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8 February 1999

Mr. James Innes
Michigan Department of Environmental Quality
Shiawassee District Headquarters
10650 Bennett Drive
Morrice, MI 48857-9792

Re: Nature of the of Shallow Water-bearing Zone
Linden Road Landfill Site
Flint Township, Genesee County, MI

Dear Mr. Innes:

Following your recent request to Mr. Robert Metcalf of General Motors (GM), Roy F. Weston, Inc. (WESTON®), on behalf of GM, has prepared this response to clarify the nature of the shallow water-bearing zone present at the Linden Road site. It is our understanding that the Michigan Department of Environmental Quality (MDEQ) has requested this information particularly in reference to monitoring well MW-03S located along the southern boundary of the site.

The shallow water-bearing zone was identified and defined during WESTON's site investigations conducted May 1991 (WESTON, March 1992) and subsequent installations of additional shallow monitoring wells as well as Geoprobe investigations (WESTON, December 1996).

WESTON's investigations determined that the shallow water-bearing zone consisting of medium-grained sand and little gravel with clay, exists at depths of 5 to 10 feet below ground surface (bgs). The thickness of this zone ranges from 0 to 6 feet and is underlain by a thick (8 to 13 feet) low permeability silty clay layer that is continuous across the site. The shallow water-bearing zone, when encountered, produced very little water, sometimes not yielding enough sample volumes to perform all required analyses. In October 1996, at the request of MDEQ additional groundwater samples from the above-referenced zone were collected using a Geoprobe unit at locations representative of the interior of the site. During this attempt the shallow water-bearing zones were either absent or were present with little or no water present at several locations confirming that this zone is not widespread across the site.

As indicated in the well construction diagram for monitoring well MW-3S (WESTON, March 1992, Appendix C), the shallow water-bearing zone is approximately a foot in thickness and consisted of silty clay which is not consistent with the sand and gravel zone typical of the shallow water-bearing zone encountered at other locations within the site.

Based on its thickness, inability to produce sufficient water, and its discontinuous nature across the site the shallow water-bearing zone is considered only as a low-yielding perched water-

bearing zone and not an aquifer. The lithology of the shallow water-bearing zone encountered at MW-03S also confirms the localized and variable nature of this perched zone.

If you have any questions or require additional information, please call me at (847) 918-4018.

Very truly yours,

ROY F. WESTON, INC.

S. Babusukumar, P.G.
Project Manager

SB/sr

cc: Robert Metcalf, GM

GEOLOGIC DRILL LOG

PROJECT NAME AND LOCATION	PAGE NO.	HOLE NO.
GM/Linden Road Landfill, Flint, Michigan	1 of 1	MW-3S

START	FINISH	DRILLER	DRILL METHOD	BOREHOLE DIAMETER	WELL DIAMETER	TOTAL DEPTH
5/15/91	5/15/91	John Mathes Env.	4.25 HSA	8"	2"	12.50'

LOGGER	TOP of CASING ELEV.	GROUND ELEVATION	DEPTH/ELEVATION GROUNDWATER - DATE MEASURED
Chris Krumm	753.16		3.30'/' 5/30/91

SAMPLE NO.	SAMPLE TYPE	RECOVERY "	SAMPLE BLOWS*	ELEV	DEPTH	DESCRIPTION	OVA readings (in units) BZ: Breathing Zone BH: Borehole SP: Sample
1	SS	33	3 4 5 2		1	**TOPSOIL:** Black, with little organic material.	SP = <1
2	SS	44	2 1 3 4		2	**SILT:** Black, with little organic material.	SP = <1
					3	**SILTY CLAY:** Black, with little organic material.	
3	SS	55	1 1 1 2		4	**CLAYEY SILT:** Gray to red mottling.	SP = <1
					5		
4	ST	100			6	**SILTY CLAY:** Gray, trace sand and gravel.	SP = <1 SHELBY TUBE, LR-SO-MW03S-0608
					7		
5	SS	55	3 5 5 7		8		SP = <1
					9		
6	SS	44	1 2 2 5		10		
					11		
					12		COMPOSITE SAMPLE, LRSO-MW03S-0312

*ASTM D1586
SS = SPLIT SPOON ST = SHELBY TUBE
D = DENNISON C = CORE CS = CONTINUOUS SAMPLER
CT = CUTTINGS BA = BUCKET AUG.

GM/Linden Road Landfill
Flint, Michigan

PAGE NO. 1 of 1 HOLE NO. MW-3S