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SOILS & GROUNDWATER INVESTIGATION

RAILROAD DRIVE-IN CLEANERS

3180 Lawson Blvd.
Oceanside, NY 11752

Prepared by:

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KB:KLB1
88-069-01

Field sampling results for tetrachloroethylene are summarized in Table 4.1. Well MW-3 shows clear contamination at the location of the former UST with the dry cleaning solvent used by Railroad Drive-In Cleaners. Lower readings were obtained in adjacent well MW-2.

TABLE 4.1

SUMMARY OF ANALYTICAL RESULTS*

	Soil (5'-7') 12/22-29/1989	Groundwater 01/31/90	Groundwater 03/28/90
MW-1	ND	ND	ND
MW-2	10	ND	91
MW-3	265	126	10,000

***Figures are for tetrachloroethene and are in ppb.**

Other contaminants were also found. See the lab reports, Appendices 'C', 'D', and 'E'.

5.0 GROUNDWATER QUALITY

On January 31 and March 28, 1990, **RDG** personnel completed the collection of groundwater samples from the three (3) site monitoring wells. The groundwater samples and a field bank were analyzed by a New York State certified laboratory for volatile organics according to EPA Method 601/602.

All samples were collected using PVC bailers. All bailers were decontaminated in the following manner:

- Alconox detergent wash
- Rinse with potable water
- Rinse with methanol
- Final rinse with distilled water

Contaminants likely to be found as constituents of fuel oil (i.e., toluene, ethylbenzene, and total xylene) were detected at soil boring B-4 at the four foot depth at levels of 210,000 , 42,000 , and 140,000 ppb, respectively. Benzene was found in groundwater on 1/31/90 (MW-3, 126 ppb) and 3/28/90 (6 ppb in MW-1 and 150 ppb in MW-2). The highest concentration of benzene was found in MW-2, the upgradient well. FOIL inquiries have been submitted to evaluate the possibility or likelihood of any contamination reaching the subject site from several of the oil companies operating terminals to the south. These results will be forwarded with appropriate comments when they become available.

Whereas, 1) three calculations yielded generally westerly flow directions; and 2) this general flow direction is consistent with

that expected when local geography is considered; and 3) the highest concentration was found in the well placed at the former tank location, we are taking the representative flow direction to be to the west. Thus, MW-2 serves as the upgradient well and well MW-1 appears to be placed slightly laterally. MW-3 appears to be located centrally within an area of contamination.

The volatile organic analyses indicate that tetrachloroethylene was found in wells MW-2 and MW-3 at levels in excess of any likely background level.

6.0 CONCLUSIONS

Based on the environmental investigation completed at the subject site, **RDG** has come to the following conclusions:

- The Phase I investigation identified contamination of the soil in the immediate vicinity of the former fuel oil storage tank in the rear with tetrachloroethylene and fuel oil components.
- Groundwater flows generally to the west, toward East Rockaway Channel.
- Groundwater contamination in the upper Glacial Aquifer has been observed at levels up to 10,000 ppb tetrachloroethylene. Highest concentrations were found in the well at the former location of the fuel oil UST.

- Some petroleum based contamination appears to be traveling with groundwater towards the subject site from off-site sources.
- Current well placement allows MW-2 to act as an upgradient well. MW-3 is located centrally at the origin of the plume.
- The nearest public supply wells are located to the north in Lister Park and on Maple Ave., Rockville Centre. These wells are all screened in the Magothy Aquifer.
- Contamination found during this investigation, although significant, poses no direct threat to the public health.
- Some contamination remains in both the saturated and unsaturated zones, despite the fact that some of this soil had been removed. See split spoon sampling results for MW-3, Appendix 'C'.

7.0 RECOMMENDATIONS

Based on results of the investigation, **Richard D. Galli, P.E., P.C.** recommends the following:

1) Install two additional monitoring wells to be placed in accordance with measured groundwater flow direction. These will be placed to the west of MW-3, and approximately 600 feet distant, depending on accessibility. These two wells will be placed several feet from each other. One will be screened to intersect the water table. The second will have a 10' screen placed approximately 40' below the water table. We propose to

screen the deeper well such that the bottom of the screen is placed approximately two feet into the "20 foot clay" believed to underlie the site, so as to intercept any contamination confined by this layer. These two wells will be considered to be the fourth (downgradient) well referred to in the Phase II workplan.

2) Removal of approximately 4-5 cubic yards of additional soil in the vicinity of MW-3. This quantity is limited due to the proximity to groundwater.

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VOLATILE ORGANICS: METHOD 601/602

Project No.: 9016798

Sample ID: MW-1
Lab Sample ID No.: 4249002
Sample Size: 5 ml

3/2 x /5.

Parameter(s)	Cas #	MDL (ug/l)	Found (ug/l)
Bromodichloromethane	75-27-4	1.0	ND
Bromoform	75-25-2	1.0	ND
Bromomethane	74-83-9	1.0	ND
Carbon Tetrachloride	56-23-5	1.0	2
Chlorobenzene	108-90-7	1.0	ND
Chloroethane	75-00-3	1.0	ND
2-Choroethylvinyl ether	100-75-8	1.0	ND
Chloroform	67-66-3	1.0	6
Chloromethane	74-87-3	1.0	ND
Dibromochloromethane	124-48-1	1.0	ND
1,2-Dichlorobenzene	95-50-1	1.0	ND
1,3-Dichlorobenzene	541-73-1	1.0	ND
1,4-Dichlorobenzene	106-46-7	1.0	ND
1,1-Dichloroethane	75-46-7	1.0	ND
1,2-Dichloroethane	107-06-2	1.0	1
1,1-Dichloroethene	75-35-4	1.0	ND
trans-1,2-Dichloroethene	156-60-5	1.0	ND
1,2-Dichloropropane	78-87-5	1.0	ND
cis-1,3-Dichloropropene	10061-01-5	1.0	ND
trans-1,3-Dichloropropene	10061-02-5	1.0	ND
Methylene Chloride	75-09-2	1.0	7 B
1,1,2,2-Tetrachloroethane	79-34-5	1.0	ND
Tetrachloroethene	127-18-4	1.0	ND
1,1,1-Trichloroethane	71-55-6	1.0	ND
1,1,2-Trichloroethane	79-00-5	1.0	ND
Trichloroethene	79-01-6	1.0	3
Trichlorofluoromethane	75-69-4	1.0	ND
Vinyl Chloride	75-01-4	1.0	9
Benzene	71-43-2	1.0	6
Toluene	108-88-3	1.0	ND
Ethyl Benzene	100-41-4	1.0	ND
Xylenes	1330-20-7	1.0	ND

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VOLATILE ORGANICS: METHOD 601/602

Project No.: 9016798

Sample ID: MW-2
Lab Sample ID No.: 4249003
Sample Size: 5 ml

Parameter(s)	Cas #	MDL (ug/l)	Found (ug/l)
Bromodichloromethane	75-27-4	1.0	ND
Bromoform	75-25-2	1.0	ND
Bromomethane	74-83-9	1.0	ND
Carbon Tetrachloride	56-23-5	1.0	1
Chlorobenzene	108-90-7	1.0	ND
Chloroethane	75-00-3	1.0	ND
2-Choroethylvinyl ether	100-75-8	1.0	ND
Chloroform	67-66-3	1.0	11
Chloromethane	74-87-3	1.0	ND
Dibromochloromethane	124-48-1	1.0	ND
1,2-Dichlorobenzene	95-50-1	1.0	ND
1,3-Dichlorobenzene	541-73-1	1.0	ND
1,4-Dichlorobenzene	106-46-7	1.0	ND
1,1-Dichloroethane	75-46-7	1.0	ND
1,2-Dichloroethane	107-06-2	1.0	0.7 J
1,1-Dichloroethene	75-35-4	1.0	3
trans-1,2-Dichloroethene	156-60-5	1.0	2
1,2-Dichloropropane	78-87-5	1.0	ND
cis-1,3-Dichloropropene	10061-01-5	1.0	ND
trans-1,3-Dichloropropene	10061-02-5	1.0	ND
Methylene Chloride	75-09-2	1.0	8 B
1,1,2,2-Tetrachloroethane	79-34-5	1.0	ND
Tetrachloroethene	127-18-4	1.0	91
1,1,1-Trichloroethane	71-55-6	1.0	ND
1,1,2-Trichloroethane	79-00-5	1.0	ND
Trichloroethene	79-01-6	1.0	76
Trichlorofluoromethane	75-69-4	1.0	ND
Vinyl Chloride	75-01-4	1.0	31
Benzene	71-43-2	1.0	150
Toluene	108-88-3	1.0	ND
Ethyl Benzene	100-41-4	1.0	ND
Xylenes	1330-20-7	1.0	ND

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VOLATILE ORGANICS: METHOD 601/602

Project No.: 9016798

Sample ID: MW-3
Lab Sample ID No.: 4249004
Sample Size: 5 ml

Parameter(s)	Cas #	MDL (ug/l)	Found (ug/l)
Bromodichloromethane	75-27-4	100.0	ND
Bromoform	75-25-2	100.0	ND
Bromomethane	74-83-9	100.0	ND
Carbon Tetrachloride	56-23-5	100.0	ND
Chlorobenzene	108-90-7	100.0	ND
Chloroethane	75-00-3	100.0	ND
2-Choroethylvinyl ether	100-75-8	100.0	ND
Chloroform	67-66-3	100.0	ND
Chloromethane	74-87-3	100.0	ND
Dibromochloromethane	124-48-1	100.0	ND
1,2-Dichlorobenzene	95-50-1	100.0	ND
1,3-Dichlorobenzene	541-73-1	100.0	ND
1,4-Dichlorobenzene	106-46-7	100.0	ND
1,1-Dichloroethane	75-46-7	100.0	ND
1,2-Dichloroethane	107-06-2	100.0	ND
1,1-Dichloroethene	75-35-4	100.0	ND
trans-1,2-Dichloroethene	156-60-5	100.0	2900
1,2-Dichloropropane	78-87-5	100.0	ND
cis-1,3-Dichloropropene	10061-01-5	100.0	ND
trans-1,3-Dichloropropene	10061-02-5	100.0	ND
Methylene Chloride	75-09-2	100.0	ND
1,1,2,2-Tetrachloroethane	79-34-5	100.0	ND
Tetrachloroethene	127-18-4	100.0	10000
1,1,1-Trichloroethane	71-55-6	100.0	ND
1,1,2-Trichloroethane	79-00-5	100.0	ND
Trichloroethene	79-01-6	100.0	1100
Trichlorofluoromethane	75-69-4	100.0	ND
Vinyl Chloride	75-01-4	100.0	ND
Benzene	71-43-2	100.0	ND
Toluene	108-88-3	100.0	ND
Ethyl Benzene	100-41-4	100.0	ND
Xylenes	1330-20-7	100.0	ND