

ATTACHMENT 1

**LABORATORY ANALYTICAL DATA COLLECTED AS PART
OF THE ADDITIONAL INVESTIGATION**

DATA QUALITY

The data generated for this project were verified by the Battelle Project Quality Assurance Officer. The verification process for the laboratory data involved ensuring that the holding times, precision, accuracy, laboratory blanks and detection limits were within the criteria outlined in the work plan.¹

Precision was determined by calculating the relative percent difference (%RPD) between matrix spike/matrix spike duplicate (MS/MSD) pairs and laboratory control spike/laboratory control spike duplicate (LCS/LCSD) pairs in the analytical laboratory. All MS/MSD and LCS/LCSD samples met the precision (%RPD) criteria defined in the analytical methods.

Accuracy was determined by calculating the percent recovery (%R) for MS/MSD and for organic analytes, with surrogate compounds. Laboratory accuracy was also assessed from %R results generated from the periodic analysis of calibration check standards and laboratory control samples (LCS/LCSD). All MS/MSD and LCS/LCSD samples met the accuracy (% R) criteria defined in the analytical methods.

Sample analyses were conducted within the holding times specified in the work plan with the following exceptions: BioInsite performed the functional gene testing on groundwater samples from the MW-1 and the production wells 7 to 8 days post-collection. BioInsite performed the functional genomic testing on groundwater samples from MW-24-1 and MW-25-3, 16 and 22 days post-collection. The maximum holding time requirement in the work plan was 48 hours. Samples were frozen by BioInsite at approximately -20°F upon receipt and until analysis.

In addition, dissolved organic carbon (DOC) analyzed by EMAX laboratories was consistently higher than total organic carbon (TOC) for all samples collected. EMAX conducted a special study in August 2005 by filtering both distilled water and acidified water through their 0.45-μm filters. The results for DOC were 7.6 and 20.8 mg/L for distilled and acidified water, respectively indicating leaching from the filters. Therefore, DOC results are not considered valid data.

The helium (He³) samples for production wells (LAWC No. 3, LFWC No.2, Garfield, Sunset, and Bangham) had to be collected after an intermediate collector instead of directly at the wellhead due to the high flow rates of the production wells. In addition, University of Miami determined all He³ samples except MW-17-3 and MW-24-1, had large amounts of air components in them increasing the uncertainty of age determination. Therefore, the He³ results were not considered valid data.

Historical water quality data obtained from the various databases was evaluated for quality by doing a charge balance calculation. That is, the sum of the anions (A) and sum of the cations (C) should balance each other. Any deviation from zero is attributable to analytical error. Thus, a charge balance calculation, as show by the equation below, is a means to assess quality of older data sets.

$$\text{Charge Balance (\%)} = \frac{C - A}{C + A} \times 100$$

Samples having a charge balance within ±10% were regarded as being of good quality. Data for samples that did not meet this quality control criterion were rejected for consideration in this study.