STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
JACKSON DISTRICT OFFICE

JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

June 23, 2009

VIA ELECTRONIC AND US MAIL

Mr. Farsad Fotouhi
Corporate Vice President
Environmental Engineering
Pall Life Sciences, Inc.
600 South Wagner Road
Ann Arbor, MI 48103-9019

Mr. Alan D. Wasserman
Williams Acosta, PLLC
535 Griswold Street
Suite 1000
Detroit, MI 48226-3535

Mr. Michael L. Caldwell
Zausmer, Kaufman,
August & Caldwell, P.C.
31700 Middlebelt Road,
Suite 150
Farmington Hills, MI 48334

Dear Sirs:

SUBJECT: Gelman Sciences, Inc. Remedial Action
Monitoring Well Nest Installation on Nancy Drive
DEQ Proposed Resolution of Dispute Pursuant to
Section XVI of Consent Judgment in Response to
Electronic Mail from Michael L. Caldwell, Dated January 20, 2009

By electronic mail dated January 20, 2009, Mr. Michael L. Caldwell, on behalf of Pall Life Sciences (PLS), invoked the dispute resolution process found in Section XVI of the Consent Judgment, regarding the Department of Environmental Quality's (DEQ) electronic mail of the same date, directing PLS to install a monitoring well cluster at the PLS-08-07 boring within 30 days. The DEQ and PLS have mutually agreed to extend the voluntary dispute resolution process several times, most recently until June 22, 2009.

The parties discussed the subject of this dispute in a telephone conference on April 14, 2009. This letter serves as the DEQ's response and resolution of the dispute.

BACKGROUND

The DEQ originally requested the installation of a monitoring well (MW) cluster in the vicinity of Nancy Drive in a letter to PLS, dated October 31, 2007. The specific location was included in an attached interoffice communication from Mr. James Coger, dated October 31, 2007. PLS declined to install the requested MW cluster at that time. After subsequent discussions, PLS did agree to install the monitoring well cluster. The DEQ approved the location by electronic mail, dated October 23, 2008.

PLS's contractors drilled a boring at the agreed upon location in late December 2008. By electronic mail dated January 2, 2009, Mr. Farsad Fotouhi informed the DEQ that PLS would not install any monitoring wells due to the results from the boring. The vertical profile results from that boring detected low concentrations of 1,4-dioxane in nine of thirteen vertical profile samples collected between 20 to 190 feet. The highest concentration detected was 14 parts per billion (ppb).

The DEQ requested installation of a monitoring well cluster at this location for two major reasons: to determine the northern extent of contamination in this area; and to assist with determining groundwater flow direction. As discussed below, this information is necessary to adequately monitor groundwater contamination and ensure that pubic health, safety and welfare, and the environment are being protected. While the DEQ did require that the boring be vertically profiled to help determine the proper screen locations, the request for this monitoring

well cluster was not contingent on the vertical profile results, nor did PLS indicate that installation of monitoring wells was contingent on the vertical profile results.

The DEQ is particularly concerned about migration of contamination to the northeast, toward Dupont Circle in the Evergreen Subdivision area, where the source of high concentrations of 1,4-dioxane has not been determined. As stated in Mr. Coger's October 31, 2007 interoffice communication: "There are no vertically profiled monitor wells north of TW-11 that establish the vertical distribution of contamination, or define the northern extent of Unit E contamination to 85 ug/l [ppb], between Wagner Road and monitor well MW-66; a distance of approximately 2,400 feet."

TW-11 is an extraction well where 1,4-dioxane was detected at 3,325 ppb in May 2002 and at 263 ppb in June 2008, when it was last sampled. Information submitted by PLS indicates there has been no extraction from TW-11 since June 2008. As the DEQ has informed PLS on several occasions, extraction well data cannot not be relied upon to define the extent of contamination. This was reiterated most recently by Mr. James Coger in an interoffice communication dated June 15, 2009 (and provided to PLS by a letter of the same date): "Purge well influent data generally is not representative of contaminant levels in the aquifer due to the development of preferential flow paths and variability associated with contaminant flux through the aquifer matrix (matrix diffusion/advective flushing)." Because TW-11 has a screen-length of 20 feet, and sampling is done during extraction, there are likely to be higher concentrations of 1,4-dioxane at that location than indicated from the sample results. The groundwater flow direction in the area of TW-11 may have changed since this extraction well has been turned off for the past year. Groundwater flow cannot be established due to the scarcity of monitoring wells in this area; therefore, it is not possible to determine if groundwater contamination in this area is expanding to the northwest, north or northeast, and the extent of contamination is not defined. The requested monitoring well cluster would help establish the extent of groundwater contamination and the direction of its migration.

As the DEQ has previously pointed out, and as PLS has acknowledged, vertical profile results are used as a screening tool and cannot be relied upon to determine the extent of contamination for the following reasons:

1) It is not possible to repeat or confirm a Simulprobe result to ensure it reflects the actual concentration in groundwater at the time of sampling;
2) A one-time sample will not reflect changes to the extent of contamination as it migrates (because 1,4-dioxane is totally water soluble and moves with the flow of groundwater, it is probable that concentrations will change over time), and
3) PLS contractors routinely add water to the augers during drilling, which can dilute the groundwater collected in the next sample (e.g. the boring log for PLS-08-07 shows that 20 to 30 gallons of water were added to the auger at five depth intervals, a total of 140 gallons, just nine feet above the next sample collected in all five cases).

The vertical profile of groundwater results from the PLS-08-07 boring showed low concentrations of 1,4-dioxane in samples collected after water had been added to the augers, as indicated above. It is possible that concentrations in the aquifer are considerably higher than the vertical profile results. In fact, PLS has reported several examples of groundwater collected from permanent monitor wells at significantly higher concentrations than detected using the Simulprobe at the same location and depth. In the boring for MW-118, on Ferry Street east of

Wagner Road, the vertical profile result at 140 feet, where permanent monitor well MW-118 was screened, was reported at 90 ppb. However, the first sample from MW-118, collected about a week later, was 327 ppb. In the six samples collected from monitor well MW-118 since that initial sample, the concentration of 1,4-dioxane has ranged between 418 ppb and 214 ppb.

Another primary reason for a monitoring well cluster at this location is to collect static water level data to provide valuable groundwater elevation data to assess the current groundwater flow direction, and to monitor changes to the groundwater flow direction as the extraction rates at various extraction wells are changed over time.

RESOLUTION

The DEQ has considered PLS's arguments against installation of the MW cluster, as detailed in electronic mail from Mr. Fotouhi dated January 6 and 20, 2009, and during the DEQ's conference calls with Mr. Fotouhi and Mr. James Brode on January 6 and April 14, 2009. For the reasons stated above, the DEQ is not convinced by PLS's assertions that a monitoring well cluster is not needed in the Nancy Drive area. Pursuant to Section XVI.B of the Consent Judgment, the DEQ's resolution of the dispute is that PLS install a monitoring well cluster, with three separate wells, each with a five-foot screen, at depths of approximately 40 feet, 80 feet, and 180 feet. Installation of this monitoring well cluster should begin within 30 days of the date of this letter, subject to acquiring access.

Sincerely,

Sybil Kolon
Environmental Quality Analyst
Gelman Sciences Project Coordinator
Remediation and Redevelopment Division
517-780-7937

SK/KJ

cc: Ms. Celeste Gill, Department of Attorney General
Mr. Mitchell Adelman, DEQ/Gelman File
Mr. James Coger, DEQ