FIRST SEMI-ANNUAL MONITORING REPORT - 2010

MOTORS LIQUIDATION COMPANY
SAGINAW METAL CASTING OPERATIONS LANDFILL
SAGINAW, MICHIGAN

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JULY 2010
REF. NO. 058502 (2)

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July 29, 2010 Reference No. 058502

Mr. Terry Walkington
Waste and Hazardous Materials Division
Michigan Dept. of Natural Resources and Environment
401 Ketchum Street, Suite B
Bay City, Michigan
U.S.A. 48708

Dear Mr. Walkington:

Re: First Semi-annual Monitoring Report - 2010
Saginaw Metal Casting Operations (SMCO) Landfill

On behalf of MLC and per the requirement of Solid Waste Operating License No. 9126, please find attached two copies of the First Semi-annual Monitoring Report - 2010 (Report) for the Saginaw Metal Casting Operations (SMCO) Landfill.

During the first and second quarters of 2010, monitoring was conducted in accordance with the "Landfill Hydrogeologic Monitoring Plan Summary, Sampling and Analysis" (URS, October 2005). Monitoring throughout this period indicated that an upward vertical gradient from the bedrock aquifer to the overlying clay was present. Operation of the leachate collection system has continued to remove leachate. CRA recommends continued implementation of the existing monitoring plan for the remainder for 2010.

If you have any questions, please do not hesitate to contact us.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Michael Tomka, P.E.

KP/kf/2
Encl.

cc: Ray Ilkka (GM)
Doug Wagner (MLC Representative)
S. Alworden (Saginaw County Health Department)
B. Kocsis (MDEQ-WHMD, Lansing)

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1.0 INTRODUCTION

This First Semi-Annual Monitoring Report for 2010 (Report) presents the results of monitoring at the Saginaw Metal Casting Operations (SMCO) Landfill (Landfill) in Saginaw, Michigan (Landfill) from January 1 to June 30, 2010. The Site location is presented on Figure 1.1.

On October 24, 2005, a "Landfill Hydrogeologic Monitoring Plan Summary, Sampling and Analysis" (URS, October 2005) was submitted. The MDEQ approved the new Monitoring Plan by issuance (on October 28, 2005) of the Landfill Operating License, No. 9126.

Groundwater monitoring at the Landfill was conducted as a requirement of Part 115 of the Michigan Natural Resources and Environmental Protection Act, 1004 PA 451 (Act 451), as amended, and the Solid Waste Disposal Area Operating License No. 9126. This Report presents the field methods, monitoring results, data evaluations, and any summaries or recommendations derived from the data generated during January 1 to June 30, 2010.

2.0 FIELD DATA AND METHODS

The following sections present the field data collected and the field sampling methods followed during the sampling events at the Landfill.

2.1 STATIC LEVEL MEASUREMENTS

During this semi-annual period, static groundwater levels were measured quarterly in all of the monitoring wells and in the leachate sump, per the approved monitoring program. Copies of the field forms containing data obtained during the monitoring events are included in Appendix A. The static level measurements for 2010 are presented in Table 2.1.

2.1.1 GROUNDWATER

The March 5, 2010 event and the June 1, 2010 event included measurement of static groundwater levels in the nine glacial clay monitoring wells and four bedrock aquifer monitoring wells.

All static groundwater measurements were take to the nearest 0.01 foot using a Solinst electronic water level meter, and were recorded on field forms. The water level meter was thoroughly rinsed with distilled water prior to and following each use to minimize the potential for cross-contamination of the monitoring wells.

2.1.2 LEACHATE SUMP

The March 5, 2010 event and the June 1, 2010 event included measurements of the liquid level in the leachate sump.

The static water measurement was taken to the nearest 0.01 foot using a Solinst electronic water level meter, and recorded on field forms. The water level meter was thoroughly rinsed with distilled water prior to use to minimize the potential for cross-contamination from other monitoring locations.

2.2 MONITORING WELL PURGING

No purging of Landfill monitoring wells occurred during the first or second quarters of 2010. Monitoring well purging is scheduled for the fourth quarter of 2010.

2.3 FIELD PARAMETERS

Field parameters were collected during the second quarter of 2010. The field parameters are presented in Appendix A.

2.3.1 STORMWATER

On June 2, 2010, stormwater field parameters were measured from the Landfill outfalls using an QED MP-20 meter. Field parameters included pH and temperature; during this event conductivity was not recorded because the meter was malfunctioning and would not calibrate.

2.3.2 GROUNDWATER

No field parameters were collected from the Landfill monitoring wells during this semi-annual period. This activity is scheduled for the fourth quarter of 2010.

2.4 ANALYTICAL SAMPLE COLLECTION

Samples were collected for chemical in June 2010 (second quarter), per the approved monitoring program.

2.4.1 STORMWATER

On June 2, 2010, stormwater samples were collected from the Landfill outfall locations Koehler Drain and Outfall #010. Grab samples were collected during a rainstorm when water was flowing at the outfall locations. The analytical results are summarized in Table 2.2. A copy of the field form is presented in Appendix A. The laboratory analytical report is presented in Appendix B.

2.4.2 LEACHATE SUMP

No leachate sample was collected from the leachate sump during this semi-annual period.

2.5 LEACHATE FLOW VOLUMES

The leachate collection system has continued to operate and remove leachate from the Landfill. The volume of leachate pumped from the Landfill in 2010 will be presented in the "Second Semi-annual Monitoring Report – 2010".

2.6 ROUTINE WELL INSPECTION AND MAINTENANCE

The Saginaw County Department of Pubic Health conducted inspections on March 22, 2010 and June 23, 2010.

One maintenance activity was conducted on a monitoring well during this semi-annual period. During the first quarter event it was noted that the protective casing would not close on one well due to heaving. On June 28, 2010 the riser was cut to allow the protective casing to close; a corrected reference elevation was subsequently entered into the database. During the first and second quarter events it was noted that some wells were missing well tags, and that well tags were exhibiting weather damage. It is recommended that all well tags be replaced when the static water levels are collected during the third quarter 2010.

3.0 ANALYSIS OF RESULTS

The following sections contain the results from monitoring conducted during this semi-annual period, and initial data evaluations for this period.

3.1 POTENTIOMETRIC SURFACE, GRADIENTS, AND VELOCITIES

Figures 3.1 through 3.4 were created to present the potentiometric gradient at the Landfill during the monitoring period.

3.1.1 GLACIAL CLAY

A potentiometric map (generated from the static groundwater level measurements) and the general direction of flow (represented by the arrow) for the first and second quarter 2010 monitoring events are presented on Figures 3.1 and 3.2, respectively. It is noted that groundwater flow in the glacial till is not expected.

Based on static groundwater elevations from all the Landfill monitoring wells plus the liquid level in the leachate sump, the direction of the gradient was inward for these two monitoring events.

The gradient along the Landfill perimeter, from monitoring well MW-13 toward MW-16, was calculated to be 3.9×10^{-3} feet/foot and 3.3×10^{-3} feet/foot for the first and second quarters, respectively. Using an effective porosity of 22 percent and a hydraulic conductivity of 7.56×10^{-9} centimeters/second (as per values identified in the "Hydrogeologic Monitoring Plan Amendment" (Radian International, March 1999)) , the flow velocity was calculated to be 1.4×10^{-4} feet/year and 1.2×10^{-4} feet/year for the first and second quarters, respectively. Gradient and flow velocity are extremely slow across the site and there is very little groundwater movement in general throughout the clays.

Historical water levels for the glacial clay monitoring well locations are presented on Figure 3.5.

Overall, at the Landfill glacial clay monitoring well locations, measured water levels and calculated flow velocities during the first and second quarters of 2010 are consistent with previous observations.

3.1.2 BEDROCK AQUIFER

A bedrock aquifer potentiometric map (generated from the static groundwater level measurements) and the general direction of flow (represented by the arrows) for the first and second quarter monitoring events are presented on Figures 3.3 and 3.4. Based on static groundwater elevations from the bedrock aquifer monitoring wells, the direction of flow for both the first and second quarter monitoring events was generally toward the north, following the contour of the Saginaw River.

The gradient from monitoring well MW-97948 toward MW-96080 was 1.4×10^{-4} feet/foot and 1.6×10^{-4} feet/foot, for the first and second quarters, respectively. Using an effective porosity of 30 percent and an average hydraulic conductivity of 3.1×10^{-3} centimeters/second (as per values identified in "Phase 1A RFI Report" (EMCON, April 2000) and "Phase 1B RFI Workplan" (EMCON, April 2000)), the flow velocity was calculated to be 1.5 feet/year and 1.8 feet/year for the first and second quarters, respectively.

Historical water levels for the bedrock aquifer monitoring well locations are presented on Figure 3.6.

Overall, in all the bedrock aquifer monitoring well locations, measured water levels and calculated flow velocities during the first and second quarters of 2010 are consistent with previous observations.

3.2 VERTICAL GRADIENT

The bedrock aquifer well MW-96080 is located within the Landfill and can be compared to other nearby clay wells to evaluate the vertical gradient. A hydrograph comparing historical groundwater elevations of seven of the glacial clay monitoring wells to MW-96080 is shown on Figure 3.7. Groundwater elevations measured in the bedrock wells during the first and second quarters of 2010 were observed to be higher than all of the glacial clay wells, indicating an overall upward vertical gradient from the bedrock aquifer to the overlying clay.

Two vertical pairs of monitoring wells are available in the north and northwest perimeter of the Landfill to evaluate vertical gradients within the clay. Static head measurements from MW-9 (shallow) and MW-8 (deeper) during the first and second quarters of 2010 indicate an upward vertical gradient within the clay. Static head measurements from MW-11B (shallow) and MW-11C (deeper) during the first and

second quarters of 2010 indicate slight upward vertical gradients. Small vertical gradients are typically observed at MW-11B and MW-11C because the depth of these wells are very similar.

Overall at the Landfill, an upward vertical gradient from the bedrock aquifer to the overlying clay was present during the first and second quarters of 2010. This is consistent with previous observations. No new trends were identified.

3.3 HORIZONTAL GRADIENT

An analysis of the horizontal gradient at the Landfill will be presented in the "Second Semi-annual Monitoring Report – 2010".

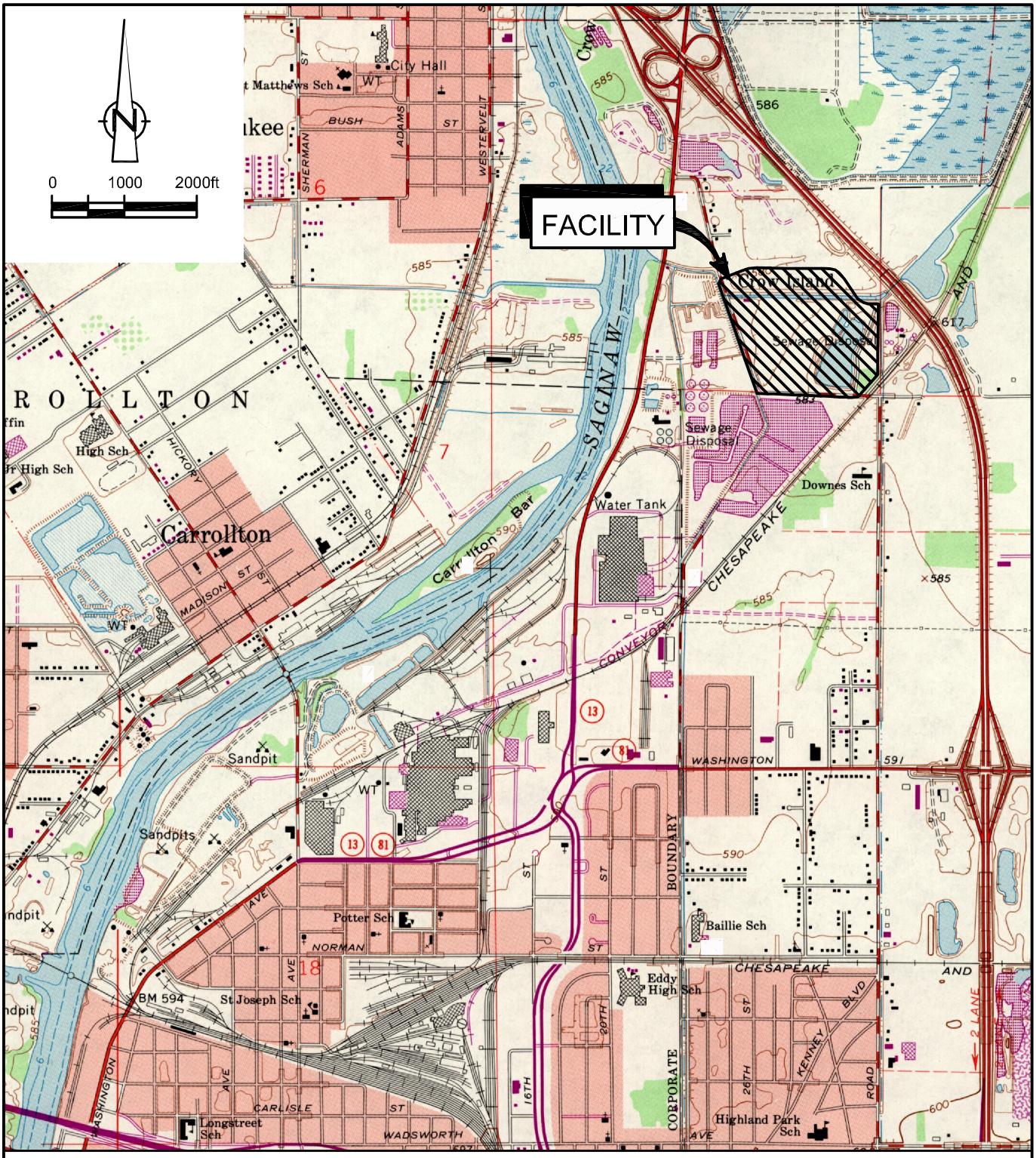
3.4 STORMWATER QUALITY ANALYSIS

To evaluate stormwater quality over time, analytical data are compared to historical results. An analytical table summarizing data from recent sampling events (2007 through 2010) at Koehler Drain and Outfall #010 is presented in Table C.1. During the 2010 sampling event, there was a slight increase in hardness at Koehler Drain, and in the concentration of zinc at Outfall #010. Metals and general chemistry concentrations in the stormwater samples obtained from the Landfill sump are generally consistent with past data.

4.0 SUMMARY AND RECOMMENDATIONS

Hydraulic monitoring for the first semi-annual period of 2010 at the SMCO Landfill was performed in accordance with the permit requirements. Static levels were collected from the nine glacial clay monitoring wells, four bedrock aquifer monitoring wells, and the leachate sump. In addition, in the first and/or second quarters of 2010, stormwater samples were collected from the Landfill outfalls for analyses and field parameters were recorded at the Landfill outfalls. Operation of the leachate collection system has continued to remove leachate. Monitoring throughout this period indicated that an upward vertical gradient from the bedrock aquifer to the overlying clay was present. No new trends were identified.

Due to the favorable and consistent hydraulic conditions, continued implementation of the existing "Landfill Hydrogeologic Monitoring Plan Summary, Sampling and Analysis" (URS, October 2005) is recommended for the remainder of 2010. The quarterly hydraulic monitoring program and annual chemical monitoring is sufficient to ensure that there is no potential for migration of hazardous constituents from the Landfill to the uppermost aquifer during the active life and post-closure care period of the Landfill.

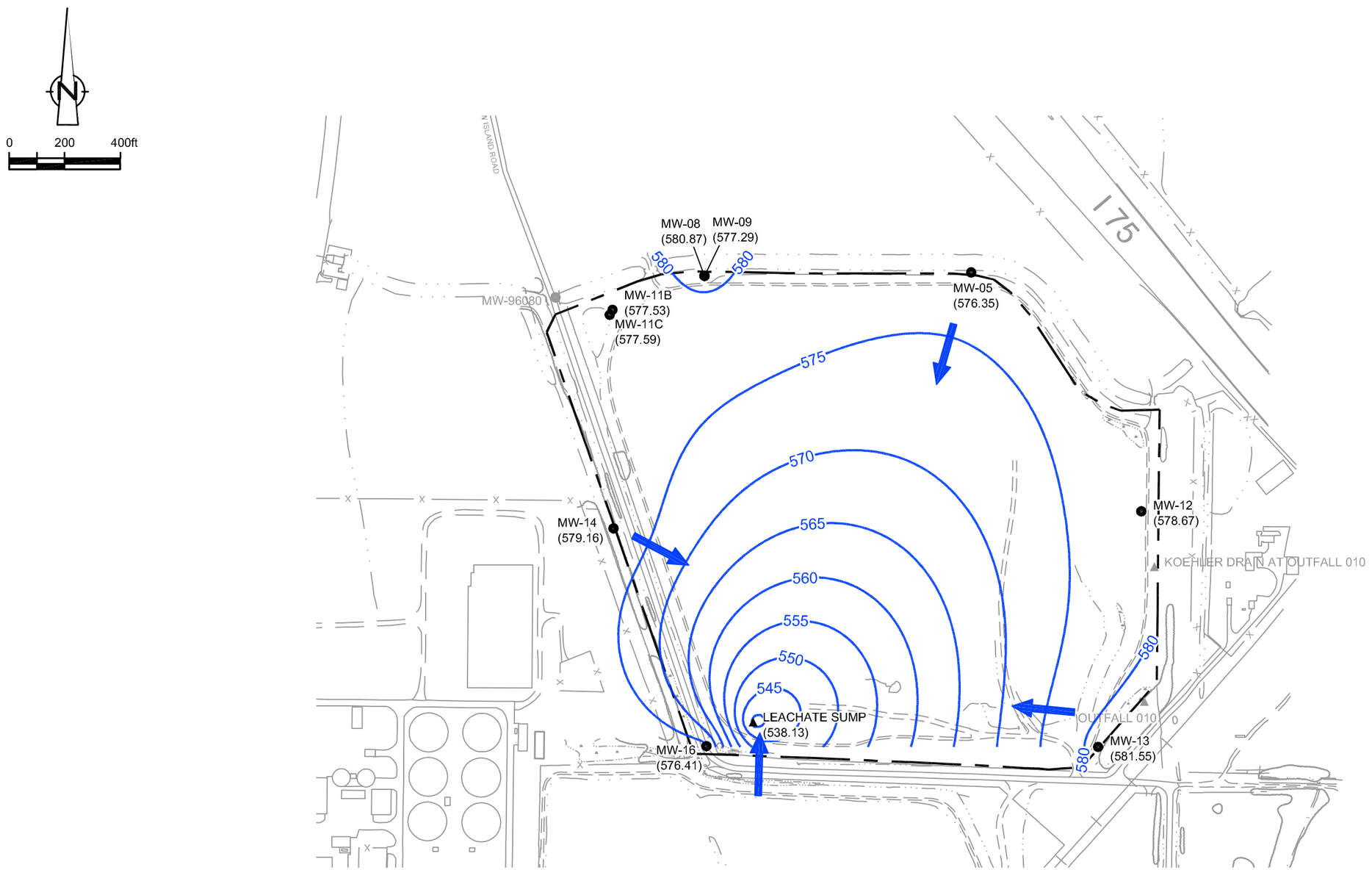


SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE; SAGINAW, MICHIGAN 1967

figure 1.1

FACILITY LOCATION MAP
GENERAL MOTORS CORPORATION
SMCO LANDFILL
Saginaw, Michigan

58502-00(002)GN-WA001 JUN 15/2010



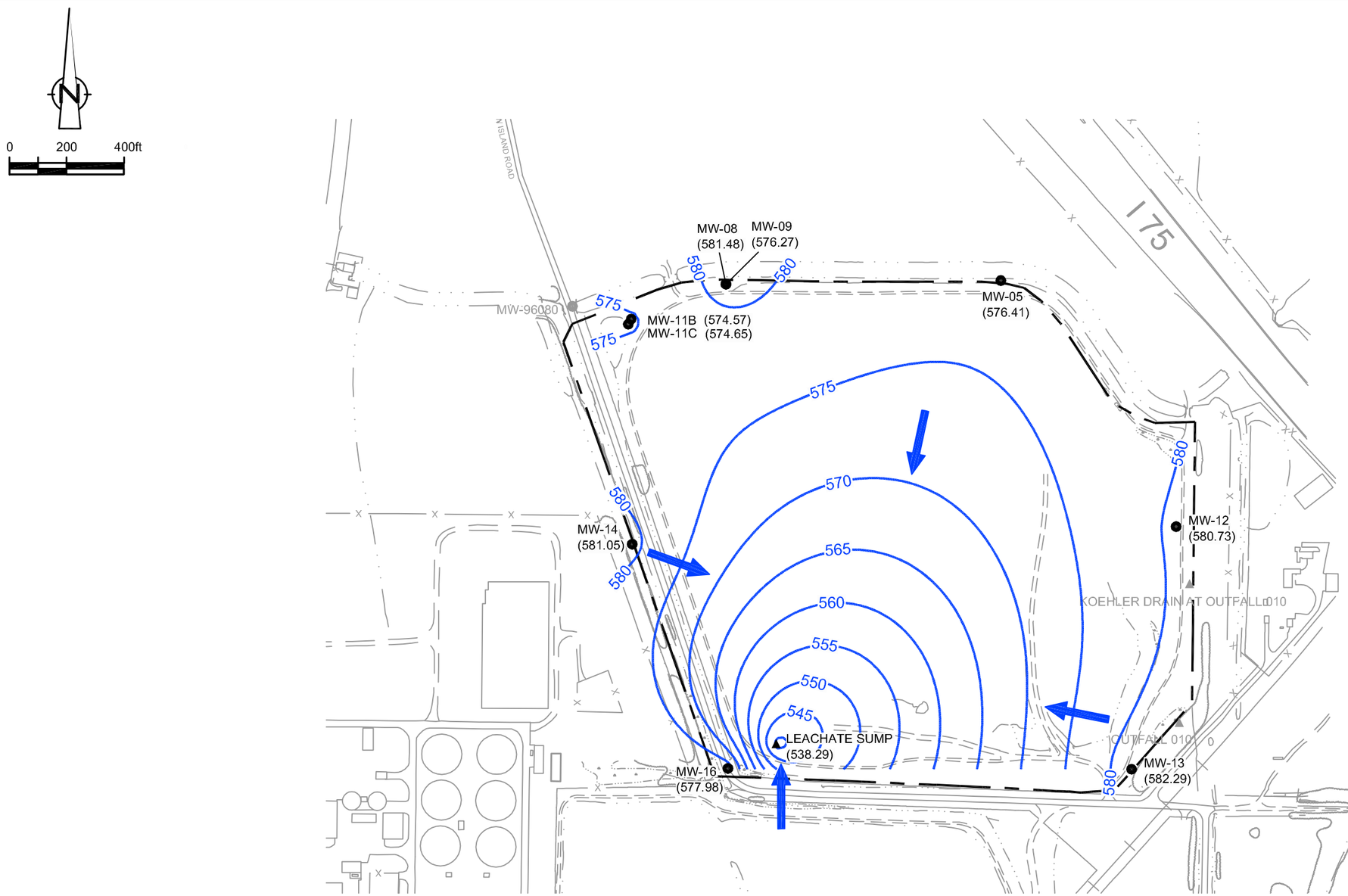
LEGEND

- APPROXIMATE BOUNDARY OF LANDFILL AREA
- MONITORING WELL LOCATION
- SAMPLING LOCATION (APPROXIMATE)
- 580 — GROUNDWATER ELEVATION CONTOUR
- (576.41) — GROUNDWATER ELEVATION, USGS FT (MARCH 5, 2010)
- GROUNDWATER FLOW DIRECTION

SOURCE:
MICHIGAN STATE PLANE SOUTH, NAD 83 USING
INTERNATIONAL FEET, NGVD 88, TOPO - SANBORN, 1996,

figure 3.1

POTENTIOMETRIC SURFACE -
GLACIAL CLAY, 1ST QUARTER 2010
SMCO LANDFILL
Saginaw, Michigan



LEGEND

- APPROXIMATE BOUNDARY OF LANDFILL AREA
- MONITORING WELL LOCATION
- SAMPLING LOCATION (APPROXIMATE)
- 580 GROUNDWATER ELEVATION CONTOUR
- (577.98) GROUNDWATER ELEVATION, USGS FT (JUNE 1, 2010)
- GROUNDWATER FLOW DIRECTION

SOURCE:
MICHIGAN STATE PLANE SOUTH, NAD 83 USING
INTERNATIONAL FEET, NGVD 88, TOPO - SANBORN, 1996,

figure 3.2

POTENTIOMETRIC SURFACE -
GLACIAL CLAY, 2ND QUARTER 2010
SMCO LANDFILL
Saginaw, Michigan

58502-00(002)GN-WA003 JUN 15/2010

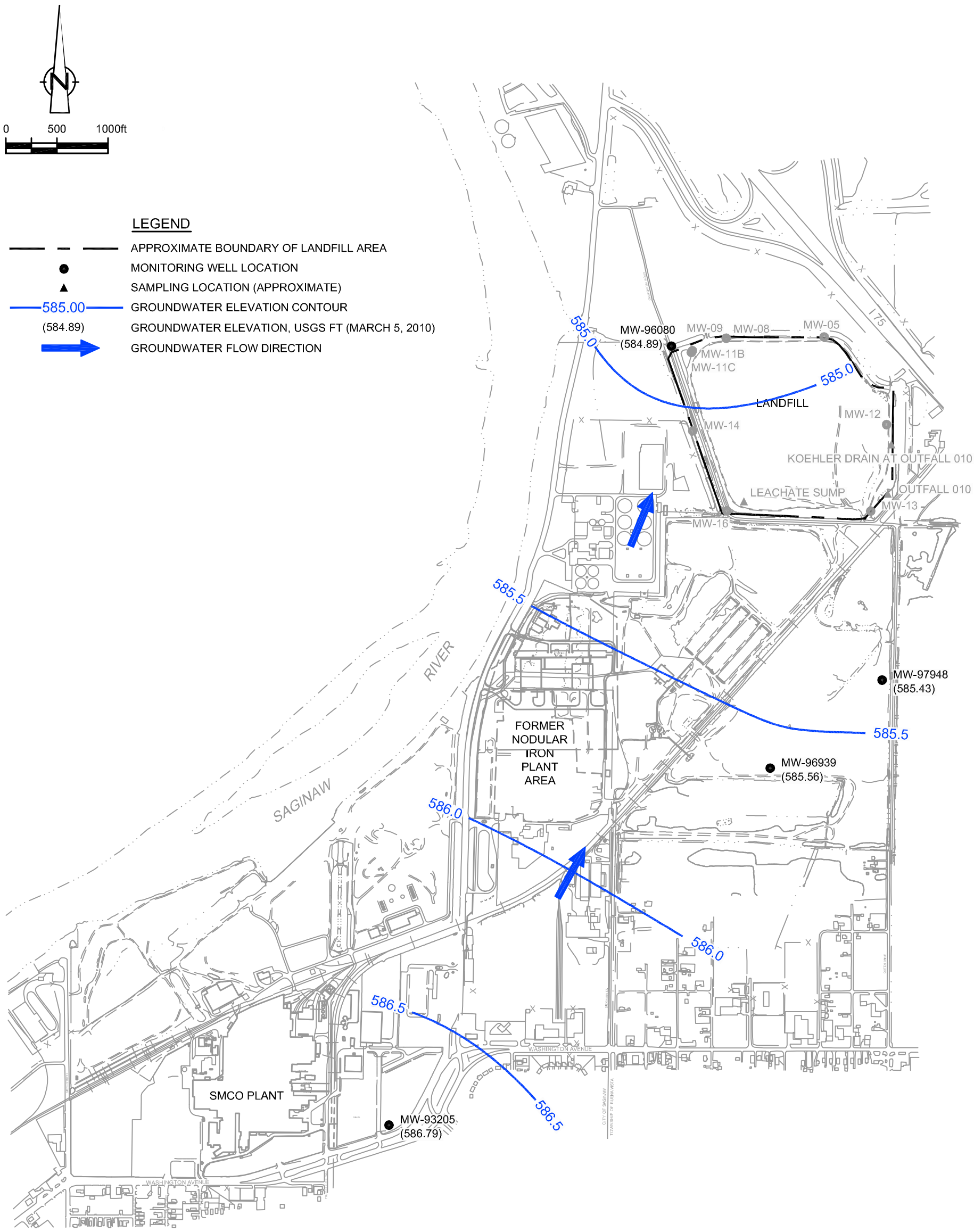


figure 3.3

POTENTIOMETRIC SURFACE -
BEDROCK AQUIFER, 1ST QUARTER 2010
SMCO LANDFILL
Saginaw, Michigan

SOURCE:
MICHIGAN STATE PLANE SOUTH, NAD 83 USING
INTERNATIONAL FEET, NGVD 88, TOPO - SANBORN, 1996,

58502-00(002)GN-WA004 JUN 15/2010

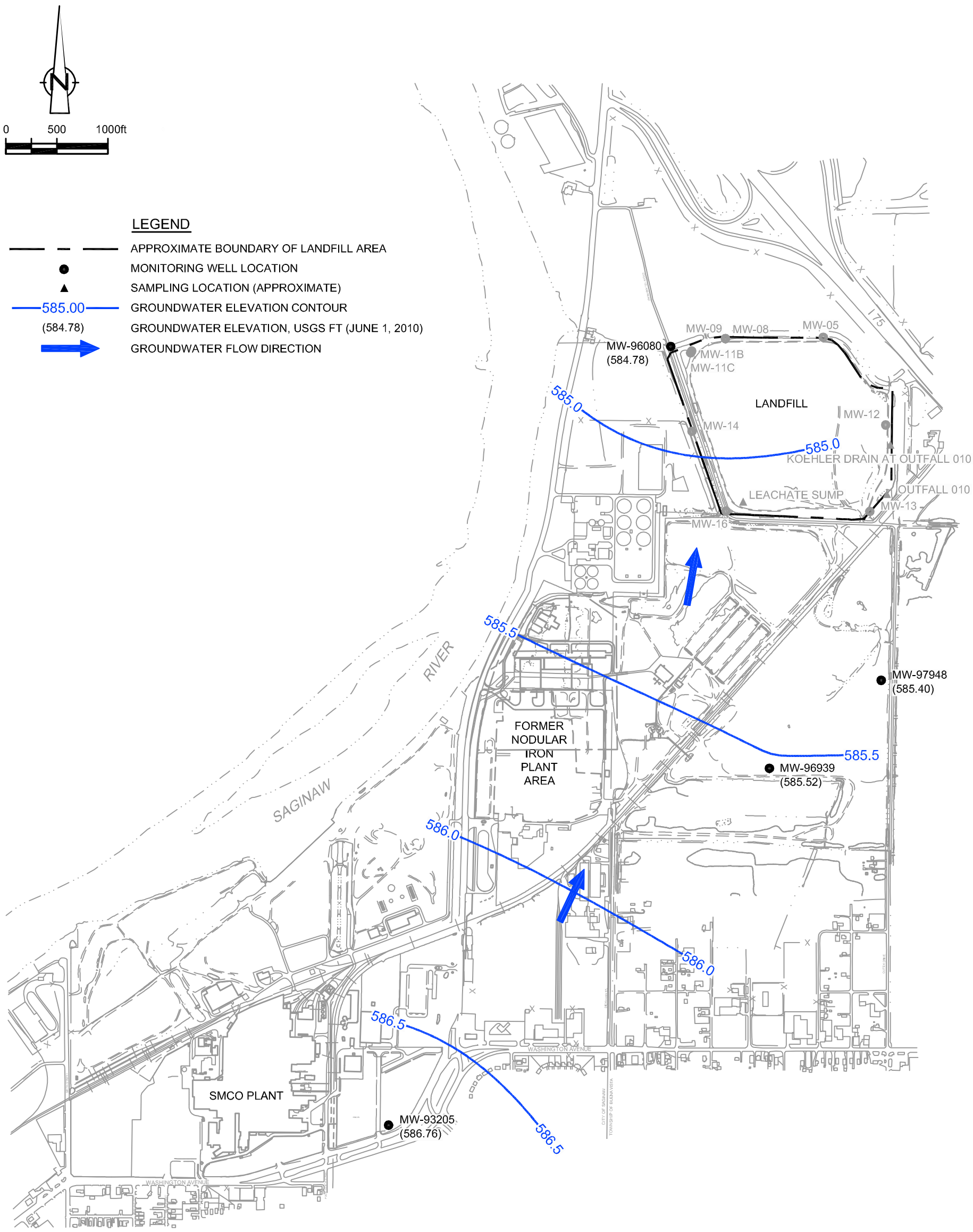


figure 3.4

POTENTIOMETRIC SURFACE -
BEDROCK AQUIFER, 2ND QUARTER 2010
SMCO LANDFILL
Saginaw, Michigan

SOURCE:
MICHIGAN STATE PLANE SOUTH, NAD 83 USING
INTERNATIONAL FEET, NGVD 88, TOPO - SANBORN, 1996,

58502-00(002)GN-WA005 JUN 15/2010

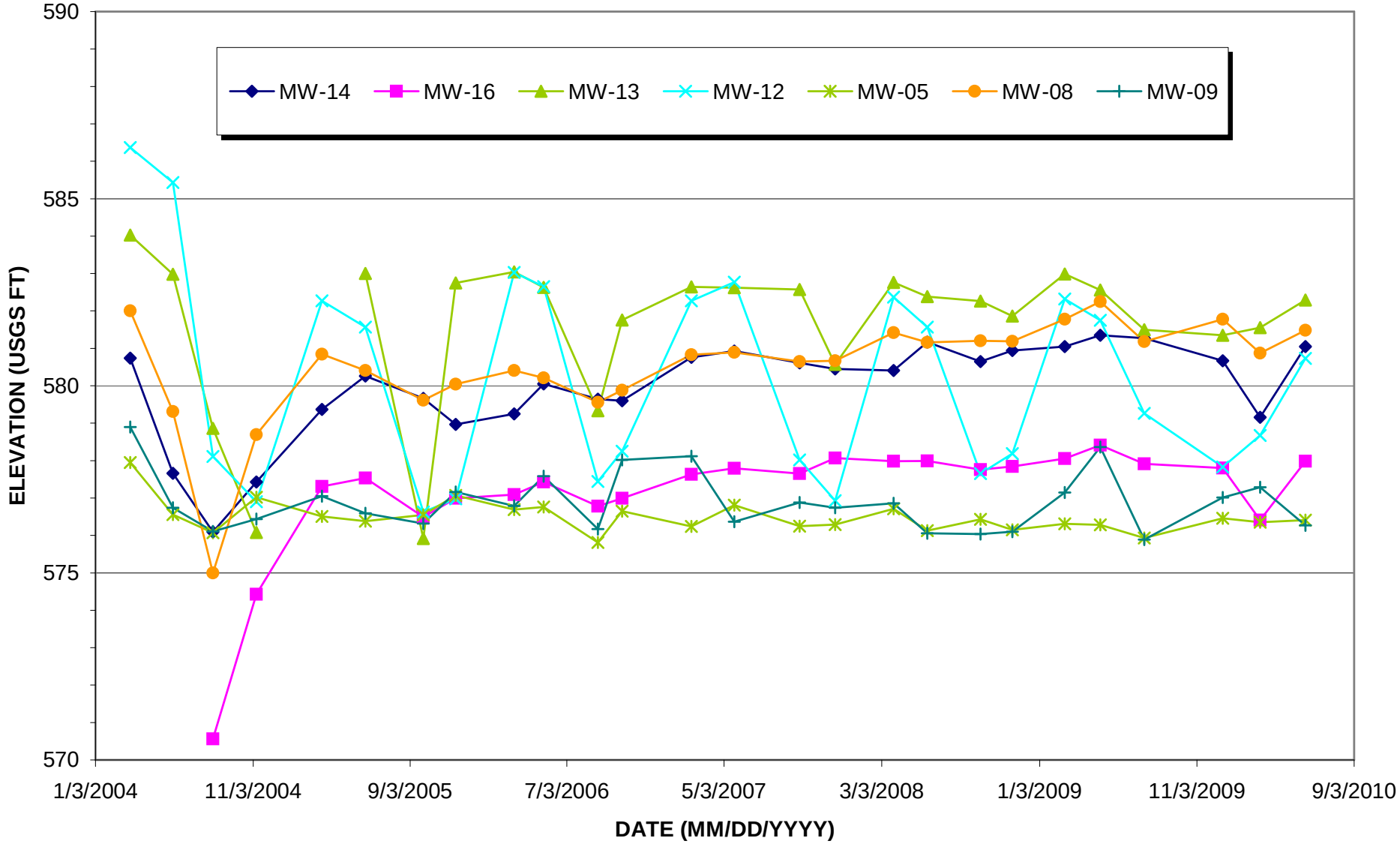


figure 3.5

HISTORICAL LANDFILL CLAY MONITORING WELL HYDROGRAPH
SMCO LANDFILL
Saginaw, Michigan

58502-00(002)GN-WA006 JUN 16/2010

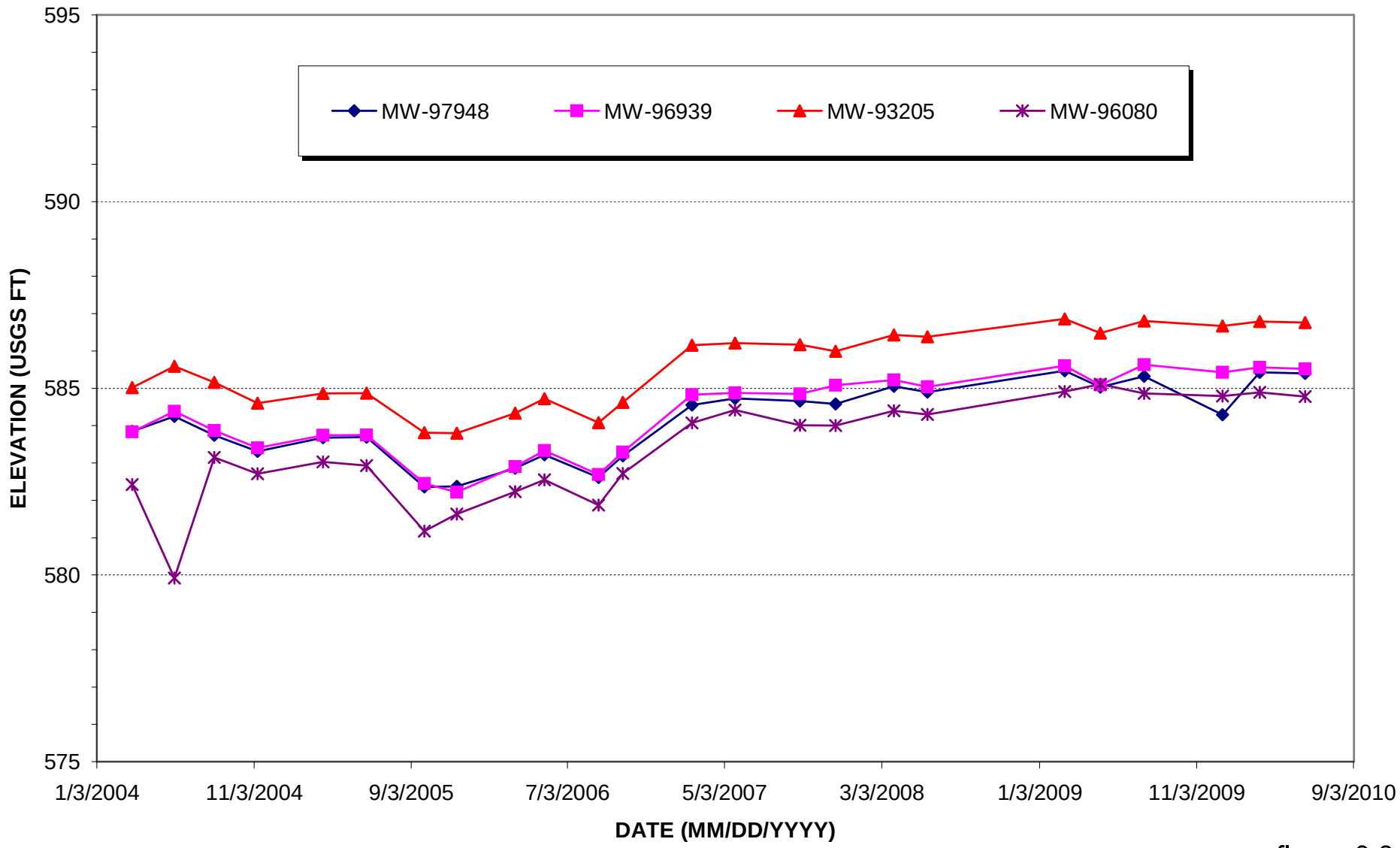


figure 3.6

HISTORICAL LANDFILL BEDROCK MONITORING WELL HYDROGRAPH
SMCO LANDFILL
Saginaw, Michigan

58502-00(002)GN-WA006 JUN 16/2010

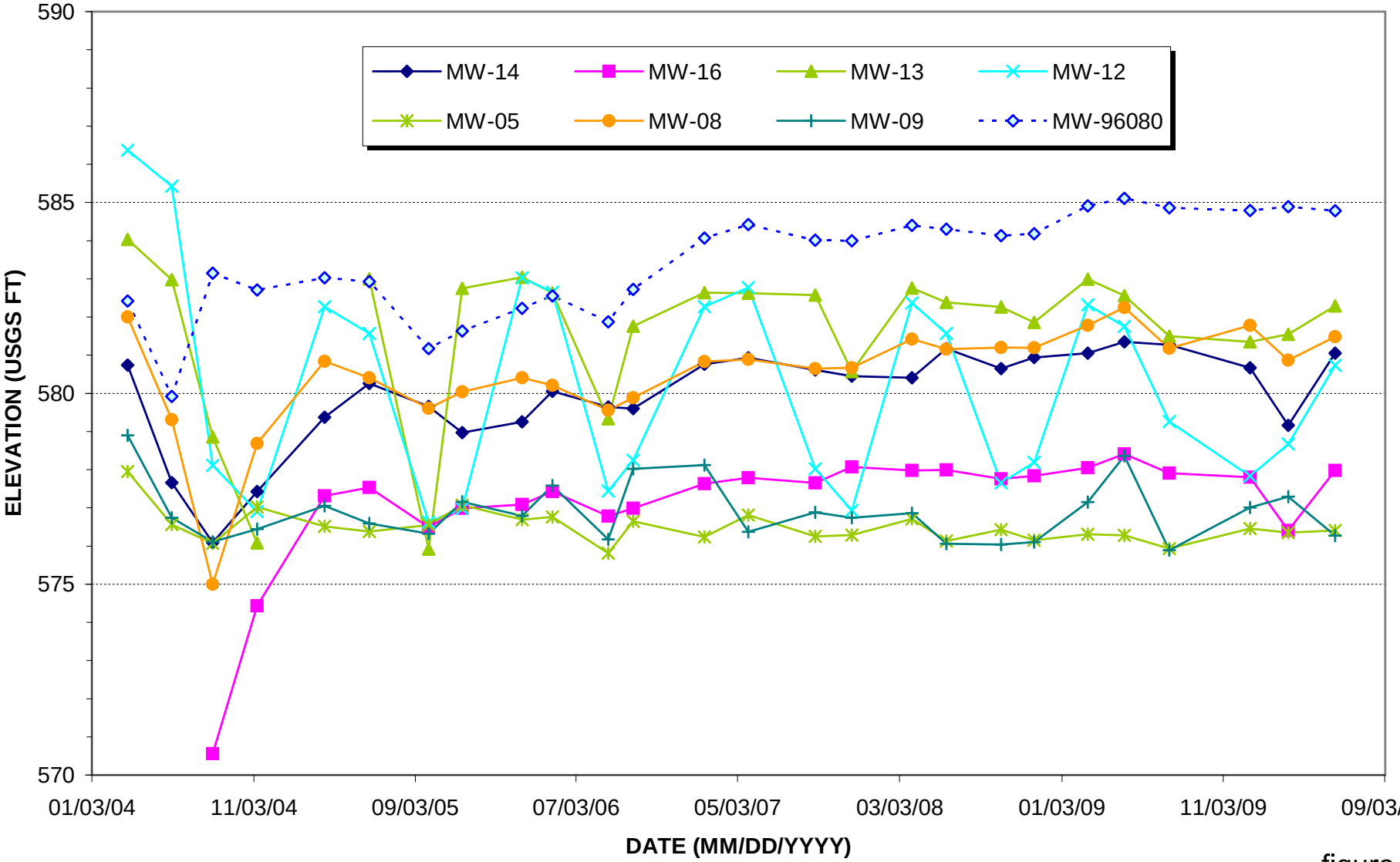


figure 3.7

HISTORICAL LANDFILL VERTICAL GRADIENT HYDROGRAPH
SMCO LANDFILL
Saginaw, Michigan

58502-00(002)GN-WA006 JUN 16/2010

TABLE 2.1

GROUNDWATER AND LEACHATE ELEVATIONS (2010)
SMCO LANDFILL
SAGINAW, MICHIGAN

Location	*Top of Riser Elevation (USGS feet)*	*Groundwater Elevation*			
		3/5/10		*6/1/10*	
		(feet bgs)	*(USGS feet)*	*(feet bgs)*	*(USGS feet)*
GLACIAL CLAY					
MW-05	584.09	7.74	576.35	7.68	576.41
MW-08	586.03	5.16	580.87	4.55	581.48
MW-09	586.03	8.74	577.29	9.76	576.27
MW-11B	590.84	13.31	577.53	16.27	574.57
MW-11C	590.83	13.24	577.59	16.18	574.65
MW-12	596.94	18.27	578.67	16.21	580.73
MW-13	586.46	4.91	581.55	4.17	582.29
MW-14	588.48	9.32	579.16	7.43	581.05
MW-16	587.34	10.93	576.41	9.36	577.98
BEDROCK AQUIFER					
MW-93205	589.98	3.19	586.79	3.22	586.76
MW-96939	592.04	6.48	585.56	6.52	585.52
MW-96080	586.38	1.49	584.89	1.60	584.78
MW-97948	589.74	4.31	585.43	4.34	585.40
LANDFILL LEACHATE SUMP					
Leachate Sump	564.00	25.87	538.13	25.71	538.29

TABLE 2.2

ANALYTICAL RESULTS FOR STORM WATER (2010)
SMCO LANDFILL
SAGINAW, MICHIGAN

Sample Location: *Sample ID:* *Sample Date:*	*Reporting Detection Limit*	*KOEHLER DRAIN* *SW-1004-060210-SSH-SW02* *6/2/2010*	*OUTFALL#010* *SW-1004-060210-SSH-SW01* *6/2/2010*
Parameters:			
Metals (mg/L)			
Copper	0.001	-	0.0077 J
Lead	0.001	-	0.0041
Zinc	0.005	-	0.316 J
General Chemistry (mg/L)			
Chemical oxygen demand (COD)	10.0	-	68.8
Hardness	5	350	-
Total suspended solids (TSS)	4.0	-	88

Notes:

J - Estimated concentration.
- - Not analyzed.

APPENDIX A

FIELD FORMS

GM SMCO LANDFILL
STATIC WATER LEVEL MEASUREMENTS

WELL	SWL (ft)	TIME	DATE	OLD SWL	COMMENTS
93205	3.19	1048	1		missing tags
97948	4.31	1035			" "
96939	6.48	917	3/5/10		
96080	1.49	1007			
MW-13	4.91	1015			
MW-12	18.27	1011			
MW-5	~~7.74~~	945			well headed - unable to close pro casing
MW-9	~~5.16~~ 8.74	939			missing tag
MW-8	5.16	938			
MW-11C	13.24	934			
MW-11B	13.31	933			missing tag
MW-14	9.32	930			
MW-16	10.93	927			
L-Sump	25.89	1020			-3.02 meter reads

GM SMCO LANDFILL
STATIC WATER LEVEL MEASUREMENTS
(ft)

WELL	SWL	TIME	DATE	OLD SWL	COMMENTS
93205	3.22	0850	6/1/10		
97948	4.34	1025			
96939	6.52	0915			
96080	1.60	0937			
MW-13	4.17	1000			
MW-12	16.21	0954			
MW-5	7.68	0950			
MW-9	9.76	0946			
MW-8	4.55	0945			
MW-11C	16.18	0940			
MW-11B	16.27	0942			
MW-14	7.43	0933			
MW-16	9.36	0930			
L-Sump	25.71	1005			meter reads -3.23
					all tags are getting bad from
					weather damage

GM SMCO STORMWATER SAMPLING LOG

OUTFALL ID 010

DATE: 6/2/10 **TIME:** 1030 am

NAME: Steve Hoewmeyer

WEATHER/WIND DIRECTION: rain, mid 60's to low 70's, light west wind

FIELD MEASUREMENTS:

Time	1030
pH	7.63
Conductivity	* meter would not calibrate
Temperature	18.7 °C

Bottle Type/Size	Preservative	Parameter	Number	Collected
500 ml / poly	—	TSS	1	#010
250 ml / poly	H_2SO_4	COD	1	#010
1L / poly	HNO_3	T. lead, copper, zinc	1	#010
500 ml / poly	—	hardness	1	Kochler Drain

COMMENTS----INCLUDE SAMPLE DESCRIPTION

Collected during rainstorm. Outfall 010 water was slightly brown. Water was approx '/2" dup in pipe. Completed SW inspection on 6/1 & outfall had no flow. Sample #s SW-1004-060210-SSH-SW01

Kochler Drain was slightly green/brown. " " " SW02

1030am SW01 — outfall #010

1035am SW02 - Kochler drain

APPENDIX B

LEACHATE ANALYSIS

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

PROJECT NO. 58502-T06-001

MLC NODULAR SSOW# 1004-06-1

Lot #: A0F030476

Paul Wiseman (PM)

Conestoga Rovers & Assoc., Inc
14496 Sheldon Rd Suite 200
Plymouth, MI 48170

TESTAMERICA LABORATORIES, INC.

Approved for release.
Denise D. Heckler
Project Manager
6/16/2010 4:29 PM

Denise D. Heckler
Project Manager
denise.heckler@testamericainc.com

June 16, 2010

CASE NARRATIVE

A0F030476

The following report contains the analytical results for two water samples submitted to TestAmerica North Canton by Conestoga-Rovers & Associates, Inc. from the MLC NODULAR SSOW# 1004-06-1 Site, project number 58502-T06-001. The samples were received June 03, 2010, according to documented sample acceptance procedures.

TestAmerica utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

TestAmerica North Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

All parameters were evaluated to the reporting limit.

Please refer to the Quality Control Elements Narrative following this case narrative for additional quality control information.

If you have any questions, please call the Project Manager, Denise D. Heckler, at 330-497-9396.

This report is sequentially paginated. The final page of the report is labeled as "END OF REPORT."

CASE NARRATIVE (continued)

SUPPLEMENTAL QC INFORMATION

SAMPLE RECEIVING

The temperature of the cooler upon sample receipt was 5.4°C.

METALS

The sample(s) that contained concentrations of target analyte(s) at a reportable level in the associated Method Blank(s) were flagged with "J". Refer to the sample report pages for the affected analyte(s).

Some reporting limits are lower than our standard reporting limit (SRL) but are supported by the laboratory's MDL and/or IDLs; however, there are no standards in the calibration curve low enough to support these values(s). The continuing calibration blanks and method blanks may not support the lower RL.

GENERAL CHEMISTRY

The analytical results met the requirements of the laboratory's QA/QC program.

QUALITY CONTROL ELEMENTS NARRATIVE

TestAmerica conducts a quality assurance/quality control (QA/QC) program designed to provide scientifically valid and legally defensible data. Toward this end, several types of quality control indicators are incorporated into the QA/QC program, which is described in detail in QA Policy, QA-003. These indicators are introduced into the sample testing process to provide a mechanism for the assessment of the analytical data. Program or agency specific requirements take precedence over the requirements listed in this narrative.

QC BATCH

Environmental samples are taken through the testing process in groups called QUALITY CONTROL BATCHES (QC batches). A QC batch contains up to twenty environmental samples of a similar matrix (water, soil) that are processed using the same reagents and standards. TestAmerica North Canton requires that each environmental sample be associated with a QC batch.

Several quality control samples are included in each QC batch and are processed identically to the twenty environmental samples.

For SW846/RCRA methods, QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) pair or a MATRIX SPIKE/SAMPLE DUPLICATE (MS/DU) pair. If there is insufficient sample to perform an MS/MSD or an MS/DU, then a LABORATORY CONTROL SAMPLE DUPLICATE (LCSD) is included in the QC batch.

For 600 series/CWA methods, QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE (MS). An MS is prepared and analyzed at a 10% frequency for GC Methods and at a 5% frequency for GC/MS methods.

LABORATORY CONTROL SAMPLE

The Laboratory Control Sample is a QC sample that is created by adding known concentrations of a full or partial set of target analytes to a matrix similar to that of the environmental samples in the QC batch. Multi peak responders may not be included in the target spike list due to co-elution. The LCS analyte recovery results are used to monitor the analytical process and provide evidence that the laboratory is performing the method within acceptable guidelines. All control analytes indicated by a bold type in the LCS must meet acceptance criteria. Failure to meet the established recovery guidelines requires the repreparation and reanalysis of all samples in the QC batch. Comparison of only the failed parameters from the first batch are evaluated. The only exception to the rework requirement is that if the LCS recoveries are biased high and the associated sample is ND (non-detected) for the parameter(s) of interest, the batch is acceptable.

At times, a Laboratory Control Sample Duplicate (LCSD) is also included in the QC batch. An LCSD is a QC sample that is created and handled identically to the LCS. Analyte recovery data from the LCSD is assessed in the same way as that of the LCS. The LCSD recoveries, together with the LCS recoveries, are used to determine the reproducibility (precision) of the analytical system. Precision data are expressed as relative percent differences (RPDs). If the RPD fails for an LCS/LCSD and yet the recoveries are within acceptance criteria, the batch is still acceptable.

METHOD BLANK

The Method Blank is a QC sample consisting of all the reagents used in analyzing the environmental samples contained in the QC batch. Method Blank results are used to determine if interference or contamination in the analytical system could lead to the reporting of false positive data or elevated analyte concentrations. All target analytes must be below the reporting limits (RL) or the associated sample(s) must be ND except under the following circumstances:

- Common organic contaminants may be present at concentrations up to 5 times the reporting limits. Common metals contaminants may be present at concentrations up to 2 times the reporting limit, or the reported blank concentration must be twenty fold less than the concentration reported in the associated environmental samples. (See common laboratory contaminants listed in the table.)

Volatile (GC or GC/MS)	Semivolatile (GC/MS)	Metals ICP-MS	Metals ICP Trace
Methylene Chloride, Acetone, 2-Butanone	Phthalate Esters	Copper, Iron, Zinc, Lead, Calcium, Magnesium, Potassium, Sodium, Barium, Chromium, Manganese	Copper, Iron, Zinc, Lead

- Organic blanks will be accepted if compounds detected in the blank are present in the associated samples at levels 10 times the blank level. Inorganic blanks will be accepted if elements detected in the blank are present in the associated samples at 20 times the blank level.

- Blanks will be accepted if the compounds/elements detected are not present in any of the associated environmental samples.

Failure to meet these Method Blank criteria requires the repreparation and reanalysis of all samples in the QC batch.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

A Matrix Spike and a Matrix Spike Duplicate are a pair of environmental samples to which known concentrations of a full or partial set of target analytes are added. The MS/MSD results are determined in the same manner as the results of the environmental sample used to prepare the MS/MSD. The analyte recoveries and the relative percent differences (RPDs) of the recoveries are calculated and used to evaluate the effect of the sample matrix on the analytical results. Due to the potential variability of the matrix of each sample, the MS/MSD results may not have an immediate bearing on any samples except the one spiked; therefore, the associated batch MS/MSD may not reflect the same compounds as the samples contained in the analytical report. When these MS/MSD results fail to meet acceptance criteria, the data is evaluated. If the LCS is within acceptance criteria, the batch is considered acceptable.

For certain methods, a Matrix Spike/Sample Duplicate (MS/DU) may be included in the QC batch in place of the MS/MSD. For the parameters (i.e. pH, ignitability) where it is not possible to prepare a spiked sample, a Sample Duplicate may be included in the QC batch. However, a Sample Duplicate is less likely to provide usable precision statistics depending on the likelihood of finding concentrations below the standard reporting limit. When the Sample Duplicate result fails to meet acceptance criteria, the data is evaluated.

For certain methods (600 series methods/CWA), a Matrix Spike is required in place of a Matrix Spike/Matrix Spike Duplicate (MS/MSD) or Matrix Spike/Sample Duplicate (MS/DU).

The acceptance criteria do not apply to samples that are diluted.

SURROGATE COMPOUNDS

In addition to these batch-related QC indicators, each organic environmental and QC sample is spiked with surrogate compounds. Surrogates are organic chemicals that behave similarly to the analytes of interest and that are rarely present in the environment. Surrogate recoveries are used to monitor the individual performance of a sample in the analytical system.

If surrogate recoveries are biased high in the LCS, LCSD, or the Method Blank, and the associated sample(s) are ND, the batch is acceptable. Otherwise, if the LCS, LCSD, or Method Blank surrogate(s) fail to meet recovery criteria, the entire sample batch is reprepared and reanalyzed. If the surrogate recoveries are outside criteria for environmental samples, the samples will be reprepared and reanalyzed unless there is objective evidence of matrix interference or if the sample dilution is greater than the threshold outlined in the associated method SOP.

The acceptance criteria do not apply to samples that are diluted. All other surrogate recoveries will be reported.

For the GC/MS BNA methods, the surrogate criterion is that two of the three surrogates for each fraction must meet acceptance criteria. The third surrogate must have a recovery of ten percent or greater.

For the Pesticide and PCB methods, the surrogate criterion is that one of two surrogate compounds must meet acceptance criteria. The second surrogate must have a recovery of 10% or greater.

EXECUTIVE SUMMARY - Detection Highlights

A0F030476

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SW-1004-060210-SSH-SW01 06/02/10 10:30 001				
Copper	7.7 J	1.0	ug/L	MCAWW 200.8
Lead	4.1	1.0	ug/L	MCAWW 200.8
Zinc	316 J	5.0	ug/L	MCAWW 200.8
Total Suspended Solids	88	4.0	mg/L	SM18 2540 D
Chemical Oxygen Demand (COD)	68.8	10.0	mg/L	MCAWW 410.4
SW-1004-060210-SSH-SW02 06/02/10 10:35 002				
Hardness, as CaCO3	350	5	mg/L	MCAWW 130.2

ANALYTICAL METHODS SUMMARY

A0F030476

PARAMETER	ANALYTICAL METHOD
Chemical Oxygen Demand	MCAWW 410.4
ICP-Mass Spectrometry ICP-Mass Spectrometry	MCAWW 200.8
Total Hardness (Titrimetric, EDTA)	MCAWW 130.2
Total Suspended Solids	SM18 2540 D

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SM18 "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992.

SAMPLE SUMMARY

A0F030476

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
L2EK6	001	SW-1004-060210-SSH-SW01	06/02/10	10:30
L2ELK	002	SW-1004-060210-SSH-SW02	06/02/10	10:35

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

Conestoga-Rovers & Associates, Inc.

Client Sample ID: SW-1004-060210-SSH-SW01

TOTAL Metals

Lot-Sample #...: A0F030476-001 **Matrix.....:** WG
Date Sampled...: 06/02/10 10:30 **Date Received..:** 06/03/10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0155022						
Copper	**7.7 J**	**1.0**	**ug/L**	**MCAWW 200.8**	**06/04/10**	**L2EK61AD**
		Dilution Factor: 1				
Lead	**4.1**	**1.0**	**ug/L**	**MCAWW 200.8**	**06/04/10**	**L2EK61AE**
		Dilution Factor: 1				
Zinc	**316 J**	**5.0**	**ug/L**	**MCAWW 200.8**	**06/04/10**	**L2EK61AF**
		Dilution Factor: 1				

NOTE(S):

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Conestoga-Rovers & Associates, Inc.

Client Sample ID: SW-1004-060210-SSH-SW01

General Chemistry

Lot-Sample #...: A0F030476-001 **Work Order #...:** L2EK6 **Matrix.....:** WG
Date Sampled...: 06/02/10 10:30 **Date Received..:** 06/03/10

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	**68.8**	**10.0**	**mg/L**	**MCAWW 410.4**	**06/11/10**	**0162101**
	Dilution Factor: 1					
Total Suspended Solids	**88**	**4.0**	**mg/L**	**SM18 2540 D**	**06/04/10**	**0155045**
	Dilution Factor: 1					

Conestoga-Rovers & Associates, Inc.

Client Sample ID: SW-1004-060210-SSH-SW02

General Chemistry

Lot-Sample #...: A0F030476-002 **Work Order #...:** L2ELK **Matrix.....:** WG
Date Sampled...: 06/02/10 10:35 **Date Received..:** 06/03/10

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Hardness, as CaCO3	**350**	**5**	**mg/L**	**MCAWW 130.2**	**06/14/10**	**0165033**

Dilution Factor: 1

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

QUALITY CONTROL SECTION

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: A0F030476 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: A0F040000-022 **Prep Batch #...:** 0155022						
Copper	**1.1**	**1.0**	**ug/L**	**MCAWW 200.8**	**06/04-06/07/10**	**L2FRH1AW**
		Dilution Factor: 1				
Lead	ND	1.0	ug/L	MCAWW 200.8	06/04-06/07/10	L2FRH1A0
		Dilution Factor: 1				
Zinc	**5.0**	**5.0**	**ug/L**	**MCAWW 200.8**	**06/04-06/07/10**	**L2FRH1AX**
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A0F030476 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: A0F040000-022 **Prep Batch #...:** 0155022							
Copper	100	102	ug/L	102	MCAWW 200.8	06/04-06/07/10	L2FRH1CV
			Dilution Factor: 1				
Zinc	100	113	ug/L	113	MCAWW 200.8	06/04-06/07/10	L2FRH1CW
			Dilution Factor: 1				
Lead	100	91.7	ug/L	92	MCAWW 200.8	06/04-06/07/10	L2FRH1CX
			Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A0F030476 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: A0F040000-022 **Prep Batch #...:** 0155022					
Copper	102	(85 - 115)	MCAWW 200.8	06/04-06/07/10	L2FRH1CV
		Dilution Factor: 1			
Zinc	113	(85 - 115)	MCAWW 200.8	06/04-06/07/10	L2FRH1CW
		Dilution Factor: 1			
Lead	92	(85 - 115)	MCAWW 200.8	06/04-06/07/10	L2FRH1CX
		Dilution Factor: 1			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: A0F030476 **Matrix.....:** WATER
Date Sampled...: 06/01/10 10:15 **Date Received..:** 06/03/10

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A0F030530-001 **Prep Batch #...:** 0155022									
Copper									
	38.1	100	120	ug/L	82		MCAWW 200.8	06/04/10	L2E3M1CP
	38.1	100	126	ug/L	88	4.9	MCAWW 200.8	06/04/10	L2E3M1CQ
			Dilution Factor: 1						
Lead									
	18.5	100	109	ug/L	90		MCAWW 200.8	06/04/10	L2E3M1CW
	18.5	100	114	ug/L	96	4.7	MCAWW 200.8	06/04/10	L2E3M1CX
			Dilution Factor: 1						
Zinc									
	180	100	256	ug/L	76		MCAWW 200.8	06/04/10	L2E3M1CT
	180	100	263	ug/L	83	2.8	MCAWW 200.8	06/04/10	L2E3M1CU
			Dilution Factor: 1						

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: A0F030476 **Matrix.....:** WATER
Date Sampled...: 06/01/10 10:15 **Date Received..:** 06/03/10

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: A0F030530-001 **Prep Batch #...:** 0155022							
Copper	82	(70 - 130)			MCAWW 200.8	06/04/10	L2E3M1CP
	88	(70 - 130)	4.9	(0-20)	MCAWW 200.8	06/04/10	L2E3M1CQ
		Dilution Factor: 1					
Lead	90	(70 - 130)			MCAWW 200.8	06/04/10	L2E3M1CW
	96	(70 - 130)	4.7	(0-20)	MCAWW 200.8	06/04/10	L2E3M1CX
		Dilution Factor: 1					
Zinc	76	(70 - 130)			MCAWW 200.8	06/04/10	L2E3M1CT
	83	(70 - 130)	2.8	(0-20)	MCAWW 200.8	06/04/10	L2E3M1CU
		Dilution Factor: 1					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

General Chemistry

Client Lot #...: A0F030476 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)		Work Order #: L2Q2N1AA		MB Lot-Sample #:	A0F110000-101	
	ND	10.0	mg/L	MCAWW 410.4	06/11/10	0162101
		Dilution Factor: 1				
Hardness, as CaCO3		Work Order #: L2VTA1AA		MB Lot-Sample #:	A0F140000-033	
	ND	5	mg/L	MCAWW 130.2	06/14/10	0165033
		Dilution Factor: 1				
Total Suspended Solids		Work Order #: L2FTF1AA		MB Lot-Sample #:	A0F040000-045	
	ND	4.0	mg/L	SM18 2540 D	06/04/10	0155045
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Lot-Sample #...: A0F030476 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	WO#:L2Q2N1AC-LCS/L2Q2N1AD-LCSD					LCS Lot-Sample#: A0F110000-101		
	134	142	mg/L	106		MCAWW 410.4	06/11/10	0162101
	134	139	mg/L	104	2.2	MCAWW 410.4	06/11/10	0162101

Dilution Factor: 1

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Client Lot #...: A0F030476 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Hardness, as CaCO3	Work Order #: L2VTA1AC				LCS Lot-Sample#: A0F140000-033		
	350	330	mg/L	96	MCAWW 130.2	06/14/10	0165033
		Dilution Factor: 1					
Total Suspended Solids	Work Order #: L2FTF1AC				LCS Lot-Sample#: A0F040000-045		
	93	86	mg/L	92	SM18 2540 D	06/04/10	0155045
		Dilution Factor: 1					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Lot-Sample #...: A0F030476 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	WO#:L2Q2N1AC-LCS/L2Q2N1AD-LCSD					LCS Lot-Sample#: A0F110000-101	
	106	(90 - 110)			MCAWW 410.4	06/11/10	0162101
	104	(90 - 110)	2.2	(0-20)	MCAWW 410.4	06/11/10	0162101

Dilution Factor: 1

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: A0F030476 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Hardness, as CaCO3		Work Order #: L2VTA1AC	LCS Lot-Sample#: A0F140000-033		
	96	(88 - 110)	MCAWW 130.2	06/14/10	0165033
		Dilution Factor: 1			
Total Suspended Solids		Work Order #: L2FTF1AC	LCS Lot-Sample#: A0F040000-045		
	92	(73 - 113)	SM18 2540 D	06/04/10	0155045
		Dilution Factor: 1			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: A0F030476 **Matrix.....:** WATER
Date Sampled...: 06/03/10 13:30 **Date Received..:** 06/04/10

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)			WO#: L2DJL1AD-MS/L2DJL1AE-MSD				MS Lot-Sample #: A0F020525-001		
	26.7	52.6	77.8	mg/L	97		MCAWW 410.4	06/11/10	0162101
	26.7	52.6	79.1	mg/L	100	1.6	MCAWW 410.4	06/11/10	0162101
			Dilution Factor: 1						
Hardness, as CaCO3			WO#: L2G161AW-MS/L2G161AX-MSD				MS Lot-Sample #: A0F040529-001		
	430	1000	1400	mg/L	99		MCAWW 130.2	06/14/10	0165033
	430	1000	1400	mg/L	100	0.70	MCAWW 130.2	06/14/10	0165033
			Dilution Factor: 1						

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: A0F030476 **Matrix.....:** WATER
Date Sampled...: 06/03/10 13:30 **Date Received..:** 06/04/10

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	WO#: L2DJL1AD-MS/L2DJL1AE-MSD					MS Lot-Sample #: A0F020525-001	
	97	(90 - 110)			MCAWW 410.4	06/11/10	0162101
	100	(90 - 110)	1.6	(0-20)	MCAWW 410.4	06/11/10	0162101
	Dilution Factor: 1						
Hardness, as CaCO3	WO#: L2G161AW-MS/L2G161AX-MSD					MS Lot-Sample #: A0F040529-001	
	99	(87 - 114)			MCAWW 130.2	06/14/10	0165033
	100	(87 - 114)	0.70	(0-20)	MCAWW 130.2	06/14/10	0165033
	Dilution Factor: 1						

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A0F030476 **Work Order #...:** L2D8N-SMP L2D8N-DUP **Matrix.....:** WATER

Date Sampled...: 06/02/10 14:00 **Date Received..:** 06/03/10

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Suspended Solids						SD Lot-Sample #: A0F030444-001		
	ND	ND	mg/L	0	(0-20)	SM18 2540 D	06/04/10	0155045

Dilution Factor: 1

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A0F030476 **Work Order #...:** L2EWM-SMP L2EWM-DUP **Matrix.....:** WATER

Date Sampled...: 06/02/10 06:00 **Date Received..:** 06/03/10

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Suspended Solids						SD Lot-Sample #: A0F030514-001		
	71	56	mg/L	24	(0-20)	SM18 2540 D	06/04/10	0155046

Dilution Factor: 1

CONESTOGA-ROVERS & ASSOCIATES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

PAGE 1 OF 1

ID # Nº D 3939

SSOW Ref. Code: 1004-06-1

Required Client Information:

Company: CRA, Inc.	Report To: Paul Wiseman
Address: 14496 Sheldon Rd.	Copy To: Mike Tomka
Suite 200	Invoice To:
Plymouth, MI 48170	P.O.:
Phone: 734-453-5123	Project Name: MLC Nodular
Fax: 734-453-5201	Project Number:
Email:	58502-T06-001

Laboratory:	Test America
Laboratory Location:	North Canton OH
Laboratory Contact:	Denise Heckler
Requested Due Date:	TAT: STD
QA/QC Requirements:	

Valid Matrix Codes: WG Groundwater; WB Borehole Water; WS Surface Water; SO Soil; SE Sediment; See Back for Additional Codes

Analysis and Method

	Sample Identification:	Matrix Code	Date Collected	Time Collected	# Containers	Preservative: Unpreserved	HCl	H2SO4	HNO3	NaOH	Other:	COD	TSS	T. copper	T. lead	T. zinc	Hardness						Remarks/Lab ID
1.	SW-1004-060210-SSH-SW01	WS	6/2/10	1030	3	X		X	X			X	X	X	X	X							
2.	SW-1004-060210-SSH-SW02	WS	6/2/10	1025	1	X											X						
3.																							
4.																							
5.																							
6.																							
7.																							
8.																							
9.																							
10.																							
11.																							
12.																							
13.																							
14.																							
15.																							
	TOTAL NUMBER OF CONTAINERS				4																		

27 of 30

SHIPMENT METHOD	NO. OF COOLERS	RELINQUISHED BY / AFFILIATION	DATE	TIME	RECEIVED BY / AFFILIATION	DATE	TIME
FedEx	1	[signature] / CRA	6/2/10	1500	[signature]	6/3/10	915
AIRBILL NO. 8717 6359 1680							

Sample Condition

Temp in °C	
Received on Ice	Y / N
Sealed Cooler	Y / N
Samples Intact	Y / N

Additional Comments:

Sampler Name: Steven S. Horwmeyer

Sampler Signature: [signature] Date: 6/2/10

Distribution: WHITE - Fully Executed Copy YELLOW - Receiving Laboratory Copy PINK - Shipper GOLDENROD - Sampler Copy

REV. 0 (6-04)

TestAmerica Cooler Receipt Form/Narrative **Lot Number:** 240F030421
North Canton Facility

Client CRA Project MLC Nodular By: Alaina Mc
Cooler Received on 6/3/10 Opened on 6/3/10 (Signature)
FedEx ☐ UPS ☐ DHL ☐ FAS ☐ Stetson ☐ Client Drop Off ☐ TestAmerica Courier ☐ Other
TestAmerica Cooler # Multiple Coolers ☐ Foam Box ☐ Client Cooler ☒ Other

1. Were custody seals on the outside of the cooler(s)? Yes ☐ No ☒ Intact? Yes ☐ No ☐ NA ☒
   If YES, Quantity Quantity Unsalvageable
   Were custody seals on the outside of cooler(s) signed and dated? Yes ☐ No ☐ NA ☒
   Were custody seals on the bottle(s)? Yes ☐ No ☒
   If YES, are there any exceptions?
2. Shippers' packing slip attached to the cooler(s)? Yes ☒ No ☐
3. Did custody papers accompany the sample(s)? Yes ☒ No ☐ Relinquished by client? Yes ☒ No ☐
4. Were the custody papers signed in the appropriate place? Yes ☒ No ☐
5. Packing material used: Bubble Wrap ☐ Foam ☐ None ☐ Other
6. Cooler temperature upon receipt 5.4 °C See back of form for multiple coolers/temps ☐
   METHOD: IR ☒ Other ☐
   COOLANT: Wet Ice ☒ Blue Ice ☐ Dry Ice ☐ Water ☐ None ☐
7. Did all bottles arrive in good condition (Unbroken)? Yes ☒ No ☐
8. Could all bottle labels be reconciled with the COC? Yes ☒ No ☐
9. Were sample(s) at the correct pH upon receipt? Yes ☒ No ☐ NA ☐
10. Were correct bottle(s) used for the test(s) indicated? Yes ☒ No ☐
11. Were air bubbles >6 mm in any VOA vials? Yes ☐ No ☐ NA ☒
12. Sufficient quantity received to perform indicated analyses? Yes ☒ No ☐
13. Was a trip blank present in the cooler(s)? Yes ☐ No ☒ Were VOAs on the COC? Yes ☐ No ☒

Contacted PM Date by via Verbal ☐ Voice Mail ☐ Other ☐
Concerning

14. CHAIN OF CUSTODY

The following discrepancies occurred:

15. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) SW02 were further preserved in Sample Receiving to meet recommended pH level(s). *Nitric Acid Lot#* 121709-HNO_3; *Sulfuric Acid Lot#* 121709-H_2SO_4; *Sodium Hydroxide Lot#* 100108 -*NaOH; Hydrochloric Acid Lot#* 092006-*HCl; Sodium Hydroxide and Zinc Acetate Lot#* 100108-$(CH_3COO)_2ZN/NaOH$. What time was preservative added to sample(s)? 1130

Client ID	pH	Date	Initials
SW01	2 2 2	6/3/10	AM
SW02	2 2		

TestAmerica Cooler Receipt Form/Narrative
North Canton Facility

Client ID	pH	Date	Initials

Cooler #	Temp. °C	Method	Coolant

Discrepancies Cont'd:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

END OF REPORT

APPENDIX C

SUMMARY TABLE OF STORMWATER ANALYSIS

TABLE C.1

ANALYTICAL RESULTS FOR STORM WATER (HISTORICAL)
SMCO LANDFILL
SAGINAW, MICHIGAN

Sample Location:	*2010 Reporting Detection Limit*	*Koehler Drain*	*Koehler Drain*	*Koehler Drain*	*Koehler Drain*	*Outfall #010*	*Outfall #010*	*Outfall #010*	*Outfall #010*	*Outfall #010*
Sample ID:		*Grab*	*Grab*	*Grab*	*SW-1004-060210-SSH-SW02*	*Grab*	*Grab*	*Grab*	*Composite*	*SW-1004-060210-SSH-SW01*
Sample Date:		*5/9/2007*	*6/23/2008*	*4/20/2009*	*6/2/2010*	*5/9/2007*	*6/23/2008*	*4/20/2009*	*4/20/2009*	*6/2/2010*
Parameters:										
Metals (mg/L)										
Copper	0.001	-	-	-	-	0.004	0.01 J	0.005 J	0.005 J	0.0077 J
Lead	0.001	-	-	-	-	0.005	0.003 J	0.003 J	0.003 J	0.0041
Zinc	0.005	-	-	-	-	0.130	0.06	0.026	0.042	0.316 J
General Chemistry (mg/L)										
Chemical oxygen demand (COD)	10.0	-	-	-	-	82	78	29	32	68.8
Hardness	5	172	NS	270	350	443	-	-	-	-
Total suspended solids (TSS)	4.0	-	-	-	-	136	22	4	5	88

Notes:

J - Estimated concentration.
- - Not analyzed.
NS - Not sampled.