Golder Associates Inc.

2221 Niagara Falls Boulevard, Suite 9
Niagara Falls, NY USA 14304
Telephone (716) 731-1560
Fax (716) 731-1652

Golder Associates

REPORT ON

SUBSURFACE INVESTIGATION
42-INCH SEWER LINE
VALEO MANUFACTURING FACILITY
1555 LYELL AVENUE
ROCHESTER, NEW YORK

Submitted to:

Valeo Wiper Systems
Wiper Systems & Electric Motors
North America Division One
3000 University Drive
Auburn Hills, MI 48326-2356

DISTRIBUTION:

3 Copies	-	Valeo Wiper Systems; Auburn Hills, Michigan
2 Copies	-	General Motors; Detroit, Michigan
1 Copy	-	Haley & Aldridge; Rochester, New York
1 Copy	-	Golder Associates Inc.; Buffalo, New York

May 1999

993-9211

Golder Associates Inc.

2221 Niagara Falls Boulevard, Suite 9
Niagara Falls, NY USA 14304
Telephone (716) 731-1560
Fax (716) 731-1652

May 20, 1999 993-9211

Valeo Wiper Systems
Wiper Systems & Electric Motors
North America Division One
3000 University Drive
Auburn Hills, MI 48326-2356

Attention: Mr. James R. Kolanek, CHMM

RE: REPORT ON SUBSURFACE INVESTIGATION
42-INCH SEWER LINE
VALEO MANUFACTURING FACILITY
1555 LYELL AVENUE
ROCHESTER, NEW YORK

Gentlemen:

Golder Associates Inc. (Golder) is pleased to submit this report on the subsurface investigation performed in March 1999, in the vicinity of the 42-inch diameter sewer line traversing the Valeo manufacturing facility at 1555 Lyell Avenue in Rochester, New York.

Golder appreciates the opportunity to provide professional engineering services to Valeo. If you have any questions regarding this report, please do not hesitate to call.

Very truly yours,

GOLDER ASSOCIATES INC.

Anthony L. Grasso, P.G.
Associate

Attachments

F/N: C:\Common\Projects\993-9211\Reports\finalrpt.doc

TABLE OF CONTENTS

1. INTRODUCTION

1.1 General

Golder Associates Inc. (Golder) is pleased to present this report on the recent subsurface investigation conducted at the Valeo manufacturing facility, located at 1555 Lyell Avenue, Rochester, New York. Golder conducted the subsurface investigation in the vicinity of the 42-inch diameter combination sanitary/storm/process wastewater sewer that extends from the Valeo facility north under Parking Area A and along Colfax Street. The 42-inch sewer discharges into a 60-inch public sewer line adjacent to Lyell Avenue (see Figure 1).

1.2 Background Information

In September 1998, Valeo's contractor visually inspected select sewers at the facility, which included a video tape recording of the inspection. The objective of the inspection was to determine if there were any obstructions that could account for sewer inundation that was experienced during storm events. No obstructions were observed, however, the 42-inch sewer was found to be deteriorated along the bottom portion of the pipe for the entire length of the sewer from the Valeo facility to the tie-in at the 60-inch sewer line along Lyell Avenue. The 42-inch sewer is reportedly installed in the top of bedrock at the facility. Bedrock ranges from approximately 8 to 10 feet below ground surface (bgs) under Parking Area A, then descends to approximately 17 feet bgs at the tie-in with the 60-inch sewer (Drawing M-1, dated Oct. 29, 1951, Manufacturing Building for Delco Appliance Division, Rochester, New York, Argonaut Realty Division, General Motors Corp.). Based on past investigation data collected at the facility, the water table in the area of the 42-inch sewer line was approximately 12 feet bgs (Haley & Aldrich, August 1996), and therefore, an outward hydraulic gradient may exist from the 42-inch sewer line to the groundwater table.

2. SUBSURFACE INVESTIGATION

2.1 General

Based on the conditions described above, it was realized that the potential existed for fluids in the sewer line to have migrated from the deteriorated sewer line into the bedrock aquifer. Because of this potential for sewer backfill material and/or groundwater to have been impacted, Golder developed a scope of work to evaluate this potential impact. Golder conducted the field portion of the subsurface investigation from March 25, 1999 through March 30, 1999. The investigation consisted of the installation of three groundwater monitoring wells installed in the upper portion of the bedrock aquifer at the facility near the southern portion of the sewer line in Parking Area A, as shown on Figure 1. Monitoring well MW-99-3 was placed approximately 100 feet east and upgradient of the sewer line and monitoring wells MW-99-1 and MW-99-2 were placed approximately 20 feet west and downgradient of the sewer line (see Figure 1).

These wells were installed to evaluate groundwater quality in the shallow bedrock aquifer in the vicinity of the sewer line. The location of the wells was selected near the southern portion of the sewer line because that is where the sanitary waste in the 42-inch sewer line receives process wastewater from the facility. This area is thought to be the location where the concentration of contaminants in the wastewater is highest, as dilution occurs further downstream from storm water entering the combined sewer.

In addition to the monitoring wells, four borings (designated B-99-1 through B-99-4) were advanced adjacent to the sewer line within the sewer line backfill materials. These borings, spaced approximately 130 feet apart (see Figure 1), were installed to evaluate the potential impact from the sewer line to these backfill materials.

Golder subcontracted Nothnagle Drilling as the drilling contractor; Columbia Analytical Services, Inc. as the analytical laboratory; and Wendel as the surveying contractor.

2.2 Drilling and Monitoring Well Installation

The monitoring wells were installed using a truck-mounted drill rig. Air rotary drilling was utilized for the bedrock monitoring wells. A 6-inch diameter downhole hammer was advanced through the overburden soil and into the bedrock to approximately 25 feet bgs (at MW-99-2, the overburden soil collapsed into the borehole, therefore, a temporary, 6-inch steel casing was advanced to the top of bedrock (approximately 10 feet bgs) and the borehole was washed out using water and air). Upon reaching termination depth, the drill rods were removed from the borehole and a 2-inch diameter PVC well with a 10-foot, number 10-slotted well screen was installed. A filter pack was installed around the screen extending from the base of the well to approximately two feet above the screen, followed by a bentonite seal, followed by cement-bentonite grout. Each well was then completed at ground surface by installing a flush-mount roadbox into concrete, with the well ID painted on the underside of the roadbox lid. The well riser caps were secured with a lock. The installation of MW-99-2 required approximately 150 gallons of grout compared to 50 gallons of grout for the installation of wells MW-99-1 and MW-99-3. The additional grout likely migrated into the overburden-bedrock interface, where the soils were observed to have collapsed during drilling. The well drilling and installation information for each well is presented on Field Boring Logs and Monitoring Well Installation Logs, in Appendix A.

Workspace air was routinely monitored during drilling and sampling activities for VOCs using an organic vapor survey instrument. Results of this monitoring were recorded on Air Monitoring forms, presented in Appendix B. The soil and water generated during drilling was containerized in 55-gallon drums that were staged at the Valeo facility. Following installation, the top of each monitoring well riser was surveyed for elevation and location, along with the elevation of the surrounding ground surface. Survey information is presented on the Monitoring Well Installation Logs (Appendix A).

2.3 Monitoring Well Development and Hydraulic Testing

The wells were developed by bailing a minimum of five well volumes from each well. Field measurements for pH, total dissolved solids, and temperature were stable by the completion of well development. Well development information was recorded on Well Development Field Records, which are presented in Appendix C. Well development was conducted a minimum of 12 hours after well installation. The pH measurements of the groundwater from MW-99-2 were elevated (~11.8 compared to ~7 for the other two wells). The elevated pH is most likely due to grout contamination; as noted previously, more grout (and filter sand) was required at MW-99-2 than at the other two wells because the more fractured nature of the soils and upper bedrock in the vicinity of this well allowed grout to penetrate further into the formation. The elevated pH should disappear as the grout cures. A precleaned, stainless steel dedicated bailer, attached to new, nylon rope, was used to develop each well. The water generated during development was contained in 55-gallon drums and staged at the Valeo facility.

Upon completion of development, a variable head test was conducted in each well to calculate the horizontal hydraulic conductivity of the rock formation adjacent to the well screen. The test involved removing a slug of water from the well bore with the dedicated bailer and monitoring the water level recovery in the well with an electronic water level indicator. Monitoring well variable head test results were recorded in the field and are presented in Appendix D.

2.4 Drilling of Borings Adjacent to Sewer Line

The borings along the sewer line were advanced using a truck-mounted drill rig with 2¼-inch inside diameter, hollow stem augers. The borings were positioned approximately 30 to 48 inches west of the centerline of the sewer line and advanced to refusal. The depth to the invert of the 42-inch sewer line was estimated at each boring location based on measured invert depths at two manholes located along the sewer line in Parking Area A. The invert depth ranged from approximately 12 feet bgs at B-99-1 to approximately 11 feet bgs at B-99-4. Soil samples were collected from 7 feet bgs to refusal, using a split

spoon soil sampler. An analytical laboratory analyzed the soil samples collected from the bottom of each borehole. Borings B-99-1 through B-99-3 were advanced to a depth that was estimated to be at the mid-point of the 42-inch sewer (not below the sewer invert elevation). Boring B-99-4 was advanced to a depth that was estimated to be below the invert elevation of the 42-inch sewer line.

Work space air was routinely monitored during drilling and sampling activities for VOCs, % LEL, and hydrogen sulfide using an organic vapor survey instrument and a tri-gas meter. Results of this monitoring were recorded on Air Monitoring forms, presented in Appendix B. Upon completion of drilling, the soil generated during drilling was containerized in 55-gallon drums and staged at the Valeo facility. The borehole was then grouted to within three inches of the surface and then capped with an asphalt patch material.

2.5 Groundwater Sampling and Groundwater Measurements

Groundwater from the three newly installed wells was sampled on March 27, 1999, using the same bailers and rope used to develop the wells. Sampling of the groundwater was performed after a minimum of 24 hours had passed after the wells were installed, with the exception of MW-99-2, which was sampled only after approximately 18.5 hours (necessary to meet the project schedule). Three well volumes were purged from the wells prior to sampling. A well volume is calculated based on the standing water column length in the well and the size of the well casing. The standing water column length is determined by subtracting the water level in the well from the depth of the well. The standing water column length is multiplied by 3.14 and the square of the well casing radius to arrive at the standing well volume. Sample Collection Information Forms documenting the groundwater sampling are presented in Appendix E.

Water level measurements from the newly installed wells were obtained during well development and hydraulic testing, prior to sampling, and several days after sampling of the wells. Water level measurements were obtained from the newly installed wells plus

existing wells MW-309-2 and MW-7, on March 30, 1999, three days after sampling of the new wells. These water level measurements are considered most representative of static water table conditions, as presented in Figure 1.

2.6 Chemical Analyses and Quality Assurance/Quality Control

The groundwater and soil samples collected during the investigation were analyzed for volatile organic compounds (VOCs) by USEPA Method 8260 and for priority pollutant metals (PP Metals) by USEPA Method 6000/7000 series. The samples were collected, handled, and submitted to the analytical laboratory under chain-of-custody procedures. Field Quality Assurance/Quality Control (QA/QC) samples included one field duplicate groundwater sample and one field equipment blank sample (of one of the precleaned bailers, collected prior to sampling) analyzed for VOCs and PP Metals. In addition, a trip blank was prepared by the laboratory and sent with the sample shuttle to the laboratory with the samples collected in the field. The trip blank was only analyzed for VOCs. Laboratory batch matrix spike and matrix spike duplicate samples were analyzed for both the groundwater samples and soil samples.

2.7 Decontamination

Golder's drilling subcontractor constructed a temporary decontamination pad at the facility. The drilling equipment was decontaminated prior to drilling, between boreholes, and at the completion of drilling. The water and solids generated during decontamination were containerized in 55-gallon drums and staged at the Valeo facility.

3. SUBSURFACE INVESTIGATION RESULTS

3.1 Air Monitoring

During drilling and sampling, air monitoring for VOCs, % LEL, and hydrogen sulfide using an organic vapor survey instrument and a tri-gas meter resulted in no readings above background. Also, Golder personnel did not notice any odors or visible signs of contamination.

3.2 Hydrogeology

Figure 1 presents the potentiometric surface and groundwater flow direction of the groundwater in the upper bedrock aquifer in the vicinity of the 42-inch sewer line. The direction of groundwater flow as determined from this investigation is toward the northwest. The groundwater flow direction observed at the facility during prior investigations were reportedly also toward the northwest in this section of the facility (Haley and Aldrich, August 1996). The depth to the invert of the 42-inch sewer line was estimated based on measured invert depths at two manholes located along the sewer line in Parking Area A. The invert depth ranged from approximately 12 feet bgs at boring B-99-1 to approximately 11 feet bgs at boring B-99-4. The depth to the water table ranged from approximately 9.5 feet bgs at well MW-99-2 (adjacent to boring B-99-4) to an estimated 14 feet bgs at boring B-99-1. The water table elevation observed in the area of the 42-inch sewer during the investigation was slightly higher (approximately 1 to 1.7 feet higher) than noted during past investigations (Haley and Aldrich, August 1996). Calculated hydraulic conductivity for the rock formation surrounding the monitoring wells ranges from a high of 8.95×10^{-4} cm/sec at well MW-99-2 to a low of 3.83×10^{-6} cm/sec at well MW-99-3 (see Appendix D).

3.3 Groundwater and Soil Chemistry

Results of the analytical testing were summarized and are presented in Tables 1 and 2. Table 1 presents the results of the soil sampling from borings B-99-1 through B-99-4 and Table 2 presents the groundwater sampling from monitoring wells MW-99-1 through MW-99-3. Full laboratory results are presented in Appendix F.

VOCs were not detected in any soil samples collected from borings B-99-1 through B-99-4 and the metals detected are below New York State Department of Environmental Conservation's (NYSDEC's) guidance values (NYSDEC, January 1994). In addition, the metals concentrations detected in these soil samples are in the range detected in previous site background samples.

VOCs were only detected in groundwater samples from MW-99-2 and MW-99-3, as shown in Table 2. Chloroform was detected at 0.0083 mg/l in a groundwater sample obtained from MW-99-2 (the NYSDEC's class GA groundwater standard is 0.005 mg/l). Acetone was detected at 0.035 mg/l in a groundwater sampled obtained from MW-99-3. Also, there is no reported groundwater standard for acetone. M+P xylene was also detected at 0.0062 mg/l in a groundwater sample obtained from MW-99-3, just above the detection limit of 0.005 mg/l (which is also the NYSDEC's class GA groundwater standard). Acetone, chloroform, and M+P xylene were not detected in the blank QA/QC samples analyzed.

The metals detected in the groundwater samples collected from MW-99-1 through MW-99-3 included arsenic, chromium, copper, lead, nickel, selenium, and zinc. As indicated in Table 2, several of the metal concentrations, particularly from MW-99-2 and MW-99-3 are above NYSDEC's class GA groundwater standards (NYSDEC, June 1998). The groundwater samples from these wells were observed to be very turbid in the field at the time of sampling and were not filtered prior to analysis, in accordance with NYSDEC sampling guidelines.

The NYSDEC GA standard for drinking water resources are used for comparison purposes only. Reference to the GA standard does not imply that these values are necessarily the applicable standards for the site. This standard was used as a conservative benchmark for evaluating VOCs and metals in groundwater at the site in the absence of 1) regulatory standards specifically applicable to the site and 2) to be consistent with past work at the site (Haley and Aldrich, August 1996).

The field QA/QC samples included a duplicate groundwater sample collected from MW-99-1 for VOC and PP Metals analysis, a trip blank for VOC analysis, and a field equipment blank for VOC and PP Metals analysis. The constituents and concentration of constituents detected in the duplicate sample are consistent with the results of the analyses from MW-99-1. No VOCs were detected in the trip blank and no VOCs or metals were detected in the field equipment blank. Batch laboratory matrix spike and matrix spike duplicate results were acceptable (Appendix F).

4. CONCLUSIONS AND RECOMMENDATIONS

The direction of groundwater flow as determined from this investigation is toward the northwest, which is consistent with the groundwater flow direction observed at the facility in the past (Haley and Aldrich, August 1996). The New York State Barge Canal is located to the west of the facility and this is a likely groundwater discharge point for the local groundwater, thus influencing groundwater flow direction. At the time of this investigation, the water table is estimated to be lower than the invert elevation of the 42-inch sewer pipe along the northern section of the pipe in Parking Lot A. Based on this investigation data, the potential exists for an outward gradient along northern portions of the sewer line to the groundwater table. However, during times of dry weather periods, the water table may be lowered to an elevation that is below the entire 42-inch sewer line. Thus, there is the potential for migration of materials from the interior of the sewer to the surrounding soil and groundwater.

Hydraulic conductivities calculated by Golder for the rock formation surrounding the monitoring wells vary substantially, indicating that there is some heterogeneity in the upper bedrock at the facility. This is likely due to the variability in the degree of rock fracturing and/or solution enlargement of discontinuities. These conditions are not atypical for this bedrock formation.

Based on Golder's review of the field and analytical data from this investigation, there does not appear to be evidence of an obvious release from the 42-inch sewer line to the soil or groundwater in the study area. However, the results are considered inconclusive due to potentially anomalous detections of VOCs and due to high turbidity observed in the groundwater samples, which may have affected the metals concentration results.

Only trace concentrations of VOCs were detected in the groundwater samples obtained from MW-99-2 and MW-99-3. Chloroform was detected at 0.0083 mg/l in a groundwater sample obtained from MW-99-2 and acetone was detected at 0.035 mg/l in a groundwater sampled obtained from MW-99-3. Acetone and chloroform are common laboratory

contaminants; therefore, this may account for these detections. However, it was noted that neither acetone nor chloroform was detected in the QA/QC blank samples (i.e. trip blank, field equipment blank, and the laboratory method blank). Therefore, we can not confirm that these detections are from laboratory sources. M+P xylene was also detected at 0.0062 mg/l in a groundwater sample obtained from MW-99-3, just above the detection limit of 0.005 mg/l (which is also the NYSDEC's class GA groundwater standard for each isomer). However, the air rotary drilling technique used to drill the boreholes for the newly installed wells may have aerated the groundwater in the vicinity of the wells. Thus, since sampling was performed just after the wells where installed, the drilling activity may have affected the VOC concentration results.

Metals concentrations detected appear to exceed NYSDEC class GA groundwater standards in samples obtained from the three monitoring wells. However, the metal concentrations detected in these samples may be elevated due to the presence of the suspended solids, as observed from the high turbidity in the groundwater samples (which were unfiltered). Additional development of the wells could result in a reduction of the detected concentrations of the groundwater samples.

The results of the QA/QC sampling, which included a duplicate groundwater sample, a trip blank, a field equipment (bailer) rinse blank, and a review of batch laboratory matrix spike and matrix spike duplicate results, are acceptable with respect to data quality objectives for this project.

As the results of the initial sampling event are considered inconclusive, Golder recommends resampling the monitoring wells and analyses for the same suite of parameters. Also, the additional time between the drilling activity and the next sampling event should result in more representative groundwater conditions, as the aquifer has been given time to equilibrate to impacts of drilling. Prior to sampling, additional development of the monitoring wells is recommended in an attempt to reduce the turbidity of the groundwater samples.

GOLDER ASSOCIATES INC.

David C. Wehn
Project Hydrogeologist

Anthony L. Grasso, P.G.
Associate

F/N: C:\Common\Projects\993-9211\Reports\finalrpt.doc

REFERENCES

Haley and Aldrich, August 1996, "Baseline Study Report, Former Delco Chassis Facility, Rochester."

New York State Department of Environmental Conservation, January 1994, "Technical and Administrative Guidance Memorandum (HWR-94-4046)."

New York State Department of Environmental Conservation, August 1997, "Contained-In Action Levels, Technical and Administrative Guidance Memorandum No. 3028."

New York State Department of Environmental Conservation, June 1998, "6 NYCRR, Part 703, Ambient Water Quality Standards and Guidance Values, for Class GA Groundwaters."

TABLE 1
VALEO WIPER SYSTEMS
ROCHESTER, NEW YORK
SOIL ANALYTICAL RESULTS
(DETECTIONS ONLY)

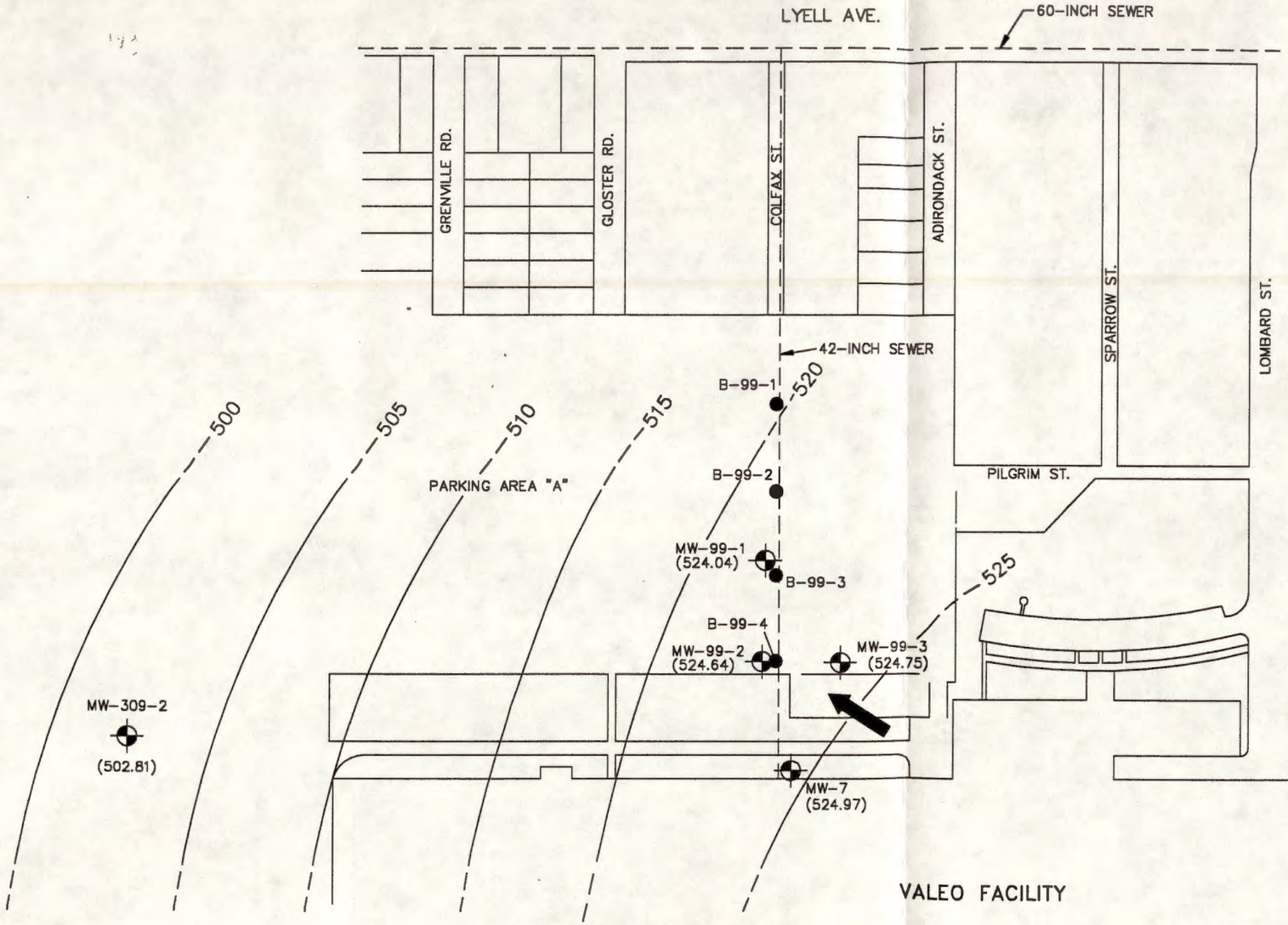
Analytes (1)	Sample Identification and Concentration (mg/kg) (2)				(3) Typical Background Levels (mg/kg)	(4) Soil Action Level (mg/kg)
	B-99-1	B-99-2	B-99-3	B-99-4		
Volatile Organic Compounds						
None Detected	ND	ND	ND	ND	NA	NA
Metals						
Arsenic	4.25	1.63	ND	ND	3 to 12	0.4
Chromium	7.01	4.46	5.70	4.10	1.5 to 40	-
Copper	4.27	5.99	13.8	7.90	1 to 50	-
Lead	10.4	7.21	7.72	4.55	4 to 500	400
Nickel	7.76	5.60	7.18	5.50	0.5 to 25	1600
Selenium	0.677	0.689	ND	ND	0.1 to 3.9	390
Zinc	22.9	15.1	23.7	13.1	9 to 50	23000

NOTES:
(1) Analysis performed in accordance with USEPA SW846 Methods.
(2) Detections only reported. Refer to laboratory results for detection limits.
(3) Typical background levels and recommended soil cleanup objective are based on a 1% soil organic carbon content and was taken from the NYSDEC's "Technical and Administrative Guidance Memorandum (HWR-94-4046)", dated January 24, 1994.
(4) NYSDEC Contained-In Action Levels, Technical and Administrative Guidance Memorandum No. 3028, dated August 26, 1997.
(-) = No Standard
ND = Not Detected
NA = Not Applicable

TABLE 2
VALEO WIPER SYSTEMS
ROCHESTER, NEW YORK
GROUNDWATER ANALYTICAL RESULTS
(DETECTIONS ONLY)

Analytes (1)	Sample Identification and Concentration (mg/l) (2)				Groundwater Standards (mg/l)(3)
	MW-99-1	MW-99-2	MW-99-3	DUP	
Volatile Organic Compounds					
Acetone	ND	ND	0.035	ND	-
Chloroform	ND	0.0083	ND	ND	0.005
M+P-Xylene	ND	ND	0.0062	ND	0.005 each isomer
Metals					
Arsenic	0.0119	0.0532	0.137	0.0180	0.025
Chromium	0.0364	0.324	0.199	0.0410	0.05
Copper	0.0615	0.275	0.333	0.0775	0.2
Lead	0.102	0.189	0.234	0.127	0.025
Nickel	0.0460	0.200	0.219	0.0549	0.1
Selenium	0.00740	0.00881	0.0133	0.00904	-
Zinc	0.0949	0.520	0.431	0.108	2

Notes: (1) Analysis performed in accordance with USEPA Methods.
(2) Detections only reported. Refer to laboratory results for detection limits.
(3) Groundwater standards from the NYSDEC, 6 NYCRR, Part 703, "Ambient Water Quality Standards and Guidance Values", for Class GA groundwaters as amended, June 1998.
(-) = No standard
ND = Not Detected
(Shade) = Exceed Standard
DUP = Duplicate sample of MW-99-1.



LEGEND

MW-99-1	MONITORING WELL (LOCATION APPROXIMATE)
(524.04)	WATER LEVEL ELEVATIONS AT MONITORING WELL IN FEET (ROCHESTER CITY DATUM = NGVD + 1.08 FEET)
B-99-1	SEWER BACKFILL BORING (LOCATION APPROXIMATE)
	DIRECTION OF GROUNDWATER FLOW
525	GROUNDWATER ELEVATION CONTOUR

NOTES:

1) WATER LEVEL MEASUREMENTS OBTAINED ON MARCH 30, 1999.
2) CONTOURS BASED ON WATER LEVELS MEASURED IN SHALLOW BEDROCK MONITORING WELLS AND INTERPOLATION OF ELEVATIONS BETWEEN MEASURING POINTS. ACTUAL ELEVATIONS MAY BE DIFFERENT.

200 0 200 400
scale feet

Golder Associates — Buffalo, New York

CLIENT/PROJECT
VALEO/
SUBSURFACE INVESTIGATION/NY

TITLE
GROUNDWATER
POTENTIOMETRIC SURFACE
OF UPPER BEDROCK

DRAWN	BEC	DATE	3/17/99	JOB NO.	993-9211
CHECKED	DCW	SCALE	AS SHOWN	DWG. NO.	VALEO 1
REVIEWED	ALG	FILE NO.	993-9211	FIGURE NO.	1

APPENDIX A

Field Boring Logs/Monitoring Well Installation Logs

Golder Associates

Field Boring Log

DEPTH HOLE 11.0'	JOB NO. 993-9211	PROJECT VALEO/ SUBSURFACE INV/NY		BORING NO. B-99-1	
DEPTH SOIL DRILL 10.9'	QA INSP. ALG	DRILLING METHOD 2¼" HSA		SHEET 1 OF 1	
DEPTH ROCK CORE —	WEATHER cloudy	DRILLING COMPANY NothNAgle		SURFACE ELEV. —	
NO. DIST. SA. — UD. SA. —	TEMP. 33°F	DRILL RIG CME-75	DRILLER S. LORANTY	DATUM —	
DEPTH WL. —	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs	DROP 30"	STARTED 935, 3-25-99	
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 1005 3-25-99	

SAMPLE TYPES: AS AUGER SAMPLE; CS CHUNK SAMPLE; DO DRIVE OPEN; DS DENISON SAMPLE; FS PITCHER SAMPLE; RC ROCK CORE; ST SLOTTED TUBE; TO THINWALLED, OPEN; TP THINWALLED, PISTON; WS WASH SAMPLE

ABBREVIATIONS: BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GR GRAVEL; LYD LAYERED; U LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE-HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SLY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WOH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION: "TRACE" 0 - 10%; LITTLE 10 - 20%; SOME 20 - 35%; AND 35 - 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	ANGULAR PRESSURE
VERY LOOSE	VLS 0 - 4	VERY SOFT	VS < 0.5 TSF
LOOSE	LS 5 - 10	SOFT	S 0.5 - 1.0 TSF
COMPACT	CP 10 - 30	FIRM	F 1.0 - 2.0 TSF
DENSE	DN 30 - 50	STIFF	ST 2.0 - 4.0 TSF
VERY DENSE	VDN > 50	VERY STIFF	VST 4.0 - 8.0 TSF
		HARD	H > 8.0 TSF

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
2	Asphalt							Augered from 0' to 7' BGS with NO sampling
4	FILL - LS, d. brown to brown, SILT, some f-c SAND,							Asphalt 0-3" FILL 3" to 7' - brown silt and gravel.
6							7	
8			1	DO	1-3-2-3	2/24	9	SA1 (7-9') loose, brown, clayey SILT, some f-c SAND
10	10.9		2	DO	1-1-1.5/5"	2/23	10.9	SA2 (9-10.9) VLS, brown clayey SILT, some f-c SAND. Rock in tip of spoon sampler
11 12	VDN, gray rock, potentially side of sewer pipe		3	DO	5/1"	1/1	11.0	SA3 (10.9-11) VDN, gray ROCK potentially side of sewer pipe
	END OF BORING 11.0'							TOOK SA2 FOR laboratory ANALYSIS

Golder Associates

Field Boring Log

DEPTH HOLE 11.5'	JOB NO 943-9211	PROJECT Valeo/ Subsurface INV. /NY		BORING NO. B-99-2	
DEPTH SOIL DRILL 11	QA INSP. ALG	DRILLING METHOD 2¼" HSA		SHEET 1 OF 1	
DEPTH ROCK CORE —	WEATHER cloudy	DRILLING COMPANY Nothnagle		SURFACE ELEV. —	
NO. DIST. SA. — UD. SA. —	TEMP. 35°F	DRILL RIG CME-75	DRILLER S. LORANTY	DATUM —	
DEPTH WL. —	HRS. PROD. —	WT. SAMPLER HAMMER 140 lbs.	DROP 30"	STARTED 1110 3/25/99	
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 1145/3-25-99	

SAMPLE TYPES: AS AUGER SAMPLE; CS CHUNK SAMPLE; DO DRIVE OPEN; DS DENISON SAMPLE; PS PITCHER SAMPLE; RC ROCK CORE; ST SLOTTED TUBE; TO THINWALLED, OPEN; TP THINWALLED, PISTON; WS WASH SAMPLE

ABBREVIATIONS: BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; L LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RK ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SLY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION: "TRACE" 0 - 10%; "LITTLE" 10 - 20%; "SOME" 20 - 35%

RELATIVE DENSITY	BLOWS	CONSISTENCY	HANDLE PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT VS	EASY INCH
LOOSE LS	4-10	SOFT S	MODERATE EASY
COMPACT CP	10-30	FIRM F	MODERATE
DENSE DN	30-50	STIFF ST	MODERATE DIFFICULT
VERY DENSE VDN	>50	VERY STIFF VST	DIFFICULT IMPOSSIBLE
		HARD H	IMPOSSIBLE THUMBNAIL

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
2	Asphalt							Augered from 0' to 7' BGS with no sampling
4	FILL- D. brown to Brown, clayey SILT grading to f-c SAND little silt and gravel.							Asphalt - 0-3"
6								FILL - 3" to 7' - D. brown, clayey SILT some f-c sand, some gravel
8							7	SA1 (7-9) VLS, brown, clayey SILT some f-c sand, little gravel.
10			1	DO	1-2-2-3	4/24	9	SA2 (9-11) LS, brown, SAND (f-c), little silt, rock in tip of split-spoon sampler
11.0			2	DO	3-4-4-6	6/24	11	
11.5	Weathered bedrock		3	DO	20/6"	4/6	11.5	SA3 (11-11.5') VDN, gray dolostone bedrock, WET
12	TOP of ROCK							Took SA2 for lab. analysis
	End of Boring 11.5'							

Golder Associates

Field Boring Log

DEPTH HOLE 9.5' | JOB NO 993-9211 | PROJECT Valco/Subsurface Inv./NY | BORING NO. B-99-3
DEPTH SOIL DRILL 9.5 | QA INSP ALG | DRILLING METHOD 2¼" HSA | SHEET 1 OF 1
DEPTH ROCK CORE — | WEATHER cloudy | DRILLING COMPANY Nothnagle | SURFACE ELEV. —
NO. DIST. SA. — UD. SA. — | TEMP. 38°F | DRILL RIG CME-75 | DRILLER S. Loranty | DATUM —
DEPTH WL. — | HRS. PROG. — | WT. SAMPLER HAMMER 140lbs | DROP 30" | STARTED 1250, 3-25-99
TIME WL. — | HRS. DELAYED — | WT. CASING HAMMER — | DROP — | COMPLETED 115 3-25-99

SAMPLE TYPES: AS AUGER SAMPLE; CS CHUNK SAMPLE; OO OPEN; DS DENISON SAMPLE; PS PITCHER SAMPLE; RC ROCK CORE; ST SLOTTED TUBE; TO THINWALLED, OPEN; TP THINWALLED, PISTON; WS WASH SAMPLE

ABBREVIATIONS: BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; U LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SLY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WOH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION: TRACE 0-10%; LITTLE 10-20%; SOME 20-35%; AND 35-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	POCKET PENETROMETER
VERY LOOSE VLS	0-4	VERY SOFT VS	<0.5 TSF
LOOSE LS	4-10	SOFT S	0.5-1.0 TSF
COMPACT CP	10-30	FIRM F	1.0-2.0 TSF
DENSE DN	30-50	STIFF ST	2.0-4.0 TSF
VERY DENSE VDN	>50	VERY STIFF VST	>4.0 TSF
		HARD H	>4.5 TSF UNCONFINED

ELEV. / DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMMER BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH
0	ASPHALT						
2	FILL - D, brown to brown, LS to DN, clayey SILT grading to f-m SAND, little silt and gravel.						
4							
6							7
8			1	OO	1-2-6-10	9/24	9
9.5 10	TOP OF ROCK		2	OO	20/6"	6/6	9.5
12	END OF Boring 9.5'						

SAMPLE DESCRIPTION AND BORING NOTES

Augered from 0-7' with NO sampling

Asphalt - 0-3"

FILL - 3" to 7', D. Brown, clayey SILT, some f-c Sand, some gravel.

SA1 (7-9') LS, brown, f-m SAND, little silt.

SA2 (9-9.5) DN, brown, f. SAND some silt, little gravel, damp.

TOOK SA2 for Lab. Analysis

Golder Associates

Field Boring Log

DEPTH HOLE 11.5'	JOB NO. 993-9211	PROJECT Valeo / Sub. INV / NY		BORING NO. B-99-4	
DEPTH SOIL DRILL 11.5'	QA INSP. ALG	DRILLING METHOD 2 1/4" HSA		SHEET 1 OF 1	
DEPTH ROCK CORE —	WEATHER cloudy	DRILLING COMPANY Nothnagle		SURFACE ELEV. —	
NO. DIST. SA. — UD. SA. —	TEMP 40°	DRILL RIG CME-75	DRILLER S. Lorenty	DATUM —	
DEPTH WL. —	HRS. PROG. —	WT. SAMPLER HAMMER 140 lbs	DROP 30"	STARTED 215 3-25-99	
TIME WL. —	HRS. DELAYED —	WT. CASING HAMMER —	DROP —	COMPLETED 240 3-25-99	

SAMPLE TYPES: AS AUGER SAMPLE; CS CHUNK SAMPLE; DO DRIVE OPEN; DS DENISON SAMPLE; PS PITCHER SAMPLE; RC ROCK CORE; SS SLOTTED TUBE; TO THINWALLED, OPEN; TP THINWALLED, PISTON; WS WASH SAMPLE

ABBREVIATIONS: BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; L LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE-HYDRAULIC; PM PRESSURE-MANUAL; R RED; RES RESIDUAL; RK ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SLY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WOH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION: TRACE 0 - 10%; LITTLE 10 - 20%; SOME 20 - 35%; AND 35 - 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	UNIAXIAL PRESSURE
VERY LOOSE VLS	0 - 4	VERY SOFT VS	0 - 0.5 TSF
LOOSE LS	5 - 10	SOFT S	0.5 - 1 TSF
COMPACT CP	10 - 30	FIRM FM	1 - 2 TSF
DENSE DN	30 - 50	STIFF ST	2 - 4 TSF
VERY DENSE VDN	>50	VERY STIFF VST	4 - 8 TSF
		HARD H	>8 TSF

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 1 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
2	Asphalt							Augered from 0' to 7' BGS with no sampling
4	Fill - LS to DN, brown, silt to clayey SILT, grading to f-c SAND, little to t-gravel, little rock chips.							Asphalt - 0.3"
6								Fill - 3" to 7' - brown, silt, some f-c sand, gravel, some
8			1	DO	1-2-3-3	2/24	7	SA1 (7-9') LS, brown clayey SILT, some f-c sand, little gravel,
10	11.5'		2	DO	1-6-9-10	9/24	9	SA2 (9-11') CP, brown, clayey SILT some f-c sand, little gravel, little rock chips.
12	TOP OF ROCK		3	DO	20-0/6"	6/6	11	SA3 (11-11.5') DN brown, f-c SAND little silt, trace gravel, little rock chips, moist.
	End of boring 11.5'						11.5	TOOK SA3 FOR LAB. Analysis

Golder Associates

Field Boring Log

DEPTH HOLE 26.2	JOB NO 993-9211	PROJECT VALEO / SUBSURFACE INVEST. / NY		BORING NO. MW-99-1	
DEPTH SOIL DRILL N/A	GA INSP. D.WEHN	DRILLING METHOD 6-INCH DOWNHOLE HAMMER		SHEET 1 OF 1	
DEPTH ROCK CORE N/A	WEATHER CLOUDY	DRILLING COMPANY NOTHN. ATLE DRILLING		SURFACE ELEV. 533.75	
NO. DIST. SA. N/A UD. SA. N/A	TEMP. 35°F	DRILL RIG REED SKSAD	DRILLER S. KING	DATUM MSL	
DEPTH WL. N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A	DROP N/A	STARTED 9:36 (TIME) 3/25/99 (DATE)	
TIME WL. N/A	HRS. DELAYED N/A	WT. CASING HAMMER N/A	DROP N/A	COMPLETED 9:53 (TIME) 3/25/99 (DATE)	

SAMPLE TYPES

AS	AUGER SAMPLE
CS	CHUNK SAMPLE
OG	GRAB OPEN
DS	DENISON SAMPLE
PS	PITCHER SAMPLE
RC	ROCK CORE
ST	SLOTTED TUBE
TO	THIN-WALLED, OPEN
TP	THIN-WALLED, PISTON
WS	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LTD	LAYERED	RES	RESIDUAL	Y	YELLOW
L	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE	0 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	SINGLE PRESSURE
VERY LOOSE VLS	0 - 4	VERY SOFT VS	0 - 0.5 TSF
LOOSE LS	5 - 10	SOFT S	0.5 - 1.0 TSF
COMPACT CP	10 - 30	FIRM F	1.0 - 2.0 TSF
DENSE DS	30 - 50	STIFF ST	2.0 - 4.0 TSF
VERY DENSE VDS	>50	VERY STIFF VST	4.0 - 8.0 TSF
		HARD H	>8.0 TSF

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC. / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
	SOIL							0-7 FT Grey brown silt with some sand and gravel. (Air hammer sample)
								7-26.2 FT Lockport dolomite
7.0	BEDROCK							
	LOCKPORT DOLOMITE							
26.2	END OF BOREHOLE							

Golder Associates

Field Boring Log

DEPTH HOLE 25.4	JOB NO. 993-9211	PROJECT VALEO / SUBSURFACE INVEST. / NY		BORING NO. MW-99-2	
DEPTH SOIL DRILL N/A	QA INSP D. WEHN	DRILLING METHOD 6-INCH DOWNHOLE HAMMER		SHEET 1 OF 1	
DEPTH ROCK CORE N/A	WEATHER CLOUDY	DRILLING COMPANY NOTHNAGLE DRILLING		SURFACE ELEV. 534.05	
NO. DIST. SA. N/A UD. SA N/A	TEMP. 35°F	DRILL RIG REED SR5AD	DRILLER S. KING	DATUM MSL	
DEPTH WL. N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A	DROP N/A	STARTED 11:25 3/25/99	
TIME WL. N/A	HRS. DELAYED N/A	WT. CASING HAMMER N/A	DROP N/A	COMPLETED 15:00 3/26/99	

SAMPLE TYPES

AS	AUGER SAMPLE	BL	BLACK
CS	CHUNK SAMPLE	BR	BROWN
DO	DRIVE OPEN	C	COARSE
DS	DENISON SAMPLE	CA	CASING
FS	FITCHER SAMPLE	CL	CLAY
RC	ROCK CORE	CLY	CLAYEY
ST	SLOTTED TUBE	F	FINE
TO	THINWALLED, OPEN	FRAG	FRAGMENTS
TP	THINWALLED, PISTON	GL	GRAVEL
WS	WASH SAMPLE	LYD	LAYERED
		U	LITTLE

ABBREVIATIONS

M	MEDIUM	SA	SAMPLE
MIC	MICACEOUS	SAT	SATURATED
MOT	MOTTLED	SD	SAND
NP	NON-PLASTIC	SI	SILT
OG	ORANGE	SLY	SILTY
ORG	ORGANIC	SM	SOME
PH	PRESSURE-HYDRAULIC	TR	TRACE
PM	PRESSURE MANUAL	WL	WATER LEVEL
R	RED	WOH	WEIGHT OF HAMMER
RES	RESIDUAL	Y	YELLOW
RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE	0 - 10%	SOME	10 - 20%
LITTLE	10 - 20%	AND	30 - 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	UNIAXIAL PRESSURE
VERY LOOSE	VLS	VERY SOFT	VS
LOOSE	LS	SOFT	S
COMPACT	CP	FIRM	F
DENSE	DN	STIFF	ST
VERY DENSE	VDN	VERY STIFF	VST
		HARD	H

ELEV. / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
0	OVERBURDEN SOIL							0.0 - 9.2 FT Grey-brown SILT with some Sand, grave. Air hammer sample.
2								
4								
6								9.2 - FT Lockport Dolomite
8								
10 9.2	LOCKPORT DOLOMITE BEDROCK							Very from 13.0 - 15.5 FT. Water at 15 FT
12								Slight sheen on return water. Probable drop of oil from rig hydraulics
14								Overburden collapsing into borehole. 6-inch steel casing driven to
16								10 FT. Debris washed from hole with CME-75 rig
18								pump. Debris removal not complete with water so
20								air rig completes clearing borehole on 3/26/99. Not
22								completely clear so auger rig spun 4-inch casing down - well
24								installed inside this as it is removed (3/26/99)
25.4	END OF BOREHOLE							
28								
30								

Golder Associates

Field Boring Log

DEPTH HOLE 25.0	JOB NO. 913-7211	PROJECT VALEC / SUBSURFACE INVEST / NL		BORING NO. MW-91-3	
DEPTH SOIL DRILL N/A	QA INSP. D WEHN	DRILLING METHOD 6-INCH AIR HAMMER		SHEET 1 OF 1	
DEPTH ROCK CORE N/A	WEATHER P. SUNNY	DRILLING COMPANY NORTHAGLE DRILLING		SURFACE ELEV. 532.51	
NO. DIST. SA. N/A UD. SA. N/A	TEMP. 46°F	DRILL RIG REED SKSAD	DRILLER S. KING	DATUM MSL	
DEPTH WL. N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A	DROP N/A	STARTED 15:10 3/25/99	
TIME WL. N/A	HRS. DELAYED N/A	WT. CASING HAMMER N/A	DROP N/A	COMPLETED 15:27 3/25/99	

SAMPLE TYPES

AS	AUGER SAMPLE
CS	CHUNK SAMPLE
OO	DRIVE OPEN
DS	DENISON SAMPLE
PS	PITCHER SAMPLE
RC	ROCK CORE
SS	SLOTTED TUBE
TO	THIN-WALLED, OPEN
TP	THIN-WALLED, PISTON
WS	WASH SAMPLE

BL	BLACK
BR	BROWN
C	COARSE
CA	CASING
CL	CLAY
CLY	CLAYEY
F	FINE
FRAG	FRAGMENTS
GL	GRAVEL
LYD	LAYERED
L	LITTLE

ABBREVIATIONS

M	MEDIUM
MIC	MICACEOUS
MOT	MOTTLED
NP	NON-PLASTIC
OG	ORANGE
ORG	ORGANIC
PH	PRESSURE-HYDRAULIC
PM	PRESSURE-MANUAL
R	RED
RES	RESIDUAL
RX	ROCK

SA	SAMPLE
SAT	SATURATED
SD	SAND
SI	SILT
SLY	SILTY
SM	SOME
TR	TRACE
WL	WATER LEVEL
WH	WEIGHT OF HAMMER
Y	YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE	0 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		UNIAXIAL PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	0-0.5 TSF
LOOSE	LS	5-10	SOFT	S	0.5-1.0 TSF
COMPACT	CP	10-30	FIRM	F	1.0-2.0 TSF
DENSE	DN	30-50	STIFF	ST	2.0-4.0 TSF
VERY DENSE	VDN	>50	VERY STIFF	VST	4.0-8.0 TSF
			HARD	H	>8.0 TSF

ELEV / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	SAMPLES TYPE	SAMPLES HAMM. BLOWS PER 6 IN (FORCE)	SAMPLES REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
0	SOIL OVERBURDEN							0-11.5 FT Grey-brown SILT with some sand, gravel. Air hammer sample
11.5	LOCKPORT DOLOMITE BEDROCK							11.5-25 FT Lockport dolomite
25 BD	END OF BOREHOLE							

MONITORING WELL INSTALLATION LOG

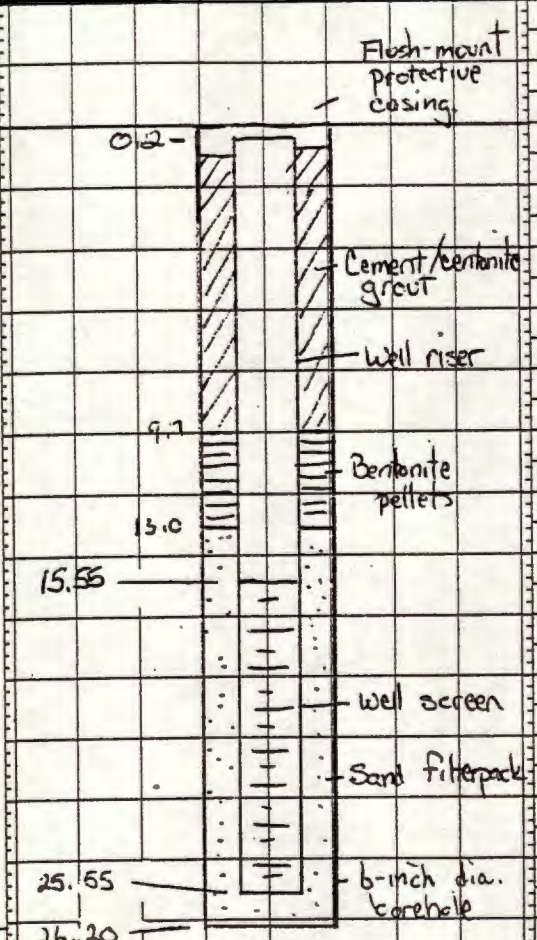
Job No. 993-5211 Project VALEO / SUBSURFACE INVEST. / NY Well No. MW-99-1 Sheet 1 of 1
GA Insp. D. WEHN Drilling Method 6" DOWNHOLE HAMMER Ground Elev. 533.75 Water Depth N/A
Weather CLOUDY Drilling Company NOTHNAGLE DRILLING Collar Elev. 533.55 Date/Time N/A
Temp. 36°F Drill Rig REED SKSAD Driller S. KING Started 9:55 TIME / 3/25/99 DATE Completed 10:15 TIME / 3/25/99 DATE

MATERIALS INVENTORY

Well Casing 2 in. dia. 15.4 l.f. Well Screen 2 in. dia. 10 l.f. Bentonite Seal 3/8 PURE COLD PELLETS
Casing Type SCH 40 PVC Screen Type MACHINED SLOT Installation Method GRAVITY
Joint Type FLUSH THREAD Slot Size 0.010 INCH Filter Pack Qty. 250 LBS
Grout Quantity 50 GAL Centralizers NONE Filter Pack Type #1 SILICA SAND
Grout Type CEMENT / 5% BENTONITE Drilling Mud Type N/A Installation Method GRAVITY
N: 5282.29 E: 5124.69

Elev./Depth	Soil/Rock Description
GROUND SURFACE	
0.0	OVERBURDEN
7.0	LOCKPORT DOLOMITE BEDROCK
26.2	END OF BOREHOLE

WELL SKETCH



Installation Notes

Well Development Notes

SEE WELL DEVELOPMENT FORM

MONITORING WELL INSTALLATION LOG

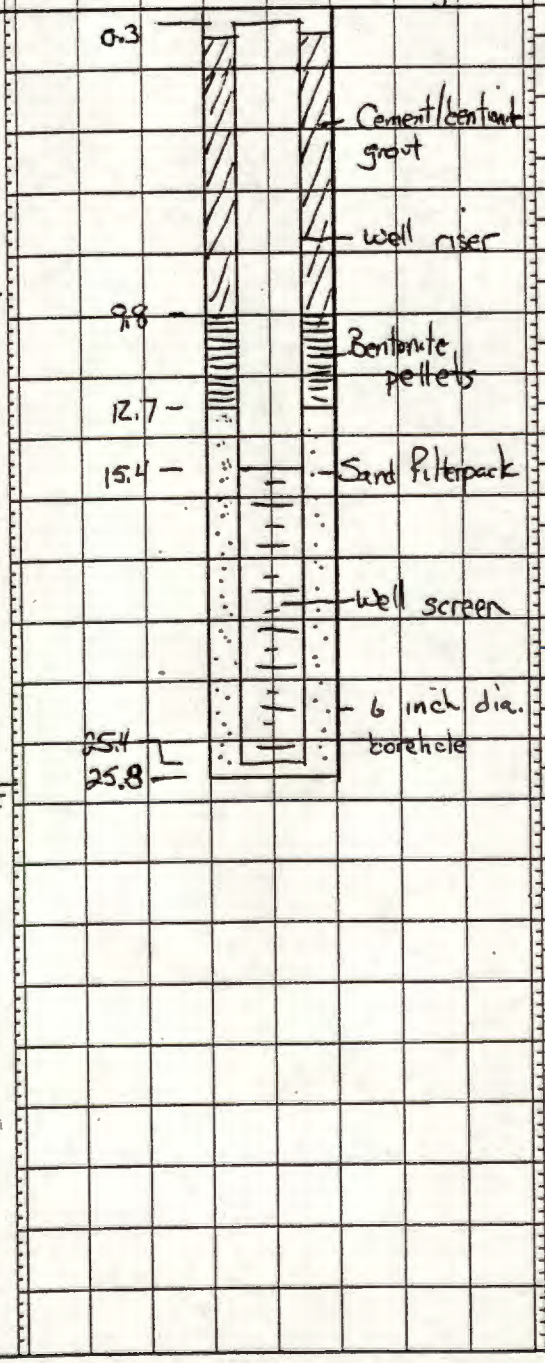
Job No. 993-9211 Project VALEO / SUBSURFACE INVEST./NY Well No. MW-99-2 Sheet 1 of 1
GA Insp. D. WEIN Drilling Method 6" DOWNHOLE HAMMER Ground Elev. 534.05 Water Depth N/A
Weather CLOUDY Drilling Company NOTHNAGEL DRILLING Collar Elev. 533.64 Date/Time N/A
Temp. 35°F Drill Rig REED SK5AD Driller S. KING Started 15:00 (TIME) 3/26/99 (DATE) Completed 15:30 (TIME) 3/26/99 (DATE)

MATERIALS INVENTORY

Well Casing 2 in. dia. 15.1 l.f. Well Screen 2 in. dia. 10 l.f. Bentonite Seal 3/8" PUREGOLD PELLETS
Casing Type SCH 40 PVC Screen Type MACHINED SLOT Installation Method GRAVITY
Joint Type FLUSH THREAD Slot Size 0.010 INCH Filter Pack Qty. 350 LBS.
Grout Quantity 150 GAL. Centralizers NONE Filter Pack Type MORIE #0
Grout Type CEMENT / 2% BENTONITE Drilling Mud Type N/A Installation Method GRAVITY
N: 5133.81 E: 5124.32

Elev./Depth	Soil / Rock Description
	GROUND SURFACE
0.0	SOIL
	OVERBURDEN
9.2	LOCKPORT DOLOMITE
	BEDROCK
25.4	END OF BOREHOLE

WELL SKETCH



Installation Notes

Well Development Notes

SEE WELL DEVELOPMENT FORM

MONITORING WELL INSTALLATION LOG

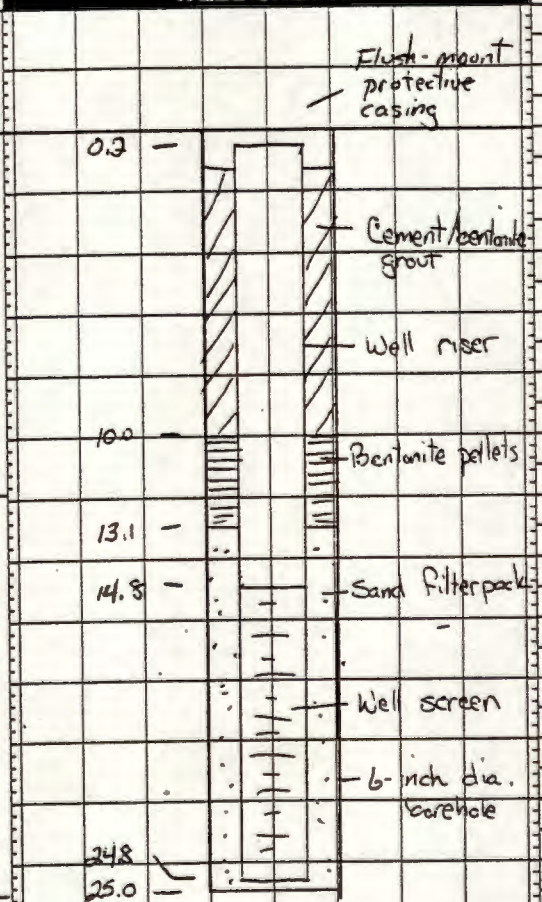
Job No. 913-9211 Project VALEO / SUBSURFACE INVEST / NY Well No. MW-99-3 Sheet 1 of 1
GA Insp. D. WEHN Drilling Method 6-INCH AIR HAMMER Ground Elev. 532.51 Water Depth N/A
Weather ~40°F & Drilling Company NOTHNAGLE DRILLING Collar Elev. 532.33 Date/Time N/A
Temp. P SUNNY Drill Rig REED SK5AD Driller S. KING Started 15:45 (TIME) 3/25/99 (DATE) Completed 16:15 (TIME) 3/25/99 (DATE)

MATERIALS INVENTORY

Well Casing 2 in. dia. 14.6 l.f. Well Screen 2 in. dia. 10 l.f. Bentonite Seal 3/8 PUREGOLD PELLETS
Casing Type SCH 40 PVC Screen Type MACHINED SLOT Installation Method GRAVITY
Joint Type FLUSH THREAD Slot Size 0.010 INCH Filter Pack Qty. 250 LBS.
Grout Quantity 50 GAL. Centralizers NONE Filter Pack Type MORIE OON
Grout Type CEMENT / 2% BENTONITE Drilling Mud Type N/A Installation Method GRAVITY
N: 5112.59 E: 5230.30

Elev./Depth	Soil / Rock Description
GROUND SURFACE	
0.0	SOIL OVERBURDEN
11.5	LOCKPORT DOLOMITE BEDROCK
25.0	END OF BOREHOLE

WELL SKETCH



Installation Notes

Well Development Notes

SEE WELL DEVELOPMENT FORM

APPENDIX B

Air Monitoring Forms

GOLDER ASSOCIATES INC.

Air Monitoring During Drilling

Sheet 1 of 1

PROJECT NAME: VALE / SUBSURFACE INVEST. / NY
PROJECT NUMBER: 993.9211
INSTRUMENT USED AND ID NO.: Mini RAE PID
CALIBRATION NUMBER: 96 ppm / 100 ppm Isobutylene
BORING NUMBER: SEE BELOW
AMBIENT TEMPERATURE: 35°F
WIND SPEED: 5-10 mph
WIND DIRECTION: SW changing to SE

DATE	TIME	DEPTH OF AUGER	INSTRUMENT READING
3/25/99	9:42	MW-99-1 - 10'	0 ppm
	9:45	MW-99-1 20'	0 ppm
	11:30	MW-99-2 - 5'	0 ppm
	11:37	MW-99-2 - 15'	0 ppm
	11:44	MW-99-2 24'	0 ppm
	15:12	MW-99-3 - 11'	0 ppm
	15:25	MW-99-3 25'	0 ppm
3/26/99	9:20	MW-99-2 Cleaning	0 ppm
	10:00	MW-99-2 Cleaning	0 ppm
	11:00	MW-99-2 Cleaning	0 ppm

GOLDER ASSOCIATES INC.

Air Monitoring During Drilling

Sheet 1 of 1

PROJECT NAME: Walco/Subsurface Assessment/NY
PROJECT NUMBER: 993-9211
INSTRUMENT USED AND ID NO.: GT 402
CALIBRATION NUMBER:
BORING NUMBER: B-99-1/B-99-2/B-99-3/
AMBIENT TEMPERATURE: 32° F
WIND SPEED:
WIND DIRECTION: 0-5 mph

DATE	TIME	DEPTH OF AUGER	INSTRUMENT READING
3/25/99	935-1005	0-10.9' B-99-1	Ø LEL, Ø H_2S, 0 ppm
3/25/99	1110-1145	0-11.5' B-99-2	Ø " " " " "
3/25/99	1250-1:15	0-9.5' B-99-3	Ø " " " " "
3/25/99	2~~15~~-240	0-11.5' B-99-4	Ø " " " " "

[redacted]: AIRMONIT.WK1

APPENDIX C

Well Development Field Records

Golder Associates

WELL DEVELOPMENT FIELD RECORD

JOB NAME VALCO/SUBSURFACE INVEST/NV
JOB NO. 993-9211 WELL NO. MW-99-1
DEVELOPED BY D. WEHN
DATE OF INSTALL. 3/25/99 SHEET 1 OF 1
STARTED DEVEL. 3/26/99 / 13:55 (DATE / TIME)
COMPLETED DEVEL. 3/26/99 / 14:35 (DATE / TIME)
W.L. BEFORE DEVEL. 11.11 / 3/26 / 13:55 (DEPTH / DATE / TIME)
AFTER DEVEL. 9.55 / 3/26 / 14:40 (DEPTH / DATE / TIME)
WELL DEPTH: BEFORE DEVEL. 25 FT
AFTER DEVEL. 25.05 WELL DIA. (In) 2
STANDING WATER COLUMN (FT.) 13.9
STANDING WELL VOLUME 2.3 gal.
SCREEN LENGTH 10 FT
DRILLING WATER LOSS N/A gal.

DATE/TIME	VOLUME REMOVED (GALS)	TDS FIELD PARAMETERS ~~SPEC. COND.~~ ~~(umhos/cm)~~ ppm	TEMP. (C)	pH (s.u.)	OTHER	REMARKS
3/26/99 14:00	2.3	1910	13	6.9		Water very silty
14:05	4.6	> 1990	13	6.9		
14:14	6.9	> 1990	12	6.9		
14:25	9.2	> 1990	11	6.9		
14:35	11.5	> 1990	10	6.9		
	11.5	= TOTAL VOLUME REMOVED (gal.)				

DEVELOPMENT METHOD: SS Bailer, nylon rope

NOTES:

Golder Associates

WELL DEVELOPMENT FIELD RECORD

JOB NAME VALEO/SUBSURFACE INVEST/NY
JOB NO. 993-9211 WELL NO. MW-99-2
DEVELOPED BY D WEHN
DATE OF INSTALL 3/26/99 SHEET 1 OF 1
STARTED DEVEL. 3/27/99 / 9:20 (DATE / TIME)
COMPLETED DEVEL. 3/27/99 / 10:00 (DATE / TIME)
W.L. BEFORE DEVEL. 9.21 / 3/27/99 / 9:25 (DEPTH / DATE / TIME)
AFTER DEVEL. 9.21 / 3/27/99 / 10:00 (DEPTH / DATE / TIME)
WELL DEPTH: BEFORE DEVEL. 25.42 AFTER DEVEL. 25.42
WELL DIA. (In) 2
STANDING WATER COLUMN (FT.) 16.2
STANDING WELL VOLUME 2.6 gal.
SCREEN LENGTH 10 FT
DRILLING WATER LOSS ~50 gal. gal.

DATE/TIME	VOLUME REMOVED (GALS)	TDS FIELD PARAMETERS ~~SPEC. COND. (umhos/cm)~~ ppm	TEMP. (C)	pH (s.u.)	OTHER	REMARKS
3/27/99 9:30	2.6	1470	14	11.6		
9:35	5.2	1910	12	11.8		
9:45	7.8	>1990	12	11.8		
9:51	10.4	>1990	13	11.8		
10:00	13.0	>1990	13	11.8		
	13.0	= TOTAL VOLUME REMOVED (gal.)				

DEVELOPMENT METHOD: S.S. Bailer, nylon rope

NOTES:

1 433-4555 P.W.

Golder Associates

WELL DEVELOPMENT FIELD RECORD

JOB NAME: VALEO / SUBSURFACE INVEST / NY
DEVELOPED BY: D. WIEHN
STARTED DEVEL: 3/26/99 (DATE) / 12:45 (TIME)
W.L. BEFORE DEVEL: 9.5 (DEPTH) 3/26 (DATE) / 12:45 (TIME)
WELL DEPTH: BEFORE DEVEL: 23.2 FT
STANDING WATER COLUMN (FT.): 15.1 FT
SCREEN LENGTH: 10 FT

JOB NO. 993721 WELL NO. MW-99-3
DATE OF INSTALL 3/25/99 SHEET 1 OF 1
COMPLETED DEVEL. 3/27/99 (DATE) / 9:10 (TIME)
AFTER DEVEL. 9.26 (DEPTH) / 3/27 (DATE) / 8:40 (TIME)
AFTER DEVEL 24.6 WELL DIA. (In) 2
STANDING WELL VOLUME .25 gal.
DRILLING WATER LOSS N/A gal.

DATE/TIME	VOLUME REMOVED (GALS)	TDS ~~SPEC. COND.~~ (umhos/cm) PPM	TEMP. (C)	pH (s.u.)	OTHER	REMARKS
3/26/99 12:50	2.5	> 1990	12	7.4		well bails dry @ 4 gal
13:10	5.0	> 1990	13	7.4		in 4 min
15:05	7.5	> 1990	12	7.4		
3/27/99 08:45	10.0	> 1990	10	7.5		
9:10	12.5	> 1990	12	7.4		
	12.5	= TOTAL VOLUME REMOVED (gal.)				

DEVELOPMENT METHOD: S.S. Bailer, nylon rope

NOTES:

APPENDIX D

Variable Head Test Results

RISING HEAD TEST

WELL	MW-99-1
DATE OF TEST:	3/27/99

STATIC WATER DEPTH =	9.52	FEET BELOW TOC
STANDPIPE DIAMETER =	2.00	INCHES
SANDPACK DIAMETER =	6.00	INCHES
TOP OF SATURATED SAND =	12.80	FEET BELOW TOC
BOTTOM OF SANDPACK =	26.00	FEET BELOW TOC

24 HOUR CLOCK HR	MIN	SEC	ELAPSED TIME (MIN)	DEPTH TO WATER (FT TOC)	HEAD (FEET)	HEAD RATIO (H/Ho)		LOG HEAD RATIO
12	42	59	0.00	12.70	-3.18	1.000		0.0000
12	43	10	0.18	12.00	-2.48	0.780	*	-0.1080
12	43	34	0.58	11.50	-1.98	0.623	*	-0.2058

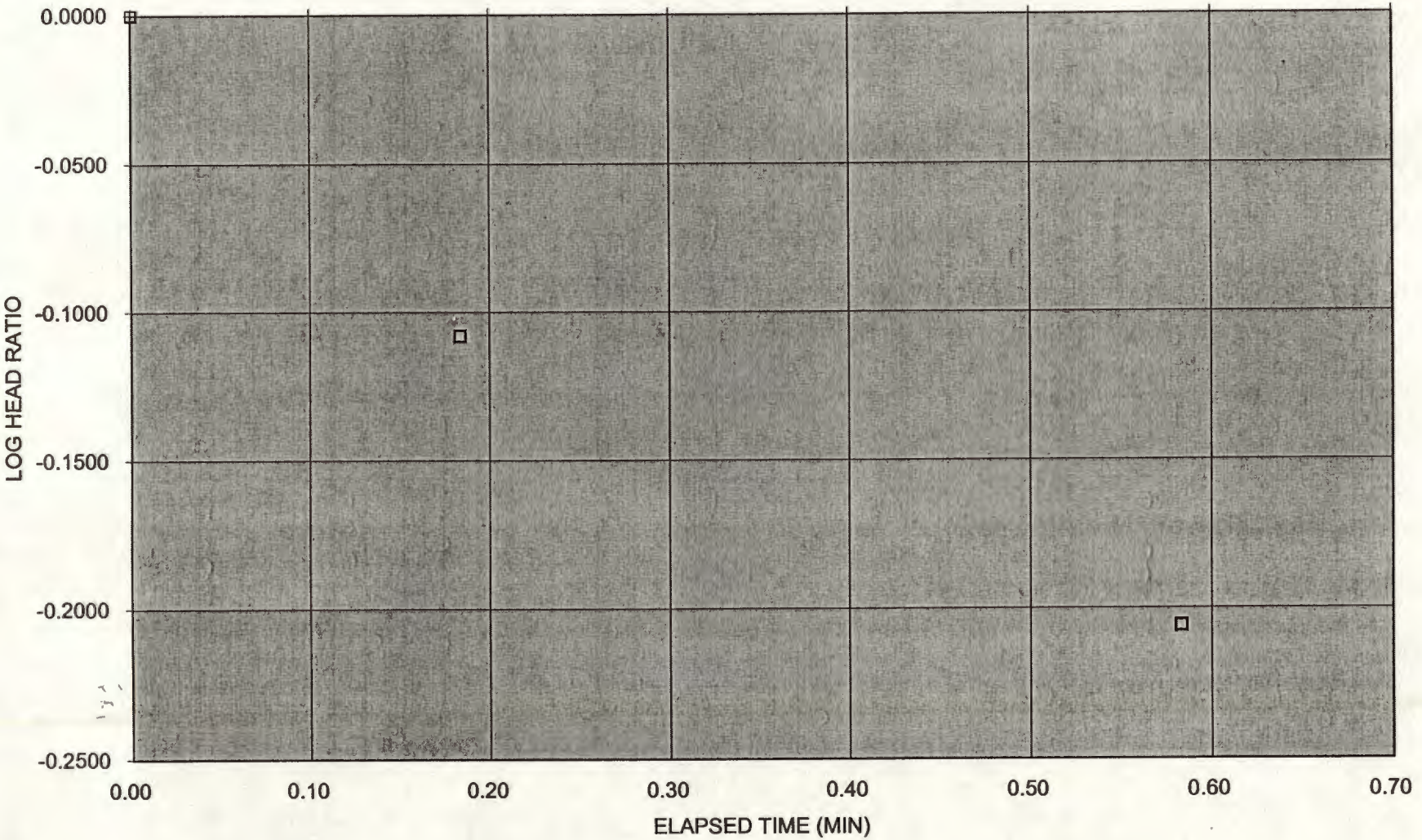
NOTES:

1) * INDICATES THE BEST FIT LINE PASSES THROUGH THESE POINTS WHICH ARE USED TO CALCULATE HYDRAULIC CONDUCTIVITY

K= 2.98E-04 CM/SEC

	ELAPSED TIME	HEAD RATIO
POINT 1	0.180	0.780
POINT 2	0.580	0.623

RISING HEAD TEST
WELL MW-99-1



RISING HEAD TEST

WELL	MW-99-2
DATE OF TEST:	3/27/99

STATIC WATER DEPTH =	8.98	FEET BELOW TOC
STANDPIPE DIAMETER =	2.00	INCHES
SANDPACK DIAMETER =	6.00	INCHES
TOP OF SATURATED SAND =	12.40	FEET BELOW TOC
BOTTOM OF SANDPACK =	25.50	FEET BELOW TOC

24 HOUR CLOCK HR	MIN	SEC	ELAPSED TIME (MIN)	DEPTH TO WATER (FT TOC)	HEAD (FEET)	HEAD RATIO (H/Ho)		LOG HEAD RATIO
12	31	46	0.00	11.05	-2.07	1.000	*	0.0000
12	31	57	0.18	10.50	-1.52	0.734		-0.1341
12	32	5	0.32	10.20	-1.22	0.589		-0.2296
12	32	12	0.43	10.00	-1.02	0.493		-0.3074
12	32	19	0.55	9.80	-0.82	0.396		-0.4022
12	32	29	0.72	9.60	-0.62	0.300		-0.5236
12	32	43	0.95	9.40	-0.42	0.203	*	-0.6927

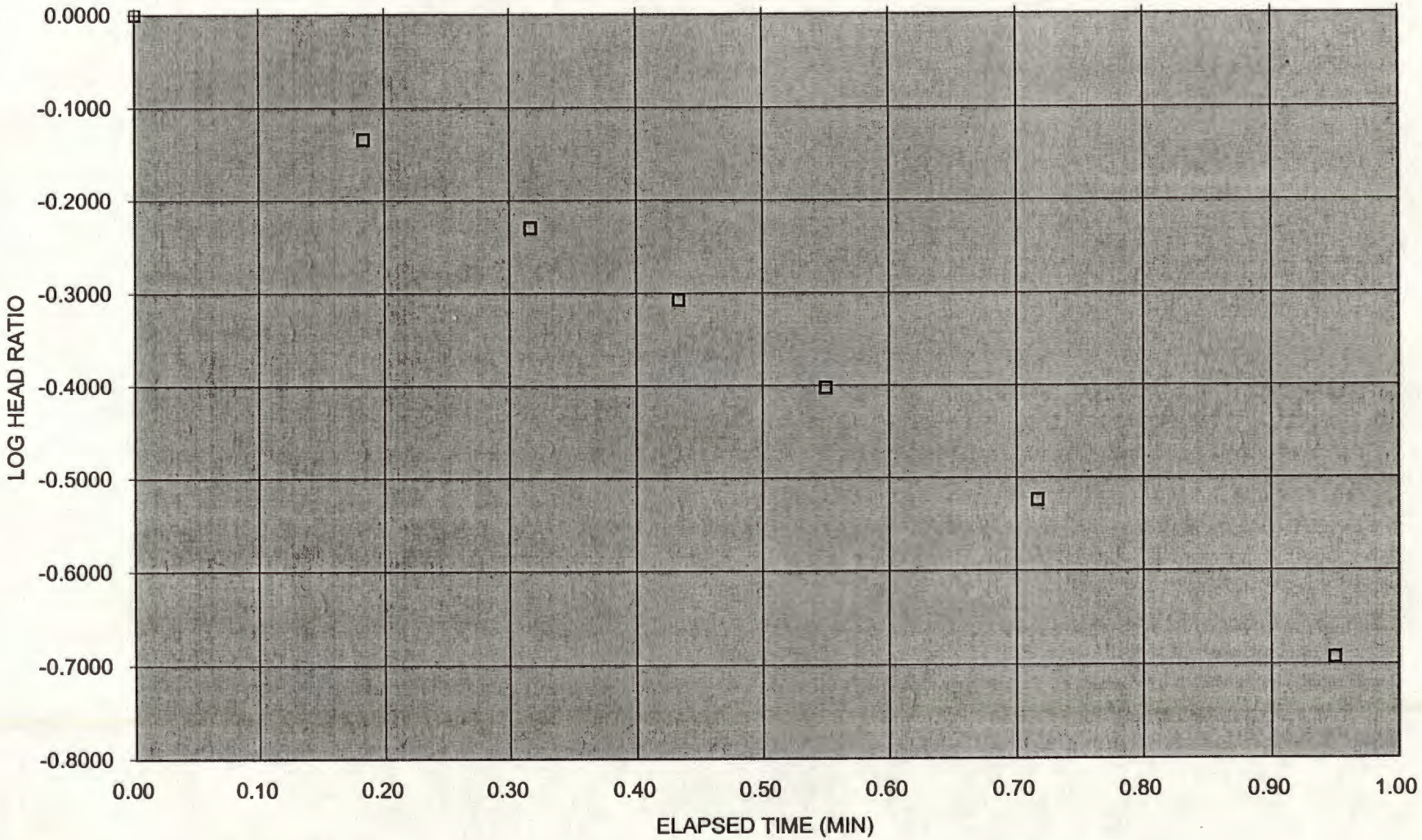
NOTES:

1) * INDICATES THE BEST FIT LINE PASSES THROUGH THESE POINTS WHICH ARE USED TO CALCULATE HYDRAULIC CONDUCTIVITY

K= 8.95E-04 CM/SEC

	ELAPSED TIME	HEAD RATIO
POINT 1	0.000	1.000
POINT 2	0.950	0.203

RISING HEAD TEST
WELL MW-99-2



RISING HEAD TEST

WELL	MW-99-3
DATE OF TEST:	3/27/99

STATIC WATER DEPTH =	9.26	FEET BELOW TOC
STANDPIPE DIAMETER =	2.00	INCHES
SANDPACK DIAMETER =	6.00	INCHES
TOP OF SATURATED SAND =	12.90	FEET BELOW TOC
BOTTOM OF SANDPACK =	24.80	FEET BELOW TOC

24 HOUR CLOCK HR	MIN	SEC	ELAPSED TIME (MIN)	DEPTH TO WATER (FT TOC)	HEAD (FEET)	HEAD RATIO (H/Ho)		LOG HEAD RATIO
9	20	0	0.00	23.45	-14.19	1.000	*	0.0000
10	7	0	47.00	21.76	-12.50	0.881		-0.0551
12	55	0	215.00	12.63	-3.37	0.237	*	-0.6244

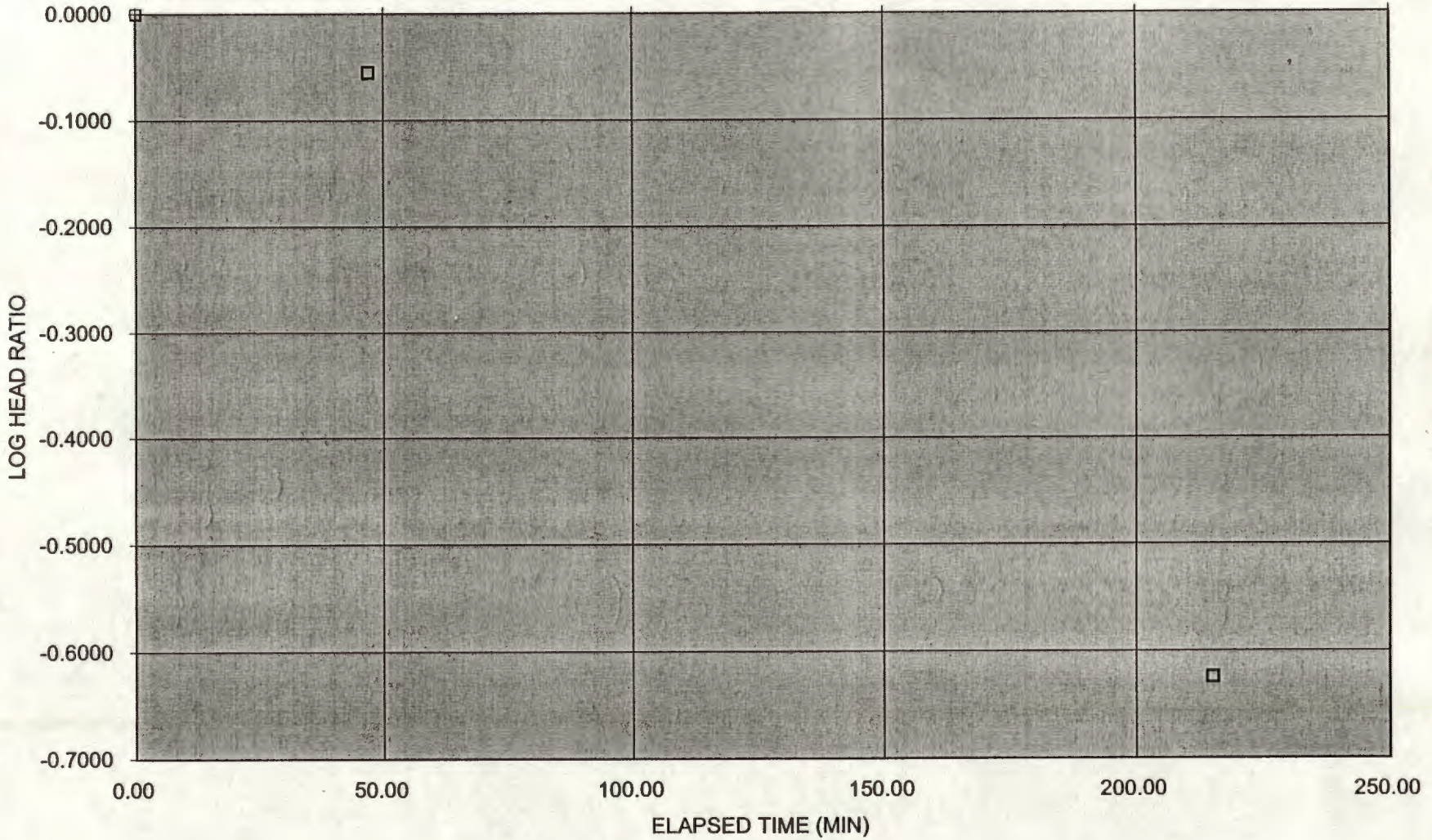
NOTES:

1) * INDICATES THE BEST FIT LINE PASSES THROUGH THESE POINTS WHICH ARE USED TO CALCULATE HYDRAULIC CONDUCTIVITY

K= 3.83E-06 CM/SEC

	ELAPSED TIME	HEAD RATIO
POINT 1	0.000	1.000
POINT 2	215.000	0.237

RISING HEAD TEST
WELL MW-99-3



APPENDIX E

Sample Collection Information Forms

Golder Associates

SAMPLE COLLECTION INFORMATION FORM

GAI PROJECT NAME: UNCEC / SUBSURFACE INVEST / NY — GAI PROJECT NO. 993-9211

SAMPLE ID. MW-99-1 — SOURCE CODES: RIVER OR STREAM, (WELL), SOIL, OTHER (CIRCLE ONE)

PURGING INFORMATION (IF APPLICABLE)

PURGE DATE (yy/mm/dd)	99/03/27	TIME (24 HR CLOCK)	10:15	ELAPSED HRS.	1/4
CASING VOL.(Gal.)	2.3	GAL. PURGED (Gal.)	7.0		
PURGING DEVICE (SEE BELOW)	E	PURGING DEVICE MATERIAL	S.S.	DEDICATED (Y/N)	

SAMPLE COLLECTION INFORMATION

SAMPLING DATE (yy/mm/dd)	99/03/27	TIME (24 HR CLOCK)	10:30	MATRIX	H_2O
SAMPLING DEVICE (SEE BELOW	E	DEDICATED (Y/N)		FILTERED (Y/N)	
SAMPLING DEVICE MATERIAL	SS	SAMPLE TYPE - GRAB/COMPOSITE (CIRCLE ONE)			

(A) AIR-LIFT PUMP (B) BLADDER PUMP (C) PERISTALTIC PUMP (D) SCOOP/SHOVEL (E) BAILER (F) OTHER (SPECIFY)

WELL INFORMATION (IF APPLICABLE)

REFERENCE POINT	TOR	LAND ELEVATION (FT./MSL)	N/A
REF. PT. ELEV.(FT. MSL)	N/A	WELL DEPTH (FT.)	25.05
DEPTH TO WATER (REF. PT.)	9.50	STICKUP (FT.)	N/A
GW. ELEV.(FT. MSL.)	N/A	WELL DIAMETER (INCHES)	2

FIELD MEASURMENTS (FOUR REPLICATES)

	Initial Purge	Final Purge	Final Sample	
pH (STD)	6.9	6.9	6.9	-----
SPEC. COND.(ppm UMHOS/CM)	>1990	>1990	>1990	-----
TEMPERATURE (C)	12	11	11	-----
OTHER (SPECIFY)	-----	-----	-----	-----

COMMENTS/CALCULATIONS

WEATHER CONDITIONS: Sun 50°F

SAMPLE APPEARANCE: Brown turbidity

2" DIA. CASING CONTAINS .163 Gal./Ft.
4" DIA. CASING CONTAINS .652 Gal./Ft.

Sample DUP collected here

PLEASE INCLUDE SAMPLE BOTTLE SIZE, BOTTLE COLOR, BOTTLE MATERIAL, PRESERVATIVES AND ANALYTICAL METHODS ON LABORATORY CUSTODY FORMS.

SAMPLER SIGNATURE: [signature] DATE 3/27/99

Golder Associates

SAMPLE COLLECTION INFORMATION FORM

GAI PROJECT NAME VMEC / SUBSURFACE INVEST / NE GAI PROJECT NO. 993-9211

SAMPLE ID. MW-99-2 SOURCE CODES: RIVER OR STREAM, (WELL), SOIL, OTHER (CIRCLE ONE)

PURGING INFORMATION (IF APPLICABLE)

PURGE DATE (yy/mm/dd)	99/03/27	TIME (24 HR CLOCK)	9:25	ELAPSED HRS.	3/4
CASING VOL.(Gal.)	26	GAL. PURGED (Gal.)	13		
PURGING DEVICE (SEE BELOW)	E	PURGING DEVICE MATERIAL	SS.	DEDICATED (Y/N)	

SAMPLE COLLECTION INFORMATION

SAMPLING DATE (yy/mm/dd)	99/03/27	TIME (24 HR CLOCK)	10:10	MATRIX	H2O
SAMPLING DEVICE (SEE BELOW	E	DEDICATED (Y/N)		FILTERED (Y/N)	
SAMPLING DEVICE MATERIAL	SS.	SAMPLE TYPE - (GRAB)/COMPOSITE (CIRCLE ONE)			

(A) AIR-LIFT PUMP (B) BLADDER PUMP (C) PERISTALTIC PUMP (D) SCOOP/SHOVEL (E) BAILER (F) OTHER (SPECIFY)

WELL INFORMATION (IF APPLICABLE)

REFERENCE POINT	TOC	LAND ELEVATION (FT./MSL)	N/A
REF. PT. ELEV.(FT. MSL)	N/A	WELL DEPTH (FT.)	25.92
DEPTH TO WATER (REF. PT.)	9.24	STICKUP (FT.)	N/A
GW. ELEV.(FT. MSL)	N/A	WELL DIAMETER (INCHES)	2

FIELD MEASURMENTS (FOUR REPLICATES)

	Initial Purge	Final Purge	Final Sample	
pH (STD)	11.8	11.8	11.8	-----
SPEC. COND.(UMHOS/CM)	>1990	>1990	>1990	-----
TEMPERATURE (C)	12	13	13	-----
OTHER (SPECIFY)	-----	-----	-----	-----

COMMENTS/CALCULATIONS

WEATHER CONDITIONS SUN 50°F

SAMPLE APPEARANCE Brown Turbidity

2" DIA. CASING CONTAINS .163 Gal./Ft.

4" DIA. CASING CONTAINS .652 Gal./Ft.

PLEASE INCLUDE SAMPLE BOTTLE SIZE, BOTTLE COLOR, BOTTLE MATERIAL, PRESERVATIVES AND ANALYTICAL METHODS ON LABORATORY CUSTODY FORMS.

SAMPLER SIGNATURE D. Wel DATE 3/27/99

Golder Associates

SAMPLE COLLECTION INFORMATION FORM

GAI PROJECT NAME VALEO / SUBSURFACE INVEST / NY GAI PROJECT NO. 993-9211

SAMPLE ID. MW-99-3 SOURCE CODES: RIVER OR STREAM, (WELL), SOIL, OTHER (CIRCLE ONE)

PURGING INFORMATION (IF APPLICABLE)

PURGE DATE (yy/mm/dd)	99/03/27	TIME (24 HR CLOCK)	8:40	ELAPSED HRS.	3/4
CASING VOL.(Gal.)	2.5	GAL. PURGED (Gal.)	5.GTG DRY		
PURGING DEVICE (SEE BELOW)	E	PURGING DEVICE MATERIAL	S.S.	DEDICATED (Y/N)	

SAMPLE COLLECTION INFORMATION

SAMPLING DATE (yy/mm/dd)	99/03/27	TIME (24 HR CLOCK)	9:20	MATRIX	H_2O
SAMPLING DEVICE (SEE BELOW	E	DEDICATED-(Y/N)		FILTERED (Y/(N))	
SAMPLING DEVICE MATERIAL	S.S.	SAMPLE TYPE - (GRAB)/COMPOSITE (CIRCLE ONE)			

(A) AIR-LIFT PUMP (B) BLADDER PUMP (C) PERISTALTIC PUMP (D) SCOOP/SHOVEL (E) BAILER (F) OTHER (SPECIFY)

WELL INFORMATION (IF APPLICABLE)

REFERENCE POINT	TOR	LAND ELEVATION (FT./MSL)	N/A.
REF. PT. ELEV.(FT. MSL)	N/A.	WELL DEPTH (FT.)	21.6
DEPTH TO WATER (REF. PT.)	9.26	STICKUP (FT.)	N/A.
GW. ELEV.(FT. MSL.)	N/A.	WELL DIAMETER (INCHES)	2.

FIELD MEASURMENTS (FOUR REPLICATES)

		Final Purge	Final Sample	
pH (STD)		7.5	7.4	
SPEC. COND.(UMHOS/CM)		7990	7990	
TEMPERATURE (C)		10	12	
OTHER (SPECIFY)				

COMMENTS/CALCULATIONS

WEATHER CONDITIONS Sun 45°F

SAMPLE APPEARANCE Very turbid

2" DIA. CASING CONTAINS .163 Gal./Ft.
4" DIA. CASING CONTAINS .652 Gal./Ft.

PLEASE INCLUDE SAMPLE BOTTLE SIZE, BOTTLE COLOR, BOTTLE MATERIAL, PRESERVATIVES AND ANALYTICAL METHODS ON LABORATORY CUSTODY FORMS.

SAMPLER SIGNATURE [signature] DATE 3/27/99

APPENDIX F

Laboratory Analytical Results

Columbia Analytical Services inc.

A FULL SERVICE ENVIRONMENTAL LABORATORY

GOLDER ASSOCIATES	
REC'D	PN
	FN
CC	ROUTE

APR 19 1999

BUFFALO, NY

April 14, 1999

Mr. Anthony Grasso
Golder Associates
2221 Niagara Falls Blvd.
LPO Box 4069
Niagara Falls, NY 14304-4069

PROJECT:VALEO
Submission #:9903000341

Dear Mr. Grasso:

Enclosed are the analytical results of the analyses requested. The analytical data was provided to you on 03/30/99 per a Facsimile transmittal. All data has been reviewed prior to report submission.

Should you have any questions please contact me at (716) 288-5380.

Thank you for letting us provide this service.

Sincerely,

COLUMBIA ANALYTICAL SERVICES

Mark Wilson
Client Service Manager

Enc.

This package has been reviewed by Columbia Analytical Services, QA Department/Laboratory Director prior to report submittal.

1 Mustard St. • Suite 250 • Rochester, NY 14608 • Tele:(716)288-5380 • Fax:(716)288-8475
65 Rampo Vally Rd. • Suite 16 • Mahwah, NJ 07430 • Tele:(201)512-3292 • Fax:(201)512-3362

Columbia Analytical Services Inc.

Effective 04/01/96

CAS LIST OF QUALIFIERS

(The basis of this proposal are the EPA-CLP Qualifiers)

U - Indicates compound was analyzed for but was not detected. The sample quantitation limit must be corrected for dilution and for percent moisture.

J - Indicates an estimated value. For further explanation see case narrative / cover letter.

B - This flag is used when the analyte is found in the associated blank as well as in the sample.

E - This flag identifies compounds whose concentrations exceed the calibration range.

A - This flag indicates that a TIC is a suspected aldol-condensation product.

N - Spiked sample recovery not within control limits.
(Flag the entire batch - Inorganic analysis only)

* - Duplicate analysis not within control limits.
(Flag the entire batch - Inorganic analysis only)

- Also used to qualify Organics QC data outside limits.

D - Spike diluted out.

S - Reported value determined by Method of Standard Additions. (MSA)

X - As specified in the case narrative.

CAS Lab ID # for State Certifications

NY ID # in Rochester:	10145	NJ ID # in Rochester:	73004
CT ID # in Rochester:	PH0556	RI ID # in Rochester:	158
MA ID # in Rochester:	M-NY032	NH ID # in Rochester:	294198-A
OH EPA # in Rochester:	VAP	AIHA # in Rochester:	7889

COLUMBIA ANALYTICAL SERVICES

Reported: 04/14/99

Golder Associates
Project Reference: VALEO/SUBSURFACE INV./NY
Client Sample ID : B-99-1

Date Sampled : 03/25/99
Date Received: 03/25/99

Order #: 280827
Submission #:9903000341

Sample Matrix: SOIL/SEDIMENT

ANALYTE	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	ANALYTICAL DILUTION
METALS					
ANTIMONY	6.00	7.46 U	MG/KG	03/30/99	1.0
ARSENIC	1.00	4.25	MG/KG	03/30/99	1.0
BERYLLIUM	0.500	0.622 U	MG/KG	03/30/99	1.0
CADMIUM	0.500	0.622 U	MG/KG	03/30/99	1.0
CHROMIUM	1.00	7.01	MG/KG	03/30/99	1.0
COPPER	2.00	4.27	MG/KG	03/30/99	1.0
LEAD	0.500	10.4	MG/KG	03/30/99	1.0
MERCURY	0.0500	0.0622 U	MG/KG	03/30/99	1.0
NICKEL	4.00	7.76	MG/KG	03/30/99	1.0
SELENIUM	0.500	0.677	MG/KG	03/30/99	1.0
SILVER	1.00	1.24 U	MG/KG	03/30/99	1.0
THALLIUM	1.00	1.24 U	MG/KG	03/30/99	1.0
ZINC	2.00	22.9	MG/KG	03/30/99	1.0
WET CHEMISTRY					
PERCENT SOLIDS	1.0	80.4	%	03/29/99	1.0

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B TCL
Reported: 04/14/99

Golder Associates
Project Reference: VALEO/SUBSURFACE INV./NY
Client Sample ID : B-99-1

Date Sampled : 03/25/99 **Order #:** 280827 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 03/25/99 **Submission #:** 9903000341 **Percent Solid:** 80.4

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 03/29/99			
ANALYTICAL DILUTION: 1.00			Dry Weight
ACETONE	20	25 U	UG/KG
BENZENE	5.0	6.2 U	UG/KG
BROMODICHLOROMETHANE	5.0	6.2 U	UG/KG
BROMOFORM	5.0	6.2 U	UG/KG
BROMOMETHANE	5.0	6.2 U	UG/KG
2-BUTANONE (MEK)	10	12 U	UG/KG
CARBON DISULFIDE	10	12 U	UG/KG
CARBON TETRACHLORIDE	5.0	6.2 U	UG/KG
CHLOROBENZENE	5.0	6.2 U	UG/KG
CHLOROETHANE	5.0	6.2 U	UG/KG
CHLOROFORM	5.0	6.2 U	UG/KG
CHLOROMETHANE	5.0	6.2 U	UG/KG
DIBROMOCHLOROMETHANE	5.0	6.2 U	UG/KG
1,1-DICHLOROETHANE	5.0	6.2 U	UG/KG
1,2-DICHLOROETHANE	5.0	6.2 U	UG/KG
1,1-DICHLOROETHENE	5.0	6.2 U	UG/KG
CIS-1,2-DICHLOROETHENE	5.0	6.2 U	UG/KG
TRANS-1,2-DICHLOROETHENE	5.0	6.2 U	UG/KG
1,2-DICHLOROPROPANE	5.0	6.2 U	UG/KG
CIS-1,3-DICHLOROPROPENE	5.0	6.2 U	UG/KG
TRANS-1,3-DICHLOROPROPENE	5.0	6.2 U	UG/KG
ETHYLBENZENE	5.0	6.2 U	UG/KG
2-HEXANONE	10	12 U	UG/KG
METHYLENE CHLORIDE	5.0	6.2 U	UG/KG
4-METHYL-2-PENTANONE (MIBK)	10	12 U	UG/KG
STYRENE	5.0	6.2 U	UG/KG
1,1,2,2-TETRACHLOROETHANE	5.0	6.2 U	UG/KG
TETRACHLOROETHENE	5.0	6.2 U	UG/KG
TOLUENE	5.0	6.2 U	UG/KG
1,1,1-TRICHLOROETHANE	5.0	6.2 U	UG/KG
1,1,2-TRICHLOROETHANE	5.0	6.2 U	UG/KG
TRICHLOROETHENE	5.0	6.2 U	UG/KG
VINYL CHLORIDE	5.0	6.2 U	UG/KG
O-XYLENE	5.0	6.2 U	UG/KG
M+P-XYLENE	5.0	6.2 U	UG/KG

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(74 - 121 %)	98	%
TOLUENE-D8	(81 - 117 %)	102	%
DIBROMOFLUOROMETHANE	(80 - 120 %)	99	%

COLUMBIA ANALYTICAL SERVICES

Reported: 04/14/99

Golder Associates
Project Reference: VALEO/SUBSURFACE INV./NY
Client Sample ID : B-99-2

Date Sampled : 03/25/99 Order #: 280828 Sample Matrix: SOIL/SEDIMENT
Date Received: 03/25/99 Submission #:9903000341

ANALYTE	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	ANALYTICAL DILUTION
METALS					
ANTIMONY	6.00	6.94 U	MG/KG	03/30/99	1.0
ARSENIC	1.00	1.63	MG/KG	03/30/99	1.0
BERYLLIUM	0.500	0.578 U	MG/KG	03/30/99	1.0
CADMIUM	0.500	0.578 U	MG/KG	03/30/99	1.0
CHROMIUM	1.00	4.46	MG/KG	03/30/99	1.0
COPPER	2.00	5.99	MG/KG	03/30/99	1.0
LEAD	0.500	7.21	MG/KG	03/30/99	1.0
MERCURY	0.0500	0.0578 U	MG/KG	03/30/99	1.0
NICKEL	4.00	5.60	MG/KG	03/30/99	1.0
SELENIUM	0.500	0.689	MG/KG	03/30/99	1.0
SILVER	1.00	1.16 U	MG/KG	03/30/99	1.0
THALLIUM	1.00	1.16 U	MG/KG	03/30/99	1.0
ZINC	2.00	15.1	MG/KG	03/30/99	1.0
WET CHEMISTRY					
PERCENT SOLIDS	1.0	86.5	%	03/29/99	1.0

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B TCL
Reported: 04/14/99

Golder Associates
Project Reference: VALEO/SUBSURFACE INV./NY
Client Sample ID : B-99-2

Date Sampled : 03/25/99 **Order #:** 280828 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 03/25/99 **Submission #:** 9903000341 **Percent Solid:** 86.5

DATE ANALYZED : 03/29/99
ANALYTICAL DILUTION: 1.00

ANALYTE	PQL	RESULT	UNITS
			Dry Weight
ACETONE	20	23 U	UG/KG
BENZENE	5.0	5.8 U	UG/KG
BROMODICHLOROMETHANE	5.0	5.8 U	UG/KG
BROMOFORM	5.0	5.8 U	UG/KG
BROMOMETHANE	5.0	5.8 U	UG/KG
2-BUTANONE (MEK)	10	12 U	UG/KG
CARBON DISULFIDE	10	12 U	UG/KG
CARBON TETRACHLORIDE	5.0	5.8 U	UG/KG
CHLOROBENZENE	5.0	5.8 U	UG/KG
CHLOROETHANE	5.0	5.8 U	UG/KG
CHLOROFORM	5.0	5.8 U	UG/KG
CHLOROMETHANE	5.0	5.8 U	UG/KG
DIBROMOCHLOROMETHANE	5.0	5.8 U	UG/KG
1,1-DICHLOROETHANE	5.0	5.8 U	UG/KG
1,2-DICHLOROETHANE	5.0	5.8 U	UG/KG
1,1-DICHLOROETHENE	5.0	5.8 U	UG/KG
CIS-1,2-DICHLOROETHENE	5.0	5.8 U	UG/KG
TRANS-1,2-DICHLOROETHENE	5.0	5.8 U	UG/KG
1,2-DICHLOROPROPANE	5.0	5.8 U	UG/KG
CIS-1,3-DICHLOROPROPENE	5.0	5.8 U	UG/KG
TRANS-1,3-DICHLOROPROPENE	5.0	5.8 U	UG/KG
ETHYLBENZENE	5.0	5.8 U	UG/KG
2-HEXANONE	10	12 U	UG/KG
METHYLENE CHLORIDE	5.0	5.8 U	UG/KG
4-METHYL-2-PENTANONE (MIBK)	10	12 U	UG/KG
STYRENE	5.0	5.8 U	UG/KG
1,1,2,2-TETRACHLOROETHANE	5.0	5.8 U	UG/KG
TETRACHLOROETHENE	5.0	5.8 U	UG/KG
TOLUENE	5.0	5.8 U	UG/KG
1,1,1-TRICHLOROETHANE	5.0	5.8 U	UG/KG
1,1,2-TRICHLOROETHANE	5.0	5.8 U	UG/KG
TRICHLOROETHENE	5.0	5.8 U	UG/KG
VINYL CHLORIDE	5.0	5.8 U	UG/KG
O-XYLENE	5.0	5.8 U	UG/KG
M+P-XYLENE	5.0	5.8 U	UG/KG

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(74 - 121 %)	99	%
TOLUENE-D8	(81 - 117 %)	97	%
DIBROMOFLUOROMETHANE	(80 - 120 %)	103	%

COLUMBIA ANALYTICAL SERVICES

Reported: 04/14/99

Golder Associates
Project Reference: VALEO/SUBSURFACE INV./NY
Client Sample ID : B-99-3

Date Sampled : 03/25/99
Date Received: 03/25/99
Order #: 280829
Submission #:9903000341
Sample Matrix: SOIL/SEDIMENT

ANALYTE	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	ANALYTICAL DILUTION
METALS					
ANTIMONY	6.00	6.85 U	MG/KG	03/30/99	1.0
ARSENIC	1.00	1.14 U	MG/KG	03/30/99	1.0
BERYLLIUM	0.500	0.571 U	MG/KG	03/30/99	1.0
CADMIUM	0.500	0.571 U	MG/KG	03/30/99	1.0
CHROMIUM	1.00	5.70	MG/KG	03/30/99	1.0
COPPER	2.00	13.8	MG/KG	03/30/99	1.0
LEAD	0.500	7.72	MG/KG	03/30/99	1.0
MERCURY	0.0500	0.0571 U	MG/KG	03/30/99	1.0
NICKEL	4.00	7.18	MG/KG	03/30/99	1.0
SELENIUM	0.500	0.571 U	MG/KG	03/30/99	1.0
SILVER	1.00	1.14 U	MG/KG	03/30/99	1.0
THALLIUM	1.00	1.14 U	MG/KG	03/30/99	1.0
ZINC	2.00	23.7	MG/KG	03/30/99	1.0
WET CHEMISTRY					
PERCENT SOLIDS	1.0	87.6	%	03/29/99	1.0

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B TCL
Reported: 04/14/99

Golder Associates
Project Reference: VALEO/SUBSURFACE INV./NY
Client Sample ID : B-99-3

Date Sampled : 03/25/99 **Order #:** 280829 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 03/25/99 **Submission #:** 9903000341 **Percent Solid:** 87.6

DATE ANALYZED : 03/29/99
ANALYTICAL DILUTION: 1.00

ANALYTE	PQL	RESULT	UNITS
			Dry Weight
ACETONE	20	23 U	UG/KG
BENZENE	5.0	5.7 U	UG/KG
BROMODICHLOROMETHANE	5.0	5.7 U	UG/KG
BROMOFORM	5.0	5.7 U	UG/KG
BROMOMETHANE	5.0	5.7 U	UG/KG
2-BUTANONE (MEK)	10	11 U	UG/KG
CARBON DISULFIDE	10	11 U	UG/KG
CARBON TETRACHLORIDE	5.0	5.7 U	UG/KG
CHLOROBENZENE	5.0	5.7 U	UG/KG
CHLOROETHANE	5.0	5.7 U	UG/KG
CHLOROFORM	5.0	5.7 U	UG/KG
CHLOROMETHANE	5.0	5.7 U	UG/KG
DIBROMOCHLOROMETHANE	5.0	5.7 U	UG/KG
1,1-DICHLOROETHANE	5.0	5.7 U	UG/KG
1,2-DICHLOROETHANE	5.0	5.7 U	UG/KG
1,1-DICHLOROETHENE	5.0	5.7 U	UG/KG
CIS-1,2-DICHLOROETHENE	5.0	5.7 U	UG/KG
TRANS-1,2-DICHLOROETHENE	5.0	5.7 U	UG/KG
1,2-DICHLOROPROPANE	5.0	5.7 U	UG/KG
CIS-1,3-DICHLOROPROPENE	5.0	5.7 U	UG/KG
TRANS-1,3-DICHLOROPROPENE	5.0	5.7 U	UG/KG
ETHYLBENZENE	5.0	5.7 U	UG/KG
2-HEXANONE	10	11 U	UG/KG
METHYLENE CHLORIDE	5.0	5.7 U	UG/KG
4-METHYL-2-PENTANONE (MIBK)	10	11 U	UG/KG
STYRENE	5.0	5.7 U	UG/KG
1,1,2,2-TETRACHLOROETHANE	5.0	5.7 U	UG/KG
TETRACHLOROETHENE	5.0	5.7 U	UG/KG
TOLUENE	5.0	5.7 U	UG/KG
1,1,1-TRICHLOROETHANE	5.0	5.7 U	UG/KG
1,1,2-TRICHLOROETHANE	5.0	5.7 U	UG/KG
TRICHLOROETHENE	5.0	5.7 U	UG/KG
VINYL CHLORIDE	5.0	5.7 U	UG/KG
O-XYLENE	5.0	5.7 U	UG/KG
M+P-XYLENE	5.0	5.7 U	UG/KG

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(74 - 121 %)	106	%
TOLUENE-D8	(81 - 117 %)	101	%
DIBROMOFLUOROMETHANE	(80 - 120 %)	103	%

COLUMBIA ANALYTICAL SERVICES

Reported: 04/14/99

Golder Associates
Project Reference: VALEO/SUBSURFACE INV./NY
Client Sample ID : B-99-4

Date Sampled : 03/25/99
Date Received: 03/25/99
Order #: 280830
Submission #:9903000341
Sample Matrix: SOIL/SEDIMENT

ANALYTE	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	ANALYTICAL DILUTION
METALS					
ANTIMONY	6.00	7.17 U	MG/KG	03/30/99	1.0
ARSENIC	1.00	1.19 U	MG/KG	03/30/99	1.0
BERYLLIUM	0.500	0.597 U	MG/KG	03/30/99	1.0
CADMIUM	0.500	0.597 U	MG/KG	03/30/99	1.0
CHROMIUM	1.00	4.10	MG/KG	03/30/99	1.0
COPPER	2.00	7.90	MG/KG	03/30/99	1.0
LEAD	0.500	4.55	MG/KG	03/30/99	1.0
MERCURY	0.0500	0.0597 U	MG/KG	03/30/99	1.0
NICKEL	4.00	5.50	MG/KG	03/30/99	1.0
SELENIUM	0.500	0.597 U	MG/KG	03/30/99	1.0
SILVER	1.00	1.19 U	MG/KG	03/30/99	1.0
THALLIUM	1.00	1.19 U	MG/KG	03/30/99	1.0
ZINC	2.00	13.1	MG/KG	03/30/99	1.0
WET CHEMISTRY					
PERCENT SOLIDS	1.0	83.7	%	03/29/99	1.0

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B TCL
Reported: 04/14/99

Golder Associates
Project Reference: VALEO/SUBSURFACE INV./NY
Client Sample ID : B-99-4

Date Sampled : 03/25/99 **Order #:** 280830 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 03/25/99 **Submission #:** 9903000341 **Percent Solid:** 83.7

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 03/29/99			
ANALYTICAL DILUTION: 1.00			Dry Weight
ACETONE	20	24 U	UG/KG
BENZENE	5.0	6.0 U	UG/KG
BROMODICHLOROMETHANE	5.0	6.0 U	UG/KG
BROMOFORM	5.0	6.0 U	UG/KG
BROMOMETHANE	5.0	6.0 U	UG/KG
2-BUTANONE (MEK)	10	12 U	UG/KG
CARBON DISULFIDE	10	12 U	UG/KG
CARBON TETRACHLORIDE	5.0	6.0 U	UG/KG
CHLOROBENZENE	5.0	6.0 U	UG/KG
CHLOROETHANE	5.0	6.0 U	UG/KG
CHLOROFORM	5.0	6.0 U	UG/KG
CHLOROMETHANE	5.0	6.0 U	UG/KG
DIBROMOCHLOROMETHANE	5.0	6.0 U	UG/KG
1,1-DICHLOROETHANE	5.0	6.0 U	UG/KG
1,2-DICHLOROETHANE	5.0	6.0 U	UG/KG
1,1-DICHLOROETHENE	5.0	6.0 U	UG/KG
CIS-1,2-DICHLOROETHENE	5.0	6.0 U	UG/KG
TRANS-1,2-DICHLOROETHENE	5.0	6.0 U	UG/KG
1,2-DICHLOROPROPANE	5.0	6.0 U	UG/KG
CIS-1,3-DICHLOROPROPENE	5.0	6.0 U	UG/KG
TRANS-1,3-DICHLOROPROPENE	5.0	6.0 U	UG/KG
ETHYLBENZENE	5.0	6.0 U	UG/KG
2-HEXANONE	10	12 U	UG/KG
METHYLENE CHLORIDE	5.0	6.0 U	UG/KG
4-METHYL-2-PENTANONE (MIBK)	10	12 U	UG/KG
STYRENE	5.0	6.0 U	UG/KG
1,1,2,2-TETRACHLOROETHANE	5.0	6.0 U	UG/KG
TETRACHLOROETHENE	5.0	6.0 U	UG/KG
TOLUENE	5.0	6.0 U	UG/KG
1,1,1-TRICHLOROETHANE	5.0	6.0 U	UG/KG
1,1,2-TRICHLOROETHANE	5.0	6.0 U	UG/KG
TRICHLOROETHENE	5.0	6.0 U	UG/KG
VINYL CHLORIDE	5.0	6.0 U	UG/KG
O-XYLENE	5.0	6.0 U	UG/KG
M+P-XYLENE	5.0	6.0 U	UG/KG

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(74 - 121 %)	97	%
TOLUENE-D8	(81 - 117 %)	99	%
DIBROMOFLUOROMETHANE	(80 - 120 %)	101	%

COLUMBIA ANALYTICAL SERVICES

Reported: 04/14/99

Golder Associates
Project Reference:VALEO
Client Sample ID :MW-99-1

Date Sampled : 03/27/99
Date Received: 03/27/99

Order #: 281228
Submission #:9903000341

Sample Matrix: WATER

ANALYTE	PQL	RESULT	UNITS	DATE ANALYZED	ANALYTICAL DILUTION
METALS					
ANTIMONY	0.0600	0.0600 U	MG/L	03/30/99	1.0
ARSENIC	0.0100	0.0119	MG/L	03/30/99	1.0
BERYLLIUM	0.00500	0.00500 U	MG/L	03/30/99	1.0
CADMIUM	0.00500	0.00500 U	MG/L	03/30/99	1.0
CHROMIUM	0.0100	0.0364	MG/L	03/30/99	1.0
COPPER	0.0200	0.0615	MG/L	03/30/99	1.0
LEAD	0.00500	0.102	MG/L	03/30/99	1.0
MERCURY	0.000300	0.000300 U	MG/L	03/29/99	1.0
NICKEL	0.0400	0.0460	MG/L	03/30/99	1.0
SELENIUM	0.00500	0.00740	MG/L	03/30/99	1.0
SILVER	0.0100	0.0100 U	MG/L	03/30/99	1.0
THALLIUM	0.0100	0.0100 U	MG/L	03/30/99	1.0
ZINC	0.0200	0.0949	MG/L	03/30/99	1.0

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B TCL
Reported: 04/14/99

Golder Associates
Project Reference: VALEO
Client Sample ID : MW-99-1

Date Sampled : 03/27/99 **Order #:** 281228 **Sample Matrix:** WATER
Date Received: 03/27/99 **Submission #:** 9903000341 **Analytical Run** 36510

DATE ANALYZED : 03/29/99
ANALYTICAL DILUTION: 1.00

ANALYTE	PQL	RESULT	UNITS
ACETONE	20	20 U	UG/L
BENZENE	5.0	5.0 U	UG/L
BROMODICHLOROMETHANE	5.0	5.0 U	UG/L
BROMOFORM	5.0	5.0 U	UG/L
BROMOMETHANE	5.0	5.0 U	UG/L
2-BUTANONE (MEK)	10	10 U	UG/L
CARBON DISULFIDE	10	10 U	UG/L
CARBON TETRACHLORIDE	5.0	5.0 U	UG/L
CHLOROBENZENE	5.0	5.0 U	UG/L
CHLOROETHANE	5.0	5.0 U	UG/L
CHLOROFORM	5.0	5.0 U	UG/L
CHLOROMETHANE	5.0	5.0 U	UG/L
DIBROMOCHLOROMETHANE	5.0	5.0 U	UG/L
1,1-DICHLOROETHANE	5.0	5.0 U	UG/L
1,2-DICHLOROETHANE	5.0	5.0 U	UG/L
1,1-DICHLOROETHENE	5.0	5.0 U	UG/L
CIS-1,2-DICHLOROETHENE	5.0	5.0 U	UG/L
TRANS-1,2-DICHLOROETHENE	5.0	5.0 U	UG/L
1,2-DICHLOROPROPANE	5.0	5.0 U	UG/L
CIS-1,3-DICHLOROPROPENE	5.0	5.0 U	UG/L
TRANS-1,3-DICHLOROPROPENE	5.0	5.0 U	UG/L
ETHYLBENZENE	5.0	5.0 U	UG/L
2-HEXANONE	10	10 U	UG/L
METHYLENE CHLORIDE	5.0	5.0 U	UG/L
4-METHYL-2-PENTANONE (MIBK)	10	10 U	UG/L
STYRENE	5.0	5.0 U	UG/L
1,1,2,2-TETRACHLOROETHANE	5.0	5.0 U	UG/L
TETRACHLOROETHENE	5.0	5.0 U	UG/L
TOLUENE	5.0	5.0 U	UG/L
1,1,1-TRICHLOROETHANE	5.0	5.0 U	UG/L
1,1,2-TRICHLOROETHANE	5.0	5.0 U	UG/L
TRICHLOROETHENE	5.0	5.0 U	UG/L
VINYL CHLORIDE	5.0	5.0 U	UG/L
O-XYLENE	5.0	5.0 U	UG/L
M+P-XYLENE	5.0	5.0 U	UG/L

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(86 - 115 %)	107	%
TOLUENE-D8	(88 - 110 %)	104	%
DIBROMOFLUOROMETHANE	(86 - 118 %)	102	%

COLUMBIA ANALYTICAL SERVICES

Reported: 04/14/99

Golder Associates
Project Reference:VALEO
Client Sample ID :MW-99-2

Date Sampled : 03/27/99
Date Received: 03/27/99

Order #: 281229
Submission #:9903000341

Sample Matrix: WATER

ANALYTE	PQL	RESULT	UNITS	DATE ANALYZED	ANALYTICAL DILUTION
METALS					
ANTIMONY	0.0600	0.0600 U	MG/L	03/30/99	1.0
ARSENIC	0.0100	0.0532	MG/L	03/30/99	1.0
BERYLLIUM	0.00500	0.00500 U	MG/L	03/30/99	1.0
CADMIUM	0.00500	0.00500 U	MG/L	03/30/99	1.0
CHROMIUM	0.0100	0.324	MG/L	03/30/99	1.0
COPPER	0.0200	0.275	MG/L	03/30/99	1.0
LEAD	0.00500	0.189	MG/L	03/30/99	1.0
MERCURY	0.000300	0.000300 U	MG/L	03/29/99	1.0
NICKEL	0.0400	0.200	MG/L	03/30/99	1.0
SELENIUM	0.00500	0.00881	MG/L	03/30/99	1.0
SILVER	0.0100	0.0100 U	MG/L	03/30/99	1.0
THALLIUM	0.0100	0.0100 U	MG/L	03/30/99	1.0
ZINC	0.0200	0.520	MG/L	03/30/99	1.0

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B TCL
Reported: 04/14/99

Golder Associates
Project Reference: VALEO
Client Sample ID : MW-99-2

Date Sampled : 03/27/99 **Order #:** 281229 **Sample Matrix:** WATER
Date Received: 03/27/99 **Submission #:** 9903000341 **Analytical Run** 36510

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 03/29/99			
ANALYTICAL DILUTION: 1.00			
ACETONE	20	20 U	UG/L
BENZENE	5.0	5.0 U	UG/L
BROMODICHLOROMETHANE	5.0	5.0 U	UG/L
BROMOFORM	5.0	5.0 U	UG/L
BROMOMETHANE	5.0	5.0 U	UG/L
2-BUTANONE (MEK)	10	10 U	UG/L
CARBON DISULFIDE	10	10 U	UG/L
CARBON TETRACHLORIDE	5.0	5.0 U	UG/L
CHLOROBENZENE	5.0	5.0 U	UG/L
CHLOROETHANE	5.0	5.0 U	UG/L
CHLOROFORM	5.0	8.3	UG/L
CHLOROMETHANE	5.0	5.0 U	UG/L
DIBROMOCHLOROMETHANE	5.0	5.0 U	UG/L
1,1-DICHLOROETHANE	5.0	5.0 U	UG/L
1,2-DICHLOROETHANE	5.0	5.0 U	UG/L
1,1-DICHLOROETHENE	5.0	5.0 U	UG/L
CIS-1,2-DICHLOROETHENE	5.0	5.0 U	UG/L
TRANS-1,2-DICHLOROETHENE	5.0	5.0 U	UG/L
1,2-DICHLOROPROPANE	5.0	5.0 U	UG/L
CIS-1,3-DICHLOROPROPENE	5.0	5.0 U	UG/L
TRANS-1,3-DICHLOROPROPENE	5.0	5.0 U	UG/L
ETHYLBENZENE	5.0	5.0 U	UG/L
2-HEXANONE	10	10 U	UG/L
METHYLENE CHLORIDE	5.0	5.0 U	UG/L
4-METHYL-2-PENTANONE (MIBK)	10	10 U	UG/L
STYRENE	5.0	5.0 U	UG/L
1,1,2,2-TETRACHLOROETHANE	5.0	5.0 U	UG/L
TETRACHLOROETHENE	5.0	5.0 U	UG/L
TOLUENE	5.0	5.0 U	UG/L
1,1,1-TRICHLOROETHANE	5.0	5.0 U	UG/L
1,1,2-TRICHLOROETHANE	5.0	5.0 U	UG/L
TRICHLOROETHENE	5.0	5.0 U	UG/L
VINYL CHLORIDE	5.0	5.0 U	UG/L
O-XYLENE	5.0	5.0 U	UG/L
M+P-XYLENE	5.0	5.0 U	UG/L

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(86 - 115 %)	110	%
TOLUENE-D8	(88 - 110 %)	103	%
DIBROMOFLUOROMETHANE	(86 - 118 %)	103	%

COLUMBIA ANALYTICAL SERVICES

Reported: 04/14/99

Golder Associates
Project Reference:VALEO
Client Sample ID :MW-99-3

Date Sampled : 03/27/99
Date Received: 03/27/99

Order #: 281230
Submission #:9903000341

Sample Matrix: WATER

ANALYTE	PQL	RESULT	UNITS	DATE ANALYZED	ANALYTICAL DILUTION
METALS					
ANTIMONY	0.0600	0.0600 U	MG/L	03/30/99	1.0
ARSENIC	0.0100	0.137	MG/L	03/30/99	1.0
BERYLLIUM	0.00500	0.00500 U	MG/L	03/30/99	1.0
CADMIUM	0.00500	0.00500 U	MG/L	03/30/99	1.0
CHROMIUM	0.0100	0.199	MG/L	03/30/99	1.0
COPPER	0.0200	0.333	MG/L	03/30/99	1.0
LEAD	0.00500	0.234	MG/L	03/30/99	1.0
MERCURY	0.000300	0.000300 U	MG/L	03/29/99	1.0
NICKEL	0.0400	0.219	MG/L	03/30/99	1.0
SELENIUM	0.00500	0.0133	MG/L	03/30/99	1.0
SILVER	0.0100	0.0100 U	MG/L	03/30/99	1.0
THALLIUM	0.0100	0.0100 U	MG/L	03/30/99	1.0
ZINC	0.0200	0.431	MG/L	03/30/99	1.0

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B TCL
Reported: 04/14/99

Golder Associates
Project Reference: VALEO
Client Sample ID : MW-99-3

Date Sampled : 03/27/99 **Order #:** 281230 **Sample Matrix:** WATER
Date Received: 03/27/99 **Submission #:** 9903000341 **Analytical Run** 36510

DATE ANALYZED : 03/29/99
ANALYTICAL DILUTION: 1.00

ANALYTE	PQL	RESULT	UNITS
ACETONE	20	35	UG/L
BENZENE	5.0	5.0 U	UG/L
BROMODICHLOROMETHANE	5.0	5.0 U	UG/L
BROMOFORM	5.0	5.0 U	UG/L
BROMOMETHANE	5.0	5.0 U	UG/L
2-BUTANONE (MEK)	10	10 U	UG/L
CARBON DISULFIDE	10	10 U	UG/L
CARBON TETRACHLORIDE	5.0	5.0 U	UG/L
CHLOROBENZENE	5.0	5.0 U	UG/L
CHLOROETHANE	5.0	5.0 U	UG/L
CHLOROFORM	5.0	5.0 U	UG/L
CHLOROMETHANE	5.0	5.0 U	UG/L
DIBROMOCHLOROMETHANE	5.0	5.0 U	UG/L
1,1-DICHLOROETHANE	5.0	5.0 U	UG/L
1,2-DICHLOROETHANE	5.0	5.0 U	UG/L
1,1-DICHLOROETHENE	5.0	5.0 U	UG/L
CIS-1,2-DICHLOROETHENE	5.0	5.0 U	UG/L
TRANS-1,2-DICHLOROETHENE	5.0	5.0 U	UG/L
1,2-DICHLOROPROPANE	5.0	5.0 U	UG/L
CIS-1,3-DICHLOROPROPENE	5.0	5.0 U	UG/L
TRANS-1,3-DICHLOROPROPENE	5.0	5.0 U	UG/L
ETHYLBENZENE	5.0	5.0 U	UG/L
2-HEXANONE	10	10 U	UG/L
METHYLENE CHLORIDE	5.0	5.0 U	UG/L
4-METHYL-2-PENTANONE (MIBK)	10	10 U	UG/L
STYRENE	5.0	5.0 U	UG/L
1,1,2,2-TETRACHLOROETHANE	5.0	5.0 U	UG/L
TETRACHLOROETHENE	5.0	5.0 U	UG/L
TOLUENE	5.0	5.0 U	UG/L
1,1,1-TRICHLOROETHANE	5.0	5.0 U	UG/L
1,1,2-TRICHLOROETHANE	5.0	5.0 U	UG/L
TRICHLOROETHENE	5.0	5.0 U	UG/L
VINYL CHLORIDE	5.0	5.0 U	UG/L
O-XYLENE	5.0	5.0 U	UG/L
M+P-XYLENE	5.0	6.2	UG/L

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(86 - 115 %)	111	%
TOLUENE-D8	(88 - 110 %)	104	%
DIBROMOFLUOROMETHANE	(86 - 118 %)	103	%

COLUMBIA ANALYTICAL SERVICES

Reported: 04/14/99

Golder Associates
Project Reference:VALEO
Client Sample ID :DUP.

Date Sampled : 03/27/99
Date Received: 03/27/99

Order #: 281231
Submission #:9903000341

Sample Matrix: WATER

ANALYTE	PQL	RESULT	UNITS	DATE ANALYZED	ANALYTICAL DILUTION
METALS					
ANTIMONY	0.0600	0.0600 U	MG/L	03/30/99	1.0
ARSENIC	0.0100	0.0180	MG/L	03/30/99	1.0
BERYLLIUM	0.00500	0.00500 U	MG/L	03/30/99	1.0
CADMIUM	0.00500	0.00500 U	MG/L	03/30/99	1.0
CHROMIUM	0.0100	0.0410	MG/L	03/30/99	1.0
COPPER	0.0200	0.0775	MG/L	03/30/99	1.0
LEAD	0.00500	0.127	MG/L	03/30/99	1.0
MERCURY	0.000300	0.000300 U	MG/L	03/29/99	1.0
NICKEL	0.0400	0.0549	MG/L	03/30/99	1.0
SELENIUM	0.00500	0.00904	MG/L	03/30/99	1.0
SILVER	0.0100	0.0100 U	MG/L	03/30/99	1.0
THALLIUM	0.0100	0.0100 U	MG/L	03/30/99	1.0
ZINC	0.0200	0.108	MG/L	03/30/99	1.0

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B TCL
Reported: 04/14/99

Golder Associates
Project Reference: VALEO
Client Sample ID : DUP

Date Sampled : 03/27/99 **Order #:** 281231 **Sample Matrix:** WATER
Date Received: 03/27/99 **Submission #:** 9903000341 **Analytical Run** 36510

DATE ANALYZED : 03/29/99
ANALYTICAL DILUTION: 1.00

ANALYTE	PQL	RESULT	UNITS
ACETONE	20	20 U	UG/L
BENZENE	5.0	5.0 U	UG/L
BROMODICHLOROMETHANE	5.0	5.0 U	UG/L
BROMOFORM	5.0	5.0 U	UG/L
BROMOMETHANE	5.0	5.0 U	UG/L
2-BUTANONE (MEK)	10	10 U	UG/L
CARBON DISULFIDE	10	10 U	UG/L
CARBON TETRACHLORIDE	5.0	5.0 U	UG/L
CHLOROBENZENE	5.0	5.0 U	UG/L
CHLOROETHANE	5.0	5.0 U	UG/L
CHLOROFORM	5.0	5.0 U	UG/L
CHLOROMETHANE	5.0	5.0 U	UG/L
DIBROMOCHLOROMETHANE	5.0	5.0 U	UG/L
1,1-DICHLOROETHANE	5.0	5.0 U	UG/L
1,2-DICHLOROETHANE	5.0	5.0 U	UG/L
1,1-DICHLOROETHENE	5.0	5.0 U	UG/L
CIS-1,2-DICHLOROETHENE	5.0	5.0 U	UG/L
TRANS-1,2-DICHLOROETHENE	5.0	5.0 U	UG/L
1,2-DICHLOROPROPANE	5.0	5.0 U	UG/L
CIS-1,3-DICHLOROPROPENE	5.0	5.0 U	UG/L
TRANS-1,3-DICHLOROPROPENE	5.0	5.0 U	UG/L
ETHYLBENZENE	5.0	5.0 U	UG/L
2-HEXANONE	10	10 U	UG/L
METHYLENE CHLORIDE	5.0	5.0 U	UG/L
4-METHYL-2-PENTANONE (MIBK)	10	10 U	UG/L
STYRENE	5.0	5.0 U	UG/L
1,1,2,2-TETRACHLOROETHANE	5.0	5.0 U	UG/L
TETRACHLOROETHENE	5.0	5.0 U	UG/L
TOLUENE	5.0	5.0 U	UG/L
1,1,1-TRICHLOROETHANE	5.0	5.0 U	UG/L
1,1,2-TRICHLOROETHANE	5.0	5.0 U	UG/L
TRICHLOROETHENE	5.0	5.0 U	UG/L
VINYL CHLORIDE	5.0	5.0 U	UG/L
O-XYLENE	5.0	5.0 U	UG/L
M+P-XYLENE	5.0	5.0 U	UG/L

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(86 - 115 %)	114	%
TOLUENE-D8	(88 - 110 %)	110	%
DIBROMOFLUOROMETHANE	(86 - 118 %)	105	%

COLUMBIA ANALYTICAL SERVICES

Reported: 04/14/99

Golder Associates
Project Reference:VALEO
Client Sample ID :RB

Date Sampled : 03/27/99
Date Received: 03/27/99

Order #: 281232
Submission #:9903000341

Sample Matrix: WATER

ANALYTE	PQL	RESULT	UNITS	DATE ANALYZED	ANALYTICAL DILUTION
METALS					
ANTIMONY	0.0600	0.0600 U	MG/L	03/30/99	1.0
ARSENIC	0.0100	0.0100 U	MG/L	03/30/99	1.0
BERYLLIUM	0.00500	0.00500 U	MG/L	03/30/99	1.0
CADMIUM	0.00500	0.00500 U	MG/L	03/30/99	1.0
CHROMIUM	0.0100	0.0100 U	MG/L	03/30/99	1.0
COPPER	0.0200	0.0200 U	MG/L	03/30/99	1.0
LEAD	0.00500	0.00500 U	MG/L	03/30/99	1.0
MERCURY	0.000300	0.000300 U	MG/L	03/29/99	1.0
NICKEL	0.0400	0.0400 U	MG/L	03/30/99	1.0
SELENIUM	0.00500	0.00500 U	MG/L	03/30/99	1.0
SILVER	0.0100	0.0100 U	MG/L	03/30/99	1.0
THALLIUM	0.0100	0.0100 U	MG/L	03/30/99	1.0
ZINC	0.0200	0.0200 U	MG/L	03/30/99	1.0

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B TCL
Reported: 04/14/99

Golder Associates
Project Reference: VALEO
Client Sample ID : RB

Date Sampled : 03/27/99 **Order #:** 281232 **Sample Matrix:** WATER
Date Received: 03/27/99 **Submission #:** 9903000341 **Analytical Run** 36510

DATE ANALYZED : 03/29/99
ANALYTICAL DILUTION: 1.00

ANALYTE	PQL	RESULT	UNITS
ACETONE	20	20 U	UG/L
BENZENE	5.0	5.0 U	UG/L
BROMODICHLOROMETHANE	5.0	5.0 U	UG/L
BROMOFORM	5.0	5.0 U	UG/L
BROMOMETHANE	5.0	5.0 U	UG/L
2-BUTANONE (MEK)	10	10 U	UG/L
CARBON DISULFIDE	10	10 U	UG/L
CARBON TETRACHLORIDE	5.0	5.0 U	UG/L
CHLOROBENZENE	5.0	5.0 U	UG/L
CHLOROETHANE	5.0	5.0 U	UG/L
CHLOROFORM	5.0	5.0 U	UG/L
CHLOROMETHANE	5.0	5.0 U	UG/L
DIBROMOCHLOROMETHANE	5.0	5.0 U	UG/L
1,1-DICHLOROETHANE	5.0	5.0 U	UG/L
1,2-DICHLOROETHANE	5.0	5.0 U	UG/L
1,1-DICHLOROETHENE	5.0	5.0 U	UG/L
CIS-1,2-DICHLOROETHENE	5.0	5.0 U	UG/L
TRANS-1,2-DICHLOROETHENE	5.0	5.0 U	UG/L
1,2-DICHLOROPROPANE	5.0	5.0 U	UG/L
CIS-1,3-DICHLOROPROPENE	5.0	5.0 U	UG/L
TRANS-1,3-DICHLOROPROPENE	5.0	5.0 U	UG/L
ETHYLBENZENE	5.0	5.0 U	UG/L
2-HEXANONE	10	10 U	UG/L
METHYLENE CHLORIDE	5.0	5.0 U	UG/L
4-METHYL-2-PENTANONE (MIBK)	10	10 U	UG/L
STYRENE	5.0	5.0 U	UG/L
1,1,2,2-TETRACHLOROETHANE	5.0	5.0 U	UG/L
TETRACHLOROETHENE	5.0	5.0 U	UG/L
TOLUENE	5.0	5.0 U	UG/L
1,1,1-TRICHLOROETHANE	5.0	5.0 U	UG/L
1,1,2-TRICHLOROETHANE	5.0	5.0 U	UG/L
TRICHLOROETHENE	5.0	5.0 U	UG/L
VINYL CHLORIDE	5.0	5.0 U	UG/L
O-XYLENE	5.0	5.0 U	UG/L
M+P-XYLENE	5.0	5.0 U	UG/L

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(86 - 115 %)	109	%
TOLUENE-D8	(88 - 110 %)	104	%
DIBROMOFLUOROMETHANE	(86 - 118 %)	105	%

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B TCL
Reported: 04/14/99

Golder Associates
Project Reference: VALEO
Client Sample ID : TRIP BLANK

Date Sampled : 03/27/99 **Order #:** 281233 **Sample Matrix:** WATER
Date Received: 03/27/99 **Submission #:** 9903000341 **Analytical Run** 36510

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 03/29/99			
ANALYTICAL DILUTION: 1.00			
ACETONE	20	20 U	UG/L
BENZENE	5.0	5.0 U	UG/L
BROMODICHLOROMETHANE	5.0	5.0 U	UG/L
BROMOFORM	5.0	5.0 U	UG/L
BROMOMETHANE	5.0	5.0 U	UG/L
2-BUTANONE (MEK)	10	10 U	UG/L
CARBON DISULFIDE	10	10 U	UG/L
CARBON TETRACHLORIDE	5.0	5.0 U	UG/L
CHLOROBENZENE	5.0	5.0 U	UG/L
CHLOROETHANE	5.0	5.0 U	UG/L
CHLOROFORM	5.0	5.0 U	UG/L
CHLOROMETHANE	5.0	5.0 U	UG/L
DIBROMOCHLOROMETHANE	5.0	5.0 U	UG/L
1,1-DICHLOROETHANE	5.0	5.0 U	UG/L
1,2-DICHLOROETHANE	5.0	5.0 U	UG/L
1,1-DICHLOROETHENE	5.0	5.0 U	UG/L
CIS-1,2-DICHLOROETHENE	5.0	5.0 U	UG/L
TRANS-1,2-DICHLOROETHENE	5.0	5.0 U	UG/L
1,2-DICHLOROPROPANE	5.0	5.0 U	UG/L
CIS-1,3-DICHLOROPROPENE	5.0	5.0 U	UG/L
TRANS-1,3-DICHLOROPROPENE	5.0	5.0 U	UG/L
ETHYLBENZENE	5.0	5.0 U	UG/L
2-HEXANONE	10	10 U	UG/L
METHYLENE CHLORIDE	5.0	5.0 U	UG/L
4-METHYL-2-PENTANONE (MIBK)	10	10 U	UG/L
STYRENE	5.0	5.0 U	UG/L
1,1,2,2-TETRACHLOROETHANE	5.0	5.0 U	UG/L
TETRACHLOROETHENE	5.0	5.0 U	UG/L
TOLUENE	5.0	5.0 U	UG/L
1,1,1-TRICHLOROETHANE	5.0	5.0 U	UG/L
1,1,2-TRICHLOROETHANE	5.0	5.0 U	UG/L
TRICHLOROETHENE	5.0	5.0 U	UG/L
VINYL CHLORIDE	5.0	5.0 U	UG/L
O-XYLENE	5.0	5.0 U	UG/L
M+P-XYLENE	5.0	5.0 U	UG/L

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(86 - 115 %)	109	%
TOLUENE-D8	(88 - 110 %)	105	%
DIBROMOFLUOROMETHANE	(86 - 118 %)	102	%

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B TCL
Reported: 04/14/99

Project Reference:
Client Sample ID : METHOD BLANK

Date Sampled : **Order #:** 281676 **Sample Matrix:** SOIL/SEDIMENT
Date Received: **Submission #:** **Percent Solid:** 100

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 03/29/99			
ANALYTICAL DILUTION: 1.00			Dry Weight
ACETONE	20	20 U	UG/KG
BENZENE	5.0	5.0 U	UG/KG
BROMODICHLOROMETHANE	5.0	5.0 U	UG/KG
BROMOFORM	5.0	5.0 U	UG/KG
BROMOMETHANE	5.0	5.0 U	UG/KG
2-BUTANONE (MEK)	10	10 U	UG/KG
CARBON DISULFIDE	10	10 U	UG/KG
CARBON TETRACHLORIDE	5.0	5.0 U	UG/KG
CHLOROBENZENE	5.0	5.0 U	UG/KG
CHLOROETHANE	5.0	5.0 U	UG/KG
CHLOROFORM	5.0	5.0 U	UG/KG
CHLOROMETHANE	5.0	5.0 U	UG/KG
DIBROMOCHLOROMETHANE	5.0	5.0 U	UG/KG
1,1-DICHLOROETHANE	5.0	5.0 U	UG/KG
1,2-DICHLOROETHANE	5.0	5.0 U	UG/KG
1,1-DICHLOROETHENE	5.0	5.0 U	UG/KG
CIS-1,2-DICHLOROETHENE	5.0	5.0 U	UG/KG
TRANS-1,2-DICHLOROETHENE	5.0	5.0 U	UG/KG
1,2-DICHLOROPROPANE	5.0	5.0 U	UG/KG
CIS-1,3-DICHLOROPROPENE	5.0	5.0 U	UG/KG
TRANS-1,3-DICHLOROPROPENE	5.0	5.0 U	UG/KG
ETHYLBENZENE	5.0	5.0 U	UG/KG
2-HEXANONE	10	10 U	UG/KG
METHYLENE CHLORIDE	5.0	5.0 U	UG/KG
4-METHYL-2-PENTANONE (MIBK)	10	10 U	UG/KG
STYRENE	5.0	5.0 U	UG/KG
1,1,2,2-TETRACHLOROETHANE	5.0	5.0 U	UG/KG
TETRACHLOROETHENE	5.0	5.0 U	UG/KG
TOLUENE	5.0	5.0 U	UG/KG
1,1,1-TRICHLOROETHANE	5.0	5.0 U	UG/KG
1,1,2-TRICHLOROETHANE	5.0	5.0 U	UG/KG
TRICHLOROETHENE	5.0	5.0 U	UG/KG
VINYL CHLORIDE	5.0	5.0 U	UG/KG
O-XYLENE	5.0	5.0 U	UG/KG
M+P-XYLENE	5.0	5.0 U	UG/KG

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(74 - 121 %)	108	%
TOLUENE-D8	(81 - 117 %)	105	%
DIBROMOFLUOROMETHANE	(80 - 120 %)	100	%

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B TCL
Reported: 04/14/99

Project Reference:
Client Sample ID : METHOD BLANK

Date Sampled : **Order #:** 281680 **Sample Matrix:** WATER
Date Received: **Submission #:** **Analytical Run** 36510

DATE ANALYZED : 03/29/99
ANALYTICAL DILUTION: 1.00

ANALYTE	PQL	RESULT	UNITS
ACETONE	20	20 U	UG/L
BENZENE	5.0	5.0 U	UG/L
BROMODICHLOROMETHANE	5.0	5.0 U	UG/L
BROMOFORM	5.0	5.0 U	UG/L
BROMOMETHANE	5.0	5.0 U	UG/L
2-BUTANONE (MEK)	10	10 U	UG/L
CARBON DISULFIDE	10	10 U	UG/L
CARBON TETRACHLORIDE	5.0	5.0 U	UG/L
CHLOROBENZENE	5.0	5.0 U	UG/L
CHLOROETHANE	5.0	5.0 U	UG/L
CHLOROFORM	5.0	5.0 U	UG/L
CHLOROMETHANE	5.0	5.0 U	UG/L
DIBROMOCHLOROMETHANE	5.0	5.0 U	UG/L
1,1-DICHLOROETHANE	5.0	5.0 U	UG/L
1,2-DICHLOROETHANE	5.0	5.0 U	UG/L
1,1-DICHLOROETHENE	5.0	5.0 U	UG/L
CIS-1,2-DICHLOROETHENE	5.0	5.0 U	UG/L
TRANS-1,2-DICHLOROETHENE	5.0	5.0 U	UG/L
1,2-DICHLOROPROPANE	5.0	5.0 U	UG/L
CIS-1,3-DICHLOROPROPENE	5.0	5.0 U	UG/L
TRANS-1,3-DICHLOROPROPENE	5.0	5.0 U	UG/L
ETHYLBENZENE	5.0	5.0 U	UG/L
2-HEXANONE	10	10 U	UG/L
METHYLENE CHLORIDE	5.0	5.0 U	UG/L
4-METHYL-2-PENTANONE (MIBK)	10	10 U	UG/L
STYRENE	5.0	5.0 U	UG/L
1,1,2,2-TETRACHLOROETHANE	5.0	5.0 U	UG/L
TETRACHLOROETHENE	5.0	5.0 U	UG/L
TOLUENE	5.0	5.0 U	UG/L
1,1,1-TRICHLOROETHANE	5.0	5.0 U	UG/L
1,1,2-TRICHLOROETHANE	5.0	5.0 U	UG/L
TRICHLOROETHENE	5.0	5.0 U	UG/L
VINYL CHLORIDE	5.0	5.0 U	UG/L
O-XYLENE	5.0	5.0 U	UG/L
M+P-XYLENE	5.0	5.0 U	UG/L

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(86 - 115 %)	109	%
TOLUENE-D8	(88 - 110 %)	101	%
DIBROMOFLUOROMETHANE	(86 - 118 %)	102	%

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B TCLP
Reported: 04/14/99

Project Reference:
Client Sample ID : METHOD BLANK

Date Sampled : **Order #:** 283313 **Sample Matrix:** SOIL/SEDIMENT
Date Received: **Submission #:** **Analytical Run** 36750

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 03/30/99			
ANALYTICAL DILUTION: 1.00			
BENZENE	5.0	5.0 U	UG/L
2-BUTANONE (MEK)	10	10 U	UG/L
CARBON TETRACHLORIDE	5.0	5.0 U	UG/L
CHLOROBENZENE	5.0	5.0 U	UG/L
CHLOROFORM	5.0	5.0 U	UG/L
1,2-DICHLOROETHANE	5.0	5.0 U	UG/L
1,1-DICHLOROETHENE	5.0	5.0 U	UG/L
TETRACHLOROETHENE	5.0	5.0 U	UG/L
TRICHLOROETHENE	5.0	5.0 U	UG/L
VINYL CHLORIDE	5.0	5.0 U	UG/L

SURROGATE RECOVERIES	QC LIMITS		
BROMOFLUOROBENZENE	(86 - 115 %)	96	%
TOLUENE-D8	(88 - 110 %)	100	%
DIBROMOFLUOROMETHANE	(86 - 118 %)	101	%

Data Reported following TCLP Toxicity Characteristics Leaching Procedure.
Federal Register, Part 261, Vol. 55, NO 126, June 29, 1990.

COLUMBIA ANALYTICAL SERVICES

EXTRACTABLE ORGANICS
METHOD 8270C TCLP
Reported: 04/14/99

Project Reference:
Client Sample ID : METHOD BLANK

Date Sampled : **Order #:** 282365 **Sample Matrix:** SOIL/SEDIMENT
Date Received: **Submission #:** **Analytical Run** 36613

ANALYTE	PQL	RESULT	UNITS
DATE EXTRACTED : 04/01/99			
DATE ANALYZED : 04/01/99			
ANALYTICAL DILUTION: 1.00			
1,4-DICHLOROBENZENE	5.0	5.0 U	UG/L
2,4-DINITROTOLUENE	5.0	5.0 U	UG/L
HEXACHLOROBENZENE	5.0	5.0 U	UG/L
HEXACHLOROBUTADIENE	5.0	5.0 U	UG/L
HEXACHLOROETHANE	5.0	5.0 U	UG/L
2-METHYLPHENOL	10	10 U	UG/L
3+4-METHYLPHENOL	10	10 U	UG/L
NITROBENZENE	5.0	5.0 U	UG/L
PENTACHLOROPHENOL	20	20 U	UG/L
PYRIDINE	10	10 U	UG/L
2,4,6-TRICHLOROPHENOL	10	10 U	UG/L
2,4,5-TRICHLOROPHENOL	10	10 U	UG/L

SURROGATE RECOVERIES	QC LIMITS		
TERPHENYL-D14	(33 - 141 %)	59	%
NITROBENZENE-D5	(35 - 114 %)	83	%
PHENOL-D6	(10 - 94 %)	34	%
2-FLUOROBIPHENYL	(43 - 116 %)	68	%
2-FLUOROPHENOL	(21 - 110 %)	44	%
2,4,6-TRIBROMOPHENOL	(10 - 123 %)	103	%

Data Reported following TCLP Toxicity Characteristics Leaching Procedure.
Federal Register, Part 261, Vol. 55, NO 126, June 29, 1990.

Columbia Analytical Services, Inc.
An Employee-Owned Company
Mustard St., Suite 250, Rochester, NY 14609-69245
(716) 288-5380 • FAX (716) 288-8475

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

DATE 3/25/99 PAGE 1 OF 1

PROJECT NAME VALEO/Subsurface Inv./NY
PROJECT MANAGER/CONTACT Anthony Grasso
COMPANY/ADDRESS 2221 Niagara Falls Blvd. Suite 9, Niagara Falls, NY 14304
TEL (716) 731-1560 FAX (716) 731-1652
SAMPLER'S SIGNATURE Anthony L. Grasso

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	FOR OFFICE USE ONLY LAB I.D.	SAMPLE MATRIX	# OF CONTAINERS	GC/MS VOA's ☐ 624 ☐ 95-1 ☒ 8260	GC/MS SVOA's ☐ 625 ☐ 95-2 ☐ 8270	GC VOA's ☐ 8021 ☐ 601/602	PESTICIDES/PCB's ☐ 8081 ☐ 608 ☐ 95-3	STAR'S LIST 8021 VOA's ☐ TOTAL ☐ TCLP	STAR'S LIST 8270 SVOA's ☐ TOTAL ☐ TCLP	TCLP ☐ METALS ☐ VOA's ☐ SVOA's ☐ H/P	WASTE CHARACTERIZATION ☐ React ☐ Corros. ☐ Ignit.	METALS, TOTAL (LIST BELOW)	METALS, DISSOLVED (LIST BELOW)	Metals, P.P.	PRESERVATION pH < 2.0	PRESERVATION pH > 12	PRESERVATION Other
B-99-1	3/25/99	1005		Soil	2	1										1			
B-99-2	"	1145		Soil	2	1										1			
B-99-3	"	1315		Soil	2	1										1			
B-99-4	"	240pm		Soil	2	1										1			

RELINQUISHED BY:
Signature: Anthony L. Grasso
Printed Name: Anthony Grasso
Firm: Golder Associates
Date/Time: 3/25/99 1600

RECEIVED BY:
Signature: Tom Hastings
Printed Name: Tom Hastings
Firm: CAS
Date/Time: 3/25/99 16:15

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS
__ 24 hr. X 48 hr. __ 5 day
__ Standard (10-15 working days)
__ Provide Verbal Preliminary Results
__ Provide FAX Preliminary Results
Requested Report Date _____

REPORT REQUIREMENTS
__ 1. Routine Report
__ 2. Routine Rep. w/CASE Narrative
__ 3. EPA Level III Validatable Package
__ 4. N.J. Reduced Deliverables Level IV
__ 5. NY ASP/CLP Deliverables
__ 6. Site specific QC.

INVOICE INFORMATION:
P.O. #:
Bill To:

SAMPLE RECEIPT:
Shipping Via: Client
Shipping #:
Temperature: 2.2°
Submission No: 3.341

SPECIAL INSTRUCTIONS/COMMENTS: RUSH - 48 hours
METALS
ORGANICS: ☐ TCL ☐ PPL ☐ AE Only ☐ BN Only ☐ Special List

Columbia Analytical Services Inc.
Cooler Receipt And Preservation Check Form

Project/Client Golder. Submission Number 3-341

Cooler received on 3/25/99 and opened on 3/25/99 by OA

1. Were custody seals on outside of cooler? YES (NO)
   If yes, how many and where? Hand delivered
2. Were signature & date correct? YES NO
3. Were custody papers properly filled out (ink, signed, etc)? (YES) NO
4. Did all bottles arrive in good condition (unbroken)? (YES) NO
5. Were all bottle labels complete (*i.e.* analysis, preservation, etc)? (YES) NO
6. Did all bottle labels and tags agree with custody papers? (YES) NO
7. Were correct bottles used for the tests indicated? (YES) NO
8. Were VOA vials checked for absence of air bubbles, and noted if so? YES NO (NA)
9. Where did the bottles originate? CAS/A CAS/K CAS/S CAS/L CAS/X CAS/J (CAS/R)
10. Temperature of cooler(s) upon receipt: 2.2 ____ ____ ____ ____

Is the temperature within 4 ± 2° C?:	Yes ☒	Yes ☐	Yes ☐	Yes ☐	Yes ☐
If No, Explain Below	No ☐	No ☐	No ☐	No ☐	No ☐

Date/Time Temperatures Taken: 3/25/99 16:17

Thermometer ID: #139 **Circle One:** Temp Blank Sample Bottle (Cooler Temp)

Explain any discrepancies: ✓

		YES	NO	Sample I.D.	Reagent	Vol. Added
pH	Reagent					
12	NaOH					
2	HNO_3					
2	H_2SO_4					
5-9*	P/PCBs (608 only)					

YES = All samples OK
NO = Samples were preserved at lab as listed
*If pH adjustment is required, use NaOH and/or H_2SO_4

VOC Vial pH Verification (Tested after Analysis) Following Samples Exhibited pH > 2				

CLIENT NOTIFICATION: _____

discrep. dr

Columbia Analytical Services, Inc.
An Employee-Owned Company

Mustard St., Suite 250, Rochester, NY 14609-69245
(716) 288-5380 • FAX (716) 288-8475

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

DATE 3/27/99 PAGE 1 OF 1

PROJECT NAME VALEO
PROJECT MANAGER/CONTACT ANTHONY GRASSO
COMPANY/ADDRESS GOLDER ASSOC.
2221 NIAGARA FALLS BLVD, NF, NY
TEL (716) 731 1560 FAX (716) 731 1652
SAMPLER'S SIGNATURE Dan Wehr

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	FOR OFFICE USE ONLY LAB I.D.	SAMPLE MATRIX	# OF CONTAINERS	GC/MS VOA's ☒ 8260 ☐ 624 ☐ 95-1	GC/MS SVOA's ☐ 8270 ☐ 625 ☐ 95-2	GC VOA's ☐ 8021 ☐ 601/602	PESTICIDES/PCB's ☐ 8081 ☐ 608 ☐ 95-3	STAR'S LIST 8021 VOA's ☐ TOTAL ☐ TCLP	STAR'S LIST 8270 SVOA's ☐ TOTAL ☐ TCLP	TCLP ☒ METALS ☒ VOA's ☒ SVOA's ☐ H/P	WASTE CHARACTERIZATION ☐ React ☐ Corros. ☐ Ignit.	METALS, TOTAL (LIST BELOW)	METALS, DISSOLVED (LIST BELOW)	PP Metals, Fe	TCL					PRESERVATION pH < 2.0	PRESERVATION pH > 12	PRESERVATION Other
MW-99-1	3/27/99	10:30	28/228	H_2O	3	X										X								
MW-99-2		10:10	229	H_2O	3	X										X								
MW-99-3		9:20	230	H_2O	3	X										X								
DUP		-	231	H_2O	3	X										X								
RB		10:00	232	H_2O	3	X										X								
SOIL		10:55	234	SOIL	1							X												
TRIP BLANK		-	233	H_2O	2	X																		

RELINQUISHED BY:
Signature: Dan Wehr
Printed Name: David Wehr
Firm: Golder
Date/Time: 3/27/99 10:55

RECEIVED BY:
Signature: Tonya Hawk
Printed Name: Tonya Hawk
Firm: CAS
Date/Time: 3/27/99 @ 1055

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS
__ 24 hr. X 48 hr. __ 5 day
__ Standard (10-15 working days)
__ Provide Verbal Preliminary Results
__ Provide FAX Preliminary Results
Requested Report Date _____

REPORT REQUIREMENTS
☒ 1. Routine Report
☒ 2. Routine Rep. w/CASE Narrative
__ 3. EPA Level III Validatable Package
__ 4. N.J. Reduced Deliverables Level IV
__ 5. NY ASP/CLP Deliverables
__ 6. Site specific QC.

INVOICE INFORMATION:
P.O. #:
Bill To: ABOVE

SAMPLE RECEIPT:
Shipping Via: Client
Shipping #:
Temperature: 8.5°C
Submission No: 3-341

SPECIAL INSTRUCTIONS/COMMENTS:
METALS
ORGANICS: ☐ TCL ☐ PPL ☐ AE Only ☐ BN Only ☐ Special List
RUSH

Columbia Analytical Services Inc.
Cooler Receipt And Preservation Check Form

Project/Client Holder Submission Number _____

Cooler received on 3/27/99 and opened on 3/27/99 by JH

1.	Were custody seals on outside of cooler? If yes, how many and where? hand delivered	YES (NO)	
2.	Were signature & date correct?	YES	NO
3.	Were custody papers properly filled out (ink, signed, etc)?	(YES)	NO
4.	Did all bottles arrive in good condition (unbroken)?	(YES)	NO
5.	Were all bottle labels complete (*i.e.* analysis, preservation, etc)?	(YES)	NO
6.	Did all bottle labels and tags agree with custody papers?	(YES)	NO
7.	Were correct bottles used for the tests indicated?	(YES)	NO
8.	Were VOA vials checked for absence of air bubbles, and noted if so?	(YES)	NO
9.	Where did the bottles originate?	CAS/A CAS/K CAS/S CAS/L CAS/X CAS/J (CAS/R)	
10.	Temperature of cooler(s) upon receipt:	8.5°C	
	Is the temperature within 4 ± 2° C?:	Yes ☐	
	If No, Explain Below	No ☒	

Date/Time Temperatures Taken: 3/27/99 @ 1100

Thermometer ID: 139 **Circle One:** Temp Blank Sample Bottle (Cooler Temp.)

Explain any discrepancies: samples just taken

		YES	NO	Sample I.D.	Reagent	Vol. Added
pH	Reagent					
12	NaOH					
2	HNO_3					
2	H_2SO_4					
5-9*	P/PCBs (608 only)					

YES = All samples OK
NO = Samples were preserved at lab as listed
*If pH adjustment is required, use NaOH and/or H_2SO_4

VOC Vial pH Verification (Tested after Analysis) Following Samples Exhibited pH > 2				

CLIENT NOTIFICATION: _____

COLUMBIA ANALYTICAL SERVICES

QUALITY CONTROL SUMMARY MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY
SOIL/SEDIMENT

Spiked Order No. : 280827 Golder Associates

Client ID: B-99-1

Test: 82608 TCL

Analytical Units: UG/KG

Run Number : 36510

Percent Solid : 80.4

ANALYTE	SPIKE ADDED	SAMPLE CONCENT.	MATRIX SPIKE		MATRIX SPIKE DUP.			QC LIMITS	
			FOUND	% REC.	FOUND	% REC.	RPD	RPD	REC.
BENZENE	62.2	0	62.2	100	65.9	106	6	21	66 - 142
CHLOROBENZENE	62.2	0	65.9	106	65.9	106	0	21	60 - 133
1,1-DICHLOROETHENE	62.2	0	64.7	104	68.4	110	6	22	59 - 172
TOLUENE	62.2	0	62.2	100	59.7	96	4	21	59 - 139
TRICHLOROETHENE	62.2	0	65.9	106	65.9	106	0	24	62 - 137

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD: 8260B TCL

LABORATORY REFERENCE SPIKE SUMMARY

REFERENCE ORDER #: 286019 ANALYTICAL RUN # : 36510

DATE ANALYZED : 3/29/99
ANALYTICAL DILUTION: 1.0

ANALYTE	TRUE VALUE	% RECOVERY	QC LIMITS
ACETONE	20	64	21 - 165
BENZENE	20	102	37 - 151
BROMODICHLOROMETHANE	20	100	35 - 155
BROMOFORM	20	91	45 - 169
BROMOMETHANE	20	110	10 - 242
2-BUTANONE (MEK)	20	64	25 - 162
CARBON DISULFIDE	20	86	45 - 148
CARBON TETRACHLORIDE	20	105	70 - 140
CHLOROBENZENE	20	103	37 - 160
CHLOROETHANE	20	122	53 - 149
CHLOROFORM	20	100	51 - 138
CHLOROMETHANE	20	125	10 - 273
DIBROMOCHLOROMETHANE	20	98	53 - 149
1,1-DICHLOROETHANE	20	103	59 - 155
1,2-DICHLOROETHANE	20	98	49 - 155
1,1-DICHLOROETHENE	20	109	10 - 234
CIS-1,2-DICHLOROETHENE	20	93	54 - 156
TRANS-1,2-DICHLOROETHENE	20	98	54 - 156
1,2-DICHLOROPROPANE	20	98	10 - 210
CIS-1,3-DICHLOROPROPENE	20	97	10 - 227
TRANS-1,3-DICHLOROPROPENE	20	94	17 - 183
ETHYLBENZENE	20	106	37 - 162
2-HEXANONE	20	61	22 - 155
METHYLENE CHLORIDE	20	107	10 - 221
4-METHYL-2-PENTANONE (MIBK)	20	58	46 - 157
STYRENE	20	101	66 - 144
1,1,2,2-TETRACHLOROETHANE	20	96	46 - 157
TETRACHLOROETHENE	20	104	64 - 148
TOLUENE	20	99	47 - 150
1,1,1-TRICHLOROETHANE	20	102	52 - 162
1,1,2-TRICHLOROETHANE	20	89	52 - 150
TRICHLOROETHENE	20	106	71 - 157
VINYL CHLORIDE	20	116	10 - 251
O-XYLENE	20	102	71 - 135
M+P-XYLENE	40	103	71 - 135

COLUMBIA ANALYTICAL SERVICES

QUALITY CONTROL SUMMARY MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY
SOIL/SEDIMENT

Spiked Order No. : 281234 Golder Associates

Client ID: SOIL

Test: 8260B TCLP

Analytical Units: UG/L

Run Number : 36750

ANALYTE	SPIKE ADDED	SAMPLE CONCENT.	MATRIX SPIKE FOUND	MATRIX SPIKE % REC.	QC LIMITS REC.
BENZENE	500	0	517	103	76 - 127
CHLOROBENZENE	500	0	490	98	75 - 130
1,1-DICHLOROETHENE	500	0	520	104	61 - 145
TETRACHLOROETHENE	500	0	490	98	64 - 148
TRICHLOROETHENE	500	0	520	104	71 - 120

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD: 8260B TCLP

LABORATORY REFERENCE SPIKE SUMMARY

REFERENCE ORDER #: 283315 ANALYTICAL RUN # : 36750

ANALYTE	TRUE VALUE	% RECOVERY	QC LIMITS
DATE ANALYZED : 3/30/99			
ANALYTICAL DILUTION: 1.0			
BENZENE	20	110	37 - 151
2-BUTANONE (MEK)	20	107	25 - 162
CARBON TETRACHLORIDE	20	117	70 - 140
CHLOROBENZENE	20	105	37 - 160
CHLOROFORM	20	115	51 - 138
1,2-DICHLOROETHANE	20	110	49 - 155
1,1-DICHLOROETHENE	20	102	10 - 234
TETRACHLOROETHENE	20	109	64 - 148
TRICHLOROETHENE	20	120	71 - 157
VINYL CHLORIDE	20	99	10 - 251

COLUMBIA ANALYTICAL SERVICES

INORGANIC QUALITY CONTROL SUMMARY

Report Date : 04/20/99
CAS Order # : 280827 - B-99-1
Client : Golder Associates
VALEO/SUBSURFACE INV./NY
Reported Units: MG/KG
Run # : 36508
Percent Solid : 80.4

	PRECISION			ACCURACY			
	ORIGINAL	DUPLICATE	RPD	FOUND	ADDED	% REC.	LIMITS
ANTIMONY	7.46 U	7.46 U	NC	10.6	57.1	19 N	75 - 125
ARSENIC	4.25	3.77	12	8.07	4.56	84	75 - 125
BERYLLIUM	0.622 U	0.622 U	NC	5.47	5.71	96	75 - 125
CADMIUM	0.622 U	0.622 U	NC	5.29	5.71	93	75 - 125
CHROMIUM	7.01	7.65	9	28.4	22.8	94	75 - 125
COPPER	4.27	5.12	18	33.5	28.5	103	75 - 125
LEAD	10.4	56.0	137	63.1	57.1	92	75 - 125
NICKEL	7.76	8.28	7	59.1	57.1	90	75 - 125
SELENIUM	0.677	0.771	13	106	115	91	75 - 125

COLUMBIA ANALYTICAL SERVICES

INORGANIC QUALITY CONTROL SUMMARY

Report Date : 04/20/99
CAS Order # : 280827 - B-99-1
Client : Golder Associates
VALEO/SUBSURFACE INV./NY
Reported Units: MG/KG
Run # : 36508
Percent Solid : 80.4

	PRECISION			ACCURACY			
	ORIGINAL	DUPLICATE	RPD	FOUND	ADDED	% REC.	LIMITS
SILVER	1.24 U	1.24 U	NC	5.21	5.71	91	75 - 125
THALLIUM	1.24 U	1.24 U	NC	224	228	98	75 - 125
ZINC	22.9	25.0	9	77.4	57.1	95	75 - 125

COLUMBIA ANALYTICAL SERVICES

INORGANIC QUALITY CONTROL SUMMARY

Report Date : 04/20/99
CAS Order # : 280827 - B-99-1
Client : Golder Associates
VALEO/SUBSURFACE INV./NY
Reported Units: MG/KG
Run # : 36513
Percent Solid : 80.4

	PRECISION			ACCURACY			
	ORIGINAL	DUPLICATE	RPD	FOUND	ADDED	% REC.	LIMITS
MERCURY	0.0622 U	0.0622 U	NC	0.223	0.199	112	75 - 125

COLUMBIA ANALYTICAL SERVICES

INORGANIC BLANK SPIKE SUMMARY

CAS Submission #: 9903000341
Client: Golder Associates
VALEO/SUBSURFACE INV./NY

BLANK SPIKES

	BLANK	FOUND	ADDED	% REC	LIMITS	RUN	UNITS
ANTIMONY	6.00 U	16.5	26.6	62	0 - 203	36508	MG/KG
ARSENIC	1.00 U	151	163	93	62 - 138	36508	MG/KG
BERYLLIUM	0.500 U	67.4	78.9	85	78 - 122	36508	MG/KG
CADMIUM	0.500 U	105	114	92	77 - 123	36508	MG/KG
CHROMIUM	1.00 U	153	175	88	73 - 126	36508	MG/KG
COPPER	2.00 U	80.2	91.0	88	82 - 118	36508	MG/KG
LEAD	0.500 U	62.3	66.0	94	68 - 132	36508	MG/KG
NICKEL	4.00 U	59.1	68.3	87	78 - 122	36508	MG/KG
SELENIUM	0.500 U	110	123	89	74 - 126	36508	MG/KG
SILVER	1.00 U	53.8	57.2	94	74 - 126	36508	MG/KG

COLUMBIA ANALYTICAL SERVICES

INORGANIC BLANK SPIKE SUMMARY

CAS Submission #: 9903000341
Client: Golder Associates
VALEO/SUBSURFACE INV./NY

BLANK SPIKES

	BLANK	FOUND	ADDED	% REC	LIMITS	RUN	UNITS
THALLIUM	1.00 U	84.4	80.0	106	57 - 142	36508	MG/KG
ZINC	2.00 U	175	190	92	77 - 123	36508	MG/KG
MERCURY	0.0500 U	1.43	1.75	82	61 - 139	36513	MG/KG

COLUMBIA ANALYTICAL SERVICES

INORGANIC BLANK SPIKE SUMMARY

CAS Submission #: 9903000341
Client: Golder Associates
VALEO

BLANK SPIKES

	BLANK	FOUND	ADDED	% REC	LIMITS	RUN	UNITS
MERCURY	0.000300 U	0.00102	0.00100	102	80 - 120	36480	MG/L
ANTIMONY	0.0600 U	0.0514	0.0500	103	80 - 120	36509	MG/L
ARSENIC	0.0100 U	0.0385	0.0400	96	80 - 120	36509	MG/L
BERYLLIUM	0.00500 U	0.0483	0.0500	97	80 - 120	36509	MG/L
CADMIUM	0.00500 U	0.0511	0.0500	102	80 - 120	36509	MG/L
CHROMIUM	0.0100 U	0.199	0.200	99	80 - 120	36509	MG/L
COPPER	0.0200 U	0.255	0.250	102	80 - 120	36509	MG/L
LEAD	0.00500 U	0.522	0.500	104	80 - 120	36509	MG/L
NICKEL	0.0400 U	0.525	0.500	105	80 - 120	36509	MG/L
SELENIUM	0.00500 U	1.01	1.01	100	80 - 120	36509	MG/L

COLUMBIA ANALYTICAL SERVICES

INORGANIC BLANK SPIKE SUMMARY

CAS Submission #: 9903000341
Client: Golder Associates
VALEO

BLANK SPIKES

	BLANK	FOUND	ADDED	% REC	LIMITS	RUN	UNITS
SILVER	0.0100 U	0.0531	0.0500	106	80 - 120	36509	MG/L
THALLIUM	0.0100 U	2.23	2.00	111	80 - 120	36509	MG/L
ZINC	0.0200 U	0.520	0.500	104	80 - 120	36509	MG/L

COLUMBIA ANALYTICAL SERVICES

INORGANIC BLANK SPIKE SUMMARY

CAS Submission #: 9903000341
Client: Golder Associates
VALEO

BLANK SPIKES

	BLANK	FOUND	ADDED	% REC	LIMITS	RUN	UNITS
ARSENIC	0.500 U	4.70	5.00	94	80 - 120	36745	MG/L
BARIUM	1.00 U	4.61	5.00	92	80 - 120	36745	MG/L
CADMIUM	0.100 U	0.972	1.00	97	80 - 120	36745	MG/L
CHROMIUM	0.100 U	4.93	5.00	99	80 - 120	36745	MG/L
LEAD	0.100 U	4.77	5.00	95	80 - 120	36745	MG/L
SELENIUM	0.500 U	0.985	1.00	99	80 - 120	36745	MG/L
SILVER	0.100 U	5.14	5.00	103	80 - 120	36745	MG/L
MERCURY	0.000300U	0.00969	0.0100	97	48 - 182	36960	MG/L