

Third and Fourth Quarter 1995 Sampling Events

2.1 Description of Activities

Field sampling procedures followed the revised project Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) (EPA, 1995a and 1995b, respectively). Water levels were measured in each well immediately after accessing the well and prior to sampling. Measurements were also recorded to the nearest 0.01-foot using an electronic sounder by the city of Los Angeles Department of Water and Power (LADWP) and incorporated into the database. These values are presented in Table 2-1. Well purging consisted of removing between three and five well volumes of water at a flow rate between 5 and 12 gallons per minute using the dedicated electric pumps. During purging, pH, temperature, electrical conductivity, and turbidity of the groundwater were measured over time (Table 2-2) to ensure that these parameters stabilized prior to sampling. Following purging, flow rates are lowered to approximately 1 gallon per minute (gpm) to minimize aeration prior to sampling. Purge water was collected in a vacuum truck and transported to a central location.

Samples were collected in appropriate containers from polyethylene tubing attached to an adjustable sampling valve. Samples were stored in coolers packed with ice and were shipped the day of sampling by overnight carrier to a laboratory designated by EPA's Contract Laboratory Program (CLP).

During the third quarter 1995 sample event, analytical parameters consisted of VOCs and N-nitrate/nitrite. During the fourth quarter 1995 sample event, analytical parameters consisted of VOCs, metals, nitrate/nitrite and additional general water chemistry parameters (chloride, sulfate, hardness, total alkalinity, total dissolved solids [TDS], and total organic carbon [TOC]). Samples collected were analyzed through EPA's CLP. Modifications to the SAP eliminated sample collection and analyses for semivolatile organic compounds (SVOCs) and radionuclides (CH2M HILL, 1995).

State of California and federal MCLs are listed in Table 2-3; Table 2-4 specifies the methods by which the parameters were analyzed and their respective target detection limits. Chain-of-custody procedures and sample documentation were conducted as outlined in the SAP and QAPP. Copies of chain-of-custody documentation for the third and fourth quarterly sampling events are provided in Appendix D.

2.1.1 Third Quarter

During the third quarter, 50 monitoring wells were sampled. These quarterly monitoring wells consist of 28 VPBs and 22 cluster wells. A total of 66 samples was collected and analyzed, including samples representing quality control (QC) samples (field blanks, laboratory blanks, and field duplicates). Samples collected by CH2M HILL were analyzed for VOCs, nitrate, and nitrite through EPA's CLP.

Three additional monitoring wells scheduled to be included in this event were not sampled. Monitoring Well NH-CO2-325 was not sampled due to a broken discharge column; and, monitoring well PO-VPB-01 was not sampled due to repaving operations conducted by the City of LA covering access to the vault. One well, NH-VPB-10, was dry.

Purge water was collected in a vacuum truck at each monitoring well location where historic VOC concentration exceeded the MCL. The purge water was transported to Los Angeles Department of Water and Power's (LADWP's) Crystal Springs yard, and containerized in Baker tanks for disposal at a later date. Approximately 12,475 gallons of purge water were collected during the third quarter event.

2.1.2 Fourth Quarter

The fourth quarter 1995 sample event was designated as a triannual event during which all 84 RI monitoring wells were scheduled for sampling. A total of 80 monitoring wells were sampled. These monitoring wells consist of 37 VPBs and 43 cluster wells. A total of 101 samples was collected and analyzed, including 34 samples representing QC samples (field blanks, laboratory blanks, and field duplicates). During the fourth quarter sampling event, approximately 11,800 gallons of purge water was collected and transported by vacuum truck to LADWP's Crystal Springs yard.

Four additional monitoring wells scheduled to be included in this event were not sampled. Monitoring Well NH-CO2-520 was not sampled due to repaving operations conducted by the City of LA covering access to the vault; and CS-VPB-01 was not sampled due to an inoperable pump. The remaining two monitoring wells, NH-VPB-10 was dry and PO-VPB-10 was not sampled due to construction activities preventing access to the well location.

2.2 Analytical Results

2.2.1 Third Quarter

Reported concentrations of TCE ranged from not-detected to a high of 11,000 micrograms/ liter ($\mu\text{g/L}$) during the third quarter. Thirty-four of the 50 RI monitoring wells exhibited sample concentrations of TCE greater than the MCL of 5 ($\mu\text{g/L}$). Fifteen of the wells had TCE concentrations greater than 100 ($\mu\text{g/L}$), including three wells (CS-VPB-07, CS-C03-100, and CS-VPB-04) with a concentration over 1,000 $\mu\text{g/L}$ (11,000 $\mu\text{g/L}$, 4,900 $\mu\text{g/L}$, and 1,100 $\mu\text{g/L}$, respectively).

Concentrations of PCE during the third quarter sampling event ranged from not-detected to a high of 310 $\mu\text{g/L}$ (CS-C02-335). Of the 50 RI monitoring wells sampled, 28 had concentrations exceeding the MCL of 5 $\mu\text{g/L}$. Six

monitoring wells (CS-C01-105, CS-C01-285, CS-C02-335, CS-VPB-01, NH-VPB-01, and PO-VPB-02) exhibited concentrations of 100 µg/L or greater.

Nitrate (as NO₃) ranged from 4.0 mg/L at CS-C03-465 to 77.0 mg/L at NH-VPB-06. Fifteen of the 50 RI monitoring wells sampled during the third quarter exceeded the nitrate MCL of 45 mg/L (as NO₃).

Table 2-5 presents a summary table of TCE, PCE, and nitrate data from the third quarter sampling event. A complete listing of these data, as well as other VOCs for the third quarter sampling event, is located in Appendix E. Results of analyses of duplicates and field blanks for this sampling event are found in Appendix F.

2.2.2 Fourth Quarter

In the 80 RI monitoring wells sampled during the fourth quarter sampling event, TCE concentrations ranged from not-detected to 7,500 µg/L. Thirty-four of the wells had reported concentrations of TCE exceeding 5 µg/L (the MCL), including 13 with concentrations over 100 µg/L. Of these monitoring wells, three were over 1,000 µg/L (CS-VPB-07 with 7,500 µg/L, CS-C03-100 with 4,200 µg/L, and CS-VPB-04 with 1,000 µg/L).

Reported concentrations of PCE ranged from not-detected at 29 monitoring wells to a high of 330 µg/L at CS-CO2-335. Twenty-six wells had concentrations above the detection limit but below the MCL. Concentrations of PCE above the MCL of 5 µg/L were reported in 25 of the 80 monitoring wells sampled during the fourth quarter event. All of these wells also exceeded the MCL for TCE except for four (CS-VPB-10, CS-VPB-11, CS-C06-278 and NH-VPB-07). Seven of the wells (CS-C01-105, CS-C01-285, CS-CO2-250, CS-CO2-335, NH-VPB-01, NH-VPB-14, and PO-VPB-02) had PCE concentrations above 100 µg/L.

During the fourth quarter, nitrate (as NO₃) concentrations ranged from 1.1 mg/L at CS-C04-520 to 81.9 mg/L at NH-VPB-06. Nineteen of the 80 wells sampled during this event exhibited concentrations greater than the MCL of 45 mg/L.

TCE, PCE, and nitrate data from the fourth quarter sampling event are presented in Table 2-6. Table 2-7 presents the results of the general water chemistry during the fourth quarter 1995. Additional VOCs detected at RI monitoring wells are reported in Section 4. Appendix E summarizes the complete analytical results for the wells sampled during the fourth quarter. Results of duplicate samples and field blanks for the fourth quarter sampling event are presented in Appendix F.

Dissolved metals exceeding primary and secondary MCLs were observed in eleven RI monitoring wells during the fourth quarter of 1995 (Table 2-8). As during the fourth quarter of 1994, chromium values exceeding the MCL were observed in two wells (PO-VPB-02 and CS-VPB-04). Iron exceeded the secondary MCL of 300 µg/L in three wells (NH-VPB-13, PO-C03-182 and PO-C03-235) during the fourth quarter of 1995. Nickel values exceeding the MCL were observed in one well (CS-CO1-105). Three wells (PO-CO2-53, PO-VPB-05 and PO-VPB-08) exceeded the secondary MCL of 50 µg/L for manganese.