

**PALL LIFE SCIENCES INC.
COMPREHENSIVE GROUNDWATER MONITORING PLAN
ANN ARBOR, MICHIGAN
MAY 4, 2009 – Amended JUNE 2, 2009**

BACKGROUND

Pall Life Sciences Inc. (PLS) is in the process of modifying its remedial program to improve its efficiency, sustainability, and effectiveness. In order to be consistent with the goals and objectives of the modified remedial program, PLS has developed a comprehensive groundwater quality and level monitoring program. This program is intended to replace any existing groundwater monitoring programs developed individually over the years for the various site areas.

PROPOSED MONITORING LOCATIONS

PLS has carefully selected approximately 175 locations to periodically collect groundwater samples for 1,4-dioxane analysis and water level measurements. The locations, along with other relevant information, are listed on Table 1 and shown on Figures 1 and 2.

In addition to the existing monitoring well network, PLS is proposing the installation of three additional wells (or well nests if appropriate based on site-specific conditions). These wells are in the Evergreen area (see Figures 1 and 2), and would be installed upon the approval of PLS' proposed remedial modifications (Comprehensive Proposal to Modify Cleanup Program, May 4, 2009).

Groundwater Quality Sampling

Objectives

The overall objectives of groundwater sampling are to:

1. Track the general distribution and trends of the 1,4-dioxane plumes.
2. Demonstrate that the objectives of the remedial systems are being met:
 - Areas West of Wagner Road (Western Area) – Preventing expansion of the areas impacted by contaminant concentrations of 85 parts per billion (ppb) or greater in directions that do not lead to the Prohibition Zone, consistent with R 299.5705(5)

- Eastern Area – Preventing groundwater containing 2,800 ppb from migrating east of Maple Road; demonstrating that the plume(s) are not expanding beyond the Prohibition Zone (PZ) boundary.
3. Track the concentrations of 1,4-dioxane in the extraction wells for purposes of determining their efficiency and whether termination criteria are met.

Purpose Designations

The monitoring locations have been assigned the following purpose designations:

Performance Monitoring (PM) – These wells are considered most critical to determine the effectiveness of the remedial systems in meeting their intended objectives.

General Monitoring (GM) – These wells are generally positioned beyond the PM wells and will be monitored periodically to track the general distribution of the plumes.

General Monitoring - Extraction Well (GM-E) – This purpose designation has been assigned to extraction wells where water quality data will be used to track trends in extraction wells and determine whether termination criteria are met.

Monitoring Locations

The locations of the monitoring wells that will be monitored are shown on Figure 1.

Monitoring Frequencies

PLS has reviewed the past water quality data and position of the wells relative to the boundaries of the plumes and has assigned each well with a monitoring frequency. These frequencies are:

Quarterly (Q) – Quarterly sampling frequencies were generally assigned to more critical locations, based on their location or historic 1,4-dioxane trends. Earlier detection of significant changes or trends are most important at these locations. A quarterly sampling frequency has also been assigned to wells in the Evergreen area to monitor for potential changes related to the changes in extraction rates. This frequency would begin upon approval of the proposed remedial modifications proposed by PLS (Comprehensive Proposal to Modify Cleanup Program, May 4, 2009) and will continue for one year, upon which time the frequency will be re-evaluated.

Semi-annual (S) – Semi-annual sampling frequencies were generally assigned to locations where routine data are important, but either due to historic trends or location, monitoring at slightly less frequent basis than quarterly will be adequate to identify significant trends or changes.

Annual (A) – Annual sampling frequencies were generally assigned to locations where routine data are important, but either due to historic trends or location, monitoring at slightly less frequent basis than semi-annual will be adequate to identify significant trends or changes.

Biennial (B) – Biennial sampling frequencies were generally assigned to locations where historic concentrations have shown that trends indicate subtle/negligible changes over time and frequent monitoring is not warranted. With minor exceptions (MW-23 and MW-24), 1,4-dioxane concentrations at these locations are below 85 ppb.

Omit (O) – PLS is proposing the elimination of selected wells from the monitoring program. Historic trends at these locations have shown that 1,4-dioxane concentrations at these locations have consistently been below 85 ppb, or alternative nearby locations can and will be monitored.

Water Level Measurements

Objectives

The overall objectives of measuring water levels are:

1. Assessing groundwater flow patterns.
2. Evaluating capture areas for extraction wells and potential changes in groundwater flow from changes in extraction rates and locations.

Locations

Locations to be used in water level monitoring are shown on Figure 2.

Frequencies

Water level data will be collected at the time groundwater quality samples are taken. In addition, one comprehensive round of water level data will be collected annually to gather sufficient data to prepare potentiometric surface maps.

Water levels in the Evergreen Area will be measured on a quarterly basis after approval of the proposed remedial modifications (otherwise these data will be collected on a semi-annual basis). This frequency, along with the rest of the groundwater monitoring program, will be reevaluated on an annual basis.

Sampling Methods and Analysis

Groundwater samples collected from monitoring wells will be collected by PLS in a manner consistent with PLS sampling protocols and sample handling procedures that are currently being used for PLS' routine monitoring. These sampling methods generally employ a 3 to 5 casing volume purge prior to sample collection, strict equipment decontamination procedures, and standard sample handling and documentation procedures.

Groundwater samples will be analyzed for 1,4-dioxane by the PLS laboratory using a U.S. Environmental Protection Agency-approved modified GC/MS method capable of detection levels of 1 ppb.

REPORTING

Data from the monitoring will be made digitally available to the Michigan Department of Environmental Quality (MDEQ) via the PLS water quality database. The database can be used by the MDEQ and others having access to prepare reports and trend graphs.

On an annual basis, PLS will prepare and submit to the MDEQ isoconcentration and potentiometric surface maps for the various aquifers, similar to those currently being provided to the MDEQ.

For a period of one year after extraction rates in the Evergreen Area are reduced, PLS will submit quarterly potentiometric surface maps for the Evergreen Area.

On an annual basis, starting with the approval date of this plan, PLS will adjust sampling frequencies and submit revisions to the MDEQ for review.