US EPA RECORDS CENTER REGION 5
464720

ANNUAL REPORT OF OPERATIONS, MAINTENANCE AND MONITORING ACTIVITIES

12TH STREET LANDFILL
481 NORTH 12TH STREET
PLAINWELL, MICHIGAN

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APRIL 2013
REF. NO. 056393(10)

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1.0 INTRODUCTION

This report was prepared by Conestoga-Rovers & Associates (CRA) on behalf of Weyerhaeuser NR Company (Weyerhaeuser) to present the annual results of operation, maintenance and monitoring (OM&M) activities at the 12th Street Landfill Operable Unit No. 4 – Allied Paper/Portage Creek/Kalamazoo River Superfund Site (Site), located in Otsego Township, Michigan between January 1 and December 31, 2012. This report also presents one round of monitoring from October 2011. The October 2011 event was the first event under the OM&M activities and therefore there was insufficient information to warrant preparing a separate report for 2011. The October 2011 information is presented herein for completeness. This report presents the OM&M activities conducted pursuant to the Operation, Maintenance, and Monitoring (OM&M) Plan (revised December 2012).

The general scope of the OM&M activities completed during the reporting period includes inspections of the landfill cover, erosion control systems, site access controls, gas vents, gas probes and groundwater monitoring wells, as well as groundwater and landfill gas quality monitoring.

2.0 QUARTERLY INSPECTIONS

Areas throughout the landfill are examined to ensure the various components of the landfill cover system are operational. Quarterly inspections are conducted on the constructed Remedial Action (RA) components including the landfill cover, drainage swales/stabilized access roads, rip rap along the Kalamazoo River, drainage outlets, gas venting system, monitoring well network and the fence.

Inspections include, but are not limited to, the following items:

- Side slopes for bulging or other evidence of slope instability
- Landfill cover for evidence of erosion, exposure of the liner or geotextile, settlement causing ponding of water, and areas of insufficient vegetation
- Landfill cover for evidence of leachate outbreaks, particularly on the side slopes
- Landfill cover for evidence of burrowing animals, tree rooting, or other evidence of conditions potentially impacting the integrity of the landfill cover
- Landfill cover and drainage swales/stabilized access roadways for evidence of damage caused by monitoring and maintenance vehicular traffic
- Surface water management structures such as the drainage swales/stabilized access roads and drainage outlets for evidence of clogging, blockage or silt accumulation

During the reporting period, CRA personnel performed the required quarterly inspections in accordance with the OM&M Plan. A form to document the inspections was created in April 2012; therefore, the October 2011 and February 2012 inspections were not recorded on a form. Copies of the three (3) inspection forms completed during 2012 (April, June, October) are presented in Appendix A. A summary of the findings from the February 2012 inspection is included in Appendix A with the other inspection forms. Repair forms and photographs of the repairs are also included in Appendix A.

All original forms are kept on file at the CRA Plainwell, Michigan office.

2.1 REPAIR/MAINTENANCE ACTIVITIES COMPLETED 2012

Minor maintenance activities were completed during 2012. Mowing was not conducted at the Site in 2012 due to the unusually dry growing season. The following sections summarize the repair/maintenance activities completed during the reporting period.

May 22, 2012

Added topsoil (previously staged on the Site), annual rye and SC50 Erosion Control Blanket (400 square yards) to areas along the perimeter of the landfill where the geotextile was exposed after the winter thaw and spring rains. Filled in an animal burrow on the west side of the landfill.

An unknown person was observed removing scrap metal previously (May 4, 2013) dumped at the Site.

July 25, 2012

A campfire, set up at the Site by a trespasser, was dismantled during the biannual sampling event.

October 24, 2012

A missing lock on GP-2 was replaced on October 24, 2012.

November 5 through November 7, 2012

Exposed geotextile along the perimeter drainage swales/access roads was covered with 3-4 inches of 1- to 1.5-inch imported angular washed stone.

Additional stone was added over the topsoil adjacent to the drainage swales/access roads. Vegetation was not able to establish in this area above the underlying stone wrapped in geotextile, due to the stone drying out the overlying topsoil and stunting the vegetation growth.

Large rip rap was added to the drainage outlet to the Kalamazoo River adjacent to the Michigan Department of Natural Resources (MDNR) property. Rip rap in this outlet had been removed by trespassers over the course of the summer.

Sediment from the southernmost drainage outlet to the wetland property was removed (placed back on top of the landfill near the entrance gate) and rip rap was added to the outlet during the reconstruction of the outlet.

3.0 GROUNDWATER MONITORING

Groundwater monitoring has been conducted at the Site since October 2011 pursuant to the OM&M Plan. The OM&M Plan activities include quarterly events and semiannual events with specific parameter lists for the analytical analysis. The October 2011 event was the first quarterly event. Quarterly events for 2012 were conducted in April and October; the semiannual events took place in February and July 2012.

This report has been submitted to document groundwater conditions at the Site during each of the five (5) groundwater monitoring events completed at the 12th Street Landfill between October 2011 and October 2012.

3.1 FIELD ACTIVITIES

A total of 15 groundwater monitoring wells (MW-101S, MW-101D, MW-102S, MW-102D, MW-103D, MW-104S, MW-104D, MW-105S, MW-105D, MW-106S, MW-106D, MW-107S, MW-108S, MW-108D, and MW-109D) were installed in February 2011, at varying depths, around the perimeter of the landfill to complete the OM&M groundwater monitoring well network. The locations of the monitoring wells are shown on Figure 1.

Prior to the each of the sampling events, CRA collected static water levels for two weeks from each well and the river staff gauge, as required by the OM&M Plan to ensure groundwater flow toward the Kalamazoo River. Monitoring well construction details and groundwater elevations representing the water level immediately before each collection event are presented in Table 1. Appendix B presents graphs of the 2 weeks of static water levels prior to each event.

Monitoring wells, MW-102S, MW-102D, MW-103D, MW-104S, MW-104D, MW-105S, MW-105D, MW-106S, MW-106D, MW-107S, MW-108S, MW-108D, and MW-109D, were purged with a peristaltic pump using low-flow purge techniques. MW-101S and MW-101D were sampled using a bladder pump also using low flow purge techniques. TestAmerica Laboratory of North Canton, Ohio supplied the fluoropolymer tubing used to purge and collect the groundwater.

Field groundwater quality measurements including pH, specific conductivity (mS/cm), temperature (degrees Celsius), oxidation-reduction potential (ORP), dissolved oxygen (DO) and turbidity (NTU) were recorded in consecutive timed intervals using a QED MP-20 Flow Cell and HACH 2100P turbidity meter. Upon stabilization of the field parameters, groundwater samples were collected.

Collected groundwater samples were containerized in laboratory provided containers, labeled, packed on ice, and shipped via FedEx priority overnight, under chain of custody protocol to ALS formerly Columbia Analytical Services (CAS) in Kelso, Washington.

Quarterly sampling event samples were submitted for laboratory analysis of target analyte list (TAL) for inorganics (sodium, magnesium), cyanide (amenable and total), low level mercury, target compound list (TCL) volatile compounds (VOCs) and polychlorinated biphenyls (PCBs). Samples collected during the semiannual events were submitted for laboratory analysis of TAL inorganics (including hexavalent chromium and trivalent chromium), cyanide (amenable and total), low level mercury, TCL VOCs, TCL semi-volatile compounds (SVOCs), PCBs, and polychlorinated dibenzodioxins/ polychlorinated dibenzofurans (PCDD/PCDF).

3.2 RESULTS AND DISCUSSION

3.2.1 WATER LEVEL ELEVATIONS

The static water levels collected from each well and staff gauge within the network were used to calculate the groundwater elevations, as summarized in Table 1. Figure 2 displays typical shallow zone potentiometric elevation contours. Typical deep zone potentiometric elevation contours are presented on Figure 3.

As presented in Table 1 and on Figures 2 and 3, the calculated groundwater elevations indicate that the hydraulic gradient in the shallow zone is towards the wetland and Kalamazoo River (northeast from the landfill). The deeper zone hydraulic gradient is also northeast towards the Kalamazoo River.

Groundwater elevations for the 2 weeks prior to each sampling event are presented in graphical form in Appendix B. The data is grouped for each event by upgradient, downgradient and wetland (west side) of the landfill.

The graphs of water level elevations versus time for each sampling event show a general correlation between the water level in the Kalamazoo River adjacent to the Site and the water levels in the Site monitoring wells. This correlation was observed relatively consistently in each of the monitoring wells at the Site, including monitoring wells located immediately adjacent to the river and monitoring wells located on the western side of the landfill (i.e., over 600 feet away from the river). The consistent observation of this correlation in water levels across the Site suggests that the water levels at the Site are more strongly influenced by rainfall events rather than by the river elevation.

To confirm this hypothesis, CRA reviewed precipitation data from the time frame of each sampling event and compared the data to the water level elevation graphs in Appendix B. Tables of daily weather observations for approximately the 1-month period corresponding to the water level monitoring and groundwater sampling events for the Plainwell Airport are also presented in Appendix B[1]. Comparison of precipitation data to the surface water and groundwater levels at the Site shows a consistent correlation (i.e., a rise in water levels corresponding to precipitation events). For example, during October 2011 an increasing trend in the water level elevations in Site monitoring wells and the Kalamazoo River was observed. This corresponded with 3.23 inches of rainfall over the same period of time. In particular, significant rainfall events occurred on October 19 and 20, 2011 resulting in 2.03 inches of rainfall in the 48-hour period. This corresponds with a sharp increase in the river and monitoring well water levels. A similar scenario occurred in October 2012 where 2.2 inches of rainfall occurred during the monitoring period, including 1.69 inches of rainfall on October 15 and 16, 2012. Similar to October 2011, a sharp increase in the water level of the river and Site monitoring wells was also observed during this timeframe. Conversely to this, in February 2012 relatively low levels of precipitation were recorded during the monitoring period (0.6 inches of precipitation that fell as a mix of snow and rain). The graphs of water levels versus time for the Kalamazoo River and the Site monitoring wells are relatively flat during the February 2012 monitoring event.

With the exception of the April 2012 monitoring event, the elevation of the Kalamazoo River was lower than the groundwater elevation of the Site monitoring wells indicating that a gradient toward the Kalamazoo River was present and that the water from the monitoring wells was representative of Site groundwater. During the April 2012 monitoring wells, fluctuations in the river elevation and groundwater elevation resulted in the river level being at a higher elevation than monitoring wells located along the north side of the landfill (i.e., MW-104S/D and MW-105S/D) and monitoring wells

[1] It should be noted that precipitation data was not available for October 2011 for the Plainwell Airport and therefore data was used for the Allegan, Michigan Airport

located adjacent to the Kalamazoo River (i.e., MW-106S/D, MW-107S and MW-108S/D) for a portion of the monitoring period. At these locations, the water level of the river was initially lower than the corresponding groundwater elevations, however, over the first week of monitoring, the water level of the Kalamazoo River increased without a corresponding increase in the groundwater levels (i.e., a backward gradient situation occurred). Only trace levels of precipitation were observed over this period further supporting that the Site groundwater levels are more strongly influenced by precipitation rather than the river elevation. On April 15 and 16, 2012, 1.65 inches of rainfall occurred in the area and the groundwater levels increased while the river level remained relatively stable resulting in the gradient toward the river to be restored. The gradient toward the river was maintained until the groundwater sampling began on April 23, 2012 for the monitoring wells along the north side of the landfill and adjacent to the Kalamazoo River with the exception of MW-106S. The groundwater elevation at MW-106S was approximately a half an inch lower than the river elevation immediately before sampling. This may have resulted in a condition where the water sample quality may have been influenced by the Kalamazoo River water.

3.2.2 GROUNDWATER ANALYTICAL RESULTS

Analytical results were compared to Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria (Cleanup Criteria), identified by Michigan Department of Environmental Quality (MDEQ) Remediation and Redevelopment Division (RRD) [September 28, 2012]. It should be noted that the Cleanup Criteria was updated in September 28, 2012 and that Memoranda (Validation and Groundwater Sampling Results) submitted for the October 2011 and February, April, and July 2012 sampling events were compared to the applicable criteria at the time (March 25, 2011). The analytical results of the groundwater sampling from October 2011 through the October 2012 events are presented in Table 2. Table 2 includes the relevant MDEQ Part 201 Criteria for comparison. Results above (a) Non-Residential Drinking Water criteria; (b) Groundwater Surface Water Interface; and/or (c) Groundwater Contact are presented in Table 2 with a box around the result and include a superscript letter denoting which criteria the result exceeds.

Validation Memoranda completed for each groundwater monitoring event are included on compact disc (CD) in Appendix C. Appendix D contains the laboratory analytical data reports on CD.

The results of the five rounds of groundwater monitoring completed at the Site between October 2011 and October 2012 are discussed by parameter or parameter group below.

Data from the groundwater monitoring for selected parameters are presented in databoxes on Figure 4. The parameters selected for databox presentation (i.e., arsenic, cyanide, mercury and total PCBs) were selected because they are key parameters of concern (e.g., PCBs) or because they were detected above GSI criteria during the monitoring events.

Arsenic

Arsenic analysis was completed during the semiannual events. Arsenic results were reported well below the GSI and Non-Residential Drinking Water (NRDW) criteria of 10 micrograms per liter (µg/L) during both semiannual events. The one exception was at MW-106S during the July 2012 event. The arsenic level at MW-106S was reported at 17.5 µg/L, which is above both the GSI and NRDW criteria. The level of arsenic at MW-106S will continue to be monitored as part of the OM&M Plan.

Arsenic levels were reported below the groundwater contact criteria of 4,300 µg/L for all events during the reporting period of October 2011 through October 2012.

Chromium

Both hexavalent and total chromium analysis were completed at each of the groundwater monitoring wells during the semiannual events.

The time between sample collection and sample preparation for analysis, or the "hold time", for hexavalent chromium is 24 hours. The laboratory specified in the Multi-Area *Quality Assurance Project Plan* (QAPP) presents a logistical challenge due to its proximity to the Site (i.e., the west coast). Hold times for hexavalent chromium were exceeded during the February 2012 sampling event due to this factor. Sample collection times were adjusted for the July 2012 event to prevent this issue.

Hexavalent chromium has not been detected in OM&M samples above the detection limit, which is below the GSI criteria. Hexavalent chromium was not detected above either the groundwater contact (460,000 µg/L) or NRDW criteria (100 µg/L) in any of the samples analyzed during the reporting period.

Cyanide

Cyanide samples were collected during both the quarterly and semiannual events from each monitoring well. Cyanide samples were analyzed for both total and amenable cyanide after October 2011.

Cyanide was reported below the laboratory reporting limit (RL) of 10 μg/L. The RL for cyanide is above the groundwater surface water interface (GSI) criteria of 5.2 μg/L. To achieve the MDEQ RRD target method detection limits (TDL), the laboratory also reported cyanide analysis to the method detection limit (MDL) of 3 μg/L. The sample concentrations reported below the MDLs were qualified as estimated (UJ) method detection limits. The MDL values are method, matrix, instrument and operator specific, which provide an estimate of data uncertainty at concentrations near the MDL.

All cyanide results identified as non-detect below the reporting limit of 10 μg/L in the tables and on Figure 4 and in Table 2 were reviewed and were determined to be below the MDL (3 μg/L).

Cyanide results were reported between 4 and 9 μg/L during the October 2011 groundwater sampling event and are qualified as estimated results below the RL. The results are included on Figure 4 and are highlighted in yellow. Estimated results above the GSI criteria were reported in the October 2011 data set at MW-102S (duplicate sample - 6J μg/L), MW-102D (9J μg/L), MW-103D (9J μg/L) and MW-106S (6J μg/L). Cyanide was not reported above the GSI criteria during the subsequent monitoring events.

Cyanide was not reported above either the groundwater contact criteria (57,000 μg/L) or the NRDW criteria (200 μg/L) during the reporting period.

Barring any dilution requirements, amenable cyanide will be reported to the RL of 5 μg/L for 2013 events to achieve the MDEQ RRD target method detection limits (TDL).

Iron

Iron levels are analyzed during the semiannual events. Levels of iron above the NRDW water criteria of 300 μg/L were reported at MW-106S, MW-107S and MW-108D during both the February and July 2012 events.

A GSI criterion for iron has not been established. Iron was not reported above the groundwater contact criteria of 58,000,000 µg/L.

Manganese

Analysis for manganese was conducted during the semiannual events. Manganese was reported above the NRDW criteria, of 50 µg/L, during both the February and July 2012 events at MW-102S (162 µg/L and 133 µg/L), MW-105S (98.1 µg/L and 79.1 µg/L) , MW-106S (479 µg/L and 406 µg/L), MW-107S (709 µg/L and 723 µg/L) and MW-108D (283 µg/L and 219 µg/L). Manganese was above the NRDW criteria at MW-108S (448 µg/L) during the February 2012 event.

Manganese levels were well below both the GSI (5,200 µg/L) and groundwater contact (9,100,000 µg/L) criteria for samples analyzed during the reporting period.

Mercury

Low level mercury samples were collected from each monitoring well as specified in the OM&M Plan during both quarterly and semiannual events. Mercury was detected above GSI criteria (0.0013 µg/L [September 28, 2012]) at MW-106S during the October 2011, February 2012 and October 2012 events. Mercury was also reported above the GSI criteria at MW-108S during the April 2012 event.

The February 2012 mercury result for MW-101S was qualified as non-detect at levels above GSI criteria due to rinse blank contamination. The mercury result for MW-101D was also qualified as non-detect but above GSI criteria for the February 2012 event due to trip blank contamination.

The April 2012 mercury results for both MW-101S and MW-101D were qualified due to rinse blank contamination. The mercury result for MW-101D was qualified as below 0.00147 µg/L detection level which is above the GSI criteria.

The maximum detected concentration of mercury at the Site was 0.0203 µg/L, located at MW-106S in October 2011. This concentration is well below the MDEQ screening level for mercury of 0.2 µg/L for venting to groundwater presented in MDEQ's Policy and Procedure Number: 09 014 dated June 20, 2012 "Evaluating Mercury in Groundwater Plumes Relative to the GSI Pursuant to Part 201." According to the Policy and Procedure, concentrations of mercury below 0.2 µg/L are considered to be a de minimis

condition pursuant to Section 20120e of Part 201 and activity beyond evaluation will not be required.

PCBs

Samples for PCB analysis were collected during the both the quarterly and semiannual events. Groundwater samples collected from October 2011 through the October 2012 event during were not detected above GSI, NRDW or groundwater contact criteria.

Dioxins and Furans

Dioxins and furans were analyzed from groundwater samples collected during the semiannual events.

Toxic Equivalents (TEQs) were calculated and compared to MDEQ Part 201 Criteria consistent with the OM&M Plan. Dioxins and furans were not reported above the applicable criteria except for at MW-104S during the July 2012 event. The TEQ calculated for the MW-104S was 0.000010842 µg/L, which is just over the GSI and Groundwater Contact criteria of 0.00001 µg/L. It should be noted that the analysis for 1, 2, 3, 7, 8-PeCDD at MW-104S was qualified as an estimated result due to laboratory outlying internal standards recovery issues.

Semi-Volatile Organic Compounds (SVOCs)

Groundwater samples for SVOC analysis were collected during the semiannual events. SVOCs were not detected above GSI, NRDW or groundwater criteria.

Volatile Organic Compounds

VOCs were collected during both the quarterly and semiannual groundwater sampling events. VOCs were below GSI, NRDW and groundwater criteria for all events.

Toluene was reported in the trip blank during the October 2012 sampling event. As a result sample results for toluene were qualified for the October 2012 event. The source of the contaminant was not determined.

4.0 LANDFILL GAS SYSTEM MAINTENANCE AND MONITORING

The passive gas management system at the Site consists of a 6-inch select granular fill venting layer below the liner and a series of 11 passive gas vents located across the top of the landfill surface tied into the granular venting layer and spaced approximately 200 feet apart. Migration of landfill gas off site is monitored via three gas probes installed around the south and west sides of the landfill. The locations of the gas probes are shown on Figure 1. Two gas probes have been installed as shallow monitoring locations (GP-1 and GP-3) and one gas probe (GP-2) has been installed as a deeper monitoring location. The shallow gas probes are installed to a depth of 4 to 5 feet below ground surface (bgs) with a 2-foot slotted pipe, and the deep gas probe is installed to a depth of approximately 30 feet bgs with a 25-foot slotted pipe. Gas probes have been constructed using a stopcock and hose barb assembly with a ½-inch PVC ball valve and a ½-inch threaded connector. Gas probe assemblies are contained at each location with a standard lockable well casing.

4.1 GAS PROBE QUALITY MONITORING

Gas monitoring of the three gas probes was completed by CRA during each of the sampling events and on April 30, 2012. The gas quality parameters that were recorded in the gas probes included soil gas pressure (inches of water column), methane (percent by volume), carbon dioxide (percent by volume) and oxygen (percent by volume). The gas quality information was measured using a Landtec Model GEM 500 portable gas analyzer or equivalent. The results of the landfill gas probe monitoring are presented in Table 3.

4.2 RESULTS AND DISCUSSION

Landfill gas goes through a specific production pattern consisting of five phases of development [Farquhar and Rovers (1973), modified by Rees (1980), Augenstein and Pacey (1991)]. Figure 5 presents the typical production phases of landfill gas [Farquhar and Rovers (1973), modified by Rees (1980), Augenstein and Pacey (1991)]. The duration of each of the phases is dependent on a number of factors including the type of waste, moisture content, nutrient content, bacterial content, and pH level. General guidelines regarding the length of the decomposition cycle for the various categories of waste are provided on Figure 5. The heterogeneity of the waste, together with the environment within the waste, has a specific bearing on the decomposition cycle.

LFG pressure readings are used as one of the indicators of the potential for soil gas migration in the subsurface environment.

The results of the monitoring conducted to date are indicative of gas characteristics within Stage V where the methane carbon dioxide concentrations are close to equilibrium. However, additional data will be gathered through the OM&M Plan monitoring program and utilized to merit the stage evaluation/status of the landfill gas.

Perimeter gas probes to assess migration and conditions beyond the limit of waste are typically installed at a property line or several feet (e.g., as much as 50 feet) away from the limit of the waste. Due to property boundaries on the south, west and southeast and the landfill closure design, the gas probes were installed within 50 feet of the limit of waste.

Methane readings at GP-1 ranged from 30.9 to 49 percent methane by volume. Carbon dioxide levels ranged from 29.2 to 37.1 percent by volume at GP-1. Methane readings at GP-2 were recorded between 4.7 and 23.3 percent by volume. A range of 14.7 to 20.8 was recorded for carbon dioxide at GP-2. Readings were not obtained during each event from GP-3 due to water in the probe. Methane readings at GP-3, when obtained, ranged from 1.3 to 0 percent by volume. Carbon dioxide levels were recorded from 0.1 to 2.5 percent by volume.

In response to the methane readings obtained from GP-1 and GP-2 during the October 2011 through April 2012 sampling events, CRA conducted an additional gas probe monitoring event on April 30, 2012. During this event landfill gas readings from each gas vent were also collected, results from the gas vent monitoring are included in Table 4. Methane was recorded at the gas vents. Ambient air monitoring was also conducted close to the ground surface in the vicinity of GP-1 and GP-2; methane readings were not detected.

A proposed work plan to further evaluate the extent of the landfill gas migration around both GP-1 and GP-2 was submitted to the USEPA on May 8, 2012. The work plan included an evaluation of the structures located southwest of GP-2. Additional investigation is pending approval or comment from the USEPA on the work plan.

4.3 RISK EVALUATION

There are no structures or human receptors in the vicinity of GP-1. Depth to groundwater in this area is approximately eight to nine feet below grade. The Kalamazoo River is located approximately 150 feet east of GP-1.

The buildings to the south of GP-2 are owned by Aggregate Industries. CRA has obtained information on the construction of the buildings from the Otsego Township offices. There are three (3) metal sided buildings across 12th Street from the landfill. One was constructed in 1956 (the one on the corner) on a 2,160 square foot steel frame. Another (1,512 square feet) structure was built just east of the first building in 1963 of wooden post construction. Neither building is reported to have a concrete floor. The third building is adjacent and south of the corner building (1956 construction) and is utilized as an office/geotechnical laboratory by Aggregate Industries. This one-story 1,008 square foot building was constructed in 1984 on a concrete slab. Upon approval of the submitted work plan, CRA will obtain access to these structures and complete a landfill gas survey.

GP-3 is located adjacent to property also owned by Aggregate Industry but leased to Wyoming Asphalt. The probe experiences relatively high water table in this area along with surface water runoff from the Wyoming Asphalt paved areas. The combination of surface water ponding and high groundwater levels have produced two times where the gas probe screen was infiltrated with water. Gas readings were not obtained when the water was found in the probe. At this time there is no evidence to indicate a landfill gas migration issue in the area of GP-3.

5.0 ADDITIONAL ACTIVITIES COMPLETED

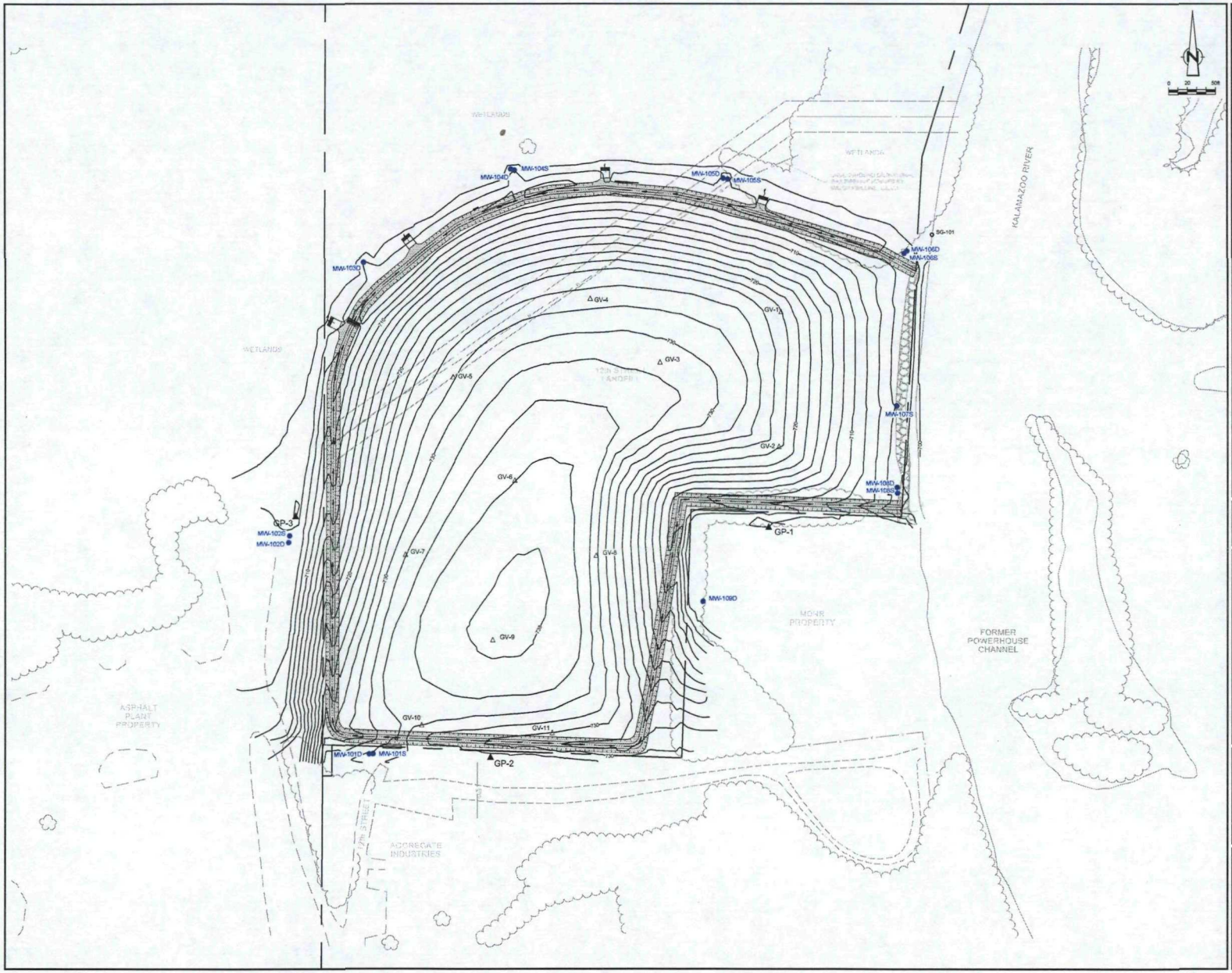
Waste Disposal

Purge/development water was collected into a 55-gallon steel drum from the February 2012 semiannual sampling event. A waste characterization sample was collected and analyzed in March 2012. The non-RCRA/DOT regulated drum of development water was transported by a licensed waste hauler (Valley City Environmental Services, Inc.) from the Site to the Waste Management Autumn Hills RDF in Zeeland, Michigan, for solidification on May 4, 2012.

Five Year Review

The USEPA completed a five year review of the Site on August 7, 2012. CRA accompanied the agencies during this inspection.

FIGURES



N/2	Revision	Date	Initial

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING EDGE OF WATER
- EXISTING TREES AND/OR BRUSH
- 718 FINAL ELEVATION CONTOURS
- ROAD/DRAINAGE SWALE
- GV-1 GAS VENT LOCATION
- MW-106S MONITORING WELL LOCATION
- GP-1 GAS PROBE LOCATION
- SG-101 STAFF GAUGE LOCATION

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial

12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

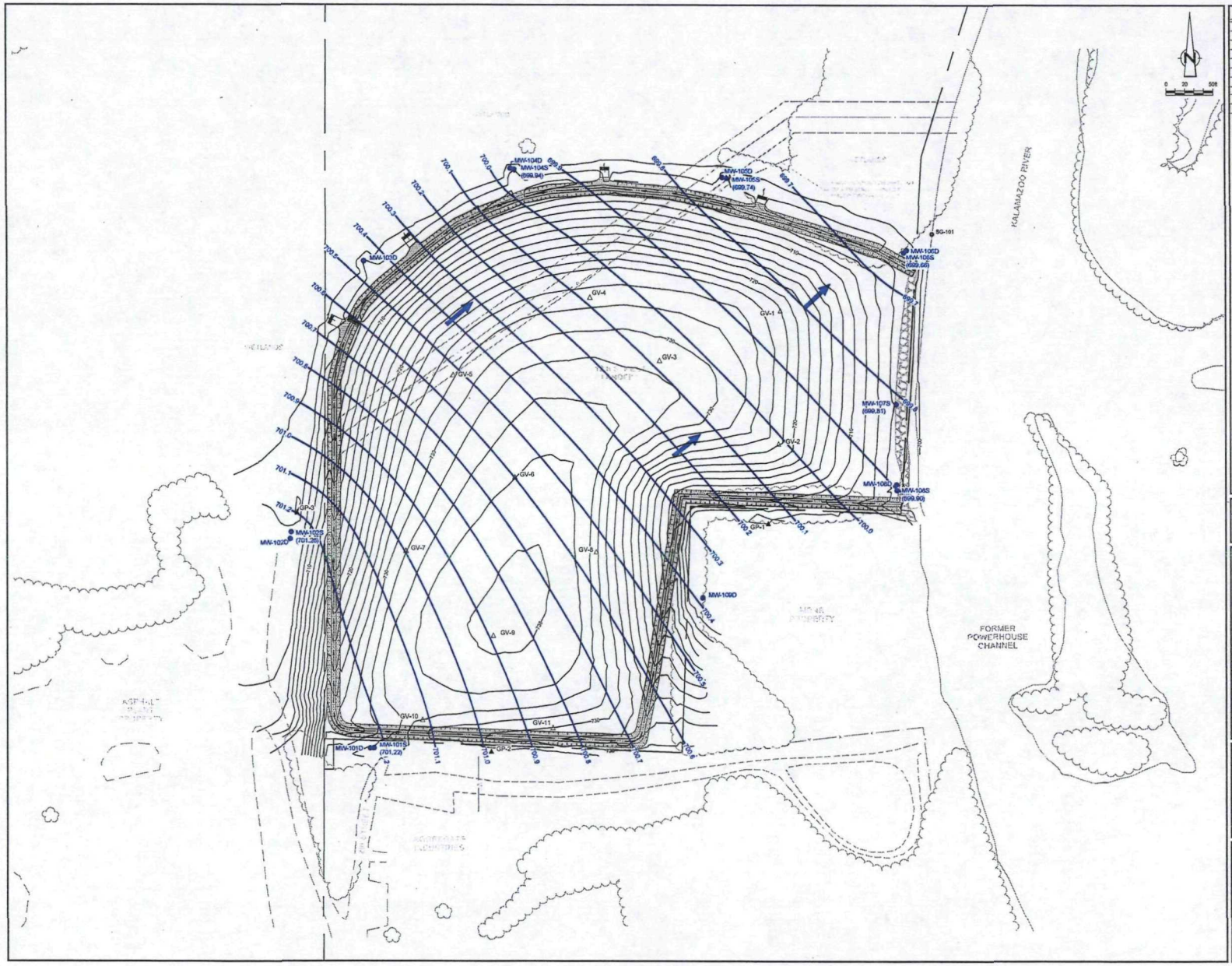
SITE PLAN

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE ADAPTED FROM PREVIOUS RMT DESIGN

Project Manager:	Reviewed By:	Date:	
J. DEMBOWSKE	G. CARLI	DECEMBER 2012	
Scale: AS SHOWN	Project N/#: 056393-08	Report N/#: 010	Drawing N/#: figure 1

056393-08(010)GM-SC007 APR 5/2013



NO.	Revision	Date	Initial

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING EDGE OF WATER
- EXISTING TREES AND/OR BRUSH
- 718 FINAL ELEVATION CONTOURS
- ROAD/DRAINAGE SWALE
- GV-1 GAS VENT LOCATION
- MW-106S MONITORING WELL LOCATION
- GP-1 GAS PROBE LOCATION
- SG-101 STAFF GAUGE LOCATION
- 700.50 GROUNDWATER ELEVATION CONTOUR
- (700.48) GROUNDWATER ELEVATION
- GROUNDWATER FLOW DIRECTION

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial

12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

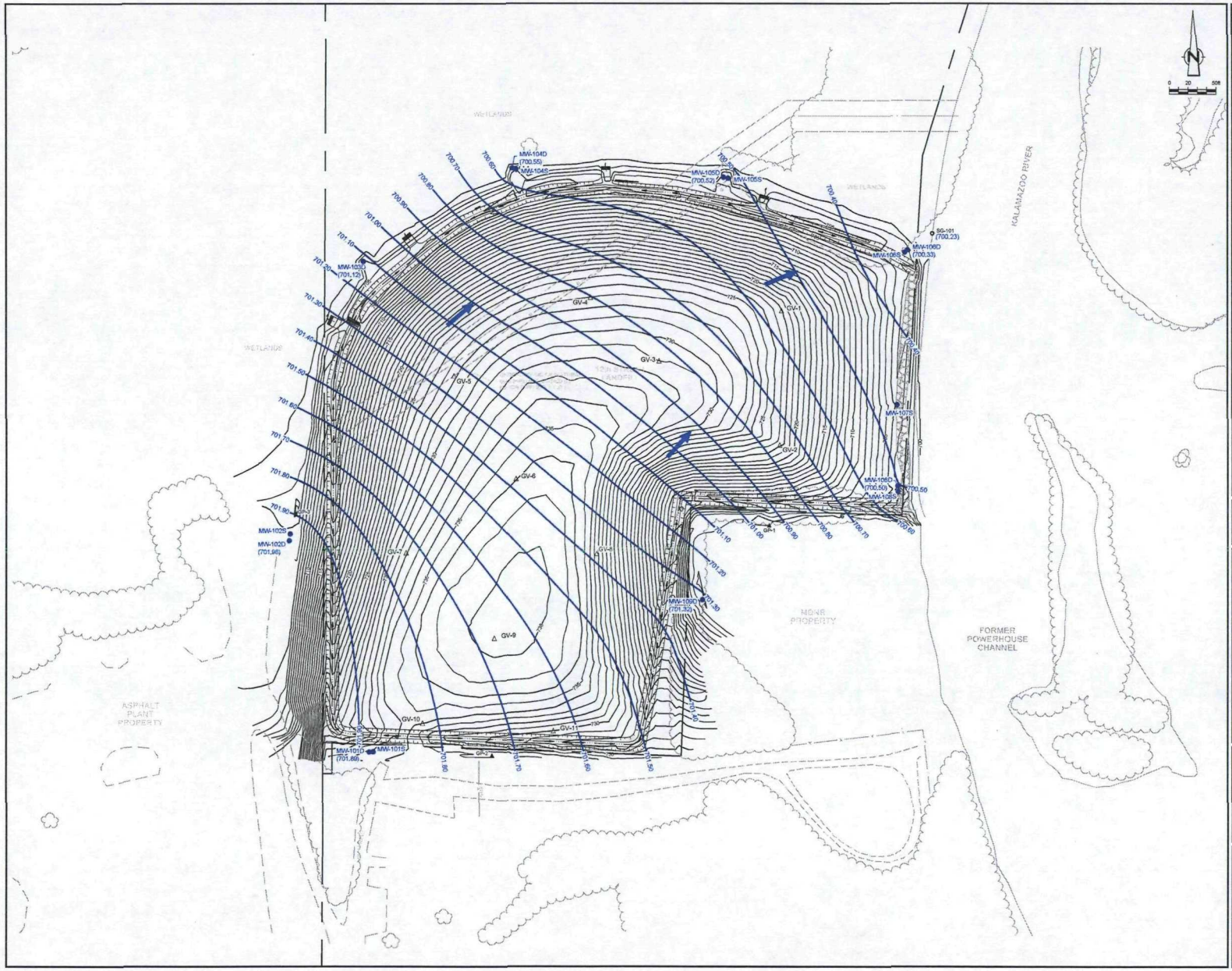
TYPICAL GROUNDWATER CONTOURS
SHALLOW

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE ADAPTED FROM PREVIOUS RMT DESIGN

Project Manager:	Reviewed By:	Date:	
J. DEMBOWSKE	G. CARLI	DECEMBER 2012	
Scale:	Project Nº:	Report Nº:	Drawing Nº:
AS SHOWN	056393-08	010	figure 2

056393-08(010)GH-SC003 APR 5/2013



NO.	Revision	Date	Initial

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING EDGE OF WATER
- EXISTING TREES AND/OR BRUSH
- 718 — FINAL ELEVATION CONTOURS
- ROAD/DRAINAGE SWALE
- GV-1 — GAS VENT LOCATION
- MW-106S — MONITORING WELL LOCATION
- GP-1 — GAS PROBE LOCATION
- 700.40 — GROUNDWATER ELEVATION CONTOUR
- (700.33) — GROUNDWATER ELEVATION
- GROUNDWATER FLOW DIRECTION

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial

12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

TYPICAL GROUNDWATER CONTOURS DEEP

CONESTOGA-ROVERS & ASSOCIATES

Source Reference: BASE ADAPTED FROM PREVIOUS RMT DESIGN

Project Manager:	Reviewed By:	Date:	
J. DEMBOWSKE	G. CARLI	JUNE 2012	
Scale: AS SHOWN	Project N/: 056393-08	Report N/: 010	Drawing N/: figure 3

056393-08(010)GH-SC004 APR 5/2013

MW-104D	10/26/2011	2/7/2012	4/25/2012	7/23/2012	10/22/2012
Inorganics					
Arsenic	-	0.23 J	-	0.2 J	-
Cyanide (total)	10 U	10 U	10 U/10 U	10 U	10 U
Mercury	0.001 U	0.001 U	0.00064 J/0.00061 J	0.00024 J	0.001 U
PCBs					
Total PCBs	ND	ND	ND/ND	ND	ND

MW-104S	10/26/2011	2/7/2012	4/25/2012	7/23/2012	10/22/2012
Inorganics					
Arsenic	-	0.21 J	-	0.3 J	-
Cyanide (total)	10 U	10 U	4 J	10 U	10 U
Mercury	0.001 U	0.001 U	0.00073 J	0.00026 J	0.001 U
PCBs					
Total PCBs	ND	ND	ND	ND	ND

MW-105D	10/26/2011	2/7/2012	4/25/2012	7/24/2012	10/22/2012
Inorganics					
Arsenic	-	0.21 J	-	0.1 J	-
Cyanide (total)	4 J	10 U	10 U	10 U	10 U
Mercury	0.001 U	0.001 U	0.00088 J	0.001 U	0.001 U
PCBs					
Total PCBs	ND	ND	ND	ND	ND

MW-105S	10/26/2011	2/7/2012	4/25/2012	7/24/2012	10/22/2012
Inorganics					
Arsenic	-	0.14 J	-	0.3 J	-
Cyanide (total)	10 U	10 U	10 U	10 U	10 U
Mercury	0.001 U	0.001 U	0.00047 J	0.001 U	0.001 U
PCBs					
Total PCBs	ND	ND	ND	ND	ND

MW-106D	10/26/2011	2/7/2012	4/26/2012	7/24/2012	10/22/2012
Inorganics					
Arsenic	-	0.24 J	-	0.1 J	-
Cyanide (total)	10 U	10 U	10 U	10 U	10 U/10 U
Mercury	0.001 U	0.001 U	0.0012	0.001 U	0.001 U/0.001 U
PCBs					
Total PCBs	0.01 J	ND	0.0098 J	ND	0.0057 J/0.0074 J

MW-103D	10/26/2011	2/7/2012	4/25/2012	7/23/2012	10/23/2012
Inorganics					
Arsenic	-	0.17 J/0.17 J	-	0.2 J	-
Cyanide (total)	9 J	10 U/10 U	10 U	10 U	10 U
Mercury	0.001 U	0.001 U/0.001 U	0.00075 J	0.00021 J	0.001 U
PCBs					
Total PCBs	ND	ND/ND	ND	ND	ND

MW-106S	10/26/2011	2/7/2012	4/26/2012	7/24/2012	10/22/2012
Inorganics					
Arsenic	-	5.77	-	17.5	-
Cyanide (total)	6 J	10 U	10 U	10 U	10 U
Mercury	0.0203	0.00447	0.00119	0.001 U	0.0118
PCBs					
Total PCBs	ND	ND	ND	ND	ND

MW-102S	10/25/2011	2/6/2012	4/25/2012	7/23/2012	10/23/2012
Inorganics					
Arsenic	-	0.16 J	-	0.2 J	-
Cyanide (total)	5 J/6 J	10 U	10 U	10 U	10 U
Mercury	0.0012/0.00119	0.00111 U	0.00074 J	0.00049 J	0.001 U
PCBs					
Total PCBs	ND/ND	ND	ND	ND	ND

MW-107S	10/27/2011	2/8/2012	4/26/2012	7/24/2012	10/22/2012
Inorganics					
Arsenic	-	1.81	-	2.6	-
Cyanide (total)	10 U	10 U	10 U	10 U	10 U
Mercury	0.001 U	0.001 U	0.00065 J	0.001 U	0.001 U
PCBs					
Total PCBs	ND	ND	ND	ND	ND

MW-108S	10/27/2011	2/8/2012	4/26/2012	7/24/2012	10/22/2012
Inorganics					
Arsenic	-	0.53	-	0.5	-
Cyanide (total)	10 U	10 U	10 U	10 U	10 U
Mercury	0.00112	0.001 U	0.00141	0.00114 U	0.001 U
PCBs					
Total PCBs	ND	ND	ND	ND	ND

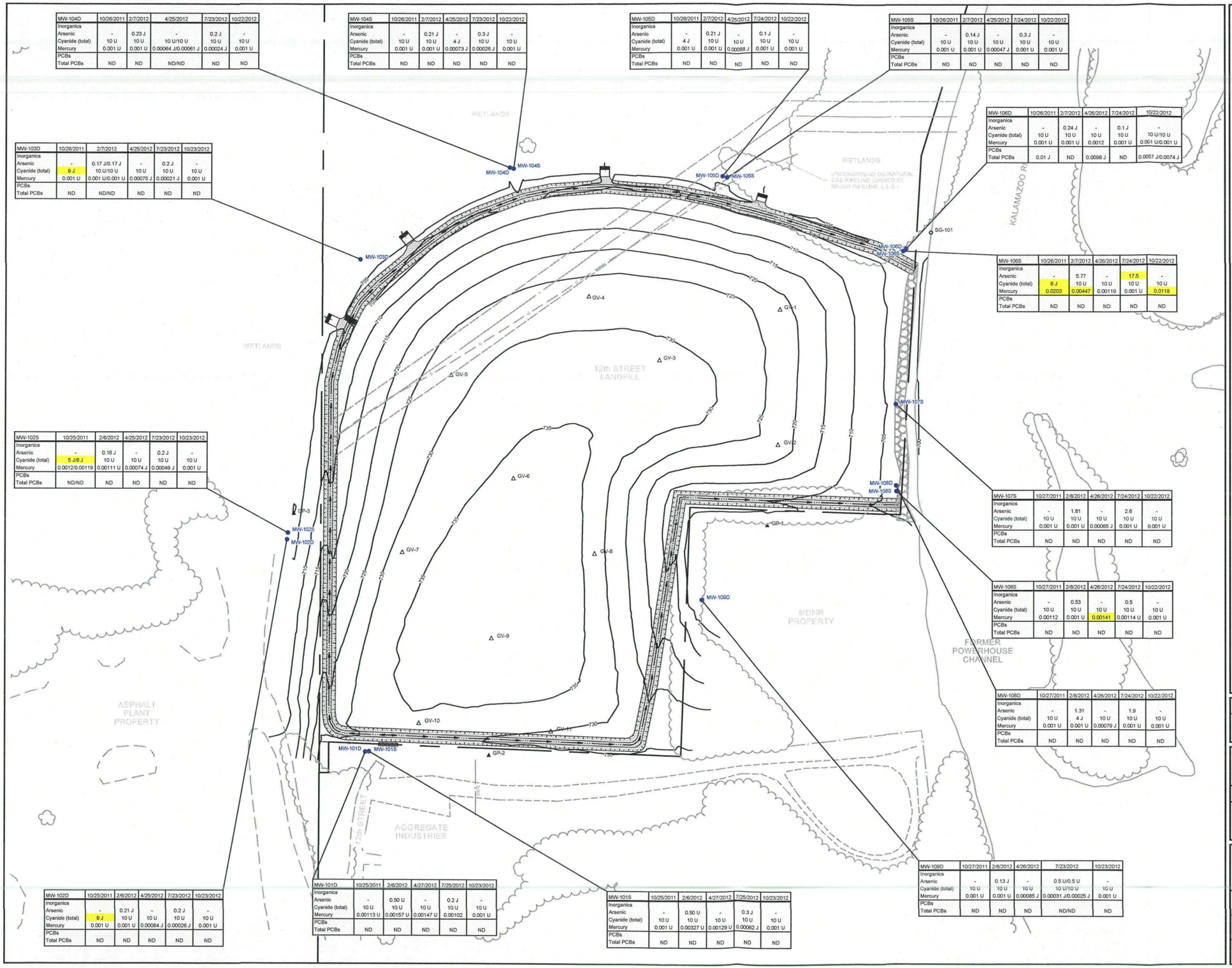
MW-108D	10/27/2011	2/8/2012	4/26/2012	7/24/2012	10/22/2012
Inorganics					
Arsenic	-	1.31	-	1.9	-
Cyanide (total)	10 U	4 J	10 U	10 U	10 U
Mercury	0.001 U	0.001 U	0.00079 J	0.001 U	0.001 U
PCBs					
Total PCBs	ND	ND	ND	ND	ND

MW-102D	10/25/2011	2/6/2012	4/25/2012	7/23/2012	10/23/2012
Inorganics					
Arsenic	-	0.21 J	-	0.2 J	-
Cyanide (total)	9 J	10 U	10 U	10 U	10 U
Mercury	0.001 U	0.001 U	0.00084 J	0.00026 J	0.001 U
PCBs					
Total PCBs	ND	ND	ND	ND	ND

MW-101D	10/25/2011	2/6/2012	4/27/2012	7/25/2012	10/23/2012
Inorganics					
Arsenic	-	0.50 U	-	0.2 J	-
Cyanide (total)	10 U	10 U	10 U	10 U	10 U
Mercury	0.00113 U	0.00157 U	0.00147 U	0.00102	0.001 U
PCBs					
Total PCBs	ND	ND	ND	ND	ND

MW-101S	10/25/2011	2/6/2012	4/27/2012	7/25/2012	10/23/2012
Inorganics					
Arsenic	-	0.50 U	-	0.3 J	-
Cyanide (total)	10 U	10 U	10 U	10 U	10 U
Mercury	0.001 U	0.00327 U	0.00129 U	0.00062 J	0.001 U
PCBs					
Total PCBs	ND	ND	ND	ND	ND

MW-109D	10/27/2011	2/6/2012	4/26/2012	7/23/2012	10/23/2012
Inorganics					
Arsenic	-	0.13 J	-	0.5 U/0.5 U	-
Cyanide (total)	10 U	10 U	10 U	10 U/10 U	10 U
Mercury	0.001 U	0.001 U	0.00085 J	0.00031 J/0.00025 J	0.001 U
PCBs					
Total PCBs	ND	ND	ND	ND/ND	ND



0 20 50ft

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING EDGE OF WATER
- EXISTING TREES AND/OR BRUSH
- 718 — FINAL ELEVATION CONTOURS
- ROAD/DRAINAGE SWALE
- GV-1 — GAS VENT LOCATION
- MW-106S — MONITORING WELL LOCATION
- GP-1 — GAS PROBE LOCATION
- SG-101 — STAFF GAUGE
- ug/L — MICROGRAMS PER LITRE
- U — NOT PRESENT AT OR ABOVE THE ASSOCIATED VALUE
- J — ESTIMATED CONCENTRATION
- 10 U/10 U — PARENT/DUPLICATE SAMPLE RESULT
- ND — NON DETECT
- - — NOT ANALYZED
- RESULT EXCEEDS GSI CRITERIA

MW-106D	4/7/2011 ug/L	10/26/2011 ug/L	2/7/2012 ug/L
Inorganics			
Arsenic	0.09 J	-	0.24 J
Cyanide (total)	-	10 U	10 U
Mercury	0.20 U	0.001 U	0.00053 J
PCBs			
Total PCBs	0.0083 J	0.01 J	ND

SAMPLE LOCATION
SAMPLE DATE
RESULT UNIT
RESULT (ug/L)
PARAMETER

	Groundwater Surface Water Interface Criteria
Inorganics (ug/L)	
Arsenic	10
Cyanide (total)	5.2
Mercury	0.0013
PCBs (ug/L)	
Total PCBs	0.2

NOTE:
MICHIGAN ACT 451, PART 201 CLEANUP CRITERIA AND PART 213 RISK-BASED SCREENING LEVELS: RESIDENTIAL AND NON-RESIDENTIAL GENERIC CLEANUP CRITERIA (1).

(1) CLEANUP CRITERIA IDENTIFIED BY MDEQ RRD OP MEMO NO. 1, UPDATED 9/28/2012, PURSUANT TO 1994 PA 451 AS AMENDED.

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

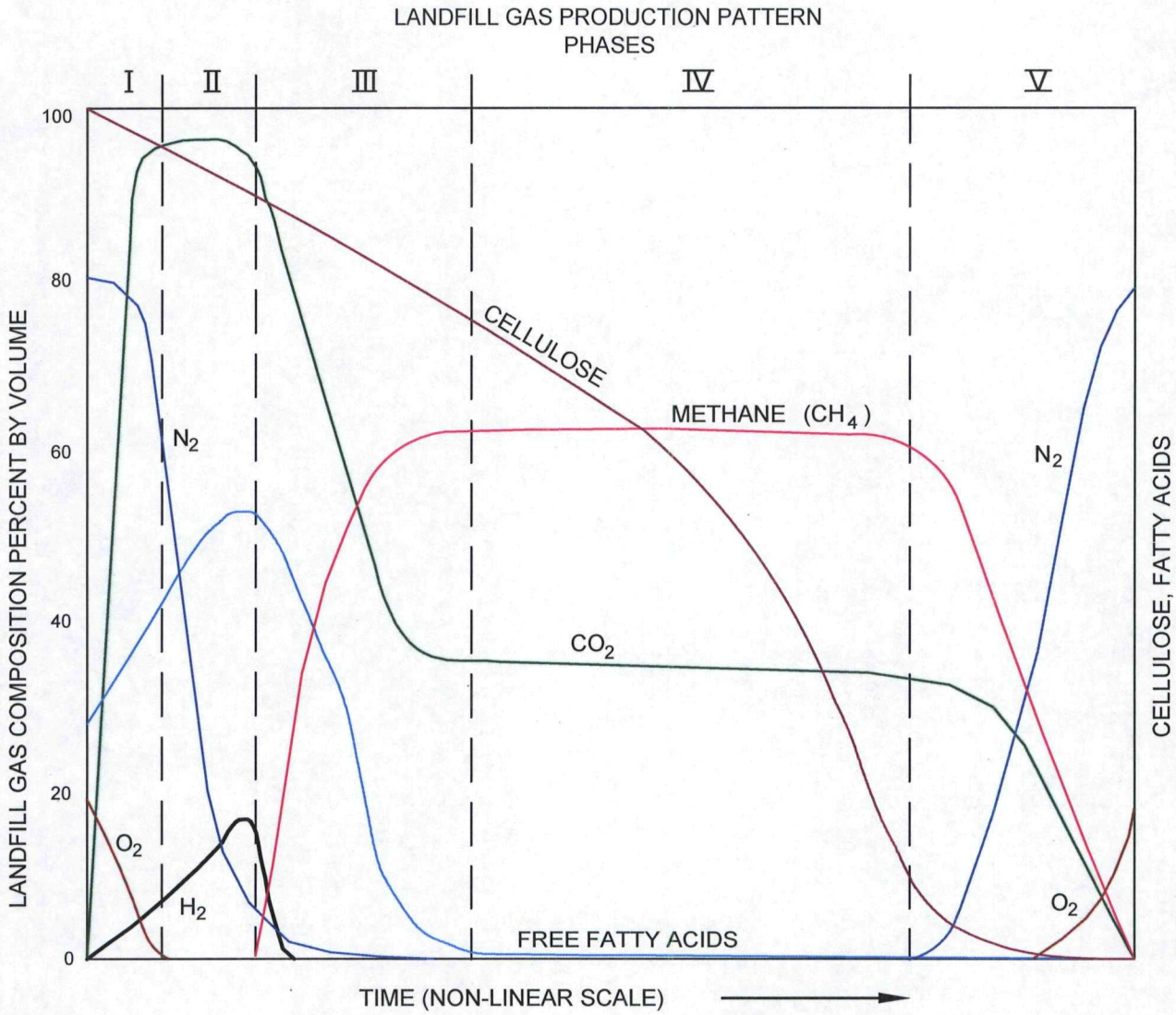
POST REMEDIAL ACTION GROUNDWATER ANALYTICAL DATA

CONESTOGA-ROVERS & ASSOCIATES

Source Reference: BASE ADAPTED FROM PREVIOUS RMT DESIGN

Project Manager:	Reviewed By:	Date:	
J. DEMBOWSKE	G. CARLI	DECEMBER 2012	
Scale:	Project N#:	Report N#:	Drawing N#:
AS SHOWN	056393-08	010	figure 4

056393-08(010)GN-SC002 FEB 21/2013



PHASES	CONDITION	TIME FRAME - TYPICAL
I	AEROBIC	HOURS TO 1 WEEK
II	ANOXIC	1 TO 6 MONTHS
III	ANAEROBIC, METHANOGENIC, UNSTEADY	3 MONTHS TO 3 YEARS
IV	ANAEROBIC, METHANOGENIC, STEADY	8 TO 40 YEARS
V	ANAEROBIC, METHANOGENIC, DECLINING	1 TO 40+ YEARS
TOTAL		10 TO 80+ YEARS

SOURCE:

FARQUHAR AND ROVERS, 1973,
AS MODIFIED BY REES, 1980,
AND AUGENSTEIN & PACEY, 1991.

figure 5

TYPICAL LANDFILL GAS PRODUCTION PHASES
12th STREET LANDFILL
Otsego Township, Michigan

056393-08(010)GN-SC005 FEB 25/2013

TABLES

TABLE 1

SUMMARY OF GROUNDWATER ELEVATIONS OCTOBER 2011 - OCTOBER 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Locations	*Ground Surface Elevation (feet AMSL)*	*Reference Elevation (feet AMSL)*	*Monitoring Well Depth (feet bgs)*	*Screened Interval (feet AMSL)*	*Water Level Data - Start of Sampling Event Water Level Elevation (feet AMSL)*				
					10/25/2011	*2/6/2012*	*4/23/2012*	*7/23/2012*	*10/22/2012*
MW-101S	734.35	737.46	39	702.35 to 695.35	701.71	702.02	701.93	700.55	701.22
MW-101D	734.33	737.14	75	664.33 to 659.33	701.76	702.02	701.89	700.55	701.23
MW-102S	704.18	707.36	10	701.18 to 694.18	701.81	702.08	701.94	700.68	701.26
MW-102D	704.43	707.43	45	664.43 to 659.43	701.83	702.11	701.98	700.72	701.29
MW-103D	704.37	707.36	35	674.37 to 669.37	701.08	701.20	701.12	700.00	700.71
MW-104S	703.86	706.55	25.5	684.86 to 677.86	700.57	700.62	700.53	699.45	699.94
MW-104D	703.48	706.42	45	663.48 to 658.48	700.62	700.67	700.55	699.50	699.92
MW-105S	704.89	707.86	12	699.89 to 692.89	700.48	700.45	700.29	699.24	699.74
MW-105D	704.78	707.89	47	662.78 to 657.78	700.71	700.68	700.52	699.45	699.75
MW-106S	703.88	706.96	9	701.88 to 694.88	700.48	700.38	700.19	699.11	699.66
MW-106D	703.66	706.36	45	664.66 to 659.66	700.60	700.51	700.33	699.24	699.72
MW-107S	703.76	706.73	13	695.76 to 690.76	700.50	700.57	700.41	699.33	699.81
MW-108S	703.32	706.21	9	701.32 to 694.32	700.65	700.73	700.56	699.50	699.96
MW-108D	703.39	706.16	45	663.39 to 658.39	700.55	700.66	700.50	699.43	699.90
MW-109D	707.41	710.46	23	689.41 to 684.41	701.25	701.60	701.32	700.08	700.88
SG-101	700.9	703.05	-	-	700.41	700.23	700.23	698.85	699.27

Notes:

[ ] Indicates that later level in monitoring well was lower than the river elevation.

feet AMSL - feet above mean sea level

feet bgs - feet below ground surface

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-101D*	*MW-101D*	*MW-101D*	*MW-101D*	*MW-101D*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102511-JV-018*	*WG-56393-020612-JV-038*	*WG-56393-042712-JV-057*	*WG-56393-072512-JV-095*	*GW-56393-102312-JV-113*
Sample Date:		Drinking Water	Surface Water	Contact	*10/25/2011*	*2/6/2012*	*4/27/2012*	*7/25/2012*	*10/23/2012*
Sample Type:			Interface						
	Units	a	b	c					
Volatile Organic Compounds									
Acetone	µg/L	2100	1700	31000000	R	R	R	R	20 U
Benzene	µg/L	5	200	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	ID	14000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	µg/L	80	ID	140000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane (Methyl bromide)	µg/L	29	35	70000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	38000	2200	240000000	R	R	R	R	R
Carbon disulfide	µg/L	2300	ID	1200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	5	45	4600	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	µg/L	100	25	86000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	µg/L	1700	1100	440000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform (Trichloromethane)	µg/L	80	350	150000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane (Methyl chloride)	µg/L	1100	ID	490000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	-	390	R	2.0 U	2.0 U	2.0 U	2.0 U
Dibromochloromethane	µg/L	80	ID	18000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	5.7	25	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	µg/L	600	13	160000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	µg/L	19	28	2000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	µg/L	75	17	6400	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane (CFC-12)	µg/L	4800	ID	300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,1-Dichloroethane	µg/L	2500	740	2400000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	µg/L	5	360	19000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	µg/L	7	130	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	µg/L	70	620	200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	µg/L	100	1500	220000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	µg/L	5	230	16000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	74	18	170000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Hexanone	µg/L	2900	ID	5200000	R	20 U	R	R	20 U
Isopropyl benzene	µg/L	2300	28	56000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methyl tert butyl ether (MTBE)	µg/L	40	7100	610000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Methyl-2-pentanone [2]	µg/L	5200	ID	13000000	R	R	20 U	20 U	20 U
Methylene chloride	µg/L	5	1500	220000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	µg/L	100	80	9700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	µg/L	35	78	4700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	µg/L	5	60	12000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	790	270	530000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trichlorobenzene	µg/L	70	99	19000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	µg/L	200	89	1300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2-Trichloroethane	µg/L	5	330	21000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	5	200	22000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane (CFC-11)	µg/L	7300	-	1100000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	µg/L	2	13	1000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m&p-Xylenes	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					MW-101D	MW-101D	MW-101D	MW-101D	MW-101D
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	WG-56393-102511-JV-018	WG-56393-020612-JV-038	WG-56393-042712-JV-057	WG-56393-072512-JV-095	GW-56393-102312-JV-113
Sample Date:					10/25/2011	2/6/2012	4/27/2012	7/25/2012	10/23/2012
Sample Type:									
	Units	a	b	c					
PCBs									
Aroclor-1016 (PCB-1016)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0051 U	0.020 U
Aroclor-1221 (PCB-1221)	µg/L	-	-	-	0.040 U	0.041 U	0.040 U	0.011 U	0.040 U
Aroclor-1232 (PCB-1232)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0051 U	0.020 U
Aroclor-1242 (PCB-1242)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0051 U	0.020 U
Aroclor-1248 (PCB-1248)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0051 U	0.020 U
Aroclor-1254 (PCB-1254)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0051 U	0.020 U
Aroclor-1260 (PCB-1260)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0051 U	0.020 U
Total PCBs	µg/L	0.5	200	3.3	ND	ND	ND	ND	ND
Dioxins									
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000026 U	--	0.000024 U	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000026 U	--	0.000024 U	--
Total heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000026 U	--	0.000024 U	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.000026 U	--	0.0000579	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.00000186 J	--	0.00025	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000026 U	--	0.000024 U	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000026 U	--	0.000024 U	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000026 U	--	0.000024 U	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000026 U	--	0.00000175 J	--
Total hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000026 U	--	0.000024 U	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000026 U	--	0.000024 U	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000026 U	--	0.000024 U	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000026 U	--	0.000035	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000026 U	--	0.000264	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	µg/L	-	-	-	--	0.0000521 U	--	0.00000376 J	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	µg/L	-	-	-	--	0.0000521 U	--	0.0000655	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000026 U	--	0.000024 U	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000026 U	--	0.000024 U	--
Total pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000026 U	--	0.000024 U	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.000026 U	--	0.000024 U	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.000026 U	--	0.0000999	--
Total tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.0000104 U	--	0.00000481 U	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.0000104 U	--	0.00000481 U	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.0000104 U	--	0.00000481 U	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.0000104 U	--	0.00000481 U	--
Toxic Equivalents	µg/L	0.00003	0.00001	0.00001	--	0.0	--	0.000004254	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-101S*	*MW-101S*	*MW-101S*	*MW-101S*	*MW-101S*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102511-JV-019*	*WG-56393-020612-JV-037*	*WG-56393-042712-JV-056*	*WG-56393-072512-JV-094*	*GW-56393-102312-JV-112*
Sample Date:		Drinking Water	Surface Water	Contact	*10/25/2011*	*2/6/2012*	*4/27/2012*	*7/25/2012*	*10/23/2012*
Sample Type:			Interface						
	Units	a	b	c					
Volatile Organic Compounds									
Acetone	µg/L	2100	1700	31000000	R	R	R	20 U	20 U
Benzene	µg/L	5	200	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	ID	14000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	µg/L	80	ID	140000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane (Methyl bromide)	µg/L	29	35	70000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	38000	2200	240000000	R	R	R	R	R
Carbon disulfide	µg/L	2300	ID	1200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	5	45	4600	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	µg/L	100	25	86000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	µg/L	1700	1100	440000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform (Trichloromethane)	µg/L	80	350	150000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane (Methyl chloride)	µg/L	1100	ID	490000	0.50 U	0.50 U	0.50 U	0.10 J	0.50 UJ
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	-	390	R	2.0 U	2.0 U	2.0 U	2.0 U
Dibromochloromethane	µg/L	80	ID	18000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	5.7	25	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	µg/L	600	13	160000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	µg/L	19	28	2000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	µg/L	75	17	6400	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane (CFC-12)	µg/L	4800	ID	300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,1-Dichloroethane	µg/L	2500	740	2400000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	µg/L	5	360	19000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	µg/L	7	130	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	µg/L	70	620	200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	µg/L	100	1500	220000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	µg/L	5	230	16000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 UJ	0.50 U
trans-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	74	18	170000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Hexanone	µg/L	2900	ID	5200000	R	20 U	R	20 U	20 U
Isopropyl benzene	µg/L	2300	28	56000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methyl tert butyl ether (MTBE)	µg/L	40	7100	610000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Methyl-2-pentanone [2]	µg/L	5200	ID	13000000	R	R	20 U	20 U	20 U
Methylene chloride	µg/L	5	1500	220000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	µg/L	100	80	9700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	µg/L	35	78	4700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	µg/L	5	60	12000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	790	270	530000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trichlorobenzene	µg/L	70	99	19000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	µg/L	200	89	1300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2-Trichloroethane	µg/L	5	330	21000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	5	200	22000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane (CFC-11)	µg/L	7300	-	1100000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	µg/L	2	13	1000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m&p-Xylenes	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-101S	MW-101S	MW-101S	MW-101S	MW-101S
Sample Identification:		Non-Residential	Groundwater	Groundwater	WG-56393-102511-JV-019	WG-56393-020612-JV-037	WG-56393-042712-JV-056	WG-56393-072512-JV-094	GW-56393-102312-JV-112
Sample Date:		Drinking Water	Surface Water	Contact	10/25/2011	2/6/2012	4/27/2012	7/25/2012	10/23/2012
Sample Type:			Interface						
	Units	a	b	c					
Semi-Volatile Organic Compounds									
Acenaphthene	µg/L	3800	38	4200	–	0.20 U	–	0.20 U	–
Acenaphthylene	µg/L	150	ID	3900	–	0.20 U	–	0.20 U	–
Anthracene	µg/L	43	ID	43	–	0.20 U	–	0.20 U	–
Benzo(a)anthracene	µg/L	8.5	ID	9.4	–	0.20 U	–	0.20 U	–
Benzo(a)pyrene	µg/L	5	ID	1	–	0.20 U	–	0.20 U	–
Benzo(b)fluoranthene	µg/L	1.5	ID	1.5	–	0.20 U	–	0.20 U	–
Benzo(g,h,i)perylene	µg/L	1	-	1	–	0.20 U	–	0.20 U	–
Benzo(k)fluoranthene	µg/L	1	-	1	–	0.20 U	–	0.20 U	–
Butyl benzylphthalate (BBP)	µg/L	2700	67	2700	–	0.20 U	–	0.20 U	–
Carbazole	µg/L	350	10	7400	–	0.20 U	–	0.20 U	–
4-Chloro-3-methylphenol	µg/L	420	7.4	79000	–	0.49 U	–	0.49 U	–
bis(2-Chloroethyl)ether	µg/L	8.3	1	5700	–	0.20 U	–	0.20 U	–
2-Chlorophenol	µg/L	130	18	94000	–	0.49 U	–	0.49 U	–
Chrysene	µg/L	1.6	ID	1.6	–	0.20 U	–	0.20 U	–
Dibenz(a,h)anthracene	µg/L	2	ID	2	–	0.20 U	–	0.20 U	–
Dibenzofuran	µg/L	ID	4	ID	–	0.20 U	–	0.20 U	–
3,3'-Dichlorobenzidine	µg/L	4.3	0.3	180	–	2.0 U	–	2.0 U	–
2,4-Dichlorophenol	µg/L	210	11	48000	–	0.49 U	–	0.49 U	–
Diethyl phthalate	µg/L	16000	110	1100000	–	0.20 U	–	0.20 U	–
Dimethyl phthalate	µg/L	210000	-	4200000	–	0.20 U	–	0.20 U	–
2,4-Dimethylphenol	µg/L	1000	380	520000	–	3.9 U	–	3.9 U	–
Di-n-butylphthalate (DBP)	µg/L	2500	9.7	11000	–	0.20 U	–	0.20 U	–
4,6-Dinitro-2-methylphenol	µg/L	20	-	9500	–	2.0 U	–	2.0 U	–
2,4-Dinitrotoluene	µg/L	32	-	8600	–	0.20 U	–	0.20 U	–
Di-n-octyl phthalate (DnOP)	µg/L	380	ID	400	–	0.20 U	–	0.20 U	–
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	6	25	320	–	0.98 U	–	0.97 U	–
Fluoranthene	µg/L	210	1.6	210	–	0.20 U	–	0.20 U	–
Fluorene	µg/L	2000	12	2000	–	0.20 U	–	0.20 U	–
Hexachlorobenzene	µg/L	1	0.2	4.6	–	0.20 U	–	0.20 U	–
Hexachlorobutadiene	µg/L	42	0.053	400	–	0.20 U	–	0.20 U	–
Hexachlorocyclopentadiene	µg/L	50	ID	1600	–	0.98 U	–	0.97 U	–
Hexachloroethane	µg/L	21	6.7	1900	–	0.20 U	–	0.20 U	–
Indeno(1,2,3-cd)pyrene	µg/L	2	ID	2	–	0.20 U	–	0.20 U	–
Isophorone	µg/L	3100	1300	990000	–	0.20 U	–	0.20 U	–
2-Methylnaphthalene	µg/L	750	19	25000	–	0.20 U	–	0.20 U	–
2-Methylphenol	µg/L	1000	30	810000	–	0.49 U	–	0.49 U	–
4-Methylphenol	µg/L	1000	30	810000	–	0.49 U	–	0.49 U	–
Naphthalene	µg/L	1500	11	31000	–	0.20 U	–	0.20 U	–
Nitrobenzene	µg/L	9.6	180	11000	–	0.20 U	–	0.20 U	–
2-Nitrophenol	µg/L	58	ID	79000	–	0.49 U	–	0.49 U	–
N-Nitrosodi-n-propylamine	µg/L	5	-	360	–	0.20 U	–	0.20 U	–
N-Nitrosodiphenylamine	µg/L	1100	-	35000	–	0.20 U	–	0.20 U	–
Pentachlorophenol	µg/L	1	G,X	200	–	0.98 U	–	0.97 U	–
Phenanthrene	µg/L	150	2	1000	–	0.20 U	–	0.20 U	–
Phenol	µg/L	13000	450	29000000	–	0.49 U	–	0.49 U	–
Pyrene	µg/L	140	ID	140	–	0.20 U	–	0.20 U	–
2,4,5-Trichlorophenol	µg/L	2100	-	170000	–	0.49 U	–	0.49 U	–
2,4,6-Trichlorophenol	µg/L	470	5	10000	–	0.49 U	–	0.49 U	–

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-101S*	*MW-101S*	*MW-101S*	*MW-101S*	*MW-101S*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102511-JV-019*	*WG-56393-020612-JV-037*	*WG-56393-042712-JV-056*	*WG-56393-072512-JV-094*	*GW-56393-102312-JV-112*
Sample Date:		Drinking Water	Surface Water	Contact	*10/25/2011*	*2/6/2012*	*4/27/2012*	*7/25/2012*	*10/23/2012*
Sample Type:			Interface						
	Units	a	b	c					
PCBs									
Aroclor-1016 (PCB-1016)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0051 U	0.020 U
Aroclor-1221 (PCB-1221)	µg/L	-	-	-	0.040 U	0.041 U	0.040 U	0.011 U	0.040 U
Aroclor-1232 (PCB-1232)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0051 U	0.020 U
Aroclor-1242 (PCB-1242)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0051 U	0.020 U
Aroclor-1248 (PCB-1248)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0051 U	0.020 U
Aroclor-1254 (PCB-1254)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0051 U	0.020 U
Aroclor-1260 (PCB-1260)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0051 U	0.020 U
Total PCBs	µg/L	0.5	200	3.3	ND	ND	ND	ND	ND
Dioxins									
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
Total heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.0000547 U	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.000239 U	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
Total hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.000029 U	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.000215	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	µg/L	-	-	-	--	0.000049 U	--	0.0000481 U	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	µg/L	-	-	-	--	0.000049 U	--	0.0000642 U	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
Total pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.000081 U	--
Total tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.0000098 U	--	0.00000481 U	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.0000098 U	--	0.00000481 U	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.0000098 U	--	0.00000481 U	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.0000098 U	--	0.0000059	--
Toxic Equivalents	µg/L	0.00003	0.00001	0.00001	--	0.0	--	0.0	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-101S	MW-101S	MW-101S	MW-101S	MW-101S
Sample Identification:		Non-Residential	Groundwater	Groundwater	WG-56393-102511-JV-019	WG-56393-020612-JV-037	WG-56393-042712-JV-056	WG-56393-072512-JV-094	GW-56393-102312-JV-112
Sample Date:		Drinking Water	Surface Water	Contact	10/25/2011	2/6/2012	4/27/2012	7/25/2012	10/23/2012
Sample Type:			Interface						
	Units	a	b	c					
Metals									
Aluminum	µg/L	50	-	64000000	--	7.0 U	--	7.6 U	--
Antimony	µg/L	6	130	68000	--	0.050 U	--	0.050 U	--
Arsenic	µg/L	10	10	4300	--	0.50 U	--	0.3 J	--
Barium	µg/L	2000	1400	14000000	--	77.0	--	89.0	--
Beryllium	µg/L	4	41	290000	--	0.020 U	--	0.020 U	--
Cadmium	µg/L	5	5.1	190000	--	0.020 U	--	0.020 U	--
Chromium	µg/L	100	11	460000	--	0.20 U	--	0.20 U	--
Chromium VI (hexavalent)	µg/L	100	11	460000	--	2.0 UJ	--	2.0 U	--
Cobalt	µg/L	100	100	2400000	--	0.034	--	0.105	--
Copper	µg/L	1000	23	7400000	--	0.40	--	0.45	--
Iron	µg/L	300	-	58000000	--	54.4	--	43.0	--
Lead	µg/L	4	34	ID	--	0.060	--	0.046 U	--
Magnesium	µg/L	1100000	-	1000000000	24200	24800	25400	24900	24100
Manganese	µg/L	50	5200	9100000	--	2.26	--	2.790	--
Mercury	µg/L	2	0.0013	56	0.001 U	0.00327 U	0.00129 U	0.00062 J	0.001 U
Nickel	µg/L	100	130	74000000	--	0.24 U	--	0.81 U	--
Selenium	µg/L	50	5	970000	--	0.4 J	--	1.0 U	--
Silver	µg/L	98	0.2	1500000	--	0.020 U	--	0.020 U	--
Sodium	µg/L	350000	-	1000000000	23800	23500	24800	24600	23700
Thallium	µg/L	2	3.7	13000	--	0.0200 U	--	0.020 U	--
Vanadium	µg/L	62	27	970000	--	0.200 U	--	0.20 U	--
Zinc	µg/L	5000	310	110000000	--	0.94 U	--	0.7 U	--
General Chemistry									
Cyanide (amenable)	µg/L	200	-	57000	--	10 U	10 U	10 U	10 U
Cyanide (total)	µg/L	200	5.2	57000	10 U	10 U	10 U	10 U	10 U
Field Parameters									
Conductivity	mS/cm	-	-	-	0.696	0.544	0.779	0.901	0.788
Dissolved Oxygen (DO)	mg/L	-	-	-	3.58	-	5.21	5.18	2.57
Oxidation Reduction Potential	millivolt	-	-	-	-29.7	202	230	77	122.6
pH	s.u.	6.5-8.5	6.5-8.5	-	7.01	7.23	7.23	6.6	7.02
Temperature	Deg C	-	-	-	16.19	9.2	9.3	16.8	16.04
Turbidity	NTU	-	-	-	-	<3.69	<0.080	3.03	1.10

Notes:

[1] Cleanup criteria identified by MDEQ RRD Op Memo No. 1, updated 9/28/12, pursuant to 1994 PA 451 as amended.

[2] Also known as Methyl isobutyl ketone (MIBK).

U - Not present at or above the associated value.

J - Estimated concentration.

UJ - Estimated reporting limit.

R - Rejected.

[ ] - Exceeds Generic Cleanup Criteria.

Superscript letter notes the criterion exceeded.

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-102D*	*MW-102D*	*MW-102D*	*MW-102D*	*MW-102D*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102511-JV-022*	*WG-56393-020612-JV-040*	*WG-56393-042512-JV-059*	*WG-56393-072312-JV-076*	*GW-56393-102312-JV-110*
Sample Date:		Drinking Water	Surface Water	Contact	*10/25/2011*	*2/6/2012*	*4/25/2012*	*7/23/2012*	*10/23/2012*
Sample Type:			Interface						
	Units	a	b	c					
Volatile Organic Compounds									
Acetone	µg/L	2100	1700	31000000	R	R	R	20 U	20 U
Benzene	µg/L	5	200	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	ID	14000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	µg/L	80	ID	140000	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
Bromomethane (Methyl bromide)	µg/L	29	35	70000	0.50 UJ	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	38000	2200	240000000	R	R	R	R	R
Carbon disulfide	µg/L	2300	ID	1200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	5	45	4600	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
Chlorobenzene	µg/L	100	25	86000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	µg/L	1700	1100	440000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform (Trichloromethane)	µg/L	80	350	150000	0.15 J	0.50 U	0.11 J	0.14 J	0.14 J
Chloromethane (Methyl chloride)	µg/L	1100	ID	490000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	-	390	R	2.0 U	R	2.0 U	2.0 U
Dibromochloromethane	µg/L	80	ID	18000	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	5.7	25	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	µg/L	600	13	160000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	µg/L	19	28	2000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	µg/L	75	17	6400	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane (CFC-12)	µg/L	4800	ID	300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,1-Dichloroethane	µg/L	2500	740	2400000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	µg/L	5	360	19000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	µg/L	7	130	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	µg/L	70	620	200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	µg/L	100	1500	220000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	µg/L	5	230	16000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	74	18	170000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Hexanone	µg/L	2900	ID	5200000	R	20 U	R	20 U	20 U
Isopropyl benzene	µg/L	2300	28	56000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methyl tert butyl ether (MTBE)	µg/L	40	7100	610000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Methyl-2-pentanone [2]	µg/L	5200	ID	13000000	20 U	R	R	20 U	20 U
Methylene chloride	µg/L	5	1500	220000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	µg/L	100	80	9700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	µg/L	35	78	4700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	µg/L	5	60	12000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	790	270	530000	0.50 U	0.070 J	0.50 U	0.50 U	0.16 J
1,2,4-Trichlorobenzene	µg/L	70	99	19000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	µg/L	200	89	1300000	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
1,1,2-Trichloroethane	µg/L	5	330	21000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	5	200	22000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane (CFC-11)	µg/L	7300	-	1100000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	µg/L	2	13	1000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m&p-Xylenes	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-102D	MW-102D	MW-102D	MW-102D	MW-102D
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	WG-56393-102511-JV-022	WG-56393-020612-JV-040	WG-56393-042512-JV-059	WG-56393-072312-JV-076	GW-56393-102312-JV-110
Sample Date:					10/25/2011	2/6/2012	4/25/2012	7/23/2012	10/23/2012
Sample Type:									
	Units	a	b	c					
Semi-Volatile Organic Compounds									
Acenaphthene	µg/L	3800	38	4200	--	0.20 U	--	0.20 U	--
Acenaphthylene	µg/L	150	ID	3900	--	0.20 U	--	0.20 U	--
Anthracene	µg/L	43	ID	43	--	0.20 U	--	0.20 U	--
Benzo(a)anthracene	µg/L	8.5	ID	9.4	--	0.20 U	--	0.20 U	--
Benzo(a)pyrene	µg/L	5	ID	1	--	0.20 U	--	0.20 U	--
Benzo(b)fluoranthene	µg/L	1.5	ID	1.5	--	0.20 U	--	0.20 U	--
Benzo(g,h,i)perylene	µg/L	1	-	1	--	0.20 U	--	0.20 U	--
Benzo(k)fluoranthene	µg/L	1	-	1	--	0.20 U	--	0.20 U	--
Butyl benzylphthalate (BBP)	µg/L	2700	67	2700	--	0.20 U	--	0.030 J	--
Carbazole	µg/L	350	10	7400	--	0.20 U	--	0.20 U	--
4-Chloro-3-methylphenol	µg/L	420	7.4	79000	--	0.48 U	--	0.49 U	--
bis(2-Chloroethyl)ether	µg/L	8.3	1	5700	--	0.20 U	--	0.20 U	--
2-Chlorophenol	µg/L	130	18	94000	--	0.48 U	--	0.49 U	--
Chrysene	µg/L	1.6	ID	1.6	--	0.20 U	--	0.20 U	--
Dibenz(a,h)anthracene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	--
Dibenzofuran	µg/L	ID	4	ID	--	0.20 U	--	0.20 U	--
3,3'-Dichlorobenzidine	µg/L	4.3	0.3	180	--	2.0 U	--	2.0 U	--
2,4-Dichlorophenol	µg/L	210	11	48000	--	0.48 U	--	0.49 U	--
Diethyl phthalate	µg/L	16000	110	1100000	--	0.20 U	--	0.20 U	--
Dimethyl phthalate	µg/L	210000	-	4200000	--	0.20 U	--	0.20 U	--
2,4-Dimethylphenol	µg/L	1000	380	520000	--	3.9 U	--	3.9 U	--
Di-n-butylphthalate (DBP)	µg/L	2500	9.7	11000	--	0.20 U	--	0.035 J	--
4,6-Dinitro-2-methylphenol	µg/L	20	-	9500	--	2.0 U	--	2.0 U	--
2,4-Dinitrotoluene	µg/L	32	-	8600	--	0.20 U	--	0.20 U	--
Di-n-octyl phthalate (DnOP)	µg/L	380	ID	400	--	0.20 U	--	0.20 U	--
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	6	25	320	--	0.96 U	--	0.97 U	--
Fluoranthene	µg/L	210	1.6	210	--	0.20 U	--	0.20 U	--
Fluorene	µg/L	2000	12	2000	--	0.20 U	--	0.20 U	--
Hexachlorobenzene	µg/L	1	0.2	4.6	--	0.20 U	--	0.20 U	--
Hexachlorobutadiene	µg/L	42	0.053	400	--	0.20 U	--	0.20 U	--
Hexachlorocyclopentadiene	µg/L	50	ID	1600	--	0.96 U	--	0.97 U	--
Hexachloroethane	µg/L	21	6.7	1900	--	0.20 U	--	0.20 U	--
Indeno(1,2,3-cd)pyrene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	--
Isophorone	µg/L	3100	1300	990000	--	0.20 U	--	0.20 U	--
2-Methylnaphthalene	µg/L	750	19	25000	--	0.20 U	--	0.20 U	--
2-Methylphenol	µg/L	1000	30	810000	--	0.48 U	--	0.49 U	--
4-Methylphenol	µg/L	1000	30	810000	--	0.48 U	--	0.49 U	--
Naphthalene	µg/L	1500	11	31000	--	0.030 J	--	0.044 J	--
Nitrobenzene	µg/L	9.6	180	11000	--	0.20 U	--	0.20 U	--
2-Nitrophenol	µg/L	58	ID	79000	--	0.48 U	--	0.49 U	--
N-Nitrosodi-n-propylamine	µg/L	5	-	360	--	0.20 U	--	0.20 U	--
N-Nitrosodiphenylamine	µg/L	1100	-	35000	--	0.20 U	--	0.20 U	--
Pentachlorophenol	µg/L	1	G,X	200	--	0.96 U	--	0.97 U	--
Phenanthrene	µg/L	150	2	1000	--	0.20 U	--	0.20 U	--
Phenol	µg/L	13000	450	29000000	--	0.48 U	--	0.49 U	--
Pyrene	µg/L	140	ID	140	--	0.20 U	--	0.20 U	--
2,4,5-Trichlorophenol	µg/L	2100	-	170000	--	0.48 U	--	0.49 U	--
2,4,6-Trichlorophenol	µg/L	470	5	10000	--	0.48 U	--	0.49 U	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-102D*	*MW-102D*	*MW-102D*	*MW-102D*	*MW-102D*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102511-JV-022*	*WG-56393-020612-JV-040*	*WG-56393-042512-JV-059*	*WG-56393-072312-JV-076*	*GW-56393-102312-JV-110*
Sample Date:		Drinking Water	Surface Water	Contact	*10/25/2011*	*2/6/2012*	*4/25/2012*	*7/23/2012*	*10/23/2012*
Sample Type:			Interface						
	Units	a	b	c					
PCBs									
Aroclor-1016 (PCB-1016)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1221 (PCB-1221)	µg/L	-	-	-	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U
Aroclor-1232 (PCB-1232)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1242 (PCB-1242)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1248 (PCB-1248)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1254 (PCB-1254)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1260 (PCB-1260)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Total PCBs	µg/L	0.5	200	3.3	ND	ND	ND	ND	ND
Dioxins									
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000024 U	--	0.00000836 J	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000024 U	--	0.000024 U	--
Total heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000024 U	--	0.000026	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.000024 U	--	0.0000614	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.000024 U	--	0.000201	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000024 U	--	0.000024 U	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000024 U	--	0.000024 U	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000024 U	--	0.000024 U	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000024 U	--	0.000024 U	--
Total hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000024 U	--	0.00000944 J	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000024 U	--	0.00000835 J	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000024 U	--	0.00000495 J	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000024 U	--	0.0000236 J	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000024 U	--	0.000176	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	µg/L	-	-	-	--	0.0000481 U	--	0.0000197 J	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	µg/L	-	-	-	--	0.0000481 U	--	0.000192	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000024 U	--	0.000024 U	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000024 U	--	0.000024 U	--
Total pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000024 U	--	0.000024 U	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.000024 U	--	0.00000211 J	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.000024 U	--	0.0000582	--
Total tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.00000962 U	--	0.00000481 U	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.00000962 U	--	0.00000481 U	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.00000962 U	--	0.00000481 U	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.00000962 U	--	0.00000481 U	--
Toxic Equivalents	µg/L	0.00003	0.00001	0.00001	--	0.0	--	0.000005443	--

TABLE 2
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12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-102D	MW-102D	MW-102D	MW-102D	MW-102D
Sample Identification:		Non-Residential	Groundwater	Groundwater	WG-56393-102511-JV-022	WG-56393-020612-JV-040	WG-56393-042512-JV-059	WG-56393-072312-JV-076	GW-56393-102312-JV-110
Sample Date:		Drinking Water	Surface Water	Contact	10/25/2011	2/6/2012	4/25/2012	7/23/2012	10/23/2012
Sample Type:			Interface						
	Units	a	b	c					
Metals									
Aluminum	µg/L	50	-	64000000	--	3.5	--	3.6	--
Antimony	µg/L	6	130	68000	--	0.050 U	--	0.050 U	--
Arsenic	µg/L	10	10	4300	--	0.21 J	--	0.2 J	--
Barium	µg/L	2000	1400	14000000	--	70.5	--	67.1	--
Beryllium	µg/L	4	41	290000	--	0.020 U	--	0.020 U	--
Cadmium	µg/L	5	5.1	190000	--	0.008 J	--	0.010 J	--
Chromium	µg/L	100	11	460000	--	0.14 J	--	0.19 J	--
Chromium VI (hexavalent)	µg/L	100	11	460000	--	2.0 UJ	--	2.0 UJ	--
Cobalt	µg/L	100	100	2400000	--	0.029	--	0.071	--
Copper	µg/L	1000	23	7400000	--	0.33	--	0.30	--
Iron	µg/L	300	-	58000000	--	20.0 U	--	8.0 J	--
Lead	µg/L	4	34	ID	--	0.048	--	0.065	--
Magnesium	µg/L	1100000	-	1000000000	22700	23800	22800	22800	23200
Manganese	µg/L	50	5200	9100000	--	0.40	--	0.291	--
Mercury	µg/L	2	0.0013	56	0.001 U	0.001 U	0.00084 J	0.00026 J	0.001 U
Nickel	µg/L	100	130	74000000	--	0.19 J	--	0.60	--
Selenium	µg/L	50	5	970000	--	0.2 J	--	1.0 U	--
Silver	µg/L	98	0.2	1500000	--	0.020 U	--	0.020 U	--
Sodium	µg/L	350000	-	1000000000	19600	21800	21200	19400	20400
Thallium	µg/L	2	3.7	13000	--	0.0200 U	--	0.020 U	--
Vanadium	µg/L	62	27	970000	--	0.107 J	--	0.10 J	--
Zinc	µg/L	5000	310	110000000	--	0.67	--	1.0	--
General Chemistry									
Cyanide (amenable)	µg/L	200	-	57000	--	10 U	10 U	10 U	10 U
Cyanide (total)	µg/L	200	5.2	57000	9 J[b]	10 U	10 U	10 U	10 U
Field Parameters									
Conductivity	mS/cm	-	-	-	0.607	0.511	0.785	0.599	0.738
Dissolved Oxygen (DO)	mg/L	-	-	-	1.88	-	2.53	1.93	2.40
Oxidation Reduction Potential	millivolt	-	-	-	-34.4	128	209	90	120.2
pH	s.u.	6.5-8.5	6.5-8.5	-	7.30	7.21	6.88	7.18	7.11
Temperature	Deg C	-	-	-	15.84	9	11.9	20.18	14.30
Turbidity	NTU	-	-	-	3.02	<2.98	<0.63	1.8	3.27

Notes:

[1] Cleanup criteria identified by MDEQ RRD Op Memo No. 1, updated 9/28/12, pursuant to 1994 PA 451 as amended.

[2] Also known as Methyl isobutyl ketone (MIBK).

U - Not present at or above the associated value.

J - Estimated concentration.

UJ - Estimated reporting limit.

R - Rejected.

[ ] - Exceeds Generic Cleanup Criteria.

Superscript letter notes the criterion exceeded.

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]								
Sample Location:					*MW-102S*	*MW-102S*	*MW-102S*	*MW-102S*	*MW-102S*	*MW-102S*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102511-JV-020*	*WG-56393-102511-JV-021*	*WG-56393-020612-JV-039*	*WG-56393-042512-JV-058*	*WG-56393-072312-JV-075*	*GW-56393-102312-JV-109*
Sample Date:		Drinking Water	Surface Water	Contact	*10/25/2011*	*10/25/2011*	*2/6/2012*	*4/25/2012*	*7/23/2012*	*10/23/2012*
Sample Type:			Interface			*Duplicate*				
	Units	a	b	c						
Volatile Organic Compounds										
Acetone	µg/L	2100	1700	31000000	R	R	R	R	20 U	20 U
Benzene	µg/L	5	200	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	ID	14000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	µg/L	80	ID	140000	0.50 U	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
Bromomethane (Methyl bromide)	µg/L	29	35	70000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	38000	2200	240000000	R	R	R	R	R	R
Carbon disulfide	µg/L	2300	ID	1200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	5	45	4600	0.50 U	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
Chlorobenzene	µg/L	100	25	86000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	µg/L	1700	1100	440000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform (Trichloromethane)	µg/L	80	350	150000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane (Methyl chloride)	µg/L	1100	ID	490000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	-	390	R	R	2.0 U	R	2.0 U	2.0 U
Dibromochloromethane	µg/L	80	ID	18000	0.50 U	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	5.7	25	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	µg/L	600	13	160000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	µg/L	19	28	2000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	µg/L	75	17	6400	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane (CFC-12)	µg/L	4800	ID	300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,1-Dichloroethane	µg/L	2500	740	2400000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	µg/L	5	360	19000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	µg/L	7	130	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	µg/L	70	620	200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	µg/L	100	1500	220000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	µg/L	5	230	16000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	74	18	170000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Hexanone	µg/L	2900	ID	5200000	R	R	20 U	R	20 U	20 U
Isopropyl benzene	µg/L	2300	28	56000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methyl tert butyl ether (MTBE)	µg/L	40	7100	610000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Methyl-2-pentanone [2]	µg/L	5200	ID	13000000	R	R	R	R	20 U	20 U
Methylene chloride	µg/L	5	1500	220000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	µg/L	100	80	9700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	µg/L	35	78	4700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	µg/L	5	60	12000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	790	270	530000	0.50 U	0.50 U	0.060 J	0.50 U	0.50 U	0.17 J
1,2,4-Trichlorobenzene	µg/L	70	99	19000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	µg/L	200	89	1300000	0.50 U	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
1,1,2-Trichloroethane	µg/L	5	330	21000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	5	200	22000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane (CFC-11)	µg/L	7300	-	1100000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	µg/L	2	13	1000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m&p-Xylenes	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

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12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]								
Sample Location:					*MW-102S*	*MW-102S*	*MW-102S*	*MW-102S*	*MW-102S*	*MW-102S*
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	*WG-56393-102511-JV-020*	*WG-56393-102511-JV-021*	*WG-56393-020612-JV-039*	*WG-56393-042512-JV-058*	*WG-56393-072312-JV-075*	*GW-56393-102312-JV-109*
Sample Date:					*10/25/2011*	*10/25/2011*	*2/6/2012*	*4/25/2012*	*7/23/2012*	*10/23/2012*
Sample Type:						*Duplicate*				
	Units	a	b	c						
Semi-Volatile Organic Compounds										
Acenaphthene	µg/L	3800	38	4200	--	--	0.20 U	--	0.20 U	--
Acenaphthylene	µg/L	150	ID	3900	--	--	0.20 U	--	0.20 U	--
Anthracene	µg/L	43	ID	43	--	--	0.20 U	--	0.20 U	--
Benzo(a)anthracene	µg/L	8.5	ID	9.4	--	--	0.20 U	--	0.20 U	--
Benzo(a)pyrene	µg/L	5	ID	1	--	--	0.20 U	--	0.20 U	--
Benzo(b)fluoranthene	µg/L	1.5	ID	1.5	--	--	0.20 U	--	0.20 U	--
Benzo(g,h,i)perylene	µg/L	1	-	1	--	--	0.20 U	--	0.20 U	--
Benzo(k)fluoranthene	µg/L	1	-	1	--	--	0.20 U	--	0.20 U	--
Butyl benzylphthalate (BBP)	µg/L	2700	67	2700	--	--	0.20 U	--	0.062 J	--
Carbazole	µg/L	350	10	7400	--	--	0.20 U	--	0.20 U	--
4-Chloro-3-methylphenol	µg/L	420	7.4	79000	--	--	0.48 U	--	0.50 U	--
bis(2-Chloroethyl)ether	µg/L	8.3	1	5700	--	--	0.20 U	--	0.20 U	--
2-Chlorophenol	µg/L	130	18	94000	--	--	0.48 U	--	0.50 U	--
Chrysene	µg/L	1.6	ID	1.6	--	--	0.20 U	--	0.20 U	--
Dibenz(a,h)anthracene	µg/L	2	ID	2	--	--	0.20 U	--	0.20 U	--
Dibenzofuran	µg/L	ID	4	ID	--	--	0.20 U	--	0.20 U	--
3,3'-Dichlorobenzidine	µg/L	4.3	0.3	180	--	--	2.0 U	--	2.0 U	--
2,4-Dichlorophenol	µg/L	210	11	48000	--	--	0.48 U	--	0.50 U	--
Diethyl phthalate	µg/L	16000	110	1100000	--	--	0.20 U	--	0.20 U	--
Dimethyl phthalate	µg/L	210000	-	4200000	--	--	0.20 U	--	0.20 U	--
2,4-Dimethylphenol	µg/L	1000	380	520000	--	--	3.9 U	--	4.0 U	--
Di-n-butylphthalate (DBP)	µg/L	2500	9.7	11000	--	--	0.20 U	--	0.049 J	--
4,6-Dinitro-2-methylphenol	µg/L	20	-	9500	--	--	2.0 U	--	2.0 U	--
2,4-Dinitrotoluene	µg/L	32	-	8600	--	--	0.20 U	--	0.20 U	--
Di-n-octyl phthalate (DnOP)	µg/L	380	ID	400	--	--	0.20 U	--	0.20 U	--
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	6	25	320	--	--	0.96 U	--	0.17 J	--
Fluoranthene	µg/L	210	1.6	210	--	--	0.20 U	--	0.20 U	--
Fluorene	µg/L	2000	12	2000	--	--	0.20 U	--	0.20 U	--
Hexachlorobenzene	µg/L	1	0.2	4.6	--	--	0.20 U	--	0.20 U	--
Hexachlorobutadiene	µg/L	42	0.053	400	--	--	0.20 U	--	0.20 U	--
Hexachlorocyclopentadiene	µg/L	50	ID	1600	--	--	0.96 U	--	1.0 U	--
Hexachloroethane	µg/L	21	6.7	1900	--	--	0.20 U	--	0.20 U	--
Indeno(1,2,3-cd)pyrene	µg/L	2	ID	2	--	--	0.20 U	--	0.20 U	--
Isophorone	µg/L	3100	1300	990000	--	--	0.20 U	--	0.20 U	--
2-Methylnaphthalene	µg/L	750	19	25000	--	--	0.20 U	--	0.20 U	--
2-Methylphenol	µg/L	1000	30	810000	--	--	0.48 U	--	0.50 U	--
4-Methylphenol	µg/L	1000	30	810000	--	--	0.48 U	--	0.50 U	--
Naphthalene	µg/L	1500	11	31000	--	--	0.040 J	--	0.054 J	--
Nitrobenzene	µg/L	9.6	180	11000	--	--	0.20 U	--	0.20 U	--
2-Nitrophenol	µg/L	58	ID	79000	--	--	0.48 U	--	0.50 U	--
N-Nitrosodi-n-propylamine	µg/L	5	-	360	--	--	0.20 U	--	0.20 U	--
N-Nitrosodiphenylamine	µg/L	1100	-	35000	--	--	0.20 U	--	0.20 U	--
Pentachlorophenol	µg/L	1	G,X	200	--	--	0.96 U	--	1.0 U	--
Phenanthrene	µg/L	150	2	1000	--	--	0.20 U	--	0.20 U	--
Phenol	µg/L	13000	450	29000000	--	--	0.48 U	--	0.50 U	--
Pyrene	µg/L	140	ID	140	--	--	0.20 U	--	0.20 U	--
2,4,5-Trichlorophenol	µg/L	2100	-	170000	--	--	0.48 U	--	0.50 U	--
2,4,6-Trichlorophenol	µg/L	470	5	10000	--	--	0.48 U	--	0.50 U	--

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12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]								
Sample Location:					*MW-102S*	*MW-102S*	*MW-102S*	*MW-102S*	*MW-102S*	*MW-102S*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102511-JV-020*	*WG-56393-102511-JV-021*	*WG-56393-020612-JV-039*	*WG-56393-042512-JV-058*	*WG-56393-072312-JV-075*	*GW-56393-102312-JV-109*
Sample Date:		Drinking Water	Surface Water	Contact	*10/25/2011*	*10/25/2011*	*2/6/2012*	*4/25/2012*	*7/23/2012*	*10/23/2012*
Sample Type:			Interface			*Duplicate*				
	Units	a	b	c						
PCBs										
Aroclor-1016 (PCB-1016)	µg/L	-	-	-	0.020 U	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U
Aroclor-1221 (PCB-1221)	µg/L	-	-	-	0.040 U	0.040 U	0.041 U	0.040 U	0.039 U	0.040 U
Aroclor-1232 (PCB-1232)	µg/L	-	-	-	0.020 U	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U
Aroclor-1242 (PCB-1242)	µg/L	-	-	-	0.020 U	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U
Aroclor-1248 (PCB-1248)	µg/L	-	-	-	0.020 U	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U
Aroclor-1254 (PCB-1254)	µg/L	-	-	-	0.020 U	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U
Aroclor-1260 (PCB-1260)	µg/L	-	-	-	0.020 U	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U
Total PCBs	µg/L	0.5	200	3.3	ND	ND	ND	ND	ND	ND
Dioxins										
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	--	0.0000245 U	--	0.00000586 J	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	--	0.0000245 U	--	0.0000245 U	--
Total heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	--	0.0000245 U	--	0.0000126 J	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	--	0.0000245 U	--	0.0000445	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	--	0.0000245 U	--	0.00019	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	--	0.0000245 U	--	0.0000245 U	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	--	0.0000245 U	--	0.0000245 U	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	--	0.0000245 U	--	0.0000245 U	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	--	0.0000245 U	--	0.0000245 U	--
Total hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	--	0.0000245 U	--	0.00000789 J	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	--	0.0000245 U	--	0.00000805 J	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	--	0.0000245 U	--	0.00000323 J	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	--	0.0000245 U	--	0.0000265	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	--	0.0000245 U	--	0.000177	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	µg/L	-	-	-	--	--	0.000049 U	--	0.00000681 J	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	µg/L	-	-	-	--	--	0.000049 U	--	0.0000646	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	--	0.0000245 U	--	0.0000245 U	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	--	0.0000245 U	--	0.0000245 U	--
Total pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	--	0.0000245 U	--	0.0000245 U	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	--	0.0000245 U	--	0.00000318 J	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	--	0.0000245 U	--	0.0000785	--
Total tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	--	0.0000098 U	--	0.0000049 U	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	--	*0.0000098 U*	--	*0.0000049 U*	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	--	0.0000098 U	--	0.0000049 U	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	--	0.0000098 U	--	0.0000049 U	--
Toxic Equivalents	µg/L	0.00003	0.00001	0.00001	--	--	0.0		0.000005872	--

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		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]								
Sample Location:					*MW-102S*	*MW-102S*	*MW-102S*	*MW-102S*	*MW-102S*	*MW-102S*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102511-JV-020*	*WG-56393-102511-JV-021*	*WG-56393-020612-JV-039*	*WG-56393-042512-JV-058*	*WG-56393-072312-JV-075*	*GW-56393-102312-JV-109*
Sample Date:		Drinking Water	Surface Water	Contact	*10/25/2011*	*10/25/2011*	*2/6/2012*	*4/25/2012*	*7/23/2012*	*10/23/2012*
Sample Type:			Interface			*Duplicate*				
	Units	a	b	c						
Metals										
Aluminum	µg/L	50	-	64000000	--	--	3.8	--	4.3	--
Antimony	µg/L	6	130	68000	--	--	0.040 J	--	0.050 U	--
Arsenic	µg/L	10	10	4300	--	--	0.16 J	--	0.2 J	--
Barium	µg/L	2000	1400	14000000	--	--	79.2	--	91.9	--
Beryllium	µg/L	4	41	290000	--	--	0.020 U	--	0.020 U	--
Cadmium	µg/L	5	5.1	190000	--	--	0.012 J	--	0.014 J	--
Chromium	µg/L	100	11	460000	--	--	0.05 J	--	0.09 J	--
Chromium VI (hexavalent)	µg/L	*100*	11	*460000*	--	--	*2.0 UJ*	--	*2.0 UJ*	--
Cobalt	µg/L	100	100	2400000	--	--	0.176	--	0.252	--
Copper	µg/L	1000	23	7400000	--	--	0.39	--	0.53	--
Iron	µg/L	300	-	58000000	--	--	52.9	--	26.2	--
Lead	µg/L	4	34	ID	--	--	0.020	--	0.046	--
Magnesium	µg/L	1100000	-	1000000000	22800	23100	26200	26800	24000	24300
Manganese	µg/L	50	5200	9100000	--	--	162[a]	--	133[a]	--
Mercury	µg/L	2	0.0013	56	0.0012	0.00119	0.00111 U	0.00074 J	0.00049 J	0.001 U
Nickel	µg/L	100	130	74000000	--	--	0.49	--	1.03	--
Selenium	µg/L	50	5	970000	--	--	1.0 U	--	1.0 U	--
Silver	µg/L	98	0.2	1500000	--	--	0.020 U	--	0.020 U	--
Sodium	µg/L	350000	-	1000000000	19200	20200	20300	23600	21700	22000
Thallium	µg/L	2	3.7	13000	--	--	0.0200 U	--	0.048	--
Vanadium	µg/L	62	27	970000	--	--	0.200 U	--	0.05 J	--
Zinc	µg/L	5000	310	110000000	--	--	0.32 J	--	0.8	--
General Chemistry										
Cyanide (amenable)	µg/L	200	-	57000	--	--	10 U	10 U	10 U	10 U
Cyanide (total)	µg/L	200	5.2	57000	5 J	6 J[b]	10 U	10 U	10 U	10 U
Field Parameters										
Conductivity	mS/cm	-	-	-	0.670	0.670	0.587	0.836	0.676	0.795
Dissolved Oxygen (DO)	mg/L	-	-	-	0.16	0.16	-	1.92	0.68	0.44
Oxidation Reduction Potential	millivolt	-	-	-	-45	-45	77	81	33	112.8
pH	s.u.	6.5-8.5	6.5-8.5	-	7.16	7.16	7.02	6.71	7.03	6.92
Temperature	Deg C	-	-	-	18.11	18.11	7	10.9	24.09	17.16
Turbidity	NTU	-	-	-	31.9	31.9	4.34	-	2.26	1.73

Notes:

[1] Cleanup criteria identified by MDEQ RRD Op Memo No. 1, updated 9/28/12, pursuant to 1994 PA 451 as amended.

[2] Also known as Methyl isobutyl ketone (MIBK)

U - Not present at or above the associated value.

J - Estimated concentration.

UJ - Estimated reporting limit.

R - Rejected.

[ ] - Exceeds Generic Cleanup Criteria.

Superscript letter notes the criterion exceeded.

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]								
Sample Location:					*MW-103D*	*MW-103D*	*MW-103D*	*MW-103D*	*MW-103D*	*MW-103D*
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	*WG-56393-102611-JV-023*	*WG-56393-020712-JV-043*	*WG-56393-020712-JV-044*	*WG-56393-042512-JV-060*	*WG-56393-072312-JV-077*	*GW-56393-102312-JV-108*
Sample Date:					*10/26/2011*	*2/7/2012*	*2/7/2012*	*4/25/2012*	*7/23/2012*	*10/23/2012*
Sample Type:							*Duplicate*			
	Units	a	b	c						
Volatile Organic Compounds										
Acetone	µg/L	2100	1700	31000000	R	R	R	R	20 U	20 U
Benzene	µg/L	5	200	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	ID	14000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	µg/L	80	ID	140000	0.50 U	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
Bromomethane (Methyl bromide)	µg/L	29	35	70000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	38000	2200	240000000	R	R	R	R	R	R
Carbon disulfide	µg/L	2300	ID	1200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	5	45	4600	0.50 U	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
Chlorobenzene	µg/L	100	25	86000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	µg/L	1700	1100	440000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform (Trichloromethane)	µg/L	80	350	150000	0.090 J	0.14 J	0.16 J	0.13 J	0.12 J	0.090 J
Chloromethane (Methyl chloride)	µg/L	1100	ID	490000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	-	390	2.0 U	2.0 U	2.0 U	R	2.0 U	2.0 U
Dibromochloromethane	µg/L	80	ID	18000	0.50 U	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	5.7	25	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	µg/L	600	13	160000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	µg/L	19	28	2000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	µg/L	75	17	6400	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane (CFC-12)	µg/L	4800	ID	300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,1-Dichloroethane	µg/L	2500	740	2400000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	µg/L	5	360	19000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	µg/L	7	130	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	µg/L	70	620	200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	µg/L	100	1500	220000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	µg/L	5	230	16000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	74	18	170000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Hexanone	µg/L	2900	ID	5200000	R	20 U	20 U	R	20 U	20 U
Isopropyl benzene	µg/L	2300	28	56000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methyl tert butyl ether (MTBE)	µg/L	40	7100	610000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Methyl-2-pentanone [2]	µg/L	5200	ID	13000000	20 U	R	R	R	20 U	20 U
Methylene chloride	µg/L	5	1500	220000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	µg/L	100	80	9700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	µg/L	35	78	4700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	µg/L	5	60	12000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	790	270	530000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.20 J
1,2,4-Trichlorobenzene	µg/L	70	99	19000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	µg/L	200	89	1300000	0.50 U	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
1,1,2-Trichloroethane	µg/L	5	330	21000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	5	200	22000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane (CFC-11)	µg/L	7300	-	1100000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	µg/L	2	13	1000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m&p-Xylenes	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-103D	MW-103D	MW-103D	MW-103D	MW-103D	MW-103D
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	WG-56393-102611-JV-023	WG-56393-020712-JV-043	WG-56393-020712-JV-044	WG-56393-042512-JV-060	WG-56393-072312-JV-077	GW-56393-102312-JV-108
Sample Date:					10/26/2011	2/7/2012	2/7/2012	4/25/2012	7/23/2012	10/23/2012
Sample Type:							Duplicate			
	Units	a	b	c						
Semi-Volatile Organic Compounds										
Acenaphthene	µg/L	3800	38	4200	--	0.20 U	0.20 U	--	0.20 U	--
Acenaphthylene	µg/L	150	ID	3900	--	0.20 U	0.20 U	--	0.20 U	--
Anthracene	µg/L	43	ID	43	--	0.20 U	0.20 U	--	0.20 U	--
Benzo(a)anthracene	µg/L	8.5	ID	9.4	--	0.20 U	0.20 U	--	0.20 U	--
Benzo(a)pyrene	µg/L	5	ID	1	--	0.20 U	0.20 U	--	0.20 U	--
Benzo(b)fluoranthene	µg/L	1.5	ID	1.5	--	0.20 U	0.20 U	--	0.20 U	--
Benzo(g,h,i)perylene	µg/L	1	-	1	--	0.20 U	0.20 U	--	0.20 U	--
Benzo(k)fluoranthene	µg/L	1	-	1	--	0.20 U	0.20 U	--	0.20 U	--
Butyl benzylphthalate (BBP)	µg/L	2700	67	2700	--	0.20 U	0.20 U	--	0.041 J	--
Carbazole	µg/L	350	10	7400	--	0.20 U	0.20 U	--	0.20 U	--
4-Chloro-3-methylphenol	µg/L	420	7.4	79000	--	0.50 U	0.48 U	--	0.49 U	--
bis(2-Chloroethyl)ether	µg/L	8.3	1	5700	--	0.20 U	0.20 U	--	0.20 U	--
2-Chlorophenol	µg/L	130	18	94000	--	0.50 U	0.48 U	--	0.49 U	--
Chrysene	µg/L	1.6	ID	1.6	--	0.20 U	0.20 U	--	0.20 U	--
Dibenz(a,h)anthracene	µg/L	2	ID	2	--	0.20 U	0.20 U	--	0.20 U	--
Dibenzofuran	µg/L	ID	4	ID	--	0.20 U	0.20 U	--	0.20 U	--
3,3'-Dichlorobenzidine	µg/L	4.3	0.3	180	--	2.0 U	2.0 U	--	2.0 U	--
2,4-Dichlorophenol	µg/L	210	11	48000	--	0.50 U	0.48 U	--	0.49 U	--
Diethyl phthalate	µg/L	16000	110	1100000	--	0.20 U	0.20 U	--	0.20 U	--
Dimethyl phthalate	µg/L	210000	-	4200000	--	0.20 U	0.20 U	--	0.20 U	--
2,4-Dimethylphenol	µg/L	1000	380	520000	--	4.0 U	3.9 U	--	3.9 U	--
Di-n-butylphthalate (DBP)	µg/L	2500	9.7	11000	--	0.20 U	0.20 U	--	0.035 J	--
4,6-Dinitro-2-methylphenol	µg/L	20	-	9500	--	2.0 U	2.0 U	--	2.0 U	--
2,4-Dinitrotoluene	µg/L	32	-	8600	--	0.20 U	0.20 U	--	0.20 U	--
Di-n-octyl phthalate (DnOP)	µg/L	380	ID	400	--	0.20 U	0.20 U	--	0.20 U	--
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	6	25	320	--	1.0 U	0.96 U	--	0.97 U	--
Fluoranthene	µg/L	210	1.6	210	--	0.20 U	0.20 U	--	0.20 U	--
Fluorene	µg/L	2000	12	2000	--	0.20 U	0.20 U	--	0.20 U	--
Hexachlorobenzene	µg/L	1	0.2	4.6	--	0.20 U	0.20 U	--	0.20 U	--
Hexachlorobutadiene	µg/L	42	0.053	400	--	0.20 U	0.20 U	--	0.20 U	--
Hexachlorocyclopentadiene	µg/L	50	ID	1600	--	1.0 U	0.96 U	--	0.97 U	--
Hexachloroethane	µg/L	21	6.7	1900	--	0.20 U	0.20 U	--	0.20 U	--
Indeno(1,2,3-cd)pyrene	µg/L	2	ID	2	--	0.20 U	0.20 U	--	0.20 U	--
Isophorone	µg/L	3100	1300	990000	--	0.20 U	0.20 U	--	0.20 U	--
2-Methylnaphthalene	µg/L	750	19	25000	--	0.20 U	0.20 U	--	0.20 U	--
2-Methylphenol	µg/L	1000	30	810000	--	0.50 U	0.48 U	--	0.49 U	--
4-Methylphenol	µg/L	1000	30	810000	--	0.50 U	0.48 U	--	0.49 U	--
Naphthalene	µg/L	1500	11	31000	--	0.075 J	0.20 U	--	0.031 J	--
Nitrobenzene	µg/L	9.6	180	11000	--	0.20 U	0.20 U	--	0.20 U	--
2-Nitrophenol	µg/L	58	ID	79000	--	0.50 U	0.48 U	--	0.49 U	--
N-Nitrosodi-n-propylamine	µg/L	5	-	360	--	0.20 U	0.20 U	--	0.20 U	--
N-Nitrosodiphenylamine	µg/L	1100	-	35000	--	0.20 U	0.20 U	--	0.20 U	--
Pentachlorophenol	µg/L	1	G,X	200	--	1.0 U	0.96 U	--	0.97 U	--
Phenanthrene	µg/L	150	2	1000	--	0.20 U	0.20 U	--	0.20 U	--
Phenol	µg/L	13000	450	29000000	--	0.50 U	0.48 U	--	0.49 U	--
Pyrene	µg/L	140	ID	140	--	0.20 U	0.20 U	--	0.20 U	--
2,4,5-Trichlorophenol	µg/L	2100	-	170000	--	0.50 U	0.48 U	--	0.49 U	--
2,4,6-Trichlorophenol	µg/L	470	5	10000	--	0.50 U	0.48 U	--	0.49 U	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]								
Sample Location:					*MW-103D*	*MW-103D*	*MW-103D*	*MW-103D*	*MW-103D*	*MW-103D*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102611-JV-023*	*WG-56393-020712-JV-043*	*WG-56393-020712-JV-044*	*WG-56393-042512-JV-060*	*WG-56393-072312-JV-077*	*GW-56393-102312-JV-108*
Sample Date:		Drinking Water	Surface Water	Contact	*10/26/2011*	*2/7/2012*	*2/7/2012*	*4/25/2012*	*7/23/2012*	*10/23/2012*
Sample Type:			Interface				*Duplicate*			
	Units	a	b	c						
PCBs										
Aroclor-1016 (PCB-1016)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1221 (PCB-1221)	µg/L	-	-	-	0.039 U	0.041 U	0.040 U	0.040 U	0.040 U	0.040 U
Aroclor-1232 (PCB-1232)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1242 (PCB-1242)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1248 (PCB-1248)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1254 (PCB-1254)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1260 (PCB-1260)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Total PCBs	µg/L	0.5	200	3.3	ND	ND	ND	ND	ND	ND
Dioxins										
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.00000507 J	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.000024 U	--
Total heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.0000101 J	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.0000429	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.000168	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.000024 U	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.000024 U	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.000024 U	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.000024 U	--
Total hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.00000585 J	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.00000885 J	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.00000394 J	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.0000224 J	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.000163	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	µg/L	-	-	-	--	0.00005 U	0.000049 U	--	0.00000471 J	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	µg/L	-	-	-	--	0.00005 U	0.000049 U	--	0.0000753 J	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.000024 U	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.000024 U	--
Total pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.000024 U	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.00000306 J	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.000025 U	0.0000245 U	--	0.0000497	--
Total tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.00001 U	0.0000098 U	--	0.00000481 U	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.00001 U	0.0000098 U	--	0.00000481 U	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.00001 U	0.0000098 U	--	0.00000481 U	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.00001 U	0.0000098 U	--	0.00000481 U	--
Toxic Equivalents	µg/L	0.00003	0.00001	0.00001	--	0.0	0.0	--	0.000005529	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]								
Sample Location:					*MW-103D*	*MW-103D*	*MW-103D*	*MW-103D*	*MW-103D*	*MW-103D*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102611-JV-023*	*WG-56393-020712-JV-043*	*WG-56393-020712-JV-044*	*WG-56393-042512-JV-060*	*WG-56393-072312-JV-077*	*GW-56393-102312-JV-108*
Sample Date:		Drinking Water	Surface Water	Contact	10/26/2011	2/7/2012	2/7/2012	4/25/2012	7/23/2012	10/23/2012
Sample Type:			Interface				*Duplicate*			
	Units	a	b	c						
Metals										
Aluminum	µg/L	50	-	64000000	--	4.5	4.0	--	5.3	--
Antimony	µg/L	6	130	68000	--	0.050 U	0.050 U	--	0.050 U	--
Arsenic	µg/L	10	10	4300	--	0.17 J	0.17 J	--	0.2 J	--
Barium	µg/L	2000	1400	14000000	--	64.6	63.7	--	59.8	--
Beryllium	µg/L	4	41	290000	--	0.020 U	0.020 U	--	0.020 U	--
Cadmium	µg/L	5	5.1	190000	--	0.020 U	0.020 U	--	0.020 U	--
Chromium	µg/L	100	11	460000	--	0.17 J	0.18 J	--	0.19 J	--
Chromium VI (hexavalent)	µg/L	100	11	460000	--	2.0 UJ	2.0 UJ	--	2.0 UJ	--
Cobalt	µg/L	100	100	2400000	--	0.047	0.050	--	0.092	--
Copper	µg/L	1000	23	7400000	--	0.33	0.28	--	0.33	--
Iron	µg/L	300	-	58000000	--	20.0 U	20.0 U	--	17.5 J	--
Lead	µg/L	4	34	ID	--	0.023	0.020 U	--	0.023	--
Magnesium	µg/L	1100000	-	1000000000	20500	23200	23400	23200	21400	22100
Manganese	µg/L	50	5200	9100000	--	0.57	0.45	--	0.882	--
Mercury	µg/L	2	0.0013	56	0.001 U	0.001 U	0.001 U	0.00075 J	0.00021 J	0.001 U
Nickel	µg/L	100	130	74000000	--	0.26	0.28	--	0.67	--
Selenium	µg/L	50	5	970000	--	0.2 J	0.2 J	--	1.0 U	--
Silver	µg/L	98	0.2	1500000	--	0.020 U	0.020 U	--	0.020 U	--
Sodium	µg/L	350000	-	1000000000	18400	22400	19800	21700	19300	18800
Thallium	µg/L	2	3.7	13000	--	0.0200 U	0.0200 U	--	0.022 U	--
Vanadium	µg/L	62	27	970000	--	0.200 U	0.200 U	--	0.13 J	--
Zinc	µg/L	5000	310	110000000	--	0.52	0.36 J	--	0.4 J	--
General Chemistry										
Cyanide (amenable)	µg/L	200	-	57000	--	10 U	10 U	10 U	10 U	10 U
Cyanide (total)	µg/L	200	5.2	57000	9 J[b]	10 U	10 U	10 U	10 U	10 U
Field Parameters										
Conductivity	mS/cm	-	-	-	0.549	0.503	0.503	0.612	0.98	0.712
Dissolved Oxygen (DO)	mg/L	-	-	-	0.25	-	-	1.95	2.48	1.10
Oxidation Reduction Potential	millivolt	-	-	-	27.2	173	173	2230	36	143.6
pH	s.u.	6.5-8.5	6.5-8.5	-	6.98	7.37	7.37	5.76	6.9	6.94
Temperature	Deg C	-	-	-	11.65	9.7	9.7	13.35	19.9	13.21
Turbidity	NTU	-	-	-	9.82	<2.98	<2.98	<2.00	2.97	3.61

Notes:

[1] Cleanup criteria identified by MDEQ RRD Op Memo No. 1, updated 9/28/12, pursuant to 1994 PA 451 as amended.

[2] Also known as Methyl isobutyl ketone (MIBK).

U - Not present at or above the associated value.

J - Estimated concentration.

UJ - Estimated reporting limit.

R - Rejected.

[ ] - Exceeds Generic Cleanup Criteria.

Superscript letter notes the criterion exceeded.

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-104D	MW-104D	MW-104D	MW-104D	MW-104D	MW-104D
Sample Identification:		Non-Residential	Groundwater	Groundwater	WG-56393-102611-JV-024	WG-56393-020712-JV-046	WG-56393-042512-JV-062	WG-56393-042512-JV-063	WG-56393-072312-JV-079	GW-56393-102212-JV-107
Sample Date:		Drinking Water	Surface Water	Contact	10/26/2011	2/7/2012	4/25/2012	4/25/2012	7/23/2012	10/22/2012
Sample Type:			Interface					Duplicate		
	Units	a	b	c						
Volatile Organic Compounds										
Acetone	µg/L	2100	1700	31000000	R	R	R	R	20 U	20 U
Benzene	µg/L	5	200	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	ID	14000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	µg/L	80	ID	140000	0.50 U	0.50 U	0.50 UJ	0.50 UJ	0.50 U	0.50 U
Bromomethane (Methyl bromide)	µg/L	29	35	70000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	38000	2200	240000000	R	R	R	R	R	R
Carbon disulfide	µg/L	2300	ID	1200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	5	45	4600	0.50 U	0.50 U	0.50 UJ	0.50 UJ	0.50 U	0.50 U
Chlorobenzene	µg/L	100	25	86000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	µg/L	1700	1100	440000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform (Trichloromethane)	µg/L	80	350	150000	0.50 U	0.50 U	0.50 U	0.50 U	0.090 J	0.50 U
Chloromethane (Methyl chloride)	µg/L	1100	ID	490000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	-	390	2.0 U	2.0 U	R	R	2.0 U	2.0 U
Dibromochloromethane	µg/L	80	ID	18000	0.50 U	0.50 U	0.50 UJ	0.50 UJ	0.50 U	0.50 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	5.7	25	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	µg/L	600	13	160000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	µg/L	19	28	2000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	µg/L	75	17	6400	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane (CFC-12)	µg/L	4800	ID	300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,1-Dichloroethane	µg/L	2500	740	2400000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	µg/L	5	360	19000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	µg/L	7	130	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	µg/L	70	620	200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	µg/L	100	1500	220000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	µg/L	5	230	16000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	74	18	170000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Hexanone	µg/L	2900	ID	5200000	R	20 U	R	R	20 U	20 U
Isopropyl benzene	µg/L	2300	28	56000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methyl tert butyl ether (MTBE)	µg/L	40	7100	610000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Methyl-2-pentanone [2]	µg/L	5200	ID	13000000	20 U	R	R	R	20 U	20 U
Methylene chloride	µg/L	5	1500	220000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	µg/L	100	80	9700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	µg/L	35	78	4700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	µg/L	5	60	12000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	790	270	530000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.11 J
1,2,4-Trichlorobenzene	µg/L	70	99	19000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	µg/L	200	89	1300000	0.50 U	0.50 U	0.50 UJ	0.50 UJ	0.50 U	0.50 U
1,1,2-Trichloroethane	µg/L	5	330	21000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	5	200	22000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane (CFC-11)	µg/L	7300	-	1100000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	µg/L	2	13	1000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m&p-Xylenes	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-104D	MW-104D	MW-104D	MW-104D	MW-104D	MW-104D
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	WG-56393-102611-JV-024	WG-56393-020712-JV-046	WG-56393-042512-JV-062	WG-56393-042512-JV-063	WG-56393-072312-JV-079	GW-56393-102212-JV-107
Sample Date:					10/26/2011	2/7/2012	4/25/2012	4/25/2012	7/23/2012	10/22/2012
Sample Type:								Duplicate		
	Units	a	b	c						
Semi-Volatile Organic Compounds										
Acenaphthene	µg/L	3800	38	4200	--	0.20 U	--	--	0.20 U	--
Acenaphthylene	µg/L	150	ID	3900	--	0.20 U	--	--	0.20 U	--
Anthracene	µg/L	43	ID	43	--	0.20 U	--	--	0.20 U	--
Benzo(a)anthracene	µg/L	8.5	ID	9.4	--	0.20 U	--	--	0.20 U	--
Benzo(a)pyrene	µg/L	5	ID	1	--	0.20 U	--	--	0.20 U	--
Benzo(b)fluoranthene	µg/L	1.5	ID	1.5	--	0.20 U	--	--	0.20 U	--
Benzo(g,h,i)perylene	µg/L	1	-	1	--	0.20 U	--	--	0.20 U	--
Benzo(k)fluoranthene	µg/L	1	-	1	--	0.20 U	--	--	0.20 U	--
Butyl benzylphthalate (BBP)	µg/L	2700	67	2700	--	0.20 U	--	--	0.039 J	--
Carbazole	µg/L	350	10	7400	--	0.20 U	--	--	0.20 U	--
4-Chloro-3-methylphenol	µg/L	420	7.4	79000	--	0.48 U	--	--	0.49 U	--
bis(2-Chloroethyl)ether	µg/L	8.3	1	5700	--	0.20 U	--	--	0.20 U	--
2-Chlorophenol	µg/L	130	18	94000	--	0.48 U	--	--	0.49 U	--
Chrysene	µg/L	1.6	ID	1.6	--	0.20 U	--	--	0.20 U	--
Dibenz(a,h)anthracene	µg/L	2	ID	2	--	0.20 U	--	--	0.20 U	--
Dibenzofuran	µg/L	ID	4	ID	--	0.20 U	--	--	0.20 U	--
3,3'-Dichlorobenzidine	µg/L	4.3	0.3	180	--	2.0 U	--	--	2.0 U	--
2,4-Dichlorophenol	µg/L	210	11	48000	--	0.48 U	--	--	0.49 U	--
Diethyl phthalate	µg/L	16000	110	1100000	--	0.20 U	--	--	0.20 U	--
Dimethyl phthalate	µg/L	210000	-	4200000	--	0.20 U	--	--	0.20 U	--
2,4-Dimethylphenol	µg/L	1000	380	520000	--	3.9 U	--	--	3.9 U	--
Di-n-butylphthalate (DBP)	µg/L	2500	9.7	11000	--	0.20 U	--	--	0.042 J	--
4,6-Dinitro-2-methylphenol	µg/L	20	-	9500	--	2.0 U	--	--	2.0 U	--
2,4-Dinitrotoluene	µg/L	32	-	8600	--	0.20 U	--	--	0.20 U	--
Di-n-octyl phthalate (DnOP)	µg/L	380	ID	400	--	0.20 U	--	--	0.20 U	--
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	6	25	320	--	0.96 U	--	--	0.17 J	--
Fluoranthene	µg/L	210	1.6	210	--	0.20 U	--	--	0.20 U	--
Fluorene	µg/L	2000	12	2000	--	0.20 U	--	--	0.20 U	--
Hexachlorobenzene	µg/L	1	0.2	4.6	--	0.20 U	--	--	0.20 U	--
Hexachlorobutadiene	µg/L	42	0.053	400	--	0.20 U	--	--	0.20 U	--
Hexachlorocyclopentadiene	µg/L	50	ID	1600	--	0.96 U	--	--	0.97 U	--
Hexachloroethane	µg/L	21	6.7	1900	--	0.20 U	--	--	0.20 U	--
Indeno(1,2,3-cd)pyrene	µg/L	2	ID	2	--	0.20 U	--	--	0.20 U	--
Isophorone	µg/L	3100	1300	990000	--	0.20 U	--	--	0.20 U	--
2-Methylnaphthalene	µg/L	750	19	25000	--	0.20 U	--	--	0.20 U	--
2-Methylphenol	µg/L	1000	30	810000	--	0.48 U	--	--	0.49 U	--
4-Methylphenol	µg/L	1000	30	810000	--	0.48 U	--	--	0.49 U	--
Naphthalene	µg/L	1500	11	31000	--	0.20 U	--	--	0.034 J	--
Nitrobenzene	µg/L	9.6	180	11000	--	0.20 U	--	--	0.20 U	--
2-Nitrophenol	µg/L	58	ID	79000	--	0.48 U	--	--	0.49 U	--
N-Nitrosodi-n-propylamine	µg/L	5	-	360	--	0.20 U	--	--	0.20 U	--
N-Nitrosodiphenylamine	µg/L	1100	-	35000	--	0.20 U	--	--	0.20 U	--
Pentachlorophenol	µg/L	1	G,X	200	--	0.96 U	--	--	0.97 U	--
Phenanthrene	µg/L	150	2	1000	--	0.20 U	--	--	0.20 U	--
Phenol	µg/L	13000	450	29000000	--	0.48 U	--	--	0.49 U	--
Pyrene	µg/L	140	ID	140	--	0.20 U	--	--	0.20 U	--
2,4,5-Trichlorophenol	µg/L	2100	-	170000	--	0.48 U	--	--	0.49 U	--
2,4,6-Trichlorophenol	µg/L	470	5	10000	--	0.48 U	--	--	0.49 U	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]								
Sample Location:					*MW-104D*	*MW-104D*	*MW-104D*	*MW-104D*	*MW-104D*	*MW-104D*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102611-JV-024*	*WG-56393-020712-JV-046*	*WG-56393-042512-JV-062*	*WG-56393-042512-JV-063*	*WG-56393-072312-JV-079*	*GW-56393-102212-JV-107*
Sample Date:		Drinking Water	Surface Water	Contact	*10/26/2011*	*2/7/2012*	*4/25/2012*	*4/25/2012*	*7/23/2012*	*10/22/2012*
Sample Type:			Interface					*Duplicate*		
	Units	a	b	c						
PCBs										
Aroclor-1016 (PCB-1016)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1221 (PCB-1221)	µg/L	-	-	-	0.040 U	0.041 U	0.040 U	0.040 U	0.040 U	0.040 U
Aroclor-1232 (PCB-1232)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1242 (PCB-1242)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1248 (PCB-1248)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1254 (PCB-1254)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1260 (PCB-1260)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Total PCBs	µg/L	0.5	200	3.3	ND	ND	ND	ND	ND	ND
Dioxins										
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000024 U	--	--	0.00000877 J	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000024 U	--	--	0.0000245 U	--
Total heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000024 U	--	--	0.00000877 J	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.000024 U	--	--	0.000077	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.000024 U	--	--	0.000305	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000024 U	--	--	0.0000245 U	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000024 U	--	--	0.0000245 U	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000024 U	--	--	0.0000245 U	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000024 U	--	--	0.0000245 U	--
Total hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000024 U	--	--	0.0000245 U	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000024 U	--	--	0.0000137 J	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000024 U	--	--	0.00000769 J	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000024 U	--	--	0.0000338	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000024 U	--	--	0.000241	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	µg/L	-	-	-	--	0.0000481 U	--	--	0.0000112 J	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	µg/L	-	-	-	--	0.0000481 U	--	--	0.000175	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000024 U	--	--	0.0000245 U	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000024 U	--	--	0.0000245 U	--
Total pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000024 U	--	--	0.0000245 U	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.000024 U	--	--	0.00000307 J	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.000024 U	--	--	0.0000524	--
Total tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.00000962 U	--	--	0.0000049 U	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.00000962 U	--	--	0.0000049 U	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.00000962 U	--	--	0.0000049 U	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.00000962 U	--	--	0.0000049 U	--
Toxic Equivalents	µg/L	0.00003	0.00001	0.00001	--	0.0	--	--	0.000007912	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]								
Sample Location:					*MW-104D*	*MW-104D*	*MW-104D*	*MW-104D*	*MW-104D*	*MW-104D*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102611-JV-024*	*WG-56393-020712-JV-046*	*WG-56393-042512-JV-062*	*WG-56393-042512-JV-063*	*WG-56393-072312-JV-079*	*GW-56393-102212-JV-107*
Sample Date:		Drinking Water	Surface Water	Contact	10/26/2011	2/7/2012	4/25/2012	4/25/2012	7/23/2012	10/22/2012
Sample Type:			Interface					*Duplicate*		
	Units	a	b	c						
Metals										
Aluminum	µg/L	50	-	64000000	--	4.7	--	--	3.2	--
Antimony	µg/L	6	130	68000	--	0.050 U	--	--	0.050 U	--
Arsenic	µg/L	10	10	4300	--	0.23 J	--	--	0.2 J	--
Barium	µg/L	2000	1400	14000000	--	66.9	--	--	67.3	--
Beryllium	µg/L	4	41	290000	--	0.020 U	--	--	0.020 U	--
Cadmium	µg/L	5	5.1	190000	--	0.008 J	--	--	0.020 U	--
Chromium	µg/L	100	11	460000	--	0.31	--	--	0.33	--
Chromium VI (hexavalent)	µg/L	100	11	460000	--	2.0 UJ	--	--	2.0 UJ	--
Cobalt	µg/L	100	100	2400000	--	0.034	--	--	0.086	--
Copper	µg/L	1000	23	7400000	--	0.27	--	--	0.29	--
Iron	µg/L	300	-	58000000	--	20.0 U	--	--	5.4 J	--
Lead	µg/L	4	34	ID	--	0.027	--	--	0.017 J	--
Magnesium	µg/L	1100000	-	1000000000	22200	22800	22600	23100	22600	23200
Manganese	µg/L	50	5200	9100000	--	0.73	--	--	0.196	--
Mercury	µg/L	2	0.0013	56	0.001 U	0.001 U	0.00061 J	0.00064 J	0.00024 J	0.001 U
Nickel	µg/L	100	130	74000000	--	0.2	--	--	0.77	--
Selenium	µg/L	50	5	970000	--	0.2 J	--	--	1.0 U	--
Silver	µg/L	98	0.2	1500000	--	0.020 U	--	--	0.020 U	--
Sodium	µg/L	350000	-	1000000000	28000	21900	21000	21900	20200	21600
Thallium	µg/L	2	3.7	13000	--	0.0200 U	--	--	0.020 U	--
Vanadium	µg/L	62	27	970000	--	0.200 U	--	--	0.11 J	--
Zinc	µg/L	5000	310	110000000	--	0.63	--	--	0.5	--
General Chemistry										
Cyanide (amenable)	µg/L	200	-	57000	--	10 U	10 U	10 U	10 U	10 U
Cyanide (total)	µg/L	200	5.2	57000	10 U	10 U	10 U	10 U	10 U	10 U
Field Parameters										
Conductivity	mS/cm	-	-	-	0.621	0.503	0.734	0.734	0.619	0.830
Dissolved Oxygen (DO)	mg/L	-	-	-	1.29	-	2.74	2.74	3.09	1.94
Oxidation Reduction Potential	millivolt	-	-	-	-26.1	188	233	233	116	95.7
pH	s.u.	6.5-8.5	6.5-8.5	-	7.5	7.35	7.06	7.06	7.42	7.17
Temperature	Deg C	-	-	-	12.28	10.1	13.1	13.1	20.4	13.78
Turbidity	NTU	-	-	-	2.01	<2.73	<2.77	<2.77	1.78	0.71

Notes:

[1] Cleanup criteria identified by MDEQ RRD Op Memo No. 1, updated 9/28/12, pursuant to 1994 PA 451 as amended.

[2] Also known as Methyl isobutyl ketone (MIBK).

U - Not present at or above the associated value.

J - Estimated concentration.

UJ - Estimated reporting limit.

R - Rejected.

[ ] - Exceeds Generic Cleanup Criteria.

Superscript letter notes the criterion exceeded.

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-104S	MW-104S	MW-104S	MW-104S	MW-104S
Sample Identification:		Non-Residential	Groundwater	Groundwater	WG-56393-102611-JV-025	WG-56393-020712-JV-045	WG-56393-042512-JV-061	WG-56393-072312-JV-078	GW-56393-102212-JV-106
Sample Date:		Drinking Water	Surface Water	Contact	10/26/2011	2/7/2012	4/25/2012	7/23/2012	10/22/2012
Sample Type:			Interface						
	Units	a	b	c					
Volatile Organic Compounds									
Acetone	µg/L	2100	1700	31000000	R	R	R	20 U	20 U
Benzene	µg/L	5	200	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	ID	14000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	µg/L	80	ID	140000	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
Bromomethane (Methyl bromide)	µg/L	29	35	70000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	38000	2200	240000000	R	R	R	R	R
Carbon disulfide	µg/L	2300	ID	1200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	5	45	4600	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
Chlorobenzene	µg/L	100	25	86000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	µg/L	1700	1100	440000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform (Trichloromethane)	µg/L	80	350	150000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane (Methyl chloride)	µg/L	1100	ID	490000	0.50 U	0.50 U	0.10 J	0.50 U	0.50 UJ
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	-	390	2.0 U	2.0 U	R	2.0 U	2.0 U
Dibromochloromethane	µg/L	80	ID	18000	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	5.7	25	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	µg/L	600	13	160000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	µg/L	19	28	2000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	µg/L	75	17	6400	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane (CFC-12)	µg/L	4800	ID	300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,1-Dichloroethane	µg/L	2500	740	2400000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	µg/L	5	360	19000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	µg/L	7	130	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	µg/L	70	620	200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	µg/L	100	1500	220000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	µg/L	5	230	16000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	74	18	170000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Hexanone	µg/L	2900	ID	5200000	R	20 U	R	20 U	20 U
Isopropyl benzene	µg/L	2300	28	56000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methyl tert butyl ether (MTBE)	µg/L	40	7100	610000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Methyl-2-pentanone [2]	µg/L	5200	ID	13000000	20 U	R	R	20 U	20 U
Methylene chloride	µg/L	5	1500	220000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	µg/L	100	80	9700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	µg/L	35	78	4700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	µg/L	5	60	12000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	790	270	530000	0.50 U	0.50 U	0.50 U	0.50 U	0.29 J
1,2,4-Trichlorobenzene	µg/L	70	99	19000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	µg/L	200	89	1300000	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
1,1,2-Trichloroethane	µg/L	5	330	21000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	5	200	22000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane (CFC-11)	µg/L	7300	-	1100000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	µg/L	2	13	1000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m&p-Xylenes	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-104S	MW-104S	MW-104S	MW-104S	MW-104S
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	WG-56393-102611-JV-025	WG-56393-020712-JV-045	WG-56393-042512-JV-061	WG-56393-072312-JV-078	GW-56393-102212-JV-106
Sample Date:					10/26/2011	2/7/2012	4/25/2012	7/23/2012	10/22/2012
Sample Type:									
	Units	a	b	c					
Semi-Volatile Organic Compounds									
Acenaphthene	µg/L	3800	38	4200	--	0.20 U	--	0.20 U	--
Acenaphthylene	µg/L	150	ID	3900	--	0.20 U	--	0.20 U	--
Anthracene	µg/L	43	ID	43	--	0.20 U	--	0.20 U	--
Benzo(a)anthracene	µg/L	8.5	ID	9.4	--	0.20 U	--	0.20 U	--
Benzo(a)pyrene	µg/L	5	ID	1	--	0.20 U	--	0.20 U	--
Benzo(b)fluoranthene	µg/L	1.5	ID	1.5	--	0.20 U	--	0.20 U	--
Benzo(g,h,i)perylene	µg/L	1	-	1	--	0.20 U	--	0.20 U	--
Benzo(k)fluoranthene	µg/L	1	-	1	--	0.20 U	--	0.20 U	--
Butyl benzylphthalate (BBP)	µg/L	2700	67	2700	--	0.20 U	--	0.045 J	--
Carbazole	µg/L	350	10	7400	--	0.20 U	--	0.20 U	--
4-Chloro-3-methylphenol	µg/L	420	7.4	79000	--	0.48 U	--	0.50 U	--
bis(2-Chloroethyl)ether	µg/L	8.3	1	5700	--	0.20 U	--	0.20 U	--
2-Chlorophenol	µg/L	130	18	94000	--	0.48 U	--	0.50 U	--
Chrysene	µg/L	1.6	ID	1.6	--	0.20 U	--	0.20 U	--
Dibenz(a,h)anthracene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	--
Dibenzofuran	µg/L	ID	4	ID	--	0.20 U	--	0.20 U	--
3,3'-Dichlorobenzidine	µg/L	4.3	0.3	180	--	2.0 U	--	2.0 U	--
2,4-Dichlorophenol	µg/L	210	11	48000	--	0.48 U	--	0.50 U	--
Diethyl phthalate	µg/L	16000	110	1100000	--	0.20 U	--	0.20 U	--
Dimethyl phthalate	µg/L	210000	-	4200000	--	0.20 U	--	0.20 U	--
2,4-Dimethylphenol	µg/L	1000	380	520000	--	3.9 U	--	4.0 U	--
Di-n-butylphthalate (DBP)	µg/L	2500	9.7	11000	--	0.20 U	--	0.066 J	--
4,6-Dinitro-2-methylphenol	µg/L	20	-	9500	--	2.0 U	--	2.0 U	--
2,4-Dinitrotoluene	µg/L	32	-	8600	--	0.20 U	--	0.20 U	--
Di-n-octyl phthalate (DnOP)	µg/L	380	ID	400	--	0.20 U	--	0.20 U	--
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	6	25	320	--	0.96 U	--	0.99 U	--
Fluoranthene	µg/L	210	1.6	210	--	0.20 U	--	0.20 U	--
Fluorene	µg/L	2000	12	2000	--	0.20 U	--	0.20 U	--
Hexachlorobenzene	µg/L	1	0.2	4.6	--	0.20 U	--	0.20 U	--
Hexachlorobutadiene	µg/L	42	0.053	400	--	0.20 U	--	0.20 U	--
Hexachlorocyclopentadiene	µg/L	50	ID	1600	--	0.96 U	--	0.99 U	--
Hexachloroethane	µg/L	21	6.7	1900	--	0.20 U	--	0.20 U	--
Indeno(1,2,3-cd)pyrene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	--
Isophorone	µg/L	3100	1300	990000	--	0.20 U	--	0.20 U	--
2-Methylnaphthalene	µg/L	750	19	25000	--	0.20 U	--	0.20 U	--
2-Methylphenol	µg/L	1000	30	810000	--	0.48 U	--	0.50 U	--
4-Methylphenol	µg/L	1000	30	810000	--	0.48 U	--	0.50 U	--
Naphthalene	µg/L	1500	11	31000	--	0.20 U	--	0.030 J	--
Nitrobenzene	µg/L	9.6	180	11000	--	0.20 U	--	0.20 U	--
2-Nitrophenol	µg/L	58	ID	79000	--	0.48 U	--	0.50 U	--
N-Nitrosodi-n-propylamine	µg/L	5	-	360	--	0.20 U	--	0.20 U	--
N-Nitrosodiphenylamine	µg/L	1100	-	35000	--	0.20 U	--	0.20 U	--
Pentachlorophenol	µg/L	1	G,X	200	--	0.96 U	--	0.99 U	--
Phenanthrene	µg/L	150	2	1000	--	0.20 U	--	0.20 U	--
Phenol	µg/L	13000	450	29000000	--	0.48 U	--	0.50 U	--
Pyrene	µg/L	140	ID	140	--	0.20 U	--	0.20 U	--
2,4,5-Trichlorophenol	µg/L	2100	-	170000	--	0.48 U	--	0.50 U	--
2,4,6-Trichlorophenol	µg/L	470	5	10000	--	0.48 U	--	0.50 U	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-104S	MW-104S	MW-104S	MW-104S	MW-104S
Sample Identification:		Non-Residential	Groundwater	Groundwater	WG-56393-102611-JV-025	WG-56393-020712-JV-045	WG-56393-042512-JV-061	WG-56393-072312-JV-078	GW-56393-102212-JV-106
Sample Date:		Drinking Water	Surface Water	Contact	10/26/2011	2/7/2012	4/25/2012	7/23/2012	10/22/2012
Sample Type:			Interface						
	Units	a	b	c					
PCBs									
Aroclor-1016 (PCB-1016)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U
Aroclor-1221 (PCB-1221)	µg/L	-	-	-	0.040 U	0.041 U	0.040 U	0.040 U	0.040 U
Aroclor-1232 (PCB-1232)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U
Aroclor-1242 (PCB-1242)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U
Aroclor-1248 (PCB-1248)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U
Aroclor-1254 (PCB-1254)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U
Aroclor-1260 (PCB-1260)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U
Total PCBs	µg/L	0.5	200	3.3	ND	ND	ND	ND	ND
Dioxins									
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000024 U	--	0.0000232 J	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000024 U	--	0.0000255 U	--
Total heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000024 U	--	0.0000728	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.000024 U	--	0.000159	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.000024 U	--	0.00052	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000024 U	--	0.0000255 U	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000024 U	--	0.0000255 U	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000024 U	--	0.0000255 U	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000024 U	--	0.0000255 U	--
Total hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000024 U	--	0.0000291	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000024 U	--	0.0000173 J	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000024 U	--	0.00000985 J	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000024 U	--	0.0000422	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000024 U	--	0.000267	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	µg/L	-	-	-	--	0.0000481 U	--	0.0000722	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	µg/L	-	-	-	--	0.0000481 U	--	0.000869	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000024 U	--	0.0000255 U	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000024 U	--	0.0000255 U	--
Total pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000024 U	--	0.0000255 U	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.000024 U	--	0.00000417 J	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.000024 U	--	0.000058	--
Total tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.00000962 U	--	0.0000051 U	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.00000962 U	--	0.0000051 U	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.00000962 U	--	0.0000051 U	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.00000962 U	--	0.0000051 U	--
Toxic Equivalents	µg/L	0.00003	0.00001	0.00001	--	0.0	--	0.000010842[b]	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			*MW-104S*	*MW-104S*	*MW-104S*	*MW-104S*	*MW-104S*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102611-JV-025*	*WG-56393-020712-JV-045*	*WG-56393-042512-JV-061*	*WG-56393-072312-JV-078*	*GW-56393-102212-JV-106*
Sample Date:		Drinking Water	Surface Water	Contact	*10/26/2011*	*2/7/2012*	*4/25/2012*	*7/23/2012*	*10/22/2012*
Sample Type:			Interface						
	Units	a	b	c					
Metals									
Aluminum	µg/L	50	-	64000000	--	8.0	--	4.3	--
Antimony	µg/L	6	130	68000	--	0.050 U	--	0.050 U	--
Arsenic	µg/L	10	10	4300	--	0.21 J	--	0.3 J	--
Barium	µg/L	2000	1400	14000000	--	74.2	--	70.7	--
Beryllium	µg/L	4	41	290000	--	0.020 U	--	0.020 U	--
Cadmium	µg/L	5	5.1	190000	--	0.07 J	--	0.010 J	--
Chromium	µg/L	100	11	460000	--	0.23	--	0.14 J	--
Chromium VI (hexavalent)	µg/L	100	11	460000	--	2.0 UJ	--	2.0 UJ	--
Cobalt	µg/L	100	100	2400000	--	0.038	--	0.094	--
Copper	µg/L	1000	23	7400000	--	0.43	--	0.28	--
Iron	µg/L	300	-	58000000	--	38.3	--	12.0 J	--
Lead	µg/L	4	34	ID	--	0.042	--	0.027	--
Magnesium	µg/L	1100000	-	1000000000	21700	24100	23200	22800	23100
Manganese	µg/L	50	5200	9100000	--	1.62	--	0.666	--
Mercury	µg/L	2	0.0013	56	0.001 U	0.001 U	0.00073 J	0.00026 J	0.001 U
Nickel	µg/L	100	130	74000000	--	0.45	--	0.69	--
Selenium	µg/L	50	5	970000	--	0.2 J	--	1.0 U	--
Silver	µg/L	98	0.2	1500000	--	0.020 U	--	0.020 U	--
Sodium	µg/L	350000	-	1000000000	20200	22300	22100	20200	20900
Thallium	µg/L	2	3.7	13000	--	0.0200 U	--	0.020 U	--
Vanadium	µg/L	62	27	970000	--	0.200 U	--	0.13 J	--
Zinc	µg/L	5000	310	110000000	--	0.45 J	--	0.7	--
General Chemistry									
Cyanide (amenable)	µg/L	200	-	57000	--	10 U	4 J	10 U	10 U
Cyanide (total)	µg/L	200	5.2	57000	10 U	10 U	4 J	10 U	10 U
Field Parameters									
Conductivity	mS/cm	-	-	-	0.610	0.519	0.739	0.617	0.671
Dissolved Oxygen (DO)	mg/L	-	-	-	1.27	-	2.67	1.42	1.69
Oxidation Reduction Potential	millivolt	-	-	-	-32.9	188	229	103	89
pH	s.u.	6.5-8.5	6.5-8.5	-	7.25	7.32	7.07	7.28	7.34
Temperature	Deg C	-	-	-	12.81	9.2	13.3	17.29	13.73
Turbidity	NTU	-	-	-	1.29	<3.14	<1.0	1.42	0.31

Notes:

[1] Cleanup criteria identified by MDEQ RRD Op Memo No. 1, updated 9/28/12, pursuant to 1994 PA 451 as amended.

[2] Also known as Methyl isobutyl ketone (MIBK).

U - Not present at or above the associated value.

J - Estimated concentration.

UJ - Estimated reporting limit.

R - Rejected.

[ ] - Exceeds Generic Cleanup Criteria.
Superscript letter notes the criterion exceeded.

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-105D*	*MW-105D*	*MW-105D*	*MW-105D*	*MW-105D*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102611-JV-026*	*WG-56393-020712-JV-048*	*WG-56393-042512-JV-065*	*WG-56393-072412-JV-085*	*GW-56393-102212-JV-105*
Sample Date:		Drinking Water	Surface Water	Contact	*10/26/2011*	*2/7/2012*	*4/25/2012*	*7/24/2012*	*10/22/2012*
Sample Type:			Interface						
	Units	a	b	c					
Volatile Organic Compounds									
Acetone	µg/L	2100	1700	31000000	R	R	R	R	20 U
Benzene	µg/L	5	200	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	ID	14000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	µg/L	80	ID	140000	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
Bromomethane (Methyl bromide)	µg/L	29	35	70000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	38000	2200	240000000	R	R	R	R	R
Carbon disulfide	µg/L	2300	ID	1200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	5	45	4600	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
Chlorobenzene	µg/L	100	25	86000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	µg/L	1700	1100	440000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform (Trichloromethane)	µg/L	80	350	150000	0.50 U	0.080 J	0.50 U	0.10 J	0.50 U
Chloromethane (Methyl chloride)	µg/L	1100	ID	490000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	-	390	2.0 U	2.0 U	R	2.0 U	2.0 U
Dibromochloromethane	µg/L	80	ID	18000	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	5.7	25	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	µg/L	600	13	160000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	µg/L	19	28	2000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	µg/L	75	17	6400	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane (CFC-12)	µg/L	4800	ID	300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,1-Dichloroethane	µg/L	2500	740	2400000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	µg/L	5	360	19000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	µg/L	7	130	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	µg/L	70	620	200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	µg/L	100	1500	220000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	µg/L	5	230	16000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	74	18	170000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Hexanone	µg/L	2900	ID	5200000	R	20 U	R	R	20 U
Isopropyl benzene	µg/L	2300	28	56000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methyl tert butyl ether (MTBE)	µg/L	40	7100	610000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Methyl-2-pentanone [2]	µg/L	5200	ID	13000000	20 U	R	R	20 U	20 U
Methylene chloride	µg/L	5	1500	220000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	µg/L	100	80	9700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	µg/L	35	78	4700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	µg/L	5	60	12000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	790	270	530000	0.50 U	0.50 U	0.50 U	0.50 U	0.060 J
1,2,4-Trichlorobenzene	µg/L	70	99	19000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	µg/L	200	89	1300000	0.50 U	0.090 J	0.090 J	0.11 J	0.50 U
1,1,2-Trichloroethane	µg/L	5	330	21000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	5	200	22000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane (CFC-11)	µg/L	7300	-	1100000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	µg/L	2	13	1000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m&p-Xylenes	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-105D	MW-105D	MW-105D	MW-105D	MW-105D
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	WG-56393-102611-JV-026	WG-56393-020712-JV-048	WG-56393-042512-JV-065	WG-56393-072412-JV-085	GW-56393-102212-JV-105
Sample Date:					10/26/2011	2/7/2012	4/25/2012	7/24/2012	10/22/2012
Sample Type:	Units	a	b	c					
Semi-Volatile Organic Compounds									
Acenaphthene	µg/L	3800	38	4200	--	0.20 U	--	0.20 U	--
Acenaphthylene	µg/L	150	ID	3900	--	0.20 U	--	0.20 U	--
Anthracene	µg/L	43	ID	43	--	0.20 U	--	0.20 U	--
Benzo(a)anthracene	µg/L	8.5	ID	9.4	--	0.20 U	--	0.20 U	--
Benzo(a)pyrene	µg/L	5	ID	1	--	0.20 U	--	0.20 U	--
Benzo(b)fluoranthene	µg/L	1.5	ID	1.5	--	0.20 U	--	0.20 U	--
Benzo(g,h,i)perylene	µg/L	1	-	1	--	0.20 U	--	0.20 U	--
Benzo(k)fluoranthene	µg/L	1	-	1	--	0.20 U	--	0.20 U	--
Butyl benzylphthalate (BBP)	µg/L	2700	67	2700	--	0.20 U	--	0.042 J	--
Carbazole	µg/L	350	10	7400	--	0.20 U	--	0.20 U	--
4-Chloro-3-methylphenol	µg/L	420	7.4	79000	--	0.48 U	--	0.50 U	--
bis(2-Chloroethyl)ether	µg/L	8.3	1	5700	--	0.20 U	--	0.20 U	--
2-Chlorophenol	µg/L	130	18	94000	--	0.48 U	--	0.50 U	--
Chrysene	µg/L	1.6	ID	1.6	--	0.20 U	--	0.20 U	--
Dibenz(a,h)anthracene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	--
Dibenzofuran	µg/L	ID	4	ID	--	0.20 U	--	0.20 U	--
3,3'-Dichlorobenzidine	µg/L	4.3	0.3	180	--	2.0 U	--	2.0 U	--
2,4-Dichlorophenol	µg/L	210	11	48000	--	0.48 U	--	0.50 U	--
Diethyl phthalate	µg/L	16000	110	1100000	--	0.20 U	--	0.20 U	--
Dimethyl phthalate	µg/L	210000	-	4200000	--	0.20 U	--	0.047 J	--
2,4-Dimethylphenol	µg/L	1000	380	520000	--	3.9 U	--	4.0 U	--
Di-n-butylphthalate (DBP)	µg/L	2500	9.7	11000	--	0.20 U	--	0.059 J	--
4,6-Dinitro-2-methylphenol	µg/L	20	-	9500	--	2.0 U	--	2.0 U	--
2,4-Dinitrotoluene	µg/L	32	-	8600	--	0.20 U	--	0.20 U	--
Di-n-octyl phthalate (DnOP)	µg/L	380	ID	400	--	0.20 U	--	0.20 U	--
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	6	25	320	--	0.96 U	--	0.22 J	--
Fluoranthene	µg/L	210	1.6	210	--	0.20 U	--	0.20 U	--
Fluorene	µg/L	2000	12	2000	--	0.20 U	--	0.20 U	--
Hexachlorobenzene	µg/L	1	0.2	4.6	--	0.20 U	--	0.20 U	--
Hexachlorobutadiene	µg/L	42	0.053	400	--	0.20 U	--	0.20 U	--
Hexachlorocyclopentadiene	µg/L	50	ID	1600	--	0.96 U	--	0.99 U	--
Hexachloroethane	µg/L	21	6.7	1900	--	0.20 U	--	0.20 U	--
Indeno(1,2,3-cd)pyrene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	--
Isophorone	µg/L	3100	1300	990000	--	0.20 U	--	0.20 U	--
2-Methylnaphthalene	µg/L	750	19	25000	--	0.20 U	--	0.20 U	--
2-Methylphenol	µg/L	1000	30	810000	--	0.48 U	--	0.50 U	--
4-Methylphenol	µg/L	1000	30	810000	--	0.48 U	--	0.50 U	--
Naphthalene	µg/L	1500	11	31000	--	0.20 U	--	0.061 J	--
Nitrobenzene	µg/L	9.6	180	11000	--	0.20 U	--	0.20 U	--
2-Nitrophenol	µg/L	58	ID	79000	--	0.48 U	--	0.50 U	--
N-Nitrosodi-n-propylamine	µg/L	5	-	360	--	0.20 U	--	0.20 U	--
N-Nitrosodiphenylamine	µg/L	1100	-	35000	--	0.20 U	--	0.20 U	--
Pentachlorophenol	µg/L	1	G,X	200	--	0.96 U	--	0.99 U	--
Phenanthrene	µg/L	150	2	1000	--	0.20 U	--	0.20 U	--
Phenol	µg/L	13000	450	29000000	--	0.48 U	--	0.50 U	--
Pyrene	µg/L	140	ID	140	--	0.20 U	--	0.20 U	--
2,4,5-Trichlorophenol	µg/L	2100	-	170000	--	0.48 U	--	0.50 U	--
2,4,6-Trichlorophenol	µg/L	470	5	10000	--	0.48 U	--	0.50 U	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			*MW-105D*	*MW-105D*	*MW-105D*	*MW-105D*	*MW-105D*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102611-JV-026*	*WG-56393-020712-JV-048*	*WG-56393-042512-JV-065*	*WG-56393-072412-JV-085*	*GW-56393-102212-JV-105*
Sample Date:		Drinking Water	Surface Water	Contact	*10/26/2011*	*2/7/2012*	*4/25/2012*	*7/24/2012*	*10/22/2012*
Sample Type:			Interface						
	Units	a	b	c					
PCBs									
Aroclor-1016 (PCB-1016)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0052 U	0.020 U
Aroclor-1221 (PCB-1221)	µg/L	-	-	-	0.040 U	0.041 U	0.040 U	0.011 U	0.040 U
Aroclor-1232 (PCB-1232)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0052 U	0.020 U
Aroclor-1242 (PCB-1242)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0052 U	0.020 U
Aroclor-1248 (PCB-1248)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0052 U	0.020 U
Aroclor-1254 (PCB-1254)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0052 U	0.020 U
Aroclor-1260 (PCB-1260)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0052 U	0.020 U
Total PCBs	µg/L	0.5	200	3.3	ND	ND	ND	ND	ND
Dioxins									
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000266 U	--	0.00000915 J	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000266 U	--	0.0000266 U	--
Total heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000266 U	--	0.000017 J	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.0000266 U	--	0.0000738	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.0000266 U	--	0.000312	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000266 U	--	0.0000266 U	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000266 U	--	0.0000266 U	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000266 U	--	0.0000266 U	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000266 U	--	0.0000266 U	--
Total hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000266 U	--	0.0000266 U	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000266 U	--	0.0000168 J	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000266 U	--	0.00000625 J	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000266 U	--	0.0000402	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000266 U	--	0.000275	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	µg/L	-	-	-	--	0.0000532 U	--	0.0000532 U	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	µg/L	-	-	-	--	0.0000532 U	--	0.0000901	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000266 U	--	0.0000266 U	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000266 U	--	0.0000266 U	--
Total pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000266 U	--	0.0000266 U	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.0000266 U	--	0.00000434 J	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.0000266 U	--	0.0000589	--
Total tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.0000106 U	--	0.00000532 U	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.0000106 U	--	0.00000532 U	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.0000106 U	--	0.00000532 U	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.0000106 U	--	0.00000532 U	--
Toxic Equivalents	µg/L	0.00003	0.00001	0.00001	--	0.0	--	0.000009325	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-105D	MW-105D	MW-105D	MW-105D	MW-105D
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	WG-56393-102611-JV-026	WG-56393-020712-JV-048	WG-56393-042512-JV-065	WG-56393-072412-JV-085	GW-56393-102212-JV-105
Sample Date:					10/26/2011	2/7/2012	4/25/2012	7/24/2012	10/22/2012
Sample Type:	Units	a	b	c					
Metals									
Aluminum	µg/L	50	-	64000000	--	7.0	--	2.4	--
Antimony	µg/L	6	130	68000	--	0.050 U	--	0.050 U	--
Arsenic	µg/L	10	10	4300	--	0.21 J	--	0.1 J	--
Barium	µg/L	2000	1400	14000000	--	80.6	--	71.5	--
Beryllium	µg/L	4	41	290000	--	0.020 U	--	0.020 U	--
Cadmium	µg/L	5	5.1	190000	--	0.020 U	--	0.020 U	--
Chromium	µg/L	100	11	460000	--	0.30	--	0.17 J	--
Chromium VI (hexavalent)	µg/L	100	11	460000	--	2.0 UJ	--	2.0 U	--
Cobalt	µg/L	100	100	2400000	--	0.037	--	0.086	--
Copper	µg/L	1000	23	7400000	--	0.38	--	0.30	--
Iron	µg/L	300	-	58000000	--	36.7	--	4.0 J	--
Lead	µg/L	4	34	ID	--	0.067	--	0.033	--
Magnesium	µg/L	1100000	-	1000000000	23200	25200	25100	24500	24500
Manganese	µg/L	50	5200	9100000	--	1.48	--	0.183	--
Mercury	µg/L	2	0.0013	56	0.001 U	0.001 U	0.00088 J	0.001 U	0.001 U
Nickel	µg/L	100	130	74000000	--	0.23	--	0.60	--
Selenium	µg/L	50	5	970000	--	1.0 U	--	1.0 U	--
Silver	µg/L	98	0.2	1500000	--	0.020 U	--	0.020 U	--
Sodium	µg/L	350000	-	1000000000	20500	22000	23600	22000	22000
Thallium	µg/L	2	3.7	13000	--	0.0200 U	--	0.020 U	--
Vanadium	µg/L	62	27	970000	--	0.200 U	--	0.06 J	--
Zinc	µg/L	5000	310	110000000	--	0.97	--	2.2	--
General Chemistry									
Cyanide (amenable)	µg/L	200	-	57000	--	10 U	10 U	10 U	10 U
Cyanide (total)	µg/L	200	5.2	57000	4 J	10 U	10 U	10 U	10 U
Field Parameters									
Conductivity	mS/cm	-	-	-	0.629	0.9	0.881	0.631	0.847
Dissolved Oxygen (DO)	mg/L	-	-	-	1.41	-	1.80	3.21	1.49
Oxidation Reduction Potential	millivolt	-	-	-	51.7	212	96	109	55.9
pH	s.u.	6.5-8.5	6.5-8.5	-	7.32	7.07	6.77	7.23	7.06
Temperature	Deg C	-	-	-	11.65	10.8	13.2	16.92	13.14
Turbidity	NTU	-	-	-	-	<1.23	<4.58	0.62	2.15

Notes:

[1] Cleanup criteria identified by MDEQ RRD Op Memo No. 1, updated 9/28/12, pursuant to 1994 PA 451 as amended.

[2] Also known as Methyl isobutyl ketone (MIBK).

U - Not present at or above the associated value.

J - Estimated concentration.

UJ - Estimated reporting limit.

R - Rejected.

[redacted] - Exceeds Generic Cleanup Criteria.

Superscript letter notes the criterion exceeded.

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			*MW-105S*	*MW-105S*	*MW-105S*	*MW-105S*	*MW-105S*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102611-JV-027*	*WG-56393-020712-JV-047*	*WG-56393-042512-JV-064*	*WG-56393-072412-JV-084*	*GW-56393-102212-JV-104*
Sample Date:		Drinking Water	Surface Water	Contact	*10/26/2011*	*2/7/2012*	*4/25/2012*	*7/24/2012*	*10/22/2012*
Sample Type:			Interface						
	Units	a	b	c					
Volatile Organic Compounds									
Acetone	µg/L	2100	1700	31000000	R	R	R	R	20 U
Benzene	µg/L	5	200	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	ID	14000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	µg/L	80	ID	140000	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
Bromomethane (Methyl bromide)	µg/L	29	35	70000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	38000	2200	240000000	R	R	R	R	R
Carbon disulfide	µg/L	2300	ID	1200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	5	45	4600	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
Chlorobenzene	µg/L	100	25	86000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	µg/L	1700	1100	440000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform (Trichloromethane)	µg/L	80	350	150000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane (Methyl chloride)	µg/L	1100	ID	490000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	-	390	2.0 U	2.0 U	R	2.0 U	2.0 U
Dibromochloromethane	µg/L	80	ID	18000	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	5.7	25	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	µg/L	600	13	160000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	µg/L	19	28	2000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	µg/L	75	17	6400	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane (CFC-12)	µg/L	4800	ID	300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,1-Dichloroethane	µg/L	2500	740	2400000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	µg/L	5	360	19000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	µg/L	7	130	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	µg/L	70	620	200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	µg/L	100	1500	220000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	µg/L	5	230	16000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	74	18	170000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Hexanone	µg/L	2900	ID	5200000	R	20 U	R	R	20 U
Isopropyl benzene	µg/L	2300	28	56000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methyl tert butyl ether (MTBE)	µg/L	40	7100	610000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Methyl-2-pentanone [2]	µg/L	5200	ID	13000000	20 U	R	R	20 U	20 U
Methylene chloride	µg/L	5	1500	220000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	µg/L	100	80	9700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	µg/L	35	78	4700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	µg/L	5	60	12000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	790	270	530000	0.50 U	0.50 U	0.50 U	0.50 U	0.24 J
1,2,4-Trichlorobenzene	µg/L	70	99	19000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	µg/L	200	89	1300000	0.12 J	0.12 J	0.080 J	0.15 J	0.13 J
1,1,2-Trichloroethane	µg/L	5	330	21000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	5	200	22000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane (CFC-11)	µg/L	7300	-	1100000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	µg/L	2	13	1000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m&p-Xylenes	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-105S	MW-105S	MW-105S	MW-105S	MW-105S
Sample Identification:		Non-Residential	Groundwater	Groundwater	WG-56393-102611-JV-027	WG-56393-020712-JV-047	WG-56393-042512-JV-064	WG-56393-072412-JV-084	GW-56393-102212-JV-104
Sample Date:		Drinking Water	Surface Water Interface	Contact	10/26/2011	2/7/2012	4/25/2012	7/24/2012	10/22/2012
Sample Type:	Units	a	b	c					
Semi-Volatile Organic Compounds									
Acenaphthene	µg/L	3800	38	4200	--	0.20 U	--	0.20 U	--
Acenaphthylene	µg/L	150	ID	3900	--	0.20 U	--	0.20 U	--
Anthracene	µg/L	43	ID	43	--	0.20 U	--	0.20 U	--
Benzo(a)anthracene	µg/L	8.5	ID	9.4	--	0.20 U	--	0.20 U	--
Benzo(a)pyrene	µg/L	5	ID	1	--	0.20 U	--	0.20 U	--
Benzo(b)fluoranthene	µg/L	1.5	ID	1.5	--	0.20 U	--	0.20 U	--
Benzo(g,h,i)perylene	µg/L	1	-	1	--	0.20 U	--	0.20 U	--
Benzo(k)fluoranthene	µg/L	1	-	1	--	0.20 U	--	0.20 U	--
Butyl benzylphthalate (BBP)	µg/L	2700	67	2700	--	0.20 U	--	0.035 J	--
Carbazole	µg/L	350	10	7400	--	0.20 U	--	0.20 U	--
4-Chloro-3-methylphenol	µg/L	420	7.4	79000	--	0.48 U	--	0.49 U	--
bis(2-Chloroethyl)ether	µg/L	8.3	1	5700	--	0.20 U	--	0.20 U	--
2-Chlorophenol	µg/L	130	18	94000	--	0.48 U	--	0.49 U	--
Chrysene	µg/L	1.6	ID	1.6	--	0.20 U	--	0.20 U	--
Dibenz(a,h)anthracene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	--
Dibenzofuran	µg/L	ID	4	ID	--	0.20 U	--	0.20 U	--
3,3'-Dichlorobenzidine	µg/L	4.3	0.3	180	--	2.0 U	--	2.0 U	--
2,4-Dichlorophenol	µg/L	210	11	48000	--	0.48 U	--	0.49 U	--
Diethyl phthalate	µg/L	16000	110	1100000	--	0.20 U	--	0.20 U	--
Dimethyl phthalate	µg/L	210000	-	4200000	--	0.20 U	--	0.20 U	--
2,4-Dimethylphenol	µg/L	1000	380	520000	--	3.9 U	--	3.9 U	--
Di-n-butylphthalate (DBP)	µg/L	2500	9.7	11000	--	0.20 U	--	0.041 J	--
4,6-Dinitro-2-methylphenol	µg/L	20	-	9500	--	2.0 U	--	2.0 U	--
2,4-Dinitrotoluene	µg/L	32	-	8600	--	0.20 U	--	0.20 U	--
Di-n-octyl phthalate (DnOP)	µg/L	380	ID	400	--	0.20 U	--	0.20 U	--
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	6	25	320	--	0.96 U	--	0.97 U	--
Fluoranthene	µg/L	210	1.6	210	--	0.20 U	--	0.20 U	--
Fluorene	µg/L	2000	12	2000	--	0.20 U	--	0.20 U	--
Hexachlorobenzene	µg/L	1	0.2	4.6	--	0.20 U	--	0.20 U	--
Hexachlorobutadiene	µg/L	42	0.053	400	--	0.20 U	--	0.20 U	--
Hexachlorocyclopentadiene	µg/L	50	ID	1600	--	0.96 U	--	0.97 U	--
Hexachloroethane	µg/L	21	6.7	1900	--	0.20 U	--	0.20 U	--
Indeno(1,2,3-cd)pyrene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	--
Isophorone	µg/L	3100	1300	990000	--	0.20 U	--	0.20 U	--
2-Methylnaphthalene	µg/L	750	19	25000	--	0.20 U	--	0.20 U	--
2-Methylphenol	µg/L	1000	30	810000	--	0.48 U	--	0.49 U	--
4-Methylphenol	µg/L	1000	30	810000	--	0.48 U	--	0.49 U	--
Naphthalene	µg/L	1500	11	31000	--	0.20 U	--	0.065 J	--
Nitrobenzene	µg/L	9.6	180	11000	--	0.20 U	--	0.20 U	--
2-Nitrophenol	µg/L	58	ID	79000	--	0.48 U	--	0.49 U	--
N-Nitrosodi-n-propylamine	µg/L	5	-	360	--	0.20 U	--	0.20 U	--
N-Nitrosodiphenylamine	µg/L	1100	-	35000	--	0.20 U	--	0.20 U	--
Pentachlorophenol	µg/L	1	G,X	200	--	0.96 U	--	0.97 U	--
Phenanthrene	µg/L	150	2	1000	--	0.20 U	--	0.20 U	--
Phenol	µg/L	13000	450	29000000	--	0.48 U	--	0.49 U	--
Pyrene	µg/L	140	ID	140	--	0.20 U	--	0.20 U	--
2,4,5-Trichlorophenol	µg/L	2100	-	170000	--	0.48 U	--	0.49 U	--
2,4,6-Trichlorophenol	µg/L	470	5	10000	--	0.48 U	--	0.49 U	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-105S*	*MW-105S*	*MW-105S*	*MW-105S*	*MW-105S*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102611-JV-027*	*WG-56393-020712-JV-047*	*WG-56393-042512-JV-064*	*WG-56393-072412-JV-084*	*GW-56393-102212-JV-104*
Sample Date:		Drinking Water	Surface Water	Contact	*10/26/2011*	*2/7/2012*	*4/25/2012*	*7/24/2012*	*10/22/2012*
Sample Type:			Interface						
	Units	a	b	c					
PCBs									
Aroclor-1016 (PCB-1016)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0052 U	0.020 U
Aroclor-1221 (PCB-1221)	µg/L	-	-	-	0.040 U	0.040 U	0.040 U	0.011 U	0.039 U
Aroclor-1232 (PCB-1232)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0052 U	0.020 U
Aroclor-1242 (PCB-1242)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0052 U	0.020 U
Aroclor-1248 (PCB-1248)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0052 U	0.020 U
Aroclor-1254 (PCB-1254)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0052 U	0.020 U
Aroclor-1260 (PCB-1260)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0052 U	0.020 U
Total PCBs	µg/L	0.5	200	3.3	ND	ND	ND	ND	ND
Dioxins									
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.00000651 J	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
Total heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.0000128 J	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.0000635	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.00026	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
Total hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.00000603 J	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.000011 J	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.00000572 J	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.000032	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.000225	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	µg/L	-	-	-	--	0.000049 U	--	0.0000481 U	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	µg/L	-	-	-	--	0.000049 U	--	0.0000731	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
Total pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.0000045 J	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.0000996	--
Total tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.0000098 U	--	0.00000481 U	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.0000098 U	--	0.00000481 U	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.0000098 U	--	0.00000481 U	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.0000098 U	--	0.00000481 U	--
Toxic Equivalents	µg/L	0.00003	0.00001	0.00001	--	0.0	--	0.000007822	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-105S	MW-105S	MW-105S	MW-105S	MW-105S
Sample Identification:		Non-Residential	Groundwater	Groundwater	WG-56393-102611-IV-027	WG-56393-020712-IV-047	WG-56393-042512-IV-064	WG-56393-072412-IV-084	GW-56393-102212-IV-104
Sample Date:		Drinking Water	Surface Water	Contact	10/26/2011	2/7/2012	4/25/2012	7/24/2012	10/22/2012
Sample Type:			Interface						
	Units	a	b	c					
Metals									
Aluminum	µg/L	50	-	64000000	--	2.1	--	1.6 J	--
Antimony	µg/L	6	130	68000	--	0.050 U	--	0.050 U	--
Arsenic	µg/L	10	10	4300	--	0.14 J	--	0.3 J	--
Barium	µg/L	2000	1400	14000000	--	114	--	111	--
Beryllium	µg/L	4	41	290000	--	0.020 U	--	0.020 U	--
Cadmium	µg/L	5	5.1	190000	--	0.010 J	--	0.010 J	--
Chromium	µg/L	100	11	460000	--	0.25	--	0.12 J	--
Chromium VI (hexavalent)	µg/L	100	11	460000	--	2.0 UJ	--	2.0 U	--
Cobalt	µg/L	100	100	2400000	--	0.179	--	0.332	--
Copper	µg/L	1000	23	7400000	--	0.35	--	0.40	--
Iron	µg/L	300	-	58000000	--	48.5	--	80.5	--
Lead	µg/L	4	34	ID	--	0.032	--	0.015 J	--
Magnesium	µg/L	1100000	-	1000000000	26700	30800	28600	27100	27700
Manganese	µg/L	50	5200	9100000	--	98.1[a]	--	79.1[a]	--
Mercury	µg/L	2	0.0013	56	0.001 U	0.001 U	0.00047 J	0.001 U	0.001 U
Nickel	µg/L	100	130	74000000	--	0.44	--	1.01	--
Selenium	µg/L	50	5	970000	--	0.2 J	--	1.0 U	--
Silver	µg/L	98	0.2	1500000	--	0.020 U	--	0.020 U	--
Sodium	µg/L	350000	-	1000000000	22800	25800	25600	23700	23800
Thallium	µg/L	2	3.7	13000	--	0.0200 U	--	0.020 U	--
Vanadium	µg/L	62	27	970000	--	0.200 U	--	0.04 J	--
Zinc	µg/L	5000	310	110000000	--	1.40	--	0.4 J	--
General Chemistry									
Cyanide (amenable)	µg/L	200	-	57000	--	10 U	10 U	10 U	10 U
Cyanide (total)	µg/L	200	5.2	57000	10 U	10 U	10 U	10 U	10 U
Field Parameters									
Conductivity	mS/cm	-	-	-	0.732	0.847	0.928	0.738	0.814
Dissolved Oxygen (DO)	mg/L	-	-	-	0.27	-	0.93	0.96	0.14
Oxidation Reduction Potential	millivolt	-	-	-	-65.1	14	81	51	33
pH	s.u.	6.5-8.5	6.5-8.5	-	7.10	7.01	6.75	7.04	6.87
Temperature	Deg C	-	-	-	13.25	8.4	12.8	18.98	14.55
Turbidity	NTU	-	-	-	3.12	<2.11	<0.64	0.87	2.97

Notes:

[1] Cleanup criteria identified by MDEQ RRD Op Memo No. 1, updated 9/28/12, pursuant to 1994 PA 451 as amended.

[2] Also known as Methyl isobutyl ketone (MIBK).

U - Not present at or above the associated value.

J - Estimated concentration.

UJ - Estimated reporting limit.

R - Rejected.

[ ] - Exceeds Generic Cleanup Criteria.

Superscript letter notes the criterion exceeded.

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-106D	MW-106D	MW-106D	MW-106D	MW-106D	MW-106D
Sample Identification:		Non-Residential	Groundwater	Groundwater	WG-56393-102611-JV-028	WG-56393-020712-JV-050	WG-56393-042612-JV-067	WG-56393-072412-JV-087	GW-56393-102212-JV-102	GW-56393-102212-JV-103
Sample Date:		Drinking Water	Surface Water	Contact	10/26/2011	2/7/2012	4/26/2012	7/24/2012	10/22/2012	10/22/2012
Sample Type:			Interface							Duplicate
	Units	a	b	c						
Volatile Organic Compounds										
Acetone	µg/L	2100	1700	31000000	R	R	R	R	20 U	20 U
Benzene	µg/L	5	200	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	ID	14000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	µg/L	80	ID	140000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane (Methyl bromide)	µg/L	29	35	70000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	38000	2200	240000000	R	R	R	R	R	R
Carbon disulfide	µg/L	2300	ID	1200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	5	45	4600	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	µg/L	100	25	86000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	µg/L	1700	1100	440000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform (Trichloromethane)	µg/L	80	350	150000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane (Methyl chloride)	µg/L	1100	ID	490000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ	0.50 UJ
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	-	390	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Dibromochloromethane	µg/L	80	ID	18000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	5.7	25	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	µg/L	600	13	160000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	µg/L	19	28	2000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	µg/L	75	17	6400	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane (CFC-12)	µg/L	4800	ID	300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ	0.50 UJ
1,1-Dichloroethane	µg/L	2500	740	2400000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	µg/L	5	360	19000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	µg/L	7	130	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	µg/L	70	620	200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	µg/L	100	1500	220000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	µg/L	5	230	16000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	74	18	170000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Hexanone	µg/L	2900	ID	5200000	R	20 U	R	R	20 U	20 U
Isopropyl benzene	µg/L	2300	28	56000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methyl tert butyl ether (MTBE)	µg/L	40	7100	610000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Methyl-2-pentanone [2]	µg/L	5200	ID	13000000	20 U	R	20 U	20 U	20 U	20 U
Methylene chloride	µg/L	5	1500	220000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	µg/L	100	80	9700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	µg/L	35	78	4700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	µg/L	5	60	12000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	790	270	530000	0.50 U	0.070 J	0.50 U	0.50 U	0.31 J	0.20 J
1,2,4-Trichlorobenzene	µg/L	70	99	19000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	µg/L	200	89	1300000	0.50 U	0.10 J	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2-Trichloroethane	µg/L	5	330	21000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	5	200	22000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane (CFC-11)	µg/L	7300	-	1100000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	µg/L	2	13	1000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m&p-Xylenes	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-106D	MW-106D	MW-106D	MW-106D	MW-106D	MW-106D
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	WG-56393-102611-JV-028	WG-56393-020712-JV-050	WG-56393-042612-JV-067	WG-56393-072412-JV-087	GW-56393-102212-JV-102	GW-56393-102212-JV-103
Sample Date:					10/26/2011	2/7/2012	4/26/2012	7/24/2012	10/22/2012	10/22/2012
Sample Type:										Duplicate
	Units	a	b	c						
Semi-Volatile Organic Compounds										
Acenaphthene	µg/L	3800	38	4200	--	0.20 U	--	0.20 U	--	--
Acenaphthylene	µg/L	150	ID	3900	--	0.20 U	--	0.20 U	--	--
Anthracene	µg/L	43	ID	43	--	0.20 U	--	0.20 U	--	--
Benzo(a)anthracene	µg/L	8.5	ID	9.4	--	0.20 U	--	0.20 U	--	--
Benzo(a)pyrene	µg/L	5	ID	1	--	0.20 U	--	0.20 U	--	--
Benzo(b)fluoranthene	µg/L	1.5	ID	1.5	--	0.20 U	--	0.20 U	--	--
Benzo(g,h,i)perylene	µg/L	1	-	1	--	0.20 U	--	0.20 U	--	--
Benzo(k)fluoranthene	µg/L	1	-	1	--	0.20 U	--	0.20 U	--	--
Butyl benzylphthalate (BBP)	µg/L	2700	67	2700	--	0.20 U	--	0.049 J	--	--
Carbazole	µg/L	350	10	7400	--	0.20 U	--	0.20 U	--	--
4-Chloro-3-methylphenol	µg/L	420	7.4	79000	--	0.50 U	--	0.49 U	--	--
bis(2-Chloroethyl)ether	µg/L	8.3	1	5700	--	0.20 U	--	0.20 U	--	--
2-Chlorophenol	µg/L	130	18	94000	--	0.50 U	--	0.49 U	--	--
Chrysene	µg/L	1.6	ID	1.6	--	0.20 U	--	0.20 U	--	--
Dibenz(a,h)anthracene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	--	--
Dibenzofuran	µg/L	ID	4	ID	--	0.20 U	--	0.20 U	--	--
3,3'-Dichlorobenzidine	µg/L	4.3	0.3	180	--	2.0 U	--	2.0 U	--	--
2,4-Dichlorophenol	µg/L	210	11	48000	--	0.50 U	--	0.49 U	--	--
Diethyl phthalate	µg/L	16000	110	1100000	--	0.20 U	--	0.20 U	--	--
Dimethyl phthalate	µg/L	210000	-	4200000	--	0.20 U	--	0.20 U	--	--
2,4-Dimethylphenol	µg/L	1000	380	520000	--	4.0 U	--	3.9 U	--	--
Di-n-butylphthalate (DBP)	µg/L	2500	9.7	11000	--	0.20 U	--	0.072 J	--	--
4,6-Dinitro-2-methylphenol	µg/L	20	-	9500	--	2.0 U	--	2.0 U	--	--
2,4-Dinitrotoluene	µg/L	32	-	8600	--	0.20 U	--	0.20 U	--	--
Di-n-octyl phthalate (DnOP)	µg/L	380	ID	400	--	0.20 U	--	0.026 J	--	--
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	6	25	320	--	1.0 U	--	0.15 J	--	--
Fluoranthene	µg/L	210	1.6	210	--	0.20 U	--	0.20 U	--	--
Fluorene	µg/L	2000	12	2000	--	0.20 U	--	0.20 U	--	--
Hexachlorobenzene	µg/L	1	0.2	4.6	--	0.20 U	--	0.20 U	--	--
Hexachlorobutadiene	µg/L	42	0.053	400	--	0.20 U	--	0.20 U	--	--
Hexachlorocyclopentadiene	µg/L	50	ID	1600	--	1.0 U	--	0.97 U	--	--
Hexachloroethane	µg/L	21	6.7	1900	--	0.20 U	--	0.20 U	--	--
Indeno(1,2,3-cd)pyrene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	--	--
Isophorone	µg/L	3100	1300	990000	--	0.20 U	--	0.20 U	--	--
2-Methylnaphthalene	µg/L	750	19	25000	--	0.20 U	--	0.20 U	--	--
2-Methylphenol	µg/L	1000	30	810000	--	0.50 U	--	0.49 U	--	--
4-Methylphenol	µg/L	1000	30	810000	--	0.50 U	--	0.49 U	--	--
Naphthalene	µg/L	1500	11	31000	--	0.033 J	--	0.20 U	--	--
Nitrobenzene	µg/L	9.6	180	11000	--	0.20 U	--	0.20 U	--	--
2-Nitrophenol	µg/L	58	ID	79000	--	0.50 U	--	0.49 U	--	--
N-Nitrosodi-n-propylamine	µg/L	5	-	360	--	0.20 U	--	0.20 U	--	--
N-Nitrosodiphenylamine	µg/L	1100	-	35000	--	0.20 U	--	0.20 U	--	--
Pentachlorophenol	µg/L	1	G,X	200	--	1.0 U	--	0.97 U	--	--
Phenanthrene	µg/L	150	2	1000	--	0.20 U	--	0.20 U	--	--
Phenol	µg/L	13000	450	29000000	--	0.50 U	--	0.49 U	--	--
Pyrene	µg/L	140	ID	140	--	0.020 J	--	0.20 U	--	--
2,4,5-Trichlorophenol	µg/L	2100	-	170000	--	0.50 U	--	0.49 U	--	--
2,4,6-Trichlorophenol	µg/L	470	5	10000	--	0.50 U	--	0.49 U	--	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			*MW-106D*	*MW-106D*	*MW-106D*	*MW-106D*	*MW-106D*	*MW-106D*
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	*WG-56393-102611-JV-028*	*WG-56393-020712-JV-050*	*WG-56393-042612-JV-067*	*WG-56393-072412-JV-087*	*GW-56393-102212-JV-102*	*GW-56393-102212-JV-103*
Sample Date:					10/26/2011	2/7/2012	4/26/2012	7/24/2012	10/22/2012	10/22/2012
Sample Type:										*Duplicate*
	Units	a	b	c						
PCBs										
Aroclor-1016 (PCB-1016)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0052 U	0.020 U	0.020 U
Aroclor-1221 (PCB-1221)	µg/L	-	-	-	0.040 U	0.040 U	0.040 U	0.011 U	0.040 U	0.039 U
Aroclor-1232 (PCB-1232)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0052 U	0.020 U	0.020 U
Aroclor-1242 (PCB-1242)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0052 U	0.020 U	0.020 U
Aroclor-1248 (PCB-1248)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0052 U	0.020 U	0.020 U
Aroclor-1254 (PCB-1254)	µg/L	-	-	-	0.010 J	0.020 U	0.0098 J	0.0093 U	0.0074 J	0.0057 J
Aroclor-1260 (PCB-1260)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0052 U	0.020 U	0.020 U
Total PCBs	µg/L	0.5	200	3.3	0.01 J	ND	0.0098 J	ND	0.0074 J	0.0057 J
Dioxins										
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.00000579 J	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.000024 U	--	--
Total heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.0000111 J	--	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.0000255 U	--	0.0000566	--	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.0000255 U	--	0.000222	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.000024 U	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.000024 U	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.000024 U	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.000024 U	--	--
Total hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.00000551 J	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000255 U	--	0.0000124 J	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000255 U	--	0.00000476 J	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000255 U	--	0.0000287	--	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000255 U	--	0.000207	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	µg/L	-	-	-	--	0.00000254 J	--	0.0000481 U	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	µg/L	-	-	-	--	0.000051 U	--	0.0000636	--	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.000024 U	--	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.000024 U	--	--
Total pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.000024 U	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.0000255 U	--	0.00000426 J	--	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.0000255 U	--	0.000095	--	--
Total tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.0000102 U	--	0.00000481 U	--	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.0000102 U	--	0.00000481 U	--	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.0000102 U	--	0.00000481 U	--	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.0000102 U	--	0.00000481 U	--	--
Toxic Equivalents	µg/L	0.00003	0.00001	0.00001	--	0.0	--	0.000007340	--	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-106D	MW-106D	MW-106D	MW-106D	MW-106D	MW-106D
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	WG-56393-102611-JV-028	WG-56393-020712-JV-050	WG-56393-042612-JV-067	WG-56393-072412-JV-087	GW-56393-102212-JV-102	GW-56393-102212-JV-103
Sample Date:					10/26/2011	2/7/2012	4/26/2012	7/24/2012	10/22/2012	10/22/2012
Sample Type:	Units	a	b	c						Duplicate
Metals										
Aluminum	µg/L	50	-	64000000	--	2.8	--	2.0 J	--	--
Antimony	µg/L	6	130	68000	--	0.085 U	--	0.085	--	--
Arsenic	µg/L	10	10	4300	--	0.24 J	--	0.1 J	--	--
Barium	µg/L	2000	1400	14000000	--	81.4	--	77.8	--	--
Beryllium	µg/L	4	41	290000	--	0.020 U	--	0.020 U	--	--
Cadmium	µg/L	5	5.1	190000	--	0.008 J	--	0.006 J	--	--
Chromium	µg/L	100	11	460000	--	0.36	--	0.51	--	--
Chromium VI (hexavalent)	µg/L	100	11	460000	--	2.0 UJ	--	2.0 U	--	--
Cobalt	µg/L	100	100	2400000	--	0.019 J	--	0.083	--	--
Copper	µg/L	1000	23	7400000	--	0.34	--	0.43	--	--
Iron	µg/L	300	-	58000000	--	20.0 U	--	6.8 J	--	--
Lead	µg/L	4	34	ID	--	0.020 U	--	0.027	--	--
Magnesium	µg/L	1100000	-	1000000000	23500	24200	24600	23700	23500	23200
Manganese	µg/L	50	5200	9100000	--	0.41	--	0.138	--	--
Mercury	µg/L	2	0.0013	56	0.001 U	0.001 U	0.0012	0.001 U	0.001 U	0.001 U
Nickel	µg/L	100	130	74000000	--	0.23	--	0.67	--	--
Selenium	µg/L	50	5	970000	--	0.3 J	--	1.0 U	--	--
Silver	µg/L	98	0.2	1500000	--	0.020 U	--	0.020 U	--	--
Sodium	µg/L	350000	-	1000000000	24400	24400	26300	23100	22400	22200
Thallium	µg/L	2	3.7	13000	--	0.0200 U	--	0.020 U	--	--
Vanadium	µg/L	62	27	970000	--	0.200 U	--	0.09 J	--	--
Zinc	µg/L	5000	310	110000000	--	0.92	--	0.8	--	--
General Chemistry										
Cyanide (amenable)	µg/L	200	-	57000	--	10 U	10 U	10 U	10 U	10 U
Cyanide (total)	µg/L	200	5.2	57000	10 U	10 U	10 U	10 U	10 U	10 U
Field Parameters										
Conductivity	mS/cm	-	-	-	0.662	0.724	0.781	1.03	0.701	0.701
Dissolved Oxygen (DO)	mg/L	-	-	-	2.37	2.07	3.42	4.40	2.62	2.62
Oxidation Reduction Potential	millivolt	-	-	-	-42.5	-31	91	-67	94	94
pH	s.u.	6.5-8.5	6.5-8.5	-	7.34	7.25	7.17	7	7.31	7.31
Temperature	Deg C	-	-	-	11.74	10.8	12.5	15	12.79	12.79
Turbidity	NTU	-	-	-	1.95	<1.52	<2.98	1.93	7.83	7.83

Notes:

[1] Cleanup criteria identified by MDEQ RRD Op Memo No. 1, updated 9/28/12, pursuant to 1994 PA 451 as amended.

[2] Also known as Methyl isobutyl ketone (MIBK).

U - Not present at or above the associated value.

J - Estimated concentration.

UJ - Estimated reporting limit.

R - Rejected.

[ ] - Exceeds Generic Cleanup Criteria.

Superscript letter notes the criterion exceeded.

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-106S*	*MW-106S*	*MW-106S*	*MW-106S*	*MW-106S*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102611-JV-029*	*WG-56393-020712-JV-049*	*WG-56393-042612-JV-066*	*WG-56393-072412-JV-086*	*GW-56393-102212-JV-101*
Sample Date:		Drinking Water	Surface Water	Contact	10/26/2011	2/7/2012	4/26/2012	7/24/2012	10/22/2012
Sample Type:			Interface						
	Units	a	b	c					
Volatile Organic Compounds									
Acetone	µg/L	2100	1700	31000000	R	R	R	R	20 U
Benzene	µg/L	5	200	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	ID	14000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	µg/L	80	ID	140000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane (Methyl bromide)	µg/L	29	35	70000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	38000	2200	240000000	R	R	R	R	R
Carbon disulfide	µg/L	2300	ID	1200000	0.50 U	0.50 U	0.50 U	0.50 U	0.11 J
Carbon tetrachloride	µg/L	5	45	4600	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	µg/L	100	25	86000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	µg/L	1700	1100	440000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform (Trichloromethane)	µg/L	80	350	150000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane (Methyl chloride)	µg/L	1100	ID	490000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	-	390	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Dibromochloromethane	µg/L	80	ID	18000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	5.7	25	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	µg/L	600	13	160000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	µg/L	19	28	2000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	µg/L	75	17	6400	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane (CFC-12)	µg/L	4800	ID	300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethane	µg/L	2500	740	2400000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	µg/L	5	360	19000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	µg/L	7	130	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	µg/L	70	620	200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	µg/L	100	1500	220000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	µg/L	5	230	16000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	74	18	170000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Hexanone	µg/L	2900	ID	5200000	R	20 U	R	R	20 U
Isopropyl benzene	µg/L	2300	28	56000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methyl tert butyl ether (MTBE)	µg/L	40	7100	610000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Methyl-2-pentanone [2]	µg/L	5200	ID	13000000	20 U	R	20 U	20 U	20 U
Methylene chloride	µg/L	5	1500	220000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	µg/L	100	80	9700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	µg/L	35	78	4700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	µg/L	5	60	12000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	790	270	530000	0.50 U	0.50 U	0.50 U	0.50 U	0.080 J
1,2,4-Trichlorobenzene	µg/L	70	99	19000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	µg/L	200	89	1300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2-Trichloroethane	µg/L	5	330	21000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	5	200	22000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane (CFC-11)	µg/L	7300	-	1100000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	µg/L	2	13	1000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m&p-Xylenes	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					MW-106S	MW-106S	MW-106S	MW-106S	MW-106S
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	WG-56393-102611-JV-029	WG-56393-020712-JV-049	WG-56393-042612-JV-066	WG-56393-072412-JV-086	GW-56393-102212-JV-101
Sample Date:					10/26/2011	2/7/2012	4/26/2012	7/24/2012	10/22/2012
Sample Type:									
	Units	a	b	c					
Semi-Volatile Organic Compounds									
Acenaphthene	µg/L	3800	38	4200	--	0.20 U	--	0.20 U	--
Acenaphthylene	µg/L	150	ID	3900	--	0.20 U	--	0.20 U	--
Anthracene	µg/L	43	ID	43	--	0.20 U	--	0.20 U	--
Benzo(a)anthracene	µg/L	8.5	ID	9.4	--	0.20 U	--	0.20 U	--
Benzo(a)pyrene	µg/L	5	ID	1	--	R	--	0.20 U	--
Benzo(b)fluoranthene	µg/L	1.5	ID	1.5	--	R	--	0.20 U	--
Benzo(g,h,i)perylene	µg/L	1	-	1	--	R	--	0.20 U	--
Benzo(k)fluoranthene	µg/L	1	-	1	--	R	--	0.20 U	--
Butyl benzylphthalate (BBP)	µg/L	2700	67	2700	--	0.20 U	--	0.040 J	--
Carbazole	µg/L	350	10	7400	--	0.20 U	--	0.20 U	--
4-Chloro-3-methylphenol	µg/L	420	7.4	79000	--	0.50 U	--	0.49 U	--
bis(2-Chloroethyl)ether	µg/L	8.3	1	5700	--	0.20 U	--	0.20 U	--
2-Chlorophenol	µg/L	130	18	94000	--	0.50 U	--	0.49 U	--
Chrysene	µg/L	1.6	ID	1.6	--	0.20 U	--	0.20 U	--
Dibenz(a,h)anthracene	µg/L	2	ID	2	--	R	--	0.20 U	--
Dibenzofuran	µg/L	ID	4	ID	--	0.20 U	--	0.20 U	--
3,3'-Dichlorobenzidine	µg/L	4.3	0.3	180	--	2.0 U	--	2.0 U	--
2,4-Dichlorophenol	µg/L	210	11	48000	--	0.50 U	--	0.49 U	--
Diethyl phthalate	µg/L	16000	110	1100000	--	0.20 U	--	0.20 U	--
Dimethyl phthalate	µg/L	210000	-	4200000	--	0.20 U	--	0.20 U	--
2,4-Dimethylphenol	µg/L	1000	380	520000	--	4.0 U	--	3.9 U	--
Di-n-butylphthalate (DBP)	µg/L	2500	9.7	11000	--	0.20 U	--	0.048 J	--
4,6-Dinitro-2-methylphenol	µg/L	20	-	9500	--	2.0 U	--	2.0 U	--
2,4-Dinitrotoluene	µg/L	32	-	8600	--	0.20 U	--	0.20 U	--
Di-n-octyl phthalate (DnOP)	µg/L	380	ID	400	--	R	--	0.20 U	--
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	6	25	320	--	1.0 U	--	0.38 J	--
Fluoranthene	µg/L	210	1.6	210	--	0.20 U	--	0.20 U	--
Fluorene	µg/L	2000	12	2000	--	0.20 U	--	0.20 U	--
Hexachlorobenzene	µg/L	1	0.2	4.6	--	0.20 U	--	0.20 U	--
Hexachlorobutadiene	µg/L	42	0.053	400	--	0.20 U	--	0.20 U	--
Hexachlorocyclopentadiene	µg/L	50	ID	1600	--	1.0 U	--	0.97 U	--
Hexachloroethane	µg/L	21	6.7	1900	--	0.20 U	--	0.20 U	--
Indeno(1,2,3-cd)pyrene	µg/L	2	ID	2	--	R	--	0.20 U	--
Isophorone	µg/L	3100	1300	990000	--	0.20 U	--	0.20 U	--
2-Methylnaphthalene	µg/L	750	19	25000	--	0.20 U	--	0.20 U	--
2-Methylphenol	µg/L	1000	30	810000	--	1.2	--	0.49 U	--
4-Methylphenol	µg/L	1000	30	810000	--	0.50 U	--	0.49 U	--
Naphthalene	µg/L	1500	11	31000	--	0.027 J	--	0.027 J	--
Nitrobenzene	µg/L	9.6	180	11000	--	0.20 U	--	0.20 U	--
2-Nitrophenol	µg/L	58	ID	79000	--	0.50 U	--	0.49 U	--
N-Nitrosodi-n-propylamine	µg/L	5	-	360	--	0.20 U	--	0.20 U	--
N-Nitrosodiphenylamine	µg/L	1100	-	35000	--	0.20 U	--	0.20 U	--
Pentachlorophenol	µg/L	1	G,X	200	--	1.0 U	--	0.97 U	--
Phenanthrene	µg/L	150	2	1000	--	0.20 U	--	0.20 U	--
Phenol	µg/L	13000	450	29000000	--	0.74	--	0.49 U	--
Pyrene	µg/L	140	ID	140	--	0.20 U	--	0.20 U	--
2,4,5-Trichlorophenol	µg/L	2100	-	170000	--	0.50 U	--	0.49 U	--
2,4,6-Trichlorophenol	µg/L	470	5	10000	--	0.50 U	--	0.49 U	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-106S*	*MW-106S*	*MW-106S*	*MW-106S*	*MW-106S*
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	*WG-56393-102611-JV-029*	*WG-56393-020712-JV-049*	*WG-56393-042612-JV-066*	*WG-56393-072412-JV-086*	*GW-56393-102212-JV-101*
Sample Date:					*10/26/2011*	*2/7/2012*	*4/26/2012*	*7/24/2012*	*10/22/2012*
Sample Type:	*Units*	a	b	c					
PCBs									
Aroclor-1016 (PCB-1016)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0051 U	0.020 U
Aroclor-1221 (PCB-1221)	µg/L	-	-	-	0.040 U	0.040 U	0.040 U	0.011 U	0.040 U
Aroclor-1232 (PCB-1232)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0051 U	0.026 U
Aroclor-1242 (PCB-1242)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0051 U	0.020 U
Aroclor-1248 (PCB-1248)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0051 U	0.020 U
Aroclor-1254 (PCB-1254)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.012 U	0.020 U
Aroclor-1260 (PCB-1260)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0051 U	0.020 U
Total PCBs	µg/L	0.5	200	3.3	ND	ND	ND	ND	ND
Dioxins									
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.00000736 J	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.000024 U	--
Total heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.0000141 J	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.0000255 U	--	0.0000641	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.0000255 U	--	0.000266	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.000024 U	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.000024 U	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.000024 U	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.000024 U	--
Total hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.00000574 J	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000255 U	--	0.0000131 J	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000255 U	--	0.00000693 J	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000255 U	--	0.0000315	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000255 U	--	0.000235	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	µg/L	-	-	-	--	0.000051 U	--	0.0000481 U	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	µg/L	-	-	-	--	0.000051 U	--	0.0000715	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.000024 U	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.000024 U	--
Total pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000255 U	--	0.000024 U	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.0000255 U	--	0.00000402 J	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.0000255 U	--	0.000074	--
Total tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.0000102 U	--	0.00000481 U	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.0000102 U	--	0.00000481 U	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.0000102 U	--	0.00000481 U	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.0000102 U	--	0.00000481 U	--
Toxic Equivalents	µg/L	0.00003	0.00001	0.00001	--	0.0	--	0.000007878	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-106S	MW-106S	MW-106S	MW-106S	MW-106S
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	WG-56393-102611-JV-029	WG-56393-020712-JV-049	WG-56393-042612-JV-066	WG-56393-072412-JV-086	GW-56393-102212-JV-101
Sample Date:					10/26/2011	2/7/2012	4/26/2012	7/24/2012	10/22/2012
Sample Type:	Units	a	b	c					
Metals									
Aluminum	µg/L	50	-	64000000	–	2.4	–	6.8	--
Antimony	µg/L	6	130	68000	--	0.146	–	0.050 U	--
Arsenic	µg/L	10	10	4300	--	5.77	–	17.5[a,b]	--
Barium	µg/L	2000	1400	14000000	–	443	–	347	--
Beryllium	µg/L	4	41	290000	–	0.020 U	--	0.020 U	--
Cadmium	µg/L	5	5.1	190000	–	0.029	–	0.020 U	--
Chromium	µg/L	100	11	460000	--	0.23	–	0.19 J	--
Chromium VI (hexavalent)	µg/L	100	11	460000	--	2.0 UJ	--	2.0 U	–
Cobalt	µg/L	100	100	2400000	–	0.578	--	0.528	--
Copper	µg/L	1000	23	7400000	–	0.50	--	0.24	--
Iron	µg/L	300	-	58000000	–	8220[a]	–	13500[a]	–
Lead	µg/L	4	34	ID	--	0.020 U	--	0.031	--
Magnesium	µg/L	1100000	-	1000000000	42300	40500	33400	27600	40900
Manganese	µg/L	50	5200	9100000	–	479[a]	–	406[a]	–
Mercury	µg/L	2	0.0013	56	0.0203[b]	0.00447[b]	0.00119	0.001 U	0.0118[b]
Nickel	µg/L	100	130	74000000	–	2.47	–	1.01	--
Selenium	µg/L	50	5	970000	--	0.3 J	--	1.0 U	–
Silver	µg/L	98	0.2	1500000	--	0.020 U	--	0.020 U	–
Sodium	µg/L	350000	-	1000000000	20800	17000	25000	22400	19100
Thallium	µg/L	2	3.7	13000	--	0.0200 U	–	0.020 U	--
Vanadium	µg/L	62	27	970000	–	0.200 U	–	0.13 J	–
Zinc	µg/L	5000	310	110000000	–	40.0	–	0.8	--
General Chemistry									
Cyanide (amenable)	µg/L	200	-	57000	–	10 U	10 U	10 U	10 U
Cyanide (total)	µg/L	200	5.2	57000	6 J[b]	10 U	10 U	10 U	10 U
Field Parameters									
Conductivity	mS/cm	-	-	-	1.243	1.23	1.04	1.31	1.25
Dissolved Oxygen (DO)	mg/L	-	-	-	0.27	-	0.98	2.60	0.39
Oxidation Reduction Potential	millivolt	-	-	-	190	-119	-59	-143	-51
pH	s.u.	6.5-8.5	6.5-8.5	-	6.78	6.77	6.63	6.5	6.66
Temperature	Deg C	-	-	-	13.83	6.8	11.3	16.8	14.87
Turbidity	NTU	-	-	-	4.01	<0.95	<1.02	3.85	0.71

Notes:

[1] Cleanup criteria identified by MDEQ RRD Op Memo No. 1, updated 9/28/12, pursuant to 1994 PA 451 as amended.

[2] Also known as Methyl isobutyl ketone (MIBK).

U - Not present at or above the associated value.

J - Estimated concentration.

UJ - Estimated reporting limit.

R - Rejected.

[ ] - Exceeds Generic Cleanup Criteria.

Superscript letter notes the criterion exceeded.

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-107S*	*MW-107S*	*MW-107S*	*MW-107S*	*MW-107S*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102711-JV-030*	*WG-56393-020812-JV-051*	*WG-56393-042612-JV-068*	*WG-56393-072412-JV-088*	*GW-56393-102212-JV-100*
Sample Date:		Drinking Water	Surface Water	Contact	*10/27/2011*	*2/8/2012*	*4/26/2012*	*7/24/2012*	*10/22/2012*
Sample Type:			Interface						
	Units	a	b	c					
Volatile Organic Compounds									
Acetone	µg/L	2100	1700	31000000	R	R	R	R	20 U
Benzene	µg/L	5	200	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	ID	14000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	µg/L	80	ID	140000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane (Methyl bromide)	µg/L	29	35	70000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	38000	2200	240000000	R	R	R	R	R
Carbon disulfide	µg/L	2300	ID	1200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	5	45	4600	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	µg/L	100	25	86000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	µg/L	1700	1100	440000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform (Trichloromethane)	µg/L	80	350	150000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane (Methyl chloride)	µg/L	1100	ID	490000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	-	390	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Dibromochloromethane	µg/L	80	ID	18000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	5.7	25	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	µg/L	600	13	160000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	µg/L	19	28	2000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	µg/L	75	17	6400	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane (CFC-12)	µg/L	4800	ID	300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethane	µg/L	2500	740	2400000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	µg/L	5	360	19000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	µg/L	7	130	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	µg/L	70	620	200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	µg/L	100	1500	220000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	µg/L	5	230	16000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	74	18	170000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Hexanone	µg/L	2900	ID	5200000	R	20 U	R	20 U	20 U
Isopropyl benzene	µg/L	2300	28	56000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methyl tert butyl ether (MTBE)	µg/L	40	7100	610000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Methyl-2-pentanone [2]	µg/L	5200	ID	13000000	20 U	R	20 U	R	20 U
Methylene chloride	µg/L	5	1500	220000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	µg/L	100	80	9700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	µg/L	35	78	4700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	µg/L	5	60	12000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	790	270	530000	0.50 U	0.50 U	0.50 U	0.50 U	0.15 J
1,2,4-Trichlorobenzene	µg/L	70	99	19000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	µg/L	200	89	1300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2-Trichloroethane	µg/L	5	330	21000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	5	200	22000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane (CFC-11)	µg/L	7300	-	1100000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	µg/L	2	13	1000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m&p-Xylenes	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-107S*	*MW-107S*	*MW-107S*	*MW-107S*	*MW-107S*
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	*WG-56393-102711-JV-030*	*WG-56393-020812-JV-051*	*WG-56393-042612-JV-068*	*WG-56393-072412-JV-088*	*GW-56393-102212-JV-100*
Sample Date:					*10/27/2011*	*2/8/2012*	*4/26/2012*	*7/24/2012*	*10/22/2012*
Sample Type:									
	Units	a	b	c					
Semi-Volatile Organic Compounds									
Acenaphthene	µg/L	3800	38	4200	--	0.20 U	--	0.20 U	--
Acenaphthylene	µg/L	150	ID	3900	--	0.20 U	--	0.20 U	--
Anthracene	µg/L	43	ID	43	--	0.20 U	--	0.20 U	--
Benzo(a)anthracene	µg/L	8.5	ID	9.4	--	0.20 U	--	0.20 U	--
Benzo(a)pyrene	µg/L	5	ID	1	--	0.20 U	--	0.20 U	--
Benzo(b)fluoranthene	µg/L	1.5	ID	1.5	--	0.20 U	--	0.20 U	--
Benzo(g,h,i)perylene	µg/L	1	-	1	--	0.20 U	--	0.20 U	--
Benzo(k)fluoranthene	µg/L	1	-	1	--	0.20 U	--	0.20 U	--
Butyl benzylphthalate (BBP)	µg/L	2700	67	2700	--	0.20 U	--	0.024 J	--
Carbazole	µg/L	350	10	7400	--	0.20 U	--	0.20 U	--
4-Chloro-3-methylphenol	µg/L	420	7.4	79000	--	0.50 U	--	0.49 U	--
bis(2-Chloroethyl)ether	µg/L	8.3	1	5700	--	0.20 U	--	0.20 U	--
2-Chlorophenol	µg/L	130	18	94000	--	0.50 U	--	0.49 U	--
Chrysene	µg/L	1.6	ID	1.6	--	0.20 U	--	0.20 U	--
Dibenz(a,h)anthracene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	--
Dibenzofuran	µg/L	ID	4	ID	--	0.20 U	--	0.20 U	--
3,3'-Dichlorobenzidine	µg/L	4.3	0.3	180	--	2.0 U	--	2.0 U	--
2,4-Dichlorophenol	µg/L	210	11	48000	--	0.50 U	--	0.49 U	--
Diethyl phthalate	µg/L	16000	110	1100000	--	0.20 U	--	0.20 U	--
Dimethyl phthalate	µg/L	210000	-	4200000	--	0.20 U	--	0.20 U	--
2,4-Dimethylphenol	µg/L	1000	380	520000	--	4.0 U	--	3.9 U	--
Di-n-butylphthalate (DBP)	µg/L	2500	9.7	11000	--	0.20 U	--	0.034 J	--
4,6-Dinitro-2-methylphenol	µg/L	20	-	9500	--	2.0 U	--	2.0 U	--
2,4-Dinitrotoluene	µg/L	32	-	8600	--	0.20 U	--	0.20 U	--
Di-n-octyl phthalate (DnOP)	µg/L	380	ID	400	--	0.20 U	--	0.20 U	--
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	6	25	320	--	1.0 U	--	0.97 U	--
Fluoranthene	µg/L	210	1.6	210	--	0.20 U	--	0.20 U	--
Fluorene	µg/L	2000	12	2000	--	0.20 U	--	0.20 U	--
Hexachlorobenzene	µg/L	1	0.2	4.6	--	0.20 U	--	0.20 U	--
Hexachlorobutadiene	µg/L	42	0.053	400	--	0.20 U	--	0.20 U	--
Hexachlorocyclopentadiene	µg/L	50	ID	1600	--	1.0 U	--	0.97 U	--
Hexachloroethane	µg/L	21	6.7	1900	--	0.20 U	--	0.20 U	--
Indeno(1,2,3-cd)pyrene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	--
Isophorone	µg/L	3100	1300	990000	--	0.20 U	--	0.20 U	--
2-Methylnaphthalene	µg/L	750	19	25000	--	0.20 U	--	0.20 U	--
2-Methylphenol	µg/L	1000	30	810000	--	0.50 U	--	0.49 U	--
4-Methylphenol	µg/L	1000	30	810000	--	0.50 U	--	0.49 U	--
Naphthalene	µg/L	1500	11	31000	--	0.036 J	--	0.038 J	--
Nitrobenzene	µg/L	9.6	180	11000	--	0.20 U	--	0.20 U	--
2-Nitrophenol	µg/L	58	ID	79000	--	0.50 U	--	0.49 U	--
N-Nitrosodi-n-propylamine	µg/L	5	-	360	--	0.20 U	--	0.20 U	--
N-Nitrosodiphenylamine	µg/L	1100	-	35000	--	0.20 U	--	0.20 U	--
Pentachlorophenol	µg/L	1	G,X	200	--	1.0 U	--	0.97 U	--
Phenanthrene	µg/L	150	2	1000	--	0.20 U	--	0.20 U	--
Phenol	µg/L	13000	450	29000000	--	0.50 U	--	0.49 U	--
Pyrene	µg/L	140	ID	140	--	0.20 U	--	0.20 U	--
2,4,5-Trichlorophenol	µg/L	2100	-	170000	--	0.50 U	--	0.49 U	--
2,4,6-Trichlorophenol	µg/L	470	5	10000	--	0.50 U	--	0.49 U	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-107S*	*MW-107S*	*MW-107S*	*MW-107S*	*MW-107S*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102711-JV-030*	*WG-56393-020812-JV-051*	*WG-56393-042612-JV-068*	*WG-56393-072412-JV-088*	*GW-56393-102212-JV-100*
Sample Date:		Drinking Water	Surface Water	Contact	*10/27/2011*	*2/8/2012*	*4/26/2012*	*7/24/2012*	*10/22/2012*
Sample Type:			Interface						
	Units	a	b	c					
PCBs									
Aroclor-1016 (PCB-1016)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0050 U	0.020 U
Aroclor-1221 (PCB-1221)	µg/L	-	-	-	0.040 U	0.041 U	0.040 U	0.010 U	0.040 U
Aroclor-1232 (PCB-1232)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0050 U	0.020 U
Aroclor-1242 (PCB-1242)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0050 U	0.020 U
Aroclor-1248 (PCB-1248)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0050 U	0.020 U
Aroclor-1254 (PCB-1254)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0050 U	0.020 U
Aroclor-1260 (PCB-1260)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0050 U	0.020 U
Total PCBs	µg/L	0.5	200	3.3	ND	ND	ND	ND	ND
Dioxins									
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.00000576 J	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
Total heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.00000576 J	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.0000552	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.000239	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.00000184 J	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000000994 J	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.00000126 J	--
Total hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.0000144 J	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.0000132 J	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.00000532 J	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.0000309	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.000236	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	µg/L	-	-	-	--	0.000049 U	--	0.00000406 J	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	µg/L	-	-	-	--	0.000049 U	--	0.0000571	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.000024 U	--
Total pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.0000245 U	--	0.00000279 J	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.00000435 J	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.0000245 U	--	0.000101	--
Total tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.0000098 U	--	0.00000481 U	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.0000098 U	--	0.00000481 U	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.0000098 U	--	0.00000481 U	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.0000098 U	--	0.00000347 J	--
Toxic Equivalents	µg/L	0.00003	0.00001	0.00001	--	0.0	--	0.000008136	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-107S*	*MW-107S*	*MW-107S*	*MW-107S*	*MW-107S*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102711-JV-030*	*WG-56393-020812-JV-051*	*WG-56393-042612-JV-068*	*WG-56393-072412-JV-088*	*GW-56393-102212-JV-100*
Sample Date:		Drinking Water	Surface Water	Contact	*10/27/2011*	*2/8/2012*	*4/26/2012*	*7/24/2012*	*10/22/2012*
Sample Type:			Interface						
	Units	a	b	c					
Metals									
Aluminum	µg/L	50	-	64000000	--	1.3 J	--	1.8 J	--
Antimony	µg/L	6	130	68000	--	0.050 U	--	0.050 U	--
Arsenic	µg/L	10	10	4300	--	1.81	--	2.6	--
Barium	µg/L	2000	1400	14000000	--	103	--	105	--
Beryllium	µg/L	4	41	290000	--	0.020 U	--	0.020 U	--
Cadmium	µg/L	5	5.1	190000	--	0.004	--	0.030 J	--
Chromium	µg/L	100	11	460000	--	0.047 J	--	0.20 U	--
Chromium VI (hexavalent)	µg/L	100	11	460000	--	2.0 U	--	2.0 U	--
Cobalt	µg/L	100	100	2400000	--	0.648	--	0.405	--
Copper	µg/L	1000	23	7400000	--	0.50	--	0.53	--
Iron	µg/L	300	-	58000000	--	3290[a]	--	3540[a]	--
Lead	µg/L	4	34	ID	--	0.020 U	--	0.018 J	--
Magnesium	µg/L	1100000	-	1000000000	27300	28300	28200	29000	28500
Manganese	µg/L	50	5200	9100000	--	709[a]	--	723[a]	--
Mercury	µg/L	2	0.0013	56	0.001 U	0.001 U	0.00065 J	0.001 U	0.001 U
Nickel	µg/L	100	130	74000000	--	2.76	--	3.04	--
Selenium	µg/L	50	5	970000	--	1.0 U	--	1.0 U	--
Silver	µg/L	98	0.2	1500000	--	0.020 U	--	0.020 U	--
Sodium	µg/L	350000	-	1000000000	26700	22300	22100	23700	23000
Thallium	µg/L	2	3.7	13000	--	0.119	--	0.098	--
Vanadium	µg/L	62	27	970000	--	0.200 U	--	0.20 U	--
Zinc	µg/L	5000	310	110000000	--	2.16	--	1.9	--
General Chemistry									
Cyanide (amenable)	µg/L	200	-	57000	--	10 U	10 U	10 U	10 U
Cyanide (total)	µg/L	200	5.2	57000	10 U	10 U	10 U	10 U	10 U
Field Parameters									
Conductivity	mS/cm	-	-	-	0.784	0.875	0.933	1.36	0.913
Dissolved Oxygen (DO)	mg/L	-	-	-	0.27	0.01	6.38	3.09	0.15
Oxidation Reduction Potential	millivolt	-	-	-	-21.2	-98	-24	-108	-40
pH	s.u.	6.5-8.5	6.5-8.5	-	6.83	6.83	6.84	6.6	6.61
Temperature	Deg C	-	-	-	12.23	9.3	11.9	16.7	13.20
Turbidity	NTU	-	-	-	5.21	<2.69	<0.24	4.62	0.92

Notes:

[1] Cleanup criteria identified by MDEQ RRD Op Memo No. 1, updated 9/28/12, pursuant to 1994 PA 451 as amended.

[2] Also known as Methyl isobutyl kelone (MIBK).

U - Not present at or above the associated value.

J - Estimated concentration.

UJ - Estimated reporting limit.

R - Rejected.

[ ] Exceeds Generic Cleanup Criteria.

Superscript letter notes the criterion exceeded.

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-108D*	*MW-108D*	*MW-108D*	*MW-108D*	*MW-108D*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102711-JV-031*	*WG-56393-020812-JV-053*	*WG-56393-042612-JV-070*	*WG-56393-072412-JV-090*	*GW-56393-102212-JV-099*
Sample Date:		Drinking Water	Surface Water	Contact	*10/27/2011*	*2/8/2012*	*4/26/2012*	*7/24/2012*	*10/22/2012*
Sample Type:			Interface						
	Units	a	b	c					
Volatile Organic Compounds									
Acetone	µg/L	2100	1700	31000000	R	R	R	R	20 U
Benzene	µg/L	5	200	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	ID	14000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	µg/L	80	ID	140000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane (Methyl bromide)	µg/L	29	35	70000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	38000	2200	240000000	R	R	R	R	R
Carbon disulfide	µg/L	2300	ID	1200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	5	45	4600	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	µg/L	100	25	86000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	µg/L	1700	1100	440000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform (Trichloromethane)	µg/L	80	350	150000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane (Methyl chloride)	µg/L	1100	ID	490000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	-	390	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Dibromochloromethane	µg/L	80	ID	18000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	5.7	25	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	µg/L	600	13	160000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	µg/L	19	28	2000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	µg/L	75	17	6400	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane (CFC-12)	µg/L	4800	ID	300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethane	µg/L	2500	740	2400000	0.14 J	0.15 J	0.11 J	0.15 J	0.14 J
1,2-Dichloroethane	µg/L	5	360	19000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	µg/L	7	130	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	µg/L	70	620	200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	µg/L	100	1500	220000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	µg/L	5	230	16000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	74	18	170000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Hexanone	µg/L	2900	ID	5200000	R	20 U	R	20 U	20 U
Isopropyl benzene	µg/L	2300	28	56000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methyl tert butyl ether (MTBE)	µg/L	40	7100	610000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Methyl-2-pentanone [2]	µg/L	5200	ID	13000000	20 U	R	20 U	R	20 U
Methylene chloride	µg/L	5	1500	220000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	µg/L	100	80	9700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	µg/L	35	78	4700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	µg/L	5	60	12000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	790	270	530000	0.50 U	0.50 U	0.50 U	0.50 U	0.43 J
1,2,4-Trichlorobenzene	µg/L	70	99	19000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	µg/L	200	89	1300000	0.50 U	0.12 J	0.14 J	0.50 U	0.50 U
1,1,2-Trichloroethane	µg/L	5	330	21000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	5	200	22000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane (CFC-11)	µg/L	7300	-	1100000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	µg/L	2	13	1000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m&p-Xylenes	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-108D	MW-108D	MW-108D	MW-108D	MW-108D
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	WG-56393-102711-JV-031	WG-56393-020812-JV-053	WG-56393-042612-JV-070	WG-56393-072412-JV-090	GW-56393-102212-JV-099
Sample Date:					10/27/2011	2/8/2012	4/26/2012	7/24/2012	10/22/2012
Sample Type:	Units	a	b	c					
Semi-Volatile Organic Compounds									
Acenaphthene	µg/L	3800	38	4200	--	0.20 U	--	0.20 U	--
Acenaphthylene	µg/L	150	ID	3900	--	0.20 U	--	0.20 U	--
Anthracene	µg/L	43	ID	43	--	0.20 U	--	0.20 U	--
Benzo(a)anthracene	µg/L	8.5	ID	9.4	--	0.023 J	--	0.20 U	--
Benzo(a)pyrene	µg/L	5	ID	1	--	0.20 U	--	0.20 U	--
Benzo(b)fluoranthene	µg/L	1.5	ID	1.5	--	0.20 U	--	0.20 U	--
Benzo(g,h,i)perylene	µg/L	1	-	1	--	0.20 U	--	0.20 U	--
Benzo(k)fluoranthene	µg/L	1	-	1	--	0.20 U	--	0.20 U	--
Butyl benzylphthalate (BBP)	µg/L	2700	67	2700	--	0.20 U	--	0.20 U	--
Carbazole	µg/L	350	10	7400	--	0.20 U	--	0.20 U	--
4-Chloro-3-methylphenol	µg/L	420	7.4	79000	--	0.50 U	--	0.49 U	--
bis(2-Chloroethyl)ether	µg/L	8.3	1	5700	--	0.20 U	--	0.20 U	--
2-Chlorophenol	µg/L	130	18	94000	--	0.50 U	--	0.49 U	--
Chrysene	µg/L	1.6	ID	1.6	--	0.20 U	--	0.20 U	--
Dibenz(a,h)anthracene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	--
Dibenzofuran	µg/L	ID	4	ID	--	0.20 U	--	0.20 U	--
3,3'-Dichlorobenzidine	µg/L	4.3	0.3	180	--	2.0 U	--	2.0 U	--
2,4-Dichlorophenol	µg/L	210	11	48000	--	0.50 U	--	0.49 U	--
Diethyl phthalate	µg/L	16000	110	1100000	--	0.20 U	--	0.20 U	--
Dimethyl phthalate	µg/L	210000	-	4200000	--	0.20 U	--	0.20 U	--
2,4-Dimethylphenol	µg/L	1000	380	520000	--	4.0 U	--	3.9 U	--
Di-n-butylphthalate (DBP)	µg/L	2500	9.7	11000	--	0.20 U	--	0.032 J	--
4,6-Dinitro-2-methylphenol	µg/L	20	-	9500	--	2.0 U	--	2.0 U	--
2,4-Dinitrotoluene	µg/L	32	-	8600	--	0.20 U	--	0.20 U	--
Di-n-octyl phthalate (DnOP)	µg/L	380	ID	400	--	0.019 J	--	0.20 U	--
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	6	25	320	--	1.0 U	--	0.97 U	--
Fluoranthene	µg/L	210	1.6	210	--	0.020 J	--	0.20 U	--
Fluorene	µg/L	2000	12	2000	--	0.20 U	--	0.20 U	--
Hexachlorobenzene	µg/L	1	0.2	4.6	--	0.20 U	--	0.20 U	--
Hexachlorobutadiene	µg/L	42	0.053	400	--	0.20 U	--	0.20 U	--
Hexachlorocyclopentadiene	µg/L	50	ID	1600	--	1.0 U	--	0.97 U	--
Hexachloroethane	µg/L	21	6.7	1900	--	0.20 U	--	0.20 U	--
Indeno(1,2,3-cd)pyrene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	--
Isophorone	µg/L	3100	1300	990000	--	0.20 U	--	0.20 U	--
2-Methylnaphthalene	µg/L	750	19	25000	--	0.20 U	--	0.20 U	--
2-Methylphenol	µg/L	1000	30	810000	--	0.50 U	--	0.49 U	--
4-Methylphenol	µg/L	1000	30	810000	--	0.50 U	--	0.49 U	--
Naphthalene	µg/L	1500	11	31000	--	0.042 J	--	0.20 U	--
Nitrobenzene	µg/L	9.6	180	11000	--	0.20 U	--	0.20 U	--
2-Nitrophenol	µg/L	58	ID	79000	--	0.50 U	--	0.49 U	--
N-Nitrosodi-n-propylamine	µg/L	5	-	360	--	0.20 U	--	0.20 U	--
N-Nitrosodiphenylamine	µg/L	1100	-	35000	--	0.20 U	--	0.20 U	--
Pentachlorophenol	µg/L	1	C,X	200	--	1.0 U	--	0.97 U	--
Phenanthrene	µg/L	150	2	1000	--	0.20 U	--	0.20 U	--
Phenol	µg/L	13000	450	29000000	--	0.50 U	--	0.49 U	--
Pyrene	µg/L	140	ID	140	--	0.022 J	--	0.20 U	--
2,4,5-Trichlorophenol	µg/L	2100	-	170000	--	0.50 U	--	0.49 U	--
2,4,6-Trichlorophenol	µg/L	470	5	10000	--	0.50 U	--	0.49 U	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-108D*	*MW-108D*	*MW-108D*	*MW-108D*	*MW-108D*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102711-JV-031*	*WG-56393-020812-JV-053*	*WG-56393-042612-JV-070*	*WG-56393-072412-JV-090*	*GW-56393-102212-JV-099*
Sample Date:		Drinking Water	Surface Water	Contact	*10/27/2011*	*2/8/2012*	*4/26/2012*	*7/24/2012*	*10/22/2012*
Sample Type:			Interface						
	Units	a	b	c					
PCBs									
Aroclor-1016 (PCB-1016)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0050 U	0.020 U
Aroclor-1221 (PCB-1221)	µg/L	-	-	-	0.040 U	0.041 U	0.040 U	0.010 U	0.040 U
Aroclor-1232 (PCB-1232)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0050 U	0.020 U
Aroclor-1242 (PCB-1242)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0050 U	0.020 U
Aroclor-1248 (PCB-1248)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0050 U	0.020 U
Aroclor-1254 (PCB-1254)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0050 U	0.020 U
Aroclor-1260 (PCB-1260)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.0050 U	0.020 U
Total PCBs	µg/L	0.5	200	3.3	ND	ND	ND	ND	ND
Dioxins									
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000025 U	--	0.00000733 J	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000025 U	--	0.000026 U	--
Total heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000025 U	--	0.0000133 J	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.000025 U	--	0.0000599	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.000025 U	--	0.00026	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	--	0.00000166 J	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	--	0.00000103 J	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	--	0.000026 U	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	--	0.00000139 J	--
Total hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	--	0.00000166 J	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000025 U	--	0.0000107 J	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000025 U	--	0.00000539 J	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000025 U	--	0.0000334	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000025 U	--	0.00024	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	µg/L	-	-	-	--	0.00005 U	--	0.00000408 J	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	µg/L	-	-	-	--	0.00005 U	--	0.0000705	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000025 U	--	0.000026 U	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000025 U	--	0.000026 U	--
Total pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000025 U	--	0.00000414 J	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.000025 U	--	0.00000373 J	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.000025 U	--	0.000098	--
Total tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.00001 U	--	0.00000521 U	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.00001 U	--	0.00000521 U	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.00001 U	--	0.00000521 U	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.00001 U	--	0.0000113	--
Toxic Equivalents	µg/L	0.00003	0.00001	0.00001	--	0.0	--	0.000007894	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-108D	MW-108D	MW-108D	MW-108D	MW-108D
Sample Identification:		Non-Residential	Groundwater	Groundwater	WG-56393-102711-JV-031	WG-56393-020812-JV-053	WG-56393-042612-JV-070	WG-56393-072412-JV-090	GW-56393-102212-JV-099
Sample Date:		Drinking Water	Surface Water	Contact	10/27/2011	2/8/2012	4/26/2012	7/24/2012	10/22/2012
Sample Type:			Interface						
	Units	a	b	c					
Metals									
Aluminum	µg/L	50	-	64000000	--	2.9	--	3.3	--
Antimony	µg/L	6	130	68000	--	0.050 U	--	0.027 J	--
Arsenic	µg/L	10	10	4300	--	1.31	--	1.9	--
Barium	µg/L	2000	1400	14000000	--	303	--	285	--
Beryllium	µg/L	4	41	290000	--	0.020 U	--	0.020 U	--
Cadmium	µg/L	5	5.1	190000	--	0.008 J	--	0.007 J	--
Chromium	µg/L	100	11	460000	--	0.15 J	--	0.16 J	--
Chromium VI (hexavalent)	µg/L	100	11	460000	--	2.0 UJ	--	2.0 U	--
Cobalt	µg/L	100	100	2400000	--	0.438	--	0.538	--
Copper	µg/L	1000	23	7400000	--	0.20	--	0.30	--
Iron	µg/L	300	-	58000000	--	398[a]	--	510[a]	--
Lead	µg/L	4	34	ID	--	0.020 U	--	0.027	--
Magnesium	µg/L	1100000	-	1000000000	26900	27200	25900	24700	25000
Manganese	µg/L	50	5200	9100000	--	283[a]	--	219[a]	--
Mercury	µg/L	2	0.0013	56	0.001 U	0.001 U	0.00079 J	0.001 U	0.001 U
Nickel	µg/L	100	130	74000000	--	0.84	--	1.30	--
Selenium	µg/L	50	5	970000	--	1.0 U	--	1.0 U	--
Silver	µg/L	98	0.2	1500000	--	0.020 U	--	0.020 U	--
Sodium	µg/L	350000	-	1000000000	46100	45700	44400	39900	35300
Thallium	µg/L	2	3.7	13000	--	0.0564	--	0.062	--
Vanadium	µg/L	62	27	970000	--	0.200 U	--	0.04 J	--
Zinc	µg/L	5000	310	110000000	--	0.74	--	1.7	--
General Chemistry									
Cyanide (amenable)	µg/L	200	-	57000	--	4 J	10 U	10 U	10 U
Cyanide (total)	µg/L	200	5.2	57000	10 U	4 J	10 U	10 U	10 U
Field Parameters									
Conductivity	mS/cm	-	-	-	0.817	0.851	0.884	0.707	0.740
Dissolved Oxygen (DO)	mg/L	-	-	-	0.17	0	1.68	0.92	0.13
Oxidation Reduction Potential	millivolt	-	-	-	-81.1	-88	-33	-76	-60
pH	s.u.	6.5-8.5	6.5-8.5	-	7.28	7.27	7.18	7.32	7.18
Temperature	Deg C	-	-	-	11.82	9.4	12.3	14.87	11.95
Turbidity	NTU	-	-	-	3.82	<3.81	<0.41	2.65	0.31

Notes:

[1] Cleanup criteria identified by MDEQ RRD Op Memo No. 1, updated 9/28/12, pursuant to 1994 PA 451 as amended.

[2] Also known as Methyl isobutyl ketone (MIBK).

U - Not present at or above the associated value.

J - Estimated concentration.

UJ - Estimated reporting limit.

R - Rejected.

[ ] - Exceeds Generic Cleanup Criteria.

Superscript letter notes the criterion exceeded.

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-108S*	*MW-108S*	*MW-108S*	*MW-108S*	*MW-108S*
Sample Identification:		Non-Residential	Groundwater	Groundwater	WG-56393-102711-JV-032	WG-56393-020812-JV-052	WG-56393-042612-JV-069	WG-56393-072412-JV-089	GW-56393-102212-JV-098
Sample Date:		Drinking Water	Surface Water	Contact	*10/27/2011*	*2/8/2012*	*4/26/2012*	*7/24/2012*	*10/22/2012*
Sample Type:			Interface						
	Units	a	b	c					
Volatile Organic Compounds									
Acetone	µg/L	2100	1700	31000000	R	R	R	R	20 U
Benzene	µg/L	5	200	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	ID	14000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	µg/L	80	ID	140000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane (Methyl bromide)	µg/L	29	35	70000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	38000	2200	240000000	R	R	R	R	R
Carbon disulfide	µg/L	2300	ID	1200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	5	45	4600	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	µg/L	100	25	86000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	µg/L	1700	1100	440000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform (Trichloromethane)	µg/L	80	350	150000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane (Methyl chloride)	µg/L	1100	ID	490000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	-	390	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Dibromochloromethane	µg/L	80	ID	18000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	5.7	25	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	µg/L	600	13	160000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	µg/L	19	28	2000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	µg/L	75	17	6400	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane (CFC-12)	µg/L	4800	ID	300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethane	µg/L	2500	740	2400000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	µg/L	5	360	19000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	µg/L	7	130	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	µg/L	70	620	200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	µg/L	100	1500	220000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	µg/L	5	230	16000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	74	18	170000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Hexanone	µg/L	2900	ID	5200000	R	20 U	R	20 U	20 U
Isopropyl benzene	µg/L	2300	28	56000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methyl tert butyl ether (MTBE)	µg/L	40	7100	610000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Methyl-2-pentanone [1]	µg/L	5200	ID	13000000	20 U	R	20 U	R	20 U
Methylene chloride	µg/L	5	1500	220000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	µg/L	100	80	9700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	µg/L	35	78	4700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	µg/L	5	60	12000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	790	270	530000	0.50 U	0.50 U	0.50 U	0.50 U	0.19 J
1,2,4-Trichlorobenzene	µg/L	70	99	19000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	µg/L	200	89	1300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2-Trichloroethane	µg/L	5	330	21000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	5	200	22000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane (CFC-11)	µg/L	7300	-	1100000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	µg/L	2	13	1000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m&p-Xylenes	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-108S*	*MW-108S*	*MW-108S*	*MW-108S*	*MW-108S*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102711-JV-032*	*WG-56393-020812-JV-052*	*WG-56393-042612-JV-069*	*WG-56393-072412-JV-089*	*GW-56393-102212-JV-098*
Sample Date:		Drinking Water	Surface Water	Contact	*10/27/2011*	*2/8/2012*	*4/26/2012*	*7/24/2012*	*10/22/2012*
Sample Type:			Interface						
	Units	a	b	c					
Semi-Volatile Organic Compounds									
Acenaphthene	µg/L	3800	38	4200	--	0.20 U	--	0.20 U	--
Acenaphthylene	µg/L	150	ID	3900	--	0.20 U	--	0.20 U	--
Anthracene	µg/L	43	ID	43	--	0.20 U	--	0.20 U	--
Benzo(a)anthracene	µg/L	8.5	ID	9.4	--	0.20 U	--	0.20 U	--
Benzo(a)pyrene	µg/L	5	ID	1	--	0.20 U	--	0.20 U	--
Benzo(b)fluoranthene	µg/L	1.5	ID	1.5	--	0.20 U	--	0.20 U	--
Benzo(g,h,i)perylene	µg/L	1	-	1	--	0.20 U	--	0.20 U	--
Benzo(k)fluoranthene	µg/L	1	-	1	--	0.20 U	--	0.20 U	--
Butyl benzylphthalate (BBP)	µg/L	2700	67	2700	--	0.20 U	--	0.021 J	--
Carbazole	µg/L	350	10	7400	--	0.20 U	--	0.20 U	--
4-Chloro-3-methylphenol	µg/L	420	7.4	79000	--	0.48 U	--	0.50 U	--
bis(2-Chloroethyl)ether	µg/L	8.3	1	5700	--	0.20 U	--	0.20 U	--
2-Chlorophenol	µg/L	130	18	94000	--	0.48 U	--	0.50 U	--
Chrysene	µg/L	1.6	ID	1.6	--	0.20 U	--	0.20 U	--
Dibenz(a,h)anthracene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	--
Dibenzofuran	µg/L	ID	4	ID	--	0.20 U	--	0.20 U	--
3,3'-Dichlorobenzidine	µg/L	4.3	0.3	180	--	2.0 U	--	2.0 U	--
2,4-Dichlorophenol	µg/L	210	11	48000	--	0.48 U	--	0.50 U	--
Diethyl phthalate	µg/L	16000	110	1100000	--	0.20 U	--	0.20 U	--
Dimethyl phthalate	µg/L	210000	-	4200000	--	0.20 U	--	0.20 U	--
2,4-Dimethylphenol	µg/L	1000	380	520000	--	3.9 U	--	4.0 U	--
Di-n-butylphthalate (DBP)	µg/L	2500	9.7	11000	--	0.20 U	--	0.20 U	--
4,6-Dinitro-2-methylphenol	µg/L	20	-	9500	--	2.0 U	--	2.0 U	--
2,4-Dinitrotoluene	µg/L	32	-	8600	--	0.20 U	--	0.20 U	--
Di-n-octyl phthalate (DnOP)	µg/L	380	ID	400	--	0.20 U	--	0.20 U	--
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	6	25	320	--	0.96 U	--	1.0 U	--
Fluoranthene	µg/L	210	1.6	210	--	0.20 U	--	0.20 U	--
Fluorene	µg/L	2000	12	2000	--	0.20 U	--	0.20 U	--
Hexachlorobenzene	µg/L	1	0.2	4.6	--	0.20 U	--	0.20 U	--
Hexachlorobutadiene	µg/L	42	0.053	400	--	0.20 U	--	0.20 U	--
Hexachlorocyclopentadiene	µg/L	50	ID	1600	--	0.96 U	--	1.0 U	--
Hexachloroethane	µg/L	21	6.7	1900	--	0.20 U	--	0.20 U	--
Indeno(1,2,3-cd)pyrene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	--
Isophorone	µg/L	3100	1300	990000	--	0.20 U	--	0.20 U	--
2-Methylnaphthalene	µg/L	750	19	25000	--	0.20 U	--	0.20 U	--
2-Methylphenol	µg/L	1000	30	810000	--	0.48 U	--	0.50 U	--
4-Methylphenol	µg/L	1000	30	810000	--	0.48 U	--	0.50 U	--
Naphthalene	µg/L	1500	11	31000	--	0.20 U	--	0.20 U	--
Nitrobenzene	µg/L	9.6	180	11000	--	0.20 U	--	0.20 U	--
2-Nitrophenol	µg/L	58	ID	79000	--	0.48 U	--	0.50 U	--
N-Nitrosodi-n-propylamine	µg/L	5	-	360	--	0.20 U	--	0.20 U	--
N-Nitrosodiphenylamine	µg/L	1100	-	35000	--	0.20 U	--	0.20 U	--
Pentachlorophenol	µg/L	1	G,X	200	--	0.96 U	--	1.0 U	--
Phenanthrene	µg/L	150	2	1000	--	0.20 U	--	0.20 U	--
Phenol	µg/L	13000	450	29000000	--	0.48 U	--	0.50 U	--
Pyrene	µg/L	140	ID	140	--	0.20 U	--	0.20 U	--
2,4,5-Trichlorophenol	µg/L	2100	-	170000	--	0.48 U	--	0.50 U	--
2,4,6-Trichlorophenol	µg/L	470	5	10000	--	0.48 U	--	0.50 U	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]							
Sample Location:					*MW-108S*	*MW-108S*	*MW-108S*	*MW-108S*	*MW-108S*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102711-JV-032*	*WG-56393-020812-JV-052*	*WG-56393-042612-JV-069*	*WG-56393-072412-JV-089*	*GW-56393-102212-JV-098*
Sample Date:		Drinking Water	Surface Water	Contact	*10/27/2011*	*2/8/2012*	*4/26/2012*	*7/24/2012*	*10/22/2012*
Sample Type:			Interface						
	Units	a	b	c					
PCBs									
Aroclor-1016 (PCB-1016)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0050 U	0.020 U
Aroclor-1221 (PCB-1221)	µg/L	-	-	-	0.040 U	0.040 U	0.040 U	0.0099 U	0.040 U
Aroclor-1232 (PCB-1232)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0050 U	0.020 U
Aroclor-1242 (PCB-1242)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0050 U	0.020 U
Aroclor-1248 (PCB-1248)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0050 U	0.020 U
Aroclor-1254 (PCB-1254)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0050 U	0.020 U
Aroclor-1260 (PCB-1260)	µg/L	-	-	-	0.020 U	0.020 U	0.020 U	0.0050 U	0.020 U
Total PCBs	µg/L	0.5	200	3.3	ND	ND	ND	ND	ND
Dioxins									
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000025 U	--	0.00000596 J	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000025 U	--	0.000025 U	--
Total heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000025 U	--	0.0000071 J	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.000025 U	--	0.0000587	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.000025 U	--	0.00025	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	--	0.00000182 J	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	--	0.00000121 J	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	--	0.000025 U	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	--	0.000025 U	--
Total hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	--	0.0000114 J	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000025 U	--	0.0000112 J	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000025 U	--	0.00000474 J	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000025 U	--	0.0000327	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000025 U	--	0.000239	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	µg/L	-	-	-	--	0.00005 U	--	0.00000327 J	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	µg/L	-	-	-	--	0.00005 U	--	0.0000686	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000025 U	--	0.000025 U	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000025 U	--	0.000025 U	--
Total pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000025 U	--	0.00000355 J	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.000025 U	--	0.0000038 J	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.000025 U	--	0.0000803	--
Total tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.00001 U	--	0.000005 U	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.00001 U	--	0.000005 U	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.00001 U	--	0.000005 U	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.00001 U	--	0.00000685	--
Toxic Equivalents	µg/L	0.00003	0.00001	0.00001	--	0.0	--	0.000007714	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			*MW-108S*	*MW-108S*	*MW-108S*	*MW-108S*	*MW-108S*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102711-JV-032*	*WG-56393-020812-JV-052*	*WG-56393-042612-JV-069*	*WG-56393-072412-JV-089*	*GW-56393-102212-JV-098*
Sample Date:		Drinking Water	Surface Water	Contact	*10/27/2011*	*2/8/2012*	*4/26/2012*	*7/24/2012*	*10/22/2012*
Sample Type:			Interface						
	Units	a	b	c					
Metals									
Aluminum	µg/L	50	-	64000000	--	3.4	--	7.6	--
Antimony	µg/L	6	130	68000	--	0.050 U	--	0.050 U	--
Arsenic	µg/L	10	10	4300	--	0.53	--	0.5	--
Barium	µg/L	2000	1400	14000000	--	99.7	--	89.6	--
Beryllium	µg/L	4	41	290000	--	0.020 U	--	0.020 U	--
Cadmium	µg/L	5	5.1	190000	--	0.017 J	--	0.020 U	--
Chromium	µg/L	100	11	460000	--	0.09 J	--	0.20	--
Chromium VI (hexavalent)	µg/L	100	11	460000	--	2.0 UJ	--	2.0 U	--
Cobalt	µg/L	100	100	2400000	--	0.369	--	0.186	--
Copper	µg/L	1000	23	7400000	--	0.47	--	0.51	--
Iron	µg/L	300	-	58000000	--	122	--	98.5	--
Lead	µg/L	4	34	ID	--	0.035	--	0.048	--
Magnesium	µg/L	1100000	-	1000000000	23900	24700	24300	27100	25000
Manganese	µg/L	50	5200	9100000	--	448[a]	--	29.8	--
Mercury	µg/L	2	0.0013	56	0.00112	0.001 U	0.00141[b]	0.00114 U	0.001 U
Nickel	µg/L	100	130	74000000	--	0.99	--	0.80	--
Selenium	µg/L	50	5	970000	--	1.0 U	--	1.0 U	--
Silver	µg/L	98	0.2	1500000	--	0.020 U	--	0.020 U	--
Sodium	µg/L	350000	-	1000000000	19500	22100	23300	23400	21700
Thallium	µg/L	2	3.7	13000	--	0.0200 U	--	0.020 U	--
Vanadium	µg/L	62	27	970000	--	0.200 U	--	0.10 J	--
Zinc	µg/L	5000	310	110000000	--	4.53	--	0.9	--
General Chemistry									
Cyanide (amenable)	µg/L	200	-	57000	--	10 U	10 U	10 U	10 U
Cyanide (total)	µg/L	200	5.2	57000	10 U	10 U	10 U	10 U	10 U
Field Parameters									
Conductivity	mS/cm	-	-	-	0.736	0.796	0.851	0.703	0.889
Dissolved Oxygen (DO)	mg/L	-	-	-	1.33	1.03	2.72	2.34	1.81
Oxidation Reduction Potential	nillivolt	-	-	-	-63.2	7	-12	66	123
pH	s.u.	6.5-8.5	6.5-8.5	-	7.00	7.02	7.05	7.32	6.85
Temperature	Deg C	-	-	-	12.59	9.1	11.9	13.99	13.08
Turbidity	NTU	-	-	-	8.74	<4.12	<0.5	1.65	0.51

Notes:

[1] Cleanup criteria identified by MDEQ RRD Op Memo No. 1, updated 9/28/12, pursuant to 1994 PA 451 as amended.

[2] Also known as Methyl isobutyl ketone (MIBK).

U - Not present at or above the associated value.

J - Estimated concentration.

UJ - Estimated reporting limit.

R - Rejected.

[ ] - Exceeds Generic Cleanup Criteria.

Superscript letter notes the criterion exceeded.

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - OCTOBER 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-109D	MW-109D	MW-109D	MW-109D	MW-109D	MW-109D
Sample Identification:		Non-Residential	Groundwater	Groundwater	WG-56393-102711-JV-033	WG-56393-020612-JV-041	WG-56393-042612-JV-071	WG-56393-072312-JV-080	WG-56393-072312-JV-081	GW-56393-102312-JV-111
Sample Date:		Drinking Water	Surface Water	Contact	10/27/2011	2/6/2012	4/26/2012	7/23/2012	7/23/2012	10/23/2012
Sample Type:			Interface						Duplicate	
	Units	a	b	c						
Volatile Organic Compounds										
Acetone	µg/L	2100	1700	31000000	R	R	R	20 U	20 U	20 U
Benzene	µg/L	5	200	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	80	ID	14000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	µg/L	80	ID	140000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane (Methyl bromide)	µg/L	29	35	70000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	38000	2200	240000000	R	R	R	R	R	R
Carbon disulfide	µg/L	2300	ID	1200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	5	45	4600	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	µg/L	100	25	86000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	µg/L	1700	1100	440000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform (Trichloromethane)	µg/L	80	350	150000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane (Methyl chloride)	µg/L	1100	ID	490000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	-	390	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Dibromochloromethane	µg/L	80	ID	18000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	5.7	25	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	µg/L	600	13	160000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	µg/L	19	28	2000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	µg/L	75	17	6400	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane (CFC-12)	µg/L	4800	ID	300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
1,1-Dichloroethane	µg/L	2500	740	2400000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	µg/L	5	360	19000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	µg/L	7	130	11000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	µg/L	70	620	200000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	µg/L	100	1500	220000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	µg/L	5	230	16000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	µg/L	-	-	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	74	18	170000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Hexanone	µg/L	2900	ID	5200000	R	20 U	R	20 U	20 U	20 U
Isopropyl benzene	µg/L	2300	28	56000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methyl tert butyl ether (MTBE)	µg/L	40	7100	610000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Methyl-2-pentanone [2]	µg/L	5200	ID	13000000	20 U	R	20 U	20 U	20 U	20 U
Methylene chloride	µg/L	5	1500	220000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	µg/L	100	80	9700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	µg/L	35	78	4700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	µg/L	5	60	12000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	790	270	530000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trichlorobenzene	µg/L	70	99	19000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	µg/L	200	89	1300000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2-Trichloroethane	µg/L	5	330	21000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	5	200	22000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane (CFC-11)	µg/L	7300	-	1100000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	µg/L	2	13	1000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m&p-Xylenes	µg/L	280	41	190000	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - OCTOBER 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-109D	MW-109D	MW-109D	MW-109D	MW-109D	MW-109D
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	WG-56393-102711-JV-033	WG-56393-020612-JV-041	WG-56393-042612-JV-071	WG-56393-072312-JV-080	WG-56393-072312-JV-081	GW-56393-102312-JV-111
Sample Date:					10/27/2011	2/6/2012	4/26/2012	7/23/2012	7/23/2012	10/23/2012
Sample Type:									Duplicate	
	Units	a	b	c						
Semi-Volatile Organic Compounds										
Acenaphthene	µg/L	3800	38	4200	--	0.20 U	--	0.20 U	0.20 U	--
Acenaphthylene	µg/L	150	ID	3900	--	0.20 U	--	0.20 U	0.20 U	--
Anthracene	µg/L	43	ID	43	--	0.20 U	--	0.20 U	0.20 U	--
Benzo(a)anthracene	µg/L	8.5	ID	9.4	--	0.20 U	--	0.20 U	0.20 U	--
Benzo(a)pyrene	µg/L	5	ID	1	--	0.20 U	--	0.20 U	0.20 U	--
Benzo(b)fluoranthene	µg/L	1.5	ID	1.5	--	0.20 U	--	0.20 U	0.20 U	--
Benzo(g,h,i)perylene	µg/L	1	-	1	--	0.20 U	--	0.20 U	0.20 U	--
Benzo(k)fluoranthene	µg/L	1	-	1	--	0.20 U	--	0.20 U	0.20 U	--
Butyl benzylphthalate (BBP)	µg/L	2700	67	2700	--	0.20 U	--	0.026 J	0.043 J	--
Carbazole	µg/L	350	10	7400	--	0.20 U	--	0.20 U	0.20 U	--
4-Chloro-3-methylphenol	µg/L	420	7.4	79000	--	0.48 U	--	0.49 U	0.49 U	--
bis(2-Chloroethyl)ether	µg/L	8.3	1	5700	--	0.20 U	--	0.20 U	0.20 U	--
2-Chlorophenol	µg/L	130	18	94000	--	0.48 U	--	0.49 U	0.49 U	--
Chrysene	µg/L	1.6	ID	1.6	--	0.20 U	--	0.20 U	0.20 U	--
Dibenz(a,h)anthracene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	0.20 U	--
Dibenzofuran	µg/L	ID	4	ID	--	0.20 U	--	0.20 U	0.20 U	--
3,3'-Dichlorobenzidine	µg/L	4.3	0.3	180	--	2.0 U	--	2.0 U	2.0 U	--
2,4-Dichlorophenol	µg/L	210	11	48000	--	0.48 U	--	0.49 U	0.49 U	--
Diethyl phthalate	µg/L	16000	110	1100000	--	0.20 U	--	0.20 U	0.20 U	--
Dimethyl phthalate	µg/L	210000	-	4200000	--	0.20 U	--	0.20 U	0.20 U	--
2,4-Dimethylphenol	µg/L	1000	380	520000	--	3.9 U	--	3.9 U	3.9 U	--
Di-n-butylphthalate (DBP)	µg/L	2500	9.7	11000	--	0.20 U	--	0.033 J	0.045 J	--
4,6-Dinitro-2-methylphenol	µg/L	20	-	9500	--	2.0 U	--	2.0 U	2.0 U	--
2,4-Dinitrotoluene	µg/L	32	-	8600	--	0.20 U	--	0.20 U	0.20 U	--
Di-n-octyl phthalate (DnOP)	µg/L	380	ID	400	--	0.20 U	--	0.20 U	0.20 U	--
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	6	25	320	--	0.96 U	--	0.97 U	0.13 J	--
Fluoranthene	µg/L	210	1.6	210	--	0.20 U	--	0.20 U	0.20 U	--
Fluorene	µg/L	2000	12	2000	--	0.20 U	--	0.20 U	0.20 U	--
Hexachlorobenzene	µg/L	1	0.2	4.6	--	0.20 U	--	0.20 U	0.20 U	--
Hexachlorobutadiene	µg/L	42	0.053	400	--	0.20 U	--	0.20 U	0.20 U	--
Hexachlorocyclopentadiene	µg/L	50	ID	1600	--	0.96 U	--	0.97 U	0.97 U	--
Hexachloroethane	µg/L	21	6.7	1900	--	0.20 U	--	0.20 U	0.20 U	--
Indeno(1,2,3-cd)pyrene	µg/L	2	ID	2	--	0.20 U	--	0.20 U	0.20 U	--
Isophorone	µg/L	3100	1300	990000	--	0.20 U	--	0.20 U	0.20 U	--
2-Methylnaphthalene	µg/L	750	19	25000	--	0.20 U	--	0.20 U	0.20 U	--
2-Methylphenol	µg/L	1000	30	810000	--	0.48 U	--	0.49 U	0.49 U	--
4-Methylphenol	µg/L	1000	30	810000	--	0.48 U	--	0.49 U	0.49 U	--
Naphthalene	µg/L	1500	11	31000	--	0.039 J	--	0.20 U	0.20 U	--
Nitrobenzene	µg/L	9.6	180	11000	--	0.20 U	--	0.20 U	0.20 U	--
2-Nitrophenol	µg/L	58	ID	79000	--	0.48 U	--	0.49 U	0.49 U	--
N-Nitrosodi-n-propylamine	µg/L	5	-	360	--	0.20 U	--	0.20 U	0.20 U	--
N-Nitrosodiphenylamine	µg/L	1100	-	35000	--	0.20 U	--	0.20 U	0.20 U	--
Pentachlorophenol	µg/L	1	G,X	200	--	0.96 U	--	0.97 U	0.97 U	--
Phenanthrene	µg/L	150	2	1000	--	0.20 U	--	0.20 U	0.20 U	--
Phenol	µg/L	13000	450	29000000	--	0.48 U	--	0.49 U	0.49 U	--
Pyrene	µg/L	140	ID	140	--	0.20 U	--	0.20 U	0.20 U	--
2,4,5-Trichlorophenol	µg/L	2100	-	170000	--	0.48 U	--	0.49 U	0.49 U	--
2,4,6-Trichlorophenol	µg/L	470	5	10000	--	0.48 U	--	0.49 U	0.49 U	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - OCTOBER 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

Sample Location:		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]			MW-109D	MW-109D	MW-109D	MW-109D	MW-109D	MW-109D
Sample Identification:		Non-Residential Drinking Water	Groundwater Surface Water Interface	Groundwater Contact	WG-56393-102711-JV-033	WG-56393-020612-JV-041	WG-56393-042612-JV-071	WG-56393-072312-JV-080	WG-56393-072312-JV-081	GW-56393-102312-JV-111
Sample Date:					10/27/2011	2/6/2012	4/26/2012	7/23/2012	7/23/2012	10/23/2012
Sample Type:									Duplicate	
	Units	a	b	c						
PCBs										
Aroclor-1016 (PCB-1016)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1221 (PCB-1221)	µg/L	-	-	-	0.040 U	0.041 U	0.040 U	0.039 U	0.040 U	0.040 U
Aroclor-1232 (PCB-1232)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1242 (PCB-1242)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1248 (PCB-1248)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1254 (PCB-1254)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Aroclor-1260 (PCB-1260)	µg/L	-	-	-	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U
Total PCBs	µg/L	0.5	200	3.3	ND	ND	ND	ND	ND	ND
Dioxins										
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000025 U	--	0.00000652 J	0.00000699 J	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000025 U	--	0.000024 U	0.0000245 U	--
Total heptachlorodibenzofuran (HpCDF)	µg/L	-	-	-	--	0.000025 U	--	0.00000652 J	0.0000149 J	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.000025 U	--	0.0000538	0.0000647	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	µg/L	-	-	-	--	0.000025 U	--	0.000235	0.000255 J	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	--	0.000024 U	0.0000245 U	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	--	0.000024 U	0.0000245 U	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	--	0.000024 U	0.0000245 U	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	--	0.000024 U	0.0000245 U	--
Total hexachlorodibenzofuran (HxCDF)	µg/L	-	-	-	--	0.000025 U	--	0.0000122 J	0.00000868 J	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000025 U	--	0.0000132 J	0.000011 J	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000025 U	--	0.00000578 J	0.00000508 J	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000025 U	--	0.0000329	0.0000294	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	µg/L	-	-	-	--	0.000025 U	--	0.000191	0.00022	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	µg/L	-	-	-	--	0.00005 U	--	0.0000481 U	0.00000786 J	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	µg/L	-	-	-	--	0.00005 U	--	0.0000668 J	0.000114 J	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000025 U	--	0.000024 U	0.0000245 U	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000025 U	--	0.000024 U	0.0000245 U	--
Total pentachlorodibenzofuran (PeCDF)	µg/L	-	-	-	--	0.000025 U	--	0.000024 U	0.0000245 U	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.000025 U	--	0.00000384 J	0.00000396 J	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	µg/L	-	-	-	--	0.000025 U	--	0.0000939	0.0000877	--
Total tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.00001 U	--	0.00000481 U	0.0000049 U	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	µg/L	-	-	-	--	0.00001 U	--	0.00000481 U	0.0000049 U	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.00001 U	--	0.00000481 U	0.0000049 U	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	µg/L	-	-	-	--	0.00001 U	--	0.00000481 U	0.0000049 U	--
Toxic Equivalents	µg/L	0.00003	0.00001	0.00001	--	0.0	--	0.000007711	0.000007245	--

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS OCTOBER 2011 - OCTOBER 2012
12th STREET LANDFILL
OTSEGO TOWNSHIP, MICHIGAN

		Michigan Act 451, Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels: Residential and Non-Residential Generic Cleanup Criteria [1]								
Sample Location:					*MW-109D*	*MW-109D*	*MW-109D*	*MW-109D*	*MW-109D*	*MW-109D*
Sample Identification:		Non-Residential	Groundwater	Groundwater	*WG-56393-102711-JV-033*	*WG-56393-020612-JV-041*	*WG-56393-042612-JV-071*	*WG-56393-072312-JV-080*	*WG-56393-072312-JV-081*	*GW-56393-102312-JV-111*
Sample Date:		Drinking Water	Surface Water	Contact	*10/27/2011*	*2/6/2012*	*4/26/2012*	*7/23/2012*	*7/23/2012*	*10/23/2012*
Sample Type:			Interface						*Duplicate*	
	Units	a	b	c						
Metals										
Aluminum	µg/L	50	-	64000000	--	1.1 J	--	1.4 J	1.7 J	--
Antimony	µg/L	6	130	68000	--	0.050 U	--	0.050 U	0.050 U	--
Arsenic	µg/L	10	10	4300	--	0.13 J	--	0.5 U	0.5 U	--
Barium	µg/L	2000	1400	14000000	--	81.4	--	90.2	89.1	--
Beryllium	µg/L	4	41	290000	--	0.020 U	--	0.020 U	0.020 U	--
Cadmium	µg/L	5	5.1	190000	--	0.020 U	--	0.007 J	0.006 J	--
Chromium	µg/L	100	11	460000	--	0.11 J	--	0.14 J	0.15 J	--
Chromium VI (hexavalent)	µg/L	100	11	460000	--	2.0 UJ	--	2.0 UJ	2.0 UJ	--
Cobalt	µg/L	100	100	2400000	--	0.037	--	0.084	0.097	--
Copper	µg/L	1000	23	7400000	--	0.37	--	0.43	0.46	--
Iron	µg/L	300	-	58000000	--	20.0 U	--	20.0 U	20.0 U	--
Lead	µg/L	4	34	ID	--	0.009 J	--	0.032	0.016 J	--
Magnesium	µg/L	1100000	-	1000000000	24400	24100	24700	28300	27700	25500
Manganese	µg/L	50	5200	9100000	--	0.17	--	0.061	0.082	--
Mercury	µg/L	2	0.0013	56	0.001 U	0.001 U	0.00085 J	0.00031 J	0.00025 J	0.001 U
Nickel	µg/L	100	130	74000000	--	0.18 J	--	0.80	0.82	--
Selenium	µg/L	50	5	970000	--	0.2 J	--	1.0 U	1.0 U	--
Silver	µg/L	98	0.2	1500000	--	0.020 U	--	0.020 U	0.020 U	--
Sodium	µg/L	350000	-	1000000000	22300	23100	22900	23000	22200	22300
Thallium	µg/L	2	3.7	13000	--	0.0200 U	--	0.020 U	0.020 U	--
Vanadium	µg/L	62	27	970000	--	0.200 U	--	0.04 J	0.06 J	--
Zinc	µg/L	5000	310	110000000	--	0.36 J	--	0.7	1.2	--
General Chemistry										
Cyanide (amenable)	µg/L	200	-	57000	--	10 U	10 U	10 U	10 U	10 U
Cyanide (total)	µg/L	200	5.2	57000	10 U	10 U	10 U	10 U	10 U	10 U
Field Parameters										
Conductivity	mS/cm	-	-	-	0.696	0.552	0.764	0.98	0.98	0.841
Dissolved Oxygen (DO)	mg/L	-	-	-	2.28	-	4.12	4.29	4.29	1.96
Oxidation Reduction Potential	millivolt	-	-	-	-68.9	206	193	33	33	139.6
pH	s.u.	6.5-8.5	6.5-8.5	-	7.22	7.13	7.17	6.8	6.8	6.94
Temperature	Deg C	-	-	-	13.81	11.1	11.7	13.7	13.7	13.55
Turbidity	NTU	-	-	-	-	<2.01	<0.35	1.35	1.35	0.49

Notes:

[1] Cleanup criteria identified by MDEQ RRD Op Memo No. 1, updated 9/28/12, pursuant to 1994 PA 451 as amended.

[2] Also known as Methyl isobutyl ketone (MIBK).

U - Not present at or above the associated value.

J - Estimated concentration.

UJ - Estimated reporting limit.

R - Rejected.

[ ] - Exceeds Generic Cleanup Criteria.

Superscript letter notes the criterion exceeded.

TABLE 3

LANDFILL GAS QUALITY MONITORING
GAS PROBES OCTOBER 2011 - OCTOBER 2012
12th STREET LANDFILL SITE
OTSEGO TOWNSHIP, MICHIGAN

Location	Ground Surface Elevation	Probe Depth (Feet)	Screen Length (Feet)	Top of Screen Elevation (Feet AMSL)	Seconds Purged	Date	Pressure (inches of W/C)	Methane (% by Volume)	Carbon Dioxide (% by Volume)	Oxygen (% by Volume)
GP-1	707.35	4	2	705.35	300	10/27/11	0.00	49.0	37.1	00.6
					300	2/6/12	0.01	30.9	29.2	01.0
					300	4/23/12	-0.01	43.0	33.1	06.0
					300	4/30/12	0.00	38.5	32.1	00.0
					300	7/23/12	0.01	33.7	32.0	00.0
					300	10/22/12	0.00	35.6	33.7	00.0
GP-2	732.88	35	25	727.88	300	10/27/11	-0.10	23.3	20.8	00.1
					300	2/6/12	0.00	15.6	18.5	01.3
					300	4/23/12	0.00	22.3	18.7	03.4
					300	4/30/12	0.00	21.1	17.7	00.0
					300	7/23/12	0.00	4.7	14.7	00.0
					300	10/22/12	-0.01	21.3	20.5	00.0
GP-3	703.51	5	2	700.51	300	10/27/11	-0.00	01.1	00.5	15.6
					300	2/6/12	0.00	0.0	00.1	21.6(1)
					<300	4/23/12	0.00	NC(2)	NC(2)	NC(2)
					<300	4/30/12	0.00	NC(2)	NC(2)	NC(2)
					300	7/23/12	0.04	0.0	02.3	07.4
					300	10/22/12	0.00	1.3	02.5	08.5

W/C = Water Column
NC = Not Collected
(1) = High oxygen and low carbon dioxide indicates potential short circuiting in probe.
(2) = Water in bottom of probe.

TABLE 4

LANDFILL GAS QUALITY MONITORING
GAS VENTS APRIL 30, 2012
12th STREET LANDFILL SITE
OTSEGO TOWNSHIP, MICHIGAN

Location	Pressure (inches of W/C)	Methane (% by Volume)	Carbon Dioxide (% by Volume)	Oxygen (% by Volume)
GV-1	0.00	60.8	35	0.0
GV-2	0.00	58.5	37.3	0.0
GV-3	0.00	64.0	27.5	0.0
GV-4	0.00	61.1	35.2	0.0
GV-5	0.00	56.5	33.5	0.9
GV-6	0.00	47.1	21.2	4.7
GV-7	0.00	56.1	36.8	0.0
GV-8	0.00	52.3	39.8	0.0
GV-9	0.00	30.0	19.3	5.0
GV-10	0.00	44.4	12.4	0.0
GV-11	0.00	15.1	24	2.5

APPENDICES

APPENDIX A

INSPECTION AND MAINTENANCE FORMS – 2012

REPAIR FORMS 2012

PHOTOGRAPHIC LOG

OPERATION AND MAINTENANCE INSPECTION SUMMARY

12TH STREET LANDFILL SITE

PLAINWELL, MI

Date: February 6, 2012

Weather: Cloudy, temperature in the 30's, no snow on the ground

Landfill Cover:
- 4"-6" grass cover
- No dead/dying vegetation
- No leachate in any areas
- No washouts
- No animal burrows
- Geotextile exposed at the bottom of the slope near swale

Access Roads/Drainage Swales:
- No erosion or obstructions
- No damage

Spillways/outlets: - No erosion or damage

Check Dams: - No erosion, obstructions, or damage

Gas vents/Probes:
- Good condition
- Locks intact

Monitoring Wells:
- Good condition
- Locks intact

Signature: Jon Valentine

056393(10)

Project No. 056393
Revision 0
April 23, 2012

Quarterly Inspection Form
12th Street Landfill – Otsego, Michigan **Weyerhaeuser Company**

Date: 4-27-12 Weather Conditions: Breezy, Sunny, 50s
Inspection Personnel: E. Battenberg, J. Valentine

Included below are the structures and controls at the 12th Street Landfill Site that are to be inspected on a quarterly basis. Please note the condition of each structure/control in the column on the right and describe any needed repairs below.

	Condition
Landfill cover and adjacent areas:	
Adequate vegetation (no woody plant growth)	good except for north edge.
Erosion	
Subsidence (surface water ponding or burrowing animals)	North swale - slight ponding near outlet

Notes: Fabric exposed north of swale that drains to river (south). North edge of cap before swale - exposed fabric, slightly eroded, not vegetated, one animal burrow. New grass on "road" across top of landfill is ~ 2-6 inches high.

Riprap, erosion control matting, and vegetation	
(20 feet up from riverbank)	
Adequate riprap (no exposed geotextile, movement of riprap)	Good
Adequate vegetation (no woody plant growth)	Good
Erosion, rutting, burrowing animals	None observed
Perimeter drainage swales and outlets (no sediment build-up)	

Notes: Scrap metal dumped near swale outlet. Pictures taken by E.B. Some gravel exposed on swale near outlet.

Site Access Controls	
Fencing, gates, locks (vandalism, deterioration, damage)	Good

Notes:

Gas Vents	
Structural integrity, identification labels	Good

Notes:

Gas Probes	
Structural integrity, identification labels	Good
Presence and condition of locks	No lock on GP-1 or GP-3

Notes:

Groundwater monitoring wells	
Structural integrity, identification labels	Good
Presence and condition of locks	Good

Notes: None

NOTE: All needed repairs are to be noted by inspection personnel on this form. Repairs will be completed within 30 days of discovery, weather and Site conditions permitting.

OPERATION AND MAINTENANCE INSPECTION FORM
12th STREET LANDFILL SITE, OPERATIONAL UNIT 4
ALLIED PAPER/PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
481 12th STREET
PLAINWELL, MICHIGAN

Date: 7-25-12 *Weather:* Sun + 80's

Inspector: J Valentine

Inspection Item	*Inspect For*	*Comments and Remarks:* *(Note if repair/maintenance is recommended, describe its location/extent and identify on Maintenance Repair Form. If no deficiency, note as such).*
1. Landfill Cover		
Vegetated Soil Cover	- erosion	None
	- exposure of the liner or geotextile	None
	- areas of insufficient vegetation coverage	None
	- dead/dying vegetation	None
	- washouts	None
	- leachate outbreaks	None
	- settlement causing ponding of water	None
	- slope instability	Good
	- burrowing by animals	None
	- rooting of trees	None
Access Roads/Drainage Swales	- erosion	None
	- obstructions or sediment build up	None
	- exposed geotextile →	When swale the (stone Burrito) exposed, little Vegetation
	- puddles	None
	- debris	None
	- damage caused by vehicular traffic	None
Rip Rap at River side	- erosion	No
	- exposure of geotextile	None
2. Storm Water Management System		
Access Roads/Drainage Swales	See Landfill Cover	
Check Dams	- erosion	None
	- obstructions or sediment build up	Southern Outlet by Wyoming Asphalt Silted over, Water not making it to the Riprap
	- exposed geotextile	None
	- puddles	None
	- debris	None
	- damage	None
Spillways/outlets	- silt accumulation	None
	- erosion	None
	- obstructions	None
3. Landfill Gas Control System Maintenance		
Gas Vents	- structural integrity, identification labels	good
	- general observations	good
Gas Probes	- structural integrity, identification labels, locks	good

OPERATION AND MAINTENANCE INSPECTION FORM
12th STREET LANDFILL SITE, OPERATIONAL UNIT 4
ALLIED PAPER/PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
481 12th STREET
PLAINWELL, MICHIGAN

Inspection Item	*Inspect For*	*Comments and Remarks:* *(Note if repair/maintenance is recommended, describe its location/extent and identify on Maintenance Repair Form. If no deficiency, note as such).*
	- general observations	
4. Landfill Monitoring Well Network Maintenance		
Monitoring Wells	- structural integrity, identification labels, locks	good
	- general observations	good
5. Other Pertinent Observations		
Staff Gauge	- structural integrity, numbers visible	good
Site Access Controls	- integrity of fence	good
	- integrity of gate	good
	- integrity of lock	good
	- placement and condition of signs	good
Other		

* Campfire set up by trespassers near River

Signed: Jon Valentine

OPERATION AND MAINTENANCE INSPECTION FORM
12th STREET LANDFILL SITE, OPERATIONAL UNIT 4
ALLIED PAPER/PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
481 12th STREET
PLAINWELL, MICHIGAN

Date: 10-23-12 *Weather:* Rain + 50's

Inspector: Jon Valentine

Inspection Item	*Inspect For*	*Comments and Remarks:* *(Note if repair/maintenance is recommended, describe its location/extent and identify on Maintenance Repair Form. If no deficiency, note as such).*

1. **Landfill Cover**

Vegetated Soil Cover	- erosion	NO
	- exposure of the liner or geotextile	NO
	- areas of insufficient vegetation coverage	yes, top of Swale ≈ 2' of no Vegetation
	- dead/dying vegetation	
	- washouts	
	- leachate outbreaks	
	- settlement causing ponding of water	
	- slope instability	
	- burrowing by animals	
	- rooting of trees	
Access Roads/Drainage Swales	- erosion	NO
	- obstructions or sediment build up	NO
	- exposed geotextile	NO
	- puddles	NO
	- debris	NO
	- damage caused by vehicular traffic	NO
Rip Rap at River side	- erosion	NO
	- exposure of geotextile	NO

2. **Storm Water Management System**

Access Roads/Drainage Swales	See Landfill Cover	
Check Dams	- erosion	NO
	- obstructions or sediment build up	NO
	- exposed geotextile	NO
	- puddles	NO
	- debris	NO
	- damage	NO
Spillways/outlets	- silt accumulation	NO
	- erosion	NO
	- obstructions	NO

3. **Landfill Gas Control System Maintenance**

Gas Vents	- structural integrity, identification labels	good
	- general observations	NO
Gas Probes	- structural integrity, identification labels, locks	good

OPERATION AND MAINTENANCE INSPECTION FORM
12th STREET LANDFILL SITE, OPERATIONAL UNIT 4
ALLIED PAPER/PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
481 12th STREET
PLAINWELL, MICHIGAN

Inspection Item	*Inspect For*	*Comments and Remarks:* *(Note if repair/maintenance is recommended, describe its location/extent and identify on Maintenance Repair Form. If no deficiency, note as such).*
	- general observations	GP # 2 getting loose
4. Landfill Monitoring Well Network Maintenance		
Monitoring Wells	- structural integrity, identification labels, locks	good
	- general observations	ok
5. Other Pertinent Observations		
Staff Gauge	- structural integrity, numbers visible	yes
Site Access Controls	- integrity of fence	good
	- integrity of gate	good
	- integrity of lock	good
	- placement and condition of signs	good
Other		

MW-102S ✓ needs lock replaced 10/24/12

Signed: Jon Valetine

OPERATION AND MAINTENANCE REPAIR FORM
12th STREET LANDFILL SITE OPERATIONAL UNIT 4
ALLIED PAPER/PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
481 12th STREET
PLAINWELL, MICHIGAN

Landfill Management System (circle one): Gen. Site Final Cover Storm Water Landfill Gas Monitoring Well

Date Problem Identified: 4/23/12

Description of Problem: Exposed geotextile and bare soil along the drainage swale

Description of Maintenance or Repair Taken (Type, Location, Extent)

Top soil previously staged on site was added to cover the exposed Geotextile, the soil was seeded with an annual rye mix and then covered with North American Green SC150 erosion control blanket.

Date(s) of Maintenance Repair: 5/22/12

Inspector(s): Jodie Dembowske

Signed:

OPERATION AND MAINTENANCE REPAIR FORM
12th STREET LANDFILL SITE OPERATIONAL UNIT 4
ALLIED PAPER/PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
481 12th STREET
PLAINWELL, MICHIGAN

Landfill Management System (circle one): Gen. Site Final Cover Storm Water Landfill Gas Monitoring Well

Date Problem Identified: 9/24/2012

Description of Problem: Rip rap had been removed from the drainage swale near the outlet to the Kalamazoo River adjacent to the MDNR property

Description of Maintenance or Repair Taken (Type, Location, Extent)

Rip rap was added to the outlet in an approximately 10 by 20 foot long section

Date(s) of Maintenance Repair: 11/5/2012

Inspector(s): Jodie Dembowske

Signed: Jodie Dembowske

OPERATION AND MAINTENANCE REPAIR FORM
12th STREET LANDFILL SITE OPERATIONAL UNIT 4
ALLIED PAPER/PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
481 12th STREET
PLAINWELL, MICHIGAN

Landfill Management System (circle one): Gen. Site Final Cover Storm Water Landfill Gas Monitoring Well

Date Problem Identified: 8-7-12

Description of Problem: Some of the Geotextile around the drainage swale where the Geotextile is wrapped around stone has become exposed. Other areas along this same construction/zone have not been able to support vegetation growth due to the rapid drainage of the water from the stone (per the design).

Description of Maintenance or Repair Taken (Type, Location, Extent)

To protect the Geotextile from ultraviolet rays/damage the exposed Geotextile will be covered with 3 – 4 inches of 1-1.5 inch angular stone.

Furthermore, the stone was applied over the topsoil in the area along the swale where vegetation growth was not established.

Date(s) of Maintenance Repair: 11/5 - 11/7/12

Inspector(s): Jodie Dembowske

Signed: Jodie Dembowske

OPERATION AND MAINTENANCE REPAIR FORM
12th STREET LANDFILL SITE OPERATIONAL UNIT 4
ALLIED PAPER/PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
481 12th STREET
PLAINWELL, MICHIGAN

Landfill Management System (circle one): Gen. Site Final Cover Storm Water Landfill Gas Monitoring Well

Date Problem Identified: 7/23/12

Description of Problem: Drainage outlet closest to Wyoming Asphalt had become silted over

Description of Maintenance or Repair Taken (Type, Location, Extent)

Outlet was reinstalled, adding rip rap closer to the drainage swale.

Date(s) of Maintenance Repair: 11/6/2012

Inspector(s): Jodie Dembowske

Signed:

PHOTO 1: Top of landfill near access gate after topsoil pile was removed -November 7, 2012 .

PHOTO 2: Outlet (first one beyond Wyoming Asphalt) before repairs - October 15, 2012.

Appendix A
PHOTOGRAPHIC LOG
12th STREET LANDFILL
Otsego Township, Michigan

PHOTO 3: Improvements to outlet (first one beyond Wyoming Asphalt) - November 7, 2012.

PHOTO 4: Exposed geotextile along the inside of the drainage swale/access road on the west side of the landfill - October 15, 2012.

Appendix A
PHOTOGRAPHIC LOG
12th STREET LANDFILL
Otsego Township, Michigan

PHOTO 5: Stone cover added over the exposed geotextile on the west side of the landfill- November 7, 2012.

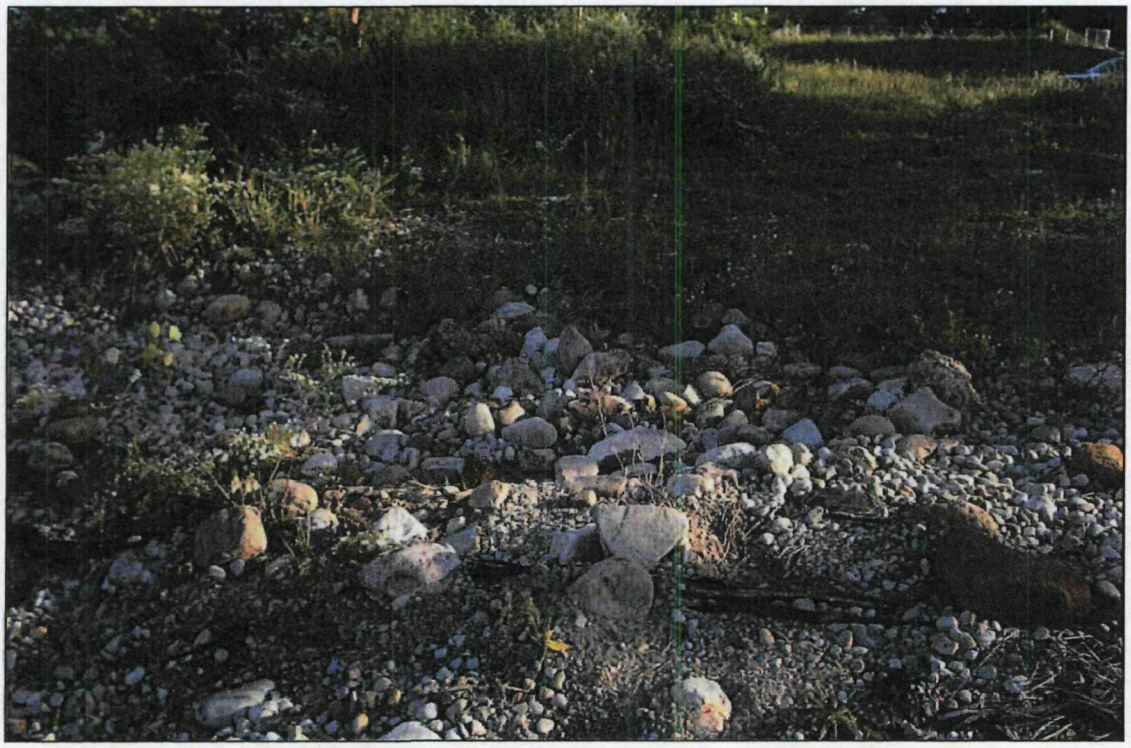


PHOTO 6: Stone removed from the outlet adjacent to the MDNR property - October 15, 2012.

Appendix A
PHOTOGRAPHIC LOG
12th STREET LANDFILL
Otsego Township, Michigan

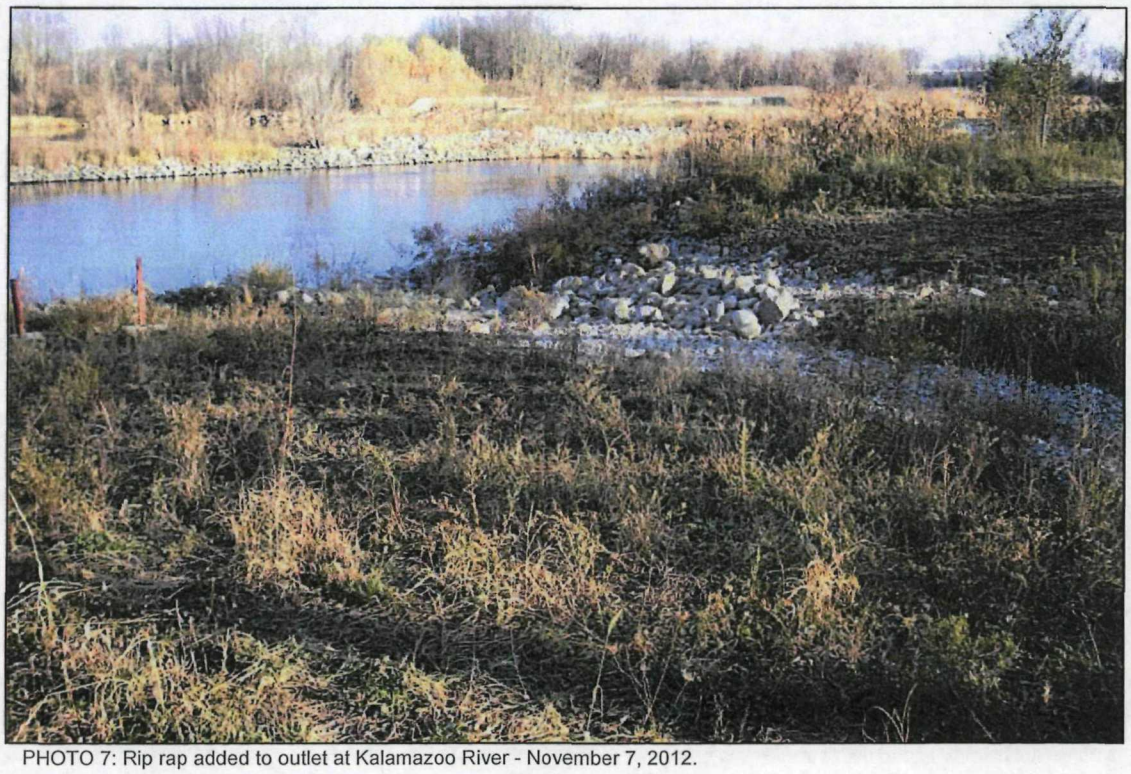


PHOTO 7: Rip rap added to outlet at Kalamazoo River - November 7, 2012.

PHOTO 8: Additional stone cover over geotextile adjacent to MDNR Property - November 7, 2012.

Appendix A
PHOTOGRAPHIC LOG
12th STREET LANDFILL
Otsego Township, Michigan

PHOTO 9: Stone placed over topsoil and geotextile area east of entrance - November 7, 2012.

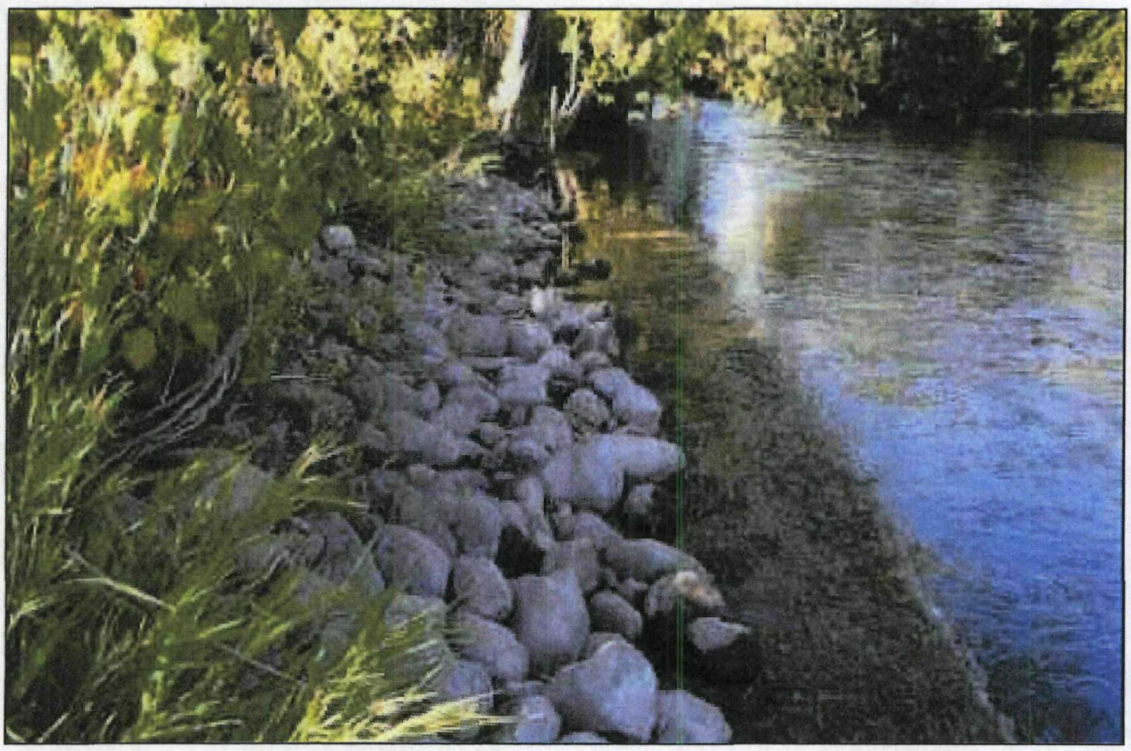


PHOTO 10: Looking north along the rip rap on the Kalamazoo River at the far west end of the rip rap - September 24, 2012.

Appendix A
PHOTOGRAPHIC LOG
12th STREET LANDFILL
Otsego Township, Michigan

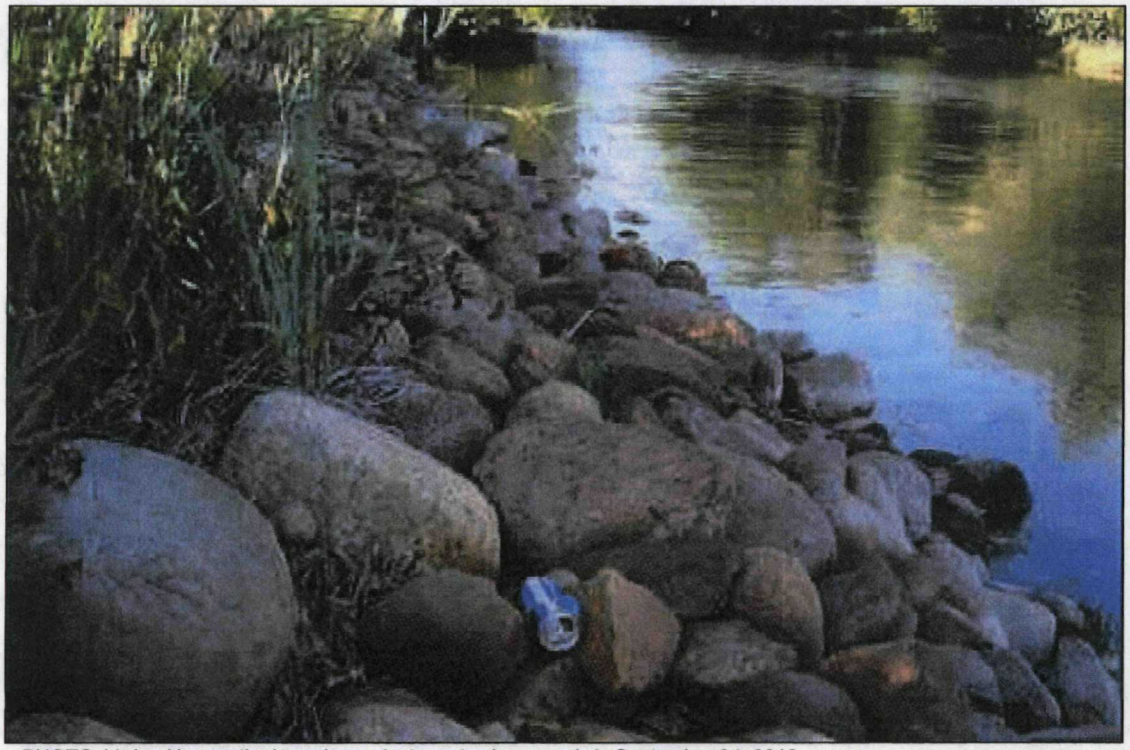


PHOTO 11: Looking north along rip rap (note rust color on rocks)- September 24, 2012.

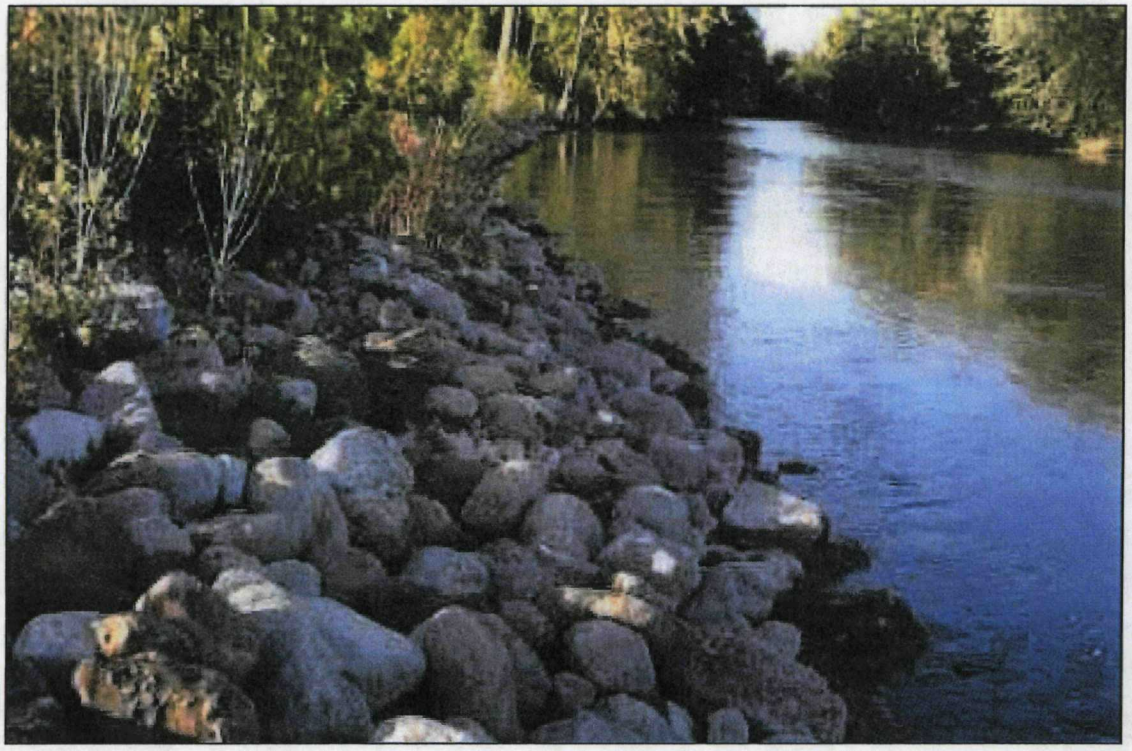


PHOTO 12: Looking north along rip rap further south of rust colored rocks - September 24, 2012.

Appendix A
PHOTOGRAPHIC LOG
12th STREET LANDFILL
Otsego Township, Michigan

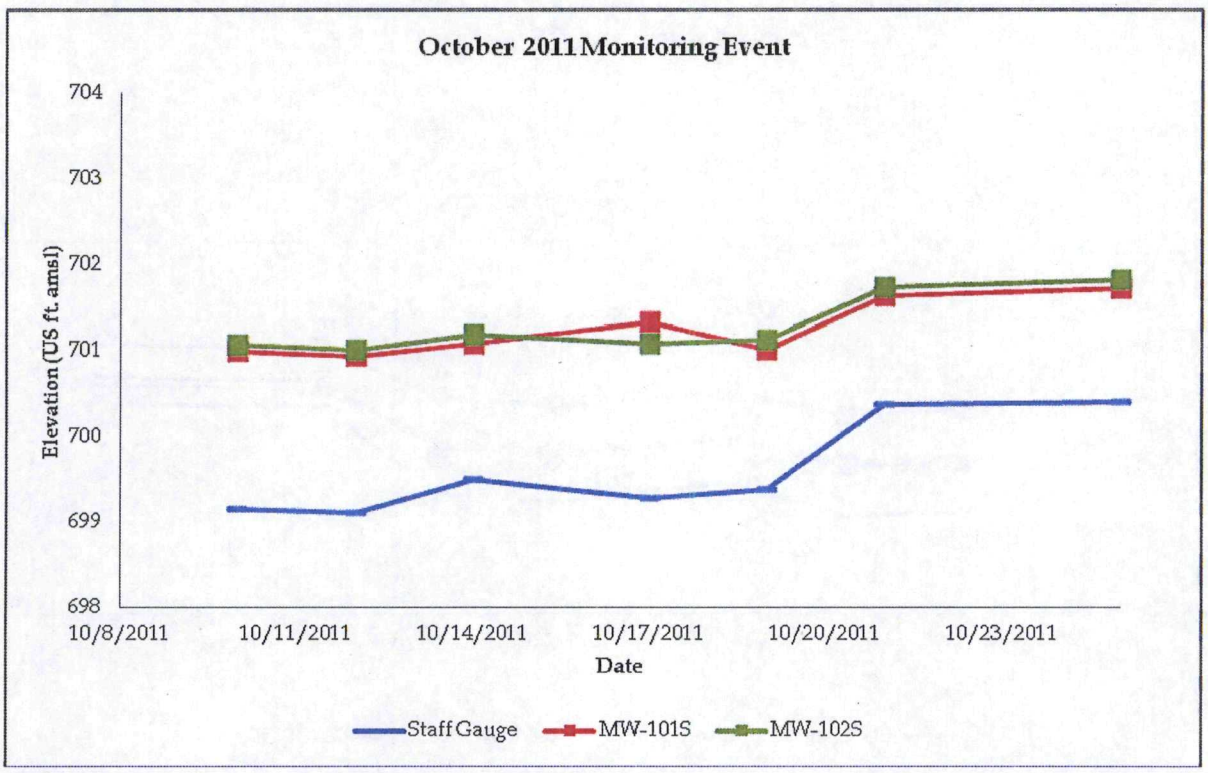
PHOTO 13: Looking north along rip rap between MW-108D and MW-107S - September 24, 2012.

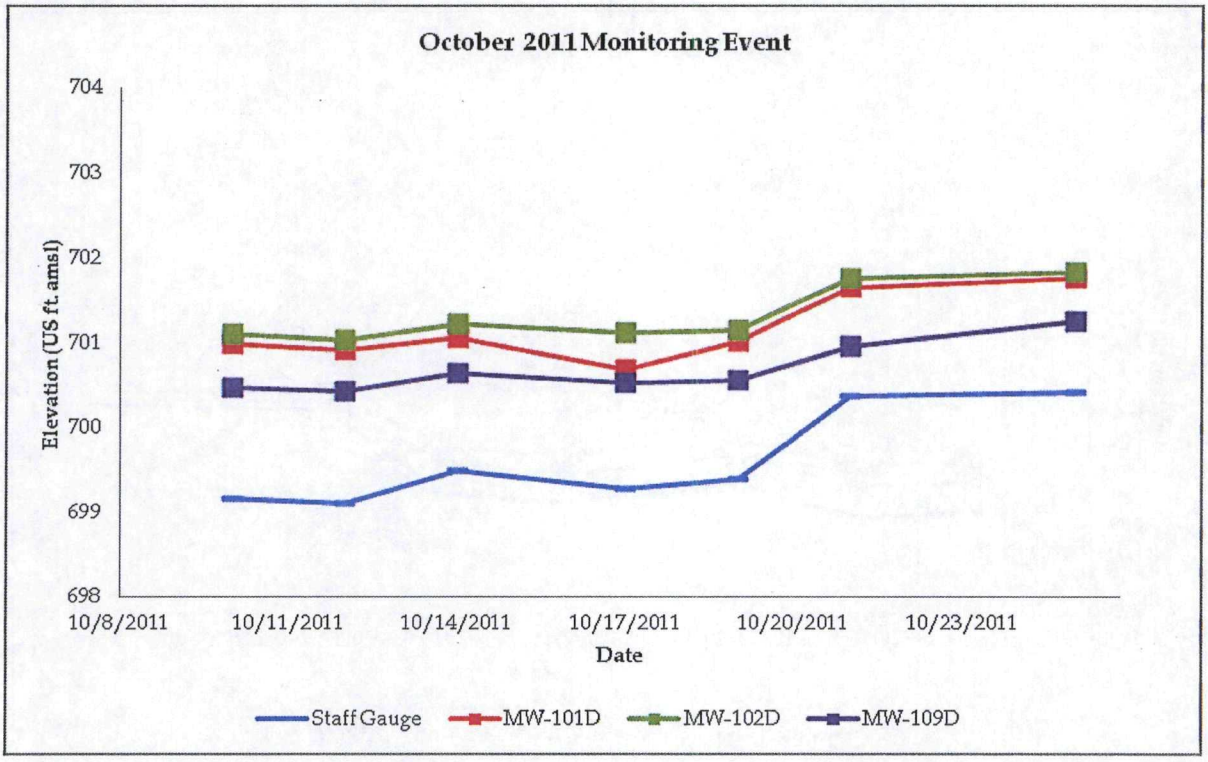
PHOTO 14: Looking at the rip rap in the outlet adjacent to the MDNR property - September 24, 2012

Appendix A
PHOTOGRAPHIC LOG
12th STREET LANDFILL
Otsego Township, Michigan

APPENDIX B

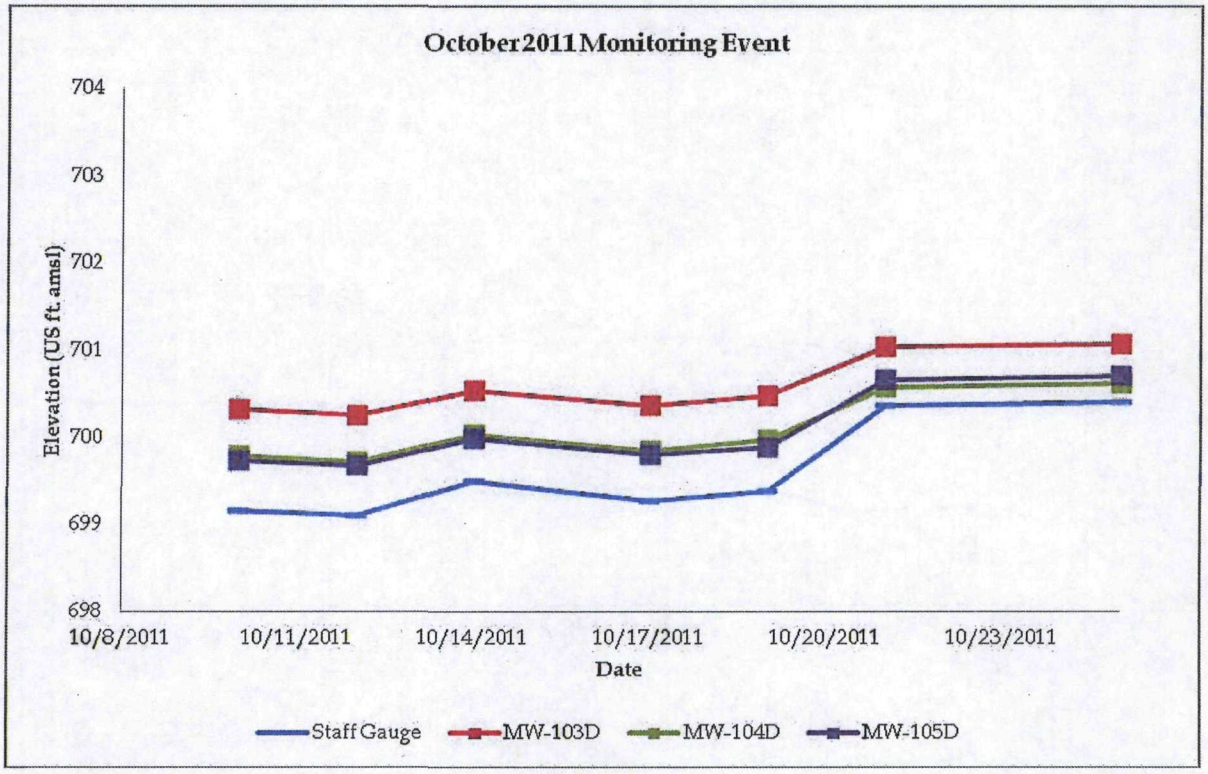
GRAPHICAL REPRESENTATIONS OF GROUNDWATER ELEVATIONS

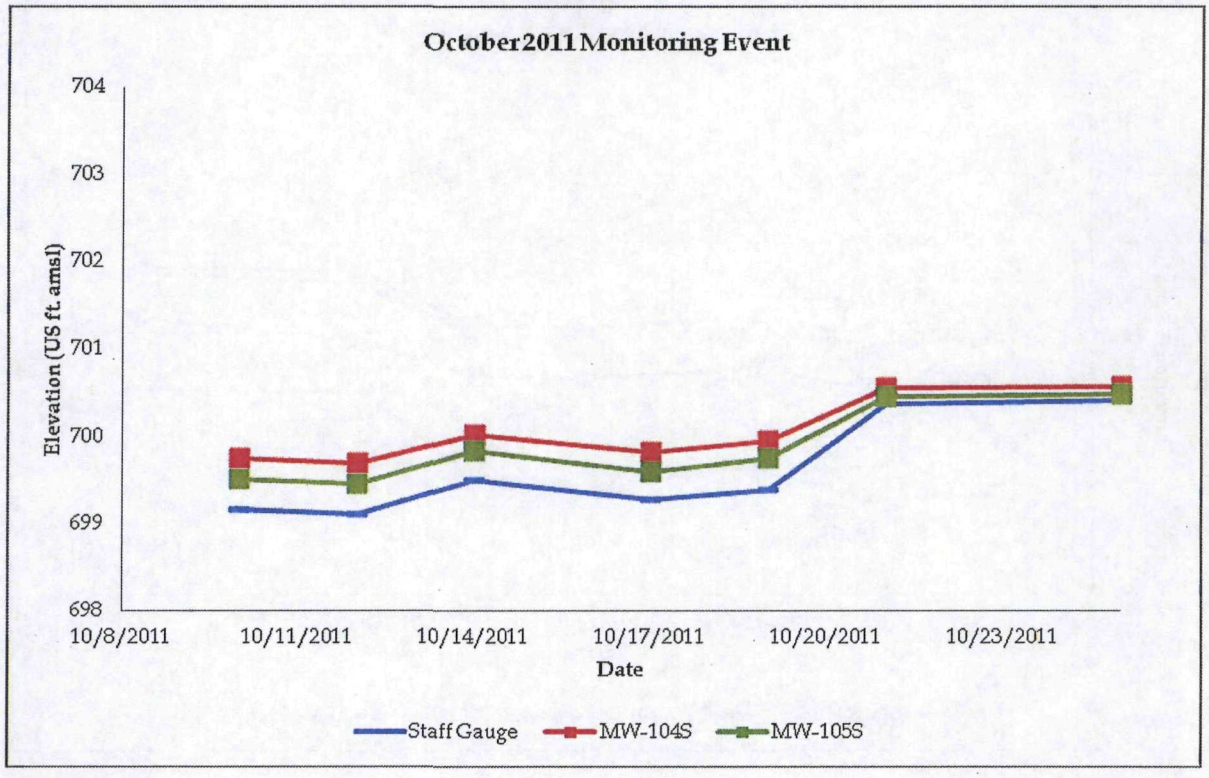




056393 (10)

GRAPHICAL REPRESENTATION OF GROUNDWATER ELEVATIONS
12th Street Landfill Site
Otsego Township, Michigan



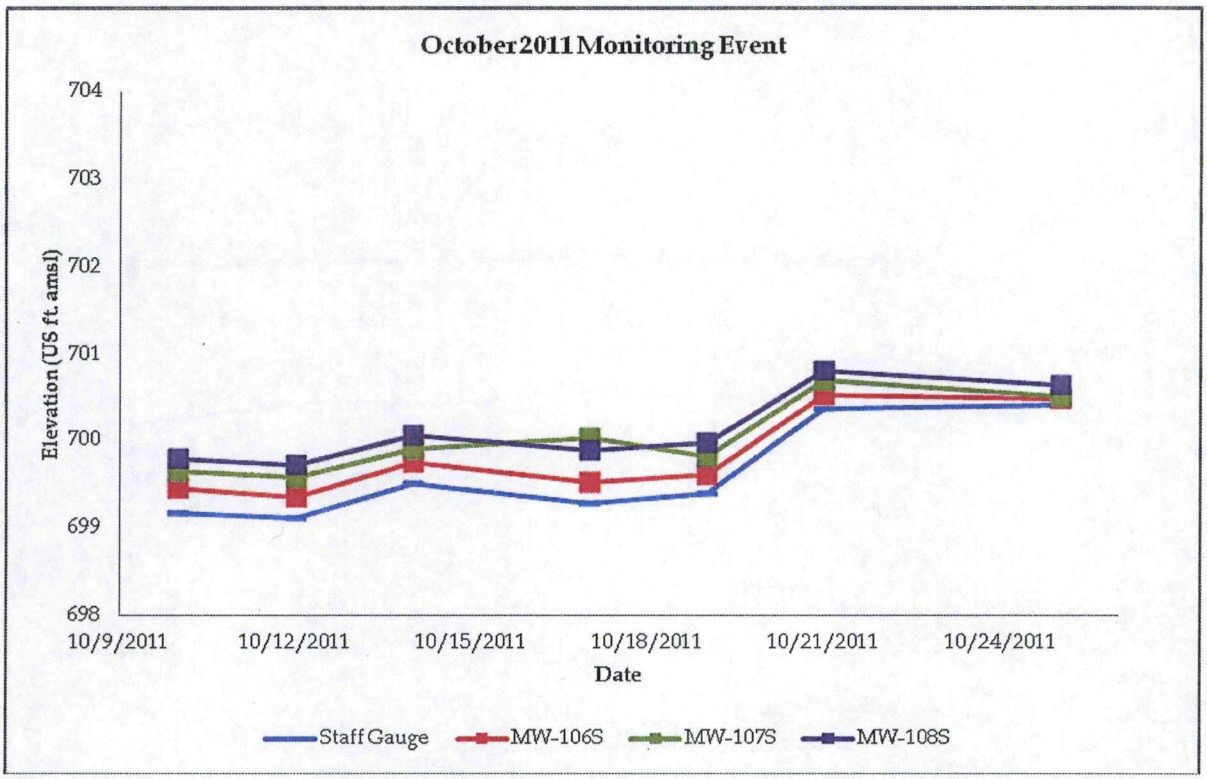


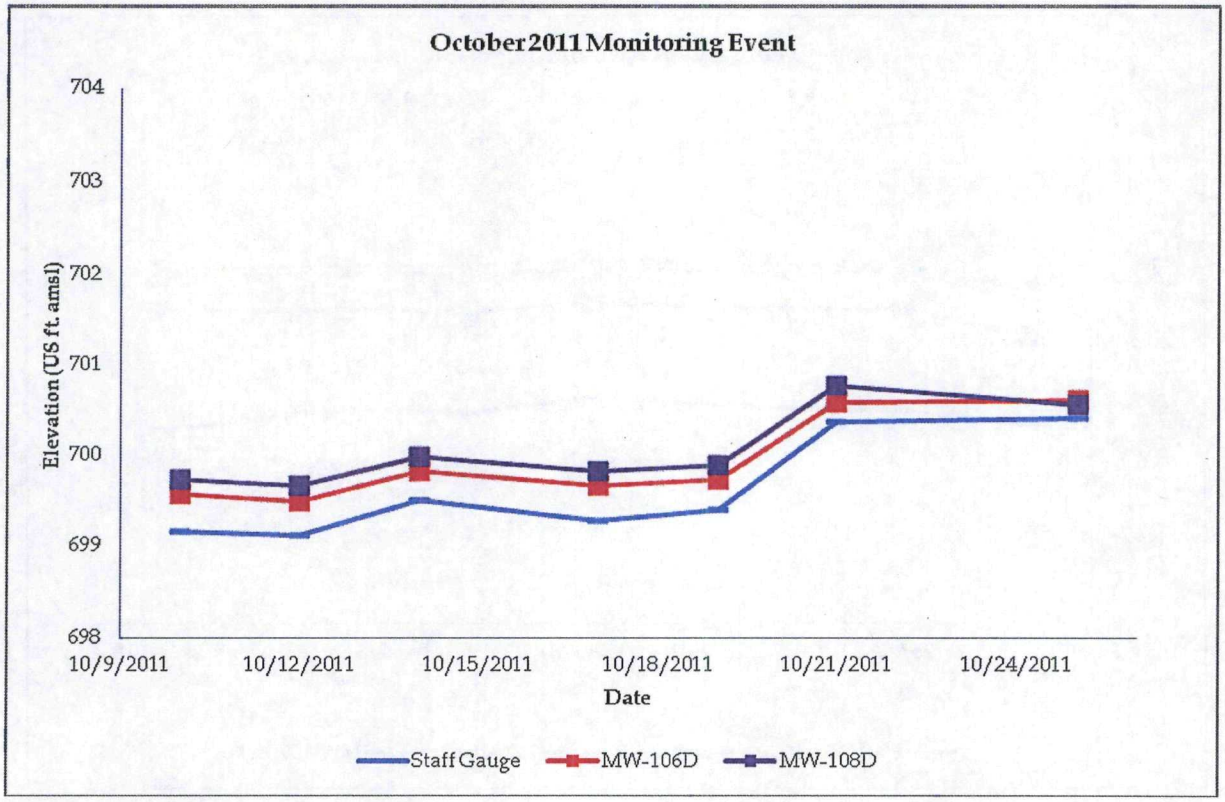
GRAPHICAL REPRESENTATION OF GROUNDWATER ELEVATIONS

12th Street Landfill Site

Otsego Township, Michigan

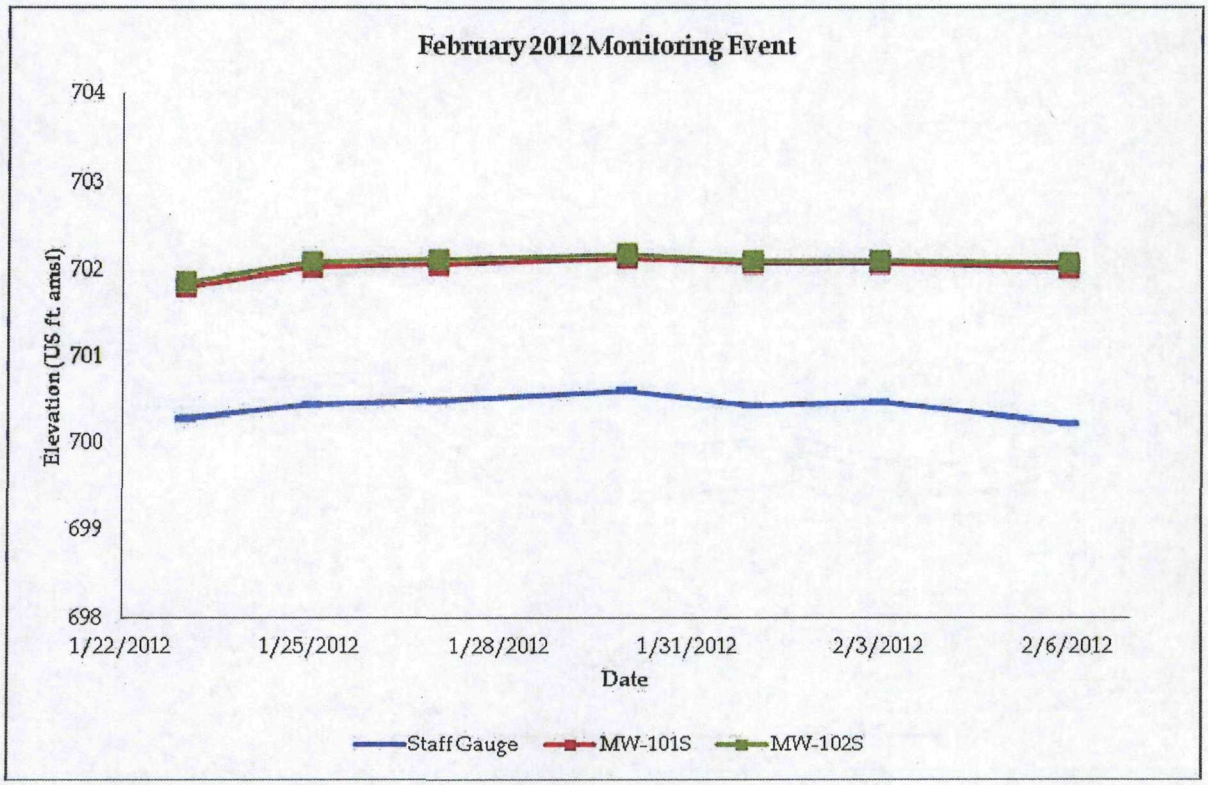
056393 (10)

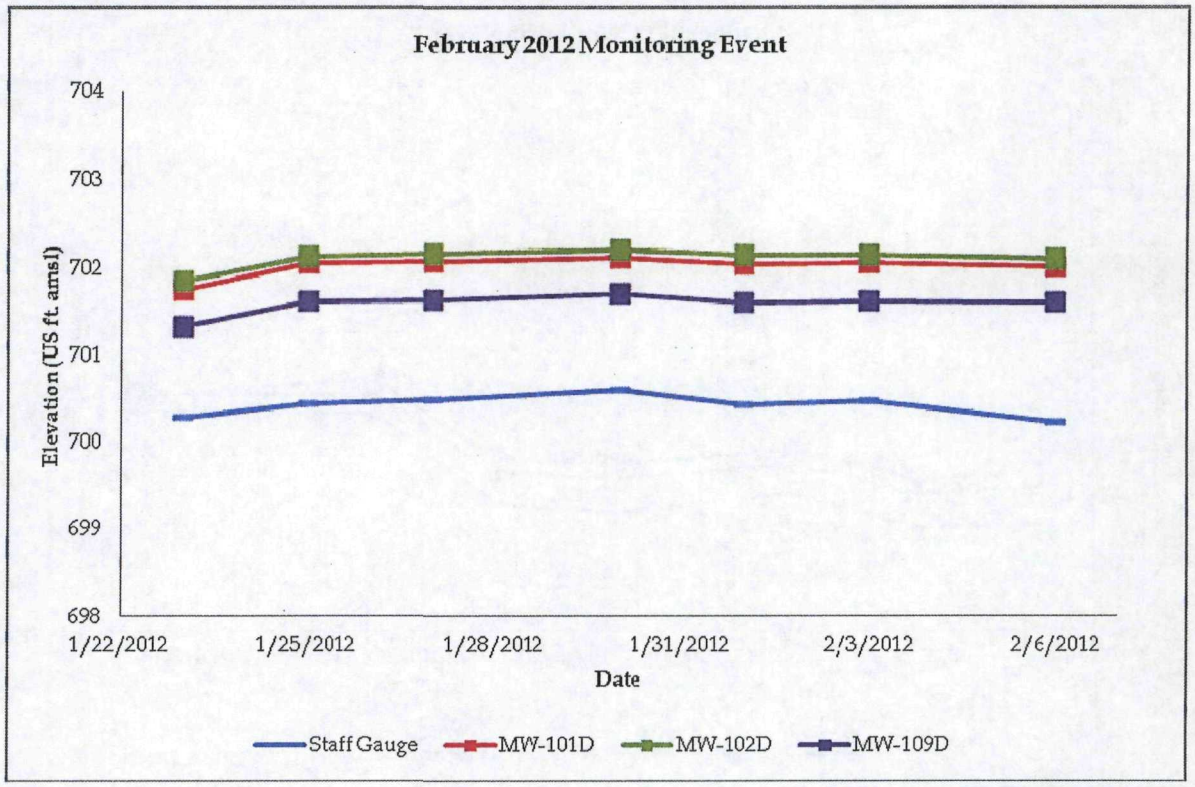




GRAPHICAL REPRESENTATION OF GROUNDWATER ELEVATIONS
12th Street Landfill Site
Otsego Township, Michigan

056393 (10)



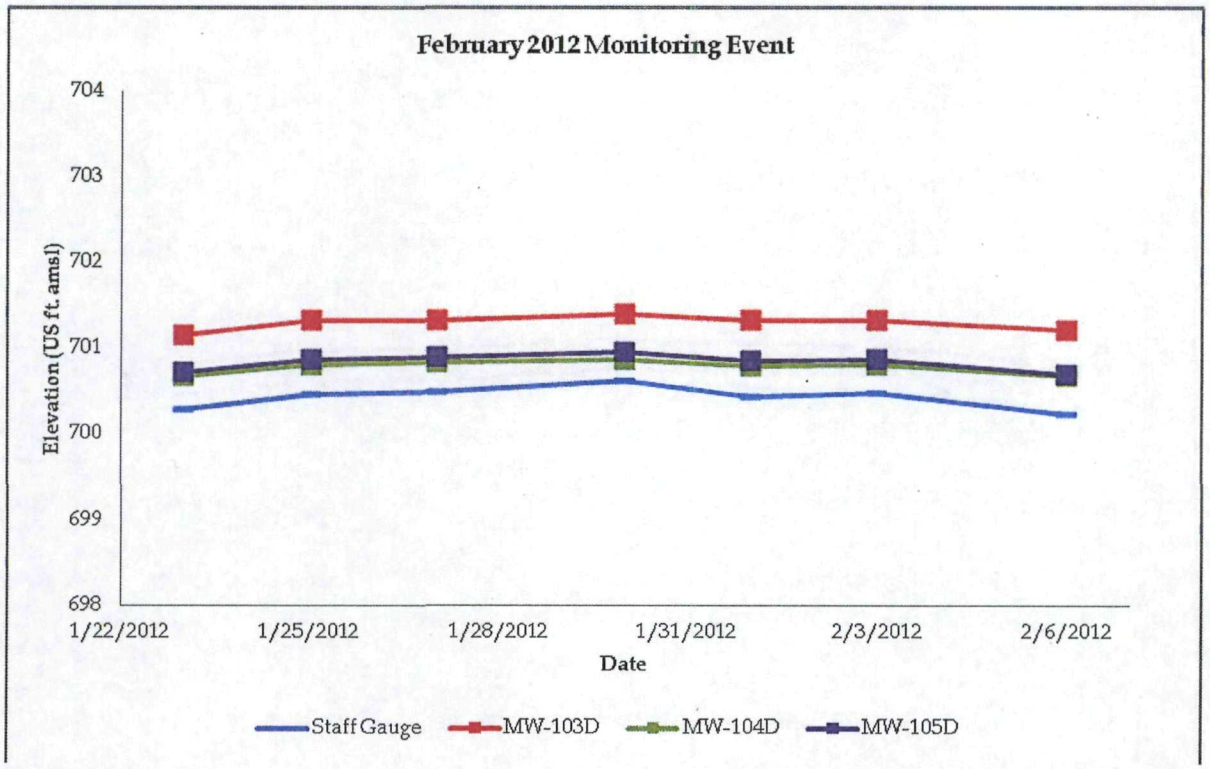


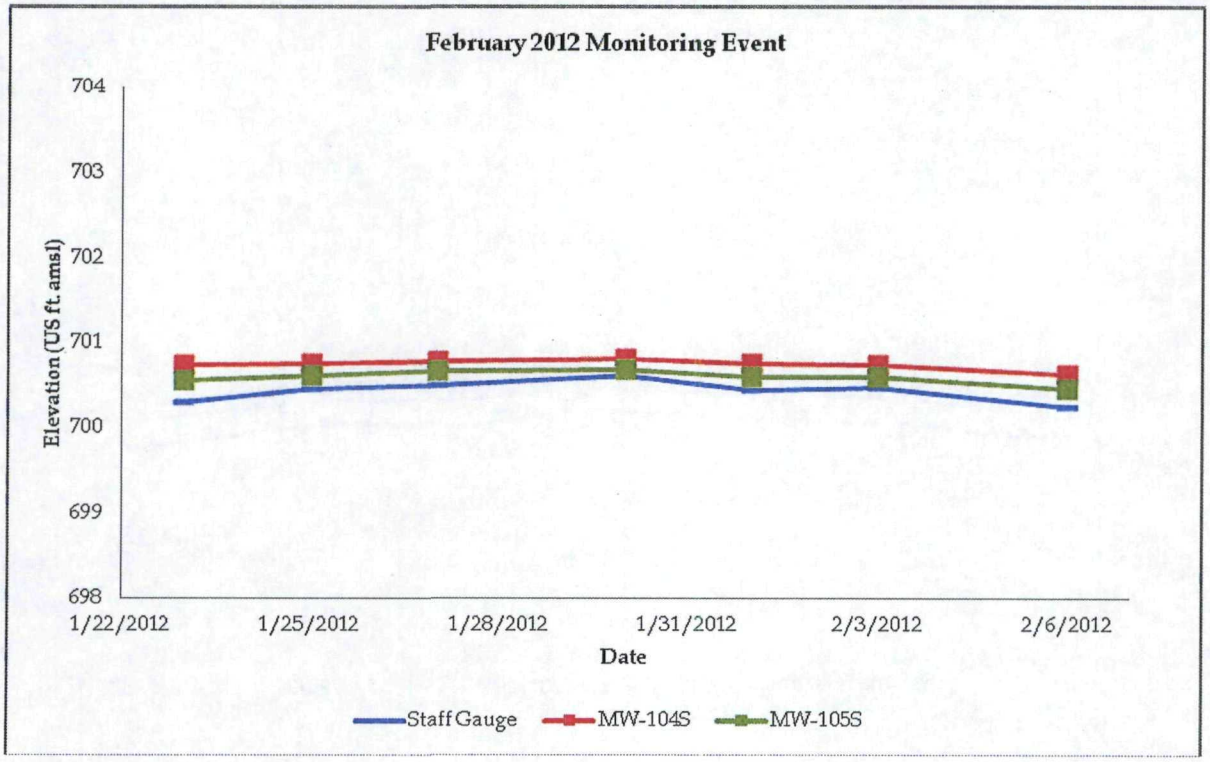
GRAPHICAL REPRESENTATION OF GROUNDWATER ELEVATIONS

12th Street Landfill Site

Otsego Township, Michigan

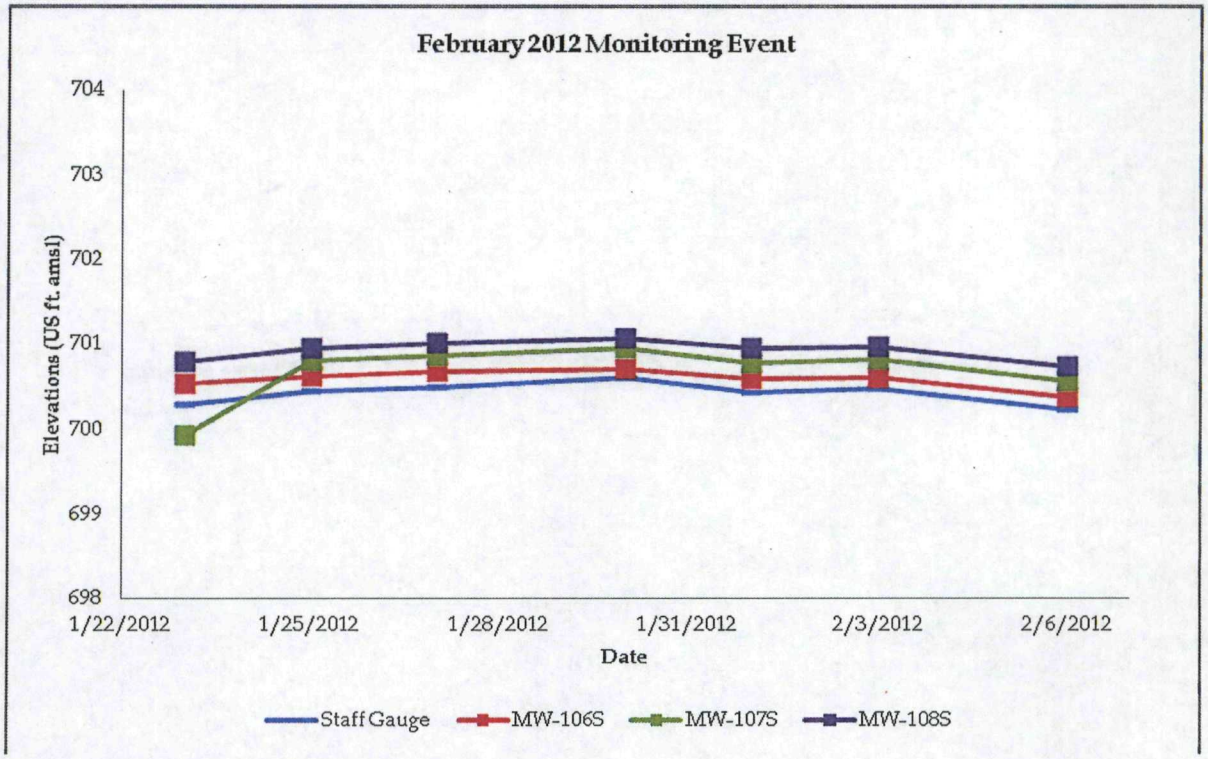
056393 (10)

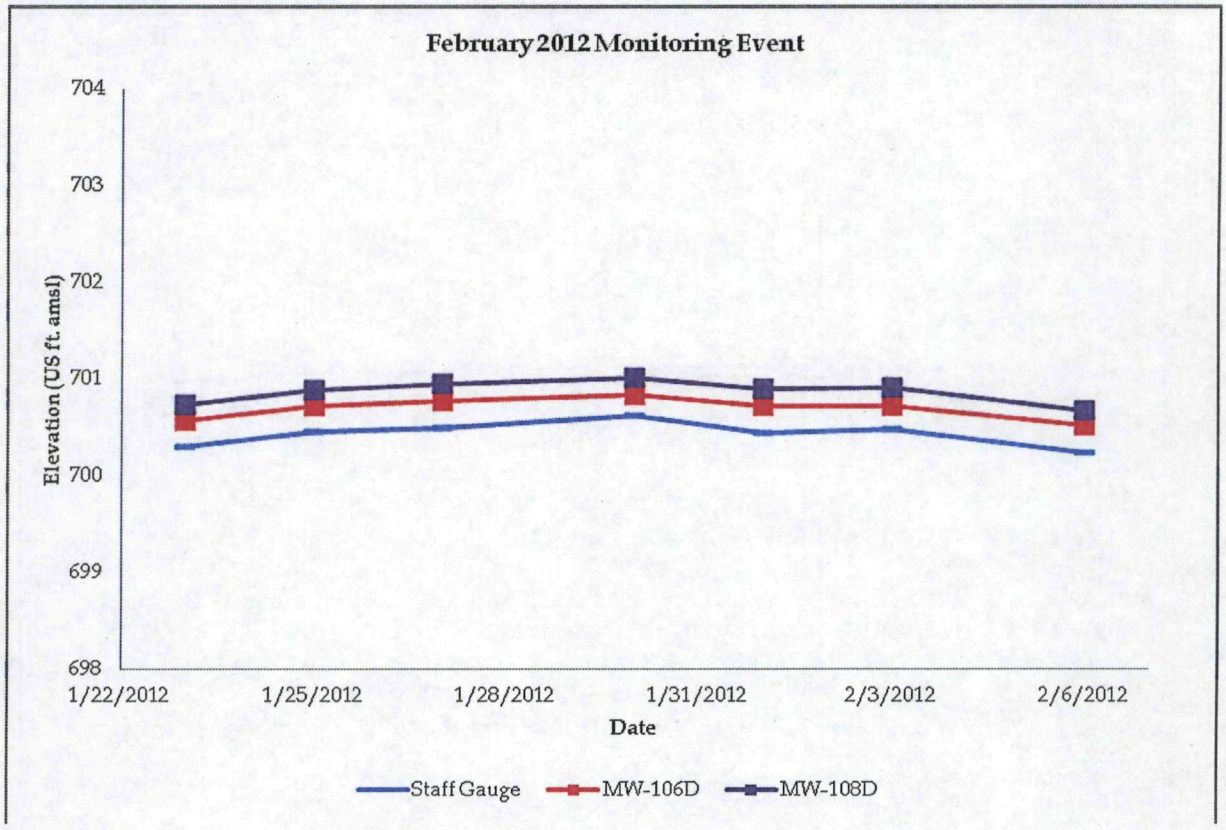




GRAPHICAL REPRESENTATION OF GROUNDWATER ELEVATIONS
12th Street Landfill Site
Otsego Township, Michigan

056393 (10)



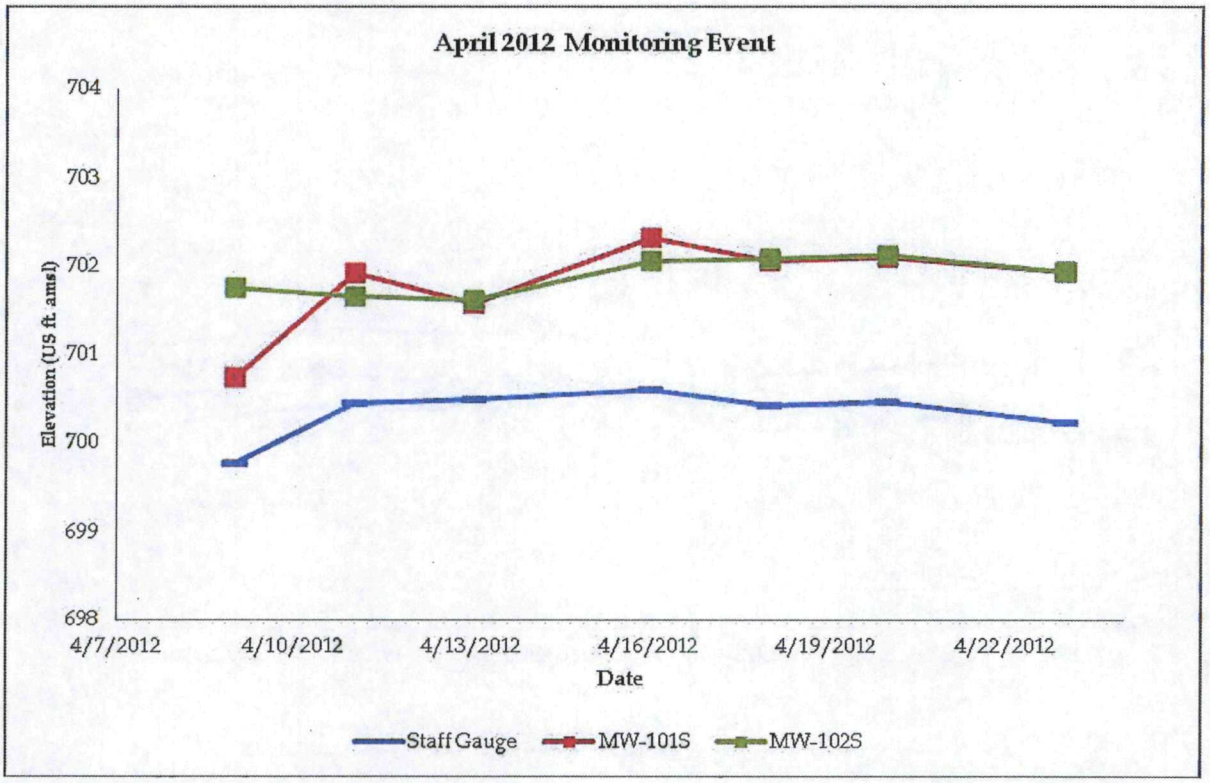


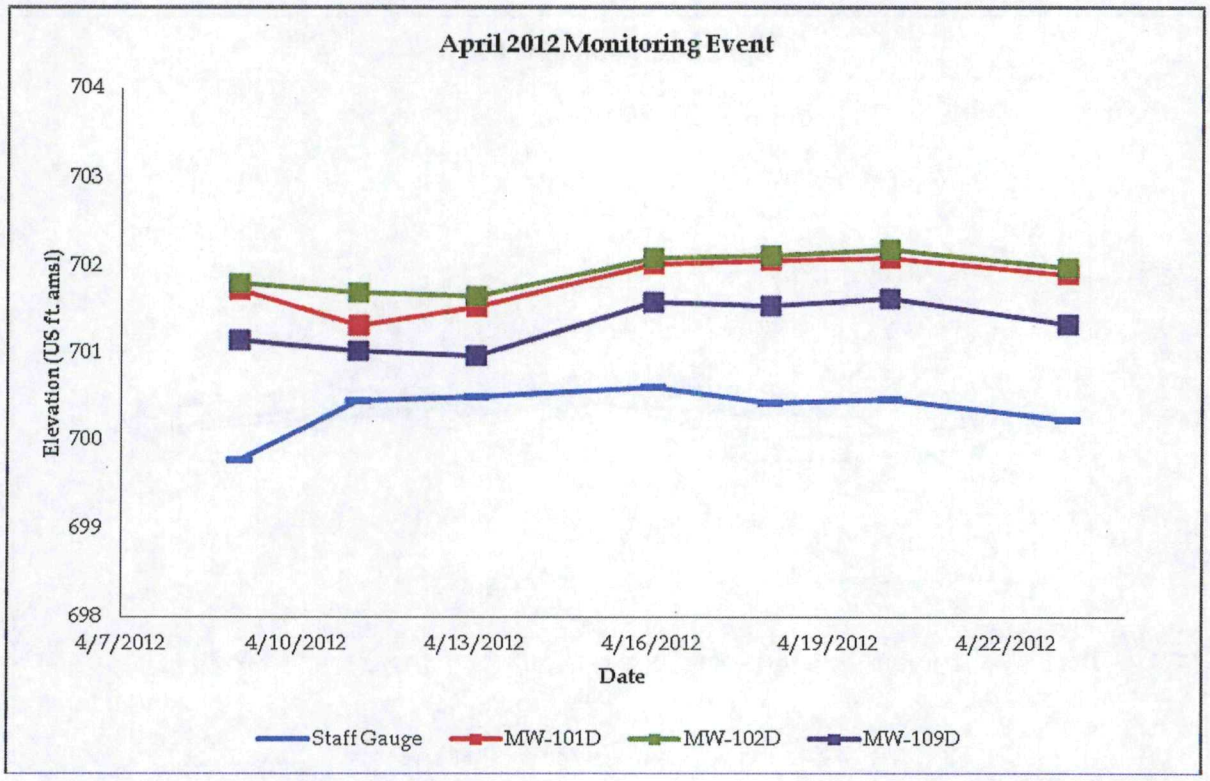
GRAPHICAL REPRESENTATION OF GROUNDWATER ELEVATIONS

12th Street Landfill Site

Otsego Township, Michigan

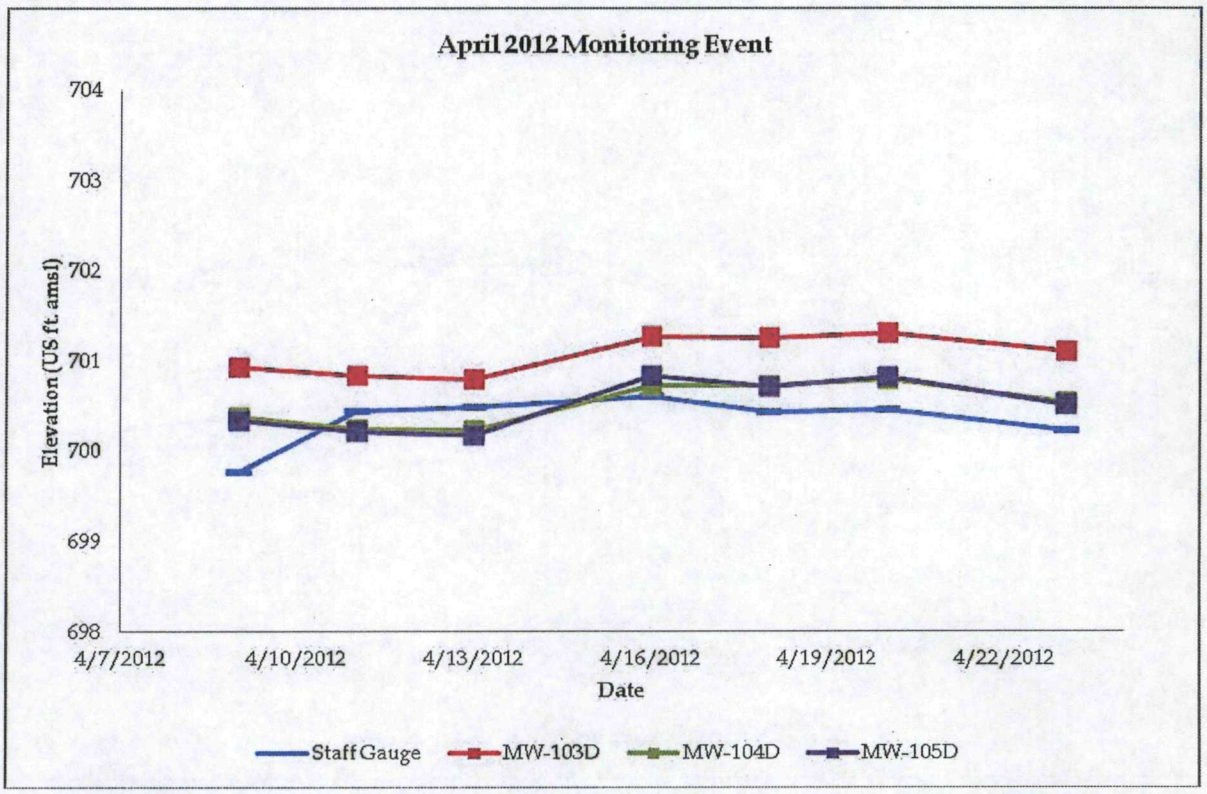
056393 (10)

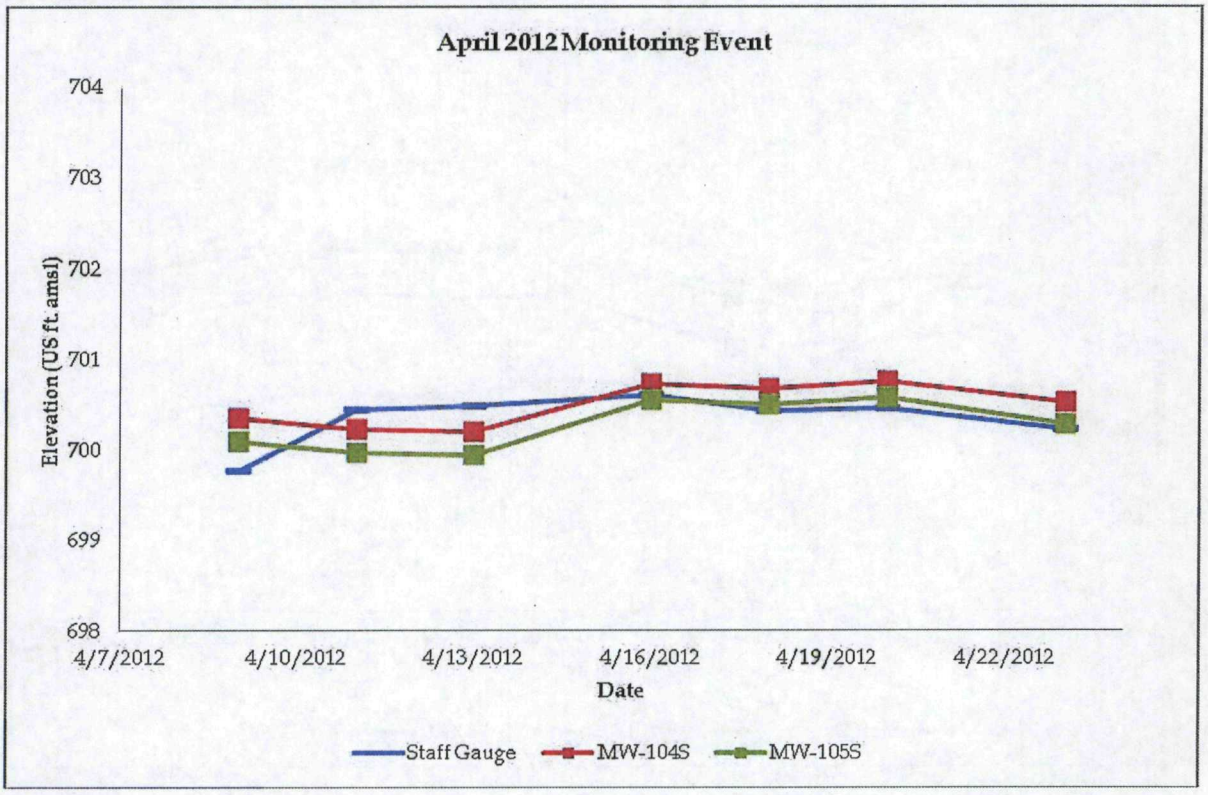




GRAPHICAL REPRESENTATION OF GROUNDWATER ELEVATIONS
12th Street Landfill Site
Otsego Township, Michigan

056393 (10)



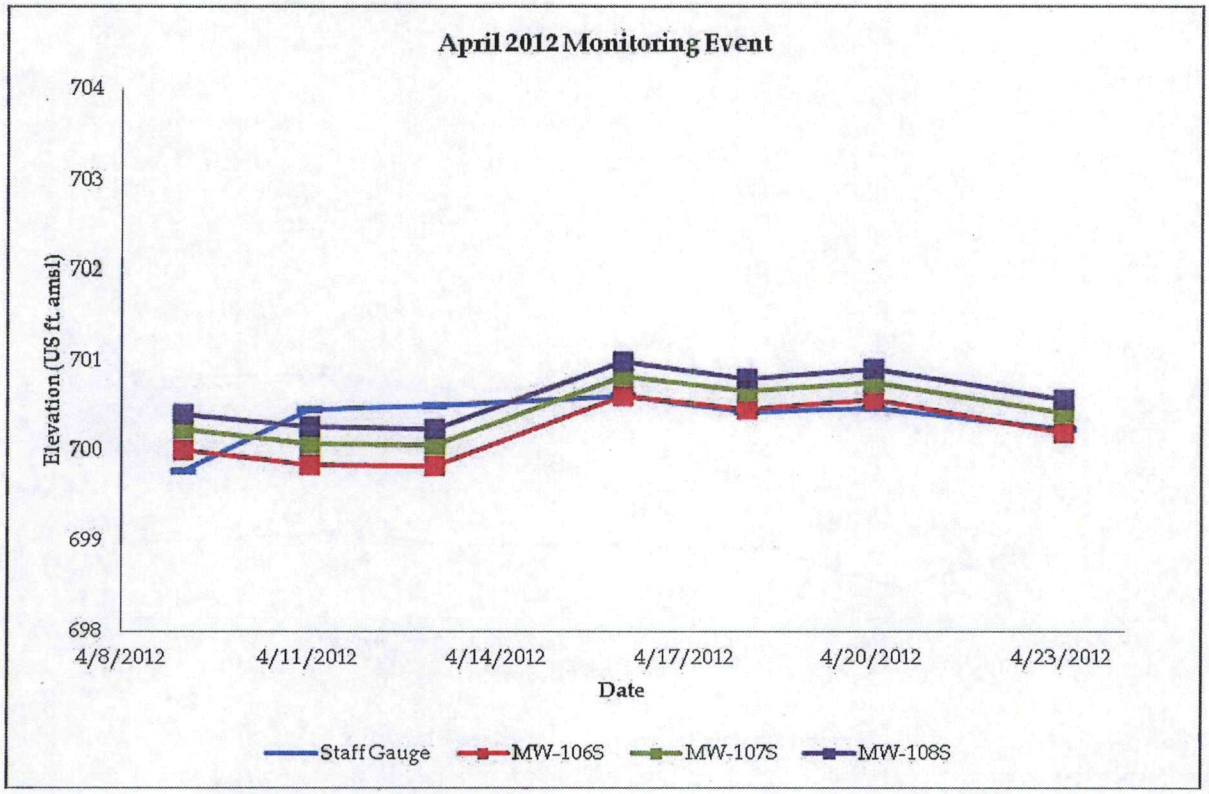


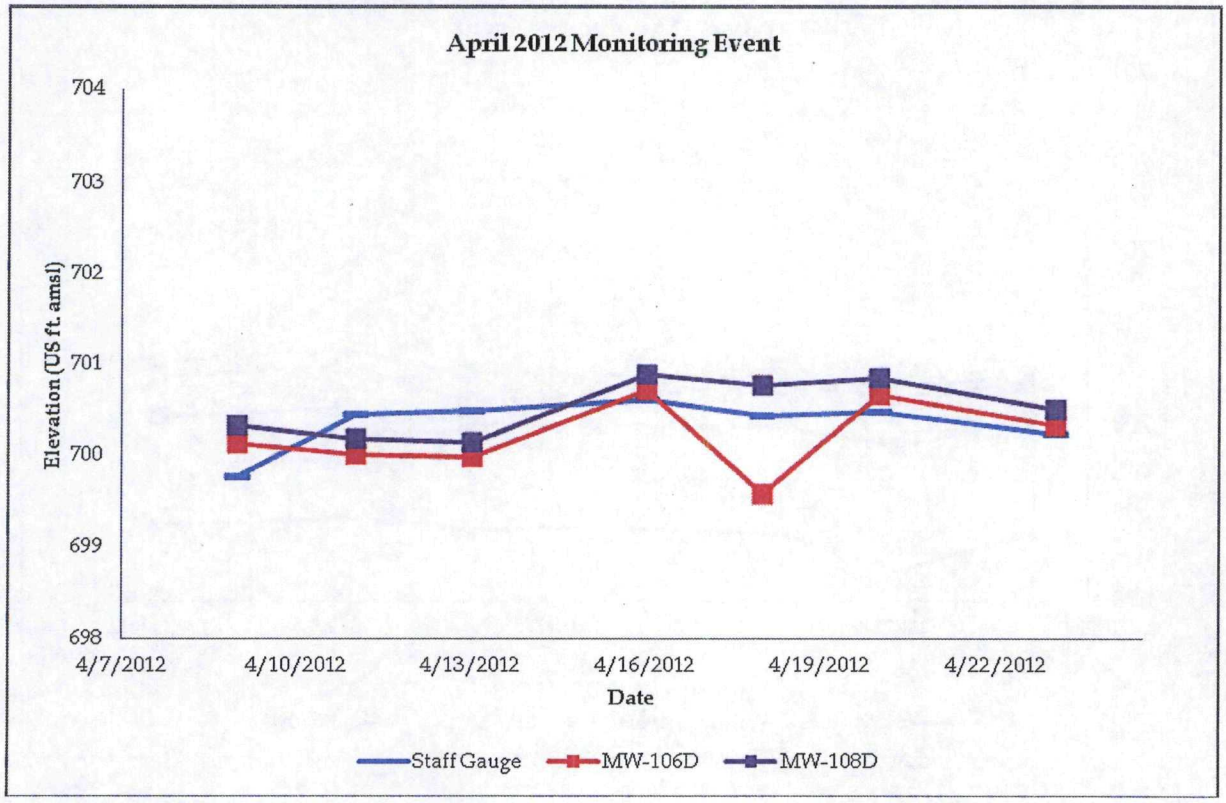
GRAPHICAL REPRESENTATION OF GROUNDWATER ELEVATIONS

12th Street Landfill Site

Otsego Township, Michigan

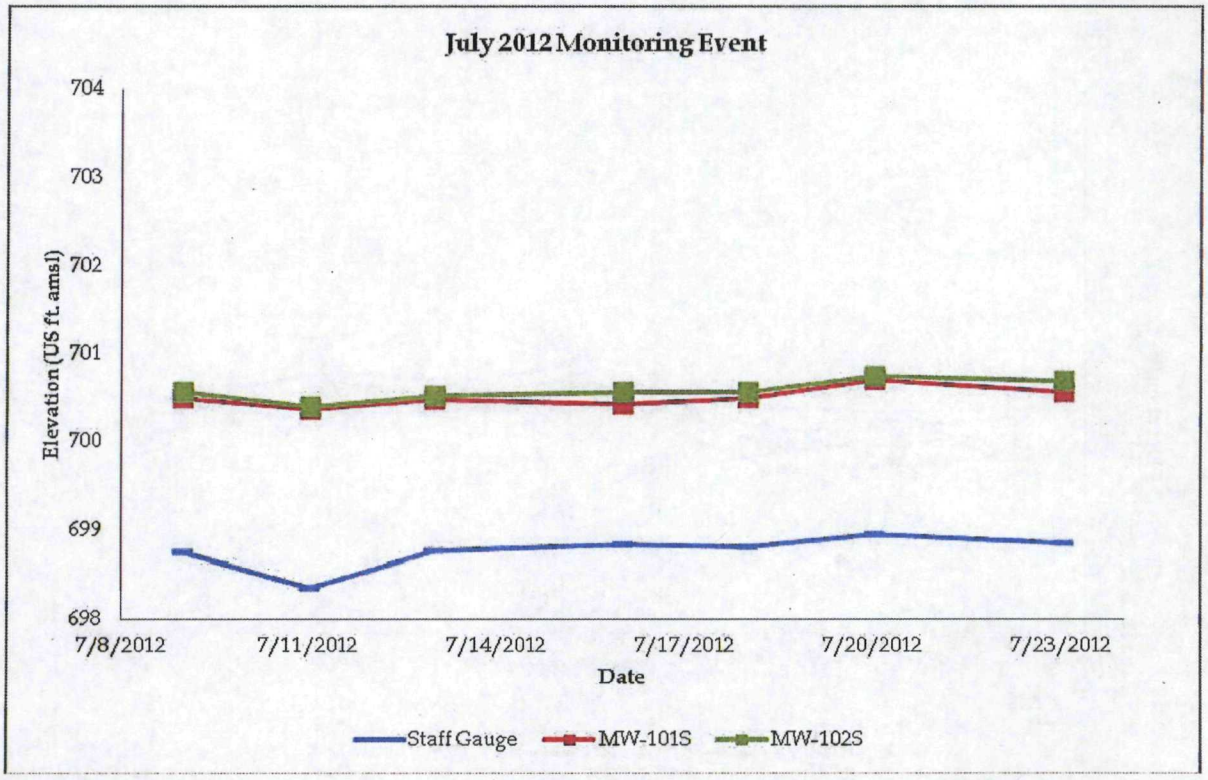
056393 (10)

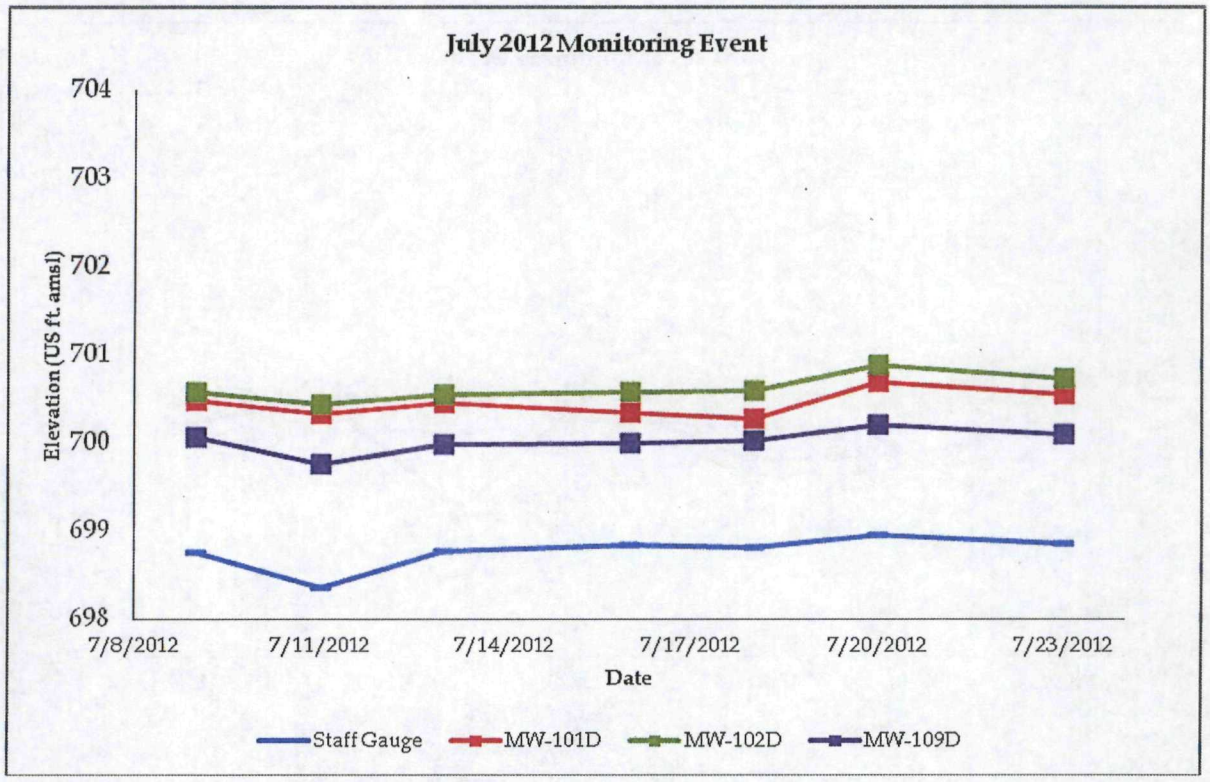




GRAPHICAL REPRESENTATION OF GROUNDWATER ELEVATIONS
12th Street Landfill Site
Otsego Township, Michigan

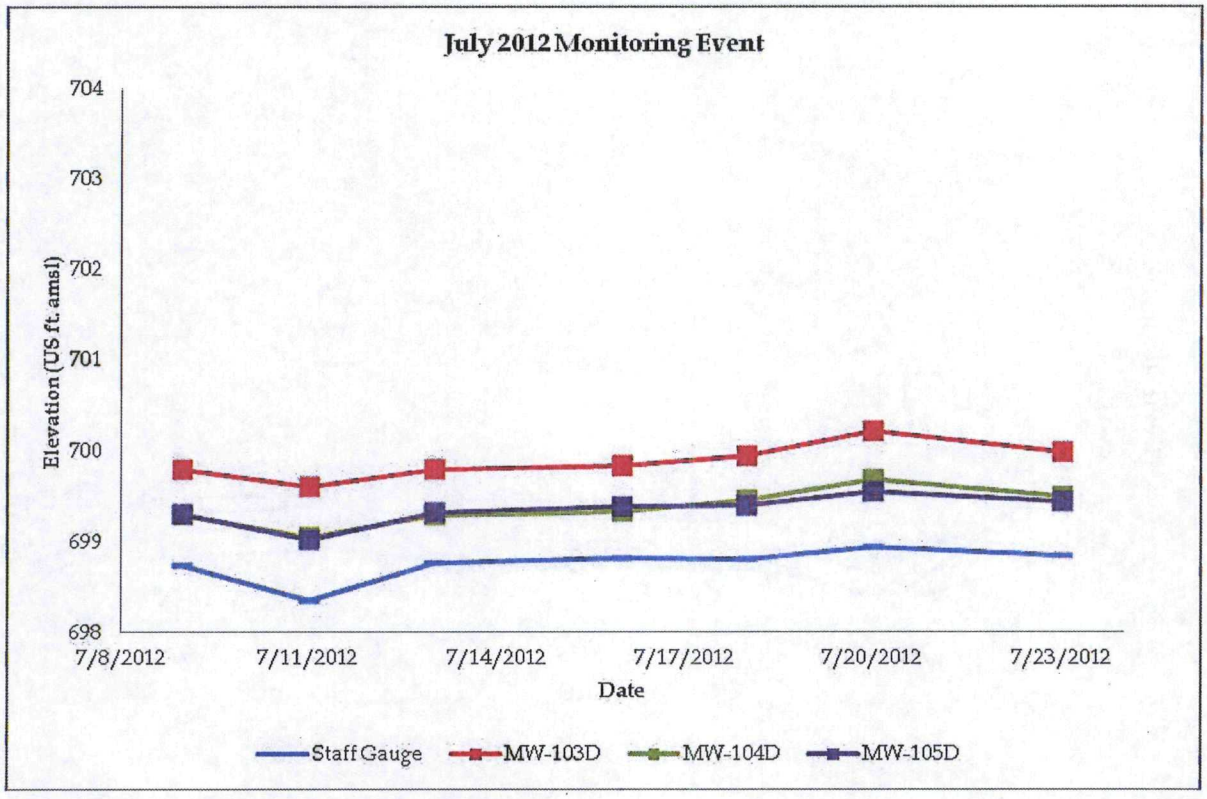
056393 (10)

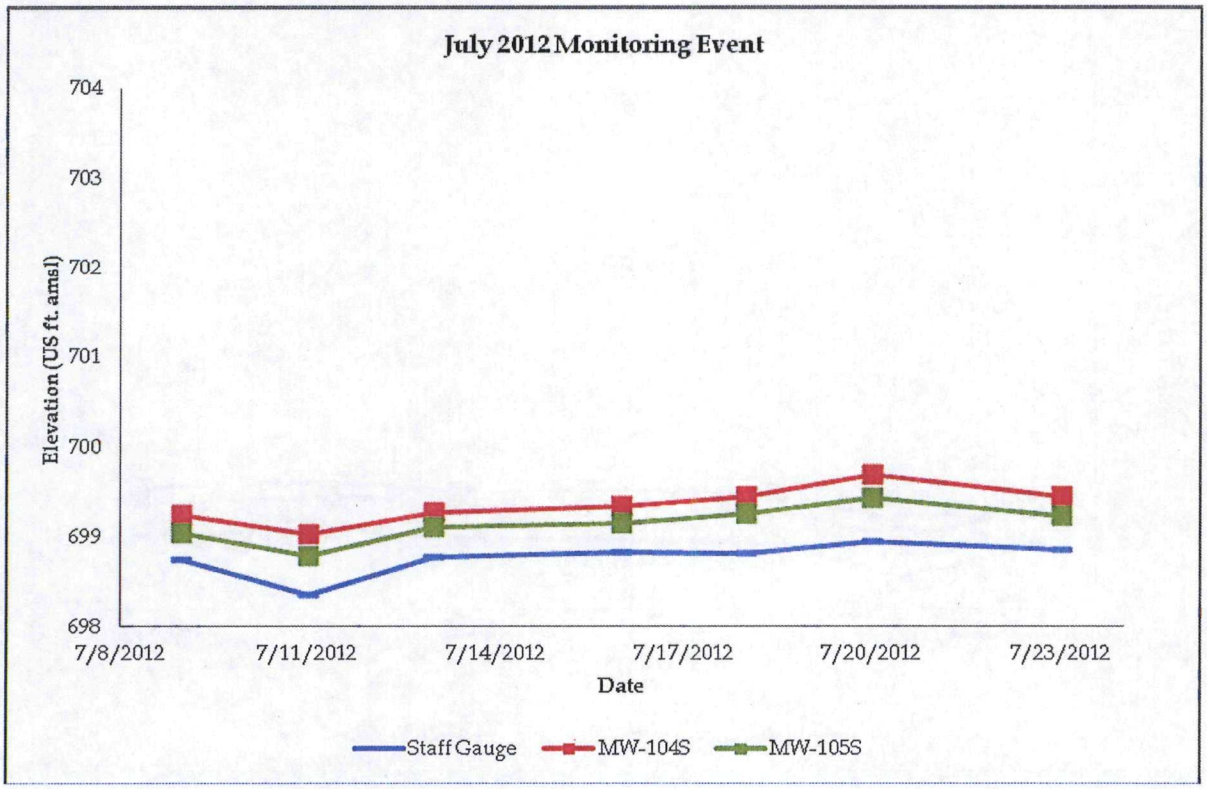




GRAPHICAL REPRESENTATION OF GROUNDWATER ELEVATIONS
12th Street Landfill Site
Otsego Township, Michigan

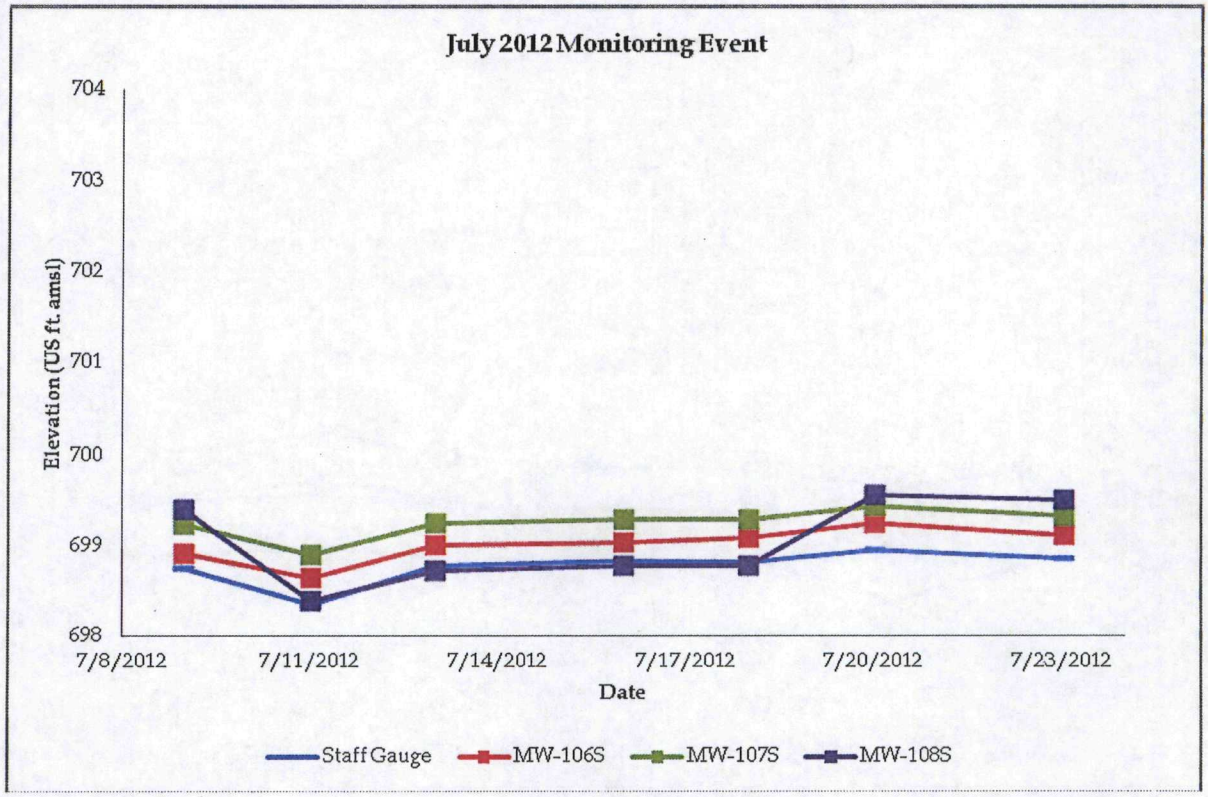
056393 (10)

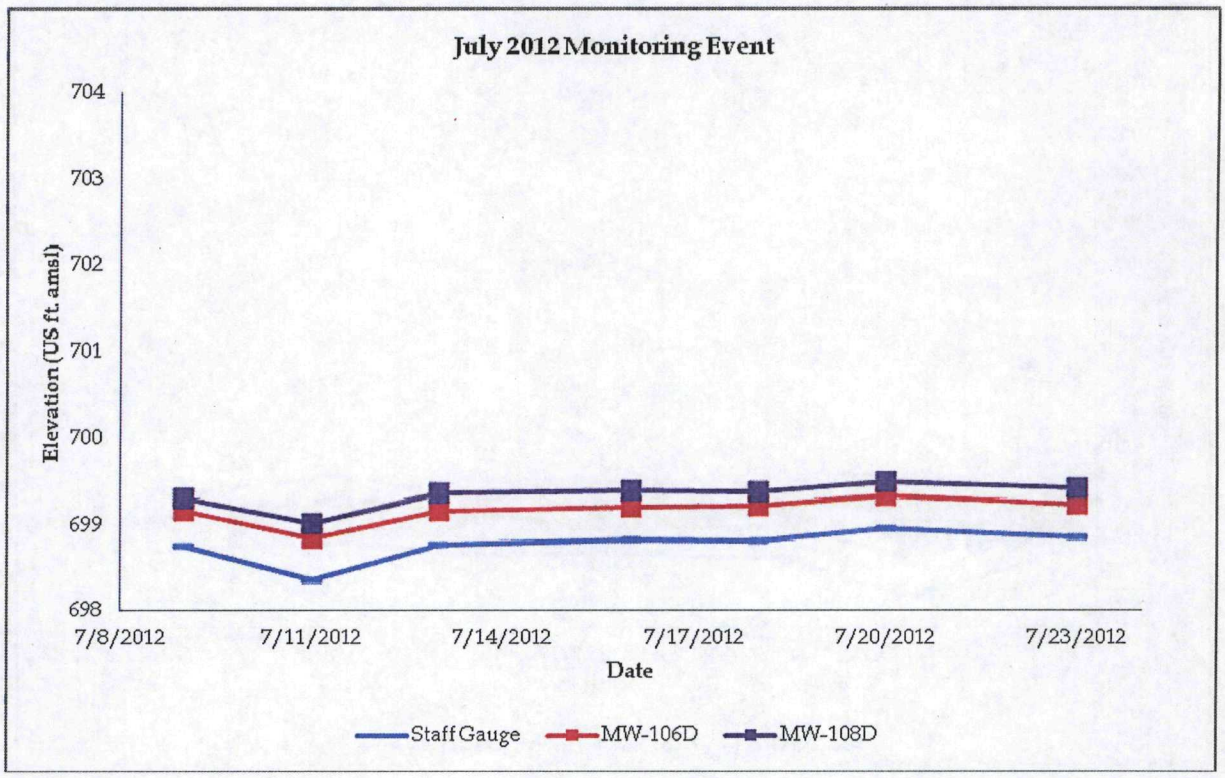




GRAPHICAL REPRESENTATION OF GROUNDWATER ELEVATIONS
12th Street Landfill Site
Otsego Township, Michigan

056393 (10)



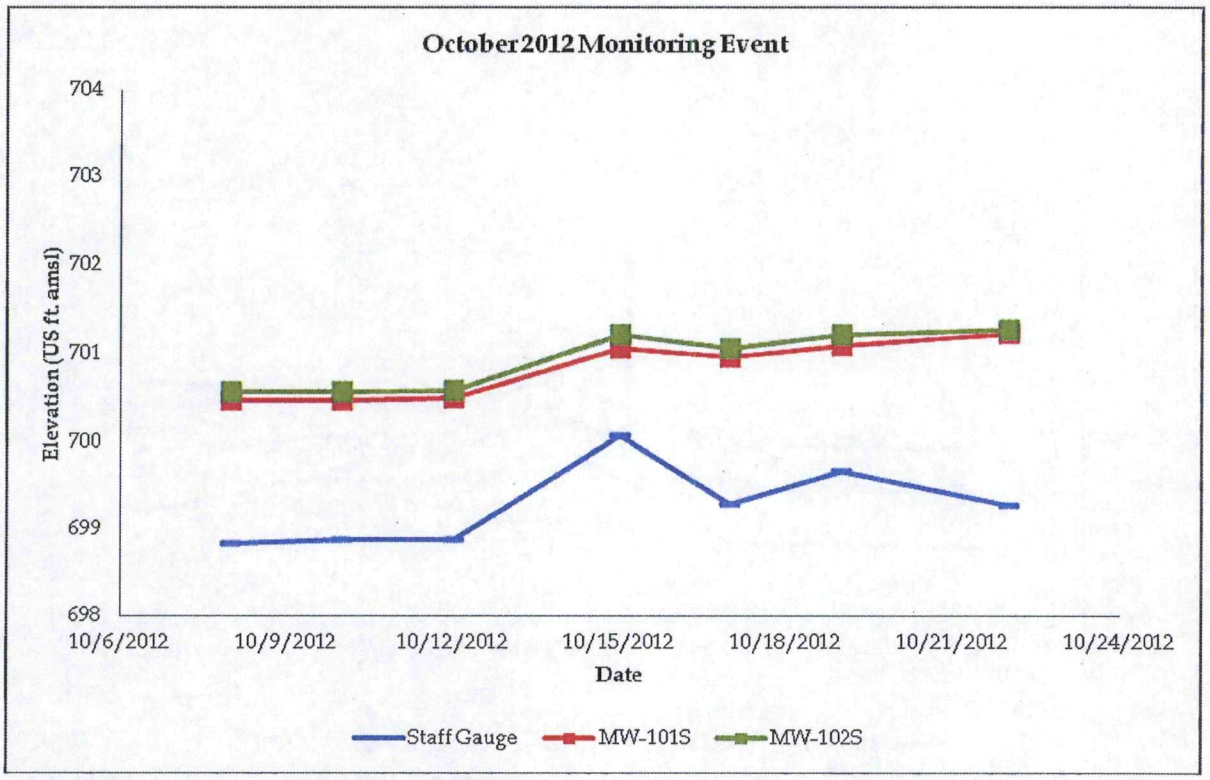


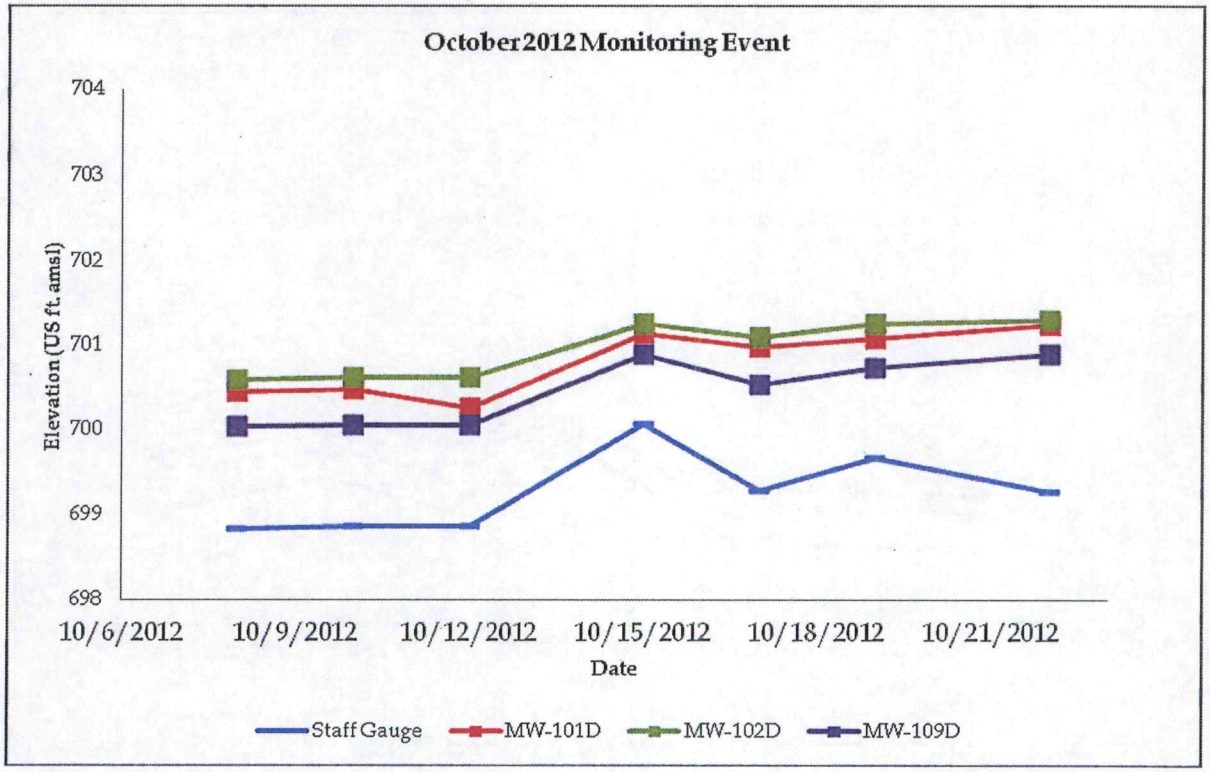
GRAPHICAL REPRESENTATION OF GROUNDWATER ELEVATIONS

12th Street Landfill Site

Otsego Township, Michigan

056393 (10)



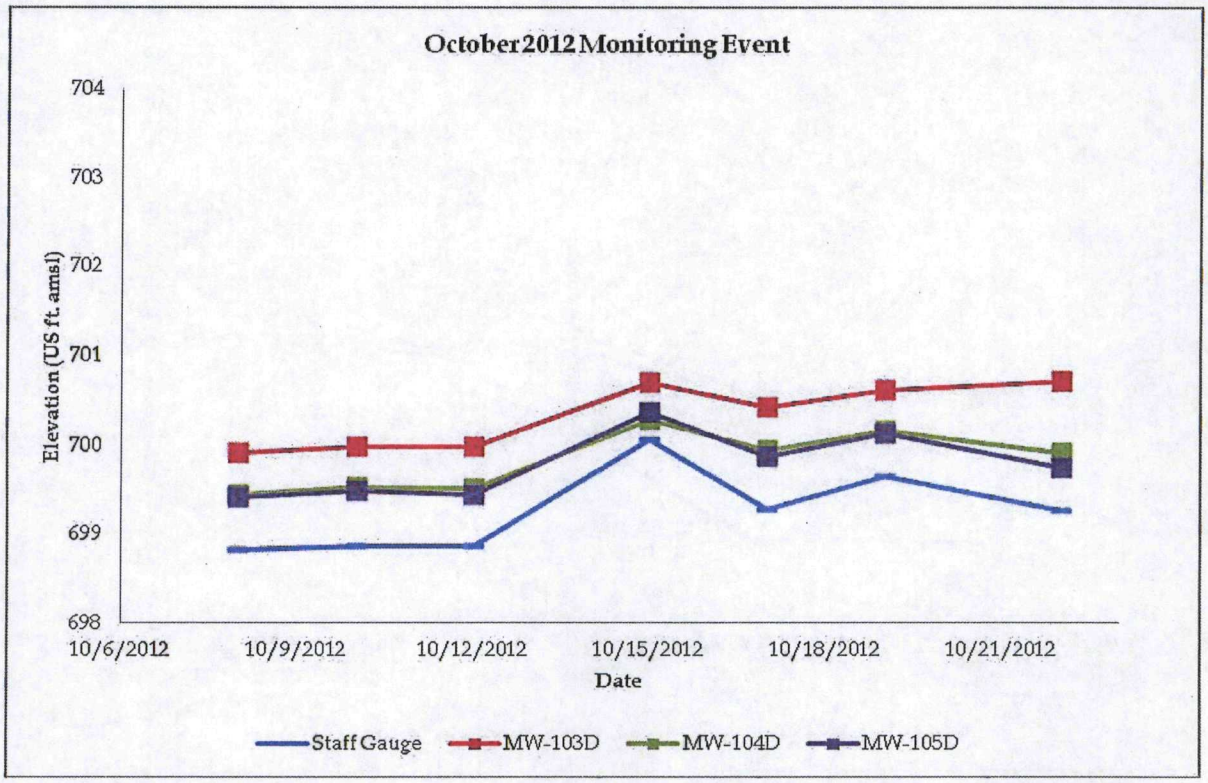


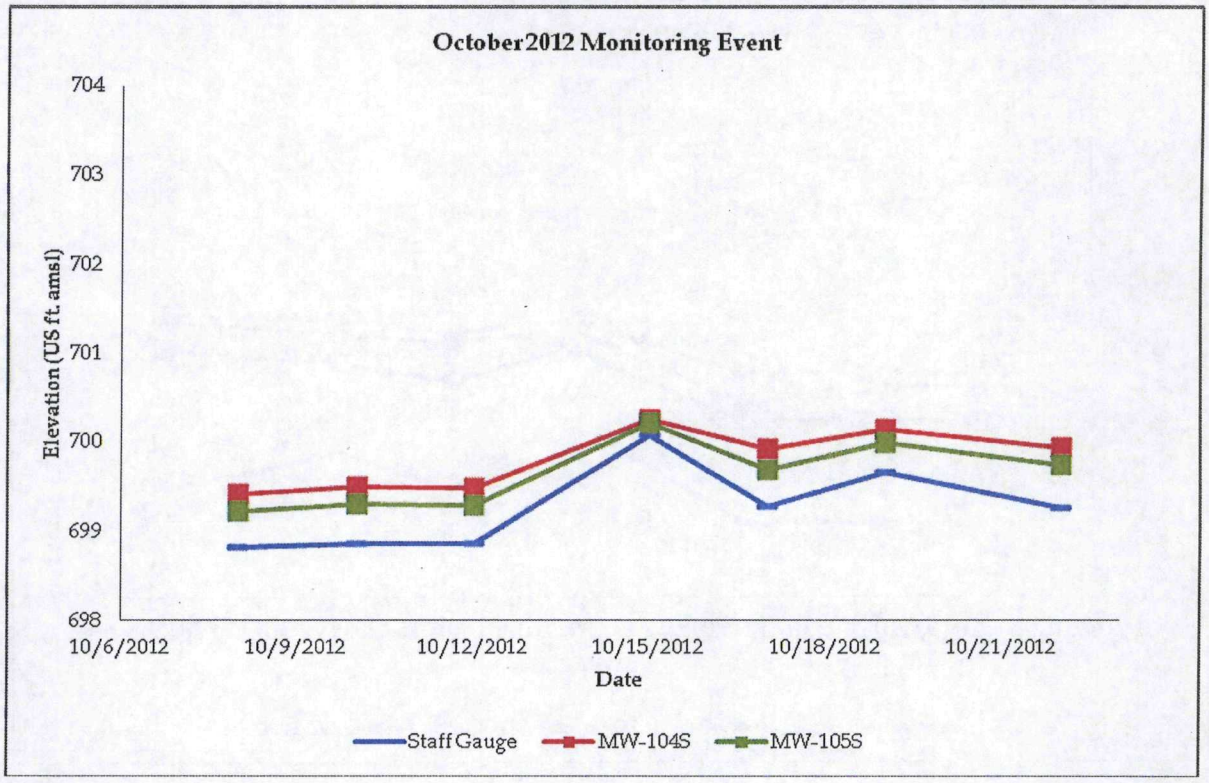
GRAPHICAL REPRESENTATION OF GROUNDWATER ELEVATIONS

12th Street Landfill Site

Otsego Township, Michigan

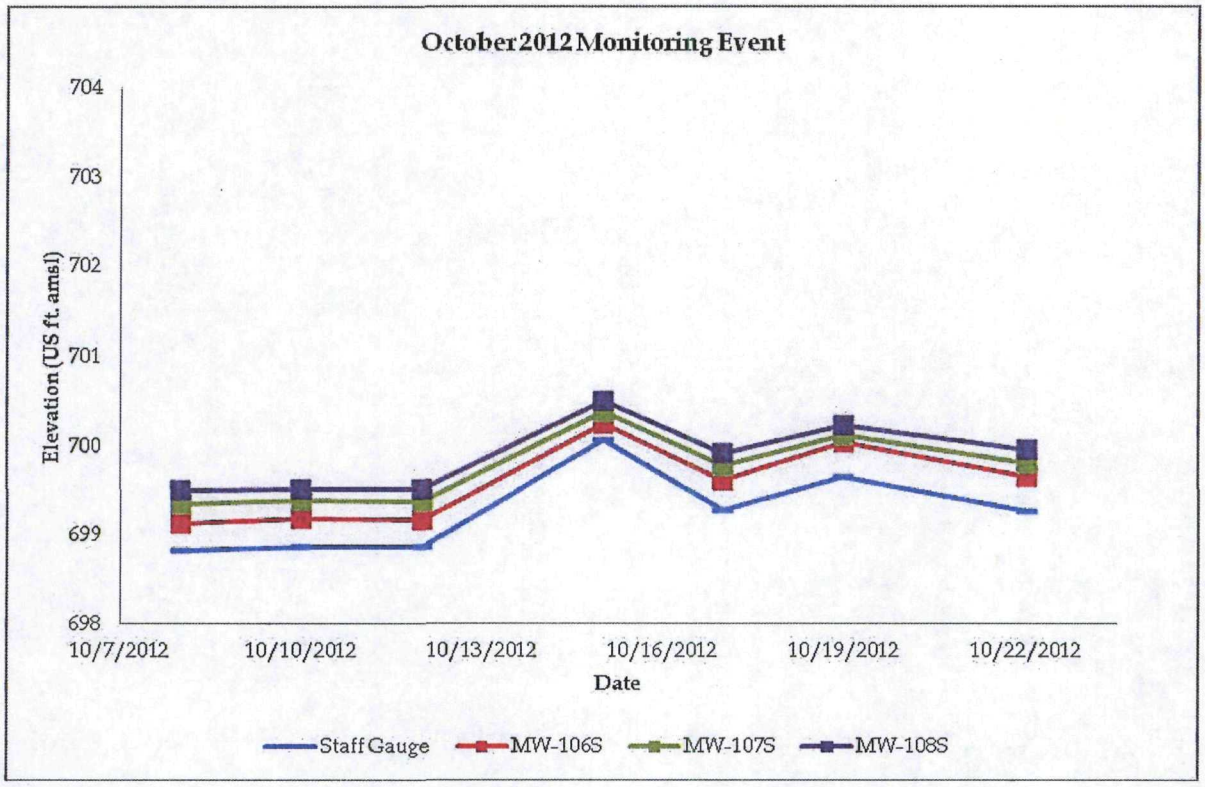
056393 (10)

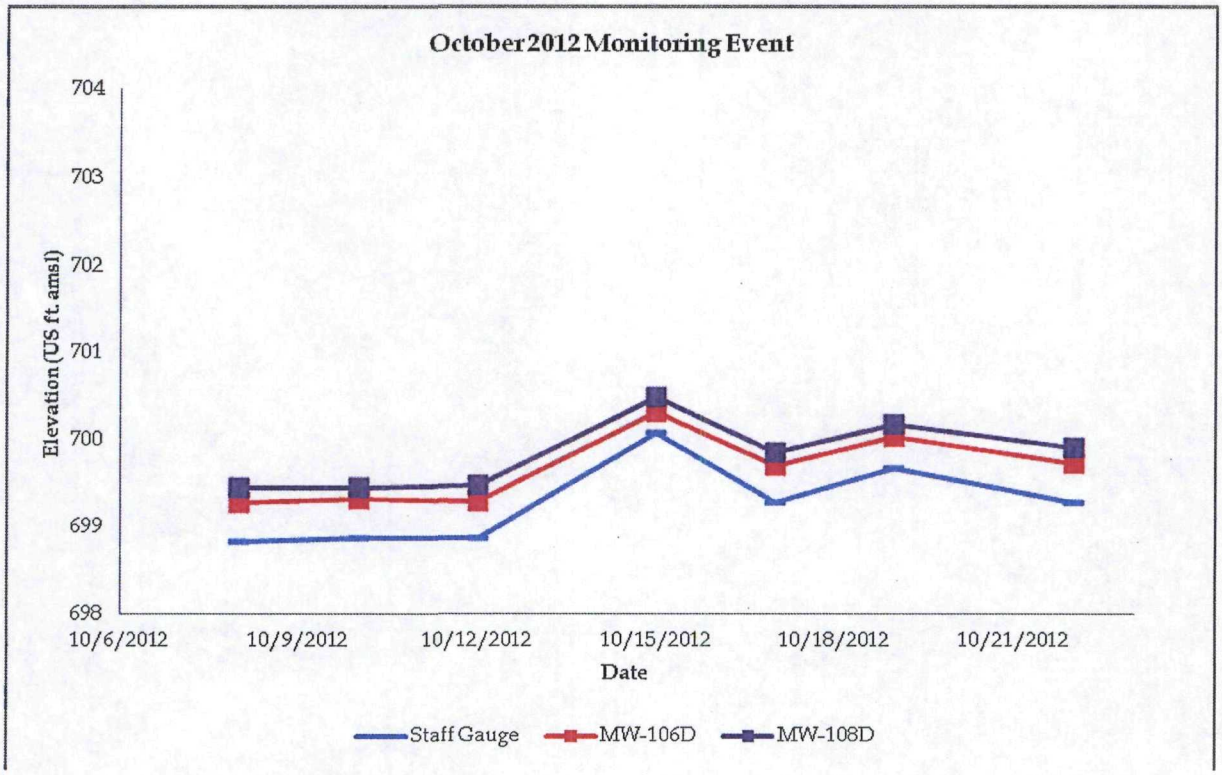




GRAPHICAL REPRESENTATION OF GROUNDWATER ELEVATIONS
12th Street Landfill Site
Otsego Township, Michigan

056393 (10)





GRAPHICAL REPRESENTATION OF GROUNDWATER ELEVATIONS

12th Street Landfill Site

Otsego Township, Michigan

056393 (10)

APPENDIX B

PRECIPITATION DATA - OCTOBER 2011
12th STREET LANDFILL SITE
OTSEGO TOWNSHIP, MICHIGAN

2011	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Wind (mph)		Precip. (in)
	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum
10/01/11	57	45	36	42	37	33	92	77	49	30.3	-	30.13	6	2	11	0
10/02/11	61	46	31	47	40	30	98	83	49	30.3	-	30.17	9	1	14	0.01
10/03/11	72	50	34	51	42	33	98	78	29	30.26	-	30.17	5	1	11	0
10/04/11	72	53	37	53	45	37	98	78	39	30.34	-	30.26	6	1	10	0
10/05/11	80	57	43	57	48	42	99	78	34	30.33	-	30.24	3	0	6	0
10/06/11	82	63	46	57	52	44	97	72	36	30.34	-	30.25	4	1	8	0
10/07/11	83	65	49	58	53	48	97	69	35	30.39	-	30.28	8	1	11	0
10/08/11	82	66	53	59	55	51	92	71	40	30.39	-	30.3	10	2	12	0
10/09/11	82	65	49	61	54	48	98	73	38	30.42	-	30.27	6	0	7	0
10/10/11	78	64	51	56	52	49	96	70	40	30.3	-	30.12	8	1	15	0
10/11/11	80	63	50	54	48	39	91	65	23	30.13	-	29.97	11	1	15	0
10/12/11	76	62	49	55	50	46	90	66	41	29.98	-	29.74	7	1	9	0
10/13/11	63	56	49	57	53	47	94	90	76	29.73	-	29.44	7	1	17	0.52
10/14/11	56	53	50	53	45	36	92	74	55	29.61	-	29.42	15	6	22	0.11
10/15/11	57	52	47	42	38	35	83	58	45	29.84	-	29.57	20	9	31	0.06
10/16/11	59	53	48	47	40	33	81	63	47	29.89	-	29.73	12	4	23	0
10/17/11	55	51	46	37	34	32	68	53	43	29.83	-	29.77	19	8	26	0
10/18/11	54	46	36	43	39	33	91	75	60	29.86	-	29.79	3	0	5	0
10/19/11	47	44	42	43	40	39	92	89	75	29.85	-	29.45	11	4	21	1
10/20/11	45	43	41	43	40	39	94	91	86	29.82	-	29.34	10	6	18	1.03
10/21/11	47	43	32	42	39	30	93	85	71	30.12	-	29.83	8	2	13	0.01
10/22/11	61	44	29	45	35	28	96	74	39	30.13	-	30.06	10	2	12	0
10/23/11	63	50	36	47	40	34	93	72	42	30.05	-	29.87	9	2	20	0.01
10/24/11	60	53	43	48	43	38	92	68	51	30.15	-	29.84	15	4	19	0.47
10/25/11	68	54	39	50	43	37	93	70	41	30.16	-	29.77	19	3	21	0.02
10/26/11	52	47	44	48	45	41	95	91	88	29.97	-	29.77	6	2	8	0
10/27/11	51	42	32	41	37	30	94	84	55	30.19	-	29.95	6	1	11	0
10/28/11	50	36	27	42	33	26	96	90	65	30.27	-	30.11	4	1	9	0.01
10/29/11	53	42	30	41	35	28	93	78	39	30.17	-	30.04	6	2	10	0.01
10/30/11	52	40	26	43	33	25	96	78	45	30.22	-	30.05	13	4	20	0.16
10/31/11	53	43	33	45	39	31	95	86	54	30.2	-	30.02	9	2	13	0.02

October 2011 Data is for Allegan Airport as precipitation data for Plainwell Airport is not available.

APPENDIX B

PRECIPITATION DATA - JANUARY AND FEBRUARY 2012
12th STREET LANDFILL SITE
OTSEGO TOWNSHIP, MICHIGAN

2012	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Wind (mph)		Precip. (in)
	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum
01/17/12	38	33	22	36	30	19	93	89	78	30.12	-	29.49	32	7	41	0
01/18/12	26	21	19	19	15	10	89	76	54	30.27	-	29.92	16	5	18	0
01/19/12	26	17	6	24	11	3	93	78	64	30.19	-	29.73	30	8	31	0
01/20/12	16	12	6	12	7	1	89	82	67	30.29	-	30.12	12	2	12	0
01/21/12	29	15	3	13	8	0	90	73	46	30.29	-	30.13	14	2	16	0
01/22/12	38	25	14	38	22	7	96	88	73	30.23	-	29.62	24	8	24	0.1
01/23/12	46	39	30	44	36	23	97	90	74	29.82	-	29.38	41	12	41	0.2
01/24/12	31	30	29	26	24	23	83	80	72	30.33	-	29.82	23	8	27	0
01/25/12	34	30	27	30	25	23	89	81	73	30.39	-	30.13	9	2	10	0.01
01/26/12	34	32	28	33	29	25	96	90	85	30.13	-	29.57	8	1	10	0.19
01/27/12	40	34	32	32	28	23	96	79	54	29.96	-	29.57	17	4	19	0.08
01/28/12	35	31	29	35	24	16	100	77	56	30.07	-	29.72	34	10	34	0
01/29/12	30	27	24	28	22	15	94	82	65	30.24	-	29.88	25	6	32	0
01/30/12	45	30	16	36	23	13	89	74	60	30.25	-	29.89	19	4	24	0
01/31/12	57	50	44	56	41	35	100	73	61	29.91	-	29.81	22	10	25	0
02/01/12	52	39	35	48	34	31	89	82	75	30.18	-	29.83	20	4	22	0
02/02/12	45	38	33	34	31	30	89	78	61	30.4	-	30.18	13	2	17	0
02/03/12	0	0	0	30	30	30	0	0	100	30.46	-	30.42	0	0	0	0
02/04/12	45	23	0	30	28	26	56	26	48	30.42	-	30.16	8	1	9	0
02/05/12	45	35	27	29	26	24	92	73	49	30.3	-	30.23	11	3	12	0.02
02/06/12	35	31	26	30	28	24	95	88	79	30.24	-	30.12	20	6	20	0
02/07/12	34	32	28	29	27	22	91	84	73	30.41	-	30.19	13	3	15	0
02/08/12	34	26	20	23	19	16	92	74	49	30.41	-	30.3	16	3	18	0
02/09/12	36	28	20	24	18	11	88	68	38	30.3	-	30.11	21	6	22	0
02/10/12	33	27	11	31	22	7	94	82	73	30.12	-	29.88	16	6	18	0
02/11/12	21	12	-3	16	8	-6	88	80	69	30.35	-	30.12	19	4	20	0
02/12/12	30	24	19	18	16	13	81	70	60	30.29	-	30.2	22	7	25	0

APPENDIX B

PRECIPITATION DATA - APRIL 2012
12th STREET LANDFILL SITE
OTSEGO TOWNSHIP, MICHIGAN

2012	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Wind (mph)			Precip. (in)
	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum
04/01/12	59	47	39	50	43	37	92	86	70	29.92	-	29.71	15	3	16	0
04/02/12	63	50	39	45	38	35	90	66	42	30.04	-	29.83	17	5	18	0
04/03/12	70	52	41	55	45	32	100	76	56	30.03	-	29.84	17	4	19	0.57
04/04/12	63	52	36	51	36	27	97	59	29	30	-	29.88	16	4	17	0
04/05/12	51	43	35	36	32	28	79	64	49	30.18	-	29.94	17	4	18	0
04/06/12	61	43	26	34	29	24	95	60	32	30.35	-	30.18	15	2	17	0
04/07/12	68	46	27	40	32	27	100	65	26	30.35	-	30.12	14	2	14	0
04/08/12	58	51	39	46	36	27	96	62	33	30.19	-	30.07	35	9	35	0.01
04/09/12	56	46	33	44	32	23	100	65	31	30.08	-	29.9	33	7	37	0.01
04/10/12	42	36	33	34	27	24	95	69	57	30.11	-	29.95	25	7	26	0
04/11/12	53	42	32	35	30	27	85	64	42	30.27	-	30.1	26	4	26	0
04/12/12	57	41	24	38	31	24	100	71	41	30.32	-	30.18	15	2	16	0
04/13/12	64	48	28	39	33	27	100	63	32	30.27	-	30.08	17	4	19	0
04/14/12	65	58	52	57	49	34	94	73	45	30.09	-	29.86	13	5	15	0
04/15/12	74	65	57	65	61	56	100	87	72	29.88	-	29.66	24	7	25	1.19
04/16/12	70	56	42	63	50	36	97	80	65	30.17	-	29.5	39	13	42	0.46
04/17/12	54	42	30	39	33	28	100	73	44	30.41	-	30.17	15	3	17	0
04/18/12	67	50	28	48	39	28	100	70	46	30.35	-	29.95	19	6	22	0
04/19/12	73	61	52	60	53	46	97	77	56	29.99	-	29.77	14	3	16	0.09
04/20/12	62	49	39	56	47	37	100	94	64	29.97	-	29.64	17	5	21	0.36
04/21/12	55	44	33	38	32	26	95	66	43	30.05	-	29.95	16	4	18	0
04/22/12	54	42	32	33	29	24	87	61	40	30.07	-	30.03	24	4	32	0
04/23/12	55	43	28	32	26	20	91	55	29	30.05	-	29.75	30	7	31	0
04/24/12	58	48	38	36	31	26	78	54	32	29.75	-	29.67	30	7	32	0
04/25/12	62	48	33	48	40	32	100	78	43	29.82	-	29.71	17	3	19	0.04
04/26/12	54	48	38	49	41	20	96	77	48	30.16	-	29.65	29	6	29	0.01
04/27/12	59	42	25	33	27	20	94	57	29	30.31	-	30.15	15	3	17	0
04/28/12	46	42	34	42	36	32	96	82	65	30.28	-	30.15	13	3	16	0.15
04/29/12	63	49	28	40	32	26	100	58	27	30.36	-	30.17	17	3	18	0.02
04/30/12	57	50	42	57	47	34	100	89	58	30.17	-	29.86	19	4	19	0.4

APPENDIX B

PRECIPITAITON DATA - JULY 2012
12th STREET LANDFILL SITE
OTSEGO TOWNSHIP, MICHIGAN

2012	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Wind (mph)		Precip. (in)	
	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum
07/01/12	92	77	62	75	68	61	100	76	47	29.95	-	29.85	15	2	18	0
07/02/12	98	79	60	74	67	60	100	71	32	30	-	29.88	11	2	13	0
07/03/12	94	83	73	75	72	69	94	71	51	29.9	-	29.78	17	4	18	0
07/04/12	98	88	72	77	74	71	100	67	43	29.84	-	29.79	19	4	19	0
07/05/12	99	88	75	77	72	69	93	63	40	29.9	-	29.83	19	4	19	0
07/06/12	103	88	71	78	74	70	96	68	42	29.93	-	29.86	14	2	16	0
07/07/12	96	85	75	76	74	71	96	72	52	29.96	-	29.87	20	4	22	0
07/08/12	90	78	66	73	63	52	97	65	34	30.05	-	29.96	21	3	23	0.09
07/09/12	87	75	62	65	61	58	97	65	39	30.04	-	29.97	17	3	18	0
07/10/12	88	74	58	60	58	54	100	62	35	30.11	-	30.02	15	2	15	0
07/11/12	93	75	59	62	56	52	90	56	27	30.16	-	30.07	13	2	16	0
07/12/12	95	75	56	60	55	53	90	55	26	30.12	-	30.04	15	2	15	0
07/13/12	91	71	60	72	64	55	100	80	39	30.08	-	30	15	2	17	0.08
07/14/12	95	78	67	73	68	63	100	73	44	30.06	-	29.94	18	3	21	0
07/15/12	88	77	68	74	69	65	100	77	53	30.02	-	29.94	19	4	22	0
07/16/12	95	80	61	73	67	61	100	68	39	30.01	-	29.81	16	4	19	0
07/17/12	97	86	74	75	71	68	89	63	42	29.83	-	29.74	20	4	23	0
07/18/12	97	82	70	76	72	67	100	75	48	29.94	-	29.79	21	3	30	1.09
07/19/12	85	72	67	76	71	66	100	94	69	29.96	-	29.85	24	3	25	1.76
07/20/12	84	73	63	66	63	60	96	74	46	30.07	-	29.96	17	4	18	0
07/21/12	83	71	57	67	63	57	100	77	49	30.1	-	30	13	3	15	0
07/22/12	89	78	64	73	68	63	100	75	50	30.08	-	29.99	19	4	21	0.01
07/23/12	93	83	73	75	72	70	96	70	52	30	-	29.82	23	6	26	0
07/24/12	88	78	65	76	68	55	100	76	34	29.97	-	29.83	13	3	15	0.05
07/25/12	91	77	62	79	68	61	100	76	54	29.95	-	29.56	20	6	22	0
07/26/12	86	77	70	76	72	67	100	86	66	29.75	-	29.55	16	4	17	0.38
07/27/12	81	71	66	73	68	65	100	91	67	29.94	-	29.72	18	3	18	0.02
07/28/12	84	71	0	65	62	56	100	75	42	30.1	-	29.94	15	4	17	0
07/29/12	91	72	55	68	61	55	100	73	36	30.12	-	29.98	9	1	10	0
07/30/12	91	76	59	69	64	59	100	72	44	30.01	-	29.84	10	2	12	0
07/31/12	85	74	63	72	68	62	100	81	56	29.98	-	29.82	31	5	31	0.54

APPENDIX B

PRECIPTATION DATA - OCTOBER 2012
12th STREET LANDFILL SITE
OTSEGO TOWNSHIP, MICHIGAN

2012	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Wind (mph)		Precip. (in)	
	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum
10/01/12	68	52	36	52	46	35	100	82	49	29.97 -		29.85	10	1	11	0
10/02/12	71	60	49	52	50	48	95	73	47	29.91 -		29.82	15	2	16	0
10/03/12	65	59	56	61	57	52	100	93	75	30.03 -		29.91	16	3	16	0.05
10/04/12	77	64	56	61	58	55	100	83	48	30.07 -		29.95	23	6	23	0.05
10/05/12	57	49	42	55	45	40	95	85	69	30.08 -		29.99	16	5	16	0
10/06/12	45	42	39	41	39	35	100	86	71	30.15 -		29.98	15	3	17	0
10/07/12	47	41	31	44	39	31	100	94	75	30.18 -		30.11	16	1	18	0.13
10/08/12	55	43	29	35	32	28	100	68	41	30.21 -		30.08	20	4	21	0
10/09/12	62	53	42	48	40	31	95	62	50	30.08 -		29.8	26	9	28	0
10/10/12	47	42	36	46	37	31	100	83	59	30.18 -		29.85	26	4	27	0.31
10/11/12	62	45	29	45	36	29	100	75	41	30.23 -		30.04	30	7	31	0.04
10/12/12	57	41	29	43	33	27	100	78	36	30.48 -		30.23	11	1	14	0.16
10/13/12	64	44	29	64	43	28	100	94	77	30.37 -		29.85	19	4	19	0.73
10/14/12	72	63	0	66	61	0	100	94	68	29.86 -		29.4	33	9	36	0.96
10/15/12	50	47	37	50	44	37	100	90	81	29.99 -		29.61	20	4	21	0
10/16/12	62	46	30	48	40	30	100	81	57	30 -		29.67	17	4	23	0.01
10/17/12	73	62	55	57	53	46	96	74	50	29.67 -		29.43	30	9	37	0.07
10/18/12	59	52	44	57	47	38	100	85	54	29.61 -		29.27	31	9	31	0.51
10/19/12	50	45	44	47	45	42	100	97	87	29.6 -		29.5	14	3	15	0.37
10/20/12	52	45	36	49	44	36	100	97	85	29.93 -		29.59	13	2	15	0.09
10/21/12	64	46	33	50	41	33	100	86	51	30.11 -		29.93	13	2	14	0.01
10/22/12	67	58	44	61	54	44	100	89	72	30.06 -		29.9	20	3	28	0.91
10/23/12	64	61	57	64	61	57	100	100	92	29.97 -		29.88	12	2	14	0.02
10/24/12	79	68	58	67	63	58	100	85	64	29.99 -		29.89	15	4	15	0
10/25/12	78	68	51	64	60	49	95	77	60	29.91 -		29.73	31	9	34	0
10/26/12	51	44	38	49	38	33	100	79	59	30.3 -		29.89	20	7	22	0.23
10/27/12	50	40	28	38	33	28	100	79	54	30.31 -		30.21	16	4	17	0
10/28/12	47	40	31	35	31	27	94	72	52	30.29 -		30.21	19	5	21	0
10/29/12	46	40	32	31	28	26	86	65	50	30.24 -		29.92	27	9	29	0
10/30/12	40	38	37	38	34	26	100	85	57	29.92 -		29.64	27	10	32	0.22
10/31/12	42	39	36	39	37	35	100	93	85	29.78 -		29.66	16	7	20	0.03

APPENDIX C

VALIDATION MEMORANDA (CD)

CONESTOGA-ROVERS
& ASSOCIATES

2055 Niagara Falls Blvd., Suite #3,
Niagara Falls, New York 14304
Telephone: (716) 297-6150 Facsimile: (716) 297-2265
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April 12, 2013

Reference No. 056393

Mr. Michael Berkoff
Remedial Project Manager
U.S. Environmental Protection Agency - Region V
Superfund Division, Remedial Response Section #2
77 West Jackson Boulevard (SR-6J)
Chicago, IL 60604-3590

Dear Mr. Berkoff:

Re: Annual Report of OM&M Activities
12th Street Landfill, Operable Unit No. 4
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Allegan and Kalamazoo County

On behalf of Weyerhaeuser NR Company (Weyerhaeuser), Conestoga-Rovers & Associates (CRA) is pleased to submit the Annual Report of Operation, Maintenance and Monitoring (OM&M) activities for the 12th Street Landfill. The report covers the period from October 2011 through December 2012 and includes five groundwater and landfill gas monitoring events. Three hard copies of the report are attached for your use.

Should you have any questions or require any additional information, please do not hesitate to contact the undersigned.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Gregory A. Carli, P. E.

GAC/ejh/23/Pwl
Encl.

cc: J. Saric (USEPA)-electronic copy only
L. Kirby-Miles (USEPA)-electronic copy only
S. Borries (USEPA)-electronic copy only
R. Frey (USEPA)-electronic copy only
K. Zakrzewski (MDEQ)-3 hard copies
R. Gay (Weyerhaeuser)-hard copy
M. Lebo (Weyerhaeuser)-electronic copy only
J. Jackowski (Weyerhaeuser)-electronic copy only
M. Erickson (Arcadis)-electronic copy only
D. Penniman (Arcadis)-electronic copy only
G. Griffith (Georgia-Pacific LLC)-electronic copy only
J. Keiser (CH2M Hill)-electronic copy only
S. Hutsell (CH2MHill)-electronic copy only

Equal
Employment Opportunity
Employer

REGISTERED COMPANY FOR
ISO 9001
ENGINEERING DESIGN

Worldwide Engineering, Environmental, Construction, and IT Services