MR. L. ZELEWSKI

Gen. Co.

CHEVROLET Central Office

October 1, 1982

Mr. I. Ted Gillinat, Supervisor
Charter Township of Flint
1490 South Dye Road
Flint, Michigan 48504

Dear Mr. Gallinat:

This letter is in response to your request at our meeting with you on September 17, 1982, respecting the Linden Road Landfill. As was indicated to you, Chevrolet has made a complete hydrogeological investigation of the site, installed monitoring wells, made backhoe excavations to identify fill material, and prepared a land reclamation study.

The hydrogeological investigation consisted of eleven soil borings, nine of which were converted to monitor wells. Subsurface materials consisted primarily of clay/tills having very low permeabilities. No usable aquifers were found in any of the soil borings and thus the potential for off-site contamination of groundwater was deemed minimal by Keck.

Attached are copies of pages of the Keck report completed in January 1980, relating to the history, location, topography, surface drainage, soils, geology, auger borings/monitor wells, hydrogeology, water quality, and adjacent land use of the Linden Road Landfill.

The following relates to groundwater quality and has been updated to include additional sampling completed in July 1982:

> Monitor well samples were collected on July 27, 1982. Analytical results are attached. Comparison shows that the levels of zinc, lead, iron, copper, chromium, cadmium, and arsenic are no longer at elevated levels. We attribute the higher values in 1979 to turbidity from the new well installations and new galvanized well casing. We are of the opinion that the 1982 samples more accurately reflect actual groundwater conditions.

The backhoe excavations performed by Gilbert/Commonwealth at twelve (12) sites to depths ranging from 4 to 12 feet indicated several soil layers which included silt, sand, and clay till. Clay till appears to be the dominant material encountered. The fill material was described as cinder-like material, grinding wastes, large chunks of stone, bricks, and concrete varying from 3 inches to 2 feet in size. Miscellaneous debris such as paper, rags, wood, metal strips, and glass were also noted.

-Continued-

In summary, the data collected so far confirms the Keck conclusions that the potential for off-site contamination of groundwater is minimal.

Respecting a site visit, this can be arranged at a mutually convenient time. Please contact the writer to make arrangements.

Should you have questions or wish to discuss the report, please call me at (313) 492-1138. We appreciate the opportunity to discuss this site with you.

Sincerely,

G. E. CALHOUN, Staff Engineer
Environmental Management Systems
Manufacturing Facilities,
Research & Development

GEC/nrm
M/CHS39

Attachment

cc: Zolton B. Phillips, Genesee County Health Dept.
Gordon Walter, Flint Township
L. Zelewski, Michigan DNR

bcc: J. P. Chu
W. Pulley

LINDEN RD. MONITORING WELLS.

TEST	7-29-1982 1D	7-29-1982 1S	7-29-1982 2D	7-29-1982 2S
PH ( )	10.05000	9.75000	10.45000	10.08000
TDS (PPM)	280.00000	426.00000	304.00000	180.00000
PHEN (PPB)	44.00000	(4.00000)	26.00000	34.00000
PCB (PPB)	(.10000)	(.10000)	(.10000)	(.12000)
NO3 (PPM)				
CL (PPM)	10.00000	12.80000	23.00000	2.50000
CN (PPB)	(20.00000)	(20.00000)	(20.00000)	(20.00000)
F (PPM)	1.25000	.30000	.64000	.35000
SO4 (PPM)	85.00000	250.00000	13.80000	11.00000
AS (PPM)	(.01000)	(.01000)	(.01000)	(.01000)
BA (PPM)	(.05000)	(.05000)	(.05000)	(.05000)
CD (PPM)	(.01000)	(.01000)	(.01000)	(.01000)
CR (PPM)	(.05000)	(.05000)	(.05000)	(.05000)
CU (PPM)	(.02000)	(.02000)	(.02000)	(.02000)
FE (PPM)	.07000	.03000	(.03000)	(.03000)
PB (PPM)	.00700	(.00500)	(.00500)	.01200
HG (PPB)				
NI (PPM)	(.04000)	(.04000)	(.04000)	(.04000)
SE (PPM)	(.01000)	(.01000)	(.01000)	(.01000)
AG (PPM)	(.01000)	(.01000)	(.01000)	(.01000)
ZN (PPM)	.10000	.20000	.14000	.07000

FACILITIES

TEST	7-29-1982 3D	7-29-1982 3S	7-29-1982 4D	7-29-1982 5D
PH ( )	9.87000	-	10.23000	9.59000
TDS (PPM)	240.00000	372.00000	282.00000	154.00000
PHEN (PPB)	34.00000	34.00000	174.00000	6.00000
PCB (PPB)	(.10000)	-	(.13000)	(.10000)
NO3 (PPM)				
CL (PPM)	4.50000	83.50000	10.00000	3.50000
CN (PPB)	(20.00000)	(20.00000)	22.00000	(20.00000)
F (PPM)	1.20000	.28000	2.45000	2.10000
SO4 (PPM)	21.00000	37.00000	3.00000	7.50000
AS (PPM)	(.01000)	(.01000)	(.01000)	(.01000)
BA (PPM)	(.05000)	(.05000)	(.05000)	(.05000)
CD (PPM)	(.01000)	(.01000)	(.01000)	(.01000)
CR (PPM)	(.05000)	(.05000)	(.05000)	(.05000)
CU (PPM)	(.02000)	.02000	(.02000)	(.02000)
FE (PPM)	(.03000)	(.03000)	(.03000)	.05000
PB (PPM)	.00500	(.00500)	.03500	(.00500)
HG (PPB)				
NI (PPM)	(.04000)	(.04000)	(.04000)	(.04000)
SE (PPM)	(.01000)	(.01000)	(.01000)	(.01000)
AG (PPM)	(.01000)	(.01000)	(.01000)	(.01000)
ZN (PPM)	.01000	.06000	.26000	.10000

TEST	7-29-1982 6D	7-29-1982 7D	7-29-1982 8D
PH ( )	10.22000	10.55000	9.70000
TDS (PPM)	492.00000	224.00000	184.00000
PHEN (PPB)	26.00000	38.00000	14.00000
PCB (PPB)	(.10000)	(.10000)	(.10000)
NO3 (PPM)			
CL (PPM)	22.50000	4.50000	2.50000
CN (PPB)	(20.00000)	(20.00000)	(20.00000)
F (PPM)	.45000	1.90000	1.40000
SO4 (PPM)	12.50000	12.00000	11.00000
AS (PPM)	(.01000)	(.01000)	(.01000)
BA (PPM)	(.05000)	(.05000)	(.05000)
CD (PPM)	(.01000)	(.01000)	(.01000)
CR (PPM)	(.05000)	(.05000)	(.05000)
CU (PPM)	(.02000)	(.02000)	.03000
FE (PPM)	(.03000)	(.03000)	(.03000)
PB (PPM)	(.00500)	(.00500)	(.00500)
HG (PPB)			
NI (PPM)	(.04000)	(.04000)	(.04000)
SE (PPM)	(.01000)	(.01000)	(.01000)
AG (PPM)	(.01000)	(.01000)	(.01000)
ZN (PPM)	.01000	.12000	.06000

PPM = MG/L FOR WATER -- MG/KG FOR SLUDGE