MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

January 28, 2004

TO: Sybil Kolon, Project Manager, RRD

FROM: Leonard Lipinski, Senior Geologist, RRD

SUBJECT: Gelman Sciences Inc., Washtenaw County
Southwest Property Area - Capture Zone Analysis

While the capture zone analysis provided by Pall Life Science (PLS) does not show total capture of the contamination by the purge wells in the Southwest Property Area (SWPA), there is no evidence that the contamination is expanding to areas not previously contaminated. In addition, the drop in static water levels and the general decrease in dioxane contamination in the monitoring wells show that the pumping is having an influence on the groundwater in the SWPA and the majority if not all of the contamination will be captured.

For their capture zone analysis, PLS used an analytical groundwater model. Analytical models are fairly simple and require the user to make a number of general assumptions about the aquifer being modeled. Since the geology is complex in the SWPA, it is difficult to adequately model it using an analytical model or even a more complex numerical model. For that reason, the capture zone analysis provided by PLS is not completely accurate.

In my memo of February 20, 2003, I expressed some concern about the direction of groundwater flow in the immediate vicinity of Third Sister Lake and whether PLS could adequately monitor the effectiveness of their purge system in the SWPA without monitoring groundwater levels adjacent to the lake. Clearly groundwater flowed toward the lake in the past. The static water level in MW-10d was almost 14 feet higher in 1987 and probably even higher in the period when they were spray irrigating. It is likely that this higher groundwater level in the SWPA in the past provided the means for transporting the contamination toward the lake. Static water levels were dropping in MW-10d after 1987 even before purging began in the area and dropped even further afterward. As pointed out in conversation with PLS, recent evidence also suggests that it is likely that Third Sister Lake is recharging the groundwater in the vicinity of MW-78. The static water level in MW-78 is closer to that of the water level in Third Sister Lake while being 10 to 15 feet higher than the other southwest wells. A review of the geology and the fact that MW-78 is screened at a similar elevation to the other southwest wells indicates that it is likely that MW-78 and the other southwest wells are hydraulically connected. Since the static water level in the SWPA has dropped so much and Third Sister Lake is recharging the groundwater, it is likely that the contaminated groundwater is flowing back toward the SWPA purge wells. For these reasons, I no longer believe that an additional monitoring well is needed in the vicinity of MW-58s.

Even though the capture zone analysis does not show complete capture of the plume, it is likely that the majority, if not all, of the contamination in the SWPA will be captured by the wells. Static water levels in the wells indicate that the pumping of the wells is creating a groundwater depression to which the majority of the groundwater in the SWPA is clearly flowing. Any dioxane which is not captured in the SWPA will flow northward due to the recharge from the lake and be captured by the purge wells in the Core Area. I believe that the monitoring wells that currently exist in the area should be adequate to determine if contamination in the SWPA is being captured.

In reference to the presentation of the data in the report, PLS should have made it clear which wells were being purged year round and which ones were being purged intermittently. The intermittent wells contribute a small percentage to the total pumping in the SWPA and have a small impact on the total capture zone. This lack of clarification did not affect my review.

LL/KL