



PROFESSIONAL ANALYSIS, INC.

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December 9, 1996

Ms. Melanie McKinley
Philips Semiconductors
9201 Pan American Freeway, NE
Albuquerque, NM 87113

Re: Philips Semiconductors 1996 4th Quarter Groundwater Monitoring Results

Dear Ms. McKinley:

Philips Semiconductors (Philips) contracted Professional Analysis, Inc. (PAI) to collect groundwater samples from four groundwater monitoring wells located on Philips property. The groundwater sampling was completed on October 22, 1996. This report documents the sampling event and presents the results of the laboratory analyses.

Activities related to the sampling event were periodically overseen by personnel from Philips' Environment, Health and Safety department. Mary Robinson and Ralph Hunkins of PAI were responsible for the actual sampling.

Methodologies

Prior to the start of sampling activities, Philips personnel provided PAI with a key to unlock the four wells, a pump controller needed to operate the well pumps, and four 55-gallon drums for each well in which to pour the purge water. PAI provided the remaining equipment and sampling supplies.

PAI used a MiniRAE photoionization detector (PID) to measure ambient organic vapor concentrations upon approaching each well and a headspace sample was measured after reaching the wells. PAI measured the depth to water at each well (MW-1: 207.6 ft; MW-2: 209.7 ft; MW-3: 232.3 ft; and MW-4: 224.5 ft) and observed that the depths to water were greater than historical values. PAI purged three well volumes at each well before collecting samples. Samples were placed in containers provided by Quanterra, Inc. (Quanterra) appropriate for the contaminants being analyzed. Temperature and pH were measured before and after the samples were collected.

Laboratory Analysis

PAI contracted with Quanterra in Arvada, Colorado, to perform the chemical analysis of the groundwater samples collected by PAI. Quanterra used EPA-approved laboratory methods 524.2, 8270, 8080A, and 6010 to determine the presence of all chemicals of concern. Attachment 1 contains Quanterra's analytical report. Results of the analyses are summarized in the following table (Table 1) and briefly discussed in the following section.

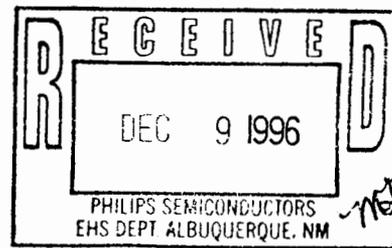


Table 1
Summary of Analytical Results from
Philips Semiconductor 4th Quarter 1996 Groundwater Samples

Sample	VOCs	Concentration
MW-1	tetrachloroethene	8.1 µg/L
MW-2	tetrachloroethene	7.1 µg/L
MW-3	ND	--
MW-4	dichlorodifluoromethane tetrachloroethene	1.3 µg/L 5.1 µg/L
MW-5 (Duplicate of MW-2)	tetrachloroethene	6.6 µg/L
MW-6 (Field Blank)	ND	--
Trip Blank	ND	--
Sample	SVOCs	Concentration
MW-1	bis(2-ethylhexyl)phthalate	11 µg/L
MW-2	ND	--
MW-3	bis(2-ethylhexyl)phthalate	14 µg/L
MW-4	ND	--
MW-5 (Duplicate of MW-2)	ND	--
Sample	Chlorinated Pesticides/PCBs	Concentration
MW-1	ND	--
MW-2	ND	--
MW-3	ND	--
MW-4	ND	--
MW-5 (Duplicate of MW-2)	ND	--
Sample	Total Metals	Concentration
MW-1	barium chromium	0.19 mg/L 0.014 mg/L
MW-2	barium	0.11 mg/L
MW-3	barium lead zinc	0.060 mg/L 0.0033 mg/L 0.035 mg/L
MW-4	barium	0.15 mg/L
MW-5 (Duplicate of MW-2)	barium	0.11 mg/L

*MW = Monitoring Well

Findings

Water samples were collected for laboratory analysis immediately after the purging of each well. No unusual color or odor was observed during collection of water samples from the wells.

No organic vapors were detected with the PID in the headspace of any of the wells. Consistent with historical findings, MW-1, MW-2, and MW-4 contained tetrachloroethene (or PCE) in the range of 5.1 micrograms per liter (µg/L) to 8.1 µg/L. Additional contaminants detected above reporting limits included dichlorodifluoromethane in MW-4 (1.3 µg/L). MW-1 and MW-3 contained 11 µg/L and 14 µg/L, respectively, of bis(2-ethylhexyl)phthalate. No chlorinated pesticides/polychlorinated biphenyls (PCBs)

were detected in any of the wells. Total metals were also analyzed, and all of the wells contained barium in the range of 0.060 milligrams per liter (mg/L) to 0.19 mg/L. MW-1 contained 0.014 mg/L of total chromium, and MW-3 contained 0.0033 mg/L of lead and 0.035 mg/L of zinc, both of which were not detected in the previous sampling event.

Data Quality Assessment

PAI has reviewed Quanterra's report for compliance with Level III data quality objectives, including holding times, surrogate recoveries, and matrix spike/matrix spike duplicate (MS/MSD) recoveries and relative percent differences. All of the analyses were performed within the established or accepted holding times for sample extraction and analysis. Surrogate and MS/MSD recoveries and MS/MSD relative percent differences are within the limits established by EPA for the particular methods.

Conclusions

Analytical results indicate the presence of tetrachloroethene in three wells (MW-1, MW-2, and MW-4). This compound has been historically detected in samples collected from these wells. In addition, the levels of tetrachloroethene are similar to the levels detected in the previous sampling event in July 1996. The semivolatile organic compound (SVOC) bis(2-ethylhexyl)phthalate was detected in the samples collected from monitor wells MW-1 and MW-3. This contaminant is a known additive for plastic materials and discussions with Quanterra personnel indicate that this is a laboratory contaminant which is occasionally detected. However, the source of this contaminant is unclear.

Dichlorodifluoromethane (a chlorofluorocarbon, or CFC) was detected in the sample collected from monitor well MW-4. The analysis also indicated a concentration of 0.014 mg/L of total chromium in the sample collected from monitor well MW-1, which was detected at a level of 0.013 mg/L in the July 1996 sampling event. In addition, concentrations of 0.0033 mg/L of lead and 0.035 mg/L of zinc were detected in MW-3. The direction of groundwater flow at the site has not been established; therefore, available information is not sufficient to draw conclusions regarding issues such as contaminant source or the extent of migration. Further, it is our opinion that the nature of these compounds do not in themselves provide conclusive evidence of the source of contamination.

Barium was detected at low concentrations in samples collected from all four wells. Barium occurs naturally in some soils, and the detection of this element in all samples may indicate that it is a characteristic constituent of the site.

Recommendations

A RCRA Facility Investigation (RFI) Work Plan has been submitted to the New Mexico Environment Department (NMED) by Philips Semiconductors for review and approval. It is our understanding that NMED has required quarterly sampling of the existing monitor wells until such time as the RFI Work Plan is approved and work on the RFI begins. All potential contaminants detected in the analysis of samples collected by PAI in October 1996 were found to be present in low concentrations. Based on this information, it is our recommendation that further investigation of contamination at the Philips Semiconductor site be limited to the sampling specified by NMED, and review of analytical data to observe any trends that may develop over time. This should continue until the approval and implementation of the RFI Work Plan. PAI does not recommend performance of activities in addition to the periodic sampling and analysis required by NMED before the RFI Work Plan is approved.

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If you have any questions or comments, please contact me at (505) 883-0942.

Sincerely,

A handwritten signature in black ink, appearing to read 'J. Shield Wallace', with a long horizontal flourish extending to the right.

J. Shield Wallace, Ph.D.
Program Manager/Senior Scientist

Attachment