## ΜΕΜΟ

Date: January 5, 2008

To: Dawn Cleary General Motors cc: file

From: John Bassett

### Subject: Notification of Newly Identified Contaminant Sources General Motors Corporation, MLK Facility, IND 980700801

This notification is made to the Indiana Department of Environmental Management (IDEM) pursuant to the requirements of Section F.5.h. of the Administrative Agreed Order Cause No.H-13855 regarding notification of a newly identified potential contaminant source area at the General Motors Corporation (GM) Dr. Martin Luther King Jr. (MLK) Boulevard Facility, Anderson, Indiana.

This notification includes the following information.

- 1. Site location
- 2. Designation of the type of unit
- 3. General unit dimensions and description
- 4. Available drawings
- 5. Dates of operation
- 6. Specifications of managed wastes
- 7. Other available information
- 8. Additional investigation

### Site Location, Designation and Description

The Main Plant Building at the GM MLK Boulevard Facility, Anderson, Indiana, is currently undergoing demolition. Chromium-impacted water was noted during demolition and removal of subsurface pits and foundations in the Bay M26/27 and Bay M30 areas in late September and early October 2008. The locations of these areas are shown on Figures 1 and 2. A Chromic Acid Holding Tank in Bay M30 was formerly utilized to store chromium plating fluid for various plating operations in this portion of the plant. During decommissioning activities in 2003, the Chromic Acid Holding Tank was emptied, cleaned, and backfilled with pea gravel. During the demolition activity in late September, 2008 the pea gravel was excavated and placed into a pile adjacent to the tank. On September 29, 2008 it was noted that yellow-colored water was seeping from the pea gravel pile (Attachment A, Photo 1).

Chromate species impart a distinctive yellow color to aqueous solutions at concentrations above approximately 1 mg/L, and chromium contamination of the gravel pile was immediately suspected based on visual observations. The pile was promptly bermed and the seep water was contained by directing it back into the holding tank (Photo 2). The appearance of chromium water in the holding tank was not anticipated because the tank had been emptied and cleaned prior to the placement of the pea gravel backfill in 2003. It is believed that residual chromium water in pipes entered the holding tank via one of the two pipe inlets shown in Attachment B, possibly because of the breaking of an air lock in the process piping draining to the tank. There is no evidence that



the bottom or sides of the tank are compromised or that groundwater had accumulated in the tank.

Chromium-impacted water was also encountered on September 29, 2008 during excavation in Bay M27 to remove a foundation wall. This area is approximately 120 feet north of the Chromic Acid Holding Tank and is shown on Figure 2. Chromium-impacted water was encountered in the excavation at a depth of approximately 6 feet between two northeast-southwest oriented foundation walls (Photo 3). The water was encountered at a level several feet above normal groundwater levels in this portion of the site indicating a perched groundwater condition. A sump pump was immediately installed in the excavation, and the chromium-impacted groundwater was pumped to storage totes (Photo 4). When the storage totes were filled, the water was transferred to the previously described Chromic Acid Holding Tank which provides a storage volume of several thousand gallons. Approximately 2000 gallons was initially pumped from the excavation to the tank.

On October 2, 2008 it was noted that groundwater was seeping through a joint in foundation wall forming the northwest side of the Bay M27 excavation approximately six feet below grade (Photo 5), suggesting an accumulation of perched groundwater on the northwest side of the wall. An excavation on the northwest side of the wall also encountered chromium water (Photo 6). The lower portion of the wall was purposely breached and the water on the northwest side of the wall was drained to an excavated sump on the southeast side (Photo 7).

By October 6, 2008 the excavation at Bay M27 had been extended north into Bay M26. The excavation was extended approximately 2 feet into the top of native soil to provide for better containment of perched groundwater infiltrating the area. Seepage continued to be observed from apparent fill material on the northwest side of the foundation wall (Photo 8). Pumping of the accumulated chromium groundwater has continued (Photo 9), initially utilizing storage totes for temporary storage. Water from the storage totes was pumped to the Chromic Acid Holding Tank and periodically transferred to a tanker truck for off site disposal as hazardous waste. Pumping volumes fluctuate in response to rainfall. Weekly pumping totals were maintained through November 14, and are summarized in the following table.

Week Ending	Gallons	Notes
10/3/08	2,000	
10/10/08	3,500	
10/17/08	1,800	1 inch rain at end of week
10/24/08	3,900	
10/31/08	3,900	
11/7/08	2,400	
11/14/08	2,100	2 inches of rain over 4 day period

Table 1 M26/27 Groundwater Volume Pumped

Beginning on November 23 water from the Bay M26/27 excavation was pumped directly to the Chromic Acid Holding Tank rather than using the storage totes. On December 11, the Chromic Acid Holding Tank ceased to be used for storage. The tank was demolished on December 12. It is planned the pumping will continue utilizing a Frac Tank for storage. To date, a total of 25,000 gallons of chromium water has been pumped and removed from the site for treatment and disposal.



### Available Drawings

A 1974 plan drawing of the Chromic Acid Holding Tank is shown in Attachment B.

The Chromic Acid Holding Tank, Bay M26/27 excavation and areas of stained soil in the vicinity were located with respect to the Indiana State Plane Coordinate System (SPCS) by field survey. As part of the pre-demolition planning, GM compiled a drawing showing the locations of former plating operations. The locations were compiled from historical engineering plans and plotted on a base drawing showing the plant column grid. Prior to demolition, several column grid locations throughout the plant were surveyed to orient the plant grid to the SPCS. This allowed georeferencing of the GM drawing to the SPCS and overlay onto an SPCS-based drawing showing previous RCRA Facility Investigation (RFI) soil borings and monitoring wells (Figure 2).

From Figure 2, it is apparent that several historic plating operations existed in the vicinity of the Bay M26/27 excavation. The excavation is directly beneath the northern end of the former 307 Plater. The 308 Plater existed to the east, and the Dichromate Plater and 1001 Plater existed to the west. The Chromic Acid Holding Tank and Bay M26/27 are located north of Area 2 - 309 / 352 Platers that were investigated during the RFI (Figure 2).

### Dates of Operation

Both the Chromic Acid Holding Tank and Bay M26/27 excavation are located within the footprint of Building 26 which was constructed in 1952 (Figure 2). The foundation wall on the northwest side of the excavation is apparently the foundation for Building 21 which was built in 1941. The purpose of the wall on the southeast side of the Bay M26/27 excavation, as seen in Photo 9, is unknown but it could be the foundation for a loading dock that existed along the southeast side of the 1941 building prior to the construction of Building 26. Operation of the 307 and 308 Platers may have commenced as early as 1952. They did exist by 1974 because they are referenced on the Chromic Acid Holding Tank drawing dated 1974 and shown in Attachment B. Both the 307 and 309 Platers are shown on an earlier drawing dated 1970. It is also likely that the Chromic Acid Holding Tank was in use sometime well before 1974 because the plan sheet shown in Attachment B pertains to a new liner installation in the existing tank.

### **Specifications of Managed Wastes**

There are no direct analytical data available concerning the wastes managed at any of the platers in the Bay M26/27 area. Recent sampling data for both the Chromic Acid Holding Tank and the Bay M26/27 excavation are provided in Table 2. Analytical data reports are included in Attachment C.

Samples of the pea gravel backfill, water in the Chromic Acid Holding Tank, and pit water in the M26 /27 excavation collected on September 29, 2008 were analyzed for TCLP metals and PCBs. All samples were characteristically hazardous for chromium. Low level PCBs were detected in the Chromic Acid Holding Tank water sample, but PCBs were not detected in either the pea gravel backfill sample or the water sample from the Bay M26/27 excavation. Based on these data, water and pea gravel from the Chromic Acid Holding Tank and groundwater from the M26/27 excavation are being disposed of off site as hazardous waste.



Samples of the M26 /27 pit water were collected on October 6, 16 and 29, 2008. Multiple samples were collected to gage the effectiveness of ongoing pit pumping activities. These samples were analyzed for US EPA target analyte list (TAL) metals, hexavalent chromium, and total and amenable cyanide. In addition, the October 16 sample was analyzed for US EPA target compound list (TCL) VOCs. Chromium was reported in all samples, but the concentration declined from October 6 to October 29. The most recent sample collected on October 29 had a total chromium concentration of 10.4 mg/L, an approximate four-fold reduction from the October 6 sample.

The hexavalent chromium analyses confirms that most of the chromium is present as hexavalent species. Hexavalent chromium acids and salts were utilized in metal plating and conversion coating operations on the site. In all cases, the reported hexavalent chromium concentrations are higher than the total chromium concentrations and are likely biased high.

Total and amenable cyanide were detected in all three of the pit water samples. The October 16 and October 29 samples both showed a marked decrease from the October 6 sample.

### Other Available Information

The foundation walls on either side of the Bay M26/27 excavation are unusually deep, and the soil materials exposed in the upper part of the excavation appear to be mixed granular fill (Figure 3, Unit 1). These materials are approximately 9 to 10 feet in thickness which suggests that a large amount of fill was added to this area during one or more phases of plant construction. The bottom 3 to 4 feet of the fill is saturated and is where perched groundwater seeped into the excavation. Native dark gray silty clay soil is exposed in the bottom of the excavation at an elevation of approximately 871.1 feet North American Vertical Datum (NAVD) (Figure 3). The clay soil appears to cause the perched water condition in the overlying Unit 1 granular fill.

Unit 3s monitoring well MW51 is located approximately 240 feet east of the Bay M26/27 excavation (Figure 2). The Unit 3s groundwater level in this well occurs at an elevation of approximately 862 feet NAVD, or approximately 9 feet below the top of the native clay in the excavation (Figure 3). The water level data confirm the perched nature of the groundwater in the fill in the vicinity of M26/27.

The closest shallow (Unit 3s and Unit 3d) monitoring wells in the vicinity of the Bay M26/27 excavation are MW50 (3d), MW51 (3s), and MW60 (3d). These wells were sampled for total chromium, dissolved chromium, and hexavalent chromium during the RFI. Analytical data are provided in Table 3. The US EPA maximum contaminant limit (MCL) of 0.1 mg/L for chromium was not exceeded at any of these wells. Further, hexavalent chromium was not detected in any of the samples.

### **Additional Investigation**

To further evaluate the chromium-impacted perched groundwater associated with the Bay M26/27 excavation, GM will implement a limited subsurface investigation. The purpose of the investigation will be to delineate the extent of chromium-impacted soil and perched groundwater within hydrogeologic Unit 1. The scope of the investigation will include collecting subsurface soil and borehole water samples.



Boreholes will be completed along transects extending northeast, southwest, northwest and southeast in a radial pattern around the Bay26/27 excavation. Along each of the four transects, boreholes will be completed at distances of approximately 20, 50, and 100 feet from the M26/27 excavation. Boreholes will be advanced to the bottom of the Unit 1 fill (anticipated to be at a depth of approximately 11 feet at the Bay M26/27 excavation). At each borehole location, a subsurface soil sample will be collected from a 2-foot interval that is stained or shows other evidence of contamination. If no visible evidence of contamination is encountered, the sample will be collected within the 2-foot interval above the perched water table (anticipated to be 2-4 feet or 4-6 feet). All samples will be submitted to the laboratory for analysis of US EPA TAL metals (including hexavalent chromium) and total and amenable cyanide.

Soil borings will be advanced using direct push technology. Soil cores will be obtained using the *Geoprobe* Macro-core® soil sampler. This device obtains a 45-inch long x 1.5-inch diameter core. New, clean, plastic (PETG) liners will be used to obtain each core sample. Each soil core will be examined by the on-site geologist and a complete soil core log will be compiled. The description will include the sample texture, color (including mottling), structure, moisture content, consistency, carbonate content, and presence of other significant features, including fill sequences. Soil material descriptions will be made following guidelines established by IDEM using the United States Department of Agriculture (USDA) Soil Classification Service descriptive procedures.

A temporary piezometer will be installed at each borehole location for use in collecting borehole water samples and static water level measurements. Piezometers will be constructed of nominal 1-inch diameter flush joint Schedule 40 PVC screen and riser inserted directly into the borehole. Screen and casing materials will be purchased from manufacturers in pre-cleaned and wrapped condition. A screen slot size of 0.010 inch and screen length of five feet will be utilized.

Borehole water samples will be collected at each piezometer using a peristaltic pump and new polyethylene tubing. Piezometers will be purged to the extent practical to remove suspended solids, reduce turbidity, and to allow visual observation of sample color (a yellow color generally indicates a hexavalent chromium concentration exceeding 1 mg/L). Alternatively, if sufficiently low turbidity samples are obtainable, a ChemMets Model K-2810 diphenylcarbazide colorimetric test kit will be used to provide an indication of the hexavalent chromium concentration. The test kit has a detection limit of 0.05 mg/L hexavalent chromium which is below the MCL. The outermost piezometer along each test transect will be installed at a location where there is no yellow color in the sample, or the chromium test kit indicates a groundwater concentration near, or below, the MCL. Samples form each piezometer will be submitted to the laboratory for analysis of US EPA TAL metals (including hexavalent chromium) and total and amenable cyanide.

The top of each piezometer will be surveyed to establish the elevation with respect to NAVD. At least one round of water level measurements will be taken in all piezometers to establish hydraulic gradient within the perched water zone.

A brief technical memorandum summarizing the results of the investigation will be provided to the IDEM.





## Plotted By: nancy.wilzbacher Layout-Sheet Name: MODEL Plot File Date Created: Nov/20/2008

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SHEE 5W DB DB NE JOB TITLE Z 5B231 BAY M26/27 R <u>882.1</u> EXCANATION MWSD/51 MUK INISA N 0.7' ต์ดั 880 801 Ï. T T B79.2 -1.2 FILL = 2.0 SUTY LT CONCRETE FROM 307/308 301,304 \$ 309 PLATERS FILL Epm M30 PLATERS SAUD 5 CHROMIC ALID UMIT 1-SLTY Gy Un A 5EEP GRAVEN LMY JD HOLDING YEL BRN (FILL) DK BRY FILL TANK 7.0 871.1 870 871.6 CLAT LOAM. PALE BRIN õ anon CALCULATION 869.0 NATINE SOIL 13.5%  $\checkmark$ DK GRY JLTY CLAY LM LOAMY JD, WET CHROME LEVEL 11.9 LINIT Z 15.5' NW 51 LMY JD,F Z 862± 12.5' JAND, BRAI, WET <u>Y</u> WETE 181 860 TD 20.01 19.01 Eleurnou UNIT 35 JAND, F 22.8 MWSI 26.4 REVIEWER ORIGINATOR 27.5 850 SLIY CLY LM BRY BRN UNIT 3 CONFILINS පිත 37 840 38.B SD, M-C, WET UN17 3d MWSO N 42.3 5D, F, WET EARTH TECH 43.0 43.5 UNIT 4 LM, GRY BR NO HORIZONTAL JCALE T.D. 47.0' DATE DATE FIGURE 3 BAY M30 CITRONAL ALIS HOLDING TANK BAY M26/27 EXCAUNTION CROSS SECTION WATER MONITORING  $\Sigma$ N AECOM wa WHIL SCIEDA 30

Sample Location: Sample ID: Sample Date: Sample Matrix:		Chromic Acid Holding Tank S-092908-MG-001 9/29/2008 Soil	Chromic Acid Holding Tank W-092908-MG-001 9/29/2008 Water	Bay M 26 Excavation W-092908-MG-002 9/29/2008 Pit Water
Parameter	Units			
Arsenic (TCLP) Barium (TCLP) Cadmium (TCLP) Chromium (TCLP) Lead (TCLP) Mercury (TCLP) Selenium (TCLP) Silver (TCLP) PCBs	mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.01 U 1.60 0.005 U 5.53 0.14 0.0002 U 0.05 U 0.002 U	0.01 U 0.41 0.005 U 483 0.06 0.0002 U 0.05 U 0.005	0.02 0.29 0.005 U 60.4 0.03 U 0.0022 0.05 U 0.027
PCB-1016 PCB-1221 PCB-1232 PCB-1242 PCB-1248 PCB-1254 PCB-1260	μg/L or μg/Kg <sup>(1)</sup> μg/L or μg/Kg <sup>(1)</sup>	330 U 330 U 330 U 330 U 330 U 330 U 330 U	0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.3 0.1 U	0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.1 U
Metals				
Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Total Chromium VI (Hexavalent) Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Vanadium Zinc	μg/L μg/L μg/L μg/L μg/L μg/L μg/L μg/L			
	"			
Cyanide (amenable) Cyanide (total)	μg/L μg/L	-	-	-

		Chromic Acid	Chromic Acid	Bay M 26
Sample Location:		Holding Tank	Holding Tank	Excavation
Sample ID:		S-092908-MG-001	W-092908-MG-001	W-092908-MG-002
Sample Date:		9/29/2008	9/29/2008	9/29/2008
Sample Matrix:		Soil	Water	Pit Water
Volatile Organic Compounds				
1,1,1-Trichloroethane	µg/L	-	-	-
1.1.2.2-Tetrachloroethane	µa/L	-	-	-
1,1,2-Trichloroethane	µg/L	-	-	-
1,1-Dichloroethane	µg/L	-	-	-
1,1-Dichloroethene	µg/L	-	-	-
1.2.4-Trichlorobenzene	µa/L	-	-	-
1.2-Dibromo-3-chloropropane (DBCP)	ua/L	-	-	-
1.2-Dibromoethane (Ethylene Dibromide)	ua/L	-	-	-
1,2-Dichlorobenzene	µg/L	-	-	-
1.2-Dichloroethane	ua/L	-	-	-
1.2-Dichloropropane	µ=9= µa/L	-	-	-
1.3-Dichlorobenzene	µ=9= µa/L	-	-	-
1.4-Dichlorobenzene	µg/= µa/l	-	-	-
2-Butanone (Methyl Ethyl Ketone)	µg/= µg/l	_	_	_
2-Hexanone	µg/L µa/l	_	_	_
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	µg/L µa/l	_	_	_
Acetone	µg/L µa/l	_	_	_
Benzene	µg, = µa/l	_	_	_
Bromodichloromethane	µg/L µa/l	_	_	_
Bromoform	µg/L µa/l	_	_	_
Bromomethane (Methyl Bromide)	µg/L µa/l	_	_	_
Carbon disulfide	µg/L µa/l	_	_	_
Carbon tetrachloride	µg/L µg/l	_	_	_
Chlorobenzene	µg/L µa/l	_	_	_
Chloroethane	µg/L µa/l	_	_	_
Chloroform (Trichloromethane)	µg/L µa/l	_	_	_
Chloromethane (Methyl Chloride)	µg/L µg/l	_	_	_
cis-1 2-Dichloroethene	µg/L µg/l	_	_	_
cis-1 3-Dichloropropene	µg/L µg/l	_	_	_
Cyclobeyane	µg/L µg/l	_	_	_
Dibromochloromethane	µg/L µg/l	_	_	_
Dichlorodifluoromethane (CEC-12)	µg/L µg/l	-	_	_
Ethylbenzene	µg/L µg/l	_	_	_
Isopropulbenzene	µg/L µg/l	_	_	_
Mothyl acotato	µg/L	-	-	-
Methyl cycloboxono	µg/L	-	-	-
Mothyl Tort Butyl Ethor	µg/L	-	-	-
Methylana chlorida	µg/L	-	-	-
m vulopo	µg/L	-	-	-
o Yylono	µg/L	-	-	-
Sturopo	µg/L	-	-	-
Totrachloroothono	µg/L	-	-	-
Teluana	µg/L	-	-	-
roluelle	µg/L	-	-	-
trans-1,2-Dichloropropaga	µg/L	-	-	-
Trichloroothono	µg/L	-	-	-
Triphorofluoromothono (CEC 11)	µg/L	-	-	-
Trifluorotriobloroothono (Eroon 112)	µg/L	-	-	-
Tinuorounchioroeunane (Freon 113) Vinul oblorido	µg/L	-	-	-
Villyi Chilofide Villona (tatal)	µg/L	-	-	-
Ayierie (lulai)	µg/L	-	-	-

Notes:

(1) Soil sample reported as μg/Kg. All other samples reported as μg/L.
Not analyzed.
J Estimated.

R Rejected.

U Not detected.

UJ Not detected, estimated reporting limit.

Sample Location:		Bay M26 Excavation	Bay M26 Excavation	Bay M26 Excavation
Sample ID: Sample Date: Sample Matrix:		WPW100608JD001 10/6/2008 Pit Water	WPW101608JD001 10/16/2006 Pit Water	WPW102908JD001 10/29/2008 Pit Water
Parameter	Units			
Arsenic (TCLP)	mg/L	-	-	-
Barium (TCLP)	mg/L	-	-	-
Cadmium (TCLP)	mg/L	-	-	-
Chromium (TCLP)	mg/L	-	-	-
Lead (TCLP)	mg/L	-	-	-
Mercury (TCLP)	mg/L	-	-	-
Selenium (TCLP)	mg/L	-	-	-
Silver (TCLP)	mg/L	-	-	-
PCBs				
PCB-1016	μg/L or μg/Kg <sup>(1)</sup>	-	-	-
PCB-1221	$\mu g/L \text{ or } \mu g/Kg^{(1)}$	-	-	-
PCB-1232	$\mu g/L \text{ or } \mu g/Kg^{(1)}$	-	-	-
PCB-1242	$\mu g/L \text{ or } \mu g/Kg^{(1)}$	-	-	-
PCB-1248	$\mu g/L \text{ or } \mu g/Kg_{(1)}^{(1)}$	-	-	-
PCB-1254	$\mu g/L \text{ or } \mu g/Kg^{(1)}$	-	-	-
PCB-1260	μg/L or μg/Kg <sup>(*)</sup>	-	-	-
Metals				
Aluminum	µg/L	1150 J	678	5060
Antimony	μg/L	1.8 U	1.9 U	8.7 U
Arsenic	µg/L	1.9 U	2.7 U	27.2
Barium	µg/L	167 J	61.4 J	103 J
Beryllium	µg/L	0.50 U	0.37 U	0.35 U
Cadmium	μg/L	0.23 U	0.40 U	0.40 U
Calcium	μg/L	194000	87700	123000
	μg/L	37900 J	21000 J	10400 J
Chromium VI (Hexavalent)	μg/L	7 3800 J	28300 J	20000 J
Copper	μg/L	1450	378	754
Iron	µg/E µa/l	2130	951	4170.1
Lead	µg,= µa/l	5.0	54	720
Magnesium	µg/= µa/L	64400	24500	44700
Manganese	μg/L	297	73.0	244
Mercury	μg/L	0.17 J	0.10 U	0.10 U
Nickel	μg/L	195	153	205 J
Potassium	μg/L	223000	123000	142000
Selenium	μg/L	3.5	4.7 U	4.7 U
Silver	µg/L	1.9 J	0.99 J	0.63 U
Sodium	µg/L	194000	123000	165000
Thallium	µg/L	11.1 U	5.0 U	5.0 U
Vanadium ¬·	µg/L	12.6 J	6.7 J	11.3 J
ZINC	µg/L	19.4 J	26.1	38.4
General Chemistry				
Cyanide (amenable)	µg/L	3440	399	71.9
Cyanide (total)	µg/L	3510	905	932

Sample Location:		Bay M26 Excavation	Bay M26 Excavation	Bay M26 Excavation
Sample Localion.				
Sample Date:		10/6/2008	10/16/2006	10/20/2008
Sample Date.		Dit Mator	Dit Mator	Dit Mator
Sample Matrix.		FIL WALEI	FIL WALEI	FIL WALEI
Volatile Organic Compounds				
1.1.1-Trichloroethane	µa/L	-	0.5 U	-
1,1,2,2-Tetrachloroethane	μg/L	-	0.5 U	-
1,1,2-Trichloroethane	µg/L	-	0.5 U	-
1,1-Dichloroethane	μg/L	-	0.15 J	-
1,1-Dichloroethene	μg/L	-	0.5 U	-
1,2,4-Trichlorobenzene	μg/L	-	0.20 J	-
1,2-Dibromo-3-chloropropane (DBCP)	μg/L	-	0.5 U	-
1,2-Dibromoethane (Ethylene Dibromide)	μg/L	-	0.5 U	-
1,2-Dichlorobenzene	μg/L	-	0.11 J	-
1,2-Dichloroethane	µg/L	-	0.5 U	-
1,2-Dichloropropane	µg/L	-	0.5 U	-
1.3-Dichlorobenzene	µg/L	-	0.5 U	-
1,4-Dichlorobenzene	μg/L	-	0.5 U	-
2-Butanone (Methyl Ethyl Ketone)	μg/L	-	2.5 U	-
2-Hexanone	µg/L	-	2.5 U	-
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	µg/L	-	2.5 U	-
Acetone	µg/L	-	R	-
Benzene	µa/L	-	0.5 U	-
Bromodichloromethane	ua/L	-	0.5 U	-
Bromoform	ua/L	-	0.5 U	-
Bromomethane (Methyl Bromide)	µg/L	-	0.5 U	-
Carbon disulfide	µg/L	-	0.5 UJ	-
Carbon tetrachloride	µg/L	-	0.5 U	-
Chlorobenzene	µg/L	-	0.5 U	-
Chloroethane	μg/L	-	0.5 U	-
Chloroform (Trichloromethane)	μg/L	-	0.5 U	-
Chloromethane (Methyl Chloride)	µg/L	-	0.5 U	-
cis-1,2-Dichloroethene	µg/L	-	1.8	-
cis-1,3-Dichloropropene	μg/L	-	0.5 U	-
Cyclohexane	μg/L	-	0.5 U	-
Dibromochloromethane	µg/L	-	0.5 U	-
Dichlorodifluoromethane (CFC-12)	μg/L	-	0.5 U	-
Ethylbenzene	µg/L	-	0.5 U	-
Isopropylbenzene	µg/L	-	0.5 U	-
Methyl acetate	µg/L	-	0.5 U	-
Methyl cyclohexane	µg/L	-	0.5 U	-
Methyl Tert Butyl Ether	µg/L	-	0.5 U	-
Methylene chloride	µg/L	-	0.5 U	-
m-xylene	μg/L	-	1.0 U	-
o-Xylene	µg/L	-	0.5 U	-
Styrene	µg/L	-	0.5 U	-
Tetrachloroethene	μg/L	-	0.27 J	-
Toluene	μg/L	-	0.5 U	-
trans-1,2-Dichloroethene	μg/L	-	0.5 U	-
trans-1,3-Dichloropropene	µg/L	-	0.5 U	-
Trichloroethene	µg/L	-	0.35 J	-
Trichlorofluoromethane (CFC-11)	µg/L	-	0.5 U	-
Trifluorotrichloroethane (Freon 113)	µg/L	-	0.5 U	-
Vinyl chloride	µg/L	-	0.14 J	-
Xylene (total)	µg/L	-	0.5 U	-

### Notes:

(1) Soil sample reported as μg/Kg. All other samples reported as μg/L.
Not analyzed.
J Estimated.

R Rejected.
U Not detected.
UJ Not detected, estimated reporting limit.

### TABLE 3 ANALYTICAL RESULTS SUMMARY GROUNDWATER ANALYTICAL DATA GM MLK BOULEVARD

Sample Location:		MW 50	MW 50	MW 51	MW 60	MW 60
Sample ID:		GM-MW-50	GM-MW-50d	GM-MW-51	WG-011305- ML-010	WG-011305- ML-011
Sample Date:		3/29/2004	3/29/2004	3/29/2004	1/13/2005	1/13/2005
Sample Matrix / Type:		WG-N	WG-FD	WG-N	WG-N	WG-FD
Parameter	Units					
Chromium Total	ug/L	11	12	2 J	ND (1) U	ND (1) U
Chromium Total (Dissolved)	ug/L	3.6 J	3.9 J	3.3 J	ND (2.5) U	ND (2.8) U
Chromium VI (Hexavalent) (Dissolved)	mg/L	ND (0.005) UJ	ND (0.005) UJ	ND (0.005) UJ	ND (0.005) U	ND (0.005) U

Notes:

ND - Not Detected (Reporting Limit)

J - Estimated concentration.

U - Not present at or above the associated value.

UJ - Estimated reporting limit.

Attachment A

Photos



Photograph No. 1 Description: Backfill removed from Bay M30 Pit Orientation: North



Photograph No. 2 Orientation: Northeast Description: Chromium-impacted water drained from fill back to Bay M30 Pit.

AECOM





Photograph No. 3 Orientation: Northeast Description: Chromium-impacted water in excavation at Bay M27.



Photograph No. 4 Description: Storage tanks at Bay M27 excavation.

Orientation: East



Photograph No. 5 Orientation: Northwest Description: Seepage through concrete foundation wall.



Photograph No. 6 Orientation: Northwest Description: Chromium water in excavation northwest of foundation wall.





Photograph No. 7 Orientation: Northwest Description: Draining the northwest side of the foundation wall.



Photograph No. 8 Orientation: West Description: Seepage from fill on west side of foundation wall.

AECOM

EARTH TECH



Photograph No. 9 Description: Pumping from sump area.

Orientation: Northeast



Attachment B

Chromic Acid Holding Tank (1974 Plan)



		REVISIONS		
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-5-16 --S<sup>eed</sup> Spike Circle 2-Fostener Spikes Requ. Near Side Only,  $(\cdot)$ 

MAT'L.

INSTRUCTIONS TO THE CONTRACTOR

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SHEETS

I, FABRICATE THO EXPANDING TYPE FIPE FLUES, AS DETAILED. DELIVER TO GUIDE LAMP DEFOR STARTING LINER REPAIR SO THAT TANK MAY BE GLEARED & VENT HOLE INSTALLED. S, LIFT THE ENSING KOROSELL LINER BACK INTO POSITION AND MECHANICALLY FASTEN TO THE GOOGRETE WALL AS GOWN ON DETAIL <sup>#</sup>, I. INSTALL & LINER STIENSION AS SHOWN ON DETAIL <sup>#</sup>, I. INSTALL & LINER STIENSION AS SHOWN ON DETAIL <sup>#</sup>, THE AREA BETWEEN THE TOP EDER OF THE MEGHANICAL FASTENER AND """AND FITTING AROUND OBSTICKLE SUCH AS FLOOR BEAMS, ETC.

### Piscen TRREERING

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PROJECT (	CHROME T'ANK LINER REPAIR						
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DRAWN J	CK HERR DATE 9-25-74						
CHECKED	AFTROVED						
	GUIDE LAMP DIVISION GENERAL NOTORS CORP. ANDEMICK, IND.						
DRWG							
	C 2027						

Attachment C

Laboratory Data Reports

TCLP Samples (September 29, 2008) M-26/27 Excavation Pit Water Samples (October 6, 16, 29 2008) Data Validation Report for Pit Water Samples

![](_page_22_Picture_0.jpeg)

![](_page_22_Picture_1.jpeg)

Report ID: S38382.01(02) Generated on 10/17/2008 Replaces report S38382.01(01) generated on 10/02/2008

### Report to

Attention: Shannon Richardson Conestoga-Rovers & Assoc., Inc. 14496 Sheldon Road Ste. Plymouth, MI 48170

Phone: 734-453-5123 FAX: 734-453-5201 Email: Anderson Guide group

**Report Summary** 

Lab Sample ID(s): S38382.01-S38382.03 Project: 46387-10/Former Guide, Anderson, IN Collected Date: 09/29/2008 Submitted Date/Time: 09/30/2008 10:10 Sampled by: Matt Groves P.O. #: GMS16658

PCB result for W-092908-MG-001 sample has been revised

Report Notes

Results relate only to items tested as received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

"Not detected" indicates that parameter was not found at a level equal to or greater than the RL.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories.

Violetta F. Murshah

Violetta F. Murshak Laboratory Director

Report produced by

Merit Laboratories 2680 East Lansing Drive East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

![](_page_23_Picture_0.jpeg)

Sample Summary (3 samples)							
Sample ID	Sample Tag	Matrix	Collected Date/Time				
S38382.01	S-092908-MG-001	Soil	09/29/2008 16:10				
S38382.02	W-092908-MG-001	Water	09/29/2008 16:25				
S38382.03	W-092908-MG-002	Water	09/29/2008 16:40				

![](_page_24_Picture_0.jpeg)

### Lab Sample ID: S38382.01 Sample Tag: S-092908-MG-001 Collected Date/Time: 09/29/2008 16:10 Matrix: Soil COC Reference: 1380

### Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Te	emp. (C) Thermo	ometer #	
4	8oz Glass	None	Yes	4.2	IR		
Ana	alvsis	Results	Units	RI	Method	Run Date/Time	Analyst CAS # Flags
Ext	traction / Prep.	rtoodito	Onito		mounou	Run Bato, Timo	
Ext	raction. PCB	Completed			3550B	09/30/08 12:00	CEM
Mei	rcury Digestion	Completed			7470A	10/02/08 11:30	JRT
Met	tal Digestion	Completed			3015A	10/02/08 12:00	SLS
тсі	LP Extraction						
Inita	al Sample pH	N/A			1311	09/30/08 16:00	WAR
pН	after 3.5 ml HCl	N/A			1311	09/30/08 16:00	WAR
% 5	Solids	100			1311	09/30/08 16:00	WAR
Sar	nple Used g	10			1311	09/30/08 16:00	WAR
Fina	al Volume mL	200			1311	09/30/08 16:00	WAR
TCI	LP Extraction Fluid	2			1311	09/30/08 16:00	WAR
Fina	al Extract pH	5.95			1311	09/30/08 16:00	WAR
Ino	rganics						
Tot	al Solids	98	%	1	Std M 2540 B	09/30/08 10:00	DJS
Me	tals						
Ars	enic, TCLP	Not detected	mg/L	0.01	6020	10/02/08 13:10	SLS 7440-38-2
Bar	ium, TCLP	1.60	mg/L	0.05	6020	10/02/08 13:10	SLS 7440-39-3
Cad	dmium, TCLP	Not detected	mg/L	0.005	6020	10/02/08 13:10	SLS 7440-43-9
Chr	omium, TCLP	5.53	mg/L	0.05	6020	10/02/08 13:10	SLS 7440-47-3
Lea	ad, TCLP	0.14	mg/L	0.03	6020	10/02/08 13:10	SLS 7439-92-1
Mei	rcury, TCLP	Not detected	mg/L	0.0002	7471A	10/02/08 14:55	JRT 7439-97-6
Sel	enium, TCLP	Not detected	mg/L	0.05	6020	10/02/08 13:10	SLS 7782-49-2
Silv	er, TCLP	Not detected	mg/L	0.002	6020	10/02/08 13:10	SLS 7440-22-4
Org	ganics - PCBs/Pesticides	5					
PC	B List						
PCI	B-1016	Not detected	ug/kg	330	8082	09/30/08 17:24	JANB 12674-11-2
PCI	B-1242	Not detected	ug/kg	330	8082	09/30/08 17:24	JANB 53469-21-9
PCI	B-1221	Not detected	ug/kg	330	8082	09/30/08 17:24	JANB 11104-28-2
PCI	B-1232	Not detected	ug/kg	330	8082	09/30/08 17:24	JANB 11141-16-5
PCI	B-1248	Not detected	ug/kg	330	8082	09/30/08 17:24	JANB 12672-29-6
PCI	B-1254	Not detected	ug/kg	330	8082	09/30/08 17:24	JANB 11097-69-1
PCI	B-1260	Not detected	ug/kg	330	8082	09/30/08 17:24	JANB 11096-82-5

![](_page_25_Picture_0.jpeg)

### Lab Sample ID: S38382.02 Sample Tag: W-092908-MG-001 Collected Date/Time: 09/29/2008 16:25 Matrix: Water COC Reference: 1380

### Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Te	emp. (C)	Thermometer #			
4	1L Amber	None	Yes	4.2		IR			
Ana	lysis	Results	Units	RL	Method	Run Date/Time	Analys	t CAS #	Flags
Ext	raction / Prep.								
Extr	action, PCB	Completed			3510C	09/30/08 16:05	TAS		
Mer	cury Digestion	Completed			7470A	10/02/08 11:30	JRT		
Met	al Digestion	Completed			3015A	10/02/08 12:00	SLS		
тсі	P Extraction								
Inita	al Sample pH	<0.5%			1311	10/01/08 14:58	WAR		
pH a	after 3.5 ml HCl	<0.5%			1311	10/01/08 14:58	WAR		
% S	olids	<0.5%			1311	10/01/08 14:58	WAR		
San	nple Used g	<0.5%			1311	10/01/08 14:58	WAR		
Fina	al Volume mL	<0.5%			1311	10/01/08 14:58	WAR		
TCL	P Extraction Fluid	<0.5%			1311	10/01/08 14:58	WAR		
Fina	al Extract pH	<0.5%			1311	10/01/08 14:58	WAR		
Met	als								
Arse	enic, TCLP	Not detected	mg/L	0.01	6020	10/02/08 13:04	SLS	7440-38-2	
Bari	um, TCLP	0.41	mg/L	0.05	6020	10/02/08 13:04	SLS	7440-39-3	
Cad	lmium, TCLP	Not detected	mg/L	0.005	6020	10/02/08 13:04	SLS	7440-43-9	
Chr	omium, TCLP	483	mg/L	0.05	6020	10/02/08 13:04	SLS	7440-47-3	
Lea	d, TCLP	0.06	mg/L	0.03	6020	10/02/08 13:04	SLS	7439-92-1	
Mer	cury, TCLP	Not detected	mg/L	0.0002	7471A	10/02/08 14:57	JRT	7439-97-6	
Sele	enium, TCLP	Not detected	mg/L	0.05	6020	10/02/08 13:04	SLS	7782-49-2	
Silv	er, TCLP	0.005	mg/L	0.002	6020	10/02/08 13:04	SLS	7440-22-4	
Org	anics - PCBs/Pesticides								
PCE	3								
PCE	3-1016	Not detected	ug/L	0.1	608	09/30/08 21:51	JANB	12674-11-	2
PCE	3-1221	Not detected	ug/L	0.1	608	09/30/08 21:51	JANB	11104-28-	2
PCE	3-1232	Not detected	ug/L	0.1	608	09/30/08 21:51	JANB	11141-16-	5
PCE	3-1242	Not detected	ug/L	0.1	608	09/30/08 21:51	JANB	53469-21-	9
PCE	3-1248	Not detected	ug/L	0.1	608	09/30/08 21:51	JANB	12672-29-	6
PCE	3-1254	0.3	ug/L	0.1	608	09/30/08 21:51	JANB	11097-69-	1
PCE	3-1260	Not detected	ug/L	0.1	608	09/30/08 21:51	JANB	11096-82-	5
PCE	3, Total	0.3	ug/L	0.1	608	09/30/08 21:51	JANB	1336-36-3	

![](_page_26_Picture_0.jpeg)

### Lab Sample ID: S38382.03 Sample Tag: W-092908-MG-002 Collected Date/Time: 09/29/2008 16:40 Matrix: Water COC Reference: 1380

### Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Te	emp. (C)	Thermometer #		
4	1L Amber	None	Yes	4.2		IR		
Ana	Ilysis	Results	Units	RL	Method	Run Date/Time	Analyst CAS # Fla	ags
Ext	raction / Prep.							Ŭ
Extr	action, PCB	Completed			3510C	09/30/08 16:05	TAS	
Mer	cury Digestion	Completed			7470A	10/02/08 11:30	JRT	
Met	al Digestion	Completed			3015A	10/02/08 12:00	SLS	
тсі	P Extraction							
Inita	al Sample pH	<0.5%			1311	10/01/08 14:58	WAR	
pH a	after 3.5 ml HCl	<0.5%			1311	10/01/08 14:58	WAR	
% S	Solids	<0.5%			1311	10/01/08 14:58	WAR	
San	nple Used g	<0.5%			1311	10/01/08 14:58	WAR	
Fina	al Volume mL	<0.5%			1311	10/01/08 14:58	WAR	
TCL	P Extraction Fluid	<0.5%			1311	10/01/08 14:58	WAR	
Fina	al Extract pH	<0.5%			1311	10/01/08 14:58	WAR	
Met	tals							
Arse	enic, TCLP	0.02	mg/L	0.01	6020	10/02/08 13:07	SLS 7440-38-2	
Bar	ium, TCLP	0.29	mg/L	0.05	6020	10/02/08 13:07	SLS 7440-39-3	
Cac	lmium, TCLP	Not detected	mg/L	0.005	6020	10/02/08 13:07	SLS 7440-43-9	
Chr	omium, TCLP	60.4	mg/L	0.05	6020	10/02/08 13:07	SLS 7440-47-3	
Lea	d, TCLP	Not detected	mg/L	0.03	6020	10/02/08 13:07	SLS 7439-92-1	
Mer	cury, TCLP	0.0022	mg/L	0.0002	7471A	10/02/08 14:59	JRT 7439-97-6	
Sele	enium, TCLP	Not detected	mg/L	0.05	6020	10/02/08 13:07	SLS 7782-49-2	
Silv	er, TCLP	0.027	mg/L	0.002	6020	10/02/08 13:07	SLS 7440-22-4	
Org	anics - PCBs/Pesticides							
PCE	3							
PCE	3-1016	Not detected	ug/L	0.1	608	09/30/08 22:02	JANB 12674-11-2	
PCE	3-1221	Not detected	ug/L	0.1	608	09/30/08 22:02	JANB 11104-28-2	
PCE	3-1232	Not detected	ug/L	0.1	608	09/30/08 22:02	JANB 11141-16-5	
PCE	3-1242	Not detected	ug/L	0.1	608	09/30/08 22:02	JANB 53469-21-9	
PCE	3-1248	Not detected	ug/L	0.1	608	09/30/08 22:02	JANB 12672-29-6	
PCE	3-1254	Not detected	ug/L	0.1	608	09/30/08 22:02	JANB 11097-69-1	
PCE	3-1260	Not detected	ug/L	0.1	608	09/30/08 22:02	JANB 11096-82-5	
PCE	3, Total	Not detected	ug/L	0.1	608	09/30/08 22:02	JANB 1336-36-3	

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### SW846 - METALS -1-

### INORGANIC ANALYSES DATA SHEET

				WPW100608JD001
Lab Name:	COMPUCHEM		Contract:	
Lab Code:	LIBRTY	Case No.:	SAS No.:	SDG No.: 0810039
Matrix (soil	l/water): WA	TER	Lab Sample ID:	0810039-01
Level (low/r	ned): <u>LOW</u>		Date Received:	10/7/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight):

UG/L

EPA SAMPLE NO.

CAS No.	Analyte	Concentration	с	Q	м
7429-90-5	Aluminum	1150		E	P
7440-36-0	Antimony	1.8	U		P
7440-38-2	Arsenic	1.9	טן		P
7440-39-3	Barium	167	В		P
7440-41-7	Beryllium	0.50	в		Р
7440-43-9	Cadmium	0.23	U		P
7440-70-2	Calcium	194000			P
7440-47-3	Chromium	37900	1		P
7440-48-4	Cobalt	16.6			P
7440-50-8	Copper	1450		ļ	P
7439-89-6	Iron	2130			Р
7439-92-1	Lead	5.0			Р
7439-95-4	Magnesium	64400			P
7439-96-5	Manganese	297			Р
7439-97-6	Mercury	0.17	в		CV
7440-02-0	Nickel	195		1	P
7440-09-7	Potassium	223000		ĺ	P
7782-49-2	Selenium	3.5	в	1	P
7440-22-4	Silver	1.9	в		P
7440-23-5	Sodium	194000			P
7440-28-0	Thallium	11.1			P
7440-62-2	Vanadium	12.6	в		P
7440-66-6	Zinc	19.4	в	l	P
57-12-5	Cyanide	3510		D	AS

Color Before:	YELLOW	Clarity Before:	CLEAR	Texture:	
Color After:	YELLOW	Clarity After:	CLEAR	Artifacts:	
Comments:					
-					
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![](_page_29_Picture_0.jpeg)

Liberty Analytical Corp.

CRA 2055 NIAGARA FALLS BLVD. SUITE#3 NIAGARA FALLS NY, 14304	F 10/10	<b>Reported:</b> D/2008 15:34								
WPW100608JD001 0810039-01 (Water)										
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method		

### **COMPUCHEM**

ug/L

500

### WET CHEMISTRY PARAMETERS

**Hexavalent Chromium** 

73770.45 5000.000

8101021 10/10/2008 15:28 10/10/2008 15:31 SM 3500CR D

COMPUCHEM

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

### SW846 - METALS -1-

### **INORGANIC ANALYSES DATA SHEET**

					1	WPW100608JD001
Lab Name:	COMPUCHEM		Contract:			
Lab Code:	LIBRTY	Case No.:	SAS No	.:	SDG No.:	0810039A
Matrix (soi	l/water):	ATER	I	ab Sample ID:	0810039-0	01
Level (low/	med): LOW		E	ate Received:	10/7/2008	3
<pre>% Solids:</pre>	0.0					

Concentration Units (ug/L or mg/kg dry weight):

UG/L

EPA SAMPLE NO.

CAS No.	Analyte	Concentration	с	Q	м
57-12-5	Amen Cyanide	3440		D	AS

Color Before:	YELLOW	Clarity Before:	CLEAR	Texture:
Color After:	COLORLESS	Clarity After:	CLEAR	Artifacts:
Comments:				
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REV. 0 (6.04)

### SW846 - METALS -1-

### INORGANIC ANALYSES DATA SHEET

			WPW101608JD001
Lab Name:	COMPUCHEM	Contract:	
Lab Code:	LIBRTY Case No.:	SAS No.:	SDG No.: 0810118
Matrix (soil	/water): WATER	Lab Sample ID:	0810118-01
Level (low/m	ned): LOW	Date Received:	10/17/2008

% Solids: 0.0

Concentration	Units	(ug/L	or	mg/kg	dry	weight):
---------------	-------	-------	----	-------	-----	----------

UG/L

EPA SAMPLE NO.

			_		
CAS No.	Analyte	Concentration	с	Q	м
7429-90-5	Aluminum	678	1		P
7440-36-0	Antimony	1.9	ט		P
7440-38-2	Arsenic	2.7	ען		P
7440-39-3	Barium	61.4	В		P
7440-41-7	Beryllium	0.37	В		P
7440-43-9	Cadmium	0.40	שן		P
7440-70-2	Calcium	87700			P
7440-47-3	Chromium	21000			P
7440-48-4	Cobalt	18.7			[ P
7440-50-8	Copper	378			P
7439-89-6	Iron	951		E	P
7439-92-1	Lead	5.4			P
7439-95-4	Magnesium	24500			P
7439-96-5	Manganese	73.0			P
7439-97-6	Mercury	0.10	שן		CV
7440-02-0	Nickel	153	Γ		P
7440-09-7	Potassium	123000			₽
7782-49-2	Selenium	4.7	ח		P
7440-22-4	Silver	0.99	в		P
7440-23-5	Sodium	123000		ĺ	₽
7440-28-0	Thallium	5.0	ע		P
7440-62-2	Vanadium	6.7	в		P
7440-66-6	Zinc	26.1			P
57-12-5	Cyanide	905		D	AS

Color Before:	YELLOW	Clarity Before:	CLEAR	Texture:
Color After:	COLORLESS	Clarity After:	CLEAR	Artifacts:
Comments:				
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### SW846 - METALS -1-

### INORGANIC ANALYSES DATA SHEET

			WPW101608JD001
Lab Name:	COMPUCHEM	Contract:	Entering of the second
Lab Code:	LIBRTY Case No.:	SAS No.:	SDG No.: 0810118
Matrix (soi	ll/water): WATER	Lab Sample ID:	0810118-01
Level (low,	/med): LOW	Date Received:	10/17/2008
<pre>% Solids:</pre>	0.0		

### Concentration Units (ug/L or mg/kg dry weight):

UG/L

EPA SAMPLE NO.

CAS No.	Analyte	Concentration	с	Q	м
57-12-5	Amen Cyanide	399		D	AS

Color Before:	COLORLESS	Clarity Before:	CLEAR	Texture:	
Color After:	COLORLESS	Clarity After:	CLEAR	Artifacts:	
Comments:					
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![](_page_34_Picture_0.jpeg)

Liberty Analytical Corp.

CRA 2055 NIAGARA FALLS BLVD. SUITE#3 NIAGARA FALLS NY, 14304		Proje Project Numb Project Manag	ect: 173 er: 173 er: DE	02-E06103 02-E06103 BORAH A	12 GM EN 12 GM EN NDRASE	NCORE GW NCORE GW KO	<b>Reported:</b> 10/30/2008 13:05				
		WPW1 081011	01608 8-01 (N	JD001 Vater)							
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method			
		COM	PUCH	IEM							
WET CHEMISTRY PARAMETERS											
Hexavalent Chromium	28307.60	5000.000	ug/L	500	8103015	10/30/2008 12:50	10/30/2008 12:52	SM 3500CR D			

Hexavalent Chromium

COMPUCHEM

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CLIENT SAMPLE NO.

	VOLATILE	ORGANICS ANALYSI	S DATA SHEET	I		- 1
Lab Nam	e: COMPUCHEM		Method: 8260F	WPW1	.01608JD001	
Ish Cod		Cago No .				. I
	e: LIBRII	Case NO.:	5A5 NO.:	SDG NO.:	0810118	
Matrix:	(soil/water)	WATER	Lab Sa	ample ID: 081	_0118-01	
Sample	wt/vol:	25 (g/ml) ML	Lab Fi	ile ID: 081	.0118-01R73	
Level:	(low/med)	LOW	Date F	Received: 10/	17/08	
% Moist	ure: not dec.		Date A	Analyzed: 10/	'18/08	
GC Colu	mn: SPB-624	ID: 0.32 (mm)	Diluti	ion Factor: 1	0	
Soil Ex	tract Volume:	(uL)	Soil A	Aliquot Volum	ne:	uL
	<b>a a b a</b>		CONCENTRATIC	ON UNITS:	-	
1	CAS NO.	COMPOUND	(ug/L or ug/	/Kg) UG/L	Q	
	75 - 71 - 8 74 - 87 - 3 75 - 01 - 4 75 - 00 - 3 75 - 00 - 3 75 - 15 - 09 - 4 75 - 15 - 09 - 2 75 - 09 - 2 75 - 09 - 2 75 - 09 - 2 75 - 09 - 2 75 - 09 - 2 75 - 34 - 3 75 - 34 - 3 75 - 34 - 3 75 - 34 - 3 75 - 34 - 3 75 - 34 - 3 75 - 34 - 3 75 - 34 - 3 75 - 34 - 3 75 - 34 - 3 75 - 34 - 3 75 - 34 - 3 75 - 34 - 3 75 - 55 - 6 75 - 55 - 6 75 - 56 - 23 - 5 71 - 43 - 2 71 - 43 - 2 71 - 43 - 2 79 - 01 - 6 79 - 01 - 6 108 - 10 - 10 - 5 108 - 10 - 10 - 5 108 - 10 - 10 - 5 108 - 10 - 10 - 5 108 - 10 - 10 - 5 108 - 10 - 10 - 5 108 - 10 - 10 -	Dichlorodifluo Chloromethane Vinyl Chloride Bromomethane Trichlorofluor Trichlorofluor I,1-Dichloroet Carbon disulfi 1,1,2-trichlor Acetone Methyl acetate Methyl acetate Methyl-tert-bu trans-1,2-Dichlor trans-1,2-Dichlor Chloroform 1,1,1-Trichlor Chloroform 1,2-Dichloroet Benzene 1,2-Dichloroet Trichloroethen 1,2-Dichloropr Bromodichlorom cis-1,3-Dichlor Toluene Toluene Tetrachloroeth Tetrachloroeth 2-hexanone Dibromochlorom	romethane omethane hene de oo-1,2,2-triflu ride loroethene hane roethene oethane loride hane oethane e opane ethane tanone loropropene tanone ene ethane ene ethane	0.5 0.5 0.1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0       U         4       J         0       U         4       J         0       U         0	
		FORM I	VOA		I I	

10

CLIENT SAMPLE NO.

VOLATILE	ORGANICS ANALYSIS	S DATA SHEET		
Lab Name: COMPUCHEM		Method: 8260B	WPW101	1608JD001
Lab Code: LIBRTY	Case No.:	SAS No.:	SDG No.: (	0810118
Matrix: (soil/water)	WATER	Lab Sample	e ID: 08101	118-01
Sample wt/vol:	25 (g/ml) ML	Lab File I	D: 08101	118-01R73
Level: (low/med)	LOW	Date Recei	ved: 10/17	7/08
% Moisture: not dec.		Date Analy	vzed: 10/18	3/08
GC Column: SPB-624	ID: 0.32 (mm)	Dilution H	actor: 1.0	0
Soil Extract Volume:	(uL)	Soil Aliqu	ot Volume:	:(uI
CAS NO.	COMPOUND	CONCENTRATION UN (ug/L or ug/Kg)	NITS: UG/L	Q
106 - 93 - 4	1,2-Dibromoetha Chlorobenzene Ethylbenzene m,p-Xylene o-Xylene Styrene Styrene Isopropyl Benze 1,2,2-Tetrach 1,2-Dichlorober 1,2-Dichlorober 1,2,4-Trichloro Xylene (total) Cyclohexane Methylcyclohexa	ene	0.50 0.50 1.0 0.50 0.50 0.50 0.50 0.50 0	מממלמממממממ

CLIENT SAMPLE NO.

						-1
Lab Name: COMPUCHEM		Method: 8260B		WQ101	L608CC001	_
Lab Code: LIBRTY (	Case No.:	SAS No.:	SDG	No.: 0	810118	
Matrix: (soil/water)	WATER	Lab Sam	ple ID:	08101	18-02	
Sample wt/vol:	25 (g/ml) ML	Lab Fil	e ID:	08101	L18-02R73	
Level: (low/med)	LOW	Date Re	ceived:	10/17	7/08	
% Moisture: not dec.		Date An	alyzed:	10/18	8/08	
GC Column: SPB-624	ID: 0.32 (mm)	Dilutic	n Facto	or: 1.0	)	
Soil Extract Volume:_	(uL)	Soil Al	iquot V	olume:	:	_(uL
CAS NO.	COMPOUND	CONCENTRATION (ug/L or ug/K	UNITS: g) UG/L	I	Q	
$\begin{array}{c} 75-71-8\\ 74-87-3\\ 75-01-4\\ 75-00-3\\ 75-69-4\\ 75-35-4\\ 75-15-0\\ 75-15-0\\ 75-15-0\\ 75-13-1\\ 75-09-2\\ 75-09-2\\ 75-09-2\\ 75-09-2\\ 75-34-3\\ 1634-04-4\\ 75-34-3\\ 1634-04-4\\ 75-34-3\\ 75-34-3\\ 75-34-3\\ 75-34-3\\ 75-34-3\\ 75-34-3\\ 75-34-3\\ 75-34-3\\ 75-34-3\\ 75-23-5\\ 78-93-3\\ 75-23-5\\ 78-93-3\\ 79-01-6$	Dichlorodifluor Chloromethane Vinyl Chloride Bromomethane Chloroethane Trichlorofluoro 1,1-Dichloroeth Carbon disulfid 1,1,2-trichloro Acetone Methyl acetate Methyl acetate Methyl-tert-but I,1-Dichloroeth cis-1,2-Dichlor 2-butanone Chloroform 1,1,1-Trichloro Carbon Tetrachl Benzene 1,2-Dichloroethene 1,2-Dichloropro Bromodichlorome cis-1,3-Dichlor 4-Methyl-2-pent Trichloroethene trans-1,3-Dichlor trans-1,3-Dichloroethe	romethane		0.50 0.50		

FORM I VOA

CLIENT SAMPLE NO.

VOLATILE	ORGANICS ANALYSIS	S DATA SHEET			
			WQ101	1608CC001	
Lab Name: COMPUCHEM		Method: 8260B			_1
Lab Code: LIBRTY	Case No.:	SAS No.:	SDG No.: (	0810118	
Matrix: (soil/water)	WATER	Lab Sample	ID: 08101	L18-02	
Sample wt/vol:	25 (g/ml) ML	Lab File I	D: 08103	L18-02R73	
Level: (low/med)	LOW	Date Recei	ved: 10/17	7/08	
% Moisture: not dec.		Date Analy	zed: 10/18	3/08	
GC Column: SPB-624	ID: 0.32 (mm)	Dilution F	actor: 1.0	C	
Soil Extract Volume:	(uL)	Soil Aliqu	ot Volume		_(uL
CAS NO.	COMPOUND	CONCENTRATION UN (ug/L or ug/Kg)	ITS: UG/L	Q	
106 - 93 - 4	1,2-Dibromoetha Chlorobenzene Ethylbenzene m,p-Xylene o-Xylene Styrene Bromoform Isopropyl Benze 1,1,2,2-Tetrach 1,3-Dichlorober 1,4-Dichlorober 1,2-Dichlorober 1,2-Dichlorober 1,2-Dibromo-3-C 1,2,4-Trichloro Xylene (total) Cyclohexane Methylcyclohexa	ane	0.50 0.50 1.0 0.50	<u>a</u> aaaaaa aaaaaaa aaaaaaa aaaaaaaa aaaaaa	

FORM I VOA

[D # N <u>2</u> 00177 SSOW Ref. Codu: Eるノのノス	C) CO ICLE PH	CS10118-02								TION DATE TIME	1 / 60 mpublic 10-17.08 0920	Bassert Date: 10-16-03
HENL Marison Nec Cory, Ne 27513 Dover TAT: 570 - 2 wess	TALMIN OH MEX CNROWIN VIEX CNROWIN VIEX CNROWIN NaOH NaOH	X X X X X X X								TIME RECEIVED BY / AFFILIA	B 1700 WNUM VI VEDRY	Sampler Name: Sampler Signature: Sampler Signature:
PAGE OF Laboratory: Complex C Laboratory Location: SOIN Laboratory Location: SOIN Requested Due Date: QA/QC Requirements: CLP LING	Matrix Code <sup>7</sup> Date Collected # Containers # Containers # Containers	X X 9 00 10 00 00 00 00 00 00 00 00 00 00 00			0					AFFILIATION DATE	we / EACTN / ECH D.16.0	
111: Report To: DER MN. J. o.2. B. K. 2. A Foils Copy To: 3. Invoice To: DER MN. D. a. K. 1. 4.3.0.4. Project Name F. M. C. D. R. K. 2. J. C. S. C. L. W. C. D. C. K. 2. J. C. S. C. L. W. C. D. C.	Valid Matrix Codes: WG Groundater WB Borchole Water WS Surface Water SS Surface Water SC Sediment SF Sediment See Back for Additional Cudes	28.5C. 001 W		BATCH	Complet				TOTAL	NO. OF COOLERS RELINQUISHED BY /	1995 680 1 24 Dune	Additional Comments:
Required Client Informati, Company: CIZA Address: 2055 Min6A BIM. See, TE: 4 Min6.01.0. Falls, NY Phone: 715-297-6 Fax: E-mail: Landras	Sample Identification:	1. 200.10/6	3.	<u>و</u> در	8.	9. 10.	11.	13.	15.	SHIPMENT METHOD	FEDEX AIRBILL NO. 8682	Sample Condition       Temp in 'C     •100       Received on Ice     0/ N       Sealed Coolcr     0/ N       Samples Intact     0/ N

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CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LIGAL DOCUMENT. All relevant fields must be completed accurately.

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### SW846 - METALS -1-

### **INORGANIC ANALYSES DATA SHEET**

		INONGAIN	CANALISES DATA SHEET	EPA SAMPLE NO.
				WPW102908JD001
Lab Name:	COMPUCHEM		Contract:	
Lab Code:	LIBRTY	Case No.:	SAS No.:	SDG No.: 0810270
Matrix (soi	l/water):	WATER	Lab Sample ID:	0810270-01
Level (low/	med): $LO$	W	Date Received:	10/30/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight):

UG/L

CAS No.	Analyte	Concentration	с	Q	м
7429-90-5	Aluminum	5060		E	P
7440-36-0	Antimony	8.7	В		P
7440-38-2	Arsenic	27.2			P
7440-39-3	Barium	103	В	E	P
7440-41-7	Beryllium	0.35	שן		P
7440-43-9	Cadmium	0.40	U	ļ	P
7440-70-2	Calcium	123000		ŀ	P
7440-47-3	Chromium	10400			P
7440-48-4	Cobalt	10.8			P
7440-50-8	Copper	754			P
7439-89-6	Iron	4170		E	P
7439-92-1	Lead	7.2			P
7439-95-4	Magnesium	44700			P
7439-96-5	Manganese	244			P
7439-97-6	Mercury	0.10	ש		cv
7440-02-0	Nickel	205		E	P
7440-09-7	Potassium	142000	1		P
7782-49-2	Selenium	4.7	שן		P
7440-22-4	Silver	0.63	ש		P
7440-23-5	Sodium	165000			P
7440-28-0	Thallium	5.0	U		P
7440-62-2	Vanadium	11.3	в		P
7440-66-6	Zinc	38.4			P
57-12-5	Cyanide	932		D	AS

Color Before:	YELLOW	Clarity Before:	CLEAR	Texture:	
Color After:	YELLOW	Clarity After:	CLEAR	Artifacts:	
Comments:					
-					

### SW846 - METALS -1-

### INORGANIC ANALYSES DATA SHEET

		IIIORGANIC ANALISES DATA SHEE	EPA SAMPLE NO.
			WPW102908JD001
Lab Name:	COMPUCHEM	Contract:	
Lab Code:	LIBRTY Case No.	SAS No.:	SDG No.: 0810270A
Matrix (soi	l/water): WATER	Lab Sample I	D: 0810270-01
Level (low/	med): LOW	Date Receive	d: <u>10/30/2008</u>
% Solids:	0.0		

Concentration Units (ug/L or mg/kg dry weight):

UG/L

CAS No.	Analyte	Concentration	С	Q	м
57-12-5	Amen Cyanide	71.9	_		AS

Color Before:	COLORLESS	Clarity Before:	CLEAR	Texture:	
Color After:	COLORLESS	Clarity After:	CLEAR	Artifacts:	
Comments:					
_					
-					
-					
-					

![](_page_42_Picture_0.jpeg)

CRAProject:17302-E061012 GM ENCORE GW2055 NIAGARA FALLS BLVD. SUITE#3Project Number:17302-E061012 GM ENCORE GWNIAGARA FALLS NY, 14304Project Manager:DEBORAH ANDRASKO11/11/2008 10:1						<b>Reported:</b> /11/2008 10:18		
WPW102908JD001 0810270-01 (Water)								
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method

**COMPUCHEM** 

500

8110335

10/30/2008 11:30

WET CHEMISTRY PARAMETERS

**Hexavalent** Chromium

25588.96

5000.000

ug/L

10/30/2008 12:40

SM 3500CR D

COMPUCHEM

The results in this report apply to the samples analyzed in accordance with the chain of  $\label{eq:constraint}$ custody document. This analytical report must be reproduced in its entirety.

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![](_page_44_Picture_0.jpeg)

2055 Niagara Falls Blvd., Suite #3 Niagara Falls, New York 14304 Telephone: (716) 297-6150 Fax: (716)297-2265 www.CRAworld.com

### MEMORANDUM

To:	John Bassett [john.bassett@earthtech.com]	REF. NO.:	017302 [17307-061012]
From:	Deb Andrasko/bjw/19	DATE:	December 11, 2008
C.C.:	Shannon Richardson	<u>E-Mail and Ha</u>	ard Copy if Requested
RE:	Data Quality Assessment and Validation Demolition Sampling - Waters General Motors – MLK Boulevard Facility Anderson, Indiana October 2008		

The following details a quality assessment and validation of the analytical data resulting from the collection of groundwater samples from the General Motors Vehicle Manufacturing Plant (GM) in Anderson, Indiana, in October 2008. The sample summary detailing sample identification, sample location, and analytical parameters is presented in Table 1. Sample analyses were performed at CompuChem, in Cary, North Carolina (CompuChem), in accordance with the methodologies presented in Table 2. The analytical results summary is provided in Table 3. The Quality Control (QC) criteria used to assess the data were established by the methods and following documents:

- i) "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", United States Environmental Protection Agency (USEPA) 540/R-99/008, October 1999; and
- "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", USEPA 540/R-094-013, February 1994; and.
- iii) Quality Assurance Project Plan (QAPP) for the Resource Conservation and Recovery Act (RCRA) Facility Investigation at GM Anderson, Indiana Facility, IND 980 700 801, Revision 2, October 14, 1997.

Full Contract Laboratory Program (CLP)-equivalent raw data deliverables were provided by the laboratory. The data quality assessment and validation presented in the following subsections were performed based on the sample results and supporting quality assurance/quality control (QA/QC) provided.

### Holding Time Period and Sample Analysis

The holding time periods are presented in the analytical methods. All samples were properly preserved and cooled to  $4^{\circ}C$  ( $\pm 2^{\circ}C$ ) after collection. All samples were prepared and analyzed within the method-required holding times with the exception of a hexavalent chromium sample. The associated result was qualified as estimated based on the potential low bias (see Table 4).

![](_page_44_Picture_11.jpeg)

### Gas Chromatography/Mass Spectrometer (GC/MS) Mass Calibration

Prior to analysis, GC/MS instrumentation is tuned to ensure optimization over the mass range of interest. To evaluate instrument tuning, the volatile organic compound (VOC) method requires the analysis of the specific tuning compound bromofluorobenzene (BFB). The resulting spectra must meet the criteria cited in the method before analysis is initiated. Analysis of the tuning compound must then be repeated every 12 hours throughout sample analysis to ensure the continued optimization of the instrument.

Instrument tuning data were reviewed. The tuning compound was analyzed at the required frequency throughout the VOC analysis. All tuning criteria were met for the analysis, indicating proper optimization of the instrumentation.

### Initial Calibration - Organic Analyses

Initial calibration data are used to demonstrate that each instrument is capable of generating acceptable quantitative data. A five point calibration curve containing all compounds of interest is analyzed to characterize instrument response for each over a specific concentration range.

Initial calibration criteria for organic analysis are evaluated against the following criteria:

- i) GC/MS (all compounds) must meet a minimum mean relative response factor (RRF) of 0.05; and
- ii) GC/MS (all compounds) the percent relative standard deviation (%RSD) values must not exceed 30.0 percent or a minimum coefficient of determination of 0.99 if quadratic equation calibration curves are used.

Initial calibration standards were analyzed as required and the data showed acceptable sensitivity and linearity, with the exception of the RRF for acetone. All associated results were either reported by the laboratory as non-detect or qualified as non-detect due to blank contamination and were qualified as rejected based on the indicated poor sensitivity (see Table 5).

### Initial Calibration - Metals Analyses

To calibrate the inductively coupled plasma (ICP), a calibration blank and at least one standard must be analyzed at each wavelength to establish the analytical curve. For mercury analyses, a calibration blank and a minimum of five standards must be analyzed to establish the analytical curve. Resulting correlation coefficient for the mercury curve must be at least 0.995.

After calibration, initial calibration verification (ICV) standard must be analyzed to verify the analytical accuracy of the calibration curves within a method-specific percent recovery of the accepted or true value.

A review of the data showed that all metals calibration curves and ICVs were analyzed at the proper frequencies and were within the acceptance criteria.

### Initial Calibration - General Chemistry Analyses

The general chemistry analyses of hexavalent chromium, total cyanide, and amenable cyanide were calibrated in accordance with the method and all calibration criteria were met.

### Continuing Calibration - Organic Analyses

To ensure that each instrument was capable of producing acceptable quantitative data over the analysis period, continuing calibration standards must be analyzed every 12 hours for GC/MS analyses. The following criteria are employed to evaluate the continuing calibration data:

- iii) GC/MS (all compounds) must meet a minimum mean RRF of 0.05; and
- iv) GC/MS (all compounds) the percent difference (%D) between the mean initial calibration RRF and the continuing calibration RRF must not exceed 20 percent.

Continuing calibration standards were analyzed at the required frequency and the results met the above criteria for instrument sensitivity and linearity of response with the exception of the %D for carbon disulfide. The associated sample result was qualified as estimated based on the indicated variability (see Table 6).

### Initial and Continuing Calibration Verification - Inorganics

Initial and continuing calibration verification criteria for inorganic analyses were the same criteria as used for assessing the initial calibration data. The calibration verification data were within the acceptance criteria.

### Method Blanks

Method blanks are prepared and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the procedures.

For this study, method blanks were analyzed at a minimum frequency of one per analytical batch. Most blank results were non-detect for the analytes of interest. Various metals and two volatile compounds were present in some of the blanks at low concentrations. All associated results with similar concentrations were qualified as non-detect (see Table 7). All non-detect results and results significantly greater than the blanks would not have been impacted.

### Surrogate Compound Percent Recoveries

In accordance with the method employed, all samples, blanks, and standards analyzed for VOCs are spiked with surrogate compounds prior to sample extraction and/or analysis. Surrogate recoveries provide a means to evaluate the effects of individual sample matrices on analytical efficiency and are assessed against method control limits.

All surrogate recoveries were within the laboratory generated control limits, demonstrating acceptable analytical accuracy.

### Internal Standard (IS) Summaries

To correct for changes in GC/MS response and sensitivity, IS compounds are added to investigative samples and QC samples prior to VOC analyses. All results are calculated as a ratio of the IS response. The criteria by which the IS results are assessed are as follows:

- i) IS area counts must not vary by more than a factor of two (-50 percent to +100 percent) from the associated calibration standard; and
- ii) the retention time of the IS must not vary more than ±30 seconds from the associated calibration standard.

All sample IS results met the above criteria and were correctly used to calculate sample results.

### Laboratory Control Sample (LCS) Analysis

The LCS serves as a measure of overall analytical performance. LCSs are prepared with all analytes of interest and analyzed with each sample batch. Some LCSs are prepared and analyzed in duplicate.

LCSs were prepared and analyzed for all parameters. The LCS recoveries were within the control limits for all analytes of interest, with the exception of a high mercury recovery for one of the LCS. The associated result was non-detect and would not be impacted by the indicated high bias.

### Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Analysis

To verify that proper inter-element and background correction factors have been established by the laboratory, ICSs are analyzed. These samples contain high concentrations of aluminum, calcium, magnesium, and iron and are analyzed at the beginning and end of each sample analysis period.

ICS analysis results were evaluated for all samples. All ICS recoveries were within the established control limits of 80 to 120 percent.

### Serial Dilution - Metals Analyses

The serial dilution determines whether significant physical or chemical interferences exist due to sample matrix. A minimum of one per 20 investigative samples is analyzed at a five-fold dilution. For samples with sufficient analyte concentrations, the serial dilution results must agree within 10 percent of the original results.

Serial dilution analyses were performed on the investigative samples and all results were within the method criteria with the exception of iron, aluminum, nickel and barium. The associated sample results were qualified as estimated due to the implied variability (see Table 8).

### Field QA/QC

The field QA/QC consisted of one trip blank sample.

### Trip Blank – VOCs

Trip blanks are transported, stored, and analyzed with the investigative samples to identify potential cross-contamination of VOCs. One trip blank was collected. All results were non-detect for the analytes of interest with the exception of low concentrations of acetone and methylene chloride. All associated samples with similar results were previously qualified as non-detect (see method blank section).

### Analyte Quantitation

The reported quantitation results were checked to ensure results reported were accurate. The sample identified in Table 1 was reviewed. No discrepancies were found between the raw data and the sample results reported by the laboratory.

Some of the samples had hexavalent chromium results significantly higher than the total chromium results. It was observed that the samples were highly colored and most likely adversely affected the hexavalent chromium analyses as the method is a colorimetric determination of concentration. The results for total chromium and hexavalent chromium were qualified as estimated to reflect the non-comparable results (see Table 9).

### System Performance

System performance between various QC checks was evaluated to monitor for changes that may have caused the degradation of data quality. The sample identified in Table 1 was reviewed. No technical problems were observed which require qualification of the data.

### Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision, based on the provided information, and may be used as reported with the qualifications and exception noted.

### SAMPLE COLLECTION AND ANALYSIS SUMMARY DEMOLITION SAMPLING - WATERS GENERAL MOTORS - MLK BOULEVARD FACILITY ANDERSON, INDIANA OCTOBER 2008

Hexavalent Chromium
Х
Х
Х

Notes:

TCL Target compound list.

VOCs Volatile organic compounds.

### SUMMARY OF ANALYTICAL METHODOLOGIES DEMOLITION SAMPLING - WATERS GENERAL MOTORS - MLK BOULEVARD FACILITY ANDERSON, INDIANA OCTOBER 2008

### Parameter

### Method

Metals (excluding mercury) Mercury Total and Amenable Cyanide Hexavalent Chromium TCL Volatiles SW-846 6010B <sup>1</sup> SW-846 7470A <sup>1</sup> SW-846 9010B/9012A <sup>1</sup> SM 3500CR <sup>2</sup> SW-846 8260B <sup>1</sup>

Notes:

1	"Test Methods for Solid Waste Physical/Chemical Methods",
	SW-846, 3rd Edition, September 1986 (with subsequent revisions).
2	"Standard Methods for the Examination of Water and Wastes", 17th Edition, 1989 (with updates).
TCL	Target Compound List.

### ANALYTICAL RESULTS SUMMARY

### DEMOLITIN SAMPLING - WATERS GENERAL MOTORS - MLK BOULEVARD FACILITY ANDERSON, INDIANA OCTOBER 2008

S	ample Location: Sample ID: Sample Date:	BAY M26 EXCAVATION WPW100608JD001 10/6/2008	BAY M26 EXCAVATION WPW101608JD001 10/16/2008	BAY M26 EXCAVATION WPW102908JD001 10/29/2008
Parameters:	Units			
Volatile Organic Compounds				
1,1,1-Trichloroethane	μg/L	-	0.5 U	-
1,1,2,2-Tetrachloroethane	μg/L	-	0.5 U	~
1,1,2-Trichloroethane	μg/L	-	0.5 U	-
1,1-Dichloroethane	μg/L	**	0.15 J	-
1,1-Dichloroethene	μg/L	-	0.5 U	-
1,2,4-Trichlorobenzene	µg/L	-	0.20 J	~
1,2-Dibromo-3-chloropropane (DBCP)	µg∕L	-	0.5 U	-
1,2-Dibromoethane (Ethylene Dibromide)	µg∕L	-	0.5 U	-
1,2-Dichlorobenzene	µg/L	-	0.11 J	-
1,2-Dichloroethane	μg/L	-	0.5 U	-
1,2-Dichloropropane	µg/L	-	0.5 U	-
1,3-Dichlorobenzene	µg/L	-	0.5 U	-
1,4-Dichlorobenzene	µg/L	-	0.5 U	-
2-Butanone (Methyl Ethyl Ketone)	µg∕L	-	2.5 U	-
2-Hexanone	μg/L	-	2.5 U	-
4-Methyl-2-Pentanone (Methyl Isobutyl Ket	one) µg/L	~	2.5 U	*
Acetone	µg/L	-	R	-
Benzene	μg/L	-	0.5 U	-
Bromodichloromethane	μg/L	-	0.5 U	-
Bromoform	μg/L	-	0.5 U	-
Bromomethane (Methyl Bromide)	µg∕L	-	0.5 U	-
Carbon disulfide	µg/L	-	0.5 UJ	-
Carbon tetrachloride	μg/L	-	0.5 U	-
Chlorobenzene	µg/L	-	0.5 U	*
Chloroethane	μg/L	-	0.5 U	-
Chloroform (Trichloromethane)	μg/L	-	0.5 U	-
Chloromethane (Methyl Chloride)	μg/L	-	0.5 U	-
cis-1,2-Dichloroethene	μg/L	-	1.8	-
cis-1,3-Dichloropropene	μg/L	-	0.5 U	-
Cyclohexane	μg/L	-	0.5 U	-
Dibromochloromethane	μg/L	-	0.5 U	-
Dichlorodifluoromethane (CFC-12)	µg/L	-	0.5 U	-
Ethylbenzene	μg/L	-	0.5 U	-
Isopropylbenzene	µg∕L	-	0.5 U	-
Methyl acetate	µg/L	-	0.5 U	-
Methyl cyclohexane	μg/L	-	0.5 U	-
Methyl Tert Butyl Ether	μg/L	-	0.5 U	~
Methylene chloride	µg/L	-	0.5 U	-
m-xylene	μg/L	-	1.0 U	~
o-Xylene	µg/L	~	0.5 U	-
Styrene	µg/L	-	0.5 U	-
Tetrachloroethene	µg/L	-	0.27 J	-
Toluene	μg/L	-	0.5 U	*
trans-1,2-Dichloroethene	μg/L	-	0.5 U	-
trans-1,3-Dichloropropene	μg/L	-	0.5 U	-
Trichloroethene	ug/L	-	0.35 J	-
Trichlorofluoromethane (CFC-11)	ug/L	-	0.5 U	-
Trifluorotrichloroethane (Freon 113)	ug/I.	-	0.5 U	-
Vinvl chloride	шσ/Т.	-	0.14 I	-
Xvlene (total)	ug/L	-	0.5 U	-
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### ANALYTICAL RESULTS SUMMARY

### DEMOLITIN SAMPLING - WATERS GENERAL MOTORS - MLK BOULEVARD FACILITY ANDERSON, INDIANA OCTOBER 2008

	Sample Location: Sample ID: Sample Date:	BAY M26 EXCAVATION WPW100608JD001 10/6/2008	BAY M26 EXCAVATION WPW101608JD001 10/16/2008	BAY M26 EXCAVATION WPW102908JD001 10/29/2008
Parameters:	Units			
Metals				
Aluminum	µg/L	1150 J	678	5060
Antimony	µg/L	1.8 U	1.9 U	8.7 U
Arsenic	μg/L	1.9 U	2.7 U	27.2
Barium	µg/L	167 J	61.4 J	103 J
Beryllium	µg/L	0.50 U	0.37 U	0.35 U
Cadmium	µg/L	0.23 U	0.40 U	0.40 U
Calcium	μg/L	194000	87700	123000
Chromium Total	μg/L	37900 J	21000 J	10400 J
Chromium VI (Hexavalent)	µg/L	73800 J	28300 J	25600 J
Cobalt	μg/L	16.6	18.7	10.8
Copper	µg/L	1450	378	754
Iron	μg/L	2130	951	4170 J
Lead	μg/L	5.0	5.4	7.2 U
Magnesium	µg/L	64400	24500	44700
Manganese	µg/L	297	73.0	244
Mercury	µg/L	0.17 J	0.10 U	0.10 U
Nickel	µg/L	195	153	205 J
Potassium	μg/L	223000	123000	142000
Selenium	µg/L	3.5	4.7 U	4.7 U
Silver	μg/L	1.9 J	0.99 J	0.63 U
Sodium	μg/L	194000	123000	165000
Thallium	µg∕L	11.1 U	5.0 U	5.0 U
Vanadium	μg/L	12.6 J	6.7 J	11.3 J
Zinc	μg/L	19.4 J	26.1	38.4
General Chemistry				
Cyanide (amenable)	μg/L	3440	399	71.9
Cyanide (total)	μg/L	3510	905	932

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Notes:

- Not analyzed.

J Estimated.

R Rejected.

U Not detected.

UJ Not detected, estimated reporting limit.

# **TABLE 4**

# QUALIFIED SAMPLE RESULTS DUE TO HOLDING TIME EXCEEDANCES DEMOLITION SAMPLING - WATERS GENERAL MOTORS - MLK BOULEVARD FACILITY ANDERSON, INDIANA OCTOBER 2008

Units	μg/L
Qualified Sample Results	28300 ]
Holding Time Criteria	24 hours
Holding Time	29 hours
Sample ID	WPW101608JD001
Parameter	Chromium VI (Hexavalent)

Notes: J Estimated.

# **TABLE 5**

# QUALIFIED SAMPLE RESULTS DUE TO OUTLYING INITIAL CALIBRATION RESULTS DEMOLITION SAMPLING - WATERS GENERAL MOTORS - MLK BOULEVARD FACILITY ANDERSON, INDIANA OCTOBER 2008

Units	µg/L
Qualified Sample Results	R
Associated Sample ID	WPW101608JD001
RRF	0.044
Calibration Date	10/13/08
Сотроинд	Acetone
Parameter	Volatiles

Notes: R Rejected. RRF Relative Response Factor.

# **TABLE 6**

# QUALIFIED SAMPLE RESULTS DUE TO OUTLYING CONTINUING CALIBRATION RESULTS DEMOLITION SAMPLING - WATERS GENERAL MOTORS - MLK BOULEVARD FACILITY ANDERSON, INDIANA OCTOBER 2008

Units	µg/L
Qualified Sample Results	0.50 UJ
Associated Sample ID	WPW101608JD001
$Q_{0/0}^{0/0}$	31
Сотроила	Carbon disulfide
Calibration Date	10/17/08
Parameter	Volatiles

Notes: %D UJ

- Percent difference. Not detected, estimated reporting limit.

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# QUALIFIED SAMPLE RESULTS DUE TO ANALYTE CONCENTRATIONS IN THE METHOD BLANKS DEMOLITION SAMPLING - WATERS GENERAL MOTORS - MLK BOULEVARD FACILITY ANDERSON, INDIANA OCTOBER 2008

Units	µg/L	µg/L	µg/L	μg/L μg/L	µg/L	µg/L
Qualified Sample Result	0.50 U	11.1 U	0.37 U	10 U 0.50 U	7.2 U	8.7 U
Sample ID	WPW100608JD001	WPW100608JD001	WPW101608JD001	WPW101608JD001 WPW101608JD001	WPW102908JD001	WPW102908JD001
Blank Result	0.567	7.1	0.40	2.1 J 0.23J	2.96	1.9
Analyte	Beryllium	Thallium	Beryllium	Acetone Methylene chloride	Lead	Antimony
Analysis Date	10/09/08	10/09/08	10/27/08	10/18/08	11/08/08	11/08/08
Parameter	Metals	Metals	Metals	Volatiles	Metals	Metals

Notes: U Not detected.

# **TABLE 8**

# QUALIFIED SAMPLES RESULTS DUE TO OUTLYING SERIAL DILUTIONS DEMOLITION SAMPLING - WATERS GENERAL MOTORS - MLK BOULEVARD FACILITY ANDERSON, INDIANA OCTOBER 2008

Sample ID	Analyte	% D	Control Limits	Associated Samples	Qualified Sample Results	Units
WPW100608JD001	Aluminum	22	10	WPW100608JD001	1150 J	μg/L
WPW102908JD001	lron Nickel Barium	19 14 18	10 10 10	WPW102908JD001 WPW102908JD001 WPW102908JD001	4170 J 205 J 103 J	µg/L µg/L µg/L

Notes: %D Percent difference. J Estimated.

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### QUALIFIED ANALYTICAL DATA DUE TO NON-COMPARABLE RESULTS DEMOLITION SAMPLING - WATERS GENERAL MOTORS - MLK BOULEVARD FACILITY ANDERSON, INDIANA OCTOBER 2008

Sample ID	Analyte	Qualified Result	Units
WPW100608JD001	Chromium VI (Hexavalent)	73800 J	μg/L
	Chromium Total	37900 J	μg/L
WPW101608JD001	Chromium VI (Hexavalent)	28300 J	μg/L
	Chromium Total	21000 J	μg/L
WPW102908JD001	Chromium VI (Hexavalent)	25600 J	μg/L
	Chromium Total	10400 J	μg/L

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Notes:

J Estimated.