fine Sand, dry. | | | | | |
| 67 | | | | | | | | | | | |
| REMARKS | 4. 3.0" split spoon used from 54.0 to 56.0 feet below ground surface. | | | | | | | | | | |
| | Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: WV-MW-14D | |

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Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-14D
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File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|----------------|---------|---|--------------------|---------|-----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | |
| 68 | 35 | 24/24 | 68-70 | 5-11 16-18 | 0.0 ppm | Very stiff, gray, Silty CLAY little fine Sand, dry. | Silty CLAY | | |
| 69 | | | | | | | | | |
| 70 | 36 | 24/24 | 70-72 | 8-16 23-26 | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. | | | |
| 71 | | | | | | | | | |
| 72 | 37 | 24/24 | 72-74 | 9-15 17-22 | 0.0 ppm | Hard, gray, CLAY & SILT, little fine to medium Sand, dry. | 72' CLAY & SILT | | |
| 73 | | | | | | | | | |
| 74 | 38 | 24/24 | 74-76 | 4-8 18-23 | 0.0 ppm | Very stiff, gray, SILT & CLAY, little fine to medium Sand, dry. | 74' SILT & CLAY | | |
| 75 | | | | | | | | | |
| 76 | 39 | 24/24 | 76-78 | 8-21 26-29 | 0.0 ppm | Hard, gray, CLAY & SILT, little fine to medium Sand, dry. | 76' CLAY & SILT | | |
| 77 | | | | | | | | | |
| 78 | 40 | 24/24 | 78-80 | 8-13 23-32 | 0.0 ppm | Hard, gray, CLAY & SILT, little fine to medium Sand, dry. Changing at 79.0 feet to: Hard, dark gray, Silty CLAY, little fine Sand, dry. | 79' Silty CLAY | 5 | |
| 79 | | | | | | | | | |
| 80 | 41 | 24/24 | 80-82 | 7-12 20-28 | 0.0 ppm | Hard, dark gray, Silty CLAY, little fine Sand, dry. Changing at 81.0 feet to: Hard, gray and green, Silty CLAY, little fine Sand, dry. | | | |
| 81 | | | | | | | | | |
| 82 | 42 | 24/24 | 82-84 | 10-16 25-28 | 0.0 ppm | Hard, brown, Silty CLAY, some fine to medium Sand, dry. Changing at 82.7 feet to: Brown to olive, Silty CLAY, little fine Sand, dry. | | | |
| 83 | | | | | | | | | |
| 84 | 43 | 24/24 | 84-86 | 4-13 18-23 | 0.0 ppm | Hard, light gray to gray, Silty CLAY, little fine to medium Sand, dry. | | | |
| <div>REMARKS</div> <div>5. Small hydraulic leak on CME 1050. Switched to CME 95.</div> | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: WV-MW-14D |

BORING WI 6267781 WWW.WOLVER AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-14D
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File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---------|--------------------|------------------|-------------|----------------|---------|--|------------------------------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | |
| 86 | 44 | 24/24 | 86-88 | 5-4 12-14 | 0.0 ppm | Very stiff, gray to olive, CLAY & SILT, little fine Sand, dry. | Silty CLAY 86' CLAY & SILT | | |
| 87 | | | | | | | | | |
| 88 | 45 | 24/12 | 88-90 | 9-50/6" | 0.0 ppm | Very stiff, gray to olive, CLAY & SILT, little fine Sand, dry. Changing at 89.9 feet to: Gray, fine to medium SAND, dry. | | | |
| 89 | | | | | | | | | |
| 90 | 46 | 24/24 | 90-92 | 12-13 21-36 | 0.0 ppm | Hard, gray, Silty CLAY, little fine to medium Sand, dry. | 89.9' 90' SAND Silty CLAY | | |
| 91 | | | | | | | | | |
| 92 | 47 | 24/24 | 92-94 | 5-14 20-21 | 0.0 ppm | Hard, gray, Silty CLAY, little fine to medium Sand, dry. | | | |
| 93 | | | | | | | | | |
| 94 | 48 | 24/24 | 94-96 | 6-12 15-22 | 0.0 ppm | Very stiff, gray, Silty CLAY, little fine to medium Sand, dry. | | | |
| 95 | | | | | | | | | |
| 96 | 49 | 24/20 | 96-98 | 5-11 15-20 | 0.0 ppm | Very stiff, gray, Silty CLAY, little fine to medium Sand, dry. | | | |
| 97 | | | | | | | | | |
| 98 | 50 | 24/24 | 98-100 | 5-10 19-20 | 0.0 ppm | Very stiff, gray, Silty CLAY, little fine to medium Sand, dry. | | | |
| 99 | | | | | | | | | |
| 100 | 51 | 24/24 | 100-102 | 3-7 12-18 | 0.0 ppm | Very stiff, gray, Silty CLAY, little fine to medium Sand, dry. | | | |
| 101 | | | | | | | | | |
| 102 | 52 | 24/24 | 102-104 | 6-12 | 0.0 ppm | Very stiff, gray, Silty CLAY, little fine to | | | |
| REMARKS | | | | | | | | | |

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: WV-MW-14D

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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-14D
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File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|----------------|---------|--|---------------|---------|-----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | |
| 103 | | | | 18-16 | | medium Sand, dry. | Silty CLAY | | |
| 104 | 53 | 24/24 | 104-106 | 5-11 19-18 | 0.0 ppm | Very stiff, gray, Silty CLAY, little fine to medium Sand, dry. | | | |
| 105 | | | | | | | | | |
| 106 | 54 | 24/24 | 106-108 | 6-13 20-19 | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. | | | |
| 107 | | | | | | | | | |
| 108 | 55 | 24/24 | 108-110 | 7-12 19-20 | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. | | 6 | |
| 109 | | | | | | | | | |
| 110 | 56 | 24/11 | 110-112 | 42-50/5" | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. Changing at 110.8 feet to: Gray, Silty CLAY, some fine Sand, dry. | | | |
| 111 | | | | | | | | | |
| 112 | 57 | 24/12 | 112-114 | 12-50/6" | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. | | | |
| 113 | | | | | | | | | |
| 114 | 58 | 24/17 | 114-116 | 12-24-50/50 | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. | | | |
| 115 | | | | | | | | | |
| 116 | 59 | 24/24 | 116-118 | 10-15 31-31 | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. | | | |
| 117 | | | | | | | | | |
| 118 | 60 | 24/24 | 118-120 | 11-9 14-25 | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. Changing at 119.9 feet to: Gray, fine to medium SAND, moist to dry. | | | |
| 119 | | | | | | | 119.9' | | |
| <div>REMARKS</div> <div>6. 3.0" split spoon used from 108.0 to 110.0 feet below ground surface.</div> | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: WV-MW-14D |

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-14D
Page: 8 of 9
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---------|--------------------|------------------|-------------|-------------------|---------|---|-------------------------|---------|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | |
| 121 | 61 | 24/24 | 120-122 | 11-16 24-30 | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. | 120' SAND Silty CLAY | | |
| 122 | 62 | 24/16 | 122-124 | 25-28-50/40 | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. | | | |
| 124 | 63 | 24/23 | 124-126 | 10-26 49-50/5" | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. | | | |
| 126 | 64 | 24/17 | 126-128 | 22-52-50/50 | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. | | | |
| 128 | 65 | 24/12 | 128-130 | 6-29-50/5" | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. | | | |
| 130 | 66 | 24/24 | 130-132 | 5-12 24-31 | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. | | | |
| 132 | 67 | 24/23 | 132-134 | 15-24 40-50/5' | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. | | | |
| 134 | 68 | 24/12 | 134-136 | 20-38 | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. | | | |
| 136 | 69 | 24/12 | 136-138 | 22-50/5" | 0.0 ppm | Hard, gray, Silty CLAY, little fine to coarse Sand, dry. Changing at 136.5 feet to: Brown to gray, fine SAND, little Silt, moist. | 136.5' SAND | | |
| 137 | | | | | | | | | |
| REMARKS | | | | | | | | | |

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: WV-MW-14D

BORING: WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide
Wolver Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-14D
Page: 9 of 9
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|----------------|---------|--|---------------|---------|-----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | |
| 138 | 70 | 24/11 | 138-140 | 20-50/5" | 0.0 ppm | Very dense, gray, fine to coarse SAND, little Silt, wet. | SAND | 7 | |
| 139 | | | | | | | | | |
| 140 | 71 | 24/18 | 140-142 | 45-44-50/6" | 0.0 ppm | Very dense, gray, fine to coarse SAND, little Silt, wet. | | | |
| 141 | | | | | | | | | |
| 142 | 72 | 24/18 | 142-144 | 11-23 40-50/4" | 0.0 ppm | Very dense, gray, fine to coarse SAND, little Silt, wet. | | | |
| 143 | | | | | | | | | |
| 144 | 73 | 24/16 | 144-146 | 12-35-50/4" | 0.0 ppm | Very dense, gray, fine to coarse SAND, little Silt, wet. Changing at 144.5 feet to: Very dense, gray, medium to coarse SAND, little Silt, wet. | | | |
| 145 | | | | | | | | | |
| 146 | 74 | 24/24 | 146-148 | | 0.0 ppm | Brown, fine to coarse SAND, some Gravel, little Silt, wet. | | | |
| 147 | | | | | | | | | |
| 148 | 75 | 24/1 | 148-150 | 50/1" | 0.0 ppm | Very dense, gray, fine to coarse SAND, little Silt, wet. | | | |
| 149 | | | | | | | | | |
| 150 | | | | | | Bottom of Borehole at 150.0 Feet | 150' | 8 | |
| 151 | | | | | | | | | |
| 152 | | | | | | | | | |
| 153 | | | | | | | | | |
| 154 | | | | | | | | | |
| <div>REMARKS</div> <div>7. Groundwater was encountered at approximately 138.0 feet below ground surface. 8. See WV-MW-14M for well installation details.</div> | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: WV-MW-14D |

BORING: WI 6267781 WWW.WOLVER AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-14M

Page: 1 of 3

File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: J. Markosky

Date Start/Finish: 4-29-19 / 5-1-19

Boring Location: See Survey

GS Elev.: See Survey Datum

Auger/

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 12.25" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: NA 140lbs

Hammer Fall: NA 30.0"

Other: NA NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------|-------|---|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | PROTECTIVE CASING |
| 1 | | | | | | See MW-WV-14D boring log for soil descriptions. | | | | |
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REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: WV-MW-14M



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-14M
Page: 2 of 3
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
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| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | |

Bentonite
Grout

Boring No.: WV-MW-14M

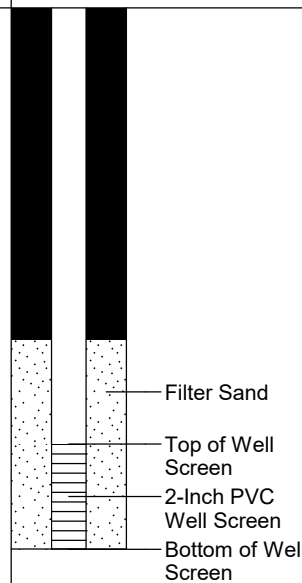


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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-14M
Page: 3 of 3
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------|-------|-------------------------------------|---------------|---------|---------------------|-----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
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| 145 | | | | | | Bottom of Borehole at 145.0 Feet | | 1 | | |
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| REMARKS | | | | | | | | | | |
| 1. Monitoring well was installed in borehole upon completion. Well screen set from 140.0 to 145.0 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | Boring No.: WV-MW-14M |



BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-14S

Page: 1 of 1

File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: J. Markosky

Date Start/Finish: 4-28-19 / 4-29-19

Boring Location: See Survey

GS Elev.: See Survey

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 12.25" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: NA 140lbs

Hammer Fall: NA 30.0"

Other: NA NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------|-------|---|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | PROTECTIVE CASING |
| 1 | | | | | | See MW-WV-14D boring log for soil descriptions. | | | | |
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| 14 | | | | | | Bottom of Borehole at 14.0 Feet | | 1 | | |
| 15 | | | | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 9.0 to 14.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: WV-MW-14S



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 Engineers and Scientists

Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-15A

Page: 1 of 1

File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 8-28-19 / 8-30-19

Boring Location: North Side of Property

GS Elev.: NM Datum: M State Plane S Zone NAD 83

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

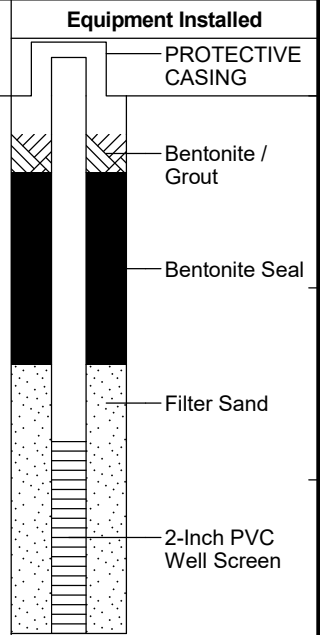
NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| NM | NM | NM | NM | NM |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|---------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 1 | | | | | | See MW-WV-15D boring log for soil descriptions. | | | | |
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| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | Bottom of Borehole at 14.0 Feet | | | | |
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REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 9.0 to 14.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: WV-MW-15A

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 9/27/19



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Engineers and Scientists

Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-15B

Page: 1 of 1

File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 8-28-19 / 8-30-19

Boring Location: North Side of Property

GS Elev.: NM Datum: M State Plane S Zone NAD 83

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| NM | NM | NM | NM | NM |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See MW-WV-15D boring log for soil descriptions. | | | | |
| 2 | | | | | | | | | | |
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| 37 | | | | | | | | | | |
| 38 | | | | | | | | | | |
| 39 | | | | | | | | | | |
| | | | | | | Bottom of Borehole at 38.0 Feet | | 1 | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 33.0 to 38.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: WV-MW-15B

BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 9/27/19



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Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-15C

Page: 1 of 2

File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 8-21-19 / 8-21-19

Boring Location: North Side of Property

GS Elev.: NM Datum: M State Plane S Zone NAD 83

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| NM | NM | NM | NM | NM |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|-------------|-----------|---|---------------|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | | | | | | See MW-WV-15D boring log for soil descriptions. | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
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| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |

Bentonite / Grout

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: WV-MW-15C

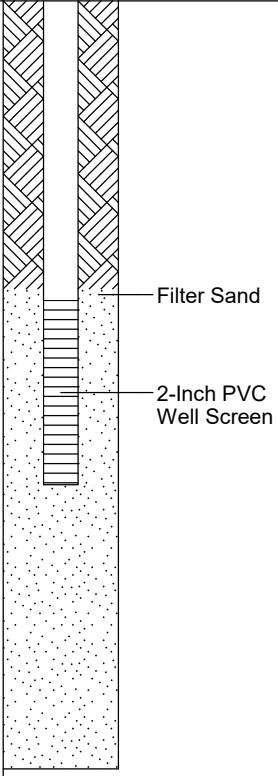
BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 9/27/19



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-15C
Page: 2 of 2
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|-------|--------------------|------------------|-------------|-------------|-----------|-------------------------------------|---------------|---------|---|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 31 | | | | | | | | |  <p>Filter Sand</p> <p>2-Inch PVC Well Screen</p> |
| 32 | | | | | | | | | |
| 33 | | | | | | | | | |
| 34 | | | | | | | | | |
| 35 | | | | | | | | | |
| 36 | | | | | | | | | |
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| 45 | | | | | | | | | |
| 46 | | | | | | | | | |
| 47 | | | | | | | | | |
| 48 | | | | | | | | | |
| 49 | | | | | | | | | |
| 50 | | | | | | Bottom of Borehole at 50.0 Feet | | 1 | |
| 51 | | | | | | | | | |
| 52 | | | | | | | | | |
| 53 | | | | | | | | | |
| 54 | | | | | | | | | |
| 55 | | | | | | | | | |
| 56 | | | | | | | | | |
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| 59 | | | | | | | | | |
| 60 | | | | | | | | | |
| 61 | | | | | | | | | |
| 62 | | | | | | | | | |
| 63 | | | | | | | | | |
| 64 | | | | | | | | | |

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from 37.8 to 42.6 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: WV-MW-15C

BORING WELL 6267781 WWW.WOLVEN AVENUE.GPJ GZA CORP.GDT 9/27/19



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Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-15D

Page: 1 of 8

File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: John Morehouse

Date Start/Finish: 8-9-19 / 8-19-19

Boring Location: North Side of Property

GS Elev.: NM Datum: M State Plane S Zone NAD 83

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| NM | NM | NM | NM | NM |
| | | | | |
| | | | | |

Surveyed By: NA Survey Date:

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|---------------|-----------|---|--|---------|---------------------|-------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (6") | Test Data | | | | | PROTECTIVE CASING |
| 1 | 1 | 24/14 | 0-2 | 3-6 6-9 | | Very dark grayish-brown, SILT, some fine Sand, trace Gravel, moist. Changing at 0.6 feet to: Yellowish-brown, SILT, some Sand, trace Gravel, moist. Changing at 1.2 feet to: NO RECOVERY. | SILT 1.2' NO RECOVERY | | | |
| 2 | 2 | 24/14 | 2-4 | 7-6 3-5 | | Yellowish-brown, SILT, some Sand, trace Gravel, moist. Changing at 2.4 feet to: Brownish-yellow, fine to medium SAND, trace Silt, moist. Changing at 2.8 feet to: Dark yellowish-brown, fine to medium SAND, trace Silt, moist. Changing at 3.2 feet to: NO RECOVERY. | 2' SILT 2.4' SAND 3.2' NO RECOVERY | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/11 | 4-6 | 4-9 8-13 | | Brown, fine to coarse SAND, trace Gravel, trace Silt, wet. Changing at 4.9 feet to: NO RECOVERY. | 4' SAND 4.9' NO RECOVERY | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/11 | 6-8 | 3-6 7-6 | | Brown, fine to coarse SAND, trace Gravel, trace Silt, grading to medium to coarse SAND, trace Gravel, trace Silt, wet. Changing at 6.9 feet to: NO RECOVERY. | 6' SAND 6.9' NO RECOVERY | | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/4 | 8-10 | 2-10 9-4 | | Brown, medium to coarse SAND, trace Gravel, trace Silt, wet. Changing at 8.3 feet to: NO RECOVERY. | 8' SAND 8.3' NO RECOVERY | | | |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/12 | 10-12 | 2-4 3-4 | | Brown, medium to coarse SAND, trace Gravel, trace Silt, wet. Changing at 11.0 feet to: NO RECOVERY. | 10' SAND 11' NO RECOVERY | | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/17 | 12-14 | 3-9 8-10 | | Brown, medium to coarse SAND, trace Gravel, trace Silt, wet. Changing at 12.7 feet to: Dark grayish-brown, SILT & CLAY, moderately plastic, cohesive, moist. Changing at 12.8 feet to: Dark grayish-brown, Silty CLAY, plastic, cohesive, moist. Changing at 13.4 feet to: NO RECOVERY. | 12' SAND 12.7' SILT & CLAY 12.8' Silty CLAY 13.4' NO RECOVERY Silty CLAY | | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/13 | 14-16 | 9-12 11-10 | | Dark grayish-brown, Silty CLAY, plastic, cohesive, moist. Changing at 15.1 feet to: NO RECOVERY. | 14' RECOVERY Silty CLAY 15.1' NO RECOVERY | | | |
| 15 | | | | | | | | | | |

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: WV-MW-15D

BORING WELL 6267781 WWW.WOLVEN AVENUE.GPJ GZA CORP.GDT 9/27/19



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Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-15D
Page: 2 of 8
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-----------|---|---|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (6") | Test Data | | | | | |
| 17 | 9 | 24/17 | 16-18 | 3-6 6-6 | | Dark grayish-brown, Silty CLAY, plastic, cohesive, moist, occasional very thin lenses of fine grained Sand, moist. Changing at 17.4 feet to: NO RECOVERY. | Silty CLAY | | | |
| 18 | 10 | 24/18 | 18-20 | 2-5 6-9 | | Dark grayish-brown, Silty CLAY, plastic, cohesive, occasional very thin lenses of fine Sand, moist. Changing at 18.6 feet to: Brown, fine SAND, trace Silt, wet. Changing at 18.9 feet to: Dark grayish-brown, Silty CLAY, plastic, cohesive, moist. Changing at 19.5 feet to: NO RECOVERY. | 17.4' NO RECOVERY 18' Silty CLAY 18.6' SAND 18.9' Silty CLAY 19.5' NO RECOVERY 20' Silty CLAY | | | |
| 19 | | | | | | Dark grayish-brown, Silty CLAY, plastic, cohesive, bedded, occasional very thin lenses of fine Sand, moist. Changing at 21.9 feet to: NO RECOVERY. | | | | |
| 20 | 11 | 24/23 | 20-22 | 4-10 12-15 | | | | | | |
| 21 | | | | | | | | | | |
| 22 | 12 | 24/19 | 22-24 | 4-9 10-13 | | Dark grayish-brown, Silty CLAY, plastic, cohesive, bedded, occasional very thin lenses of fine Sand, moist. Changing at 23.6 feet to: NO RECOVERY. | 21.9' NO RECOVERY 22' Silty CLAY | | | |
| 23 | | | | | | | | | | |
| 24 | 13 | 24/24 | 24-26 | 2-13 13-13 | | Dark grayish-brown, Silty CLAY, plastic, cohesive, bedded, occasional very thin lenses of fine Sand, moist. Changing at 24.5 feet to: Brown, fine SAND, trace Silt, wet. Changing at 24.9 feet to: Dark grayish-brown, Silty CLAY, plastic, cohesive, bedded, moist. Changing at 25.3 feet to: Brown, fine SAND, trace Silt, wet. Changing at 25.6 feet to: Dark grayish-brown, Silty CLAY, plastic, cohesive, bedded, moist. | 23.6' NO RECOVERY 24' Silty CLAY 24.5' SAND 24.9' Silty CLAY 25.3' SAND 25.6' Silty CLAY 26.2' SILT | | | |
| 25 | | | | | | | | | | |
| 26 | 14 | 24/24 | 26-28 | 1-8 11-11 | | Dark grayish-brown, Silty CLAY, plastic, cohesive, bedded, moist. Changing at 26.2 feet to: Brown, SILT, little Sand, cohesive, non-plastic, moist. Changing at 27.4 feet to: Dark grayish-brown, Silty CLAY, plastic, cohesive, bedded, moist. | 27.4' Silty CLAY | | | |
| 27 | | | | | | | | | | |
| 28 | 15 | 24/20 | 28-30 | WOH | | Dark grayish-brown, Silty CLAY, plastic, cohesive, bedded, moist. Changing at 29.7 feet to: NO RECOVERY. | 28' SAND / SILT / Silty CLAY | 1 | | |
| 29 | | | | | | | | | | |
| 30 | 16 | 24/24 | 30-32 | 1-2 3-3 | | Brown, fine SAND, Silt and Silty Clay, moist to wet. Changing at 30.8 feet to: Grayish-brown to brown, fine SAND, some Silt, wet. Changing at 30.9 feet to: Grayish-brown to brown, fine SAND, some Silt, wet. | 29.7' NO RECOVERY 30' SAND 30.8' SAND / SILT / Silty CLAY 30.9' SAND | | | |
| 31 | | | | | | | | | | |
| 32 | 17 | 24/18 | 32-34 | 2-6 5-5 | | Brown to grayish-brown, fine SAND, little Silt, wet. Changing at 32.4 feet to: Dark grayish-brown, Silty CLAY, plastic, cohesive, moist. Changing at 32.8 feet to: Brown to grayish-brown, fine SAND, little Silt, wet. | 32.4' Silty CLAY 32.8' SAND | | | |
| 33 | | | | | | | | | | |
| 34 | 18 | 24/14 | 34-36 | 1-2 4-4 | | Brown to grayish-brown, fine SAND, little | 34.2' Silty CLAY 34.3' | | | |
| REMARKS 1. Groundwater was encountered at approximately 28.0 feet below ground surface. | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: WV-MW-15D | |

BORING WELL 6267781 WWW.WOLVEN AVENUE.GPJ GZA CORP.GDT 9/27/19



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Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-15D
Page: 3 of 8
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|--|--|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 35 | | | | | | Silt, wet. Changing at 34.2 feet to: Dark grayish-brown, Silty CLAY, plastic, cohesive, moist. Changing at 34.3 feet to: Brown to grayish-brown, fine SAND, little Silt, wet. | SAND SAND | | | |
| 36 | 19 | 24/22 | 36-38 | 4-10 13-11 | | Brown to grayish-brown, fine SAND, little Silt, wet. Changing at 36.1 feet to: Dark grayish-brown, fine SAND, little Silt, wet. Changing at 36.3 feet to: Brown to grayish-brown, fine SAND, little Silt, wet. Changing at 36.8 feet to: Brown, SILT, cohesive, non-plastic, moist. Changing at 37.0 feet to: Brown to grayish-brown, fine SAND, little Silt, wet. Changing at 37.5 feet to: Brown, SILT, cohesive, non-plastic, moist. Changing at 37.6 feet to: Brown to grayish-brown, fine SAND, trace Gravel, trace Silt, wet. Changing at 38.7 feet to: NO RECOVERY. | 36.1' 36.3' Silty CLAY 36.8' SAND 37' SILT 37.5' SAND 37.6' SILT SAND | | | |
| 37 | | | | | | | | | | |
| 38 | 20 | 24/8 | 38-40 | 2-5 10-12 | | | 38.7' NO RECOVERY | | | |
| 39 | | | | | | | | | | |
| 40 | 21 | 24/22 | 40-42 | 1-2 6-9 | | | 40' SAND | | | |
| 41 | | | | | | | | | | |
| 42 | 22 | 24/19 | 42-44 | 1-5 7-9 | | | 41.8' 42' NO RECOVERY 42.5' SAND 42.6' Silty CLAY 42.9' GRAVEL 43' Silty CLAY 43.6' SAND | | | |
| 43 | | | | | | | | | | |
| 44 | 23 | 24/22 | 44-46 | 4-6 9-12 | | | 44' NO RECOVERY 44.6' SAND 44.7' Silty CLAY SAND | | | |
| 45 | | | | | | | 45.4' SILT 45.8' NO RECOVERY GRAVEL | | | |
| 46 | 24 | 24/24 | 46-48 | 6-14 24-31 | | | | | | |
| 47 | | | | | | | 47.3' 47.5' Sandy CLAY Silty CLAY | | | |
| 48 | 25 | 24/24 | 48-50 | 14-30 30-30 | | | | | | |
| 49 | | | | | | | | | | |
| 50 | | 60 | | | | | 50' NO SAMPLE COLLECTED | | | |
| 51 | | | | | | | | | | |
| 52 | | | | | | | | | | |
| 53 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: WV-MW-15D | |

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Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-15D
Page: 4 of 8
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|---|----------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 54 | | | | | | | NO SAMPLE COLLECTED | | | |
| 55 | 26 | 12/12 | 55-56 | 7-9 | | Dark grayish-brown, Silty CLAY, plastic, cohesive, bedded, moist. | 55' Silty CLAY | | | |
| 56 | 27 | 24/24 | 56-58 | 7-18 20-29 | | Dark grayish-brown, Silty CLAY, plastic, cohesive, bedded, moist. Changing at 57.6 feet to: Dark grayish-brown, Silty CLAY, trace Gravel, plastic, cohesive, some bedding, moist. | | | | |
| 57 | | | | | | | | | | |
| 58 | 28 | 24/24 | 58-60 | 40-39 22-22 | | Dark grayish-brown, Silty CLAY, trace Gravel, plastic, cohesive, some bedding, moist. | | | | |
| 59 | | | | | | | | | | |
| 60 | 29 | 24/24 | 60-62 | 19-21 30-44 | | Dark grayish-brown, Silty CLAY, trace Gravel, plastic, cohesive, moist. | | | | |
| 61 | | | | | | | | | | |
| 62 | 30 | 24/24 | 62-64 | 3-11 17-23 | | Dark grayish-brown, Silty CLAY, trace Gravel, plastic, cohesive, moist. | | | | |
| 63 | | | | | | | | | | |
| 64 | 31 | 24/24 | 64-66 | 12-29 32-50 | | Dark grayish-brown, Silty CLAY, trace Gravel, plastic, cohesive, moist. | | | | |
| 65 | | | | | | | | | | |
| 66 | 32 | 24/24 | 66-68 | 12-20 26-40 | | Dark grayish-brown, Silty CLAY, trace Gravel, plastic, cohesive, moist. | | | | |
| 67 | | | | | | | | | | |
| 68 | 33 | 24/5 | 68-70 | 17-50 | | Dark grayish-brown, Silty CLAY, trace Gravel, plastic, cohesive, moist. | 68.4' NO RECOVERY | | | |
| 69 | | | | | | | | | | |
| 70 | 34 | 24/24 | 70-72 | 9-19 31-42 | | Dark grayish-brown, Silty CLAY, trace Gravel, plastic, cohesive, moist. | 70' Silty CLAY | | | |
| 71 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
| | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: WV-MW-15D | |

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Bentonite / Grout



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Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-15D
Page: 5 of 8
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|--|---|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 73 | 35 | 10/8 | 72-72.8 | 30-50/4" | | Dark grayish-brown, Silty CLAY, trace Gravel, plastic, cohesive, moist. Changing at 72.7 feet to: NO RECOVERY. | Silty CLAY 72.7' NO RECOVERY | | | |
| 74 | 36 | 17/12 | 74-75.4 | 15-39-50/5" | | Dark grayish-brown, Silty CLAY, trace Gravel, plastic, cohesive, moist. Changing at 74.3 feet to: Dark grayish-brown to brown, fine to medium SAND, little to some Silt, slightly cohesive, non-plastic, moist to wet. Changing at 74.6 feet to: Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 75.0 feet to: NO RECOVERY. | 74' Silty CLAY 74.3' SAND 75' NO RECOVERY | | | |
| 76 | 37 | 8/5 | 76-76.7 | 30-50/2" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 75.0 feet to: NO RECOVERY. | 76' SAND 76.4' NO RECOVERY | | | |
| 78 | 38 | 10/10 | 78-78.8 | 20-50/4" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 76.4 feet to: NO RECOVERY. | 78' SAND 78.8' NO RECOVERY | | | |
| 80 | 39 | 10/8 | 80-80.8 | 34-50/4" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 80.7 feet to: NO RECOVERY. | 80' SAND 80.7' NO RECOVERY | | | |
| 82 | 40 | 10/8 | 82-82.8 | 15-50/4" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 82.7 feet to: NO RECOVERY. | 82' SAND 82.7' NO RECOVERY | | | |
| 84 | 41 | 11/12 | 84-84.9 | 32-50/5" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 85.0 feet to: NO RECOVERY. | 84' SAND 85' NO RECOVERY | | | |
| 86 | 42 | 11/11 | 86-86.9 | 31-50/5" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 86.9 feet to: NO RECOVERY. | 86' SAND 86.9' NO RECOVERY | | | |
| 88 | 43 | 12/12 | 88-89 | 33-50 | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 88.5 feet to: Dark grayish-brown to dark yellowish-brown, fine to medium SAND, little to some Silt, moist to wet. Changing at 89.0 feet to: NO RECOVERY. | 88' SAND 89' NO RECOVERY | | | |
| 90 | 44 | 11/12 | 90-90.9 | 38-50/4.5" | | Dark grayish-brown, fine SAND, some Silt, | 90' SAND | | | |
| <div>REMARKS</div> | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: WV-MW-15D | |

BORING WELL 6267781 WWW.WOLVEN AVENUE.GPJ GZA CORP.GDT 9/27/19



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Engineers and Scientists

Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-15D
Page: 6 of 8
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|-------------|-----------|--|---------------------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 91 | | | | | | little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 91.0 feet to: NO RECOVERY. | 91' SAND NO RECOVERY | | | |
| 92 | 45 | 12/12 | 92-93 | 27-50 | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 93.0 feet to: NO RECOVERY. | 92' SAND | | | |
| 93 | | | | | | | 93' NO RECOVERY | | | |
| 94 | 46 | 12/12 | 94-95 | 27-50 | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 95.0 feet to: NO RECOVERY. | 94' SAND | | | |
| 95 | | | | | | | 95' NO RECOVERY | | | |
| 96 | 47 | 17/18 | 96-97.4 | 29-47-50/5" | | Dark grayish-brown, Silty CLAY, plastic, cohesive, moist. Changing at 97.5 feet to: NO RECOVERY. | 96' Silty CLAY | | | |
| 97 | | | | | | | 97.5' NO RECOVERY | | | |
| 98 | 48 | 18/18 | 98-99.5 | 23-43-50 | | Brown, fine to medium SAND, little Silt, trace Gravel, moist to wet. Changing at 98.4 feet to: Dark grayish-brown, Silty CLAY, plastic, cohesive, moist. | 98' SAND 98.4' Silty CLAY | | | |
| 99 | | | | | | | | | | |
| 100 | 49 | 8/7 | 100-100.7 | 48-50/2" | | Dark grayish-brown, fine to medium SAND, little Silt, trace Gravel, slightly cohesive, moist to wet. Changing at 100.4 feet to: Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 100.9 feet to: NO RECOVERY. | 100' SAND | | | |
| 101 | | | | | | | 100.9' NO RECOVERY | | | |
| 102 | 50 | 10/7 | 102-102.8 | 37-50/3.5" | | Grayish-brown to brown, fine to medium SAND, little Silt, trace Gravel, slightly cohesive, moist to wet. Changing at 102.6 feet to: NO RECOVERY. | 102' SAND 102.6' NO RECOVERY | | | |
| 103 | | | | | | | | | | |
| 104 | 51 | 10/8 | 104-104.8 | 37-50/4" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 104.7 feet to: NO RECOVERY. | 104' SAND 104.7' NO RECOVERY | | | |
| 105 | | | | | | | | | | |
| 106 | 52 | 9/8 | 106-106.8 | 41-50/3" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 106.9 feet to: NO RECOVERY. | 106' SAND 106.9' NO RECOVERY | | | |
| 107 | | | | | | | | | | |
| 108 | 53 | 11/8 | 108-108.9 | 44-50/4.5" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 108.9 feet to: NO RECOVERY. | 108' SAND 108.9' | | | |
| 109 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 9/27/19



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-15D
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Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|----------------|-----------|---|-----------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | | |
| 110 | 54 | 11/14 | 110-110.9 | 38-50/5" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 111.3 to 112.0 feet to: NO RECOVERY. | 110' NO RECOVERY SAND | | | |
| 111 | | | | | | | 111.3' NO RECOVERY | | | |
| 112 | 55 | 11/12 | 112-112.9 | 31-50/5" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 113.0 feet to: NO RECOVERY. | 112' NO RECOVERY SAND | | | |
| 113 | | | | | | | 113' NO RECOVERY | | | |
| 114 | 56 | 17/17 | 114-115.4 | 11-36-50/5" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 115.4 feet to: NO RECOVERY. | 114' NO RECOVERY SAND | | | |
| 115 | | | | | | | 115.4' NO RECOVERY | | | |
| 116 | 57 | 12/8 | 116-117 | 48-50/5.5" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 116.9 feet to: NO RECOVERY. | 116' NO RECOVERY SAND | | | |
| 117 | | | | | | | 116.9' NO RECOVERY | | | |
| 118 | 58 | 18/18 | 118-119.5 | 26-49-50 | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 119.5 feet to: NO RECOVERY. | 118' NO RECOVERY SAND | | | |
| 119 | | | | | | | 119.5' NO RECOVERY | | | |
| 120 | 59 | 21/22 | 120-121.8 | 23-37 40-50/3" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. | 120' NO RECOVERY SAND | | | |
| 121 | | | | | | | | | | |
| 122 | 60 | 5/0 | 122-122.4 | 50/5" | | NO RECOVERY. | 122' NO RECOVERY | | | |
| 123 | | | | | | | | | | |
| 124 | 61 | 11/10 | 124-124.9 | 33-50/5" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 124.8 feet to: NO RECOVERY. | 124' NO RECOVERY SAND | | | |
| 125 | | | | | | | 124.8' NO RECOVERY | | | |
| 126 | 62 | 10/9 | 126-126.8 | 48-50/4" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 126.9 feet to: NO RECOVERY. | 126' NO RECOVERY SAND | | | |
| 127 | | | | | | | 126.9' NO RECOVERY | | | |
| | | | | | | | 128' | | | |
| <div>REMARKS</div> | | | | | | | | | | |
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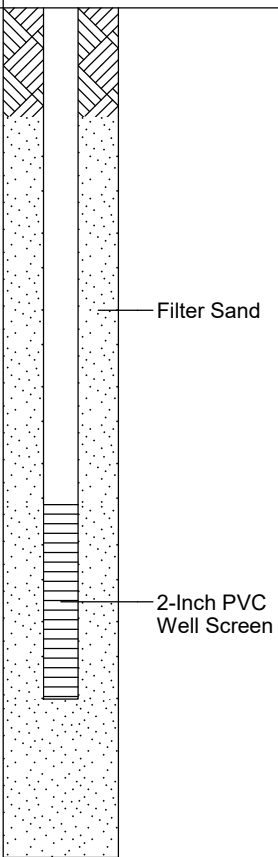
BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 9/27/19



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: WV-MW-15D
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Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|--|--------------------|------------------|-------------|-------------|-----------|---|---------------------------------------|--|---------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | Blows (/6") | Test Data | | | | |
| 129 | 63 | 10/9 | 128-128.8 | 40-50/4" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 128.9 feet to: NO RECOVERY. | SAND 128.9' NO RECOVERY |  | |
| 130 | 64 | 11/11 | 130-130.9 | 33-50/5" | | Dark grayish-brown, fine SAND, some Silt, little Clay, trace Gravel, non to slightly plastic, cohesive, moist. Changing at 131.2 feet to: NO RECOVERY. | 130' SAND 131.2' NO RECOVERY | | |
| 131 | | | | | | | 132' SAND 133.4' NO RECOVERY | | |
| 132 | 65 | 9/9 | 132-132.8 | 46-50/3" | | Brown, fine to medium SAND, little Silt, moist to wet. Changing at 132.6 feet to: Dusky red to dark yellowish-brown to gray, fine to medium SAND, little Silt moist to wet (weathered Sandstone). Changing at 135.4 feet to: NO RECOVERY. | 132' SAND 133.4' NO RECOVERY | | |
| 133 | | | | | | | 134.2' SAND NO RECOVERY | | |
| 134 | 66 | 2/2 | 134-134.2 | 50/2" | | Brown, fine to coarse SAND, little Gravel, trace Silt, wet (weathered Sandstone). Changing at 134.2 feet to: NO RECOVERY. | 134.2' SAND NO RECOVERY | | |
| 135 | | | | | | | | | |
| 136 | 67 | 3/4 | 136-136.3 | 50/3" | | Dark gray, weathered SHALE, moist. | 136' SHALE | | |
| 137 | | | | | | | | | |
| 138 | | | | | | Bottom of Borehole at 138.0 Feet | 138' | | |
| 139 | | | | | | | | | |
| 140 | | | | | | | | | |
| 141 | | | | | | | | | |
| 142 | | | | | | | | | |
| 143 | | | | | | | | | |
| 144 | | | | | | | | | |
| 145 | | | | | | | | | |
| 146 | | | | | | | | | |
| <div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">BORING WELL 6267781 WWW.WOLVENAVENUE.GPJ GZA CORP.GDT 9/27/19</div> <div> <p>REMARKS</p> <p>2. Monitoring well was installed in borehole upon completion. Well screen set from 134.9 to 137.6 feet below ground surface.</p> </div> <div> <p>Boring No.: WV-MW-15D</p> </div> </div> | | | | | | | | | |

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.



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Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-16D

Page: 1 of 6

File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry Huntoon

Logged by: S. Stephenson

Date Start/Finish: 3-21-19 / 3-22-19

Boring Location: See Survey

GS Elev.: See Survey Datum: State Plane S Zone NAD 83

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 12.25" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: NA 140lbs

Hammer Fall: NA 30.0"

Other: NA NA

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| NM | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------------|----------------|----------|----------|---|------------------|---------|----------------------|----------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | PROTECTIVE CASING | |
| 1 | 1 | 300 | 0-25 | | ND | Blind drill. See MW-WV-16S for soil descriptions from 0.0 to 25.0 feet. | BLIND DRILL | 1 | | Concrete |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million by volume (ppmv) of isobutylene. ND indicates nothing detected (<0.1 ppmv).

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV-16D



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Wolven Avenue Area
Algoma Twp, Kent County, Michigan

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| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|--------------|-------|---|--------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 16 | | | | | | | BLIND DRILL | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | 2 | 24/24 | 26-28 | 3-9 14-23 | ND | Very stiff, brown, CLAY & SILT, little Sand, trace Rock fragments. | 26' CLAY & SILT | 2 | | |
| 27 | | | | | | | | | | |
| 28 | 3 | 24/24 | 28-30 | 6-7 8-16 | ND | Very stiff, brown, CLAY & SILT, little Sand, trace Rock fragments. Silt lenses from approximately 28.4 to 28.7 feet below ground surface. | | | | |
| 29 | | | | | | | | | | |
| 30 | 4 | 24/24 | 30-32 | 5-8 14-19 | ND | Very stiff, brown, CLAY & SILT, trace Sand, wet. | | | | |
| 31 | | | | | | | | | | |
| 32 | 5 | 24/24 | 32-34 | 5-9 | ND | Very stiff, brown, CLAY & SILT, trace Sand, | | | | |
| REMARKS 2. Second borehole drilling at MW-WV-16D. | | | | | | | | | | |
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BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide
Wolvern Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-16D
Page: 3 of 6
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-------|--|--------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 33 | | | | 29-33 | | wet. | CLAY & SILT | | | |
| 34 | 6 | 24/24 | 34-36 | 9-8 14-17 | ND | Very stiff, brown, CLAY & SILT, trace Sand, wet. | | | | |
| 35 | | | | | | | | | | |
| 36 | 7 | 24/24 | 36-38 | 11-7 12-17 | ND | Very stiff, brown, CLAY & SILT, trace Sand, wet. | | | | |
| 37 | | | | | | | | | | |
| 38 | 8 | 24/24 | 38-40 | 5-10 19-24 | ND | Very stiff, brown, CLAY & SILT, trace Sand, wet. | | | | |
| 39 | | | | | | | | | | |
| 40 | 9 | 24/24 | 40-42 | 4-12 15-26 | ND | Very stiff, brown, CLAY & SILT, trace Sand, wet. | | | | |
| 41 | | | | | | | | | | |
| 42 | 10 | 24/24 | 42-44 | 5-9 12-14 | ND | Very stiff, brown, CLAY & SILT, trace Sand, wet. | | | | |
| 43 | | | | | | | | | | |
| 44 | 11 | 24/24 | 44-46 | 6-10 15-21 | ND | Very stiff, brown, CLAY & SILT, trace Sand, wet. | | | | |
| 45 | | | | | | | | | | |
| 46 | 12 | 24/24 | 46-48 | 4-9 19-24 | ND | Very stiff, brown, CLAY & SILT, trace Sand, wet. Changing at 47.5 feet to: Brown and gray, fine SAND, some Silt, wet. | | | | |
| 47 | | | | | | | 47.5' SAND | | | |
| 48 | 13 | 24/24 | 48-50 | 3-7 6-8 | ND | Stiff, brown, CLAY & SILT, trace Sand, wet. Changing at 48.5 feet to: Brown, fine SAND, some Silt, wet. Changing at 49.0 feet to: Brown, Clayey SILT, trace Sand, wet. | 48' CLAY & SILT | | | |
| 49 | | | | | | | 48.5' SAND | | | |
| | | | | | | | 49' Clayey SILT | | | |
| REMARKS | | | | | | | | | | |
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BORING WI 6267781 WWW.WOLVERN AVENUE.GPJ WI DNR.GDT 4/17/20

Bentonite Grout



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-16D
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Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|---|--------------------|------------------|-------------|---------------|-------|---|----------------------|---------|-----------------------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | | |
| 51 | 14 | 24/24 | 50-52 | 3-9 9-16 | ND | Brown, Clayey SILT, some Sand, wet. Changing at 51.7 feet to: Brown, CLAY & SILT, trace Sand, wet. | Clayey SILT | | | |
| 52 | 15 | 24/24 | 52-54 | 3-8 14-23 | ND | Very stiff, brown, CLAY & SILT, trace Sand, wet. | 51.5' CLAY & SILT | | | |
| 53 | | | | | | | | | | |
| 54 | 16 | 24/24 | 54-56 | 5-10 16-19 | ND | Very stiff, brown, CLAY & SILT, trace Sand, wet. | | | | |
| 55 | | | | | | | | | | |
| 56 | 17 | 24/24 | 56-58 | 2-7 13-19 | ND | Very stiff, brown, CLAY & SILT, trace Sand, wet. | | | | |
| 57 | | | | | | | | | | |
| 58 | 18 | 24/24 | 58-60 | 3-10 15-21 | ND | Very stiff, brown, CLAY & SILT, trace Sand, wet. | | | | |
| 59 | | | | | | | | | | |
| 60 | 19 | 24/24 | 60-62 | 3-8 17-25 | ND | Very stiff, brown, CLAY & SILT, trace Sand, wet. | | | | |
| 61 | | | | | | | | | | |
| 62 | 20 | 24/24 | 62-64 | 2-11 15-22 | ND | Very stiff, brown, CLAY & SILT, trace Sand, wet. | | | | |
| 63 | | | | | | | | | | |
| 64 | 21 | 24/24 | 64-66 | 4-10 14-19 | ND | Very stiff, brown, CLAY & SILT, trace Sand, wet. | | | | |
| 65 | | | | | | | | | | |
| 66 | 22 | 24 | 66-68 | 4-11 16-21 | ND | Very stiff, brown, CLAY & SILT, trace Sand, wet. | | | | |
| 67 | | | | | | | | | | |
| REMARKS | | | | | | | | | | |
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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

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Check: Kate McDonald

| Sample Information | | | | | | Argonia Twp, Kent County, Michigan | | Check: Kate McDonald | | | | | |
|---|-----|------------------|-------------|----------------|-------|---|--|----------------------|---------------------|--|-----------------------|--|--|
| Depth | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | | | | |
| | | | | | | | | | | | | | |
| 68 | 23 | 24/24 | 68-70 | 4-11 19-23 | ND | Very stiff, brown, CLAY & SILT, trace Sand, wet. Changing at 69.0 feet to: Brown, Silty CLAY, trace Sand, wet. | CLAY & SILT | | | | | | |
| 69 | | | | | | | 69' Silty CLAY | | | | | | |
| 70 | 24 | 24/24 | 70-72 | 3-14 23-27 | ND | Brown, Silty CLAY, trace Sand, wet. Changing at 71.0 feet to: Brown, CLAY & SILT, wet. | 71' CLAY & SILT | | | | | | |
| 71 | | | | | | | 72' Silty CLAY | | | | | | |
| 72 | 25 | 24/24 | 72-74 | 4-10 17-26 | ND | Very stiff, brown, Silty CLAY, trace Sand, wet. Changing at 73.0 feet to: Dark brown and dark gray, Silty CLAY, trace Sand, wet. | 75.8' 76' CLAY & SILT Silty CLAY | | | | | | |
| 73 | | | | | | | | | | | | | |
| 74 | 26 | 24/18 | 74-76 | 10-19 33-39 | ND | Hard, black and gray with slight blue and green tinge, Silty CLAY, trace Sand, wet. Changing at 75.8 feet to: Green, CLAY & SILT, some Sand, wet. | 77.5' CLAY & SILT | | | | | | |
| 75 | | | | | | | | | | | | | |
| 76 | 27 | 24/12 | 76-78 | 1-6 15-25 | ND | Very stiff, black and gray, Silty CLAY, wet. changing at 77.5 feet to: Pale green and gray, CLAY & SILT, little to trace Sand, wet. | | | | | | | |
| 77 | | | | | | | | | | | | | |
| 78 | 28 | 24/18 | 78-80 | 10-20 26-38 | ND | Pale green and gray, CLAY & SILT, little to trace Sand, wet. | | | | | | | |
| 79 | | | | | | | | | | | | | |
| 80 | 29 | 24/24 | 80-82 | 11-24 35-39 | ND | Pale green and gray, CLAY & SILT, little to trace Sand, wet. | | | | | | | |
| 81 | | | | | | | | | | | | | |
| 82 | 30 | 24/24 | 82-84 | 7-16 24-38 | ND | Pale green and gray, CLAY & SILT, little to trace Sand, wet. | | | | | | | |
| 83 | | | | | | | | | | | | | |
| 84 | 31 | 24/12 | 84-86 | 12-50/6" | ND | Pale green and gray, CLAY & SILT, little to trace Sand, wet. Pulverized rock at 85.9 feet below ground surface. | | | | | | | |
| REMARKS | | | | | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | | | Boring No.: MW-WV-16D | | |

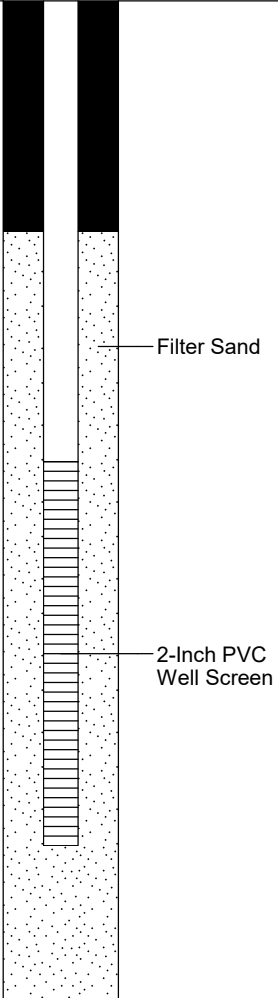
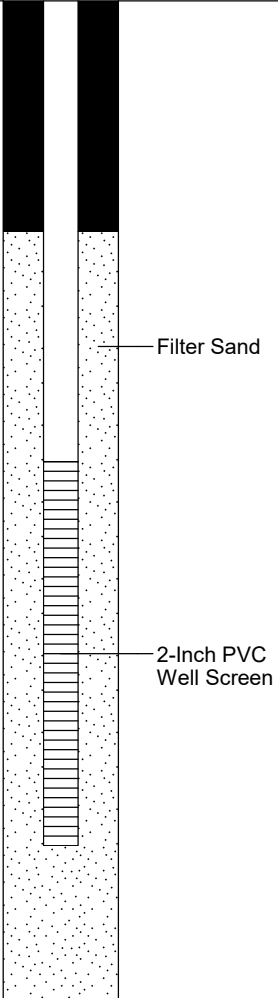
BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-16D
Page: 6 of 6
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------------|-------|---|---------------------------------------|---------|--|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | |
| 86 | 32 | 24/18 | 86-88 | 2-5 6-9 | ND | Gray, CLAY & SILT, little Sand, wet. Changing at 86.2 feet to: Brown and gray, fine SAND and SILT, wet. | CLAY & SILT 86.2' SAND and SILT | 3 |  |
| 87 | | | | | | | | | |
| 88 | 33 | 24/18 | 88-90 | 6-24-50/6" | ND | Very dense, brown and gray, fine SAND, some Silt, wet. | 88' SAND | | |
| 89 | | | | | | | | | |
| 90 | 34 | 24/8 | 90-92 | 37-50/2" | ND | Very dense, brown and gray, fine SAND, some Silt, wet. | | | |
| 91 | | | | | | | | | |
| 92 | 35 | 24/10 | 92-94 | 24-50/4" | ND | Very dense, brown and gray, fine SAND, some Silt, wet. | | | |
| 93 | | | | | | | | |  |
| 94 | 36 | 24/6 | 94-96 | 50/6" | ND | Very dense, brown and gray, fine SAND, some Silt, wet. | | | |
| 95 | | | | | | | | | |
| 96 | 37 | 24/18 | 96-98 | 18-31-50/6" | ND | Brown and gray, Clayey SILT, little fine to coarse Sand, dry. | 96' Clayey SILT | | |
| 97 | | | | | | | | | |
| 98 | | | | | | Bottom of Borehole at 98.0 Feet | 98' | 4 | |
| 99 | | | | | | | | | |
| 100 | | | | | | | | | |
| 101 | | | | | | | | | |
| 102 | | | | | | | | | |
| <div>REMARKS</div> <div>3. Groundwater sample was collected from temporary well with a well screen from approximately 91.0 to 96.0 feet. 4. Monitoring well was installed in borehole upon completion. Well screen set from 91.0 to 96.0 feet below ground surface.</div> | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV-16D |

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Wolverine World Wide

Wolven Avenue Area

Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-16S

Page: 1 of 2

File No.: 16.0062677.81

Check: Kate McDonald

Contractor: Stearns Drilling Company

Foreman: J. Muntoon

Logged by: Sheryl Stephenson

Date Start/Finish: 3-19-19 / 3-20-19

Boring Location: See Survey

GS Elev.: See Survey

Auger/
Casing

Sampler

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 12.25" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: NA 140lbs

Hammer Fall: NA 30.0"

Other: NA NA

GROUNDWATER READINGS

| Date | Time | Depth | Casing | Stab |
|------|------|-------|--------|------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed | |
|-------|--------------------|------------------|-------------|---------------|-------|---|------------------------------|---------|---------------------|------------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | PROTECTIVE CASING | |
| 1 | 1 | 24/6 | 0-2 | 1-1 1-1 | ND | Very loose, brown, TOPSOIL. | TOPSOIL | | | |
| 2 | 2 | 24/18 | 2-4 | 2-3 4-4 | ND | Loose, light brown, fine SAND, little Silt, moist. | SAND | | | |
| 3 | | | | | | | | | | |
| 4 | 3 | 24/18 | 4-6 | 3-5 5-4 | ND | Medium dense, light brown and gray, fine SAND, little Silt, trace fine Gravel, moist. | | | | |
| 5 | | | | | | | | | | |
| 6 | 4 | 24/18 | 6-8 | 4-7 5-5 | ND | Medium dense, light brown, fine to coarse SAND, little Gravel, little Silt, wet. Changing at 7.5 feet to: Orange and brown, fine SAND, little Silt, wet. | | 1 | | |
| 7 | | | | | | | | | | |
| 8 | 5 | 24/12 | 8-10 | 2-4 6-5 | ND | Medium dense, brown, fine SAND, some Silt, trace fine Gravel, wet. | | 2 | | Bentonite Grout |
| 9 | | | | | | | | | | |
| 10 | 6 | 24/24 | 10-12 | 1-6 6-5 | ND | Medium dense, brown, fine SAND, some Silt, wet. Changing at 11.0 feet to: Brown, fine to coarse SAND, some Silt, little fine Gravel, wet. | | | | |
| 11 | | | | | | | | | | |
| 12 | 7 | 24/18 | 12-14 | 9-11 12-17 | ND | Very stiff, gray, Clayey SILT, some fine to coarse Sand, wet. | Clayey SILT | | | |
| 13 | | | | | | | | | | |
| 14 | 8 | 24/18 | 14-16 | 6-12 12-13 | ND | Medium dense, gray, fine to medium SAND, some Silt, trace fine Gravel, wet. Changing at 15.0 feet to: Gray, Clayey SILT, little fine to coarse Sand, dry. | SAND | | | |
| 15 | | | | | | | | | | |
| 16 | 9 | 24/18 | 16-18 | 5-11 9-13 | ND | Medium dense, gray, SAND and SILT, trace fine Gravel, moist. | Clayey SILT SAND and SILT | 3 | | |
| 17 | | | | | | | | | | |
| 18 | 10 | 24/8 | 18-20 | 7-16 14-13 | ND | Dense, brown, fine to medium SAND, some Silt, wet. | SAND | | | |
| 19 | | | | | | | | | | |
| 20 | 11 | 24/12 | 20-22 | 1-7 8-12 | ND | Medium dense, fine to medium SAND, some Silt, wet. Changing at 21.0 feet to: Brown, Clayey SILT, some Sand, trace fine Gravel, moist. | Clayey SILT | | | Filter Sand |
| 21 | | | | | | | | | | |
| 22 | 12 | 24/0 | 22-24 | 9-13 15-15 | | NO RECOVERY. | NO RECOVERY | 4 | | 2-Inch PVC Well Screen |

REMARKS

1. Groundwater was encountered at approximately 6.0 feet below ground surface.
2. Temporary well installed from 4.0 to 14.0 feet below ground surface. Well screen interval from 9.0 to 14.0 feet below ground surface. Purged 25.0 gallons of water.
3. Casing set at 15.0 feet below ground surface.
4. 2.0-inch of Sand and Silt with large Gabbro fragment and cohesive nature.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: MW-WV-16S

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



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Wolverine World Wide
Wolven Avenue Area
Algoma Twp, Kent County, Michigan

Boring No.: MW-WV-16S
Page: 2 of 2
File No.: 16.0062677.81
Check: Kate McDonald

| Depth | Sample Information | | | | | Sample Description & Classification | Stratum Desc. | Remarks | Equipment Installed |
|---|--------------------|------------------|-------------|-------------|-------|---|-------------------------------------|---------|-----------------------|
| | No. | Pen./ Rec. (in.) | Depth (Ft.) | % REC | % RQD | | | | |
| 24 | 13 | 24/18 | 24-26 | 5-5 9-10 | ND | Medium dense, brown, Clayey SILT, some Sand, trace fine Gravel, wet. Changing at 23.0 feet to: Brown, CLAY & SILT, trace Gravel, moist. | NO RECOVERY | 5 | |
| 25 | | | | | | | 24' Clayey SILT | | |
| 26 | | | | | | | 25' CLAY & SILT | | |
| 27 | | | | | | | 26' Bottom of Borehole at 26.0 Feet | | |
| 28 | | | | | | | | | |
| 29 | | | | | | | | | |
| 30 | | | | | | | | | |
| 31 | | | | | | | | | |
| 32 | | | | | | | | | |
| 33 | | | | | | | | | |
| 34 | | | | | | | | | |
| 35 | | | | | | | | | |
| 36 | | | | | | | | | |
| 37 | | | | | | | | | |
| 38 | | | | | | | | | |
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| 40 | | | | | | | | | |
| 41 | | | | | | | | | |
| 42 | | | | | | | | | |
| 43 | | | | | | | | | |
| 44 | | | | | | | | | |
| 45 | | | | | | | | | |
| 46 | | | | | | | | | |
| 47 | | | | | | | | | |
| 48 | | | | | | | | | |
| 49 | | | | | | | | | |
| 5. Monitoring well was installed in borehole upon completion. Well screen set from 17.0 to 22.0 feet below ground surface. | | | | | | | | | |
| REMARKS | | | | | | | | | |
| Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. | | | | | | | | | Boring No.: MW-WV-16S |

BORING WI 6267781 WWW.WOLVEN AVENUE.GPJ WI DNR.GDT 4/17/20



APPENDIX B – STANDARD OPERATING PROCEDURES

PURPOSE

The purpose of the Standard Operating Procedure (SOP) is to obtain pore water samples for analysis for PFAS that are representative of environmental conditions at the location sampled.

PREPARATION

If a sample cannot be obtained safely, the sample should not be collected at all and the circumstances shall be documented in the sampler's field notes. This procedure requires a minimum of two sample personnel for safety concerns.

Sampling locations shall be permanently located using a global positioning system (GPS) unit for future reference. The expected accuracy of the GPS unit shall be determined in advance and specified in the Sampling and Analysis Plan (SAP).

When collecting surface water, pore water, and sediment samples in the same location, sampling should occur in that order: surface water samples first, then pore water samples, and finally sediment samples.

EQUIPMENT AND MATERIALS

The following equipment is typically used in collecting pore water samples:

- Appropriate health and safety gear as indicated in an approved site-specific Health & Safety Plan.
- Site-Specific SAP which includes a map and other project-specific information including field data from last sampling event, if available.
- Waders.
- Boat.
- Sample containers, preserved as necessary, cooler, and double-bagged ice.
- Field worksheets, sample labels, and chain of custody forms.
- Pencil/pen and calculator.
- Camera to take digital pictures.
- The manufacturer's instruction manuals for all equipment.
- Ruler or staff gauge for measuring water depth.
- GPS unit or similar device.
- Decontamination supplies/equipment; including laboratory-grade PFAS-free water.
- Paper towels.
- Henry sampler (Push Point).
- Flange for Henry sampler to reduce likelihood of surface water intrusion.
- Shop-fabricated sampler for use in locations that are too deep or where sediment depths prevent the use of the Henry sampler. See attachment for a drawing and picture describing the shop-fabricated sampler.
- A multiparameter meter (e.g., YSI PRO or other approved meter as specified in the site-specific QAPP) and flow through cell for measuring pH, specific conductivity in $\mu\text{S}/\text{cm}$, dissolved oxygen, oxidation-reduction potential (ORP), and temperature ($^{\circ}\text{C}$).
- A probe guard for the multiparameter meter to take in-situ parameter surface water readings.
- A Turbidity Meter (e.g., Hach 2100P or 2100Q or other approved meter as specified in the site-specific QAPP).
- Appropriate calibration solutions for the multi-parameter and turbidity meters, if water quality parameters are collected.

- Peristaltic pump and tubing
- Toolbox to include general items such as large and small wrenches, pipe wrenches, pliers, screw drivers, 25-foot measuring tape, sharp knife (locking blade), and duct tape, at a minimum.

PROCEDURE

In general, all instrumentation necessary for field monitoring and health and safety purposes shall be maintained, tested, and inspected according to the manufacturer's instructions. The manufacturer's instruction manuals for field equipment shall be kept on-site with the equipment.

All instruments will be successfully calibrated once by the sampling team prior to the sampling event according to SOP A15: *Calibration of Field Instruments*.

Instruments will be calibrated at the beginning of each sampling day at the site and will be checked (in the run mode) in the morning and again at the end of the day. Instrument calibration will be performed additional times during the sampling day if instrument readings appear to be significantly different than previously observed.

Digital photographs are usually taken at each sampling location, upstream and downstream from the same position so that consistency can be maintained between sampling rounds.

If not previously done, use a GPS unit to permanently mark the sample location for future reference (See SOP A11: *Global Positioning System*).

If the stream/creek/water body must be waded to collect pore water samples, the water should not exceed three feet in depth. If the water exceeds three feet, samples will be collected by boat.

Using a stream staff/gage or similar measuring device, measure the depth of water from the bottom of the streambed/lakebed to the surface of the water, in feet, directly downstream of each sampling location and record on the *Pore Water Worksheet*. Some sites may have a permanently installed staff gage at one location to monitor water levels instead of, or in addition to, collecting measurements at each separate location.

Pore water samples to be collected from the same water body should be collected sequentially from downstream to upstream sample locations. Sample locations will be approached from the downstream side to minimize bottom sediment disturbance, and the sampler should stand down stream of the sampling device. Water samples collected from a boat shall be collected from the bow or upstream side of the boat, away from the motor, with extreme care taken to avoid contamination of the sample.

At each sample location either a Henry sampler or the shop-fabricated sampler will be driven through a flange in the stream bottom. The purpose of the flange is to reduce surface water intrusion during sampling. The flange is carefully placed on top of the sediment. The sampler is inserted through the flange to the desired depth. The flange should fit snugly around the body of the sampler to prevent surface water from contaminating the pore water sample. Samplers will estimate the thickness of organic sediment on the bottom of the river based on resistance. The sampler inlet will be positioned 6-12 inches below the base of the loose sediment.

Samplers will use a peristaltic pump to remove fines from the sampler to facilitate flow. During purging, samplers will monitor and record indicator field parameters (turbidity, temperature, pH, specific conductance) at 3 minute or greater intervals. All measurements, except turbidity will be taken using a flow through cell. The pore water will be sampled using low-flow sampling methods as described below once the field readings from the pore water have stabilized and the pore water readings are distinguishable from the river readings. The following criteria shall be used to determine if pore water is ready for sampling (in order of preference):

1. There is a >10% difference between the river and pore water field parameter readings; OR
2. There is a >10% difference between the river and pore water readings for two out of the 3 readings; OR

3. The sample has cleared (no visible fines, turbidity at least 10% lower than river reading) and the sampler has been purged for at least 15 minutes.

When field parameters are stabilized in accordance with the criteria above, samples may be collected directly into the sample containers. Collect duplicates and other quality control samples as required in the SAP.

Once sampling containers are filled with the appropriate amount, they are capped and cleaned to remove any potential residue. Place samples in re-sealable plastic bags and store the samples in accordance with appropriate protocols. If samples require cooling, the samples shall be placed in a cooler of **double-bagged** ice.

QUALITY ASSURANCE SAMPLES

Collect appropriate quality assurance samples as specified in the site-specific SAP. At a minimum, at least one duplicate, one MS/MSD, and one field blank (for PFAS) should be collected per 20 samples. Duplicate samples are collected by filling a separate container for each analysis immediately following the actual field sample collection and should be in the same priority order as indicated in the SAP. Duplicate samples are typically not intended to be blind duplicate samples.

Equipment blanks should be collected on non-disposable equipment to ensure that the equipment is clean and the decontamination procedure is adequate (e.g., syringes, glass or stainless steel containers, etc.).

If using an in-line filter for dissolved metals, collect an equipment blank prior to sampling by running deionized water through the filter and collecting a sample for dissolved metals to ensure the integrity of the filter.

DECONTAMINATION

Decontaminate equipment according to GZA SOP A10: *Decontamination Procedure*. Disposable sampling equipment shall be discarded after completing the sampling task and not reused.

RECORDS AND DOCUMENTATION

In general, all data and sampling information will be documented as recorded as specified in the SAP. Specific reporting of these sampling events may include, but is not limited to, the following information:

1. Samples collected.
2. Date and time of sample collection.
3. Water depths at the sampling locations.
4. Any water quality parameter readings taken.
5. General physical description of the samples and sampling locations.
6. Digital photographs of sampling locations including one or more of the larger surrounding area, along with any notes on the photographs.

SPECIAL NOTES

None.

APPLICABLE STANDARDS AND REFERENCES

U.S. Environmental Protection Agency, region 4, Science and Ecosystem support Division, *Standard Operating Procedure SESDPROC-513-R3*, December 14, 2016.

ATTACHMENT

Pore Water Worksheet

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Date:

Location ID:**Weather Conditions:****Sampler's Name:**

**Sampler Screen Interval (ft) (below
water surface)**

Water Depth (ft):

**Sediment Thickness
(ft) (est):**

Start time

Sample Time

[illegible]

[illegible]

PURPOSE

The purpose of the Standard Operating Procedure (SOP) is to install piezometers in a manner in which they can be used for measurement of groundwater to surface water flow.

EQUIPMENT AND MATERIALS

- Hand auger
- Stainless steel well screen
- Galvanized threaded piping
- Dielectric Pipe Couplings
- Pipe wrenches
- Well/fence post driver
- Vented well cap
- Bentonite seal and concrete pad for piezometers installed on the riverbank.
- GPS unit or similar device
- Camera to take digital pictures
- Appropriate health and safety PPE and an approved site-specific Health and Safety Plan

INSTALLATION PROCEDURES

1. Using a pipe wrench, assemble the well screen and galvanized piping
2. Hand Auger as needed, then hand drive piezometer casing so that the top of screen is approximately 3 feet below the river bottom. The top of the piezometer should be above the estimated flood level based on observations of vegetation and deposition
3. Make a note of the general material (gravel vs sediment) on a GZA boring log. Calculate the depth of the screen beneath the floor of the river.
4. Piezometer completion shall include a 1-foot bentonite seal and concrete pad for those installed on the riverbank. If in-stream piezometers are installed, the bentonite seal and concrete pad shall not be installed.
5. Use a GPS to permanently mark the piezometer location

MEASUREMENT PROCEDURES

Water level measurements shall be collected following the procedures outlined in *SOP A14, Water Level Measurement* and recorded on the form included in SOP A14. Groundwater analytical samples may be collected from piezometers following the procedures outlined in *SOP A29, Piezometer Sampling*. If they will be used for groundwater sample collection, piezometers should be developed in accordance with *SOP A13, Well Development* and allowed to stabilize for 1 week prior to sampling.

RECORDS AND DOCUMENTATION

The details of the installation shall be recorded on the GZA boring log. If needed, additional information can be attached as a separate sheet.

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PURPOSE

The purpose of the Standard Operating Procedure (SOP) is to obtain piezometer samples for analysis for PFAS that are representative of environmental conditions at the location sampled.

PREPARATION

If a sample cannot be obtained safely, the sample should not be collected at all and the circumstances shall be documented in the sampler's field notes. This procedure requires a minimum of two sample personnel for safety concerns.

Sampling locations shall be permanently located using a global positioning system (GPS) unit for future reference. The expected accuracy of the GPS unit shall be determined in advance and specified in the Sampling and Analysis Plan (SAP).

EQUIPMENT AND MATERIALS

The following equipment is typically used in collecting pore water samples:

- Appropriate health and safety gear as indicated in an approved site-specific Health & Safety Plan.
- Site-Specific SAP which includes a map and other project-specific information including field data from last sampling event, if available.
- Sample containers, preserved as necessary, cooler, and double-bagged ice.
- Field worksheets, sample labels, and chain of custody forms.
- Pencil/pen and calculator.
- Camera to take digital pictures.
- The manufacturer's instruction manuals for all equipment.
- Ruler or staff gauge for measuring water depth.
- GPS unit or similar device.
- Decontamination supplies/equipment; including laboratory-grade PFAS-free water.
- Paper towels.
- A multiparameter meter (e.g., YSI PRO or other approved meter as specified in the site-specific QAPP) and flow through cell for measuring pH, specific conductivity in $\mu\text{S}/\text{cm}$, dissolved oxygen, oxidation-reduction potential (ORP), and temperature ($^{\circ}\text{C}$).
- A Turbidity Meter (e.g., Hach 2100P or 2100Q or other approved meter as specified in the site-specific QAPP).
- Appropriate calibration solutions for the multi-parameter and turbidity meters, if water quality parameters are collected.
- Peristaltic pump and tubing
- Toolbox to include general items such as large and small wrenches, pipe wrenches, pliers, screw drivers, 25-foot measuring tape, sharp knife (locking blade), and duct tape, at a minimum.

PROCEDURE

In general, all instrumentation necessary for field monitoring and health and safety purposes shall be maintained, tested, and inspected according to the manufacturer's instructions. The manufacturer's instruction manuals for field equipment shall be kept on-site with the equipment.

All instruments will be successfully calibrated once by the sampling team prior to the sampling event according to SOP A15: *Calibration of Field Instruments*.

Instruments will be calibrated at the beginning of each sampling day at the site and will be checked (in the run mode) in the morning and again at the end of the day. Instrument calibration will be performed additional times during the sampling day if instrument readings appear to be significantly different than previously observed.

Digital photographs are usually taken at each sampling location, upstream and downstream from the same position so that consistency can be maintained between sampling rounds.

If not previously done, use a GPS unit to permanently mark the sample location for future reference (See SOP A11: *Global Positioning System*).

PURGING AND SAMPLING PROCEDURE

Purging and sampling piezometers in order of increasing chemical concentrations (known or anticipated) is preferred. See the QAPP for additional information.

1. Initial Water Level

Measure and record the depth to water (to 0.01 ft.) before any disturbance to the piezometer. Care should be taken to minimize suspension of any particulates attached to the sides. The initial water level is recorded on the worksheet.

2. Install sampling tubing.

Lower tubing slowly into the piezometer so that the intake is located at the center of the saturated screened interval at a depth that will remain under water at all times. The lowest historical midpoint of the saturated screen length is often used as the location of the intake. If possible keep the pump or tubing intake at least two feet above the bottom of the piezometer, to minimize mobilization of particulates present in the bottom of the piezometer. The tubing shall be secured to the piezometer casing (or PVC stick-up) to minimize movement.

3. Measure Water Level

Measure and record the water level again with the equipment in the piezometer before starting the pump.

4. Purging

From the time the pump starts purging and until the time the samples are collected, the purged water is discharged into a graduated bucket to determine the total volume of groundwater purged. This information is recorded on the worksheet.

Start the pump at its lowest speed setting and slowly increase the speed until discharge occurs. Check the water level. Check equipment for water leaks and if present, fix or replace the affected equipment. Try to match the final pumping rate used during previous sampling events. Otherwise, adjust pump speed until there is little or no water level drawdown. If the minimal drawdown that can be achieved exceeds 0.3 feet, but remains stable, continue purging.

Monitor and record the water level, draw down, and pumping rate, every 5 minutes, or as appropriate, during purging. **Readings shall not be less than 5 minutes apart.** Record any pumping rate adjustments (both time and flow rate). Adjustments are best made in the first 15 minutes of pumping in order to help minimize purging time. Pumping rates should, if needed, be reduced to the minimum capabilities of the pump to avoid drawdown and to ensure stabilization of monitoring parameters. **Pumping rates shall not be less than 50 ml/minute.**

If a constant water level cannot be maintained (e.g., if the recovery rate to the piezometer is less than 50 ml/minute, or the piezometer is being essentially dewatered during purging), the initial water level was above the top of the screen and the water level falls below the top of the piezometer screen, or the water level continues to drop after the initial 15 minutes at a rate that is greater than the maximum allowable drawdown in the chart below, the piezometer should be considered to have insufficient recharge for low flow sampling. The pump should be stopped and the piezometer should be sampled as soon as the water level has recovered sufficiently to collect the volume needed for all anticipated samples. A water level measurement needs to be performed and recorded, and one discharge line volume of water must be purged, before samples are collected with the pump.

1. Monitor indicator field parameters.

During piezometer purging, monitor and record indicator field parameters (turbidity, temperature, specific conductance, pH, ORP, and DO) at a frequency of 5 minute intervals or greater (e.g., every 10 minutes until the piezometer starts to stabilize, then every 5 minutes until stabilization). **Readings shall NOT be taken less than 5 minutes apart.**

The pump's flow rate must be able to "turn over" at least one flow-through cell volume between measurements (for a 250 ml flow-through cell with a flow rate of 50 ml/minute, the monitoring frequency would be every 5 minutes; for a 500 ml flow-through cell at the same flow rate, it would be every 10 minutes). If the cell volume cannot be replaced in the proper interval, (e.g., 5 minute for a 250 ml flow through cell) then the time between measurements must be increased accordingly.

All measurements, except turbidity, must be obtained using a flow-through cell. Samples for turbidity measurements must be obtained before the water enters the flow-through cell. Rinse the turbidity vial with DI water before collecting the first sample. Rinse the vial with DI water between readings to eliminate any sediment that may have collected on the bottom.

See SOP A16 for additional details on field parameter readings for low-flow sampling.

NOTE: There is a 2-hour time limit for each piezometer unless specified differently in the site-specific SAP.

The piezometer is considered ready for sample collection once the water level and the indicator parameters have stabilized and the purge volume requirement has been met, or two hours of purge time has elapsed.

Stabilization is considered to be achieved when three consecutive readings at 5-minute intervals are within the following limits:

- **Water Level (ft): No change in water level for three consecutive readings.**
- **Temperature (°C) +/- 1° C**
Values are typically rounded to the nearest whole number (e.g., 10.4 is rounded to 10, whereas 10.5 is rounded to 11).
- **Specific Conductivity (µS/cm) +/-3%**
Values are typically rounded to the nearest whole number.
- **DO +/-10% for values greater than 0.5 mg/l,**
Values are typically rounded to the nearest tenth place number.
Values between 0.5 and 1.0 are typically considered stable within +/- 0.1 mg/L.
Values less than zero point five (0.5) are typically reported as <0.5.
If three consecutive DO values are less than 0.5 mg/l, consider the values stabilized.
- **pH +/- 0.1 unit**
Values are typically rounded to the nearest tenth place number.
- **ORP +/- 10 millivolts**
Values are typically rounded to the nearest whole number.
- **Turbidity +/-10% for values greater than 5 NTU**
Values are typically rounded to the nearest whole number.
Values between 5 and 10 are typically considered stable within +/- 1 NTU.
Values less than five (5) are typically reported as <5.
If three consecutive turbidity values are less than 5 NTU, consider the values stabilized.

2. Purge Volume Requirement

If the drawdown is less than 0.3 feet, purging is considered complete and sampling may begin when all the above indicator field parameters have stabilized._

If the drawdown has exceeded 0.3 feet and stabilizes, calculate the volume of water between the initial water level and the stabilized water level. The Final Purge Volume (FPV) must be greater than the stabilized drawdown volume plus the pump's tubing volume. This combined volume of water needs to be purged from the piezometer after the water level has stabilized before samples are collected. Document all purge volume calculations on the field worksheet.

$$\text{FPV} = (\text{Total Tubing Length} \times \text{Tubing Capacity}) + (\text{Total Drawdown} \times \text{Piezometer Capacity})$$

NOTE: Include the length of tubing that is outside the piezometer to the Total Tubing Length.

Tubing Capacity Values

| Tubing Diameter (inches) | ¼ - inch (0.25) OD (0.17 in ID)* | 3/8 - inch (0.375) OD (0.25 in ID)* | 1/2 - inch (0.50) OD (0.375 in ID)* | 5/8 - inch (0.625) OD (0.50 in ID)* |
|--------------------------|----------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Volume (gal/foot) | 0.0012 | 0.0026 | 0.0057 | 0.0102 |

Piezometer Capacity Values

| PVC/Inner Casing ID* (inches) | 1.25 | 1.5 | 1.75 | 2 | 2.25 | 3 | 3.5 | 4 | 6 |
|-------------------------------|------|------|------|------|------|------|-----|------|------|
| Volume (gal/ft) | 0.06 | 0.09 | 0.12 | 0.16 | 0.21 | 0.63 | 0.5 | 0.65 | 1.47 |

* Calculations are based on the inside diameter (ID).

Once the purge volume requirement has been met and the water level and the indicator parameters have stabilized, the piezometer is considered ready for sample collection.

3. Sample Collection

Samples for laboratory analyses must be collected before the flow cell and the 3-way stopcock. This will be done by disconnecting the flow cell and the 3-way stopcock so that the samples are collected directly from the pump tubing.

Make sure that all sample containers are properly labeled. Fill all sample containers by allowing the pump discharge to flow gently down the inside of the container with minimal turbulence. Sample containers should be wiped dry and placed in re-sealable plastic bags.

During purging and sampling, the centrifugal/peristaltic pump tubing must remain filled with water to avoid aeration of the groundwater. It is recommended that 1/4-inch (inside diameter) tubing be used to help insure that the sample tubing remains water filled. If the pump tubing is not completely filled to the sampling point, use the following procedure to collect samples: collect non-VOC/dissolved gases samples first, then increase flow rate slightly until the water completely fills the tubing, collect the VOC/dissolved gases samples, and record new drawdown depth and flow rate.

Use pre-preserved sample containers or add preservative, as required by analytical methods, to the samples immediately after they are collected. Check the analytical methods (e.g., EPA SW-846, 40 CFR 136, water supply, etc.) and the lab for additional information on preservation.

Field duplicate and matrix spike/matrix spike duplicate (MS/MSD) samples should be collected by filling a separate container for each analysis immediately following the actual field sample collection (e.g., original, duplicate, MS/MSD)

Samples requiring cooling will be placed into a cooler **in double-bagged ice** for delivery to the laboratory.

7. Post Sampling Activities

Record the total purged volume (graduated bucket).

Remove the pump and tubing from the piezometer, unless dedicated. Dedicated pump and tubing should be secured to the inside of the piezometer. Non-dedicated tubing should be discarded.

If not previously measured, measure and record the depth of the piezometer (to 0.1 ft.) as required in the SAP. More information on measuring piezometer depths is located under Preliminary Procedures.

Secure the piezometer with the locking cap.

Decontaminate any non-dedicated equipment according to the Decontamination SOP in the SAP.

QUALITY ASSURANCE SAMPLES

Collect appropriate quality assurance samples as specified in the site-specific SAP. At a minimum, at least one duplicate, one MS/MSD, and one field blank (for PFAS) should be collected per 20 samples. Duplicate samples are collected by filling a separate container for each analysis immediately following the actual field sample collection and should be in the same priority order as indicated in the SAP. Duplicate samples are typically not intended to be blind duplicate samples.

Equipment blanks should be collected on non-disposable equipment to ensure that the equipment is clean and the decontamination procedure is adequate (e.g., syringes, glass or stainless steel containers, etc.).

DECONTAMINATION

Decontaminate equipment according to GZA SOP A10: *Decontamination Procedure*. Disposable sampling equipment shall be discarded after completing the sampling task and not reused.

RECORDS AND DOCUMENTATION

In general, all data and sampling information will be documented as recorded as specified in the SAP. Specific reporting of these sampling events may include, but is not limited to, the following information:

1. Samples collected.
2. Date and time of sample collection.
3. Water depths at the sampling locations.
4. Any water quality parameter readings taken.
5. General physical description of the samples and sampling locations.
6. Digital photographs of sampling locations including one or more of the larger surrounding area, along with any notes on the photographs.

SPECIAL NOTES

None.

APPLICABLE STANDARDS AND REFERENCES

U.S. Environmental Protection Agency, region 4, Science and Ecosystem support Division, *Standard Operating Procedure SESDPROC-513-R3*, December 14, 2016.

ATTACHMENT

Piezometer Sampling Worksheet

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Attachment A – Piezometer Sampling Worksheet

Date:

Location ID:

Weather Conditions:

Sampler's Name:

Piezometer Screen Interval (ft) (below
water surface)

Water Depth (ft):

Sediment Thickness
(ft) (est):

Start time

Sample Time

| Time | Water Level (ft) | Drawdown (ft) | Purge Rate (ml/min) | Temp (°C) | Specific Conductance (us/cm) | pH (SU) | DO (mg/L) | ORP (mV) | Turbidity (NTU) |
|------|---------------------|------------------|------------------------|--------------|------------------------------------|---------|-----------|----------|--------------------|
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GZA GeoEnvironmental, Inc.