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PHASE II RCRA FACILITY INVESTIGATION
J.F. QUEENY PLANT
MONSANTO COMPANY
ST. LOUIS, MISSOURI

June 1994

Prepared for

Monsanto Company
800 N. Lindbergh Blvd.
St. Louis, Missouri 63167

Prepared by

Geraghty & Miller, Inc.
125 East Bethpage Road
Plainview, New York 11803
(516) 249-7600

R00105671
RCRA RECORDS CENTER
Acc#11

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ST. LOUIS, MISSOURI

June 30, 1994

Geraghty & Miller, Inc. is submitting this report to Monsanto Company for work performed at their J.F. Queeny Plant in St. Louis, Missouri. The report was prepared in conformance with Geraghty & Miller's strict quality assurance/quality control procedures to ensure that the report meets industry standards in terms of the methods used and the information presented. If you have any questions or comments concerning this report, please contact one of the individuals listed below.

Respectfully submitted

GERAGHTY & MILLER, INC.

Laurie B. Musiker
Senior Scientist/Project Manager

Dennis Colton
Project Director/Project Officer

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PHASE II RCRA FACILITY INVESTIGATION
J.F. QUEENY PLANT
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ST. LOUIS, MISSOURI

1.0 INTRODUCTION

Geraghty & Miller, Inc. was retained by Monsanto Company to conduct a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) at the company's J.F. Queeny Plant in St. Louis, Missouri, in accordance with its RCRA facility permit. The purpose of the RFI was to characterize the nature, extent, and rate of migration of possible past releases of chemicals to the subsurface soils or groundwater.

During Phase I, which was conducted in 1991, monitoring and sampling efforts were conducted in each of the areas identified and discussed in the RFI work plan approved by the U.S. Environmental Protection Agency (USEPA) on November 15, 1990 (Geraghty & Miller, Inc. 1990). A Phase I RFI report was submitted to the agency in March 1992 (Geraghty & Miller, Inc. 1992). This report contained the results of a groundwater model and a risk assessment. The model was used to predict loading of volatile organic compounds (VOCs) to the Mississippi River for use in the risk assessment.

The Phase II investigation was designed to further characterize groundwater and soil quality at several areas, and was conducted in accordance with the work plan (Geraghty & Miller 1993) that was approved by USEPA on October 14, 1993. This report describes the Phase II field activities and discusses the results. Following review of this report by the USEPA, the groundwater model and the risk assessment will be updated to include the Phase II data.

1.1 PHASE II INVESTIGATION

The Phase II field investigation was conducted in the fall of 1993, and Spring of 1994. Activities performed during the Phase II investigation are summarized below.

- Groundwater sampling was conducted at six wells for analysis of VOCs to resolve sample analysis dilution issues.

- Groundwater sampling was conducted at 11 wells plus three Geoprobe locations to delineate the extent of alachlor at the former acetanilides/railcar unloading area.

- Groundwater sampling was conducted at well MW-13 and at six Geoprobe locations surrounding well MW-13 to identify the source of p-chloroaniline previously detected in samples collected from this well.

- Groundwater sampling was conducted at well MW-20 and at two Geoprobe locations to determine the source of cyanide previously detected in samples collected from this well.

- Groundwater sampling was conducted at three wells (MW-13, MW-15, and MW-20) to determine the mobile fraction of metals in groundwater.

- Seven wells (GM-1 through GM-5, MW-14, and VW-2) were inspected for the presence of non-aqueous phase liquids (NAPLs).

- Bedrock well MW-9R was abandoned.

- Soil sampling was conducted in the former acetanilides production/railcar unloading area at 15 locations to delineate the areal extent of alachlor.

- Four soil probes were driven to bedrock north of the former quarry to determine if the quarry extended further north than initially identified. Soil sampling was conducted at these four locations.

- Soil sampling was conducted in the former bulk chemical storage terminal at eight locations to evaluate residual impact from the former storage tanks.

- Soil sampling was conducted around the former boiler slag accumulation pad to delineate the areal and vertical extent of soils potentially impacted with polychlorinated biphenyls (PCBs) and metals.

- Soil sampling was conducted near well MW-13 in an attempt to determine the source of p-chloraniline previously detected in groundwater samples collected from this well.

- Soil sampling was conducted at three locations near well MW-20 in an attempt to determine the source of cyanide previously detected in groundwater samples collected from this well.

- Soil sampling was conducted at four locations in the area west of the KK building to determine if soil had been impacted by former aboveground storage tanks in that area.

- Soil sampling was conducted in the former coal storage yard at three specified locations and at specified depths within those locations where previous HNu readings had been above background in the vadose zone.

- Soil sampling was conducted near the VV building at 33 locations to delineate the areal and vertical extent of PCB-impacted soil detected during railroad track repair at the central drumming area.

- Soil sampling was conducted in the northwest parking lot at three locations to obtain background metals concentrations.

- Data validation was performed for all Phase II soil and groundwater samples to ensure that all data developed during the RFI were correct.

- An off-site well inventory was performed.

- A regional geologic cross section was obtained.

- A bedrock contour map for the site was prepared.

- A site map of the paved and unpaved areas within the plant boundaries was developed.

All drilling and sampling procedures were specified in the Field Sampling Plan (FSP) of the October 1990 Phase I RFI Work Plan (Geraghty & Miller, Inc. 1990). The only addition during Phase II was the use of a Geoprobe for soil and groundwater sampling. Protocols for the Geoprobe work were included in the USEPA-approved Phase II RFI Work Plan (Geraghty & Miller, Inc. 1993).

Laboratory protocols followed the site-specific Quality Assurance Project Plan (QAPP) provided in the Phase I work plan (Geraghty & Miller, Inc. 1990). An addendum to the QAPP for the analysis of alachlor was submitted with the USEPA-approved Phase II Work Plan (Geraghty & Miller, Inc. 1993). The USEPA also approved the use of field test kits for analysis of cyanide in water and for laboratory analysis of PCBs in soil by Monsanto's laboratory at its Environmental Sciences Center (ESC), which performed 24-hour turnaround of results.

2.0 SITE DESCRIPTION

The J.F. Queeny Plant is located in St. Louis, Missouri on a 63-acre property that is located in the western portion of the Cahokia, Illinois, U.S. Geological Survey (USGS) topographic quadrangle at Mississippi River mile 178. A 9-acre parcel of the plant was sold to Rhone-Poulenc in 1989 (Figure 2-1). The Monsanto property is completely surrounded by an 8-ft high fence and access to the site requires authorization from Monsanto Company or Rhone-Poulenc.

Despite the close proximity of the Mississippi River (500 to 800 ft), the facility is not located within the 100-year flood plain, according to the Federal Emergency Management Agency (FEMA) because of a flood wall constructed by the U.S. Corps of Engineers along the eastern boundary of the Missouri-Pacific Railroad yard (Figure 2-1). During the record flooding in the summer of 1993, when the river crested at nearly 20 ft above flood stage, the plant was protected by this flood wall. A more detailed site description was provided in the Phase I RFI report (Geraghty & Miller, Inc. 1992)

2.1 REGIONAL AND SITE GEOLOGY

The stratigraphy at the site consists of recent alluvium that overlies glacial material. Published information indicates that these unconsolidated deposits are underlain by bedrock of Pennsylvanian and Mississippian age, which consists of limestone and dolomite with lesser amounts of sandstone and shale (Brill 1991, USGS 1974). A geologic cross section through the St. Louis area is provided in Appendix A.

Figures 2-2 through 2-5 are north-south and east-west cross sections that represent the geology at the site. As shown on these figures, fill material is present in many locations of the site to depths as great as 30 to 35 ft below grade and is approximately 100 ft thick at the former quarry. In the central portion of the site, the fill material is underlain by fine grained silt, clay, and silty sand (5 to 40 ft thick), which rests directly on the shallow bedrock that is encountered at 10 to 20 ft below grade (Figures 2-2 and 2-4). In areas where bedrock occurs at greater depths, fine to coarse sand and gravel (0 to 45 ft thick) underlie the finer-grained material. In

the northern portion of the facility, the sand and gravel layer is underlain by additional fine-grained deposits of silt, clay, and silty sand ranging up to 35 ft in thickness (Figure 2-3). In the southern portion of the site, the sand is underlain by a discontinuous silty clay and silty sand layer (10 to 15 ft thick) underlain by additional fine to coarse sand (0 to 25 ft thick) that appears to increase in thickness as the depth to bedrock increases (Figure 2-2).

In the southeastern portion of the plant, a quarry is known to have existed in the past. The geologic log from well QS-1, which was drilled in the quarry, indicates that some parts of the quarry were approximately 100 ft deep. Logs for borings and wells completed in the quarry area indicate that the quarry has been filled with native unconsolidated deposits, foundry slag, bricks, and concrete.

During Phase II, four soil probes (QP-1 through QP-4) were advanced to bedrock north of the quarry boundaries to confirm its northern extent (Figure 2-6). The depth to bedrock in these borings ranged from approximately 18 to 58 ft below grade. A bedrock contour map has been prepared that shows the extent of the quarry and the bedrock surface at the site (Figure 2-6). Review of this figure and old photographs indicates that a ramp extended along Kosciusko Street, north of the location of well QS-1, to provide access to the quarry.

Twelve cone penetrometer tests were conducted by Fugro Geosciences, Inc. (Fugro Geosciences 1993) in December 1993. These tests were performed to provide information on the depth to bedrock in the vicinity of the FF building during a separate investigation at that location. The depth to bedrock for all monitoring well and boring locations is provided in Table 2-1.

2.2 REGIONAL AND SITE HYDROGEOLOGY

Synoptic water-level data collected during Phase I of the RFI (June and October 1991) are provided in Table 2-2. Figure 2-7 shows the configuration of the water table on October 28, 1991. A detailed discussion of regional and site hydrogeology was provided in the Phase I report (Geraghty & Miller, Inc. 1992).

2.3 REGIONAL AND SITE WATER USE

In 1993, Geraghty & Miller performed an inventory of wells within a 1-mile radius of the site. While performing this inventory, Geraghty & Miller contacted The Missouri Department of Natural Resources (MDNR) and was informed that the MDNR maintains two filing systems: one for wells drilled prior to 1986 and one for wells drilled after January 1, 1986. This separation is based on a law that went into effect in 1986 requiring the registration of new wells. Records on wells drilled before 1986 were filed at the discretion of the well owner. Review of the post-1986 files by MDNR personnel indicated that there was no information on wells in the area.

The pre-1986 inventory has records for only two wells within a 1-mile radius of the Queeny plant. The first well was reportedly located approximately 1 mile south of the plant, was identified as the Industrial Sugar Corporation well, and was drilled in 1959 to a total depth of 69 ft below grade. The current status of this well is unknown and the St. Louis telephone directory has no listing for Industrial Sugar Corporation. The second well identified within a 1-mile radius of the site is the Bettendorf well, located 4,000 ft to the north of the site. This well was drilled in 1929 to a total depth of 805 ft bls. The current status of this well is also unknown. The St. Louis telephone directory has several Bettendorf residential listings and one business listing (an attorney), but none located in the vicinity of this well.

Six additional wells were identified within a 2-mile radius of the Queeny plant. One of the wells, the Hoffman well, was drilled approximately 2 miles to the southwest of the Queeny plant. The Hoffman well was drilled to a total depth of 901 ft bls in 1938 as an oil and gas test well. The well was unsuccessful as an oil and gas test well and was completed as a dry hole. In the oil and gas industry, dry holes are typically abandoned by filling the well with cement. In 1937, five wells were drilled by the City of St. Louis between 1.5 and 2 miles west of the Queeny plant. These wells were drilled as "sewer job test holes" to depths of between 115 and 152 ft bls. Current uses of these wells (if they are not abandoned) could not be determined. None of the eight wells within a 2-mile radius is downgradient of the plant.

2.4 SITE MAP OF PAVED AREAS

During Phase II of the RFI, a map was prepared that shows paved and unpaved portions of the site. This information is provided on Figure 2-8.

3.0 FIELD ACTIVITIES

Field activities conducted during the RFI consisted of soil and groundwater sampling, monitoring well installation, bedrock coring, and aquifer testing. The Phase I investigation was conducted in 1991, and the Phase II investigation was conducted in 1993 and 1994. Details of the field activities are provided below.

3.1 SOIL SAMPLING INVESTIGATION

Soil sampling was conducted during both phases of the RFI. During Phase I, soil sampling was performed at four areas of the site:

- Former acetanilides production/railcar unloading area.
- Former quarry.
- Former bulk chemical storage terminal.
- Former boiler slag accumulation pad.

Additional soil sampling was performed during Phase II at the four Phase I locations, plus six other locations:

- Vicinity of well MW-13.
- Vicinity of well MW-20.
- Area west of KK Building.
- Former coal storage yard.
- VV building/central drumming.
- Background locations.

Phase I and Phase II sampling locations are shown on Figures 3-1 through 3-5. Parameters analyzed in RFI soil samples are provided in Table 3-1.

Phase II soil sampling was conducted during March 1994 using Geoprobe equipment, as specified in the Phase II Work Plan (Geraghty & Miller, Inc. 1993). Services were provided by Geotrace, Inc. (GTI) of Mt. Vernon, Illinois. The Phase II soil samples were collected from specific depths with either a macrocore sampler (4 ft long) or a large-bore sampler (2 ft long), depending on the volume of soil necessary for analysis. Sample identifications were qualified with an "S," "M," or "D" (shallow, intermediate, or deep, respectively) to provide relative depths within the unsaturated zone. Actual depth intervals are provided in the geologic logs (Appendix B).

The Geoprobe sampling tube was cut open on clean plastic with a razor blade that had been previously decontaminated with laboratory-grade detergent and distilled water. The soil was field screened with an HNu for VOCs and was then placed in the designated container. Due to equipment failure, an HNu was not available to screen the soil until the second afternoon of sampling during Phase II. The USEPA representative on-site was notified of the equipment failure. HNu readings are included in the geologic logs (Appendix B).

3.1.1 Former Acetanilides Production/Railcar Unloading Area

During Phase I, 14 soil borings (LS-1 through LS-14) were drilled at the former acetanilides production/railcar unloading area to determine the hydrogeology and soil quality of the unsaturated deposits (Figure 3-2). Soil samples were analyzed for VOCs.

After the Phase I report had been submitted, and based on discussions with the USEPA, one additional soil sample (designated LSS-1) was collected on October 8, 1992. This sample was collected with a hand auger from a depth of 3 to 3.75 ft below grade, at a location adjacent to Phase I soil boring LS-10. The soil sample was analyzed for the priority pollutant list of parameters plus alachlor.

During Phase II, soil samples were collected at 15 Geoprobe locations, designated AC-1 through AC-16; these locations are shown on Figure 3-2. Sampling was attempted twice at

location AC-4, but refusal occurred at 1.5 ft below grade that prevented sampling. The USEPA field representative agreed to abandon this location; therefore, there is no geologic log for location AC-4.

Locations AC-1 through AC-3 and AC-5 through AC-9 were placed around the perimeter of the former acetanilides production area for delineation of VOCs and alachlor. Samples from locations AC-10 through AC-16 (within the center of the area) were analyzed for alachlor only, because soil samples from this area had been analyzed for VOCs during Phase I of the RFI. The intervals sampled were dependent on depth to groundwater and sample volume recovery. Because the depth to water was shallow and variable (4 to 8 ft below grade), a macrocore sampler, which is 4 ft long, was used so that the soil interval directly above the water table could be easily selected. However, despite the fact that a macrocore sampler was used, soil volume recovery was low due to the gravel fill that was encountered at many locations.

At location AC-13, groundwater was not encountered before refusal occurred at 12 ft below grade. Refusal most likely occurred because of the underlying bedrock, which is known to exist at approximately 8 to 15 ft below grade at the former acetanilides production area.

Pink or purple stained soil was documented at locations AC-3, AC-11, and AC-12. Samples were not collected from these stained zones because the soil was wet, and the staining may have been representative of groundwater rather than soil quality. The USEPA representative collected split samples at locations AC-1, AC-3, AC-5, AC-8, and AC-13.

3.1.2 Former Quarry

To determine whether the quarry extended further north than shown on Phase I drawings (Geraghty & Miller, Inc. 1992), four soil probes (QP-1 through QP-4) were advanced to bedrock during Phase II at the locations shown on Figure 3-5. At locations QP-1, QP-3, and QP-4, bedrock was encountered at depths of 58.1 ft below grade, 18.5 ft below grade, and 33.2 ft below grade, respectively. At location QP-2, two attempts were made to advance the probes to bedrock.

During both attempts, the Geoprobe rods bent and were lost in the subsurface. A depth of 48 ft was reached during the first attempt, without encountering bedrock. The USEPA representative agreed to abandon the attempt to locate bedrock at this location.

In addition to determining the depth to bedrock, a large-bore sampler was used to collect soil samples at the four Phase II Geoprobe locations. At each location, three soil samples were collected from the vadose zone for analysis of base/neutral compounds and metals. One soil sample from each location was also to be analyzed for VOCs and alachlor, as requested by the USEPA in its January 5, 1994 letter. Due to an oversight, samples were not retained at location QP-3 for analysis of VOCs or alachlor. The USEPA field representative split samples from locations QP-1 and QP-2.

3.1.3 Former Bulk Chemical Storage Terminal

During Phase I, four soil borings (VS-1 through VS-4) were drilled at the former bulk chemical storage terminal adjacent to the four former aboveground storage tanks (Figure 3-3), to characterize soil lithology and quality and to supplement data obtained during an earlier investigation (Geraghty & Miller, Inc. 1988a). Soil samples were retained for analysis of Appendix IX constituents.

Soil samples were collected from locations VS-5 through VS-12 during Phase II to determine the extent of impacted soil in the vicinity of the former bulk chemical storage terminal (Figure 3-3). Either two or three soil samples were collected from each boring, depending on soil volume recovery and depth to water, which occurred between 6 to 8 ft below grade. The samples were analyzed for VOCs, base/neutral compounds, metals, and sulfides. The USEPA field representative split samples from locations VS-11 and VS-12.

3.1.4 Boiler Slag Accumulation Pad

During Phase I, one shallow soil sample (BS-1) was collected at the boiler slag accumulation pad at the location shown on Figure 3-4. The sample was collected at 1.25 to 3.25 ft below grade for analysis of Appendix IX compounds.

To delineate the areal extent of PCBs and metals identified during Phase I, additional soil sampling was conducted in the vicinity of the boiler slag accumulation pad during Phase II. Samples were collected from 1 to 3 ft at 13 locations (BP-1 through BP-10, GP-20A, GP-20B, and GP-20C) using the Geoprobe (Figure 3-4). The presence of numerous underground utilities and other infrastructure often limited the placement of sampling locations. The USEPA representative collected split samples at location BP-4.

The Phase II Work Plan (Geraghty & Miller, Inc. 1993) had originally specified analysis for PCBs using a field immunoassay method. Monsanto's ESC proposed to perform PCB analysis using gas chromatography (GC) with a detection limit of 1 part per million (ppm) and provide the results within 24 hours. This method was believed to be more accurate for screening than the field immunoassay analysis, and the USEPA approved this change in a letter, dated January 26, 1994. The ESC results for PCB analysis are provided in Table 3-2. Based on the ESC's results, samples were collected from locations BP-3, BP-4, GP-20A, and GP-20B for confirmatory analysis of PCBs and for analysis of metals by Savannah Laboratories of Savannah, Georgia.

After review of the ESC data and discussions with the USEPA representative on-site, a decision was made to conduct the vertical delineation during this phase of field activities. Locations BP-20A (two sample depths) and BP-20B (three sample depths) were used for vertical delineation. Location BP-10 (two sample depths), located in the vicinity of the original Phase I boring at the former boiler slag accumulation pad (BS-1), was also used for vertical delineation. Samples from these three locations were submitted to Savannah Laboratories for analysis of PCBs and metals.

3.1.5 Vicinity of Well MW-13

In an attempt to determine the source of p-chloroaniline detected in Phase I groundwater samples from well MW-13, soil samples from the area upgradient of well MW-13 were analyzed for base/neutral compounds (Figure 3-5). Three soil samples were collected from location GP-1, and data from this location plus data from the four Geoprobe locations north of the former quarry, were reviewed to evaluate source determination.

3.1.6 Vicinity of Well MW-20

During Phase II, soil samples were collected from three Geoprobe locations (GP-20A, GP-20B and GP-20C) upgradient of well MW-20 in an attempt to determine the source of cyanide previously detected in groundwater samples from well MW-20. Six soil samples were collected from the vadose zone for cyanide analysis (Figure 3-4). These soil samples were also submitted for PCB analysis by ESC as described in Section 3.1.4 (Boiler slag Accumulation Pad). The USEPA representative collected split samples from locations GP-20A and GP-20C.

3.1.7 Vicinity of KK Building

During Phase II, eight soil samples were collected from locations KP-1 through KP-4 to determine if soil in the vadose zone has been impacted by former aboveground tanks in the area west of the KK Building (Figure 3-1). Samples were analyzed for VOCs because the materials stored in the former tanks were VOCs. Based on previous information from soil boring logs and water-level data, the depth to water at this area was expected to occur at approximately 25 ft below grade. However, water was encountered between 6 and 10 ft below grade at locations KP-1, KP-2, and KP-3. Geraghty & Miller believes that this water represents perched conditions because water was not encountered at location KP-4, which was advanced to 24 ft below grade. The sampling log for location KP-4 indicated that the bottom of the 22 to 24 ft large bore sample was very moist, suggesting proximity to the water table, which agrees with previous information. Soil samples were collected from three depths at location KP-4, from two depths at locations KP-

2 and KP-3, and from one depth at location KP-1. The USEPA representative collected split samples from location KP-2.

3.1.8 Former Coal Storage Yard

Soil samples were collected at three locations at the coal storage yard during Phase II to determine whether subsurface soil has been impacted by past usage. Although Monsanto had only used this property for coal storage, former owners used the yard for other purposes.

Drilling was conducted in this area by Geraghty & Miller in 1988 to assess potential impacts from previous site activities. No soil samples were collected for laboratory analysis. However, screening with a photoionization detector (PID) showed some readings above background conditions at specific depths at well HW-2, boring HB-2, and boring HB-3. The Phase II RFI soil program was designed to evaluate soil quality at these three locations (Figure 3-1). Soil probes were placed adjacent to these original locations and soil samples were collected for analysis of VOCs using the same boring/well designations used in 1988. Soil samples were collected as follows: well HW-2, 14 to 16 ft below grade (sample HW-2GP); boring HB-2, 19 to 21 ft below grade (sample HB-2GP); and boring HB-3, 8 to 10 ft below grade (sample HB-3GP). Background levels were reported by screening with an HNu detector during Phase II sampling. The USEPA representative collected a split sample from location HW-2.

3.1.9 VV Building/Central Drumming Area

During repair of the rail spur at the VV Building in 1993, soil containing some oil was observed. The soil was analyzed and found to contain PCBs. The USEPA was notified in a letter, dated April 30, 1993, and a scope of work for investigation at this area was included in the Phase II Work Plan.

During Phase II, soil sampling was conducted using the same PCB delineation procedure employed near the former boiler slag accumulation pad area. Underground utilities and

infrastructures limited sampling locations, especially along the railroad tracks and loading thoroughfare. Samples were collected for PCB analysis during Phase II at locations VP-1 through VP-32 from 1 to 3 ft or 2 to 4 ft below grade, depending on the presence of surface fill and/or concrete (Figure 3-6). The analytical data reported by ESC are provided in Table 3-2.

After areal delineation had been completed (based on the ESC data), samples were collected from locations VP-5, VP-20, VP-21, and VP-31. These four samples were submitted to Savannah Laboratories for PCB analysis.

Vertical delineation for PCBs was attempted at location VP-5; however, groundwater was encountered at 3 ft below grade. Location VP-33 was selected for vertical delineation, and a sample was collected from 3 to 5 ft below grade for PCB analysis. A deeper sample could not be collected because groundwater was encountered at 6 ft below grade. The USEPA representative collected split samples from locations VP-6, VP-11, and VP-30.

3.1.10 Background Soil Sampling

After Phase I soil data were reviewed, the USEPA requested that soil samples be collected during Phase II in an area not affected by industrial activities to determine background concentrations of metals in soil. Soil was collected with a Geoprobe sampler from locations BG-1, BG-2, and BG-3 in the northwest parking lot (Figure 3-1). Initially, soil was to be composited from land surface to the water table, which occurs at approximately 20 ft below grade. However, the soil consisted of a stiff clay which made retrieval of the sampler extremely difficult, and once the samples were retrieved, the sleeve containing the soil could not be extracted from the sampler. The USEPA representative agreed that a composite sample from land surface to 12 ft below grade was sufficient. The soil was mixed in a stainless-steel bowl and submitted for analysis of Appendix IX metals. The USEPA representative collected a split sample from location BG-2.

3.2 WELL ABANDONMENT

During the Phase I bedrock coring at well MW-9R, the 6-inch inner casing was observed to rotate after it had been grouted in place. An agreement was reached with the USEPA that this well should be abandoned because of its poor seal. Therefore, this well was abandoned in March 1994, coincident with the Phase II soil sampling. Well MW-9R was abandoned in accordance with the new Missouri regulations for well abandonment (10 CSR 23-4.080) by a Missouri-licensed well contractor. The well abandonment form was completed and submitted to the MDNR; a copy is provided in Appendix C.

3.3 INSPECTION OF WELLS FOR NON-AQUEOUS PHASE LIQUIDS

During Phase II, well VW-2, located at the former bulk chemical storage terminal, was visually inspected for light non-aqueous phase liquids (LNAPLs) prior to sampling. A weighted top-filling Teflon bailer was used to inspect this well for LNAPLs (as suggested by USEPA) as follows:

- The top-filling bailer was lowered slowly down the well to the static water level.
- The bailer was lowered into the water until the top of the bailer was submerged; the bailer was filled by skimming the surface of the water.
- The bailer was raised slowly, after it was 1/2 to 3/4 full, to ensure retention of any LNAPL present.
- The sample was placed in sample containers and stored in an ice-filled cooler.
- The bailer was cleaned according to appropriate decontamination procedures.

Geraghty & Miller determined that there was a very thin LNAPL sheen, but the thickness could not be measured. A groundwater sample from well VW-2 was submitted for laboratory analysis of VOCs. Following discussions in the field with the USEPA representative, well VW-2 was inspected again 2 days after the initial sampling in an attempt to collect the LNAPL. No measurable LNAPL was present, and a groundwater sample (labelled VW-2A) was collected and submitted for VOC analysis.

Well MW-14 and the five monitoring wells installed around this well (GM-1 through GM-5) were inspected for the presence of a dense NAPL (DNAPL) by using a peristaltic pump at a very low pumping rate. This inspection was conducted prior to purging each well for groundwater sampling. Each sample was visually inspected by both Geraghty & Miller field personnel and the USEPA representative, and no DNAPL was observed in any of these six wells. However, the evacuation water from well MW-14 did appear to have an LNAPL present. Based on discussions with the USEPA, well MW-14 was inspected again 2 days after the initial sampling to obtain the LNAPL, if possible. This sample was collected using the top-filling bailer as described for well VW-2; it did not appear to contain an LNAPL. A groundwater sample (labelled MW-14A) was submitted for laboratory analysis of Appendix IX VOCs.

3.4 GROUNDWATER SAMPLING

Phase II groundwater sampling was conducted during November 1993. Groundwater samples were collected from 17 existing wells and nine Geoprobe locations to further define groundwater quality. Samples were collected from existing wells GM-1, GM-2, GM-3, GM-4, GM-5, QS-1, VW-2, OBS-1, MW-3, MW-4, MW-5, MW-8A, MW-11B, MW-13, MW-14, MW-15, and MW-20. In addition, groundwater samples were collected from Geoprobe locations GM-1A, GM-1B, GM-1C, MW-13A, MW-13B, MW-13C, MW-13D, MW-13F, and MW-20B (Figure 3-1). Details of Phase II groundwater sampling are provided below and the sampling logs are provided in Appendix D.

Groundwater sampling in the monitoring wells during Phase II was performed using the methodologies outlined in the approved Phase I RFI Work Plan (Geraghty & Miller, Inc. 1990). In general, water-level measurements were collected and the volume of water in the well was calculated. Three to five volumes of water were removed, or the well was bailed dry prior to sampling, using either one of the following well evacuation methods, or a combination of the following equipment: 4-inch stainless-steel submersible pump, peristaltic pump, Teflon bailer, or a polyethylene (disposable) bailer. The evacuated water was placed into drums for disposal by Monsanto personnel.

Following well evacuation, groundwater samples were collected with either a dedicated bottom-filling Teflon bailer, a disposable bailer, or a peristaltic pump. The peristaltic pump was used to collect samples for total metals analysis (wells MW-13, MW-15, and MW-20). Geoprobe sampling was conducted by GTI by driving a core into the water table, and withdrawing a sample with a peristaltic pump and dedicated tubing.

The USEPA representative split samples at all locations where sufficient water was available to fill all containers. For quality assurance/quality control (QA/QC) purposes, matrix spike/matrix spike duplicate (MS/MSD) samples were obtained from 10 percent of all groundwater samples collected. Laboratory analysis was performed using SW-846 methodologies for Appendix IX parameters, as described in the RFI QAPP (Geraghty & Miller, Inc. 1990). A method for alachlor, which is not an Appendix IX compound, was included in the Phase II RFI Work Plan to supplement the Phase I RFI QAPP. The parameters analyzed for each groundwater sample are summarized in Table 3-3.

3.4.1 Groundwater Sampling for Volatile Organic Compounds

During Phase I of the RFI, elevated concentrations of some VOCs were detected in some groundwater samples. These concentrations necessitated sample dilution prior to analysis and the detection limits were, therefore, increased. To determine if other VOCs might be present in groundwater at concentrations below the elevated detection limits, wells VW-2, MW-3, MW-8A,

MW-13, MW-14, and OBS-1 were resampled during Phase II for VOC analysis without dilution, if possible. These wells were selected based on the Phase I results. The laboratory screened all samples prior to analysis and determined that only the sample from well MW-13 could be analyzed without dilution. The other samples required dilution, and the USEPA agreed that the analyses should proceed with the necessary dilutions.

3.4.2 Groundwater Sampling for Alachlor

During Phase II, 11 wells were sampled for analysis of alachlor. These locations included four wells within the former acetanilides production/railcar unloading area (wells GM-1, GM-3, GM-5, and MW-14) and seven wells outside this area (wells MW-3, MW-4, MW-5, MW-11B, MW-13, MW-15, and QS-1), as shown on Figure 3-1. In addition, a Geoprobe was used to obtain groundwater samples from three locations east of Kosciusko Street (GM-1A, GM-1B, and GM-1C). The USEPA representative collected split samples at all wells but not from any Geoprobe locations.

3.4.3 Groundwater Sampling for Metals

To determine the mobile fraction of metals in groundwater, three wells (MW-13, MW-15, and MW-20) were sampled during Phase II because these wells had the highest concentrations of some metals during Phase I of the RFI. Each of these wells was sampled for total Appendix IX metals. Since these wells are screened in silty/clayey sands, a passive sampling procedure was employed to minimize turbulence. Three to five well volumes were evacuated from each well with a peristaltic pump at a very low pumping rate or by slowly withdrawing the water with a bailer. Once the wells had recovered, a water sample was collected with the peristaltic pump for analysis of total Appendix IX metals. The USEPA representative collected split samples at all locations.

3.4.4 Groundwater Sampling in the Vicinity of Well MW-13

In an attempt to determine the source of p-chloroaniline detected in groundwater samples collected from well MW-13 during Phase I, a Geoprobe was used to obtain additional groundwater samples upgradient of this well during Phase II. Geoprobe locations MW-13A, MW-13B, MW-13C, MW-13D, MW-13E, and MW-13F (Figure 3-5) yielded very silty samples. The sample volume was insufficient to split samples with the USEPA representative at location MW-13D, and the flow volume at location MW-13E was insufficient for either Geraghty & Miller or the USEPA representative to collect a sample. Groundwater samples from well MW-13 and from the Geoprobe locations were analyzed for base/neutral compounds.

3.4.5 Groundwater Sampling in the Vicinity of Well MW-20

To determine the source of cyanide detected in groundwater samples previously collected from well MW-20, groundwater samples were collected from well MW-20 and one Geoprobe location during Phase II for cyanide analysis. The initial scope of work proposed that three Geoprobe locations (MW-20A, MW-20B, and MW-20C) be analyzed for cyanide using a Hach field kit. If cyanide was observed at these locations, additional samples were to be collected to delineate the possible source.

Because of numerous underground and overhead utilities and heavy truck traffic, the two Geoprobe locations planned on Kosciusko Street were inaccessible. MW-20A was placed at its proposed location. Only one alternate Geoprobe location (MW-20B) was possible, given the site constraints, and it was placed at a location that was actually more sidegradient than upgradient (Figure 3-4).

At location MW-20A, the groundwater recharge was too slow and the water too silty to collect any samples. A sample was collected for both field and laboratory analysis of cyanide at Geoprobe location MW-20B and well MW-20. Cyanide was not detected by the field analysis at these two locations; therefore, no additional samples were collected. The USEPA

representative agreed that additional sampling was impractical and would not provide additional useful data. The USEPA representative collected split samples at both locations.

4.0 DATA EVALUATION

This section describes the analytical results from soil and groundwater sampling completed during Phase II. Data validation was conducted on all Phase II samples, and a discussion of the results of the validation is provided in Appendix E. Analytical data from both phases are included in Tables 4-1 through 4-9. Results from Phase I are discussed in this section whenever they are relevant to Phase II results.

4.1 SOIL DATA

During Phase I, soil samples were analyzed for the full list of Appendix IX constituents at all sampling locations, except for the former acetanilides production area, where soil was only analyzed for VOCs in accordance with the USEPA-approved work plan (Geraghty & Miller, Inc. 1990). During Phase II, additional soil samples were collected for specific Appendix IX parameters, to further characterize soil quality at specific areas of the site.

4.1.1 Former Acetanilides Production Area

Of the 33 soil samples collected from the former acetanilides production area and analyzed for VOCs during both phases of the RFI, chlorobenzene was detected in 16 samples at concentrations ranging from 7.1 to 59,000 micrograms per kilogram (ug/kg) (Table 4-1). The highest chlorobenzene concentrations generally occur at locations along the railroad tracks adjacent to the eastern boundary of the former acetanilides production area (Figure 4-1). Chlorobenzene was detected in only two samples collected during Phase II for perimeter delineation: 7.1 ug/kg (estimated) in sample AC-2S (0 to 2 ft below grade), and 25 ug/kg in sample AC-8D (5 to 7 ft below grade).

Acetone was detected in ten of the 16 Phase II soil samples at concentrations ranging from 78 to 310 ug/kg. Methylene chloride was detected in nine of 16 Phase II samples at concentrations ranging from 8.4 to 13 ug/kg. Geraghty & Miller believes that the detection of both of these compounds is due to laboratory contamination for the following reasons. Neither

compound was used for decontamination of soil sampling equipment. Acetone was not detected in soil samples collected during Phase I, nor was it detected in groundwater samples (other than an estimated concentration at well MW-8B during Phase I) during any RFI sampling event.

Other VOCs detected during both Phases of the RFI include 2-butanone (methyl ethyl ketone [MEK]) at an estimated concentration of 160,000 ug/kg in sample LS-7 (7.5 to 9.5 ft below grade); 1,1,1-trichloroethane ranging from 15 to 57 ug/kg at locations LS-11 through LS-14; carbon disulfide at 8.2 ug/kg at location LS-12 (0.5 to 2.5 ft below grade); trichloroethene at 8.9 ug/kg and xylenes at an estimated concentration of 12 ug/kg at location LS-13A (1.0 to 3.0 ft below grade); tetrachloroethene (PCE) at 6.3 ug/kg and 10 ug/kg, in samples AC-1D and AC-1S, respectively; PCE, toluene, and xylenes in sample AC-2S; and xylenes at 53 ug/kg in sample AC-6D.

Alachlor was detected in 15 out of 30 samples from locations LSS-1 and AC-1 through AC-9 (excluding location AC-4). Concentrations ranged from 18 to 80,000 ug/kg (Table 4-2). As shown on Figure 4-2, the highest concentrations of alachlor were detected in samples collected near the railroad tracks: 80,000 ug/kg in sample AC-3S, 26,000 ug/kg in sample AC-13M, 17,000 ug/kg in sample AC-13D, and 13,000 ug/kg in sample AC-15S. The other occurrences of alachlor appear at various depths and locations, and do not indicate a specific source.

In general, the most prevalent occurrences of VOCs and alachlor are along the railroad tracks. The areal and vertical distribution of these constituents at other locations is apparently random and may represent years of activity throughout the entire former acetanilides production area. The perimeter sampling locations provided sufficient data to delineate the extent of VOCs at the former acetanilides production area.

4.1.2 Former Quarry

In general, VOCs were detected in soil samples collected during the RFI at concentrations less than 20 ug/kg (Table 4-1). The only exception was in samples QP-2S and QP-4D where

acetone was detected at 200 ug/kg and 330 ug/kg, respectively. The occurrence of acetone is attributed to laboratory contamination, as explained in Section 4.1.1 (Former Acetanilides Production Area).

Base/neutral compounds were detected in 14 of the 16 soil samples collected during both phases of the RFI, at total concentrations ranging from 1,160 ug/kg (QP-3D) to 91,400 ug/kg (QS-1 at 0 to 4 ft below grade). The concentrations of total base/neutral compounds in the vicinity of the former quarry and well MW-13 are depicted on Figure 4-3 and summarized in Table 4-2. As shown on the figure, the distribution of base/neutral compounds in soil varies with depth and location, and does not point to a specific source. The boring logs indicate that the material is fill, which is probably associated with closure of the quarry. This fill is the probable explanation for the variability of distribution of base/neutral compounds in the soil.

No Appendix IX acid extractable organic compounds, pesticides, PCBs, herbicides, or chlorinated dioxins/furans were detected in the soil samples collected from the former quarry during Phase I (Table 4-4). Therefore, these compounds were not analyzed during Phase II. Alachlor was not detected in the three samples collected during Phase II (QP-1S, QP-2S, QP-4D).

During both phases of the RFI, antimony, silver, thallium, and selenium were not detected in any soil samples collected at the former quarry, and beryllium was only detected at concentrations just above its detection limit in samples from boring QS-1 (0.56 and 0.61 milligrams per kilogram [mg/kg]) and sample QP-4S (0.63 mg/kg) (Table 4-5). All other metals concentrations are within the range of the three background samples collected during Phase II (samples BG-1, BG-2, and BG-3). Total cyanide was only analyzed in samples collected during Phase I and was not detected. Sulfide was also only analyzed in Phase I soil samples; it was detected in samples from QS-1 at 12 ug/kg and 29 ug/kg (estimated).

4.1.3 Former Bulk Chemical Storage Terminal

Total VOC concentrations in all RFI soil samples ranged from approximately 30 ug/kg (sample VS-2 at 7 to 9 ft below grade) to 1,500,000 ug/kg (sample VS-9M at 3 to 5 ft below grade). The most prevalent constituent is chlorobenzene, which accounts for the majority of the total VOCs detected in the soil samples from this area. Chlorobenzene was detected at concentrations ranging from 15 ug/kg (sample VS-7M at 2 to 4 ft below grade) to 1,500,000 ug/kg (sample VS-9M at 3 to 5 ft below grade). The distribution of total VOCs in soil in the vicinity of the former bulk chemical storage terminal is shown on Figure 4-4. As shown on this figure, the highest concentrations of VOCs were detected within the eastern and southeastern portions of the former bulk chemical storage terminal.

Base/neutral organic compounds were detected in all but two soil samples collected at the former bulk chemical storage terminal (Table 4-3). Where detected, concentrations of total base/neutral compounds ranged from 900 ug/kg (sample VS-6S) to 1,564,000 ug/kg (sample VS-5S). The constituents are primarily fluoranthenes, anthracenes, and pyrenes. The concentrations of total base/neutral compounds in soil at the former bulk chemical storage terminal are plotted on Figure 4-5. In comparison to VOCs, the distribution of base/neutral compounds appears to be more random.

No acid extractable organic compounds, pesticides, PCBs, herbicides, or chlorinated dioxins or furans were detected in any soil samples collected at the former storage terminal during Phase I (Table 4-4). Therefore, these compounds were not analyzed during Phase II.

The highest metal concentrations were detected in RFI soil samples from locations VS-1, VS-4, VS-5, VS-7, VS-8, and VS-9 (Table 4-4). In particular, lead and barium were detected in these samples at higher concentrations than was reported for background samples BG-1, BG-2, and BG-3.

4.1.4 Boiler Slag Accumulation Pad

The ESC results for soil samples BP-1 through BP-10 (two intervals), GP-20A, GP-20B, and GP-20C are summarized in Table 3-2. Review of these data shows that PCBs were not detected in 11 out of 14 soil samples at a detection limit of 1 ppm. Concentrations in the three samples where PCBs were detected (samples BP-6, GP-20AS, and GP-20BS) ranged from approximately 5 to 24 ppm. The data from the ESC analyses were plotted on Figure 4-6, which shows that the highest PCB concentration occurs along the railroad spur (sample GP-20BS).

Selected samples were sent to Savannah Laboratories for confirmatory analysis of PCBs and for analysis of metals at locations BP-3, BP-4, BP-10, GP-20A (two intervals), and GP-20B (three intervals). No PCBs were detected in sample BP-10, which was collected adjacent to the original Phase I boring (BS-1) (Table 4-4). The highest concentrations were detected in the three samples collected from boring GP-20B, which was also identified by ESC as representing the highest PCB concentrations in the area (Figure 4-6).

Comparison of ESC data with Savannah Laboratories data shows good correlation, particularly with respect to the goals of the investigation (delineation). Any variation between the analytical data may be explained by the fact that the samples collected for analysis by Savannah Laboratories were obtained from locations adjacent to the original sample location for analysis by ESC. Variations within soil are expected because of the heterogeneous nature of soil.

As shown on Figure 4-6, the highest PCB concentrations occur at location GP-20B, which is adjacent to the railroad track. Vertical sampling shows that PCBs were detected by Savannah Laboratories at 720 ppm at 6 ft below grade (the water table occurs at 7 ft below grade at this location). However, at location GP-20A, PCBs were only detected at 11.5 ppm at 8 ft below grade (depth to water occurs at 9 ft below grade at this location). Based on these two samples collected for vertical delineation, plus samples collected at 11 other locations for areal delineation, the vertical and areal extent of the PCBs appears to be limited to a small area at the railroad tracks.

The eight Phase II soil samples analyzed for metals were compared to the background samples. The concentrations of each parameter are within the range of concentrations in the background soil samples (Table 4-5).

4.1.5. Vicinity of Well MW-13

p-Chloroaniline was detected in soil samples GP-1M (5 to 7 ft) and GP-1D (9 to 11 ft) at 8,200 ug/kg and 8,300 ug/kg, respectively. Geoprobe location GP-1 was placed approximately 10 ft from well MW-13. The only other occurrence of p-chloroaniline was 2,200 ug/kg in shallow soil sample, QP-4S, which is approximately 100 ft from well MW-13. No other soil samples collected upgradient of well MW-13, including those collected north of the former quarry area, contained p-chloroaniline. Because of the limited occurrence of p-chloraniline in this area, there is no apparent source.

4.1.6 Vicinity of Well MW-20

Cyanide was not detected in any of the six soil samples collected in the vicinity of well MW-20 during Phase II (Table 4-5 and Figure 4-7). Because the only occurrence of cyanide in groundwater was detected in MW-20 and it was not detected in any of the six soil samples, there is no apparent source of cyanide.

4.1.7 Area West of KK Building

VOCs were not detected in the one soil sample collected at location KP-1 (collected at 3 to 5 ft below grade). In the seven other soil samples collected at locations KP-2 through KP-4, total VOC concentrations ranged from approximately 175 to 572,000 ug/kg, and consisted only of xylenes, chlorobenzene, and acetone (Table 4-1). The highest VOC concentrations occurred in samples KP-3S (572,000 ug/kg) and KP-3D (29,000 ug/kg). Acetone was detected in three samples at concentrations ranging from 110 to 180 ug/kg; the acetone is believed to be the result of laboratory contamination.

Concentrations of total VOCs at depth, as detected in samples KP-4M (11 to 14 ft below grade) and KP-4D (22 to 24 ft below grade), were less than approximately 200 ug/kg and consisted primarily of acetone (Table 4-1).

4.1.8 Former Coal Storage Yard

The three soil samples collected at the former coal storage yard were analyzed for VOCs and the data are summarized in Table 4-1. As indicated in this table, very few VOCs were detected. Total VOC concentrations, which consisted primarily of acetone, ranged from 126 to 190 ug/kg. Acetone concentrations ranged from 100 to 150 ug/kg. The acetone is believed to be a laboratory artifact. Chlorobenzene was detected in all three samples at concentrations ranging from 14 to 17 ug/kg. The only other VOCs detected were xylenes in sample HB-3GP (73 ug/kg), and xylenes (7.2 ug/kg) and ethylbenzene (6.2 ug/kg) in sample HW-2 GP.

4.1.9 VV Building

Thirty-three soil samples were collected for PCB analysis by ESC, as summarized in Table 3-2. The ESC results are plotted on Figure 4-8, which shows the extent of PCBs detected in this area. Confirmatory samples were collected at locations VP-5, VP-20, VP-21, and VP-31 for analysis by Savannah Laboratories. In addition, vertical delineation samples from locations VP-5 and VP-33 were also submitted for PCB analysis by Savannah Laboratories. These data are summarized on Table 4-4 and are plotted on Figure 4-8.

As with the data from the boiler slag accumulation pad, there is good correlation between the ESC data and Savannah Laboratories data. The highest PCB concentration of 3,400 ppm was detected at sample VP-33 (collected at 3 to 5 ft below grade), which is located in the center of the highest area sampled. As shown on Figure 4-8, the area where PCBs occur is well defined, and the perimeter delineation has been confirmed by laboratory analysis.

4.1.10 Background Soil Quality

The results of metals analyses for three composite soil samples are summarized in Table 4-5. These data were used for comparison with soil data at other areas.

4.2 GROUNDWATER DATA

Additional sampling was performed during Phase II of the RFI at 17 wells and nine Geoprobe locations to further define groundwater quality. Selected parameters were analyzed during this phase (Table 3-3). The analytical results are presented in Tables 4-6 through 4-10. Data validation was conducted on all samples, and the validation results are included in Appendix E.

4.2.1 Volatile Organic Compounds

Of the six wells resampled for VOCs during Phase II for undiluted analysis, only the groundwater sample from well MW-13 could be analyzed without dilution. Review of data from this well shows that no additional VOCs were detected at the lower detection limits (Table 4-6). The analytical results for all six wells sampled showed that the VOC concentrations were within the range of concentrations from previous rounds.

4.2.2 Groundwater Sampling for Alachlor

Of the 14 locations sampled for alachlor during Phase II, concentrations ranged from not detected (at a detection limit of 1 micrograms per liter [ug/L]) at six sampling locations to 85,000 ug/L (Table 4-9). The highest concentrations of alachlor were detected in wells GM-3 (710 ug/L), GM-1 (67,000 ug/L), and MW-14 (85,000 ug/L), all of which are within 50 ft of each other.

Alachlor was not detected at the three Geoprobe locations (GM-1A, GM-1B, GM-1C, and MW-13) and well MW-13 to the east of Kosciusko Street except for an estimated concentration

of 1.4 ug/L at location GM-1A. Each of these locations is hydraulically downgradient of the former acetanilides production area. Alachlor was not detected above 1 ug/L to the north of the former acetanilides production area (wells MW-3 and MW-5). At the locations to the south and west of the area, alachlor was detected at concentrations less than or equal to 36 ug/L. Due to the radial flow pattern in this area of the site, sampling locations to the north, south, and west are also hydraulically downgradient.

4.2.3 Metals

Three wells (MW-13, MW-15, and MW-20) were resampled during Phase II for total metals analysis using the passive sampling procedure. These results closely resemble the dissolved metals results from both Phase I rounds of sampling and were lower than Phase I total metals results (Table 4-10). For example, at well MW-13, total barium concentrations in groundwater samples collected during Phase I ranged from approximately 1,000 ug/L to 2,200 ug/L, and dissolved barium concentrations ranged from 400 to 510 ug/L. During Phase II, total barium was reported at 300 ug/L. In addition, during Phase I, total lead concentrations at well MW-13 ranged from 560 to 1,000 ug/L, and dissolved lead was not detected at detection limits ranging between 5 and 25 ug/L. In Phase II, total lead was reported at 26 ug/L.

Similar observations can be made for metals concentrations at wells MW-15 and MW-20, which were also sampled during Phase II using the passive sampling technique. In general, the Phase I dissolved metals concentrations and Phase II total metals concentrations are a minimum of one order of magnitude lower than the total metals concentrations detected in Phase I groundwater samples.

4.2.4 Vicinity of MW-13

p-Chloroaniline was not detected in any of the five Geoprobe samples collected upgradient of well MW-13, except for an estimated concentration of 120 ug/L at location MW-13F (Table 4-7). Because of the limited occurrence of p-chloraniline in this area, there is no apparent source.

4.2.5 Groundwater Sampling in the Vicinity of Well MW-20

The field analysis for cyanide indicated that cyanide was not present in the sample from well MW-20 or Geoprobe sample MW-20B. However, cyanide concentrations in samples analyzed by Savannah Laboratories at well MW-20 and Geoprobe sample MW-20B were 490 ug/L and 18 ug/L, respectively. These concentrations are one to three orders of magnitude lower than the Phase I cyanide concentrations detected at well MW-20 (6,500 ug/L and 27,000 ug/L). The field test may not have been accurate due to the cold weather.

4.3 INSPECTION OF THE WELLS FOR NAPLs

During Phase II of the RFI, wells MW-14, GM-1 through GM-5, and VW-2 were visually inspected for NAPLs. No DNAPLs were observed. A thin LNAPL sheen was observed at wells MW-14 and VW-2, but the LNAPL was not sufficiently thick to measure or to collect samples for analysis. Two water samples were collected at each well for VOC analysis. The only VOC detected at well MW-14 was chlorobenzene at a concentrations of 100,000 ug/L and 83,000 ug/L. Chlorobenzene was also detected at well VW-2 at 5,700 ug/L and 3,500 ug/L.

5.0 FINDINGS

The findings of the Phase II RFI are summarized below. The groundwater model and risk assessment, which were included in the Phase I RFI report, will be updated following discussions with the USEPA about the results of the Phase II RFI. The need for corrective measures will be based on the conclusions of the groundwater model and risk assessment.

5.1 FORMER ACETANILIDES PRODUCTION AREA

- VOC results indicate that the primary VOC detected in soil is chlorobenzene, and the highest concentrations of chlorobenzene occur along the railroad spur that is adjacent to the eastern boundary of the former acetanilides production area. Chlorobenzene was not detected in samples collected around the perimeter of the former acetanilides production area, with the exception of low concentrations in samples AC-2S (7.1 ug/kg) and AC-8D (25 ug/kg). Based on the Phase I and Phase II soil sampling programs, the areal and vertical extent of VOCs has been delineated.

- Soil samples were also analyzed for alachlor during Phase II. Similar to the VOC results, the highest concentrations of alachlor occur along the railroad tracks. Other occurrences of alachlor appear at various depths and locations and do not indicate a specific source. There is no apparent pattern of distribution of alachlor in soil.

- During Phase II, groundwater samples from 14 locations were analyzed for alachlor. The highest concentrations were observed in wells GM-1, GM-3, and MW-14, all of which are close to each other. Alachlor was not detected above 1.4 ug/L to the east of Kosciusko Street or to the north of the former acetanilides production area. At locations to the west and south, alachlor was detected at concentrations less than or equal to 36 ug/L. Based on these data, the areal extent of alachlor in groundwater has been delineated, and it is limited to an area defined by wells GM-1, GM-3, and MW-14.

5.2 FORMER QUARRY

- Soil probes were installed north of the quarry area using a Geoprobe to provide more information on the northern extent of the quarry. Based on these results and a review of historical photographs, it appears that a ramp existed along Kosciusko Street to provide access to the quarry.

- Base/neutral organic compounds were the primary constituents detected in soil samples collected from the quarry. However, their distribution is variable, both areally and vertically. This variable distribution of base/neutral compounds is likely the result of filling the quarry after operations had ceased.

- Analysis for alachlor was performed on three soil samples collected north of the former quarry during Phase II; no alachlor was detected in these three samples. All metals concentrations were within the range of the three background samples collected during Phase II.

5.3 FORMER BULK CHEMICAL STORAGE TERMINAL

- VOCs, base/neutral organic compounds, and metals were detected in soil samples collected at the former bulk chemical storage terminal. The highest VOC concentrations were found in the eastern and southeastern portions of the site, whereas the distribution of base/neutral compounds appears to be more random.

5.4 FORMER BOILER SLAG ACCUMULATION PAD

- Sampling conducted at the former boiler slag accumulation pad during Phase II revealed that PCBs were only detected in three of 14 soil samples analyzed by ESC, at concentrations equal to or less than 24 ppm. The three soil samples in which PCBs were detected, were located along the railroad track, north of the former boiler slag

accumulation pad. Based on these results, the vertical and areal extent of the PCBs has been defined and is limited to a small area along the railroad tracks.

5.5 VICINITY OF WELL MW-13

- The highest concentrations of p-chloroaniline in soil were detected in two samples collected from the Geoprobe location closest to well MW-13 (location GP-1). The only other occurrence of p-chloroaniline was in shallow sample QP-4S, located approximately 100 ft upgradient of well MW-13.

- Of the five groundwater samples collected from the Geoprobe locations upgradient of well MW-13, p-Chloroaniline was only detected at an estimated concentration of 120 ug/L at one location (MW-13F).

- Because the occurrence of p-chloroaniline in both soil and groundwater in the vicinity of well MW-13 is limited, there is no apparent source.

5.6 VICINITY OF WELL MW-20

- Cyanide was not detected in any of the six soil samples collected upgradient of well MW-20.

- The concentrations of cyanide in the two groundwater samples collected near well MW-20 were one to three orders of magnitude lower than the Phase I results for this well.

- Based on the Phase II groundwater results and the absence of cyanide in the six soil samples that were collected in this area during Phase II, the occurrence of cyanide appears to be limited to the immediate vicinity of well MW-20 and there is no apparent source.

5.7 AREA WEST OF THE KK BUILDING

- The highest concentrations of VOCs in soil west of the KK building were detected in the shallow soil (less than 6 ft below grade) and consisted of xylenes, chlorobenzene, and acetone. VOC concentrations in deeper soil samples were less than approximately 200 ug/kg and consisted primarily of acetone. Based on these results, it appears that only the shallow soils were affected by the former aboveground storage tanks.

5.8 FORMER COAL STORAGE YARD

- Concentrations of total VOCs in soil at the former coal storage yard were less than 200 ug/kg and consisted primarily of acetone. The only other constituents were xylenes, ethylbenzene, and chlorobenzene.

5.9 VV BUILDING

- Based on the results of soil sampling conducted during Phase II, the areal and vertical extent of PCBs in the vicinity of the VV Building is well defined, and the perimeter delineation has been confirmed by laboratory analysis.

5.10 BACKGROUND SOIL QUALITY

- Background metals data collected during Phase II were compared to metals data reported for other soil samples collected across the site. In general, concentrations of metals in soil were within the range of metals reported for the three background samples. The only location where metals were reported outside the range of the background samples was at the former bulk chemical storage terminal, where lead and barium were detected above the range of background concentrations.

5.11 VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER

- Of the six wells that were resampled for VOCs analysis during Phase II, only the groundwater sample from well MW-13 did not require dilution. No additional VOCs were detected in the sample from well MW-13. Analytical results for all wells showed that VOC concentrations were within the same range as previous sampling results.

5.12 METALS IN GROUNDWATER

- The analytical results for groundwater samples collected using the passive procedure (to minimize turbulence and reduce silt content) showed that Phase II total metals concentrations were similar to the dissolved metals results obtained during Phase I. These results indicate that dissolved metals account for the majority of the mobile fraction of metals in groundwater.

5.13 INSPECTION OF THE WELLS FOR NAPLs

- A thin LNAPL sheen was observed in wells MW-14 and VW-2, but there was not a sufficiently thick layer to measure or to collect an LNAPL sample.

- No DNAPLs were found in well MW-14 or any of the five other wells in the former acetanilides production area.

6.0 REFERENCES

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Table 2-1. Bedrock Elevations at the J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Well/Boring Designation	Land Surface Elevation (1)	Depth to Bedrock (2)	Bedrock Elevation (1)
AC-05	423.00 (3)	5.00	418.00
AC-13	423.70 (3)	12.00	411.70
CPT-01	423.00 (3)	30.00	393.00
CPT-02	423.00 (3)	30.00	393.00
CPT-03	423.00 (3)	30.00	393.00
CPT-04	423.00 (3)	30.00	393.00
CPT-05	423.00 (3)	30.00	393.00
CPT-06	423.00 (3)	32.00	391.00
CPT-07	423.00 (3)	38.00	385.00
CPT-08	423.00 (3)	31.00	392.00
CPT-10	423.00 (3)	35.00	388.00
CPT-11	423.00 (3)	34.00	389.00
CPT-12	423.00 (3)	31.00	392.00
GM-01	423.70	11.80	411.90
GM-02	423.50	9.80	413.70
GM-03	424.50	9.50	415.00
GM-04	424.80	9.50	415.30
GM-05	425.00	16.50	408.50
HW-01	420.80	79.00	341.80
HW-01B	420.60	78.50	342.10
HW-02	421.40	29.30	392.10
HW-03	422.20	22.00	400.20
MW-01A	428.10	59.00	369.10
MW-01B	427.30	59.00	368.30
MW-02A	429.30	48.50	380.80
MW-02B	428.80	48.50	380.30
MW-02R	428.80	49.50	379.30
MW-03	423.40	31.50	391.90
MW-04	425.30	17.50	407.80
MW-05	424.10	17.00	407.10
MW-06A	424.30	50.00	374.30
MW-06B	424.10	50.00	374.10
MW-07A	420.20	95.00	325.20
MW-07B	419.70	95.00	324.70
MW-08A	421.70	82.50	339.20
MW-08B	421.70	82.50	339.20
MW-08R	421.70	84.00	337.70
MW-09	422.70	41.50	381.20

(1) Feet above mean sea level. Land surface elevation estimated by subtracting height of well above land surface from surveyed measuring point elevation.

(2) Feet below land surface.

(3) Elevation estimated from nearby data points.

Only those wells/borings at which bedrock was encountered are listed.

BEDRCK-2.XLS

Table 2-1. Bedrock Elevations at the J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Well/Boring Designation	Land Surface Elevation (1)	Depth to Bedrock (2)	Bedrock Elevation (1)
MW-09R	421.90	39.50	382.40
MW-10	423.20	41.50	381.70
MW-11A	426.20	83.00	343.20
MW-12	424.00	24.00	400.00
MW-13R	423.70	53.00	370.70
MW-14	423.90	10.00	413.90
MW-15	424.30	16.00	408.30
MW-16	421.20	50.00	371.20
MW-18A	420.50	81.50	339.00
MW-18B	420.60	81.50	339.10
MW-19	421.60	13.00	408.60
MW-20	420.80	26.50	394.30
MW-21R	424.30	6.50	417.80
MW-A	423.00 (3)	31.50	391.50
OBS-01	419.90	76.00	343.90
QP-01	423.70 (3)	58.10	365.60
QP-03	423.70 (3)	18.50	405.20
QP-04	423.70 (3)	33.20	390.50
QS-01	424.70	100.00	324.70
QS-03	424.70 (3)	15.50	409.20
QS-03R	424.70 (3)	83.50	341.20
QS-04	424.70 (3)	62.50	362.20
REC-01	423.00	42.00	381.00
REC-02	423.00	58.00	365.00
REC-03	423.00	60.00	363.00
REC-04	423.00	66.00	357.00
TW-01	421.00	63.00	358.00
TW-01A	421.00 (3)	64.00	357.00
TW-01B	420.00 (3)	94.00	326.00
VW-01	416.90	70.80	346.10
VW-02B	416.80	76.00	340.80

(1) Feet above mean sea level. Land surface elevation estimated by subtracting height of well above land surface from surveyed measuring point elevation.

(2) Feet below land surface.

(3) Elevation estimated from nearby data points.

Only those wells/borings at which bedrock was encountered are listed.

Table 2-2. Synoptic Water-Level Elevations, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Well ID	Measuring Point Elevation (1)	June 3, 1991 Depth to Water (2)	June 3, 1991 Water-Level Elevation (1)	October 28, 1991 Depth to Water (2)	October 28, 1991 Water-Level Elevation (1)
MW-2A	430.83	16.47	414.36	19.91	410.92
MW-2B	430.77	14.38	416.39	17.81	412.96
MW-3(D)	425.41	10.65	414.76	13.26	412.15
MW-4	427.33	8.83	418.50	8.44	418.89
MW-5	426.11	10.77	415.34	10.65	415.46
MW-7B	422.17	16.81	405.36	DRY	--
MW-8A	423.70	18.77	404.93	36.38	387.32
MW-8B	423.70	14.92	408.78	29.72	393.98
MW-9	424.94	14.81	410.13	23.86	401.08
MW-10	425.19	18.94	406.25	33.00	392.19
MW-11A	426.20	12.19	414.01	12.58	413.62
MW-11B	426.35	12.37	413.98	12.74	413.61
MW-11C	426.23	12.21	414.02	13.05	413.18
MW-13	425.91	11.87	414.04	12.18	413.73
MW-14	425.92	3.10	422.82	4.27	421.65
MW-15	426.63	13.37	413.26	13.64	412.99
MW-17	420.52	--	--	13.41	407.11
MW-18A	422.96	17.60	405.36	34.37	388.59
MW-18B	423.06	9.96	413.10	10.76	412.30
MW-19	424.11	11.37	412.74	11.20	412.91
MW-20	423.27	6.15	417.12	6.65	416.62
GM-1	425.48	9.25	416.23	9.26	416.22
GM-2	425.47	9.26	416.21	9.40	416.07
GM-3	427.48	4.88	422.60	5.81	421.67
GM-4	424.28	0.91	423.37	2.78	421.50
GM-5	424.53	1.63	422.90	4.38	420.15
TW-1	423.09	18.11	404.98	35.50	387.59
OBS-1	423.79	18.47	405.32	35.15	388.64
QS-1	427.51	13.41	414.10	13.81	413.70
HW-1	423.13	19.40	403.73	40.25	382.88
HW-1B	422.39	18.74	403.65	39.58	382.81
HW-2	425.25	15.23	410.02	19.19	406.06
HW-3	423.99	16.82	407.17	22.44	401.55
VW-1	419.13	9.98	409.15	10.35	408.78
VW-2	419.40	10.28	409.12	11.11	408.29
VW-2B	419.56	16.05	403.51	36.88	382.68
MW-2R	431.69	14.94	416.75	17.09	414.60
MW-8R	423.19	17.62	405.57	35.68	387.51
MW-9R	424.36	32.65	391.71	15.70	408.66
MW-13R	424.21	43.65	380.56	15.25	408.96
MW-21R	427.15	11.33	415.82	10.94	416.21

-- Measurement not collected.
(1) Elevation in feet above mean sea level.
(2) Feet below measuring point.

Table 3-1. Summary of Soil Samples Collected and Parameters Analyzed During the RFI, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample Location/Designation	Appendix IX VOCs	Appendix IX BNs	Appendix IX Acid Extractables	Other Appendix IX Organics*	Appendix IX Metals	Sulfide	Cyanide	Alachlor	PCBs	PCBs by ESC	Priority Pollutant Parameters
Former Acetanilides Production/ Rail Car Unloading Area Unloading Area						Number of Samples					
Phase I											
LS-1	2										
LS-2	2										
LS-6	2										
LS-7	2										
LS-8	1										
LS-11	2										
LS-12	2										
LS-13	1										
LS-14	2										
LSS-1								1			1
Phase II											
AC-1	2							2			
AC-2	2							2			
AC-3	1							1			
AC-5	1							1			
AC-6	3							3			
AC-7	1							1			
AC-8	3							3			
AC-9	1							1			
AC-10								3			
AC-11								1			
AC-12								2			
AC-13								3			
AC-14								2			
AC-15								1			
AC-16								3			

See footnotes on last page.

Table 3-1. Summary of Soil Samples Collected and Parameters Analyzed During the RFI, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample Location/Designation	Appendix IX VOCs	Appendix IX BNs	Appendix IX Acid Extractables	Other Appendix IX Organics*	Appendix IX Metals	Sulfide	Cyanide	Alachlor	PCBs	PCBs by ESC	Priority Pollutant Parameters
Former Quarry						Number of Samples					
Phase I											
QS-1	2	2	2	2	2	2	2				
QS-2	2	2	2	2	2	2	2				
Phase II											
QP-1	1	3			3			1			
QP-2	1	3			3			1			
QP-3		3			3						
QP-4	1	3			3			1			
Former Bulk Chemical Storage Terminal											
Phase I											
VS-1	1	1	1	1	1	1	1				
VS-2	1	1	1	1	1	1	1				
VS-3	1	1	1	1	1	1	1				
VS-4	1	1	1	1	1	1	1				
Phase II											
VS-5	3	3			3	3					
VS-6	2	2			2	2					
VS-7	3	3			3	3					
VS-8	2	2			2	2					
VS-9	3	3			3	3					
VS-10	2	2			2	2					
VS-11	2	2			2	2					
VS-12	3	3			3	3					

See footnotes on last page.

Table 3-1. Summary of Soil Samples Collected and Parameters Analyzed During the RFI, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample Location/Designation	Appendix IX VOCs	Appendix IX BNs	Appendix IX Acid Extractables	Other Appendix IX Organics*	Appendix IX Metals	Sulfide	Cyanide	Alachlor	PCBs	PCBs by ESC	Priority Pollutant Parameters
					Number of Samples						
Boiler Slag Accumulation Pad											
Phase I											
BS-1	1	1	1	1	1	1	1				
Phase II											
BP-1										1	
BP-2										1	
BP-3					1				1	1	
BP-4					1				1	1	
BP-5										1	
BP-6										1	
BP-7										1	
BP-8										1	
BP-9										1	
BP-10					2					2	
Vicinity of Well MW-13											
Phase II											
GP-1		3									
Vicinity of Well MW-20											
Phase II											
GP-20A					2		2		2	1	
GP-20B					3		3		3	1	
GP-20C							1			1	

See footnotes on last page.

Table 3-1. Summary of Soil Samples Collected and Parameters Analyzed During the RFI, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample Location/Designation	Appendix IX VOCs	Appendix IX BNs	Appendix IX Acid Extractables	Other Appendix IX Organics*	Appendix IX Metals	Sulfide	Cyanide	Alachlor	PCBs	PCBs by ESC	Priority Pollutant Parameters
Vicinity of KK Building						Number of Samples					
Phase II											
KP-1	1										
KP-2	2										
KP-3	2										
KP-4	3										
Former Coal Storage Yard											
HW-2GP	1										
HB-2GP	1										
HB-3GP	1										
VV Building/Central Drumming											
Phase II											
VP-1										1	
VP-2										1	
VP-3										1	
VP-4										1	
VP-5									1	1	
VP-6										1	
VP-7										1	
VP-8										1	
VP-9										1	
VP-10										1	
VP-11										1	
VP-12										1	
VP-13										1	
VP-14										1	
VP-15										1	

See footnotes on last page.

Table 3-1. Summary of Soil Samples Collected and Parameters Analyzed During the RFI, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample Location/Designation	Appendix IX VOCs	Appendix IX BNs	Appendix IX Acid Extractables	Other Appendix IX Organics*	Appendix IX Metals	Sulfide	Cyanide	Alachlor	PCBs	PCBs by ESC	Priority Pollutant Parameters
Former Coal Storage Yard (cont.)					Number of Samples						
VP-16										1	
VP-17										1	
VP-18										1	
VP-19										1	
VP-20									1	1	
VP-21									1	1	
VP-22										1	
VP-23										1	
VP-24										1	
VP-25										1	
VP-26										1	
VP-27										1	
VP-28										1	
VP-29										1	
VP-30										1	
VP-31									1	1	
VP-32										1	
VP-33									1	1	
Background Soil Sampling											
Phase II											
BG-1					1						
BG-2					1						
BG-3					1						

VOCs Volatile organic compounds.
BNs Base/neutral compounds
PCBs Polychlorinated Biophenyls.
ESC Monsanto Environmental Sciences Center.
* Other Appendix IX organic sinclude pesticides, PCBs, herbicides, chlorinated dioxins, and furans.

Table 3-2. Concentrations of Polychlorinated Biphenyls in Soil, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample Identification	Concentration (ppm)
Boiler Slag Accumulation Pad	
BP-1	ND
BP-2	ND
BP-3	ND
BP-4	ND
BP-5	ND
BP-6	7.1/30.5
BP-7	ND
BP-8	ND
BP-9	ND
BP-10 (3-5)	ND
BP-10 (5-7)	ND
GP-20A	5.6
GP-20B	23.6
GP-20C	ND
VV/Central Drumming	
VP-1	24.2
VP-2	50.0
VP-3	2.0
VP-4	ND
VP-5	198.5
VP-6	133.101
VP-7	ND/ND
VP-8	27.9
VP-9	37.7
VP-10	105.4
VP-11	7.2
VP-12	8.4

Analyses performed by Monsanto Company's Environmental Sciences Center.
ppm Parts per million.

Table 3-2. Concentrations of Polychlorinated Biphenyls in Soil, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample Identification	Concentration (ppm)
VV/Central Drumming (continued)	
VP-13	ND
VP-14	ND
VP-15	3.2
VP-16	16.2/23.0
VP-17	75.3
VP-18	66.8
VP-19	13.1
VP-20	ND
VP-21	ND/ND
VP-22	ND
VP-23	70.9
VP-24	2.6
VP-25	ND
VP-26	169.4
VP-27	11.0
VP-28	ND
VP-29	1.1
VP-30	ND
VP-31	ND
VP-32	ND
VP-33	114.4/123.2

Analyses performed by Monsanto Company's Environmental Sciences Center.
ppm Parts per million.

table32.tab

Table 3-3. Summary of Wells and Geoprobe Locations Sampled and Parameters Analyzed During the RFI, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample Location/ Designation	Appendix IX Volatile Organic Compounds	Appendix IX Base Neutral Compounds	Appendix IX Acid Extractable Compounds	Other Appendix IX Organics**	Appendix IX Metals*** (Total and Dissolved)	Appendix IX Total Cyanide	Appendix IX Total Sulfide	Alachlor
GM-1	1/2							II
GM-1A								II
GM-1B								II
GM-1C								II
GM-2	1/2							
GM-3	1/2							II
GM-4	1/2							
GM-5	1/2							II
MW-2A	1/2	1	1	1	1	1	1	
MW-2B	1/2	1	1	1	1	1	1	
MW-2R	1/2	1	1	1	1/2	1/2	1/2	
MW-3(D)	1/2/II	1	1	1	1/2	1/2	1/2	II
MW-4	1/2	1/2	1	1	1/2	1/2	1/2	II
MW-5								II
MW-8A	1*/2/II	1*/2*	1*/2*	1*	1*/2*	1*/2	1*/2	

1 Round 1, Phase I.
2 Round 2, Phase I.
II Phase II.
* Replicate sample.
** Other Appendix IX organics include pesticides, polychlorinated biphenyls, herbicides, chlorinated dioxins, and furans.
*** Only total metals were analyzed during Phase II.

Table 3-3. Summary of Wells and Geoprobe Locations Sampled and Parameters Analyzed During the RFI, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample Location/ Designation	Appendix IX Volatile Organic Compounds	Appendix IX Base Neutral Compounds	Appendix IX Acid Extractable Compounds	Other Appendix IX Organics**	Appendix IX Metals*** (Total and Dissolved)	Appendix IX Total Cyanide	Appendix IX Total Sulfide	Alachlor
MW-8B	1*/2*	1*/2	1*/2	1*	1*/2	1*/2	1*/2	
MW-8R	2*	2	2		2	2	2	
MW-9	1/2	1	1	1	1/2	1/2	1/2	
MW-10	1/2	1/2	1	1	1/2	1/2	1/2	
MW-11A	1/2	1	1	1	1/2	1/2	1/2	
MW-11B	1/2	1	1	1	1/2	1/2	1/2	II
MW-13	1*/2/II	1*/2/II	1*	1*	1*/2/II	1*/2*	1*/2*	II
MW-13A		II						
MW-13B		II						
MW-13C		II						
MW-13D		II						
MW-13F		II						
MW-13R	2	2			2	2	2	
MW-14	1*/2/II				2	2	2	II
MW-15	1/2	1	1	1	1/2/II	1/2	1/2	II

1 Round 1, Phase I.
2 Round 2, Phase I.
II Phase II.
* Replicate sample.
** Other Appendix IX organics include pesticides, polychlorinated biphenyls, herbicides, chlorinated dioxins, and furans.
*** Only total metals were analyzed during Phase II.

Table 3-3. Summary of Wells and Geoprobe Locations Sampled and Parameters Analyzed During the RFI, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample Location/ Designation	Appendix IX Volatile Organic Compounds	Appendix IX Base Neutral Compounds	Appendix IX Acid Extractable Compounds	Other Appendix IX Organics**	Appendix IX Metals*** (Total and Dissolved)	Appendix IX Total Cyanide	Appendix IX Total Sulfide	Alachlor
MW-20	1/2	1	1	1	1/2/II	1/2/II	1/2	
MW-20B						II		
QS-1	1/2	1/2	1	1	1/2	1/2	1/2	II
TW-1	1/2	1/2	1	1	1/2	1/2	1/2	
OBS-1	1/2/II	1/2	1	1	1/2	1/2	1/2	
VW-2	1/2/II	1/2	1/2	1	1/2	1/2	1/2	
VW-2B	1/2	1	1	1	1/2	1/2	1/2	
HW-1B	1/2	1	1	1	1/2	1/2	1/2	

1 Round 1, Phase I.
2 Round 2, Phase I.
II Phase II.
* Replicate sample.
** Other Appendix IX organics include pesticides, polychlorinated biphenyls, herbicides, chlorinated dioxins, and furans.
*** Only total metals were analyzed during Phase II.

TABLE33.TAB

Table 4-1. Concentrations of Volatile Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

	-----Replicates-----				
Sample I.D.:	LS-1	LS-15	LS-1	LS-2	LS-2
Sample Depth(1):	(1.5-3.5)	(1.5-3.5)	(9.5-11.5)	(1.0-3.0)	(9.0-11.0)
Sample Date:	2/4/91	2/4/91	2/4/91	2/1/91	2/1/91
Parameter (ug/kg)					
Acetonitrile	<3000 I	<3100 I	<79000 I	<570 I	<79000 I
Acetone	<600	<630	<16000	<110	<16000
Benzene	<30	<31	<790	<5.7	<790
Bromodichloromethane	<30	<31	<790	<5.7	<790
Bromomethane	<60	<63	<1600	<11	<1600
Carbon disulfide	<30	<31	<790	<5.7	<790
Chlorobenzene	**1200**	**680**	**13000**	<5.7	**2300**
Dibromochloromethane	<30	<31	<790	<5.7	<790
Chloroethane	<60	<63	<1600	<11	<1600
Chloromethane	<60	<63	<1600	<11	<1600
Chloroform	<30	<31	<790	<5.7	<790
3-Chloropropene (allylchloride)	<60	<63	<1600	<11	<1600
1,2-Dibromo-3-chloropropane	<60 I	<63 I	<1600	<11	<1600 I
1,2-Dibromoethane (EDB)	<30	<31	<790	<5.7	<790
Dibromomethane	<30	<31	<790	<5.7	<790
trans-1,4-Dichloro-2-butene	<60	<63	<1600	<11	<1600
Dichlorodifluoromethane	<300	<310	<7900	<57	<7900
1,1-Dichloroethane	<30	<31	<790	<5.7	<790
1,2-Dichloroethane	<30	<31	<790	<5.7	<790
trans-1,2-Dichloroethene	<30	<31	<790	<5.7	<790
1,1-Dichloroethene	<30	<31	<790	<5.7	<790
Methylene chloride	<30	<31	<790	<5.7	<790
1,2-Dichloropropane	<30	<31	<790	<5.7	<790
cis-1,3-Dichloropropene	<30	<31	<790	<5.7	<790
trans-1,3-Dichloropropene	<30	<31	<790	<5.7	<790
1,3-Dichloropropene (total)	--	--	--	--	--
Ethyl benzene	<30	<31	<790	<5.7	<790
2-Butanone (MEK)	<600 I	<630 I	<16000 I	<110 I	<16000 I
Iodomethane	<30	<31	<790	<5.7	<790
Methacrylonitrile	<600	<630	<16000	<110	<16000
4-Methyl-2-pentanone (MIBK)	<300	<310	<7900	<57	<7900
Pentachloroethane	<60	<63	<1600	<11	<1600
Styrene	<30	<31	<790	<5.7	<790
1,1,1,2-Tetrachloroethane	<30	<31	<790	<5.7	<790
1,1,2,2-Tetrachloroethane	<30	<31	<790	<5.7	<790
Tetrachloroethene	<30	<31	<790	<5.7	<790
Carbon tetrachloride	<30	<31	<790	<5.7	<790
Toluene	<30	<31	<790	<5.7	<790
Bromoform	<30	<31	<790	<5.7	<790
1,1,2-Trichloroethane	<30	<31	<790	<5.7	<790
1,1,1-Trichloroethane	<30	<31	<790	<5.7	<790
Trichloroethene	<30	<31	**940**	<5.7	<790
Trichlorofluoromethane	<60	<63	<1600	<11	<1600
1,2,3-Trichloropropane	<30	<31	<790	<5.7	<790
Vinyl acetate	<300	<310	<7900	<57	<7900
Vinyl chloride	<60	<63	<1600	<11	<1600
Xylenes	<30	<31	<790	<5.7	<790
2-Hexanone	<300	<310	<7900	<57	<7900
Propionitrile	<600 I	<630 I	<16000 I	<110 I	<16000 I
Methyl methacrylate	<30	<31	<790	<5.7	<790
Acrolein	<600 I	<630 I	<16000 I	<110 I	<16000 I
Acrylonitrile	<600	<630	<16000	<110	<16000
Ethyl methacrylate	<30	<31	<790	<5.7	<790
Isobutyl alcohol	<6000 I	<6300 I	<160000 I	<1100 I	<160000 I
2-Chloroethylvinyl ether	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	--	--	--
cis-1,2-Dichloroethene	--	--	--	--	--
Total VOCs	1200	680	13940	0	2300

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
-- Parameter not analyzed.
VOCs Volatile organic compounds.

Table 4-1. Concentrations of Volatile Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

		---Replicates---			
Sample I.D.:	LS-6	LS-6	LS-15	LS-7	LS-7
Sample Depth(1) :	(1.0-3.0)	(9.0-11.0)	(9.0-11.0)	(1.5-3.5)	(7.5-9.5)
Sample Date:	2/4/91	2/4/91	2/4/91	2/4/91	2/4/91
Parameter (ug/kg)					
Acetonitrile	<760000 I	<75000 I	<150000 I	<74000 I	<780000 I
Acetone	<150000	<15000	<30000	<15000	<160000
Benzene	<7600	<750	<1500	<740	<7800
Bromodichloromethane	<7600	<750	<1500	<740	<7800
Bromomethane	<15000	<1500	<3000	<1500	<16000
Carbon disulfide	<7600	<750	<1500	<740	<7800
Chlorobenzene	**59000**	**8200**	**23000**	**14000**	<7800
Dibromochloromethane	<7600	<750	<1500	<740	<7800
Chloroethane	<15000	<1500	<3000	<1500	<16000
Chloromethane	<15000	<1500	<3000	<1500	<16000
Chloroform	<7600	<750	<1500	<740	<7800
3-Chloropropene (allylchloride)	<15000	<1500	<3000	<1500	<16000
1,2-Dibromo-3-chloropropane	<15000	<1500	<3000	<1500 I	<16000
1,2-Dibromoethane (EDB)	<7600	<750	<1500	<740	<7800
Dibromomethane	<7600	<750	<1500	<740	<7800
trans-1,4-Dichloro-2-butene	<15000	<1500	<3000	<1500	<16000
Dichlorodifluoromethane	<76000	<7500	<15000	<7400	<78000
1,1-Dichloroethane	<7600	<750	<1500	<740	<7800
1,2-Dichloroethane	<7600	<750	<1500	<740	<7800
trans-1,2-Dichloroethene	<7600	<750	<1500	<740	<7800
1,1-Dichloroethene	<7600	<750	<1500	<740	<7800
Methylene chloride	<7600	<750	<1500	<740	<7800
1,2-Dichloropropane	<7600	<750	<1500	<740	<7800
cis-1,3-Dichloropropene	<7600	<750	<1500	<740	<7800
trans-1,3-Dichloropropene	<7600	<750	<1500	<740	<7800
1,3-Dichloropropene (total)	–	–	–	–	–
Ethyl benzene	<7600	<750	<1500	<740	<7800
2-Butanone (MEK)	**120000 I**	<15000 I	<30000 I	<15000 I	**160000 J**
Iodomethane	<7600	<750	<1500	<740	<7800
Methacrylonitrile	<150000	<15000	<30000	<15000	<160000
4-Methyl-2-pentanone (MIBK)	<76000	<7500	<15000	<7400	<78000
Pentachloroethane	<15000	<1500	<3000	<1500	<16000
Styrene	<7600	<750	<1500	<740	<7800
1,1,1,2-Tetrachloroethane	<7600	<750	<1500	<740	<7800
1,1,2,2-Tetrachloroethane	<7600	<750	<1500	<740	<7800
Tetrachloroethene	<7600	<750	<1500	<740	<7800
Carbon tetrachloride	<7600	<750	<1500	<740	<7800
Toluene	<7600	<750	<1500	<740	<7800
Bromoform	<7600	<750	<1500	<740	<7800
1,1,2-Trichloroethane	<7600	<750	<1500	<740	<7800
1,1,1-Trichloroethane	<7600	<750	<1500	<740	<7800
Trichloroethene	<7600	<750	<1500	<740	<7800
Trichlorofluoromethane	<15000	<1500	<3000	<1500	<16000
1,2,3-Trichloropropane	<7600	<750	<1500	<740	<7800
Vinyl acetate	<76000	<7500	<15000	<7400	<78000
Vinyl chloride	<150000	<1500	<3000	<1500	<16000
Xylenes	<7600	<750	<1500	<740	<7800
2-Hexanone	<76000	<7500	<15000	<7400	<78000
Propionitrile	<150000 I	<15000 I	<30000 I	<15000 I	<160000 I
Methyl methacrylate	<7600	<750	<1500	<740	<7800
Acrolein	<150000 I	<15000 I	<30000 I	<15000 I	<160000 I
Acrylonitrile	<150000	<15000	<30000 I	<15000	<160000
Ethyl methacrylate	<7600	<750	<1500	<740	<7800
Isobutyl alcohol	<1500000 I	<150000 I	<300000 I	<150000 I	<1600000 I
2-Chloroethylvinyl ether	–	–	–	–	–
1,1,2-Trichloro-1,2,2-trifluoroethane	–	–	–	–	–
cis-1,2-Dichloroethene	–	–	–	–	–
Total VOCs	179000	8200	23000	14000	160000

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
– Parameter not analyzed.
VOCs Volatile organic compounds.

4-VOC.XLS

Table 4-1. Concentrations of Volatile Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (ug/kg) / Sample I.D.: / Sample Depth(1): / Sample Date:	LS-8 (0.6-2.5) 2/4/91	LS-11 (2.5-4.5) 1/31/91	LS-11 (6.5-8.5) 1/31/91	LS-12 (0.5-2.5) 1/31/91	LS-12 (2.5-4.5) 1/31/91
Acetonitrile	<570 I	<3000 I	<630 I	<570 I	<3100 I
Acetone	<110	<610	<130	<110	<620
Benzene	<5.7	<30	<6.3	<5.7	<31
Bromodichloromethane	<5.7	<30	<6.3	<5.7	<31
Bromomethane	<11	<61	<13	<11	<62
Carbon disulfide	<5.7	<30	<6.3	**8.2**	<31
Chlorobenzene	**37**	**390**	**48**	<5.7	**920**
Dibromochloromethane	<5.7	<30	<6.3	<5.7	<31
Chloroethane	<11	<61	<13	<11	<62
Chloromethane	<11	<61	<13	<11	<62
Chloroform	<5.7	<30	<6.3	<5.7	<31
3-Chloropropene (allylchloride)	<11	<61	<13	<11	<62
1,2-Dibromo-3-chloropropane	<11	<61	<13	<11	<62
1,2-Dibromoethane (EDB)	<5.7	<30	<6.3	<5.7	<31
Dibromomethane	<5.7	<30	<6.3	<5.7	<31
trans-1,4-Dichloro-2-butene	<11	<61	<13	<11	<62
Dichlorodifluoromethane	<57	<300	<63	<57	<310
1,1-Dichloroethane	<5.7	<30	<6.3	<5.7	<31
1,2-Dichloroethane	<5.7	<30	<6.3	<5.7	<31
trans-1,2-Dichloroethene	<5.7	<30	<6.3	<5.7	<31
1,1-Dichloroethene	<5.7	<30	<6.3	<5.7	<31
Methylene chloride	<5.7	<30	<6.3	<5.7	<31
1,2-Dichloropropane	<5.7	<30	<6.3	<5.7	<31
cis-1,3-Dichloropropene	<5.7	<30	<6.3	<5.7	<31
trans-1,3-Dichloropropene	<5.7	<30	<6.3	<5.7	<31
1,3-Dichloropropene (total)	–	–	–	–	–
Ethyl benzene	<5.7	<30	<6.3	<5.7	<31
2-Butanone (MEK)	<110 I	<610 I	<130 I	<110 I	<620 I
Iodomethane	<5.7	<30	<6.3	<5.7	<31
Methacrylonitrile	<110	<610	<130	<110	<620
4-Methyl-2-pentanone (MIBK)	<57	<300	<63	<57	<310
Pentachloroethane	<11	<61	<13	<11	<62
Styrene	<5.7	<30	<6.3	<5.7	<31
1,1,1,2-Tetrachloroethane	<5.7	<30	<6.3	<5.7	<31
1,1,2,2-Tetrachloroethane	<5.7	<30	<6.3	<5.7	<31
Tetrachloroethene	<5.7	<30	<6.3	<5.7	<31
Carbon tetrachloride	<5.7	<30	<6.3	<5.7	<31
Toluene	<5.7	<30	<6.3	<5.7	<31
Bromoform	<5.7	<30	<6.3	<5.7	<31
1,1,2-Trichloroethane	<5.7	<30	<6.3	<5.7	<31
1,1,1-Trichloroethane	<5.7	<30	**15**	**29**	<31
Trichloroethene	<5.7	<30	<6.3	<5.7	<31
Trichlorofluoromethane	<11	<61	<13	<11	<62
1,2,3-Trichloropropane	<5.7	<30	<6.3	<5.7	<31
Vinyl acetate	<57	<300	<63	<57	<310
Vinyl chloride	<11	<61	<13	<11	<62
Xylenes	<5.7	<30	<6.3	<5.7	<31
2-Hexanone	<57	<300	<63	<57	<310
Propionitrile	<110 I	<610 I	<130 I	<110 I	620 I
Methyl methacrylate	<5.7	<30	<6.3	<5.7	<31
Acrolein	<110 I	<610 I	<130 I	<110 I	<620 I
Acrylonitrile	<110	<610	<130	<110	<620
Ethyl methacrylate	<5.7	<30	<6.3	<5.7	<31
Isobutyl alcohol	<1100 I	<6100 I	<1300 I	<1100 I	<6200 I
2-Chloroethylvinyl ether	–	–	–	–	–
1,1,2-Trichloro-1,2,2-trifluoroethane	–	–	–	–	–
cis-1,2-Dichloroethene	–	–	–	–	–
Total VOCs	37	390	63	37.2	920

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
– Parameter not analyzed.
VOCs Volatile organic compounds.

4-VOC.XLS

Table 4-1. Concentrations of Volatile Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (ug/kg)	Sample I.D.: LS-13A Sample Depth(1): (1.0-3.0) Sample Date: 2/1/91	LS-14 (0.5-2.5) 1/31/91	LS-14 (2.5-4.5) 1/31/91	LSS-1 (3.0-3.75) 10/8/92	AC-01S (1-2) 3/9/94
Acetonitrile	<570 I	<600 I	<600 I	–	< 1100
Acetone	<110	<120	<120	–	**140 J**
Benzene	<5.7	<6.0	<6.0	<700	< 6
Bromodichloromethane	<5.7	<6.0	<6.0	<700	< 6
Bromomethane	<11	<12	<12	<1400	< 11
Carbon disulfide	<5.7	<6.0	<6.0	–	< 6
Chlorobenzene	<5.7	<6.0	**33**	**2100**	< 6
Dibromochloromethane	<5.7	<6.0	<6.0	<700	< 6
Chloroethane	<11	<12	<12	<1400	< 11
Chloromethane	<11	<12	<12	<700	< 11
Chloroform	<5.7	<6.0	<6.0	<700	< 6
3-Chloropropene (allylchloride)	<11	<12	<12	–	< 6
1,2-Dibromo-3-chloropropane	<11	<12	<12	–	< 11
1,2-Dibromoethane (EDB)	<5.7	<6.0	<6.0	–	< 6
Dibromomethane	<5.7	<6.0	<6.0	–	< 6
trans-1,4-Dichloro-2-butene	<11	<12	<12	–	< 11
Dichlorodifluoromethane	<57	<60	<60	<700	< 6
1,1-Dichloroethane	<5.7	<6.0	<6.0	<700	< 6
1,2-Dichloroethane	<5.7	<6.0	<6.0	<700	< 6
trans-1,2-Dichloroethene	<5.7	<6.0	<6.0	<700	< 6
1,1-Dichloroethene	<5.7	<6.0	<6.0	<700	< 6
Methylene chloride	<5.7	<6.0	**6.5 J**	<700	< 6
1,2-Dichloropropane	<5.7	<6.0	<6.0	<700	< 6
cis-1,3-Dichloropropene	<5.7	<6.0	<6.0	–	< 6
trans-1,3-Dichloropropene	<5.7	<6.0	<6.0	–	< 6
1,3-Dichloropropene (total)	–	–	–	<700	–
Ethyl benzene	<5.7	<6.0	<6.0	<700	< 6
2-Butanone (MEK)	<110 I	<120 I	<120 I	–	< 57
Iodomethane	<5.7	<6.0	<6.0	–	< 6
Methacrylonitrile	<110	<120	<120	–	< 110
4-Methyl-2-pentanone (MIBK)	<57	<60	<60	–	< 57
Pentachloroethane	<11	<12	<12	–	< 28
Styrene	<5.7	<6.0	<6.0	–	< 6
1,1,1,2-Tetrachloroethane	<5.7	<6.0	<6.0	–	< 6
1,1,2,2-Tetrachloroethane	<5.7	<6.0	<6.0	<700	< 6
Tetrachloroethene	<5.7	<6.0	<6.0	<700	**10**
Carbon tetrachloride	<5.7	<6.0	<6.0	<700	< 6
Toluene	<5.7	<6.0	<6.0	<700	< 6
Bromoform	<5.7	<6.0	<6.0	<700	< 6
1,1,2-Trichloroethane	<5.7	<6.0	<6.0	<700	< 6
1,1,1-Trichloroethane	**26**	**57**	**25 J**	<700	< 6
Trichloroethene	**8.9**	<6.0	<6.0	<700	< 6
Trichlorofluoromethane	<11	<12	<12	<700	< 6
1,2,3-Trichloropropane	<5.7	<6.0	<6.0	–	< 6
Vinyl acetate	<57	<60	<60	–	< 11
Vinyl chloride	<11	<12	<12	<1400	< 11
Xylenes	**12 J**	<6.0	<6.0	<700	< 6
2-Hexanone	<57	<60	<60	–	< 57
Propionitrile	<110 I	<120 I	<120 I	–	< 110
Methyl methacrylate	<5.7	<6.0	<6.0	–	< 6
Acrolein	<110 I	<120 I	<120 I	<28000	< 110 I
Acrylonitrile	<110	<120	<120	<28000	–
Ethyl methacrylate	<5.7	<6.0	<6.0	–	< 6
Isobutyl alcohol	<1000 I	<1200 I	<1200 I	–	< 1100 I
2-Chloroethylvinyl ether	–	–	–	<7000	< 57
1,1,2-Trichloro-1,2,2-trifluoroethane	–	–	–	–	< 11
cis-1,2-Dichloroethene	–	–	–	–	< 6
Total VOCs	46.9	57	64.5	2100	150

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
– Parameter not analyzed.
VOCs Volatile organic compounds.

4-VOC.XLS

Table 4-1. Concentrations of Volatile Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (ug/kg)	Sample I.D.: AC-01D Sample Depth(1): (2-4) Sample Date: 3/9/94	AC-02S (1-2) 3/9/94	AC-02D (3-4) 3/9/94	AC-03S (2-4.5) 3/9/94	AC-05S (1-3) 3/9/94
Acetonitrile	< 1100	< 1200	< 1000	< 1300	< 1100 J
Acetone	**150 J**	**310 E**	< 52	< 67	< 56 J
Benzene	< 6	< 6	< 5	< 7	< 6 J
Bromodichloromethane	< 6	< 6	< 5	< 7	< 6 J
Bromomethane	< 11	< 12	< 10	< 13	< 11 J
Carbon disulfide	< 6	< 6	< 5	< 7	< 6 J
Chlorobenzene	< 6	**7.1 J**	< 5	< 7	< 6 J
Dibromochloromethane	< 6	< 6	< 5	< 7	< 6 J
Chloroethane	< 11	< 12	< 10	< 13	< 11 J
Chloromethane	< 11	< 12	< 10	< 13	< 11 J
Chloroform	< 6	< 6	< 5	< 7	< 6 J
3-Chloropropene (allylchloride)	< 6	< 6	< 5	< 7	< 6 J
1,2-Dibromo-3-chloropropane	< 11	< 12	< 10	< 13	< 11 J
1,2-Dibromoethane (EDB)	< 6	< 6	< 5	< 7	< 6 J
Dibromomethane	< 6	< 6	< 5	< 7	< 6 J
trans-1,4-Dichloro-2-butene	< 11	< 12	< 10	< 13	< 11 J
Dichlorodifluoromethane	< 6	< 6	< 5	< 7	< 6 J
1,1-Dichloroethane	< 6	< 6	< 5	< 7	< 6 J
1,2-Dichloroethane	< 6	< 6	< 5	< 7	< 6 J
trans-1,2-Dichloroethene	< 6	< 6	< 5	< 7	< 6 J
1,1-Dichloroethene	< 6	< 6	< 5	< 7	< 6 J
Methylene chloride	< 6	< 6	**9.8**	< 7	**9.4 J**
1,2-Dichloropropane	< 6	< 6	< 5	< 7	< 6 J
cis-1,3-Dichloropropene	< 6	< 6	< 5	< 7	< 6 J
trans-1,3-Dichloropropene	< 6	< 6	< 5	< 7	< 6 J
1,3-Dichloropropene (total)	–	–	–	–	–
Ethyl benzene	< 6	< 6 J	< 5	< 7	< 6 J
2-Butanone (MEK)	< 61	< 62	< 52	< 67	< 56 J
Iodomethane	< 6	< 6	< 5	< 7	< 6 J
Methacrylonitrile	< 110	< 120	< 100	< 130	< 110 J
4-Methyl-2-pentanone (MIBK)	< 61	< 62 J	< 52	< 67	< 56 J
Pentachloroethane	< 30	< 31	< 26	< 33	< 28 J
Styrene	< 6	< 6 J	< 5	< 7	< 6 J
1,1,1,2-Tetrachloroethane	< 6	< 6	< 5	< 7	< 6 J
1,1,2,2-Tetrachloroethane	< 6	< 6 J	< 5	< 7	< 6 J
Tetrachloroethene	**6.3**	**10 J**	< 5	< 7	< 6 J
Carbon tetrachloride	< 6	< 6	< 5	< 7	< 6 J
Toluene	< 6	**8.2 J**	< 5	< 7	< 6 J
Bromoform	< 6	< 6	< 5	< 7	< 6 J
1,1,2-Trichloroethane	< 6	< 6	< 5	< 7	< 6 J
1,1,1-Trichloroethane	< 6	< 6	< 5	< 7	< 6 J
Trichloroethene	< 6	< 6	< 5	< 7	< 6 J
Trichlorofluoromethane	< 6	< 6	< 5	< 7	< 6 J
1,2,3-Trichloropropane	< 6	< 6 J	< 5	< 7	< 6 J
Vinyl acetate	< 11	< 12	< 10	< 13	< 11 J
Vinyl chloride	< 11	< 12	< 10	< 13	< 11 J
Xylenes	< 6	**34 J**	< 5	< 7	< 6 J
2-Hexanone	< 61	< 62	< 52	< 67	< 56 J
Propionitrile	< 110	< 120	< 100	< 130	< 110 J
Methyl methacrylate	< 6	< 6	< 5	< 7	< 6 J
Acrolein	< 110 I	< 120 I	< 100 I	< 130 I	< 110 I
Acrylonitrile	–	–	–	–	–
Ethyl methacrylate	< 6	< 6 J	< 5	< 7	< 6 J
Isobutyl alcohol	< 1100 I	< 1200 I	< 1000 I	< 1300 I	< 1100 I
2-Chloroethylvinyl ether	< 61	< 62 J	< 52	< 67	< 56 J
1,1,2-Trichloro-1,2,2-trifluoroethane	< 11	< 12	< 10	< 13	< 11 J
cis-1,2-Dichloroethene	< 6	< 6	< 5	< 7	< 6 J
Total VOCs	156.3	369.3	9.8	0	9.4

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
– Parameter not analyzed.
VOCs Volatile organic compounds.

4-VOC.XLS

Table 4-1. Concentrations of Volatile Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (ug/kg)	Sample I.D.: AC-06S Sample Depth(1): (1-3) Sample Date: 3/9/94		Sample I.D.: AC-06M Sample Depth(1): (4-6) Sample Date: 3/9/94		Sample I.D.: AC-06D Sample Depth(1): (6-8) Sample Date: 3/9/94		Sample I.D.: AC-07S Sample Depth(1): (3-5) Sample Date: 3/9/94		Sample I.D.: AC-08S Sample Depth(1): (1-3) Sample Date: 3/9/94	
Acetonitrile	< 1100		< 1300		< 1200		< 1300		< 1200	
Acetone	**78**		**160**		**94**		< 66		**91**	
Benzene	< 6		< 7	J	< 6		< 7		< 6	
Bromodichloromethane	< 6		< 7	J	< 6		< 7		< 6	
Bromomethane	< 11		< 13		< 12		< 13		< 12	
Carbon disulfide	< 6		< 7		< 6		< 7		< 6	
Chlorobenzene	< 6		< 7	J	< 6		< 7		< 6	
Dibromochloromethane	< 6		< 7	J	< 6		< 7		< 6	
Chloroethane	< 11		< 13		< 12		< 13		< 12	
Chloromethane	< 11		< 13		< 12		< 13		< 12	
Chloroform	< 6		< 7		< 6		< 7		< 6	
3-Chloropropene (allylchloride)	< 6		< 7		< 6		< 7		< 6	
1,2-Dibromo-3-chloropropane	< 11		< 13		< 12		< 13		< 12	
1,2-Dibromoethane (EDB)	< 6		< 7		< 6		< 7		< 6	
Dibromomethane	< 6		< 7	J	< 6		< 7		< 6	
trans-1,4-Dichloro-2-butene	< 11		< 13	J	< 12		< 13		< 12	
Dichlorodifluoromethane	< 6		< 7		< 6		< 7		< 6	
1,1-Dichloroethane	< 6		< 7		< 6		< 7		< 6	
1,2-Dichloroethane	< 6		< 7		< 6		< 7		< 6	
trans-1,2-Dichloroethene	< 6		< 7		< 6		< 7		< 6	
1,1-Dichloroethene	< 6		< 7		< 6		< 7		< 6	
Methylene chloride	**8.4**		**11**		**8.8**		**11**		**12**	
1,2-Dichloropropane	< 6		< 7	J	< 6		< 7		< 6	
cis-1,3-Dichloropropene	< 6		< 7	J	< 6		< 7		< 6	
trans-1,3-Dichloropropene	< 6		< 7	J	< 6		< 7		< 6	
1,3-Dichloropropene (total)	–		–		–		–		–	
Ethyl benzene	< 6		< 7	J	< 6		< 7		< 6	
2-Butanone (MEK)	< 56		< 65	J	< 61		< 66		< 62	
Iodomethane	< 6		< 7		< 6		< 7		< 6	
Methacrylonitrile	< 110		< 130		< 120		< 130		< 120	
4-Methyl-2-pentanone (MIBK)	< 56		< 65	J	< 61		< 66		< 62	
Pentachloroethane	< 28		< 32		< 30		< 33		< 31	
Styrene	< 6		< 7	J	< 6		< 7		< 6	
1,1,1,2-Tetrachloroethane	< 6		< 7		< 6		< 7		< 6	
1,1,2,2-Tetrachloroethane	< 6		< 7	J	< 6		< 7		< 6	
Tetrachloroethene	< 6		< 7	J	< 6		< 7		< 6	
Carbon tetrachloride	< 6		< 7	J	< 6		< 7		< 6	
Toluene	< 6		< 7	J	< 6		< 7		< 6	
Bromoform	< 6		< 7	J	< 6		< 7		< 6	
1,1,2-Trichloroethane	< 6		< 7	J	< 6		< 7		< 6	
1,1,1-Trichloroethane	< 6		< 7	J	< 6		< 7		< 6	
Trichloroethene	< 6		< 7	J	< 6		< 7		< 6	
Trichlorofluoromethane	< 6		< 7		< 6		< 7		< 6	
1,2,3-Trichloropropane	< 6		< 7	J	< 6		< 7		< 6	
Vinyl acetate	< 11		< 13	J	< 12		< 13		< 12	
Vinyl chloride	< 11		< 13		< 12		< 13		< 12	
Xylenes	< 6		< 7	J	**53**		< 7		< 6	
2-Hexanone	< 56		< 65	J	< 61		< 66		< 62	
Propionitrile	< 110		< 130		< 120		< 130		< 120	
Methyl methacrylate	< 6		< 7		< 6		< 7		< 6	
Acrolein	< 110	I	< 130	I	< 120	I	< 130	I	< 120	I
Acrylonitrile	–		–		–		–		–	
Ethyl methacrylate	< 6		< 7	J	< 6		< 7		< 6	
Isobutyl alcohol	< 1100	I	< 1300	I	< 1200	I	< 1300	I	< 1200	I
2-Chloroethylvinyl ether	< 56		< 65	J	< 61		< 66		< 62	
1,1,2-Trichloro-1,2,2-trifluoroethane	< 11		< 13		< 12		< 13		< 12	
cis-1,2-Dichloroethene	< 6		< 7		< 6		< 7		< 6	
Total VOCs	86.4		171		155.8		11		103	

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
– Parameter not analyzed.
VOCs Volatile organic compounds.

Table 4-1. Concentrations of Volatile Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (ug/kg)	Sample I.D.: AC-08M Sample Depth(1): (3-5) Sample Date: 3/9/94	AC-08D (5-7) 3/9/94	AC-09S (2-4) 3/9/94	QS-1 (0-4.5) 2/6/91	QS-1 (4.0-9.0) 2/6/91
Acetonitrile	< 1300	< 1300	< 1100	<560 I	<590 I
Acetone	**140**	**160**	**100** J	<110	<120
Benzene	< 7	< 6	< 6	<5.6	<5.9
Bromodichloromethane	< 7	< 6	< 6	<5.6	<5.9
Bromomethane	< 13	< 13	< 11	<11	<12
Carbon disulfide	< 7	< 6	< 6	<5.6	<5.9
Chlorobenzene	< 7	**25**	< 6 J	**14**	<5.9
Dibromochloromethane	< 7	< 6	< 6	<5.6	<5.9
Chloroethane	< 13	< 13	< 11	<11	<12
Chloromethane	< 13	< 13	< 11	<11 I	<12 I
Chloroform	< 7	< 6	< 6	<5.6	<5.9
3-Chloropropene (allylchloride)	< 7	< 6	< 6	<11	<12
1,2-Dibromo-3-chloropropane	< 13	< 13	< 11	<11	<12
1,2-Dibromoethane (EDB)	< 7	< 6	< 6	<5.6	<5.9
Dibromomethane	< 7	< 6	< 6	<5.6	<5.9
trans-1,4-Dichloro-2-butene	< 13	< 13	< 11	<11	<12
Dichlorodifluoromethane	< 7	< 6	< 6	<56	<59
1,1-Dichloroethane	< 7	< 6	< 6	<5.6	<5.9
1,2-Dichloroethane	< 7	< 6	< 6	<5.6	<5.9
trans-1,2-Dichloroethene	< 7	< 6	< 6	<5.6	<5.9
1,1-Dichloroethene	< 7	< 6	< 6	<5.6	<5.9
Methylene chloride	**8.6**	**13**	< 6	<5.6	<5.9
1,2-Dichloropropane	< 7	< 6	< 6	<5.6	<5.9
cis-1,3-Dichloropropene	< 7	< 6	< 6	<5.6	<5.9
trans-1,3-Dichloropropene	< 7	< 6	< 6	<5.6	<5.9
1,3-Dichloropropene (total)	–	–	–	–	–
Ethyl benzene	< 7	< 6	< 6 J	<5.6	<5.9
2-Butanone (MEK)	< 66	< 63	< 57	<110	<120
Iodomethane	< 7	< 6	< 6	<5.6	<5.9
Methacrylonitrile	< 130	< 130	< 110	<110 I	<120 I
4-Methyl-2-pentanone (MIBK)	< 66	< 63	< 57 J	<56	<59
Pentachloroethane	< 33	< 32	< 28	<11	<12
Styrene	< 7	< 6	< 6 J	<5.6	<5.9
1,1,1,2-Tetrachloroethane	< 7	< 6	< 6	<5.6	<5.9
1,1,2,2-Tetrachloroethane	< 7	< 6	< 6 J	<5.6	<5.9
Tetrachloroethene	< 7	< 6	< 6 J	<5.6	<5.9
Carbon tetrachloride	< 7	< 6	< 6	<5.6	<5.9
Toluene	< 7	< 6	< 6 J	<5.6	<5.9
Bromoform	< 7	< 6	< 6	<5.6	<5.9
1,1,2-Trichloroethane	< 7	< 6	< 6	<5.6	<5.9
1,1,1-Trichloroethane	< 7	< 6	< 6	<5.6	<5.9
Trichloroethene	< 7	< 6	< 6	<5.6	<5.9
Trichlorofluoromethane	< 7	< 6	< 6	<11	<12
1,2,3-Trichloropropane	< 7	< 6	< 6 J	<5.6	<5.9
Vinyl acetate	< 13	< 13	< 11	<56	<59
Vinyl chloride	< 13	< 13	< 11	<11	<12
Xylenes	< 7	< 6	< 6 J	**20**	<5.9
2-Hexanone	< 66	< 63	< 57 J	<56	<59
Propionitrile	< 130	< 130	< 110	<110 I	<120 I
Methyl methacrylate	< 7	< 6	< 6	<5.6	<5.9
Acrolein	< 130 I	< 130 I	< 110 I	<110 I	<120 I
Acrylonitrile	–	–	–	<110	<120
Ethyl methacrylate	< 7	< 6	< 6 J	<5.6	<5.9
Isobutyl alcohol	< 1300 I	< 1300 I	< 1100 I	<1100 I	<1200 I
2-Chloroethylvinyl ether	< 66	< 63	< 57	–	–
1,1,2-Trichloro-1,2,2-trifluoroethane	< 13	< 13	< 11	–	–
cis-1,2-Dichloroethene	< 7	< 6	< 6	–	–
Total VOCs	148.6	198	100	34	0

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
– Parameter not analyzed.
VOCs Volatile organic compounds.

Table 4-1. Concentrations of Volatile Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

		----Replicates----				
	Sample I.D.:	QS-2	QS-5	QS-2	QS-4	QP-01S
	Sample Depth(1):	(0-2.5)	(0-2.5)	(4.0-9.0)	Cuttings	(1-3)
	Sample Date:	2/11/91	2/11/91	2/11/91	2/22/91	3/9/94
Parameter (ug/kg)						
Acetonitrile		<560 I	<560 I	<570 I	<700 I	< 1200
Acetone		<110	<110	<110	<140	< 58
Benzene		<5.6	<5.6	<5.7	<7.0	< 6
Bromodichloromethane		<5.6	<5.6	<5.7	<7.0	< 6
Bromomethane		<11	<11	<11	<14	< 12
Carbon disulfide		<5.6	<5.6	<5.7	<7.0	< 6
Chlorobenzene		<5.6	<5.6	**8.6**	<7.0	**8.9**
Dibromochloromethane		<5.6	<5.6	<5.7	<7.0	< 6
Chloroethane		<11	<11	<11	<14	< 12
Chloromethane		<11 I	<11	<11 I	<14	< 12
Chloroform		<5.6	<5.6	<5.7	<7.0	< 6
3-Chloropropene (allylchloride)		<11	<11	<11	<14	< 6
1,2-Dibromo-3-chloropropane		<11	<11	<11	<14	< 12
1,2-Dibromoethane (EDB)		<5.6	<5.6	<5.7	<7.0	< 6
Dibromomethane		<5.6	<5.6	<5.7	<7.0	< 6
trans-1,4-Dichloro-2-butene		<11	<11	<11	<14	< 12
Dichlorodifluoromethane		<56	<56	<57	<70	< 6
1,1-Dichloroethane		<5.6	<5.6	<5.7	<7.0	< 6
1,2-Dichloroethane		<5.6	<5.6	<5.7	<7.0	< 6
trans-1,2-Dichloroethene		<5.6	<5.6	<5.7	<7.0	< 6
1,1-Dichloroethene		<5.6	<5.6	<5.7	<7.0	< 6
Methylene chloride		<5.6	<5.6	<5.7	<7.0	**9.6**
1,2-Dichloropropane		<5.6	<5.6	<5.7	<7.0	< 6
cis-1,3-Dichloropropene		<5.6	<5.6	<5.7	<7.0	< 6
trans-1,3-Dichloropropene		<5.6	<5.6	<5.7	<7.0	< 6
1,3-Dichloropropene (total)		--	--	--	--	--
Ethyl benzene		<5.6	<5.6	<5.7	<7.0	< 6
2-Butanone (MEK)		<110	<110	<110	<140	< 58
Iodomethane		<5.6	<5.6	<5.7	<7.0	< 6
Methacrylonitrile		<110 I	<110 I	<110 I	<140 I	< 120
4-Methyl-2-pentanone (MIBK)		<56	<56	<57	<70	< 58
Pentachloroethane		<11	<11	<11	<14	< 29
Styrene		<5.6	<5.6	<5.7	<7.0	< 6
1,1,1,2-Tetrachloroethane		<5.6	<5.6	<5.7	<7.0	< 6
1,1,2,2-Tetrachloroethane		<5.6	<5.6	<5.7	<7.0	< 6
Tetrachloroethene		<5.6	<5.6	<5.7	<7.0	< 6
Carbon tetrachloride		<5.6	<5.6	<5.7	<7.0	< 6
Toluene		<5.6	<5.6	<5.7	<7.0	< 6
Bromoform		<5.6	<5.6	<5.7	<7.0	< 6
1,1,2-Trichloroethane		<5.6	<5.6	<5.7	<7.0	< 6
1,1,1-Trichloroethane		**6.2**	<5.6	**8.9**	<7.0	< 6
Trichloroethene		<5.6	<5.6	<5.7	<7.0	< 6
Trichlorofluoromethane		<11	<11	<11	<14	< 6
1,2,3-Trichloropropane		<5.6	<5.6	<5.7	<7.0	< 6
Vinyl acetate		<56	<56	<57	<70	< 12
Vinyl chloride		<11	<11	<11	<14	< 12
Xylenes		<5.6	<5.6	7.7	<7.0	< 6
2-Hexanone		<56	<56	<57	<70	< 58
Propionitrile		<110 I	<110 I	<110 I	<140 I	< 120
Methyl methacrylate		<5.6	<5.6	<5.7	<7.0	< 6
Acrolein		<110 I	<110 I	<110 I	<140 I	< 120 I
Acrylonitrile		<110	<110 I	<110	<140	< 6
Ethyl methacrylate		<5.6	<5.6	<5.7	<7.0	< 1200 I
Isobutyl alcohol		<1100 I	<1100 I	<1100 I	<1400 I	< 58
2-Chloroethylvinyl ether		--	--	--	--	< 12
1,1,2-Trichloro-1,2,2-trifluoroethane		--	--	--	--	< 6
cis-1,2-Dichloroethene		--	--	--	--	--
Total VOCs		6.2	0	25.2	0	18.5

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
-- Parameter not analyzed.
VOCs Volatile organic compounds.

4-VOC.XLS

Table 4-1. Concentrations of Volatile Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (ug/kg)	Sample I.D.: QP-02S Sample Depth(1): (1-3) Sample Date: 3/9/94	QP-04D (9-11) 3/9/94	VS-1 (10.5-12.5) 3/6/91	VS-2 (7.0-9.0) 3/7/91	VS-3 (9.0-11.0) 3/7/91
Acetonitrile	< 1100	< 1300	<4200000 I	<630 I	<680 I
Acetone	**200**	**330 E**	<850000	<130	<140
Benzene	< 6	< 6	<42000	<6.3	<6.8
Bromodichloromethane	< 6	< 6	<42000	<6.3	<6.8
Bromomethane	< 11	< 13	<85000	<13	<14
Carbon disulfide	< 6	< 6	<42000	**8.4 J**	**12 J**
Chlorobenzene	< 6	< 6	**620000**	<6.3	<6.8
Dibromochloromethane	< 6	< 6	<42000	<6.3	<6.8
Chloroethane	< 11	< 13	<85000	<13	<14
Chloromethane	< 11	< 13	<85000	<13	<14
Chloroform	< 6	< 6	<42000	<6.3	<6.8
3-Chloropropene (allylchloride)	< 6	< 6	<85000	<13	<14
1,2-Dibromo-3-chloropropane	< 11	< 13	<85000	<13	<14
1,2-Dibromoethane (EDB)	< 6	< 6	<42000	<6.3	<6.8
Dibromomethane	< 6	< 6	<42000	<6.3	<6.8
trans-1,4-Dichloro-2-butene	< 11	< 13	<85000	<13	<14
Dichlorodifluoromethane	< 6	< 6	<420000	<63	<68
1,1-Dichloroethane	< 6	< 6	<42000	<6.3	<6.8
1,2-Dichloroethane	< 6	< 6	<42000	<6.3	<6.8
trans-1,2-Dichloroethene	< 6	< 6	<42000	<6.3	<6.8
1,1-Dichloroethene	< 6	< 6	<42000	<6.3	<6.8
Methylene chloride	**8.2**	**10**	**<42000**	**7.4**	**8.2**
1,2-Dichloropropane	< 6	< 6	<42000	<6.3	<6.8
cis-1,3-Dichloropropene	< 6	< 6	<42000	<6.3	<6.8
trans-1,3-Dichloropropene	< 6	< 6	<42000	<6.3	<6.8
1,3-Dichloropropene (total)	–	–	–	–	–
Ethyl benzene	< 6	< 6	<42000	<6.3	<6.8
2-Butanone (MEK)	< 57	< 63	<850000 I	<130 I	<140 I
Iodomethane	< 6	< 6	**49000**	<6.3	<6.8
Methacrylonitrile	< 110	< 130	<850000	<130	<140
4-Methyl-2-pentanone (MIBK)	< 57	< 63	<42000	<63	<68
Pentachloroethane	< 28	< 32	<42000	<13	<14
Styrene	< 6	< 6	<42000	<6.3	<6.8
1,1,1,2-Tetrachloroethane	< 6	< 6	<42000	<6.3	<6.8
1,1,2,2-Tetrachloroethane	< 6	< 6	<42000	<6.3	<6.8
Tetrachloroethene	< 6	< 6	<42000	<6.3	<6.8
Carbon tetrachloride	< 6	< 6	<42000	<6.3	<6.8
Toluene	< 6	< 6	<42000	**14**	**13**
Bromoform	< 6	< 6	<42000	<6.3	<6.8
1,1,2-Trichloroethane	< 6	< 6	<42000	<6.3	<6.8
1,1,1-Trichloroethane	< 6	< 6	<42000	<6.3	<6.8
Trichloroethene	< 6	< 6	<42000	<6.3	<6.8
Trichlorofluoromethane	< 6	< 6	<85000	<13	<14
1,2,3-Trichloropropane	< 6	< 6	<42000	<6.3	<6.8
Vinyl acetate	< 11	< 13	<420000	<63	<68
Vinyl chloride	< 11	< 63	<85000	<13	<14
Xylenes	< 6	< 6	<42000	<6.3	<6.8
2-Hexanone	< 57	< 63	<420000	<63	<68
Propionitrile	< 110	< 130	<850000 I	<130 I	<140 I
Methyl methacrylate	< 6	< 6	<42000	<6.3	<6.8
Acrolein	< 110 I	< 130 I	<850000 I	<130 I	<140 I
Acrylonitrile	< 6	< 6	<850000	<130	<140
Ethyl methacrylate	< 1100 I	< 1300 I	**57000**	<6.3	<6.8
Isobutyl alcohol	< 57	< 63	<8500000 I	<1300 I	<1400 I
2-Chloroethylvinyl ether	< 11	< 13	–	–	–
1,1,2-Trichloro-1,2,2-trifluoroethane	< 6	< 6	–	–	–
cis-1,2-Dichloroethene	–	–	–	–	–
Total VOCs	208.2	340	726000	29.8	33.2

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
– Parameter not analyzed.
VOCs Volatile organic compounds.

4-VOC.XLS

Table 4-1. Concentrations of Volatile Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	VS-4	VS-05S	VS-05M	VS-05D	VS-06S
Sample Depth(1) :	(9.0-11.0)	(0-2)	(2-4)	(4-6)	(2.5-3.5
Sample Date:	3/8/91	3/8/94	3/8/94	3/8/94	3/8/94
Parameter (ug/kg)					
Acetonitrile	<3300 I	< 1200 J	< 1400	< 1400	< 1100
Acetone	<660	< 62 J	< 72	< 69	< 54
Benzene	<33	< 6 J	< 7	< 7	< 5
Bromodichloromethane	<33	< 6 J	< 7	< 7	< 5
Bromomethane	<66	< 12 J	< 14	< 14	< 11
Carbon disulfide	<33	< 6 J	< 7	< 7	< 5
Chlorobenzene	<33	< 6 J	< 7	< 7	< 5
Dibromochloromethane	<33	< 6 J	< 7	< 7	< 5
Chloroethane	<66	< 12 J	< 14	< 14	< 11
Chloromethane	<66	< 12 J	< 14	< 14	< 11
Chloroform	<33	< 6 J	< 7	< 7	< 5
3-Chloropropene (allylchloride)	<66	< 6 J	< 7	< 7	< 5
1,2-Dibromo-3-chloropropane	<66	< 12 J	< 14	< 14	< 11
1,2-Dibromoethane (EDB)	<33	< 6 J	< 7	< 7	< 5
Dibromomethane	<33	< 6 J	< 7	< 7	< 5
trans-1,4-Dichloro-2-butene	<66	< 62 J	< 72	< 69	< 54
Dichlorodifluoromethane	<330	< 6 J	< 7	< 7	< 5
1,1-Dichloroethane	<33	< 6 J	< 7	< 7	< 5
1,2-Dichloroethane	<33	< 6 J	< 7	< 7	< 5
trans-1,2-Dichloroethene	<33	< 6 J	< 7	< 7	< 5
1,1-Dichloroethene	<33	< 6 J	< 7	< 7	< 5
Methylene chloride	<33	< 6 J	< 7	< 7	< 5
1,2-Dichloropropane	<33	< 6 J	< 7	< 7	< 5
cis-1,3-Dichloropropene	<33	< 6 J	< 7	< 7	< 5
trans-1,3-Dichloropropene	<33	< 6 J	< 7	< 7	< 5
1,3-Dichloropropene (total)	–	–	–	–	–
Ethyl benzene	<33	< 6 J	< 7	< 7	< 5
2-Butanone (MEK)	<660 I	< 62 J	< 72	< 69	< 54
Iodomethane	<33	< 6 J	< 7	< 7	< 5
Methacrylonitrile	<660	< 120 J	< 140	< 140	< 110
4-Methyl-2-pentanone (MIBK)	<330	< 62 J	< 72	< 69	< 54
Pentachloroethane	<66	< 31 J	< 36	< 35	< 27
Styrene	<33	< 6 J	< 7	< 7	< 5
1,1,1,2-Tetrachloroethane	<33	< 6 J	< 7	< 7	< 5
1,1,2,2-Tetrachloroethane	<33	< 6 J	< 7	< 7	< 5
Tetrachloroethene	<33	< 6 J	< 7	< 7	< 5
Carbon tetrachloride	<33	< 6 J	< 7	< 7	< 5
Toluene	<33	< 6 J	< 7	< 7	< 5
Bromoform	<33	< 6 J	< 7	< 7	< 5
1,1,2-Trichloroethane	<33	< 6 J	< 7	< 7	< 5
1,1,1-Trichloroethane	<33	< 6 J	< 7	< 7	< 5
Trichloroethene	<33	< 6 J	< 7	< 7	< 5
Trichlorofluoromethane	<66	< 6 J	< 7	< 7	< 5
1,2,3-Trichloropropane	<33	< 6 J	< 7	< 7	< 5
Vinyl acetate	<330	< 12 J	< 14	< 14	< 11
Vinyl chloride	<66	< 12 J	< 14	< 14	< 11
Xylenes	<33	< 6 J	< 7	< 7	< 5
2-Hexanone	<330	< 62 J	< 72	< 69	< 54
Propionitrile	<660 I	< 120 J	< 140	< 140	< 110
Methyl methacrylate	<33	< 6 J	< 7	< 7	< 5
Acrolein	<660 I	< 120 I	< 140 I	< 140 I	< 110 I
Acrylonitrile	<660	< 6 J	< 7	< 7	< 5
Ethyl methacrylate	<33	< 1200 I	< 1400 I	< 1400 I	< 1100 I
Isobutyl alcohol	<6600 I	< 62 J	< 72	< 69	< 54
2-Chloroethylvinyl ether	–	< 12 J	< 14	< 14	< 11
1,1,2-Trichloro-1,2,2-trifluoroethane	–	< 6 J	< 7	< 7	< 5
cis-1,2-Dichloroethene	–	–	–	–	–
Total VOCs	0	0	0	0	0

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
– Parameter not analyzed.
VOCs Volatile organic compounds.

Table 4-1. Concentrations of Volatile Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	VS-06D	VS-07S	VS-07M	VS-07D	VS-08S
Sample Depth(1):	(4-6)	(2-3)	(3-4)	(4-7)	(2-3)
Sample Date:	3/8/94	3/8/94	3/8/94	3/8/94	3/8/94
Parameter (ug/kg)					
Acetonitrile	< 1200	< 1500 J	< 1200	< 650000	< 190000
Acetone	**200**	**170 J**	**210**	< 32000	< 9600
Benzene	< 6	< 8	< 6	< 3200	< 960
Bromodichloromethane	< 6	< 8	< 6	< 3200	< 960
Bromomethane	< 12	< 15 J	< 12	< 6500	< 1900
Carbon disulfide	< 6	< 8 J	< 6	< 3200	< 960
Chlorobenzene	< 6 J	< 8 J	**15**	**10000**	**9000**
Dibromochloromethane	< 6	< 8	< 6	< 3200	< 960
Chloroethane	< 12	< 15 J	< 12	< 6500	< 1900
Chloromethane	< 12	< 15 J	< 12	< 6500	< 1900
Chloroform	< 6	< 8 J	< 6	< 3200	< 960
3-Chloropropene (allylchloride)	< 6	< 8	< 6	< 3200	< 960
1,2-Dibromo-3-chloropropane	< 12	< 15	< 12	< 6500	< 1900
1,2-Dibromoethane (EDB)	< 6	< 8	< 6	< 3200	< 960
Dibromomethane	< 6	< 8	< 6	< 3200	< 960
trans-1,4-Dichloro-2-butene	< 58	< 15	< 12	< 6500 I	< 1900 I
Dichlorodifluoromethane	< 6	< 8 J	< 6	< 3200	< 960 I
1,1-Dichloroethane	< 6	< 8 J	< 6	< 3200	< 960
1,2-Dichloroethane	< 6	< 8 J	< 6	< 3200	< 960
trans-1,2-Dichloroethene	< 6	< 8 J	< 6	< 3200	< 960
1,1-Dichloroethene	< 6	< 8 J	< 6	< 3200	< 960
Methylene chloride	**16**	< 8 J	< 6	< 3200	< 960
1,2-Dichloropropane	< 6	< 8	< 6	< 3200	< 960
cis-1,3-Dichloropropene	< 6	< 8	< 6	< 3200	< 960
trans-1,3-Dichloropropene	< 6	< 8	< 6	< 3200	< 960
1,3-Dichloropropene (total)	–	–	–	–	–
Ethyl benzene	< 6 J	< 8 J	< 6	< 3200	< 960
2-Butanone (MEK)	< 58	< 77	< 62	< 32000	< 9600
Iodomethane	< 6	< 8 J	< 6	< 3200	< 960
Methacrylonitrile	< 120	< 150	< 120	< 65000	< 19000
4-Methyl-2-pentanone (MIBK)	< 58 J	< 77 J	< 62	< 32000	< 9600
Pentachloroethane	< 29	< 38	< 31	< 16000	< 4800
Styrene	< 6 J	< 8 J	< 6	< 3200	< 960
1,1,1,2-Tetrachloroethane	< 6	< 8	< 6	< 3200	< 960
1,1,2,2-Tetrachloroethane	< 6 J	< 8 J	< 6	< 3200	< 960
Tetrachloroethene	**10 J**	**7.7 J**	**6.4**	< 3200	< 960
Carbon tetrachloride	< 6	< 8	< 6	< 3200	< 960
Toluene	< 6 J	< 8 J	< 6	< 3200	< 960
Bromoform	< 6	< 8	< 6	< 3200	< 960
1,1,2-Trichloroethane	< 6	< 8	< 6	< 3200	< 960
1,1,1-Trichloroethane	< 6	< 8	< 6	< 3200	< 960
Trichloroethene	< 6	< 8	< 6	< 3200	< 960
Trichlorofluoromethane	< 6	< 8 J	< 6	< 3200	< 960
1,2,3-Trichloropropane	< 6 J	< 8 J	< 6	< 3200	< 960
Vinyl acetate	< 12	< 15	< 12	< 6500	< 1900
Vinyl chloride	< 12	< 15 J	< 12	< 6500	< 1900
Xylenes	< 6 J	< 8 J	< 6	< 3200	< 960
2-Hexanone	< 58 J	< 77 J	< 62	< 32000	< 9600
Propionitrile	< 120	< 150	< 120	< 65000	< 19000
Methyl methacrylate	< 6	< 8	< 6	< 3200	< 960
Acrolein	< 120 I	< 150 I	< 120 I	< 65000 I	< 19000 I
Acrylonitrile	< 6 J	< 8 J	< 6	< 3200	< 960
Ethyl methacrylate	< 1200 I	< 1500 I	< 1200 I	< 650000 I	< 190000 I
Isobutyl alcohol	< 58	< 77	< 62	< 32000	< 9600
2-Chloroethylvinyl ether	< 12	< 15	< 12	< 6500	< 1900
1,1,2-Trichloro-1,2,2-trifluoroethane	< 6	< 8	< 6	< 3200	< 960
cis-1,2-Dichloroethene	–	–	–	–	–
Total VOCs	226	177.7	231.4	10000	9000

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
– Parameter not analyzed.
VOCs Volatile organic compounds.

4-VOC.XLS

Table 4-1. Concentrations of Volatile Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (ug/kg)	Sample I.D.: VS-08D Sample Depth(1): (7-8) Sample Date: 3/8/94		Sample I.D.: VS-09S Sample Depth(1): (3-4) Sample Date: 3/8/94		Sample I.D.: VS-09M Sample Depth(1): (4-5) Sample Date: 3/8/94		Sample I.D.: VS-09D Sample Depth(1): (5-7) Sample Date: 3/8/94		Sample I.D.: VS-10S Sample Depth(1): (1-3) Sample Date: 3/8/94	
Acetonitrile	< 2800000		< 5900000		< 35000000		< 7000000		< 1200	
Acetone	< 140000		< 300000		< 1800000		< 350000		< 62	
Benzene	< 14000		< 30000		< 180000		< 35000		< 6	
Bromodichloromethane	< 14000		< 30000		< 180000		< 35000		< 6	
Bromomethane	< 28000		< 59000		< 350000		< 70000		< 12	
Carbon disulfide	< 14000		< 30000		< 180000		< 35000		< 6	
Chlorobenzene	**80000**		**750000**		**1500000**		**1400000**		< 6	
Dibromochloromethane	< 14000		< 30000		< 180000		< 35000		< 6	
Chloroethane	< 28000		< 59000		< 350000		< 70000		< 12	
Chloromethane	< 28000		< 59000		< 350000		< 70000		< 12	
Chloroform	< 14000		< 30000		< 180000		< 35000		< 6	
3-Chloropropene (allylchloride)	< 14000		< 30000		< 180000		< 35000		< 6	
1,2-Dibromo-3-chloropropane	< 28000		< 59000		< 350000		< 70000		< 12	
1,2-Dibromoethane (EDB)	< 14000		< 30000		< 180000		< 35000		< 6	
Dibromomethane	< 14000		< 30000		< 180000		< 35000		< 6	
trans-1,4-Dichloro-2-butene	< 28000	I	< 59000	I	< 350000	I	< 70000	I	< 12	
Dichlorodifluoromethane	< 14000		< 30000		< 180000		< 35000		< 6	
1,1-Dichloroethane	< 14000		< 30000		< 180000		< 35000		< 6	
1,2-Dichloroethane	< 14000		< 30000		< 180000		< 35000		< 6	
trans-1,2-Dichloroethene	< 14000		< 30000		< 180000		< 35000		< 6	
1,1-Dichloroethene	< 14000		< 30000		< 180000		< 35000		< 6	
Methylene chloride	< 14000		< 30000		< 180000		< 35000		< 6	
1,2-Dichloropropane	< 14000		< 30000		< 180000		< 35000		< 6	
cis-1,3-Dichloropropene	< 14000		< 30000		< 180000		< 35000		< 6	
trans-1,3-Dichloropropene	< 14000		< 30000		< 180000		< 35000		< 6	
1,3-Dichloropropene (total)	--		--		--		--		--	
Ethyl benzene	< 14000		< 30000		< 180000		< 35000		< 6	
2-Butanone (MEK)	< 140000		< 300000		< 1800000		< 350000		< 62	
Iodomethane	< 14000		< 30000		< 180000		< 35000		< 6	
Methacrylonitrile	< 280000		< 590000		< 3500000		< 700000		< 120	
4-Methyl-2-pentanone (MIBK)	< 140000		< 300000		< 1800000		< 350000		< 62	
Pentachloroethane	< 68000		< 140000		< 880000		< 180000		< 31	
Styrene	< 14000		< 30000		< 180000		< 35000		< 6	
1,1,1,2-Tetrachloroethane	< 14000		< 30000		< 180000		< 35000		< 6	
1,1,2,2-Tetrachloroethane	< 14000		< 30000		< 180000		< 35000		< 6	
Tetrachloroethene	< 14000		< 30000		< 180000		< 35000		< 6	
Carbon tetrachloride	< 14000		< 30000		< 180000		< 35000		< 6	
Toluene	< 14000		< 30000		< 180000		< 35000		< 6	
Bromoform	< 14000		< 30000		< 180000		< 35000		< 6	
1,1,2-Trichloroethane	< 14000		< 30000		< 180000		< 35000		< 6	
1,1,1-Trichloroethane	< 14000		< 30000		< 180000		< 35000		< 6	
Trichloroethene	< 14000		< 30000		< 180000		< 35000		< 6	
Trichlorofluoromethane	< 14000		< 30000		< 180000		< 35000		< 6	
1,2,3-Trichloropropane	< 14000		< 30000		< 180000		< 35000		< 6	
Vinyl acetate	< 28000		< 59000		< 350000		< 70000		< 12	
Vinyl chloride	< 28000		< 59000		< 350000		< 70000		< 12	
Xylenes	< 14000		< 30000		< 180000		< 35000		< 6	
2-Hexanone	< 140000		< 300000		< 1800000		< 350000		< 62	
Propionitrile	< 280000		< 590000		< 3500000		< 700000		< 120	
Methyl methacrylate	< 14000		< 30000		< 180000		< 35000		< 6	
Acrolein	< 280000	I	< 590000	I	< 3500000	I	< 700000	I	< 120	I
Acrylonitrile	< 14000		< 30000		< 180000		< 35000		< 6	
Ethyl methacrylate	< 2800000	I	< 5900000	I	< 35000000	I	< 7000000	I	< 1200	I
Isobutyl alcohol	< 140000		< 300000		< 1800000		< 350000		< 62	
2-Chloroethylvinyl ether	< 28000		< 59000		< 350000		< 70000		< 12	
1,1,2-Trichloro-1,2,2-trifluoroethane	< 14000		< 30000		< 180000		< 35000		< 6	
cis-1,2-Dichloroethene	--		--		--		--		--	
Total VOCs	80000		750000		1500000		1400000		0	

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
-- Parameter not analyzed.
VOCs Volatile organic compounds.

Table 4-1. Concentrations of Volatile Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	VS-10D		VS-11S		VS-11D		VS-12S		VS-12M	
Sample Depth(1) :	(6-8)		(2-4)		(4.5-6.5)		(0-2.5)		(2.5-4)	
Sample Date:	3/8/94		3/8/94		3/8/94		3/8/94		3/8/94	
Parameter (ug/kg)										
Acetonitrile	< 3200000		< 1200		< 1100		< 1200		< 6900	
Acetone	< 160000		**170**	**J**	< 54		**81**	**J**	**540**	**J**
Benzene	< 16000		< 6		< 5		< 6		< 35	
Bromodichloromethane	< 16000		< 6		< 5		< 6		< 35	
Bromomethane	< 32000		< 12		< 11		< 12		< 69	
Carbon disulfide	< 16000		< 6		< 5		< 6		< 35	
Chlorobenzene	**160000**		< 6		< 5		< 6		< 35	
Dibromochloromethane	< 16000		< 6		< 5		< 6		< 35	
Chloroethane	< 32000		< 12		< 11		< 12		< 69	
Chloromethane	< 32000		< 12		< 11		< 12		< 69	
Chloroform	< 16000		< 6		< 5		< 6		< 35	
3-Chloropropene (allylchloride)	< 16000		< 6		< 5		< 6		< 35	
1,2-Dibromo-3-chloropropane	< 32000		< 12		< 11		< 12		< 69	
1,2-Dibromoethane (EDB)	< 16000		< 6		< 5		< 6		< 35	
Dibromomethane	< 16000		< 6		< 5		< 6		< 35	
trans-1,4-Dichloro-2-butene	< 32000	I	< 12		< 11		< 12		< 69	
Dichlorodifluoromethane	< 16000		< 6		< 5		< 6		< 35	
1,1-Dichloroethane	< 16000		< 6		< 5		< 6		< 35	
1,2-Dichloroethane	< 16000		< 6		< 5		< 6		< 35	
trans-1,2-Dichloroethene	< 16000		< 6		< 5		< 6		< 35	
1,1-Dichloroethene	< 16000		< 6		< 5		< 6		< 35	
Methylene chloride	< 16000		< 6		< 5		**6.9**		< 35	
1,2-Dichloropropane	< 16000		< 6		< 5		< 6		< 35	
cis-1,3-Dichloropropene	< 16000		< 6		< 5		< 6		< 35	
trans-1,3-Dichloropropene	< 16000		< 6		< 5		< 6		< 35	
1,3-Dichloropropene (total)	–		–		–		–		–	
Ethyl benzene	< 16000		< 6		< 5		< 6		< 35	
2-Butanone (MEK)	< 160000		< 62		< 54		< 60		< 350	
Iodomethane	< 16000		< 6		< 5		< 6		< 35	
Methacrylonitrile	< 320000		< 120		< 110		< 120		< 690	
4-Methyl-2-pentanone (MIBK)	< 160000		< 62		< 54		< 60		< 350	
Pentachloroethane	< 80000		< 31		< 27		< 30		< 170	
Styrene	< 16000		< 6		< 5		< 6		< 35	
1,1,1,2-Tetrachloroethane	< 16000		< 6		< 5		< 6		< 35	
1,1,2,2-Tetrachloroethane	< 16000		< 6		< 5		< 6		< 35	
Tetrachloroethene	< 16000		< 6		< 5		< 6		< 35	
Carbon tetrachloride	< 16000		< 6		< 5		< 6		< 35	
Toluene	< 16000		< 6		< 5		< 6		< 35	
Bromoform	< 16000		< 6		< 5		< 6		< 35	
1,1,2-Trichloroethane	< 16000		< 6		< 5		< 6		< 35	
1,1,1-Trichloroethane	< 16000		< 6		< 5		< 6		< 35	
Trichloroethene	< 16000		< 6		< 5		< 6		< 35	
Trichlorofluoromethane	< 16000		< 6		< 5		< 6		< 35	
1,2,3-Trichloropropane	< 16000		< 6		< 5		< 6		< 35	
Vinyl acetate	< 32000		< 12		< 11		< 12		< 69	
Vinyl chloride	< 32000		< 12		< 11		< 12		< 69	
Xylenes	< 16000		< 6		< 5		< 6		< 35	
2-Hexanone	< 160000		< 62		< 54		< 60		< 350	
Propionitrile	< 320000		< 120		< 110		< 120		< 690	
Methyl methacrylate	< 16000		< 6		< 5		< 6		< 35	
Acrolein	< 320000	I	< 120	I	< 110	I	< 120	I	< 690	I
Acrylonitrile	< 16000		< 6		< 5		< 6		< 35	
Ethyl methacrylate	< 3200000	I	< 1200	I	< 1100	I	< 1200	I	< 6900	I
Isobutyl alcohol	< 160000		< 62		< 54		< 60		< 350	
2-Chloroethylvinyl ether	< 32000		< 12		< 11		< 12		< 69	
1,1,2-Trichloro-1,2,2-trifluoroethane	< 16000		< 6		< 5		< 6		< 35	
cis-1,2-Dichloroethene	–		–		–		–		–	
Total VOCs	160000		170		0		87.9		540	

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
– Parameter not analyzed.
VOCs Volatile organic compounds.

Table 4-1. Concentrations of Volatile Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (ug/kg)	Sample I.D.: VS-12D Sample Depth(1): (4-6.5) Sample Date: 3/8/94	BS-1 (1.25-3.25) 3/12/91	KP-01S (3-5) 3/10/94	KP-02S (1-3) 3/10/94	KP-02M (4-6) 3/10/94
Acetonitrile	< 6900 J	<590 I	< 1200	< 5700	< 1300
Acetone	< 350 J	<120	< 62	< 290	**110 J**
Benzene	< 35 J	<5.9	< 6	< 29 J	< 7
Bromodichloromethane	< 35 J	<5.9	< 6	< 29 J	< 7
Bromomethane	< 69 J	<12	< 12	< 57	< 13
Carbon disulfide	< 35 J	<5.9	< 6	< 29	< 7
Chlorobenzene	< 35 J	<5.9	< 6 J	**240**	**10**
Dibromochloromethane	< 35 J	<5.9	< 6	< 29 J	< 7
Chloroethane	< 69 J	<12	< 12	< 57	< 13
Chloromethane	< 69 J	<12	< 12	< 57	< 13
Chloroform	< 35 J	<5.9	< 6	< 29	< 7
3-Chloropropene (allylchloride)	< 35 J	<12	< 6	< 29	< 7
1,2-Dibromo-3-chloropropane	< 69 J	<12	< 12	< 57	< 13
1,2-Dibromoethane (EDB)	< 35 J	<5.9	< 6	< 29	< 7
Dibromomethane	< 35 J	<5.9	< 6	< 29 J	< 7
trans-1,4-Dichloro-2-butene	< 69 J	<12 I	< 12	< 57 J	< 13
Dichlorodifluoromethane	< 35 J	<59	< 6	< 29	< 7
1,1-Dichloroethane	< 35 J	<5.9	< 6	< 29	< 7
1,2-Dichloroethane	< 35 J	<5.9	< 6	< 29	< 7
trans-1,2-Dichloroethene	< 35 J	<5.9	< 6	< 29	< 7
1,1-Dichloroethene	< 35 J	<5.9	< 6	< 29	< 7
Methylene chloride	< 35 J	<5.9	< 6	< 29	< 7
1,2-Dichloropropane	< 35 J	<5.9	< 6	< 29 J	< 7
cis-1,3-Dichloropropene	< 35 J	<5.9	< 6	< 29 J	< 7
trans-1,3-Dichloropropene	< 35 J	<5.9	< 6	< 29 J	< 7
1,3-Dichloropropene (total)	–	–	–	–	–
Ethyl benzene	< 35 J	<5.9	< 6 J	< 29	< 7
2-Butanone (MEK)	< 350 J	<120 I	< 62	< 290 J	< 66
Iodomethane	< 35 J	<5.9	< 6	< 29	< 7
Methacrylonitrile	< 690 J	<120	< 120	< 570	< 130
4-Methyl-2-pentanone (MIBK)	**380 J**	<59	< 62 J	< 290	< 66
Pentachloroethane	< 170 J	<12 I	< 31	< 140	< 33
Styrene	< 35 J	<5.9	< 6 J	< 29	< 7
1,1,1,2-Tetrachloroethane	< 35 J	<5.9	< 6	< 29	< 7
1,1,2,2-Tetrachloroethane	< 35 J	<5.9	< 6 J	< 29	< 7
Tetrachloroethene	< 35 J	<5.9	< 6 J	< 29	< 7
Carbon tetrachloride	< 35 J	<5.9	< 6	< 29 J	< 7
Toluene	< 35 J	<5.9	< 6 J	< 29	< 7
Bromoform	< 35 J	<5.9	< 6	< 29 J	< 7
1,1,2-Trichloroethane	< 35 J	<5.9	< 6	< 29 J	< 7
1,1,1-Trichloroethane	< 35 J	<5.9	< 6	< 29 J	< 7
Trichloroethene	< 35 J	<5.9	< 6	< 29 J	< 7
Trichlorofluoromethane	< 35 J	<12	< 6	< 29	< 7
1,2,3-Trichloropropane	< 35 J	<5.9	< 6 J	< 29	< 7
Vinyl acetate	< 69 J	<59	< 12	< 57 J	< 13
Vinyl chloride	< 69 J	<12	< 12	< 57	< 13
Xylenes	< 35 J	<5.9	< 6 J	< 29	< 7
2-Hexanone	< 350 J	<59	< 62 J	< 290	< 66
Propionitrile	< 690 J	<120 I	< 120	< 570	< 130
Methyl methacrylate	< 35 J	<5.9	< 6	< 29	< 7
Acrolein	< 690 I	<120 I	< 120 I	< 570 I	< 130 I
Acrylonitrile	< 35 J	<120	< 6 J	< 29	< 7
Ethyl methacrylate	< 6900 I	<5.9	< 1200 I	< 5700 I	< 1300 I
Isobutyl alcohol	< 350 J	<1200 I	< 62	< 290 J	< 66
2-Chloroethylvinyl ether	< 69 J	–	< 12	< 57	< 13
1,1,2-Trichloro-1,2,2-trifluoroethane	< 35 J	–	< 6	< 29	< 7
cis-1,2-Dichloroethene	–	–	–	–	–
Total VOCs	380	0	0	240	120

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
– Parameter not analyzed.
VOCs Volatile organic compounds.

4-VOC.XLS

Table 4-1. Concentrations of Volatile Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	KP-03S	KP-03D	KP-04S	KP-04M	KP-04D
Sample Depth(1) :	(2-3)	(4-6)	(1-3)	(11-13)	(22-24)
Sample Date:	3/10/94	3/10/94	3/10/94	3/10/94	3/10/94
Parameter (ug/kg)					
Acetonitrile	< 2200000	< 2400000	< 2200000	< 1200	< 1400
Acetone	< 110000	< 120000	< 110000	**160**	**180**
Benzene	< 11000	< 12000	< 11000	< 6	< 7
Bromodichloromethane	< 11000	< 12000	< 11000	< 6	< 7
Bromomethane	< 22000	< 24000	< 22000	< 12	< 14
Carbon disulfide	< 11000	< 12000	< 11000	< 6	< 7
Chlorobenzene	**20000**	**29000**	**19000**	**8.8 J**	**18**
Dibromochloromethane	< 11000	< 12000	< 11000	< 6	< 7
Chloroethane	< 22000	< 24000	< 22000	< 12	< 14
Chloromethane	**22000 J**	< 24000	< 22000	< 12	< 14
Chloroform	< 11000	< 12000	< 11000	< 6	< 7
3-Chloropropene (allylchloride)	< 11000	< 12000	< 11000	< 6	< 7
1,2-Dibromo-3-chloropropane	< 22000	< 24000	< 22000	< 12	< 14
1,2-Dibromoethane (EDB)	< 11000	< 12000	< 11000	< 6	< 7
Dibromomethane	< 11000	< 12000	< 11000	< 6	< 7
trans-1,4-Dichloro-2-butene	< 22000 I	< 24000 I	< 22000 I	< 12	< 14
Dichlorodifluoromethane	< 11000	< 12000	< 11000	< 6	< 7
1,1-Dichloroethane	< 11000	< 12000	< 11000	< 6	< 7
1,2-Dichloroethane	< 11000	< 12000	< 11000	< 6	< 7
trans-1,2-Dichloroethene	< 11000	< 12000	< 11000	< 6	< 7
1,1-Dichloroethene	< 11000	< 12000	< 11000	< 6	< 7
Methylene chloride	< 11000	< 12000	< 11000	< 6	< 7
1,2-Dichloropropane	< 11000	< 12000	< 11000	< 6	< 7
cis-1,3-Dichloropropene	< 11000	< 12000	< 11000	< 6	< 7
trans-1,3-Dichloropropene	< 11000	< 12000	< 11000	< 6	< 7
1,3-Dichloropropene (total)	--	--	--	--	--
Ethyl benzene	< 11000	< 12000	< 11000	< 6 J	< 7
2-Butanone (MEK)	< 110000	< 120000	< 110000	< 61	< 68
Iodomethane	< 11000	< 12000	< 11000	< 6	< 7
Methacrylonitrile	< 220000	< 240000	< 220000	< 120	< 140
4-Methyl-2-pentanone (MIBK)	< 110000	< 120000	< 110000	< 61 J	< 68
Pentachloroethane	< 54000	< 60000	< 54000	< 30	< 34
Styrene	< 11000	< 12000	< 11000	< 6 J	< 7
1,1,1,2-Tetrachloroethane	< 11000	< 12000	< 11000	< 6	< 7
1,1,2,2-Tetrachloroethane	< 11000	< 12000	< 11000	< 6 J	< 7
Tetrachloroethene	< 11000	< 12000	< 11000	< 6 J	< 7
Carbon tetrachloride	< 11000	< 12000	< 11000	< 6	< 7
Toluene	< 11000	< 12000	< 11000	< 6 J	< 7
Bromoform	< 11000	< 12000	< 11000	< 6	< 7
1,1,2-Trichloroethane	< 11000	< 12000	< 11000	< 6	< 7
1,1,1-Trichloroethane	< 11000	< 12000	< 11000	< 6	< 7
Trichloroethene	< 11000	< 12000	< 11000	< 6	< 7
Trichlorofluoromethane	< 11000	< 12000	< 11000	< 6	< 7
1,2,3-Trichloropropane	< 11000	< 12000	< 11000	< 6 J	< 7
Vinyl acetate	< 22000	< 24000	< 22000	< 12	< 14
Vinyl chloride	< 22000	< 24000	< 22000	< 12	< 14
Xylenes	**530000**	< 12000	**180000**	**6.6 J**	**6.6 J**
2-Hexanone	< 110000	< 120000	< 110000	< 61 J	< 68
Propionitrile	< 220000	< 240000	< 220000	< 120	< 140
Methyl methacrylate	< 11000	< 12000	< 11000	< 6	< 7
Acrolein	< 220000 I	< 240000 I	< 220000 I	< 120 I	< 140 I
Acrylonitrile	< 11000	< 12000	< 11000	< 6 J	< 7
Ethyl methacrylate	< 2200000 I	< 2400000 I	< 2200000 I	< 1200 I	< 1400 I
Isobutyl alcohol	< 110000	< 120000	< 110000	< 61	< 68
2-Chloroethylvinyl ether	< 22000	< 24000	< 22000	< 12	< 14
1,1,2-Trichloro-1,2,2-trifluoroethane	< 11000	< 12000	< 11000	< 6	< 7
cis-1,2-Dichloroethene	--	--	--	--	--
Total VOCs	572000	29000	199000	175.4	204.6

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
-- Parameter not analyzed.
VOCs Volatile organic compounds.

4-VOC.XLS

Table 4-1. Concentrations of Volatile Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (ug/kg)	Sample I.D.: HW-02GP Sample Depth(1): (12-14) Sample Date: 3/10/94		Sample I.D.: HB-02GP Sample Depth(1): (19-21) Sample Date: 3/10/94		Sample I.D.: HB-03GP Sample Depth(1): (8-10) Sample Date: 3/10/94	
Acetonitrile	< 1200		< 1300		< 1200	
Acetone	**150**	**J**	**110**		**100**	
Benzene	< 6	J	< 7		< 6	
Bromodichloromethane	< 6	J	< 7		< 6	
Bromomethane	< 12		< 13		< 12	
Carbon disulfide	< 6		< 7		< 6	
Chlorobenzene	**14**		**16**		**17**	
Dibromochloromethane	< 6	J	< 7		< 6	
Chloroethane	< 12		< 13		< 12	
Chloromethane	< 12		< 13		< 12	
Chloroform	< 6		< 7		< 6	
3-Chloropropene (allylchloride)	< 6		< 7		< 6	
1,2-Dibromo-3-chloropropane	< 12		< 13		< 12	
1,2-Dibromoethane (EDB)	< 6		< 7		< 6	
Dibromomethane	< 6	J	< 7		< 6	
trans-1,4-Dichloro-2-butene	< 12	J	< 13		< 12	
Dichlorodifluoromethane	< 6		< 7		< 6	
1,1-Dichloroethane	< 6		< 7		< 6	
1,2-Dichloroethane	< 6		< 7		< 6	
trans-1,2-Dichloroethene	< 6		< 7		< 6	
1,1-Dichloroethene	< 6		< 7		< 6	
Methylene chloride	< 6		< 7		< 6	
1,2-Dichloropropane	< 6	J	< 7		< 6	
cis-1,3-Dichloropropene	< 6	J	< 7		< 6	
trans-1,3-Dichloropropene	< 6	J	< 7		< 6	
1,3-Dichloropropene (total)	–		–		–	
Ethyl benzene	6.2		< 7		< 6	
2-Butanone (MEK)	< 57	J	< 67		< 61	
Iodomethane	< 6		< 7		< 6	
Methacrylonitrile	< 120		< 130		< 120	
4-Methyl-2-pentanone (MIBK)	< 57		< 67		< 61	
Pentachloroethane	< 29		< 33		< 30	
Styrene	< 6		< 7		< 6	
1,1,1,2-Tetrachloroethane	< 6		< 7		< 6	
1,1,2,2-Tetrachloroethane	< 6		< 7		< 6	
Tetrachloroethene	< 6		< 7		< 6	
Carbon tetrachloride	< 6	J	< 7		< 6	
Toluene	< 6		< 7		< 6	
Bromoform	< 6	J	< 7		< 6	
1,1,2-Trichloroethane	< 6	J	< 7		< 6	
1,1,1-Trichloroethane	< 6	J	< 7		< 6	
Trichloroethene	< 6	J	< 7		< 6	
Trichlorofluoromethane	< 6		< 7		< 6	
1,2,3-Trichloropropane	< 6		< 7		< 6	
Vinyl acetate	< 12	J	< 13		< 12	
Vinyl chloride	< 12		< 13		< 12	
Xylenes	**7.2**		< 7		**73**	
2-Hexanone	< 57		< 67		< 61	
Propionitrile	< 120		< 130		< 120	
Methyl methacrylate	< 6		< 7		< 6	I
Acrolein	< 120	I	< 130	I	< 120	
Acrylonitrile	< 6		< 7		< 6	I
Ethyl methacrylate	< 1200	I	< 1300	I	< 1200	
Isobutyl alcohol	< 57	J	< 67		< 61	
2-Chloroethylvinyl ether	< 12		< 13		< 12	
1,1,2-Trichloro-1,2,2-trifluoroethane	< 6		< 7		< 6	
cis-1,2-Dichloroethene	–		–		–	
Total VOCs	177.4		126		190	

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
– Parameter not analyzed.
VOCs Volatile organic compounds.

Table 4-2. Concentrations of Alachlor in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	LSS-1	AC-01S	AC-01D	AC-02S	AC-02D	AC-03S	AC-05S	AC-06S	AC-06M	AC-06D	AC-07S
Sample Depth(1):	(3.0-3.75	(1-2)	(2-4)	(1-2)	(3-4)	(2-4.5)	(1-3)	(1-3)	(4-6)	(6-8)	(3-5)
Sample Date:	10/8/92	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94
Parameter (ug/kg)											
Alachlor	**1200**	**7.6**	<8 J	<8 J	**43**	**80000**	**190**	<36	<9	<8	**18**

Sample I.D.:	AC-08S	AC-08M	AC-08D	AC-09S	AC-10S	AC-10M	AC-10D	AC-11S	AC-12S	AC-12D	AC-13S
Sample Depth(1):	(1-3)	(3-5)	(5-7)	(2-4)	(1-2)	(3-4)	(4.5-5.5)	(3-4)	(1-2)	(2-4)	(2-4)
Sample Date:	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94
Parameter (ug/kg)											
Alachlor	<8	<9	**1800**	**42**	<8	<8	**10**	<9	**2200**	**140**	<8

Sample I.D.:	AC-13M	AC-13D	AC-14S	AC-14D	AC-15S	AC-16S	AC-16M	AC-16D	QP-01S	QP-02S	QP-04D
Sample Depth(1):	(6-7)	(11-12)	(2-3)	(4-5)	(3-4)	(3-4)	(4-5)	(6-7.5)	(1-3)	(1-3)	(9-11)
Sample Date:	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94
Parameter (ug/kg)											
Alachlor	**26000**	**17000**	<10	<9	**13000**	**8.5**	<9	**340**	<8	<8	<9 J

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
J The associated numerical value is an estimated quantity.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Missouri.

Sample I.D.:	LSS-1	QS-1	QS-1	——Replicates—— QS-2	QS-5
Sample Depth(1):	(3.0-3.75)	(0-4.5)	(4.0-9.0)	(0-2.5)	(0-2.5)
Sample Date:	10/8/92	2/6/91	2/6/91	2/11/91	2/11/91
Parameter (ug/kg)					
Acenaphthene	<370	<8700*	<10000*	<11000*	<11000*
Acenaphthylene	<370	<8700	<10000	<11000	<11000
Acetophenone	–	<8700	<10000	<11000	<11000
2-Acetylaminofluorene	–	<17000	<20000	<22000	<22000
4-Aminobiphenyl	–	<17000	<20000	<22000	<22000
Anthracene	<370	<8700	<10000	<11000	<11000
Aniline	–	<8700	<10000	<11000	<11000
Benzo(a)anthracene	<370	<8700	<10000	<11000	<11000
Benzo(k)fluoranthene	<370	<8700	<10000	<11000	<11000
Benzo(b)fluoranthene	–	<8700	<10000	<11000	<11000
Benzo(g,h,i)perylene	<370	<8700	<10000	<11000	<11000
Benzo(a)pyrene	<370	<8700	<10000	<11000	<11000
Benzyl alcohol	–	<8700	<10000	<11000	<11000
bis(2-Chloroethoxy)methane	<370	<8700	<10000	<11000	<11000
bis(2-Chloroethyl)ether	<370	<8700	<10000	<11000	<11000
bis(2-Ethylhexyl)phthalate	<370	<8700	<10000	<11000	<11000
4-Bromophenyl-phenyl-ether	<370	<8700	<10000	<11000	<11000
Butylbenzylphthalate	<370	<8700	<10000	<11000	<11000
(Dinoseb)2-sec-butyl-4,6-dinitropheno	–	<44000	<51000	<54000	<54000
p-Chloroaniline	–	<17000	<20000	<22000	<22000
1,3-Dichlorobenzene	<370	<8700	<10000	<11000	<11000
1,4-Dichlorobenzene	<370	<8700	<10000	<11000	<11000
1,2-Dichlorobenzene	<370	<8700	<10000	<11000	<11000
4-Chlorophenyl-phenylether	<370	<8700	<10000	<11000	<11000
2-Chloronaphthalene	<370	<8700	<10000	<11000	<11000
Chrysene	<370	<8700	<10000	<11000	<11000
Dibenz(a,h)anthracene	<370	<8700	<10000	<11000	<11000
Di-n-butylphthalate	<370	<8700	<10000	<11000	<11000
3,3'-Dichlorobenzidine	<740	<17000	<20000	<22000	<22000
3,3'-Dimethylbenzidine	–	<8700	<10000	<11000	<11000
Diethylphthalate	<370	<8700	<10000	<11000	<11000
p-(Dimethylamino)azobenzene	–	<8700	<10000	<11000	<11000
7,12-Dimethylbenz(a)anthracene	–	<8700	<10000	<11000	<11000
a-a-Dimethylphenethylamine	–	<44000	<51000	<54000	<54000
Dimethylphthalate	<370	<8700	<10000	<11000	<11000
m-Dinitrobenzene	–	<44000	<51000	<54000	<54000
2,4-Dinitrotoluene	<370	<8700	<10000	<11000	<11000
2,6-Dinitrotoluene	<370	<8700	<10000	<11000	<11000
Di-n-octylphthalate	<370	<8700	<10000	<11000	<11000
N-Nitroso-di-n-propylamine	<370	<8700	<10000	<11000	<11000
Fluoranthene	<370	<8700	<10000	<11000	<11000
Fluorene	<370	<8700	<10000	<11000	<11000
Hexachlorobenzene	<370	<8700	<10000	<11000	<11000
Hexachlorobutadiene	<370	<8700	<10000	<11000	<11000
Hexachlorocyclopentadiene	<370	<8700	<10000	<11000	<11000
Hexachloroethane	<370	<8700	<10000	<11000	<11000
Hexachloropropene	–	<8700	<10000	<11000	<11000
Indeno(1,2,3-cd)pyrene	<370	<8700	<10000	<11000	<11000
Isophorone	<370	<8700	<10000	<11000	<11000
Isosafrole	–	<8700	<10000	<11000	<11000
Methapyrilene	–	<87000	<100000	<110000	<110000
3-Methylcholanthrene	–	<8700	<10000	<11000	<11000
Methylmethanesulfonate	–	–	–	–	–
2-Methylnaphthalene	–	<8700	<10000	<11000	<11000
Naphthalene	<370	<8700	<10000	<11000	<11000
1,4-Naphthoquinone	–	<8700	<10000	<11000	<11000

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detecti
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Missouri.

Sample I.D.:	LSS-1	QS-1	QS-1	——Replicates—— QS-2	QS-5
Sample Depth(1):	(3.0-3.75)	(0-4.5)	(4.0-9.0)	(0-2.5)	(0-2.5)
Sample Date:	10/8/92	2/6/91	2/6/91	2/11/91	2/11/91
Parameter (ug/kg)					
1-Naphthylamine	–	<8700	<10000	<11000	<11000
2-Naphthylamine	–	<8700	<10000	<11000	<11000
2-Nitroaniline	–	<44000	<51000	<54000	<54000
3-Nitroaniline	–	<44000	<51000	<54000	<54000
4-Nitroaniline	–	<44000	<51000	<54000	<54000
Nitrobenzene	<370	<8700	<10000	<11000	<11000
N-Nitrosodi-n-butylamine	–	<8700	<10000	<11000	<11000
N-Nitrosodiethylamine	–	<17000	<20000	<22000	<22000
N-Nitrosodimethylamine	<370	<8700	<10000	<11000	<11000
N-Nitrosomethylethylamine	–	<8700	<10000	<11000	<11000
N-Nitrosodiphenylamine/Diphenylami	<370	<8700	<10000	<11000	<11000
N-Nitrosomorpholine	–	<8700	<10000	<11000	<11000
N-Nitrosopiperidine	–	<17000	<20000	<22000	<22000
Nitrosopyrrolidine	–	<35000	<41000	<43000	<43000
5-Nitro-o-toluidine	–	<8700	<10000	<11000	<11000
Pentachlorobenzene	–	<8700	<10000	<11000	<11000
Pentachloronitrobenzene	–	<87000	<100000	<110000	<110000
Phenacetin	–	<17000	<20000	<22000	<22000
Phenanthrene	<370	**15000**	<10000	<11000	<11000
2-Picoline	–	<8700	<10000	<11000	<11000
Pronamide	–	<8700	<10000	<11000	<11000
Pyrene	<370	**9400**	<10000	<11000	<11000
Safrole	–	<8700	<10000	<11000	<11000
1,2,4,5-Tetrachlorobenzene	–	<8700	<10000	<11000	<11000
1,2,4-Trichchlorobenzene	<370	<8700	<10000	<11000	<11000
2-Chlorophenol	<370	<8700	<10000	<11000	<11000
Cresol m&p	–	<8700	<10000	<11000	<11000
o-Cresol	–	<8700	<10000	<11000	<11000
4-Nitrophenol	<1900	<44000	<51000	<54000	<54000
2,4-Dichlorophenol	<370	<8700	<10000	<11000	<11000
2,6-Dichlorophenol	–	<8700	<10000	<11000	<11000
2,4-Dimethylphenol	<370	<8700	<10000	<11000	<11000
4,6-Dinitro-2-methylphenol	<1900	<44000	<51000	<54000	<54000
2,4-Dinitrophenol	<1900	<44000	<51000	<54000	<54000
Pentachlorophenol	<1900	<44000	<51000	<54000	<54000
Phenol	<370	<8700	<10000	<11000	<11000
2,4,5-Trichlorophenol	–	<44000	<51000	<54000	<54000
2,4,6-Trichlorophenol	<370	<8700	<10000	<11000	<11000
2,3,4,6-Tetrachlorophenol	–	<8700	<10000	<11000	<11000
2-Nitrophenol	<370	<8700	<10000	<11000	<11000
Diallate	–	<8700	<10000	<11000	<11000
Ethyl methanesulfonate	–	<17000	<20000	<22000	<22000
4-Nitroquinoline 1-oxide	–	<87000	<100000	<110000	<110000
p-Phenylenediamine	–	**67000**	**79000**	<11000	<11000
o-Toluidine	–	<8700	<10000	<11000	<11000
0,0,0-Triethyl phosphorothioate	–	<8700	<10000	<11000	<11000
1,3,5-Trinitrobenzene	–	<44000	<51000	<54000	<54000
4-Chloro-3-methylphenol	<370	<8700	<10000	<11000	<11000
Dibenzofuran	–	<8700	<10000	<11000	<11000
1,4-Dioxane	–	<8700	<10000	<11000	<11000
Pyridine	–	<8700	<10000	<11000	<11000
Bis(2-chloroisopropyl)ether	<370	–	–	–	–
Total SVOCs	0	91400	79000	0	0

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detecti
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis Missouri.

Sample I.D.:	QS-2	QS-4	QP-01S		QP-01M		QP-01D	
Sample Depth(1):	(4.0-9.0)	Cuttings	(1-3)		(5-7)		(9-11)	
Sample Date:	2/11/91	2/22/91	3/9/94		3/9/94		3/9/94	
Parameter (ug/kg)								
Acenaphthene	<13000*	580	< 1900		530		< 2000	
Acenaphthylene	<13000	<460	< 1900		< 420		< 2000	
Acetophenone	<13000	<460	< 1900		< 420		< 2000	
2-Acetylaminofluorene	<26000	<930	< 1900		< 420		< 2000	
4-Aminobiphenyl	<26000	<930	< 1900		< 420		< 2000	
Anthracene	<13000	990	4100		1500		< 2000	
Aniline	<13000	<460	< 1900		< 420		< 2000	
Benzo(a)anthracene	<13000	3800	6300	J	2300	J	4000	J
Benzo(k)fluoranthene	<13000	610	< 1900	J	1100	J	< 2000	J
Benzo(b)fluoranthene	<13000	990	7300	J	2600	J	7000	J
Benzo(g,h,i)perylene	<13000	1800	3700	J	1200	J	2700	J
Benzo(a)pyrene	<13000	2700	5900	J	2100	J	4000	J
Benzyl alcohol	<13000	<460	< 1900		< 420		< 2000	
bis(2-Chloroethoxy)methane	<13000	<460	< 1900		< 420		< 2000	
bis(2-Chloroethyl)ether	<13000	<460	< 1900		< 420		< 2000	
bis(2-Ethylhexyl)phthalate	<13000	<460	< 1900	J	< 420	J	< 2000	J
4-Bromophenyl-phenyl-ether	<13000	<460	< 1900		< 420		< 2000	
Butylbenzylphthalate	<13000	<460	< 1900	J	< 420	J	< 2000	J
(Dinoseb)2-sec-butyl-4,6-dinitropheno	<65000	<2300	< 1900		< 420		< 2000	
p-Chloroaniline	<26000	<930	< 3800		< 840		< 4100	
1,3-Dichlorobenzene	<13000	<460	< 1900		< 420		< 2000	
1,4-Dichlorobenzene	<13000	<460	< 1900		< 420		< 2000	
1,2-Dichlorobenzene	<13000	<460	< 1900		< 420		< 2000	
4-Chlorophenyl-phenylether	<13000	<460	< 1900		< 420		< 2000	
2-Chloronaphthalene	<13000	<460	< 1900		< 420		< 2000	
Chrysene	<13000	<460	5800	J	1900	J	4200	J
Dibenz(a,h)anthracene	<13000	480	< 1900	J	< 420	J	< 2000	J
Di-n-butylphthalate	<13000	<460	< 1900		< 420		< 2000	
3,3'-Dichlorobenzidine	<26000	<930	< 3800	J	< 840	J	< 4100	J
3,3'-Dimethylbenzidine	<13000	<460	< 9900		< 2200		< 10000	
Diethylphthalate	<13000	<460	< 1900		< 420		< 2000	
p-(Dimethylamino)azobenzene	<13000	<460	< 1900	J	< 420	J	< 2000	J
7,12-Dimethylbenz(a)anthracene	<13000	<460	< 1900	J	< 420	J	< 2000	J
a-a-Dimethylphenethylamine	<65000	<2300	< 9900		< 2200		< 10000	
Dimethylphthalate	<13000	<460	< 1900		< 420		< 2000	
m-Dinitrobenzene	<65000	<2300	< 1900		< 420		< 2000	
2,4-Dinitrotoluene	<13000	<460	< 1900		< 420		< 2000	
2,6-Dinitrotoluene	<13000	<460	< 1900		< 420		< 2000	
Di-n-octylphthalate	<13000	<460	< 1900	J	< 420	J	< 2000	J
N-Nitroso-di-n-propylamine	<13000	<460	< 1900		< 420		< 2000	
Fluoranthene	<13000	3500	10000		4300		7000	
Fluorene	<13000	1100	2700		1100		< 2000	
Hexachlorobenzene	<13000	<460	< 1900		< 420		< 2000	
Hexachlorobutadiene	<13000	<460	< 1900		< 420		< 2000	
Hexachlorocyclopentadiene	<13000	<460	< 1900		< 420		< 2000	
Hexachloroethane	<13000	<460	< 1900		< 420		< 2000	
Hexachloropropene	<13000	<460	< 1900		< 420		< 2000	
Indeno(1,2,3-cd)pyrene	<13000	1300	3500	J	1200	J	2600	J
Isophorone	<13000	<460	< 1900		< 420		< 2000	
Isosafrole	<13000	<460	< 1900		< 420		< 2000	
Methapyrilene	<130000	<4600	< 19000		< 4200		< 20000	
3-Methylcholanthrene	<13000	<460	< 1900	J	< 420	J	< 2000	J
Methylmethanesulfonate	–	<460	< 1900		< 420		< 2000	
2-Methylnaphthalene	<13000	<460	< 1900		< 420		< 2000	
Naphthalene	<13000	<630	< 1900		< 420		< 2000	
1,4-Naphthoquinone	<13000	<460	< 1900		< 420		< 2000	

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detection li
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis Missouri.

Sample I.D.: / Sample Depth(1): / Sample Date: / Parameter (ug/kg)	QS-2 (4.0-9.0) 2/11/91	QS-4 Cuttings 2/22/91	QP-01S (1-3) 3/9/94	QP-01M (5-7) 3/9/94	QP-01D (9-11) 3/9/94
1-Naphthylamine	<13000	<460	< 1900	< 420	< 2000
2-Naphthylamine	<13000	<460	< 1900	< 420	< 2000
2-Nitroaniline	<65000	<2300	< 9900	< 2200	< 10000
3-Nitroaniline	<65000	<2300	< 9900	< 2200	< 10000
4-Nitroaniline	<65000	<2300	< 9900	< 2200	< 10000
Nitrobenzene	<13000	<460	< 1900	< 420	< 2000
N-Nitrosodi-n-butylamine	<13000	<460	< 1900	< 420	< 2000
N-Nitrosodiethylamine	<26000	<930	< 1900	< 420	< 2000
N-Nitrosodimethylamine	<13000	<460	< 1900	< 420	< 2000
N-Nitrosomethylethylamine	<13000	<460	< 1900	< 420	< 2000
N-Nitrosodiphenylamine/Diphenylami	<13000	<460	< 1900	< 420	< 2000
N-Nitrosomorpholine	<13000	<460	< 1900	< 420	< 2000
N-Nitrosopiperidine	<26000	<930	< 1900	< 420	< 2000
Nitrosopyrrolidine	<52000	<1900	< 1900	< 420	< 2000
5-Nitro-o-toluidine	<13000	<460	< 1900	< 420	< 2000
Pentachlorobenzene	<13000	<460	< 1900	< 420	< 2000
Pentachloronitrobenzene	<130000	<4600	< 1900	< 420	< 2000
Phenacetin	<26000	<930	< 1900	< 420	< 2000
Phenanthrene	<13000	**2900**	**15000**	**4900**	**8800**
2-Picoline	<13000	<460	< 1900	< 420	< 2000
Pronamide	<13000	<460	< 1900	< 420	< 2000
Pyrene	<13000	**6200**	**15000** J	**6600** J	**10000** J
Safrole	<13000	<460	< 1900	< 420	< 2000
1,2,4,5-Tetrachlorobenzene	<13000	<460	< 1900	< 420	< 2000
1,2,4-Trichchlorobenzene	<13000	<460	< 1900	< 420	< 2000
2-Chlorophenol	<13000	<460	–	–	–
Cresol m&p	<13000	<460	–	–	–
o-Cresol	<13000	<460	–	–	–
4-Nitrophenol	<65000	<2300	–	–	–
2,4-Dichlorophenol	<13000	<460	–	–	–
2,6-Dichlorophenol	<13000	<460	–	–	–
2,4-Dimethylphenol	<13000	<460	–	–	–
4,6-Dinitro-2-methylphenol	<65000	<2300	–	–	–
2,4-Dinitrophenol	<65000	<2300	–	–	–
Pentachlorophenol	<65000	<2300	–	–	–
Phenol	<13000	<460	–	–	–
2,4,5-Trichlorophenol	<65000	<2300	–	–	–
2,4,6-Trichlorophenol	<13000	<460	–	–	–
2,3,4,6-Tetrachlorophenol	<13000	<460	–	–	–
2-Nitrophenol	<13000	<460	–	–	–
Diallate	<13000	<460	< 1900	< 420	< 2000
Ethyl methanesulfonate	<26000	<930	< 1900	< 420	< 2000
4-Nitroquinoline 1-oxide	<130000	<4600	< 19000 I	< 4200	< 20000 I
p-Phenylenediamine	<13000	<460	< 9900	< 2200	< 10000
o-Toluidine	<13000	<460	< 1900	< 420	< 2000
0,0,0-Triethyl phosphorothioate	<13000	<460	< 1900	< 420	< 2000
1,3,5-Trinitrobenzene	<65000	<2300	< 1900	< 420	< 2000
4-Chloro-3-methylphenol	<13000	<460	–	–	–
Dibenzofuran	<13000	**470**	< 1900	**570**	< 2000
1,4-Dioxane	<13000	<460	< 1900	< 420	< 2000
Pyridine	<13000	<460	< 1900	< 420	< 2000
Bis(2-chloroisopropyl)ether	–	–	< 1900	< 420	< 2000
Total SVOCs	0	27420	79300	31900	50300

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detection li
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	QP-02S		QP-02M		QP-02D		QP-03S		QP-03M	
Sample Depth(1):	(1-3)		(5-7)		(9-11)		(1-3)		(5-7)	
Sample Date:	3/9/94		3/9/94		3/9/94		3/9/94		3/9/94	
Parameter (ug/kg)										
Acenaphthene	< 370		< 390		< 750		**1000**		< 400	
Acenaphthylene	< 370		< 390		< 750		< 370		< 400	
Acetophenone	< 370		< 390		< 750		< 370		< 400	
2-Acetylaminofluorene	< 370		< 390		< 750		< 370		< 400	
4-Aminobiphenyl	< 370		< 390		< 750		< 370		< 400	
Anthracene	< 370		< 390		**5000**		**1700**		< 400	
Aniline	< 370		< 390		< 750		< 370		< 400	
Benzo(a)anthracene	**520**	J	< 390	J	**2200**	J	**1500**	J	< 400	J
Benzo(k)fluoranthene	< 370	J	< 390	J	< 750	J	**610**	J	< 400	J
Benzo(b)fluoranthene	**750**	J	**400**	J	**2500**	J	**1500**	J	**410**	J
Benzo(g,h,i)perylene	< 370	J	< 390	J	**1400**	J	**750**	J	< 400	J
Benzo(a)pyrene	**570**	J	< 390	J	**2200**	J	**1300**	J	< 400	J
Benzyl alcohol	< 370		< 390		< 750		< 370		< 400	
bis(2-Chloroethoxy)methane	< 370		< 390		< 750		< 370		< 400	
bis(2-Chloroethyl)ether	< 370		< 390		< 750		< 370		< 400	
bis(2-Ethylhexyl)phthalate	< 370	J	< 390	J	< 750	J	< 370	J	< 400	J
4-Bromophenyl-phenyl-ether	< 370		< 390		< 750		< 370		< 400	
Butylbenzylphthalate	< 370	J	< 390	J	< 750	J	< 370	J	< 400	J
(Dinoseb)2-sec-butyl-4,6-dinitropheno	< 370		< 390		< 750		< 370		< 400	
p-Chloroaniline	< 750		< 780		< 1500		< 750		< 800	
1,3-Dichlorobenzene	< 370		< 390		< 750		< 370		< 400	
1,4-Dichlorobenzene	< 370		< 390		< 750		< 370		< 400	
1,2-Dichlorobenzene	< 370		< 390		< 750		< 370		< 400	
4-Chlorophenyl-phenylether	< 370		< 390		< 750		< 370		< 400	
2-Chloronaphthalene	< 370		< 390		< 750		< 370		< 400	
Chrysene	**540**	J	< 390	J	**2200**	J	**1100**	J	< 400	J
Dibenz(a,h)anthracene	< 370	J	< 390	J	< 750	J	< 370	J	< 400	J
Di-n-butylphthalate	< 370		< 390		< 750		< 370		< 400	
3,3'-Dichlorobenzidine	< 750	J	< 780	J	< 1500	J	< 750	J	< 800	J
3,3'-Dimethylbenzidine	< 1900		< 2000		< 3900		< 1900		< 2000	
Diethylphthalate	< 370		< 390		< 750		< 370		< 400	
p-(Dimethylamino)azobenzene	< 370	J	< 390	J	< 750	J	< 370	J	< 400	J
7,12-Dimethylbenz(a)anthracene	< 370	J	< 390	J	< 750	J	< 370	J	< 400	J
a-a-Dimethylphenethylamine	< 1900		< 2000		< 3900		< 1900		< 2000	
Dimethylphthalate	< 370		< 390		< 750		< 370		< 400	
m-Dinitrobenzene	< 370		< 390		< 750		< 370		< 400	
2,4-Dinitrotoluene	< 370		< 390		< 750		< 370		< 400	
2,6-Dinitrotoluene	< 370		< 390		< 750		< 370		< 400	
Di-n-octylphthalate	< 370	J	< 390	J	< 750	J	< 370	J	< 400	J
N-Nitroso-di-n-propylamine	< 370		< 390		< 750		< 370		< 400	
Fluoranthene	**810**		**640**		**3300**		**2300**		**680**	
Fluorene	< 370		< 390		**890**		**1400**		< 400	
Hexachlorobenzene	< 370		< 390		< 750		< 370		< 400	
Hexachlorobutadiene	< 370		< 390		< 750		< 370		< 400	
Hexachlorocyclopentadiene	< 370		< 390		< 750		< 370		< 400	
Hexachloroethane	< 370		< 390		< 750		< 370		< 400	
Hexachloropropene	< 370		< 390		< 750		< 370		< 400	
Indeno(1,2,3-cd)pyrene	< 370	J	< 390	J	**1200**	J	**780**	J	< 400	J
Isophorone	< 370		< 390		< 750		< 370		< 400	
Isosafrole	< 370		< 390		< 750		< 370		< 400	
Methapyrilene	< 3700		< 3900		< 7500		< 3700		< 4000	
3-Methylcholanthrene	< 370	J	< 390	J	< 750	J	< 370	J	< 400	J
Methylmethanesulfonate	< 370		< 390		< 750		< 370		< 400	
2-Methylnaphthalene	< 370		< 390		< 750		< 370		< 400	
Naphthalene	< 370		< 390		< 750		< 370		< 400	
1,4-Naphthoquinone	< 370		< 390		< 750		< 370		< 400	

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detection limits.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	QP-02S	QP-02M	QP-02D	QP-03S	QP-03M
Sample Depth(1):	(1-3)	(5-7)	(9-11)	(1-3)	(5-7)
Sample Date:	3/9/94	3/9/94	3/9/94	3/9/94	3/9/94
Parameter (ug/kg)					
1-Naphthylamine	< 370	< 390	< 750	< 370	< 400
2-Naphthylamine	< 370	< 390	< 750	< 370	< 400
2-Nitroaniline	< 1900	< 2000	< 3900	< 1900	< 2000
3-Nitroaniline	< 1900	< 2000	< 3900	< 1900	< 2000
4-Nitroaniline	< 1900	< 2000	< 3900	< 1900	< 2000
Nitrobenzene	< 370	< 390	< 750	< 370	< 400
N-Nitrosodi-n-butylamine	< 370	< 390	< 750	< 370	< 400
N-Nitrosodiethylamine	< 370	< 390	< 750	< 370	< 400
N-Nitrosodimethylamine	< 370	< 390	< 750	< 370	< 400
N-Nitrosomethylethylamine	< 370	< 390	< 750	< 370	< 400
N-Nitrosodiphenylamine/Diphenylami	< 370	< 390	< 750	< 370	< 400
N-Nitrosomorpholine	< 370	< 390	< 750	< 370	< 400
N-Nitrosopiperidine	< 370	< 390	< 750	< 370	< 400
Nitrosopyrrolidine	< 370	< 390	< 750	< 370	< 400
5-Nitro-o-toluidine	< 370	< 390	< 750	< 370	< 400
Pentachlorobenzene	< 370	< 390	< 750	< 370	< 400
Pentachloronitrobenzene	< 370	< 390	< 750	< 370	< 400
Phenacetin	< 370	< 390	< 750	< 370	< 400
Phenanthrene	**1000**	**840**	**5000**	**3700**	**870**
2-Picoline	< 370	< 390	< 750	< 370	< 400
Pronamide	< 370	< 390	< 750	< 370	< 400
Pyrene	**2200 J**	**1200 J**	**6600 J**	**4600 J**	**1200 J**
Safrole	< 370	< 390	< 750	< 370	< 400
1,2,4,5-Tetrachlorobenzene	< 370	< 390	< 750	< 370	< 400
1,2,4-Trichchlorobenzene	< 370	< 390	< 750	< 370	< 400
2-Chlorophenol	--	--	--	--	--
Cresol m&p	--	--	--	--	--
o-Cresol	--	--	--	--	--
4-Nitrophenol	--	--	--	--	--
2,4-Dichlorophenol	--	--	--	--	--
2,6-Dichlorophenol	--	--	--	--	--
2,4-Dimethylphenol	--	--	--	--	--
4,6-Dinitro-2-methylphenol	--	--	--	--	--
2,4-Dinitrophenol	--	--	--	--	--
Pentachlorophenol	--	--	--	--	--
Phenol	--	--	--	--	--
2,4,5-Trichlorophenol	--	--	--	--	--
2,4,6-Trichlorophenol	--	--	--	--	--
2,3,4,6-Tetrachlorophenol	--	--	--	--	--
2-Nitrophenol	--	--	--	--	--
Diallate	< 370	< 390	< 750	< 370	< 400
Ethyl methanesulfonate	< 370	< 390	< 750	< 370	< 400
4-Nitroquinoline 1-oxide	< 3700 I	< 3900 I	< 7500 I	< 3700 I	< 4000 I
p-Phenylenediamine	< 1900	< 2000	< 3900	< 1900	< 2000
o-Toluidine	< 370	< 390	< 750	< 370	< 400
0,0,0-Triethyl phosphorothioate	< 370	< 390	< 750	< 370	< 400
1,3,5-Trinitrobenzene	< 370	< 390	< 750	< 370	< 400
4-Chloro-3-methylphenol	--	--	--	--	--
Dibenzofuran	< 370	< 390	< 750	**710**	< 400
1,4-Dioxane	< 370	< 390	< 750	< 370	< 400
Pyridine	< 370	< 390	< 750	< 370	< 400
Bis(2-chloroisopropyl)ether	< 370	< 390	< 750	< 370	< 400
Total SVOCs	6390	3080	32490	22950	3160

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detection limits.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
-- Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	QP-03D		QP-04S		QP-04M		QP-04D		VS-1
Sample Depth(1):	(9-11)		(1-3)		(5-7)		(9-11)		(10.5-12.5)
Sample Date:	3/9/94		3/9/94		3/9/94		3/9/94		3/6/91
Parameter (ug/kg)									
Acenaphthene	< 410		**550**		< 410		< 420		<15000
Acenaphthylene	< 410		< 390		< 410		< 420		<15000
Acetophenone	< 410		< 390		< 410		< 420		<15000
2-Acetylaminofluorene	< 410		< 390		< 410		< 420		<31000
4-Aminobiphenyl	< 410		< 390		< 410		< 420		<31000
Anthracene	< 410		**760**		< 410		< 420		<15000
Aniline	< 410		< 390		< 410		< 420		<15000
Benzo(a)anthracene	< 410	J	**1100**	J	**480**	J	**520**		<15000
Benzo(k)fluoranthene	< 410	J	**620**	J	< 410	J	< 420	J	<15000
Benzo(b)fluoranthene	< 410	J	**1400**	J	**600**	J	**730**	J	<15000
Benzo(g,h,i)perylene	< 410	J	**840**	J	< 410	J	< 420	J	<15000
Benzo(a)pyrene	< 410	J	**1000**	J	**480**	J	**580**	J	<15000
Benzyl alcohol	< 410		< 390		< 410		< 420		<15000
bis(2-Chloroethoxy)methane	< 410		< 390		< 410		< 420		<15000
bis(2-Chloroethyl)ether	< 410		< 390		< 410		< 420		<15000
bis(2-Ethylhexyl)phthalate	< 410	J	**690**	J	< 410	J	< 420		<15000
4-Bromophenyl-phenyl-ether	< 410		< 390		< 410		< 420		<15000
Butylbenzylphthalate	< 410	J	< 390	J	< 410	J	< 420		<15000
(Dinoseb)2-sec-butyl-4,6-dinitropheno	< 410		< 390		< 410		< 420		<77000
p-Chloroaniline	< 810		**2200**		< 820		< 840		<31000
1,3-Dichlorobenzene	< 410		< 390		< 410		< 420		<15000
1,4-Dichlorobenzene	< 410		< 390		< 410		< 420		<15000
1,2-Dichlorobenzene	< 410		< 390		< 410		< 420		<15000
4-Chlorophenyl-phenylether	< 410		< 390		< 410		< 420		<15000
2-Chloronaphthalene	< 410		< 390		< 410		< 420		<15000
Chrysene	< 410	J	**940**	J	**440**	J	**460**		<15000
Dibenz(a,h)anthracene	< 410	J	< 390	J	< 410	J	< 420	J	<15000
Di-n-butylphthalate	< 410		< 390		< 410		< 420		<15000
3,3'-Dichlorobenzidine	< 810	J	< 780	J	< 820	J	< 840		<31000
3,3'-Dimethylbenzidine	< 2100		< 2000		< 2100		< 2200		<15000
Diethylphthalate	< 410		< 390		< 410		< 420		<15000
p-(Dimethylamino)azobenzene	< 410	J	< 390	J	< 410	J	< 420		<15000
7,12-Dimethylbenz(a)anthracene	< 410	J	< 390	J	< 410	J	< 420	J	<15000
a-a-Dimethylphenethylamine	< 2100		< 2000		< 2100		< 2200		<77000
Dimethylphthalate	< 410		< 390		< 410		< 420		<15000
m-Dinitrobenzene	< 410		< 390		< 410		< 420		<15000
2,4-Dinitrotoluene	< 410		< 390		< 410		< 420		<15000
2,6-Dinitrotoluene	< 410		< 390		< 410		< 420		<15000
Di-n-octylphthalate	< 410	J	< 390	J	< 410	J	< 420	J	<15000
N-Nitroso-di-n-propylamine	< 410		< 390		< 410		< 420		<15000
Fluoranthene	< 410		**2000**		**870**		**1300**		**24000**
Fluorene	< 410		**1200**		< 410		< 420		<15000
Hexachlorobenzene	< 410		< 390		< 410		< 420		<15000
Hexachlorobutadiene	< 410		< 390		< 410		< 420		<15000
Hexachlorocyclopentadiene	< 410		< 390		< 410		< 420		<15000
Hexachloroethane	< 410		< 390		< 410		< 420		<15000
Hexachloropropene	< 410		< 390		< 410		< 420		<15000
Indeno(1,2,3-cd)pyrene	< 410	J	**800**	J	< 410	J	< 420	J	<15000
Isophorone	< 410		< 390		< 410		< 420		<15000
Isosafrole	< 410		< 390		< 410		< 420		<15000
Methapyrilene	< 4100		< 3900		< 4100		< 4200		<150000
3-Methylcholanthrene	< 410	J	< 390	J	< 410	J	< 420	J	<15000
Methylmethanesulfonate	< 410		< 390		< 410		< 420		<15000
2-Methylnaphthalene	< 410		**490**		< 410		< 420		**41000**
Naphthalene	< 410		**650**		< 410		< 420		<40000
1,4-Naphthoquinone	< 410		< 390		< 410		< 420		<15000

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detection limits.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	QP-03D	QP-04S	QP-04M	QP-04D	VS-1
Sample Depth(1):	(9-11)	(1-3)	(5-7)	(9-11)	(10.5-12.5)
Sample Date:	3/9/94	3/9/94	3/9/94	3/9/94	3/6/91
Parameter (ug/kg)					
1-Naphthylamine	< 410	< 390	< 410	< 420	<15000
2-Naphthylamine	< 410	< 390	< 410	< 420	<15000
2-Nitroaniline	< 2100	< 2000	< 2100	< 2200	<77000
3-Nitroaniline	< 2100	< 2000	< 2100	< 2200	<77000
4-Nitroaniline	< 2100	< 2000	< 2100	< 2200	<77000
Nitrobenzene	< 410	< 390	< 410	< 420	<15000
N-Nitrosodi-n-butylamine	< 410	< 390	< 410	< 420	<15000
N-Nitrosodiethylamine	< 410	< 390	< 410	< 420	<31000
N-Nitrosodimethylamine	< 410	< 390	< 410	< 420	<15000
N-Nitrosomethylethylamine	< 410	< 390	< 410	< 420	<15000
N-Nitrosodiphenylamine/Diphenylami	< 410	< 390	< 410	< 420	<15000
N-Nitrosomorpholine	< 410	< 390	< 410	< 420	<15000
N-Nitrosopiperidine	< 410	< 390	< 410	< 420	<31000
Nitrosopyrrolidine	< 410	< 390	< 410	< 420	<62000
5-Nitro-o-toluidine	< 410	< 390	< 410	< 420	<15000
Pentachlorobenzene	< 410	< 390	< 410	< 420	<15000
Pentachloronitrobenzene	< 410	< 390	< 410	< 420	<150000
Phenacetin	< 410	< 390	< 410	< 420	<31000
Phenanthrene	**450**	**3100**	**1200**	**860**	<15000
2-Picoline	< 410	< 390	< 410	< 420	<15000
Pronamide	< 410	< 390	< 410	< 420	<15000
Pyrene	**710** J	**4100** J	**1500** J	**1700**	<15000
Safrole	< 410	< 390	< 410	< 420	<15000
1,2,4,5-Tetrachlorobenzene	< 410	< 390	< 410	< 420	<15000
1,2,4-Trichchlorobenzene	< 410	< 390	< 410	< 420	<15000
2-Chlorophenol	–	–	–	–	<15000
Cresol m&p	–	–	–	–	<15000
o-Cresol	–	–	–	–	<15000
4-Nitrophenol	–	–	–	–	<77000
2,4-Dichlorophenol	–	–	–	–	<15000
2,6-Dichlorophenol	–	–	–	–	<15000
2,4-Dimethylphenol	–	–	–	–	<15000
4,6-Dinitro-2-methylphenol	–	–	–	–	<77000
2,4-Dinitrophenol	–	–	–	–	<77000
Pentachlorophenol	–	–	–	–	<77000
Phenol	–	–	–	–	<15000
2,4,5-Trichlorophenol	–	–	–	–	<77000
2,4,6-Trichlorophenol	–	–	–	–	<15000
2,3,4,6-Tetrachlorophenol	–	–	–	–	<15000
2-Nitrophenol	–	–	–	–	<15000
Diallate	< 410	< 390	< 410	< 420	<15000
Ethyl methanesulfonate	< 410	< 390	< 410	< 420	<31000
4-Nitroquinoline 1-oxide	< 4100 I	< 3900 I	< 4100 I	< 4200	<150000 I
p-Phenylenediamine	< 2100	< 2000	< 2100	< 2200	<15000
o-Toluidine	< 410	< 390	< 410	< 420	<15000
0,0,0-Triethyl phosphorothioate	< 410	< 390	< 410	< 420	<15000
1,3,5-Trinitrobenzene	< 410	< 390	< 410	< 420	<77000
4-Chloro-3-methylphenol	–	–	–	–	<15000
Dibenzofuran	< 410	< 390	< 410	< 420	<15000
1,4-Dioxane	< 410	< 390	< 410	< 420	<15000
Pyridine	< 410	< 390	< 410	< 420	<15000
Bis(2-chloroisopropyl)ether	< 410	< 390	< 410	< 420	–
Total SVOCs	1160	22440	5570	6150	65000

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detection limits.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	VS-2	VS-3	VS-4	VS-05S	VS-05M
Sample Depth(1):	(7.0-9.0)	(9.0-11.0)	(9.0-11.0)	(0-2)	(2-4)
Sample Date:	3/7/91	3/7/91	3/8/91	3/8/94	3/8/94
Parameter (ug/kg)					
Acenaphthene	<12000	<13000	<12000	**1600**	< 480
Acenaphthylene	<12000	<13000	<12000	< 820	< 480
Acetophenone	<12000	<13000	<12000	< 820	< 480
2-Acetylaminofluorene	<24000	<25000	<24000	< 820	< 480
4-Aminobiphenyl	<24000	<25000	<24000	< 820	< 480
Anthracene	<12000	<13000	<12000	**3500**	**820**
Aniline	<12000	<13000	<12000	< 820	< 480
Benzo(a)anthracene	<12000	<13000	<12000	**6100** J	**2000**
Benzo(k)fluoranthene	<12000	<13000	<12000	**2300**	**730**
Benzo(b)fluoranthene	<12000	<13000	<12000	**4600**	**2000**
Benzo(g,h,i)perylene	<12000	<13000	<12000	**1500**	**580**
Benzo(a)pyrene	<12000	<13000	<12000	**4000**	**1600**
Benzyl alcohol	<12000	<13000	<12000	< 820	< 480
bis(2-Chloroethoxy)methane	<12000	<13000	<12000	< 820	< 480
bis(2-Chloroethyl)ether	<12000	<13000	<12000	< 820	< 480
bis(2-Ethylhexyl)phthalate	<12000	<13000	<12000	< 820	< 480
4-Bromophenyl-phenyl-ether	<12000	<13000	<12000	< 820	< 480
Butylbenzylphthalate	<12000	<13000	<12000	< 820	< 480
(Dinoseb)2-sec-butyl-4,6-dinitropheno	<60000	<64000	<64000	< 820	< 480
p-Chloroaniline	<24000	<25000	<24000	< 1600	< 960
1,3-Dichlorobenzene	<12000	<13000	<12000	< 820	< 480
1,4-Dichlorobenzene	<12000	<13000	<12000	< 820	< 480
1,2-Dichlorobenzene	<12000	<13000	<12000	< 820	< 480
4-Chlorophenyl-phenylether	<12000	<13000	<12000	< 820	< 480
2-Chloronaphthalene	<12000	<13000	<12000	< 820	< 480
Chrysene	<12000	<13000	<12000	**4300**	**1700**
Dibenz(a,h)anthracene	<12000	<13000	<12000	< 820	< 480
Di-n-butylphthalate	<12000	<13000	<12000	< 820	< 480
3,3'-Dichlorobenzidine	<24000	<25000	<24000	< 1600	< 960
3,3'-Dimethylbenzidine	<12000	<13000	<12000	< 4200	< 2500
Diethylphthalate	<12000	<13000	<12000	< 820	< 480
p-(Dimethylamino)azobenzene	<12000	<13000	<12000	< 820	< 480
7,12-Dimethylbenz(a)anthracene	<12000	<13000	<12000	< 820	< 480
a-a-Dimethylphenethylamine	<60000	<64000	<60000	< 4200	< 2500
Dimethylphthalate	<12000	<13000	<12000	< 820	< 480
m-Dinitrobenzene	<60000	<64000	<60000	< 820	< 480
2,4-Dinitrotoluene	<12000	<13000	<12000	< 820	< 480
2,6-Dinitrotoluene	<12000	<13000	<12000	< 820	< 480
Di-n-octylphthalate	<12000	<13000	<12000	< 820	< 480
N-Nitroso-di-n-propylamine	<12000	<13000	<12000	< 820	< 480
Fluoranthene	**15000**	<13000	<12000	**8300**	**3000**
Fluorene	<12000	<13000	<12000	**1600**	< 480
Hexachlorobenzene	<12000	<13000	<12000	< 820	< 480
Hexachlorobutadiene	<12000	<13000	<12000	< 820	< 480
Hexachlorocyclopentadiene	<12000	<13000	<12000	< 820	< 480
Hexachloroethane	<12000	<13000	<12000	< 820	< 480
Hexachloropropene	<12000	<13000	<12000	< 820	< 480
Indeno(1,2,3-cd)pyrene	<12000	<13000	<12000	**1500**	**640**
Isophorone	<12000	<13000	<12000	< 820	< 480
Isosafrole	<12000	<13000	<12000	< 820	< 480
Methapyrilene	<120000	<130000	<120000	< 8200	< 4800
3-Methylcholanthrene	<12000	<13000	<12000	< 820	< 480
Methylmethanesulfonate	<12000	<13000	<12000	< 820	< 480
2-Methylnaphthalene	<12000	<13000	<12000	< 820	< 480
Naphthalene	<12000	<13000	<12000	< 820	< 480
1,4-Naphthoquinone	<12000	<13000	<12000	< 820	< 480

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detection limi
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.: / Sample Depth(1): / Sample Date: / Parameter (ug/kg)	VS-2 (7.0-9.0) 3/7/91	VS-3 (9.0-11.0) 3/7/91	VS-4 (9.0-11.0) 3/8/91	VS-05S (0-2) 3/8/94	VS-05M (2-4) 3/8/94
1-Naphthylamine	<12000	<13000	<12000	< 820	< 480
2-Naphthylamine	<12000	<13000	<12000	< 820	< 480
2-Nitroaniline	<60000	<64000	<60000	< 4200	< 2500
3-Nitroaniline	<60000	<64000	<60000	< 4200	< 2500
4-Nitroaniline	<60000	<64000	<60000	< 4200	< 2500
Nitrobenzene	<12000	<13000	<12000	< 820	< 480
N-Nitrosodi-n-butylamine	<12000	<13000	<12000	< 820	< 480
N-Nitrosodiethylamine	<24000	<25000	<24000	< 820	< 480
N-Nitrosodimethylamine	<12000	<13000	<12000	< 820	< 480
N-Nitrosomethylethylamine	<12000	<13000	<12000	< 820	< 480
N-Nitrosodiphenylamine/Diphenylami	<12000	<13000	<12000	< 820	< 480
N-Nitrosomorpholine	<12000	<13000	<12000	< 820	< 480
N-Nitrosopiperidine	<24000	<25000	<24000	< 820	< 480
Nitrosopyrrolidine	<48000	<51000	<48000	< 820	< 480
5-Nitro-o-toluidine	<12000	<13000	<12000	< 820	< 480
Pentachlorobenzene	<12000	<13000	<12000	< 820	< 480
Pentachloronitrobenzene	<120000	<130000	<120000	< 820	< 480
Phenacetin	<24000	<25000	<24000	< 820	< 480
Phenanthrene	13000	<13000	<12000	**7300**	**2700**
2-Picoline	<12000	<13000	<12000	< 820	< 480
Pronamide	<12000	<13000	<12000	< 820	< 480
Pyrene	**14000**	<13000	<12000	**8600**	**3200**
Safrole	<12000	<13000	<12000	< 820	< 480
1,2,4,5-Tetrachlorobenzene	<12000	<13000	<12000	< 820	< 480
1,2,4-Trichchlorobenzene	<12000	<13000	<12000	< 820	< 480
2-Chlorophenol	<12000	<13000	<12000	--	--
Cresol m&p	<12000	<13000	<12000	--	--
o-Cresol	<12000	<13000	<12000	--	--
4-Nitrophenol	<60000	<64000	<60000	--	--
2,4-Dichlorophenol	<12000	<13000	<12000	--	--
2,6-Dichlorophenol	<12000	<13000	<12000	--	--
2,4-Dimethylphenol	<12000	<13000	<12000	--	--
4,6-Dinitro-2-methylphenol	<60000	<64000	<60000	--	--
2,4-Dinitrophenol	<60000	<64000	<60000	--	--
Pentachlorophenol	<60000	<64000	<60000	--	--
Phenol	<12000	<13000	<12000	--	--
2,4,5-Trichlorophenol	<60000	<64000	<60000	--	--
2,4,6-Trichlorophenol	<12000	<13000	<12000	--	--
2,3,4,6-Tetrachlorophenol	<12000	<13000	<12000	--	--
2-Nitrophenol	<12000	<13000	<12000	--	--
Diallate	<12000	<13000	<12000	< 820	< 480
Ethyl methanesulfonate	<24000	<25000	<24000	< 820	< 480
4-Nitroquinoline 1-oxide	<120000 I	<130000 I	<120000 I	< 8200	< 4800
p-Phenylenediamine	<12000	<13000	<12000	< 4200	< 2500
o-Toluidine	<12000	<13000	<12000	< 820	< 480
0,0,0-Triethyl phosphorothioate	<12000	<13000	<12000	< 820	< 480
1,3,5-Trinitrobenzene	<60000	<64000	<60000	< 820	< 480
4-Chloro-3-methylphenol	<12000	<13000	<12000	--	--
Dibenzofuran	<12000	<13000	<12000	< 820	< 480
1,4-Dioxane	<12000	<13000	<12000	< 820	< 480
Pyridine	<12000	<13000	<12000	< 820	< 480
Bis(2-chloroisopropyl)ether	--	--	--	< 820	< 480
Total SVOCs	29000	0	0	55200	18970

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detection limi
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
-- Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	VS-05D	VS-06S	VS-06D	VS-07S	VS-07M
Sample Depth(1):	(4-6)	(2.5-3.5)	(4-6)	(2-3)	(3-4)
Sample Date:	3/8/94	3/8/94	3/8/94	3/8/94	3/8/94
Parameter (ug/kg)					
Acenaphthene	43000	< 350	< 1900	6400	74000
Acenaphthylene	< 23000	< 350	< 1900	< 5100	< 20000
Acetophenone	< 23000	< 350	< 1900	< 5100	< 20000
2-Acetylaminofluorene	< 23000	< 350	< 1900	< 5100	< 20000
4-Aminobiphenyl	< 23000	< 350	< 1900	< 5100	< 20000
Anthracene	110000	< 350	5100	18000	< 20000
Aniline	< 23000	< 350	< 1900	< 5100	< 20000
Benzo(a)anthracene	150000 J	< 350	9400 J	43000 J	< 20000
Benzo(k)fluoranthene	47000	< 350	3400	15000	< 20000
Benzo(b)fluoranthene	100000	< 350	7000	30000	< 20000
Benzo(g,h,i)perylene	32000	< 350	2200	10000	< 20000
Benzo(a)pyrene	88000	< 350	6000	24000	< 20000
Benzyl alcohol	< 23000	< 350	< 1900	< 5100	< 20000
bis(2-Chloroethoxy)methane	< 23000	< 350	< 1900	< 5100	< 20000
bis(2-Chloroethyl)ether	< 23000	< 350	< 1900	< 5100	< 20000
bis(2-Ethylhexyl)phthalate	< 23000	< 350	< 1900	< 5100	< 20000
4-Bromophenyl-phenyl-ether	< 23000	< 350	< 1900	< 5100	< 20000
Butylbenzylphthalate	< 23000	< 350	< 1900	< 5100	< 20000
(Dinoseb)2-sec-butyl-4,6-dinitropheno	< 23000	< 350	< 1900	< 5100	< 20000
p-Chloroaniline	< 46000	< 710	< 3800	< 10000	< 41000
1,3-Dichlorobenzene	< 23000	< 350	< 1900	< 5100	< 20000
1,4-Dichlorobenzene	< 23000	< 350	< 1900	< 5100	< 20000
1,2-Dichlorobenzene	< 23000	< 350	< 1900	< 5100	< 20000
4-Chlorophenyl-phenylether	< 23000	< 350	< 1900	< 5100	< 20000
2-Chloronaphthalene	< 23000	< 350	< 1900	< 5100	< 20000
Chrysene	110000	< 350	7000	34000	< 20000
Dibenz(a,h)anthracene	< 23000	< 350	< 1900	< 5100	< 20000
Di-n-butylphthalate	< 23000	< 350	< 1900	< 5100	< 20000
3,3'-Dichlorobenzidine	< 46000	< 710	< 3800	< 10000	< 41000
3,3'-Dimethylbenzidine	< 120000	< 1800	< 9900	< 26000	< 100000
Diethylphthalate	< 23000	< 350	< 1900	< 5100	< 20000
p-(Dimethylamino)azobenzene	< 23000	< 350	< 1900	< 5100	< 20000
7,12-Dimethylbenz(a)anthracene	< 23000	< 350	< 1900	< 5100	< 20000
a-a-Dimethylphenethylamine	< 120000	< 1800	< 9900	< 26000	< 100000
Dimethylphthalate	< 23000	< 350	< 1900	< 5100	< 20000
m-Dinitrobenzene	< 23000	< 350	< 1900	< 5100	< 20000
2,4-Dinitrotoluene	< 23000	< 350	< 1900	< 5100	< 20000
2,6-Dinitrotoluene	< 23000	< 350	< 1900	< 5100	< 20000
Di-n-octylphthalate	< 23000	< 350	< 1900	< 5100	< 20000
N-Nitroso-di-n-propylamine	< 23000	< 350	< 1900	< 5100	< 20000
Fluoranthene	230000	< 350	14000	58000	21000
Fluorene	63000	< 350	2400	8400	50000
Hexachlorobenzene	< 23000	< 350	< 1900	< 5100	< 20000
Hexachlorobutadiene	< 23000	< 350	< 1900	< 5100	< 20000
Hexachlorocyclopentadiene	< 23000	< 350	< 1900	< 5100	< 20000
Hexachloroethane	< 23000	< 350	< 1900	< 5100	< 20000
Hexachloropropene	< 23000	< 350	< 1900	< 5100	< 20000
Indeno(1,2,3-cd)pyrene	35000	< 350	2300	10000	< 20000
Isophorone	< 23000	< 350	< 1900	< 5100	< 20000
Isosafrole	< 23000	< 350	< 1900	< 5100	< 20000
Methapyrilene	< 230000	< 3500	< 19000	< 51000	< 200000
3-Methylcholanthrene	< 23000	< 350	< 19000	< 5100	< 20000
Methylmethanesulfonate	< 23000	< 350	< 1900	< 5100	< 20000
2-Methylnaphthalene	< 23000	< 350	< 1900	< 5100	75000
Naphthalene	43000	< 350	< 1900	< 5100	250000
1,4-Naphthoquinone	< 23000	< 350	< 1900	< 5100	< 20000

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detection limits.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
-- Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	VS-05D	VS-06S	VS-06D	VS-07S	VS-07M
Sample Depth(1):	(4-6)	(2.5-3.5)	(4-6)	(2-3)	(3-4)
Sample Date:	3/8/94	3/8/94	3/8/94	3/8/94	3/8/94
Parameter (ug/kg)					
1-Naphthylamine	< 23000	< 350	< 1900	< 5100	< 20000
2-Naphthylamine	< 23000	< 350	< 1900	< 5100	< 20000
2-Nitroaniline	< 120000	< 1800	< 9900	< 26000	< 100000
3-Nitroaniline	< 120000	< 1800	< 9900	< 26000	< 100000
4-Nitroaniline	< 120000	< 1800	< 9900	< 26000	< 100000
Nitrobenzene	< 23000	< 350	< 1900	< 5100	< 20000
N-Nitrosodi-n-butylamine	< 23000	< 350	< 1900	< 5100	< 20000
N-Nitrosodiethylamine	< 23000	< 350	< 1900	< 5100	< 20000
N-Nitrosodimethylamine	< 23000	< 350	< 1900	< 5100	< 20000
N-Nitrosomethylethylamine	< 23000	< 350	< 1900	< 5100	< 20000
N-Nitrosodiphenylamine/Diphenylami	< 23000	< 350	< 1900	< 5100	< 20000
N-Nitrosomorpholine	< 23000	< 350	< 1900	< 5100	< 20000
N-Nitrosopiperidine	< 23000	< 350	< 1900	< 5100	< 20000
Nitrosopyrrolidine	< 23000	< 350	< 1900	< 5100	< 20000
5-Nitro-o-toluidine	< 23000	< 350	< 1900	< 5100	< 20000
Pentachlorobenzene	< 23000	< 350	< 1900	< 5100	< 20000
Pentachloronitrobenzene	< 23000	< 350	< 1900	< 5100	< 20000
Phenacetin	< 23000	< 350	< 1900	< 5100	< 20000
Phenanthrene	**240000**	< 350	**12000**	**53000**	**71000**
2-Picoline	< 23000	< 350	< 1900	< 5100	< 20000
Pronamide	< 23000	< 350	< 1900	< 5100	< 20000
Pyrene	**230000**	< 350	**14000**	**64000**	< 20000
Safrole	< 23000	< 350	< 1900	< 5100	< 20000
1,2,4,5-Tetrachlorobenzene	< 23000	< 350	< 1900	< 5100	< 20000
1,2,4-Trichchlorobenzene	< 23000	**900**	< 1900	< 5100	< 20000
2-Chlorophenol	–	–	–	–	–
Cresol m&p	–	–	–	–	–
o-Cresol	–	–	–	–	–
4-Nitrophenol	–	–	–	–	–
2,4-Dichlorophenol	–	–	–	–	–
2,6-Dichlorophenol	–	–	–	–	–
2,4-Dimethylphenol	–	–	–	–	–
4,6-Dinitro-2-methylphenol	–	–	–	–	–
2,4-Dinitrophenol	–	–	–	–	–
Pentachlorophenol	–	–	–	–	–
Phenol	–	–	–	–	–
2,4,5-Trichlorophenol	–	–	–	–	–
2,4,6-Trichlorophenol	–	–	–	–	–
2,3,4,6-Tetrachlorophenol	–	–	–	–	–
2-Nitrophenol	–	–	–	–	–
Diallate	< 23000	< 350	< 1900	< 5100	< 20000
Ethyl methanesulfonate	< 23000	< 350	< 1900	< 5100	< 20000
4-Nitroquinoline 1-oxide	< 230000	< 3500	< 19000	< 51000	< 200000
p-Phenylenediamine	< 120000	< 1800	< 9900	< 26000	< 100000
o-Toluidine	< 23000	< 350	< 1900	< 5100	< 20000
0,0,0-Triethyl phosphorothioate	< 23000	< 350	< 1900	< 5100	< 20000
1,3,5-Trinitrobenzene	< 23000	< 350	< 1900	< 5100	< 20000
4-Chloro-3-methylphenol	–	–	–	–	–
Dibenzofuran	**43000**	< 350	< 1900	< 5100	**74000**
1,4-Dioxane	< 23000	< 350	< 1900	< 5100	< 20000
Pyridine	< 23000	< 350	< 1900	< 5100	< 20000
Bis(2-chloroisopropyl)ether	< 23000	< 350	< 1900	< 5100	< 20000
Total SVOCs	2E+06	900	84800	373800	61500

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detection limits.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	VS-07D		VS-08S	VS-08D	VS-09S	VS-09M
Sample Depth(1):	(4-7)		(2-3)	(7-8)	(3-4)	(4-5)
Sample Date:	3/8/94		3/8/94	3/8/94	3/8/94	3/8/94
Parameter (ug/kg)						
Acenaphthene	< 430		< 510	< 8900	< 3900	< 9300
Acenaphthylene	< 430		< 510	< 8900	< 3900	< 9300
Acetophenone	< 430		< 510	< 8900	< 3900	< 9300
2-Acetylaminofluorene	< 430		< 510	< 8900	< 3900	< 9300
4-Aminobiphenyl	< 430		< 510	< 8900	< 3900	< 9300
Anthracene	**580**		**1700**	< 8900	< 3900	< 9300
Aniline	< 430		< 510	< 8900	< 3900	< 9300
Benzo(a)anthracene	**2200**	J	**3200**	< 8900	< 3900	< 9300
Benzo(k)fluoranthene	**800**		**1300**	< 8900	< 3900	< 9300
Benzo(b)fluoranthene	**1800**		**4100**	< 8900	< 3900	< 9300
Benzo(g,h,i)perylene	**590**	J	**1400**	< 8900	< 3900	< 9300
Benzo(a)pyrene	**1400**		**3100**	< 8900	< 3900	< 9300
Benzyl alcohol	< 430		< 510	< 8900	< 3900	< 9300
bis(2-Chloroethoxy)methane	< 430		< 510	< 8900	< 3900	< 9300
bis(2-Chloroethyl)ether	< 430		< 510	< 8900	< 3900	< 9300
bis(2-Ethylhexyl)phthalate	< 430		< 510	< 8900	< 3900	< 9300
4-Bromophenyl-phenyl-ether	< 430		< 510	< 8900	< 3900	< 9300
Butylbenzylphthalate	< 430		< 510	< 8900	< 3900	< 9300
(Dinoseb)2-sec-butyl-4,6-dinitropheno	< 430		< 510	< 8900	< 3900	< 9300
p-Chloroaniline	< 860		< 1000	< 18000	< 7800	< 18000
1,3-Dichlorobenzene	< 430		< 510	< 8900	< 3900	< 9300
1,4-Dichlorobenzene	< 430		< 510	< 8900	< 3900	< 9300
1,2-Dichlorobenzene	< 430		< 510	< 8900	< 3900	< 9300
4-Chlorophenyl-phenylether	< 430		< 510	< 8900	< 3900	< 9300
2-Chloronaphthalene	< 430		< 510	< 8900	< 3900	< 9300
Chrysene	**1600**		**2700**	< 8900	< 3900	< 9300
Dibenz(a,h)anthracene	< 430		< 510	< 8900	< 3900	< 9300
Di-n-butylphthalate	< 430		< 510	< 8900	< 3900	< 9300
3,3'-Dichlorobenzidine	< 860		< 1000	< 18000	< 7800	< 18000
3,3'-Dimethylbenzidine	< 2200		< 2600	< 46000	< 20000	< 48000
Diethylphthalate	< 430		< 510	< 8900	< 3900	< 9300
p-(Dimethylamino)azobenzene	< 430		< 510	< 8900	< 3900	< 9300
7,12-Dimethylbenz(a)anthracene	< 430		< 510	< 8900	< 3900	< 9300
a-a-Dimethylphenethylamine	< 2200		< 2600	< 46000	< 20000	< 48000
Dimethylphthalate	< 430		< 510	< 8900	< 3900	< 9300
m-Dinitrobenzene	< 430		< 510	< 8900	< 3900	< 9300
2,4-Dinitrotoluene	< 430		< 510	< 8900	< 3900	< 9300
2,6-Dinitrotoluene	< 430		< 510	< 8900	< 3900	< 9300
Di-n-octylphthalate	< 430		< 510	< 8900	< 3900	< 9300
N-Nitroso-di-n-propylamine	< 430		< 510	< 8900	< 3900	< 9300
Fluoranthene	**2900**		**6900**	< 8900	< 3900	< 9300
Fluorene	< 430		**620**	< 8900	< 3900	< 9300
Hexachlorobenzene	< 430		< 510	< 8900	< 3900	< 9300
Hexachlorobutadiene	< 430		< 510	< 8900	< 3900	< 9300
Hexachlorocyclopentadiene	< 430		< 510	< 8900	< 3900	< 9300
Hexachloroethane	< 430		< 510	< 8900	< 3900	< 9300
Hexachloropropene	< 430		< 510	< 8900	< 3900	< 9300
Indeno(1,2,3-cd)pyrene	**620**	J	**1500**	< 8900	< 3900	< 9300
Isophorone	< 430		< 510	< 8900	< 3900	< 9300
Isosafrole	< 430		< 510	< 8900	< 3900	< 9300
Methapyrilene	< 4300		< 5100	< 89000	< 39000	< 93000
3-Methylcholanthrene	< 430		< 510	< 8900	< 3900	< 9300
Methylmethanesulfonate	< 430		< 510	< 8900	< 3900	< 9300
2-Methylnaphthalene	< 430		< 510	< 8900	< 3900	< 9300
Naphthalene	**950**		< 510	< 8900	< 3900	< 9300
1,4-Naphthoquinone	< 430		< 510	< 8900	< 3900	< 9300

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detection limits.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	VS-07D	VS-08S	VS-08D	VS-09S	VS-09M
Sample Depth(1):	(4-7)	(2-3)	(7-8)	(3-4)	(4-5)
Sample Date:	3/8/94	3/8/94	3/8/94	3/8/94	3/8/94
Parameter (ug/kg)					
1-Naphthylamine	< 430	< 510	< 8900	< 3900	< 9300
2-Naphthylamine	< 430	< 510	< 8900	< 3900	< 9300
2-Nitroaniline	< 2200	< 2600	< 46000	< 20000	< 48000
3-Nitroaniline	< 2200	< 2600	< 46000	< 20000	< 48000
4-Nitroaniline	< 2200	< 2600	< 46000	< 20000	< 48000
Nitrobenzene	< 430	< 510	< 8900	< 3900	< 9300
N-Nitrosodi-n-butylamine	< 430	< 510	< 8900	< 3900	< 9300
N-Nitrosodiethylamine	< 430	< 510	< 8900	< 3900	< 9300
N-Nitrosodimethylamine	< 430	< 510	< 8900	< 3900	< 9300
N-Nitrosomethylethylamine	< 430	< 510	< 8900	< 3900	< 9300
N-Nitrosodiphenylamine/Diphenylami	< 430	< 510	< 8900	< 3900	< 9300
N-Nitrosomorpholine	< 430	< 510	< 8900	< 3900	< 9300
N-Nitrosopiperidine	< 430	< 510	< 8900	< 3900	< 9300
Nitrosopyrrolidine	< 430	< 510	< 8900	< 3900	< 9300
5-Nitro-o-toluidine	< 430	< 510	< 8900	< 3900	< 9300
Pentachlorobenzene	< 430	< 510	< 8900	< 3900	< 9300
Pentachloronitrobenzene	< 430	< 510	< 8900	< 3900	< 9300
Phenacetin	< 430	< 510	< 8900	< 3900	< 9300
Phenanthrene	**2100**	**5400**	< 8900	< 3900	< 9300
2-Picoline	< 430	< 510	< 8900	< 3900	< 9300
Pronamide	< 430	< 510	< 8900	< 3900	< 9300
Pyrene	**3200**	**5200**	< 8900	< 3900	< 9300
Safrole	< 430	< 510	< 8900	< 3900	< 9300
1,2,4,5-Tetrachlorobenzene	< 430	< 510	< 8900	< 3900	< 9300
1,2,4-Trichchlorobenzene	< 430	< 510	< 8900	< 3900	< 9300
2-Chlorophenol	–	–	–	–	–
Cresol m&p	–	–	–	–	–
o-Cresol	–	–	–	–	–
4-Nitrophenol	–	–	–	–	–
2,4-Dichlorophenol	–	–	–	–	–
2,6-Dichlorophenol	–	–	–	–	–
2,4-Dimethylphenol	–	–	–	–	–
4,6-Dinitro-2-methylphenol	–	–	–	–	–
2,4-Dinitrophenol	–	–	–	–	–
Pentachlorophenol	–	–	–	–	–
Phenol	–	–	–	–	–
2,4,5-Trichlorophenol	–	–	–	–	–
2,4,6-Trichlorophenol	–	–	–	–	–
2,3,4,6-Tetrachlorophenol	–	–	–	–	–
2-Nitrophenol	–	–	–	–	–
Diallate	< 430	< 510	< 8900	< 3900	< 9300
Ethyl methanesulfonate	< 430	< 510	< 8900	< 3900	< 9300
4-Nitroquinoline 1-oxide	< 4300	< 5100	< 89000	< 39000	< 93000
p-Phenylenediamine	< 2200	< 2600	< 46000	< 20000	< 48000
o-Toluidine	< 430	< 510	< 8900	< 3900	< 9300
0,0,0-Triethyl phosphorothioate	< 430	< 510	< 8900	< 3900	< 9300
1,3,5-Trinitrobenzene	< 430	< 510	< 8900	< 3900	< 9300
4-Chloro-3-methylphenol	–	–	–	–	–
Dibenzofuran	< 430	< 510	< 8900	< 3900	< 9300
1,4-Dioxane	< 430	< 510	< 8900	< 3900	< 9300
Pyridine	< 430	< 510	< 8900	< 3900	< 9300
Bis(2-chloroisopropyl)ether	< 430	< 510	< 8900	< 3900	< 9300
Total SVOCs	18740	37120	0	0	0

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detection limits.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	VS-09D		VS-10S	VS-10D	VS-11S	VS-11D	
Sample Depth(1):	(5-7)		(1-3)	(6-8)	(2-4)	(4.5-6.5)	
Sample Date:	3/8/94		3/8/94	3/8/94	3/8/94	3/8/94	
Parameter (ug/kg)							
Acenaphthene	< 9300		< 410	< 10000	< 410	< 710	
Acenaphthylene	< 9300		< 410	< 10000	< 410	< 710	
Acetophenone	< 9300		< 410	< 10000	< 410	< 710	
2-Acetylaminofluorene	< 9300		< 410	< 10000	< 410	< 710	
4-Aminobiphenyl	< 9300	J	< 410	< 10000	< 410	< 710	
Anthracene	< 9300	J	**560**	< 10000	< 410	**1700**	
Aniline	< 9300		< 410	< 10000	< 410	< 710	
Benzo(a)anthracene	< 9300		**3000**	< 10000	< 410	**4600**	J
Benzo(k)fluoranthene	< 9300		**900**	< 10000	< 410	**1500**	
Benzo(b)fluoranthene	< 9300		**5000**	< 10000	**880**	**3400**	
Benzo(g,h,i)perylene	< 9300		**1500**	< 10000	< 410	**1300**	J
Benzo(a)pyrene	< 9300		**3800**	< 10000	**430**	**2800**	
Benzyl alcohol	< 9300		< 410	< 10000	< 410	< 710	
bis(2-Chloroethoxy)methane	< 9300		< 410	< 10000	< 410	< 710	
bis(2-Chloroethyl)ether	< 9300		< 410	< 10000	< 410	< 710	
bis(2-Ethylhexyl)phthalate	< 9300		< 410	< 10000	< 410	< 710	
4-Bromophenyl-phenyl-ether	< 9300	J	< 410	< 10000	< 410	< 710	
Butylbenzylphthalate	< 9300		< 410	< 10000	< 410	< 710	
(Dinoseb)2-sec-butyl-4,6-dinitropheno	< 9300		< 410	< 10000	< 410	< 710	
p-Chloroaniline	< 18000		< 810	< 21000	< 820	< 1400	
1,3-Dichlorobenzene	< 9300		< 410	< 10000	< 410	< 710	
1,4-Dichlorobenzene	< 9300		< 410	< 10000	< 410	< 710	
1,2-Dichlorobenzene	< 9300		< 410	< 10000	< 410	< 710	
4-Chlorophenyl-phenylether	< 9300		< 410	< 10000	< 410	< 710	
2-Chloronaphthalene	< 9300		< 410	< 10000	< 410	< 710	
Chrysene	< 9300		**2600**	< 10000	**440**	**3300**	
Dibenz(a,h)anthracene	< 9300		**420**	< 10000	< 410	< 710	
Di-n-butylphthalate	< 9300	J	< 410	< 10000	< 410	< 710	
3,3'-Dichlorobenzidine	< 18000		< 810	< 21000	< 820	< 1400	
3,3'-Dimethylbenzidine	< 48000		< 2100	< 54000	< 2100	< 3600	
Diethylphthalate	< 9300		< 410	< 10000	< 410	< 710	
p-(Dimethylamino)azobenzene	< 9300		< 410	< 10000	< 410	< 710	
7,12-Dimethylbenz(a)anthracene	< 9300		< 410	< 10000	< 410	< 710	
a-a-Dimethylphenethylamine	< 48000		< 2100	< 54000	< 2100	< 3600	
Dimethylphthalate	< 9300		< 410	< 10000	< 410	< 710	
m-Dinitrobenzene	< 9300		< 410	< 10000	< 410	< 710	
2,4-Dinitrotoluene	< 9300		< 410	< 10000	< 410	< 710	
2,6-Dinitrotoluene	< 9300		< 410	< 10000	< 410	< 710	
Di-n-octylphthalate	< 9300		< 410	< 10000	< 410	< 710	
N-Nitroso-di-n-propylamine	< 9300		< 410	< 10000	< 410	< 710	
Fluoranthene	< 9300	J	**5000**	< 10000	**1100**	**7000**	
Fluorene	< 9300		< 410	< 10000	< 410	< 710	
Hexachlorobenzene	< 9300	J	< 410	< 10000	< 410	< 710	
Hexachlorobutadiene	< 9300		< 410	< 10000	< 410	< 710	
Hexachlorocyclopentadiene	< 9300		< 410	< 10000	< 410	< 710	
Hexachloroethane	< 9300		< 410	< 10000	< 410	< 710	
Hexachloropropene	< 9300		< 410	< 10000	< 410	< 710	
Indeno(1,2,3-cd)pyrene	< 9300		**1600**	< 10000	< 410	**1300**	J
Isophorone	< 9300		< 410	< 10000	< 410	< 710	
Isosafrole	< 9300		< 410	< 10000	< 410	< 710	
Methapyrilene	< 93000		< 4100	< 100000	< 4100	< 7100	
3-Methylcholanthrene	< 9300		< 410	< 10000	< 410	< 710	
Methylmethanesulfonate	< 9300		< 410	< 10000	< 410	< 710	
2-Methylnaphthalene	< 9300		**870**	< 10000	< 410	< 710	
Naphthalene	**10000**		< 410	< 10000	< 410	< 710	
1,4-Naphthoquinone	< 9300		< 410	< 10000	< 410	< 710	

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detection limits.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	VS-09D	VS-10S	VS-10D	VS-11S	VS-11D
Sample Depth(1):	(5-7)	(1-3)	(6-8)	(2-4)	(4.5-6.5)
Sample Date:	3/8/94	3/8/94	3/8/94	3/8/94	3/8/94
Parameter (ug/kg)					
1-Naphthylamine	< 9300	< 410	< 10000	< 410	< 710
2-Naphthylamine	< 9300	< 410	< 10000	< 410	< 710
2-Nitroaniline	< 48000	< 2100	< 54000	< 2100	< 3600
3-Nitroaniline	< 48000	< 2100	< 54000	< 2100	< 3600
4-Nitroaniline	< 48000	< 2100	< 54000	< 2100	< 3600
Nitrobenzene	< 9300	< 410	< 10000	**620**	< 710
N-Nitrosodi-n-butylamine	< 9300	< 410	< 10000	< 410	< 710
N-Nitrosodiethylamine	< 9300	< 410	< 10000	< 410	< 710
N-Nitrosodimethylamine	< 9300	< 410	< 10000	< 410	< 710
N-Nitrosomethylethylamine	< 9300	< 410	< 10000	< 410	< 710
N-Nitrosodiphenylamine/Diphenylami	< 9300 J	< 410	< 10000	< 410	< 710
N-Nitrosomorpholine	< 9300	< 410	< 10000	< 410	< 710
N-Nitrosopiperidine	< 9300	< 410	< 10000	< 410	< 710
Nitrosopyrrolidine	< 9300	< 410	< 10000	< 410	< 710
5-Nitro-o-toluidine	< 9300	< 410	< 10000	< 410	< 710
Pentachlorobenzene	< 9300	< 410	< 10000	< 410	< 710
Pentachloronitrobenzene	< 9300 J	< 410	< 10000	< 410	< 710
Phenacetin	< 9300 J	< 410	< 10000	< 410	< 710
Phenanthrene	< 9300 J	**2400**	< 10000	**620**	**5800**
2-Picoline	< 9300	< 410	< 10000	< 410	< 710
Pronamide	< 9300 J	< 410	< 10000	< 410	< 710
Pyrene	< 9300	**5000**	< 10000	**500**	**7600**
Safrole	< 9300	< 410	< 10000	< 410	< 710
1,2,4,5-Tetrachlorobenzene	< 9300	< 410	< 10000	< 410	< 710
1,2,4-Trichchlorobenzene	< 9300	< 410	< 10000	< 410	< 710
2-Chlorophenol	–	–	–	–	–
Cresol m&p	–	–	–	–	–
o-Cresol	–	–	–	–	–
4-Nitrophenol	–	–	–	–	–
2,4-Dichlorophenol	–	–	–	–	–
2,6-Dichlorophenol	–	–	–	–	–
2,4-Dimethylphenol	–	–	–	–	–
4,6-Dinitro-2-methylphenol	–	–	–	–	–
2,4-Dinitrophenol	–	–	–	–	–
Pentachlorophenol	–	–	–	–	–
Phenol	–	–	–	–	–
2,4,5-Trichlorophenol	–	–	–	–	–
2,4,6-Trichlorophenol	–	–	–	–	–
2,3,4,6-Tetrachlorophenol	–	–	–	–	–
2-Nitrophenol	–	–	–	–	–
Diallate	< 9300	< 410	< 10000	< 410	< 710
Ethyl methanesulfonate	< 9300	< 410	< 10000	< 410	< 710
4-Nitroquinoline 1-oxide	< 93000	< 4100	< 100000	< 4100	< 7100
p-Phenylenediamine	< 48000	< 2100	< 54000	< 2100	< 3600
o-Toluidine	< 9300	< 410	< 10000	< 410	< 710
0,0,0-Triethyl phosphorothioate	< 9300	< 410	< 10000	< 410	< 710
1,3,5-Trinitrobenzene	< 9300	< 410	< 10000	< 410	< 710
4-Chloro-3-methylphenol	–	–	–	–	–
Dibenzofuran	< 9300	< 410	< 10000	< 410	< 710
1,4-Dioxane	< 9300	< 410	< 10000	< 410	< 710
Pyridine	< 9300	< 410	< 10000	< 410	< 710
Bis(2-chloroisopropyl)ether	< 9300	< 410	< 10000	< 410	< 710
Total SVOCs	10000	32650	0	4590	40300

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detection limits.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Missouri.

Sample I.D.:	VS-12S	VS-12M	VS-12D		BS-1
Sample Depth(1):	(0-2.5)	(2.5-4)	(4-6.5)		(1.25-3.25)
Sample Date:	3/8/94	3/8/94	3/8/94		3/12/91
Parameter (ug/kg)					
Acenaphthene	< 3900	< 460	< 4600		<9700
Acenaphthylene	< 3900	< 460	< 4600		<9700
Acetophenone	< 3900	< 460	< 4600		<9700
2-Acetylaminofluorene	< 3900	< 460	< 4600		<19000
4-Aminobiphenyl	< 3900	< 460	< 4600		<19000
Anthracene	**8100**	**860**	**4900**		<9700
Aniline	< 3900	< 460	< 4600		<9700
Benzo(a)anthracene	**16000**	**1700**	**35000**	J	<9700
Benzo(k)fluoranthene	**6900**	< 460	**12000**		<9700
Benzo(b)fluoranthene	**16000**	**2300**	**27000**		<9700
Benzo(g,h,i)perylene	**8500**	**580**	**9600**	J	<9700
Benzo(a)pyrene	**13000**	**1800**	**24000**		<9700
Benzyl alcohol	< 3900	< 460	< 4600		<9700
bis(2-Chloroethoxy)methane	< 3900	< 460	< 4600		<9700
bis(2-Chloroethyl)ether	< 3900	< 460	< 4600		<9700
bis(2-Ethylhexyl)phthalate	< 3900	< 460	< 4600		<9700
4-Bromophenyl-phenyl-ether	< 3900	< 460	< 4600		<9700
Butylbenzylphthalate	< 3900	< 460	< 4600		<9700
(Dinoseb)2-sec-butyl-4,6-dinitropheno	< 3900	< 460	< 4600		<49000
p-Chloroaniline	< 7800	< 920	< 9200		<19000
1,3-Dichlorobenzene	< 3900	< 460	< 4600		<9700
1,4-Dichlorobenzene	< 3900	< 460	< 4600		<9700
1,2-Dichlorobenzene	< 3900	< 460	< 4600		<9700
4-Chlorophenyl-phenylether	< 3900	< 460	< 4600		<9700
2-Chloronaphthalene	< 3900	< 460	< 4600		<9700
Chrysene	**15000**	**1500**	**26000**		<9700
Dibenz(a,h)anthracene	< 3900	< 460	< 4600		<9700
Di-n-butylphthalate	< 3900	< 460	< 4600		<9700
3,3'-Dichlorobenzidine	< 7800	< 920	< 9200		<19000
3,3'-Dimethylbenzidine	< 20000	< 2400	< 24000		<9700
Diethylphthalate	< 3900	< 460	< 4600		<9700
p-(Dimethylamino)azobenzene	< 3900	< 460	< 4600		<9700
7,12-Dimethylbenz(a)anthracene	< 3900	< 460	< 4600		<9700
a-a-Dimethylphenethylamine	< 3900	< 2400	< 24000		<49000
Dimethylphthalate	< 3900	< 460	< 4600		<9700
m-Dinitrobenzene	< 3900	< 460	< 4600		<49000
2,4-Dinitrotoluene	< 3900	< 460	< 4600		<9700
2,6-Dinitrotoluene	< 3900	< 460	< 4600		<9700
Di-n-octylphthalate	< 3900	< 460	< 4600		<9700
N-Nitroso-di-n-propylamine	< 3900	< 460	< 4600		<9700
Fluoranthene	**34000**	**3300**	**49000**		<9700
Fluorene	< 3900	< 460	< 4600		<9700
Hexachlorobenzene	< 3900	< 460	< 4600		<9700
Hexachlorobutadiene	< 3900	< 460	< 4600		<9700
Hexachlorocyclopentadiene	< 3900	< 460	< 4600		<9700
Hexachloroethane	< 3900	< 460	< 4600		<9700
Hexachloropropene	< 3900	< 460	< 4600		<9700
Indeno(1,2,3-cd)pyrene	**7700**	**720**	**9800**	J	<9700
Isophorone	< 3900	< 460	< 4600		<9700
Isosafrole	< 3900	< 460	< 4600		<9700
Methapyrilene	< 39000	< 4600	< 46000		<97000
3-Methylcholanthrene	< 3900	< 460	< 4600		<9700
Methylmethanesulfonate	< 3900	< 460	< 4600		<9700
2-Methylnaphthalene	< 3900	< 460	< 4600		<9700
Naphthalene	< 3900	< 460	< 4600		<9700
1,4-Naphthoquinone	< 3900	< 460	< 4600		<9700

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detectio
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Missouri.

Sample I.D.:	VS-12S	VS-12M	VS-12D	BS-1
Sample Depth(1):	(0-2.5)	(2.5-4)	(4-6.5)	(1.25-3.25)
Sample Date:	3/8/94	3/8/94	3/8/94	3/12/91
Parameter (ug/kg)				
1-Naphthylamine	< 3900	< 460	< 4600	<9700
2-Naphthylamine	< 3900	< 460	< 4600	<9700
2-Nitroaniline	< 20000	< 2400	< 24000	<49000
3-Nitroaniline	< 20000	< 2400	< 24000	<49000
4-Nitroaniline	< 20000	< 2400	< 24000	<49000
Nitrobenzene	< 3900	< 460	< 4600	<9700
N-Nitrosodi-n-butylamine	< 3900	< 460	< 4600	<9700
N-Nitrosodiethylamine	< 3900	< 460	< 4600	<19000
N-Nitrosodimethylamine	< 3900	< 460	< 4600	<9700
N-Nitrosomethylethylamine	< 3900	< 460	< 4600	<9700
N-Nitrosodiphenylamine/Diphenylami	< 3900	< 460	< 4600	<9700
N-Nitrosomorpholine	< 3900	< 460	< 4600	<9700
N-Nitrosopiperidine	< 3900	< 460	< 4600	<19000
Nitrosopyrrolidine	< 3900	< 460	< 4600	<39000
5-Nitro-o-toluidine	< 3900	< 460	< 4600	<9700
Pentachlorobenzene	< 3900	< 460	< 4600	<9700
Pentachloronitrobenzene	< 3900	< 460	< 4600	<97000
Phenacetin	< 3900	< 460	< 4600	<19000
Phenanthrene	**31000**	**2100**	**28000**	<9700
2-Picoline	< 3900	< 460	< 4600	<9700
Pronamide	< 3900	< 460	< 4600	<9700
Pyrene	**30000**	**3200**	**55000**	<9700
Safrole	< 3900	< 460	< 4600	<9700
1,2,4,5-Tetrachlorobenzene	< 3900	< 460	< 4600	<9700
1,2,4-Trichchlorobenzene	< 3900	< 460	< 4600	<9700
2-Chlorophenol	–	–	–	<9700
Cresol m&p	–	–	–	<9700
o-Cresol	–	–	–	<9700
4-Nitrophenol	–	–	–	<49000
2,4-Dichlorophenol	–	–	–	<9700
2,6-Dichlorophenol	–	–	–	<9700
2,4-Dimethylphenol	–	–	–	<9700
4,6-Dinitro-2-methylphenol	–	–	–	<49000
2,4-Dinitrophenol	–	–	–	<49000
Pentachlorophenol	–	–	–	<49000
Phenol	–	–	–	<9700
2,4,5-Trichlorophenol	–	–	–	<49000
2,4,6-Trichlorophenol	–	–	–	<9700
2,3,4,6-Tetrachlorophenol	–	–	–	<9700
2-Nitrophenol	–	–	–	<9700
Diallate	< 3900	< 460	< 4600	<9700
Ethyl methanesulfonate	< 3900	< 460	< 4600	<19000
4-Nitroquinoline 1-oxide	< 39000	< 4600	< 46000	<97000 I
p-Phenylenediamine	< 20000	< 2400	< 24000	<9700
o-Toluidine	< 3900	< 460	< 4600	<9700
0,0,0-Triethyl phosphorothioate	< 3900	< 460	< 4600	<9700
1,3,5-Trinitrobenzene	< 3900	< 460	< 4600	<4900
4-Chloro-3-methylphenol	–	–	–	<9700
Dibenzofuran	< 3900	< 460	< 4600	<9700
1,4-Dioxane	< 3900	< 460	< 4600	<9700
Pyridine	< 3900	< 460	< 4600	<9700
Bis(2-chloroisopropyl)ether	< 3900	< 460	< 4600	–
Total SVOCs	186200	18060	280300	0

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detectio
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	GP-01S		GP-01M		GP-01D	
Sample Depth(1):	(1-3)		(5-7)		(9-11)	
Sample Date:	3/9/94		3/9/94		3/9/94	
Parameter (ug/kg)						
Acenaphthene	**10000**		< 810	J	**1100**	J
Acenaphthylene	< 8600		< 810	J	< 750	
Acetophenone	< 8600		< 810	J	< 750	
2-Acetylaminofluorene	< 8600		< 810	J	< 750	
4-Aminobiphenyl	< 8600		< 810	J	< 750	
Anthracene	**21000**		< 810	J	**8900**	J
Aniline	< 8600		< 810	J	< 750	
Benzo(a)anthracene	**23000**		< 810	J	**2200**	J
Benzo(k)fluoranthene	< 8600		< 810	J	**820**	J
Benzo(b)fluoranthene	**22000**		**950**	J	**2300**	J
Benzo(g,h,i)perylene	< 8600		< 810	J	< 750	J
Benzo(a)pyrene	**17000**		< 810	J	**1500**	J
Benzyl alcohol	< 8600		< 810	J	< 750	
bis(2-Chloroethoxy)methane	< 8600		< 810	J	< 750	
bis(2-Chloroethyl)ether	< 8600		< 810	J	< 750	
bis(2-Ethylhexyl)phthalate	< 8600		< 810	J	< 750	
4-Bromophenyl-phenyl-ether	< 8600		< 810	J	< 750	
Butylbenzylphthalate	< 8600		< 810	J	< 750	
(Dinoseb)2-sec-butyl-4,6-dinitropheno	< 8600		< 810	J	< 750	
p-Chloroaniline	< 17000		**8200**	J	**8300**	J
1,3-Dichlorobenzene	< 8600		< 810	J	< 750	
1,4-Dichlorobenzene	< 8600		< 810	J	< 750	
1,2-Dichlorobenzene	< 8600		< 810	J	< 750	
4-Chlorophenyl-phenylether	< 8600		< 810	J	< 750	
2-Chloronaphthalene	< 8600		< 810	J	< 750	
Chrysene	**20000**		< 810	J	**1800**	J
Dibenz(a,h)anthracene	< 8600		< 810	J	< 750	J
Di-n-butylphthalate	< 8600		< 810	J	< 750	
3,3'-Dichlorobenzidine	< 17000		< 1600	J	< 1500	
3,3'-Dimethylbenzidine	< 44000		< 4200	J	< 3900	
Diethylphthalate	< 8600		< 810	J	< 900	J
p-(Dimethylamino)azobenzene	< 8600		< 810	J	< 750	
7,12-Dimethylbenz(a)anthracene	< 8600		< 810	J	< 750	J
a-a-Dimethylphenethylamine	< 44000		< 4200	J	< 3900	
Dimethylphthalate	< 8600		< 810	J	< 750	
m-Dinitrobenzene	< 8600		< 810	J	< 750	
2,4-Dinitrotoluene	< 8600		< 810	J	< 750	
2,6-Dinitrotoluene	< 8600		< 810	J	< 750	
Di-n-octylphthalate	< 8600		< 810	J	< 750	J
N-Nitroso-di-n-propylamine	< 8600		< 810	J	< 750	
Fluoranthene	**61000**		**1400**	J	**5300**	J
Fluorene	**19000**		< 810	J	**3400**	J
Hexachlorobenzene	< 8600		< 810	J	< 750	
Hexachlorobutadiene	< 8600		< 810	J	< 750	
Hexachlorocyclopentadiene	< 8600		< 810	J	< 750	
Hexachloroethane	< 8600		< 810	J	< 750	
Hexachloropropene	< 8600		< 810	J	< 750	
Indeno(1,2,3-cd)pyrene	< 8600		< 810	J	< 750	J
Isophorone	< 8600		< 810	J	< 750	
Isosafrole	< 8600		< 810	J	< 750	
Methapyrilene	< 86000		< 8100	J	< 7500	
3-Methylcholanthrene	< 8600		< 810	J	< 750	J
Methylmethanesulfonate	< 8600		< 810	J	< 750	
2-Methylnaphthalene	< 8600		< 810	J	< 750	
Naphthalene	< 8600		< 810	J	< 750	
1,4-Naphthoquinone	< 8600		< 810	J	< 750	

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detection limits.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
-- Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-3. Concentrations of Acid and Base/Neutral Organic Compounds in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample I.D.:	GP-01S		GP-01M		GP-01D	
Sample Depth(1):	(1-3)		(5-7)		(9-11)	
Sample Date:	3/9/94		3/9/94		3/9/94	
Parameter (ug/kg)						
1-Naphthylamine	< 8600		< 810	J	< 750	
2-Naphthylamine	< 8600		< 810	J	< 750	
2-Nitroaniline	< 44000		< 4200	J	< 3900	
3-Nitroaniline	< 44000		< 4200	J	< 3900	
4-Nitroaniline	< 44000		< 4200	J	< 3900	
Nitrobenzene	< 8600		< 810	J	< 750	
N-Nitrosodi-n-butylamine	< 8600		< 810	J	< 750	
N-Nitrosodiethylamine	< 8600		< 810	J	< 750	
N-Nitrosodimethylamine	< 8600		< 810	J	< 750	
N-Nitrosomethylethylamine	< 8600		< 810	J	< 750	
N-Nitrosodiphenylamine/Diphenylami	< 8600		< 810	J	< 750	
N-Nitrosomorpholine	< 8600		< 810	J	< 750	
N-Nitrosopiperidine	< 8600		< 810	J	< 750	
Nitrosopyrrolidine	< 8600		< 810	J	< 750	
5-Nitro-o-toluidine	< 8600		< 810	J	< 750	
Pentachlorobenzene	< 8600		< 810	J	< 750	
Pentachloronitrobenzene	< 8600		< 810	J	< 750	
Phenacetin	< 8600		< 810	J	< 750	
Phenanthrene	**54000**		**1000**	**J**	**6800**	**J**
2-Picoline	< 8600		< 810	J	< 750	
Pronamide	< 8600		< 810	J	< 750	
Pyrene	**46000**		**1700**	**J**	**8300**	**J**
Safrole	< 8600		< 810	J	< 750	
1,2,4,5-Tetrachlorobenzene	< 8600		< 810	J	< 750	
1,2,4-Trichchlorobenzene	< 8600		< 810	J	< 750	
2-Chlorophenol	–		–		–	
Cresol m&p	–		–		–	
o-Cresol	–		–		–	
4-Nitrophenol	–		–		–	
2,4-Dichlorophenol	–		–		–	
2,6-Dichlorophenol	–		–		–	
2,4-Dimethylphenol	–		–		–	
4,6-Dinitro-2-methylphenol	–		–		–	
2,4-Dinitrophenol	–		–		–	
Pentachlorophenol	–		–		–	
Phenol	–		–		–	
2,4,5-Trichlorophenol	–		–		–	
2,4,6-Trichlorophenol	–		–		–	
2,3,4,6-Tetrachlorophenol	–		–		–	
2-Nitrophenol	–		–		–	
Diallate	< 8600		< 810	J	< 750	
Ethyl methanesulfonate	< 8600		< 810	J	< 750	
4-Nitroquinoline 1-oxide	< 86000		< 8100	J	< 7500	
p-Phenylenediamine	< 44000		< 4200	J	< 3900	
o-Toluidine	< 8600		< 810	J	< 750	
0,0,0-Triethyl phosphorothioate	< 8600		< 810	J	< 750	
1,3,5-Trinitrobenzene	< 8600		< 810	J	< 750	
4-Chloro-3-methylphenol	–		–		–	
Dibenzofuran	< 8600		< 810	J	750	
1,4-Dioxane	< 8600		< 810	J	< 750	
Pyridine	< 8600		< 810	J	< 750	
Bis(2-chloroisopropyl)ether	< 8600		< 810	J	< 750	
Total SVOCs	293000		13250		51470	

ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high-level extraction was employed, which increased reported detection limits.
I The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.
(1) Ft. below land surface.
SVOCs Semivolatile organic compounds consist of acid and base/neutral organic compounds.

Table 4-4. Concentrations of Pesticides, Polychlorinated Biphenyls, Herbicides, Chlorinated Dioxins, and Furans in Soil Samples, J.F. Queen Monsanto Company, St. Louis, Missouri.

Parameter (ug/kg)	Sample I.D.:	LSS-1	QS-1	QS-1	——Replicates—— QS-2	QS-5
	Sample Depth(1):	(3.0-3.75)	(0-4.5)	(4.0-9.0)	(0-2.5)	(0-2.5)
	Sample Date:	10/8/92	2/6/91	2/6/91	2/11/91	2/11/91
Pesticides						
Disulfoton		–	<860*	<890*	<850*	<860*
Methyl parathion		–	<130	<130	<130	<130
Ethyl parathion		–	<430	<440	<430	<430
Sulfotepp		–	<640	<670	<640	<640
Famphur		–	<4300	<4400	<4300	<4300
Phorate		–	<640	<670	<640	<640
Thionazin		–	<430	<440	<430	<430
Dimethoate		–	<4300	<4400	<4300	<4300
Aldrin		<2.2	<63*	<66*	<66*	<32*
Isodrin		–	<130	<130	<130	<65
alpha-Chlordane		–	<63	<66	<66	<32
gamma-Chlordane		–	<63	<66	<66	<32
Chlordane		<19	–	–	–	–
Chlorobenzilate		–	<2500	<2600	<2600	<1300
DDD		<4.5	<130	<130	<130	<65
DDE		<4.5	<130	<130	<130	<65
DDT		<11	<320	<330	<330	<160
Dieldrin		<4.5	<130	<130	<130	<65
Endosulfan I		<4.5	<130	<130	<130	<65
Endosulfan II		<11	<320	<330	<330	<160
Endosulfan sulfate		<18	<500	<530	<530	<260
Endrin		<4.5	<130	<130	<130	<65
Endrin aldehyde		<22	<630	<660	<660	<320
Heptachlor		<2.2	<63	<66	<66	<32
Heptachlor epoxide		<4.5	<130	<130	<130	<65
alpha-BHC		<2.2	<63	<66	<66	<32
beta-BHC		<2.2	<63	<66	<66	<32
gamma-BHC		<2.2	<63	<66	<66	<32
delta-BHC		<2.2	<63	<66	<66	<32
Kepone		–	<320	<330	<330	<160
Methoxychlor		–	<2500	<2600	<2600	<1300
Toxaphene		<180	<5000	<5300	<5300	<2600
Polychlorinated Biphenyls						
Aroclor-1016		<90	<2500	<2600	<2600	<1300
Aroclor-1221		<90	<2500	<2600	<2600	<1300
Aroclor-1232		<90	<2500	<2600	<2600	<1300
Aroclor-1242		<90	<2500	<2600	<2600	<1300
Aroclor-1248		<90	<2500	<2600	<2600	<1300
Aroclor-1254		<90	<2500	<2600	<2600	<1300
Aroclor-1260		<90	<2500	<2600	<2600	<1300
Herbicides						
2,4-D		–	<1100**	<120	<220	<110
2,4,5-T		–	<670	<71	<130	<67
2,4,5-TP Silvex		–	<220	<24	<45	<22
Chlorinated Dioxins and Furans						
Tetra-CDD		–	<5.6*	<5.9*	<5.6*	<0.56
Tetra-CDF		–	<5.6	<5.9	<5.6	<0.56
Penta-CDD		–	<5.6	<5.9	<5.6	<0.56
Penta-CDF		–	<5.6	<5.9	<5.6	<0.56
Hexa-CDD		–	<5.6	<5.9	<5.6	<0.56
Hexa-CDF		–	<5.6	<5.9	<5.6	<0.56
Dioxin-2,3,7,8-TCDD		–	<5.6	<5.9	<5.6	<0.56

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high level extraction was employed, which increased reported detection limits.
** Elevated detection limits due to sample matrix interference.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.

Table 4-4. Concentrations of Pesticides, Polychlorinated Biphenyls, Herbicides, Chlorinated Dioxins, and Furans in Soil Samples, J.F. Queen Monsanto Company, St. Louis, Missouri.

Parameter (ug/kg)	Sample I.D.:	QS-2	QS-4	VS-1	VS-2	VS-3
	Sample Depth(1):	(4.0-9.0)	Cuttings	(10.5-12.5)	(7.0-9.0)	(9.0-11.0)
	Sample Date:	2/11/91	2/22/91	3/6/91	3/7/91	3/7/91
Pesticides						
Disulfoton		<890*	<990*	<1200	<850	<1100*
Methyl parathion		<130	<74	<180	<130	<160
Ethyl parathion		<440	<490	<620	<420	<540
Sulfotepp		<670	<740	<920	<630	<810
Famphur		<4400	<4900	<6200	<4200	<5400
Phorate		<670	<740	<920	<630	<810
Thionazin		<440	<490	<620	<420	<540
Dimethoate		<4400	<4900	<6200	<4200	<5400
Aldrin		<66*	<180*	<420*	<32*	<180*
Isodrin		<130	<350	<840	<64	<370
alpha-Chlordane		<66	<180	<420	<32	<180
gamma-Chlordane		<66	<180	<420	<32	<180
Chlordane		–	–	–	–	–
Chlorobenzilate		<2600	<7000	<17000	<1300	<7300
DDD		<130	<350	<840	<64	<370
DDE		<130	<350	<840	<64	<370
DDT		<330	<880	<2100	<160	<910
Dieldrin		<130	<350	<840	<64	<370
Endosulfan I		<130	<350	<840	<64	<370
Endosulfan II		<330	<880	<2100	<160	<910
Endosulfan sulfate		<530	<1400	<3300	<250	<1500
Endrin		<130	<350	<840	<64	<370
Endrin aldehyde		<660	<1800	<4200	<320	<1800
Heptachlor		<66	<180	<420	<32	<180
Heptachlor epoxide		<130	<350	<840	<64	<370
alpha-BHC		<66	<180	<420	<32	<180
beta-BHC		<66	<180	<420	<32	<180
gamma-BHC		<66	<180	<420	<32	<180
delta-BHC		<66	<180	<420	<32	<180
Kepone		<330	<880	<2100	<160	<910
Methoxychlor		<2600	<7000	<17000	<1300	<7300
Toxaphene		<5300	<14000	<33000	<2500	<15000
Polychlorinated Biphenyls						
Aroclor-1016		<2600	<7000	<17000	<1300	<7300
Aroclor-1221		<2600	<7000	<17000	<1300	<7300
Aroclor-1232		<2600	<7000	<17000	<1300	<7300
Aroclor-1242		<2600	<7000	<17000	<1300	<7300
Aroclor-1248		<2600	<7000	<17000	<1300	<7300
Aroclor-1254		<2600	<7000	<17000	<1300	<7300
Aroclor-1260		<2600	<7000	<17000	<1300	<7300
Herbicides						
2,4-D		<230	<140	<340*	<120	<130
2,4,5-T		<140	<85	<200	<75	<81
2,4,5-TP Silvex		<45	<28	<68	<25	<27
Chlorinated Dioxins and Furans						
Tetra-CDD		<5.7*	–	<0.85	<0.63	<0.68
Tetra-CDF		<5.7	–	<0.85	<0.63	<0.68
Penta-CDD		<5.7	–	<0.85	<0.63	<0.68
Penta-CDF		<5.7	–	<0.85	<0.63	<0.68
Hexa-CDD		<5.7	–	<0.85	<0.63	<0.68
Hexa-CDF		<5.7	–	<0.85	<0.63	<0.68
Dioxin-2,3,7,8-TCDD		<5.7	–	<0.85	<0.63	<0.68

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high level extraction was employed which increased reported detection limits.
** Elevated detection limits due to sample matrix interference.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.

Table 4-4. Concentrations of Pesticides, Polychlorinated Biphenyls, Herbicides, Chlorinated Dioxins, and Furans in Soil Samples, J.F. Queeny Monsanto Company, St. Louis, Missouri.

Parameter (ug/kg)	Sample I.D.: VS-4	BS-1	BP-03	BP-04	BP-10
	Sample Depth(1): (9.0-11.0)	(1.25-3.25)	(1-3)	(1-3)	(5-7)
	Sample Date: 3/8/91	3/12/91	3/10/94	3/10/94	3/11/94
Pesticides					
Disulfoton	<900*	<880*	–	–	–
Methyl parathion	<130	<130	–	–	–
Ethyl parathion	<450	<440	–	–	–
Sulfotepp	<670	<660	–	–	–
Famphur	<4500	<4400	–	–	–
Phorate	<670	<660	–	–	–
Thionazin	<450	<440	–	–	–
Dimethoate	<4500	<4400	–	–	–
Aldrin	<630*	<620*	–	–	–
Isodrin	<1300	<1200	–	–	–
alpha-Chlordane	<630	<620	–	–	–
gamma-Chlordane	<630	<620	–	–	–
Chlordane	–	–	–	–	–
Chlorobenzilate	<25000	<25000	–	–	–
DDD	<1300	<1200	–	–	–
DDE	<1300	<1200	–	–	–
DDT	<3200	<3100	–	–	–
Dieldrin	<1300	<1200	–	–	–
Endosulfan I	<1300	<1200	–	–	–
Endosulfan II	<3200	<3100	–	–	–
Endosulfan sulfate	<5100	<5000	–	–	–
Endrin	<1300	<1200	–	–	–
Endrin aldehyde	<6300	<6200	–	–	–
Heptachlor	<630	<620	–	–	–
Heptachlor epoxide	<1300	<1200	–	–	–
alpha-BHC	<630	<620	–	–	–
beta-BHC	<630	<620	–	–	–
gamma-BHC	<630	<620	–	–	–
delta-BHC	<630	<620	–	–	–
Kepone	<3200	<3100	–	–	–
Methoxychlor	<25000	<25000	–	–	–
Toxaphene	<51000	<50000	–	–	–
Polychlorinated Biphenyls					
Aroclor-1016	<25000	<25000	<94	<1900	<100
Aroclor-1221	<25000	<25000	<190	<3800	<200
Aroclor-1232	<25000	<25000	<94	<1900	<100
Aroclor-1242	<25000	<25000	<94	<1900	<100
Aroclor-1248	<25000	**89000**	<94	**5300**	<100
Aroclor-1254	<25000	**46000**	<94	<1900	<100
Aroclor-1260	<25000	<25000	**210**	**4000 J**	<100
Herbicides					
2,4-D	<1300*	<120*	–	–	–
2,4,5-T	<790	<71	–	–	–
2,4,5-TP Silvex	<260	<24	–	–	–
Chlorinated Dioxins and Furans					
Tetra-CDD	<0.66	<2.9	–	–	–
Tetra-CDF	<0.66	<2.9	–	–	–
Penta-CDD	<0.66	<2.9	–	–	–
Penta-CDF	<0.66	<2.9	–	–	–
Hexa-CDD	<0.66	<2.9	–	–	–
Hexa-CDF	<0.66	<2.9	–	–	–
Dioxin-2,3,7,8-TCDD	<0.66	<2.9	–	–	–

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high level extraction was employed, which increased reported detection limits.
** Elevated detection limits due to sample matrix interference.
J The associated numerical value is an estimated quantity.
– Parameter not analyzed.

Table 4-4. Concentrations of Pesticides, Polychlorinated Biphenyls, Herbicides, Chlorinated Dioxins, and Furans in Soil Samples, J.F. Queeny Pla
Monsanto Company, St. Louis, Missouri.

Parameter (ug/kg)	Sample I.D.:	GP-20AS	GP-20AD	GP-20BS	GP-20BM	GP-20BD
	Sample Depth(1):	(3-4)	(6-8)	(1-3)	(3-4)	(4-6)
	Sample Date:	3/10/94	3/8/94	3/10/94	3/8/94	3/8/94
Pesticides						
Disulfoton		--	--	--	--	--
Methyl parathion		--	--	--	--	--
Ethyl parathion		--	--	--	--	--
Sulfotepp		--	--	--	--	--
Famphur		--	--	--	--	--
Phorate		--	--	--	--	--
Thionazin		--	--	--	--	--
Dimethoate		--	--	--	--	--
Aldrin		--	--	--	--	--
Isodrin		--	--	--	--	--
alpha-Chlordane		--	--	--	--	--
gamma-Chlordane		--	--	--	--	--
Chlordane		--	--	--	--	--
Chlorobenzilate		--	--	--	--	--
DDD		--	--	--	--	--
DDE		--	--	--	--	--
DDT		--	--	--	--	--
Dieldrin		--	--	--	--	--
Endosulfan I		--	--	--	--	--
Endosulfan II		--	--	--	--	--
Endosulfan sulfate		--	--	--	--	--
Endrin		--	--	--	--	--
Endrin aldehyde		--	--	--	--	--
Heptachlor		--	--	--	--	--
Heptachlor epoxide		--	--	--	--	--
alpha-BHC		--	--	--	--	--
beta-BHC		--	--	--	--	--
gamma-BHC		--	--	--	--	--
delta-BHC		--	--	--	--	--
Kepone		--	--	--	--	--
Methoxychlor		--	--	--	--	--
Toxaphene		--	--	--	--	--
Polychlorinated Biphenyls						
Aroclor-1016		<1700	<510	<5000	<5200	<110000
Aroclor-1221		<3400	<1000	<10000	<10000	<230000
Aroclor-1232		<1700	<510	<5000	<5200	<110000
Aroclor-1242		<1700	<510	<5000	<5200	<110000
Aroclor-1248		**8800**	**9900**	**100000**	**25000**	**460000**
Aroclor-1254		<1700	<510	<5000	<5200	<110000
Aroclor-1260		**2000 J**	**1600 J**	**7400 J**	**14000 J**	**260000 J**
Herbicides						
2,4-D		--	--	--	--	--
2,4,5-T		--	--	--	--	--
2,4,5-TP Silvex		--	--	--	--	--
Chlorinated Dioxins and Furans						
Tetra-CDD		--	--	--	--	--
Tetra-CDF		--	--	--	--	--
Penta-CDD		--	--	--	--	--
Penta-CDF		--	--	--	--	--
Hexa-CDD		--	--	--	--	--
Hexa-CDF		--	--	--	--	--
Dioxin-2,3,7,8-TCDD		--	--	--	--	--

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high level extraction was employed, which increased reported detection limits.
** Elevated detection limits due to sample matrix interference.
J The associated numerical value is an estimated quantity.
-- Parameter not analyzed.

Table 4-4. Concentrations of Pesticides, Polychlorinated Biphenyls, Herbicides, Chlorinated Dioxins, and Furans in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (ug/kg)	Sample I.D.: VP-05	VP-20	VP-21	VP-31	VP-33
	Sample Depth(1): (1-3)	(1-3)	(1-3)	(1-3)	(3-5)
	Sample Date: 3/9/94	3/9/94	3/9/94	3/11/94	3/11/94
Pesticides					
Disulfoton	--	--	--	--	--
Methyl parathion	--	--	--	--	--
Ethyl parathion	--	--	--	--	--
Sulfotepp	--	--	--	--	--
Famphur	--	--	--	--	--
Phorate	--	--	--	--	--
Thionazin	--	--	--	--	--
Dimethoate	--	--	--	--	--
Aldrin	--	--	--	--	--
Isodrin	--	--	--	--	--
alpha-Chlordane	--	--	--	--	--
gamma-Chlordane	--	--	--	--	--
Chlordane	--	--	--	--	--
Chlorobenzilate	--	--	--	--	--
DDD	--	--	--	--	--
DDE	--	--	--	--	--
DDT	--	--	--	--	--
Dieldrin	--	--	--	--	--
Endosulfan I	--	--	--	--	--
Endosulfan II	--	--	--	--	--
Endosulfan sulfate	--	--	--	--	--
Endrin	--	--	--	--	--
Endrin aldehyde	--	--	--	--	--
Heptachlor	--	--	--	--	--
Heptachlor epoxide	--	--	--	--	--
alpha-BHC	--	--	--	--	--
beta-BHC	--	--	--	--	--
gamma-BHC	--	--	--	--	--
delta-BHC	--	--	--	--	--
Kepone	--	--	--	--	--
Methoxychlor	--	--	--	--	--
Toxaphene	--	--	--	--	--
Polychlorinated Biphenyls					
Aroclor-1016	<20000	<99	<100	<100	<990000
Aroclor-1221	<40000	<200	<200	<200	<2000000
Aroclor-1232	<20000	<99	<100	<100	<990000
Aroclor-1242	**240000**	**250**	**250**	<100	**3400000**
Aroclor-1248	<20000	<99	<100	<100	<990000
Aroclor-1254	<20000	<99	<100	<100	<990000
Aroclor-1260	**21000 J**	<99	<100	<100	<990000
Herbicides					
2,4-D	--	--	--	--	--
2,4,5-T	--	--	--	--	--
2,4,5-TP Silvex	--	--	--	--	--
Chlorinated Dioxins and Furans					
Tetra-CDD	--	--	--	--	--
Tetra-CDF	--	--	--	--	--
Penta-CDD	--	--	--	--	--
Penta-CDF	--	--	--	--	--
Hexa-CDD	--	--	--	--	--
Hexa-CDF	--	--	--	--	--
Dioxin-2,3,7,8-TCDD	--	--	--	--	--

(1) Feet below land surface.
ug/kg Micrograms per kilogram.
* Due to the abundance of organics present in the sample, high level extraction was employed, which increased reported detection limits.
** Elevated detection limits due to sample matrix interference.
J The associated numerical value is an estimated quantity.
-- Parameter not analyzed.

Table 4-5. Concentrations of Metals, Total Cyanide, and Sulfate in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (mg/kg)	Sample I.D.:	QS-1	QS-1	QS-2	QS-5	QS-2	QP-01D	QP-01M	QP-01S
				---Replicate---					
	Sample Depth(1):	(0-4.5)	(4.0-9.0)	(0-2.5)	(0-2.5)	(4.0-9.0)	11.0	7.0	3.0
	Sample Event:	Phase I	Phase I	Phase I	Phase I	Phase I	Phase II	Phase II	Phase II
Antimony		<5.6	<5.8	<5.4	<5.4	<5.5	<6.2 J	<6.3 J	5.8 J
Barium		460	530	150	130	180	120	210	140
Beryllium		0.56	0.61	<0.54	<0.54	<0.55	<0.62	<0.63	<0.58
Cadmium		0.76	1.1	4.3 J	4.9 J	4.5 J	<0.62	<0.63	<0.58
Chromium		19	31 J	22 J	20 J	22 J	6.9	8.8	9.8
Cobalt		5.5	8.1	4.7	4.3	6.0	4.0	4.8	3.6
Copper		44	130	57 J	38 J	5.6 J	15	22	17
Nickel		15	25	30	28	26	10	12	14
Silver		<1.1	<1.2	<1.1	<1.1	<1.1	<1.2 J	<1.3 J	<1.2 J
Tin		13 J	<5.8 I	<5.4	<5.4	<5.5	8.6	<6.3	<5.8
Vanadium		25	13	17	15	25	12	15	12
Zinc		250 J*	460 J*	96 J	110 J	130 J	62 J	83 J	130 J
Arsenic		12 J	16 J	8.5	4.5	11	4.7 J	4.2 J	6.9 J
Lead		240 J	500 J	76	31	170	100 J	79 J	250 J
Thallium		<1.1	<1.2	<1.1	<1.1	<1.1	<1.2	<1.3 J	<1.2 J
Selenium		<2.7 I	<2.9 I	<2.2 **	<2.2 **	<2.2 **	<1.2 J	<1.3 J	<1.2 J
Mercury		0.34	0.35	0.22	0.24	0.30	0.049	0.21	0.1
Total Cyanide		<1.2	<1.2 I	<1.1	<1.1	<1.1	--	--	--
Sulfide		12	29 J	<2.8 I	<2.8 I	<2.8 I	--	--	--

mg/kg Milligrams per kilogram.
* Reported value is estimated because of interference indicated by the serial dilution percent difference.
** Elevated detection limits reported due to sample matrix interference.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present).
-- Parameters not analyzed.
(1) Depth in ft. below land surface.

Table 4-5. Concentrations of Metals, Total Cyanide, and Sulfate in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (mg/kg)	Sample I.D.:	QP-2D	QP-02M	QP-2S	QP-03D	QP-03M	QP-03S	QP-04D	QP-04M
	Sample Depth(1):	11.0	7.0	3.0	11.0	7.0	3.0	11.0	7.0
	Sample Event:	Phase II	Phase II	Phase II	Phase II	Phase II	Phase II	Phase II	Phase II
Antimony		<5.7 J	<6.0 J	<5.7 J	<6.2 J	<6.0 J	<5.7 J	<6.3 J	<6.2 J
Barium		170	200	3600	320	160	120	190	190
Beryllium		<0.57	<0.60	<0.57	<0.62	<0.60	<0.57	<0.63	<0.62
Cadmium		0.74	<0.60	0.72	3.0	0.73	0.69	1.7	<0.62
Chromium		11	11	22	18	7.8	8.8	14	8.1
Cobalt		3.4	7.6	7.1	6.3	4.4	2.9	9.5	5.0
Copper		30	53	53	120	17	21	63	20
Nickel		30	16	16	21	12	13	18	12
Silver		<1.1 J	<1.2 J	<1.1 J	<1.2 J	<1.2 J	<1.1 J	<1.3 J	<1.2 J
Tin		8.0	10	<5.7	7.4	<6.0	<5.7	26	56
Vanadium		14	17	32	18	14	11	22	15
Zinc		110 J	130 J	150 J	620	230 J	200 J	470 J	110 J
Arsenic		19 J	33 J	7.6 J	6.9 J	6.1 J	5.4 J	6.4 J	5.3 J
Lead		200 J	280 J	160 J	120	52 J	120 J	270 J	77 J
Thallium		<1.1 J	<1.2	<1.1 J	<1.2	<1.2	<1.1 J	<1.3	<1.2
Selenium		<1.1 J	<1.2 J	<1.1 J	<1.2 J	<1.2 J	<2.3 J	<1.3 J	<1.2 J
Mercury		0.18	0.39	0.34	1.1	0.13	0.25	0.16	0.27
Total Cyanide		--	--	--	--	--	--	--	--
Sulfide		--	--	--	--	--	--	--	--

mg/kg Milligrams per kilogram.
* Reported value is estimated because of interference indicated by the serial dilution percent difference.
** Elevated detection limits reported due to sample matrix interference.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present).
-- Parameters not analyzed.
(1) Depth in ft. below land surface.

Table 4-5. Concentrations of Metals, Total Cyanide, and Sulfate in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (mg/kg) / Sample I.D.:	QP-04S	VS-1	VS-2	VS-3	VS-4	VS-05D	VS-05M	VS-05S
Sample Depth(1):	3.0	(10.5-12.5)	(7.0-9.0)	(9.0-11.0)	(9.0-11.0)	6.0	4.0	2.0
Sample Event:	Phase II	Phase I	Phase I	Phase I	Phase I	Phase II	Phase II	Phase II
Antimony	<6.0 J	<7.4	<5.4	<5.9	<5.7	<6.9 J	<7.2 J	7.3 J
Barium	190	580	290	490	1600	670 J	340 J	540 J
Beryllium	0.63	1.5	0.59	0.90	0.87	1.5	0.94	0.91
Cadmium	0.79	6.4	8.3	4.3	5.0	1.9	1.3	6.7
Chromium	15	19	8.0	14	48	14	16	270
Cobalt	7.1	9.2	4.7	7.9	9.9	5.7	5.0	11
Copper	67	180 J	44 J	36 J	66 J	47 J	51 J	210 J
Nickel	22	27	17	23	32	25	13	37
Silver	<1.2 J	<15	<11	<5.9	<11	<1.2	<1.4	<1.2
Tin	17	100	7.4	23	<5.7	25	<7.2	120
Vanadium	27	23	16	29	27	29	19	38
Zinc	190 J	1800 J	180 J	180 J	910 J	590 J	320 J	1300
Arsenic	9.3 J	20 J	7.6 J	8.0 J	8.0 J	7.1 J	5.9 J	42 J
Lead	120 J	1200	230	170	170	290	240 J	1100
Thallium	<1.2	<1.4 I*	<2.2 I*	<1.2 I*	<1.0 I*	<1.4 J	<1.4 J	<1.2 J
Selenium	<1.2 J	<2.9 I**	<2.2 I**	<2.4 I**	<23 I**	<1.4 J	<1.4 J	<1.2 J
Mercury	0.16	0.95	0.39	0.37	1.5	0.34	0.22	10
Total Cyanide	–	<1.7 I	<1.3 I	<1.4 I	<1.4 I	–	–	–
Sulfide	–	2800	<7.2	<22	300 J	<14 J	<14 J	<13 J

mg/kg Milligrams per kilogram.
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** Elevated detection limits reported due to sample matrix interference.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present).
– Parameters not analyzed.
(1) Depth in ft. below land surface.

Table 4-5. Concentrations of Metals, Total Cyanide, and Sulfate in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (mg/kg)	Sample I.D.:	VS-06D	VS-06S	VS-07D	VS-07M	VS-07S	VS-08D	VS-08S	VS-09D
	Sample Depth(1):	6.0	3.5	7.0	4.0	3.0	8.0	3.0	7.0
	Sample Event:	Phase II	Phase II	Phase II	Phase II	Phase II	Phase II	Phase II	Phase II
Antimony		<5.8 J	<5.4 J	<6.5 J	7.9 J	25 J	<6.8 J	45 J	<7.0 J
Barium		470 J	440 J	130 J	1600 J	1700 J	260 J	320 J	1400 J
Beryllium		<0.58	<0.54	<0.65	<0.62	2.7	0.76	3.1	0.95
Cadmium		0.98	1.1	<0.65	6.8	3.8	<0.68	4.2	8.5
Chromium		9.2	12	13	42	43	16	24	24
Cobalt		1.8	6.8	9.5	5.3	13	9.1	11	13
Copper		30 J	43 J	31 J	540 J	370 J	26 J	100 J	510 J
Nickel		7.6	16	22	92	67	26	38	22
Silver		<1.2	<1.1	<1.3	<1.2	2.9	<1.4	1.5	<1.4
Tin		19	<5.4	<6.5	170	94	<6.8	21	1800
Vanadium		15	20	31	13	59	33	42	25
Zinc		120 J	240 J	63 J	1200 J	1000 J	66 J	500 J	850 J
Arsenic		4.6 J	5.7 J	8.9 J	15 J	16 J	14 J	20 J	9.2 J
Lead		150	91	14	1100	5800	34	6000	1800
Thallium		<1.2 J	<1.1 J	<1.3 J	<1.2 J	6.6	<1.4 J	<1.5 J	<1.4 J
Selenium		<2.3 J	<2.2 J	<1.3 J	<1.2 J	<1.5 J	<1.4 J	<1.5 J	<1.4 J
Mercury		0.42	0.22	0.56	1.2	0.80	0.061	0.22	0.14
Total Cyanide		–	–	–	–	–	–	–	–
Sulfide		18 J	<11 J	<13 J	<12 J	<15 J	27 J	<15 J	<14 J

mg/kg Milligrams per kilogram.
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J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present).
– Parameters not analyzed.
(1) Depth in ft. below land surface.

Table 4-5. Concentrations of Metals, Total Cyanide, and Sulfate in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (mg/kg)	Sample I.D.:	VS-09M	VS-09S	VS-10D	VS-10S	VS-11D	VS-11S	VS-12D	VS-12M
	Sample Depth(1):	5.0	4.0	8.0	3.0	6.5	4.0	6.5	4.0
	Sample Event:	Phase II	Phase II	Phase II	Phase II	Phase II	Phase II	Phase II	Phase II
Antimony		<7.0 J	6.4 J	<7.9 J	<6.2 J	<5.4 J	11 J	<6.9 J	<6.9 J
Barium		210 J	250 J	380 J	150 J	73 J	400 J	3400 J	770 J
Beryllium		2.0	<0.59	2.8	<0.62	<0.54	0.72	1.9	2.6
Cadmium		1.5	3.3	1.1	0.75	0.81	11	1.8	5.4
Chromium		15	21	18	18	6.8	40	15	26
Cobalt		7.5	4.9	7.9	5.7	1.4	20	7.4	9.6
Copper		410 J	180 J	120 J	360 J	19 J	130 J	370 J	2400 J
Nickel		25	17	30	16	19	24	61	32
Silver		<1.4	<1.2	<1.6	<1.2	<1.1	<1.2	<1.4	<1.4
Tin		110	38	21	<6.2	<5.4	40	34	130
Vanadium		41	17	45	33	6.0	27	29	49
Zinc		210 J	360 J	220 J	71 J	74 J	2000 J	330 J	880 J
Arsenic		5.5 J	6.9 J	9.3 J	5.3 J	5.1 J	4.0 J	13 J	12 J
Lead		85	470	440	58	82	280	280	590
Thallium		<1.4 J	<1.2 J	<1.6 J	<1.2 J	<1.1 J	<1.2 J	<1.2 J	<1.4 J
Selenium		<1.4 J	<2.4 J	<1.6 J	<2.5 J	<1.1 J	<1.2 J	<1.4 J	<1.4 J
Mercury		0.063	0.51	0.034	0.25	0.16	1.8	0.91	0.54
Total Cyanide		–	–	–	–	–	–	–	–
Sulfide		<14 J	<12 J	<16 J	<12 I	<11 J	<13 J	<14 J	<14 J

mg/kg Milligrams per kilogram.
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** Elevated detection limits reported due to sample matrix interference.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present).
– Parameters not analyzed.
(1) Depth in ft. below land surface.

Table 4-5. Concentrations of Metals, Total Cyanide, and Sulfate in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (mg/kg)	Sample I.D.:	VS-12S	BS-1	BP-03	BP-04	GP-20AD	GP-20AS	GP-20BD	GP-20BM
	Sample Depth(1):	2.5	(1.25-3.25)	3.0	3.0	8.0	4.0	6.0	4.0
	Sample Event:	Phase II	Phase I	Phase II	Phase II	Phase II	Phase II	Phase II	Phase II
Antimony		<6.0 J	<5.9	<6.0 J	<6.2 J	<6.3 J	<11 J	<7.1 J	<6.6 J
Barium		420 J	180	200 J	290 J	190 J	62 J	420 J	190 J
Beryllium		<0.6	0.70	0.96	0.77	<0.63	<1.1	0.83	<0.66
Cadmium		4.4	4.1	0.99	<0.62	<0.63	2.0	1.5	<0.66
Chromium		24	18	9.7	12	7.7	15	14	14
Cobalt		53	6.3	4.8	6.3	9.9	2.0	4.8	9.1
Copper		130 J	35	40	19	14	24	37	19
Nickel		16	18	18	17	14	13	17	24
Silver		<1.2	<1.2	<1.2	<1.2	<1.3	<2.2	<1.4	<1.3
Tin		45	48 J	8.9	<6.1	6.7	<11	11	<6.6
Vanadium		20	53 J	19	22	19	14	18	26
Zinc		400 J	250 J	170	68 J	80 J	190 J	290 J	230 J
Arsenic		20 J	6.5 J	6.1 J	9.1 J	9.3 J	4.4 J	6.0 J	6.4 J
Lead		400	260	330	48	64	91	390	51
Thallium		<1.2 J	<1.2	<1.2	<1.2	<1.3	<1.1 J	<1.4 J	<1.3
Selenium		<1.2 J	<5.9 I**	<1.2 J	<6.1 J	<2.5 J	<1.1 J	<1.4 J	<2.6 J
Mercury		0.90	0.44	0.18 J	0.16 J	0.39 J	0.17 J	1.4 J	0.060 J
Total Cyanide		--	<1.2 I	--	--	<1.3 J	<1.3 J	<1.3 J	<1.3 J
Sulfide		<12 J	<2.5	--	--	--	--	--	--

mg/kg Milligrams per kilogram.
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** Elevated detection limits reported due to sample matrix interference.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present).
-- Parameters not analyzed.
(1) Depth in ft. below land surface.

Table 4-5. Concentrations of Metals, Total Cyanide, and Sulfate in Soil Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (mg/kg)	Sample I.D.:	GP-20BS	GP–20CS	BG-01	BG-02	BG-03	LSS-1
	Sample Depth(1):	3.0	4.0	3.0	3.0	3.0	(3-3.75)
	Sample Event:	Phase II	Phase II	Phase II	Phase II	Phase II	
Antimony		<6.3 J	–	<6.1 J	<6.8 J	<6.0 J	<5.6
Barium		140 J	–	120 J	240 J	240 J	–
Beryllium		0.85	–	0.74	1.2	0.66	<0.56
Cadmium		1.5	–	0.92	<0.68	<0.60	0.68
Chromium		21	–	9.3	15	9.0	11
Cobalt		7.4	–	2.6	5.3	7.0	–
Copper		31	–	28	20	17	17
Nickel		20	–	12	22	15	11
Silver		<1.3	–	<1.2	<1.4	<1.2	<1.1
Tin		15	–	12	<6.8	<6.0	–
Vanadium		26	–	14	25	17	–
Zinc		140 J	–	280 J	56	94 J	93
Arsenic		7.9 J	–	8.1 J	5.2 J	5.1 J	2.8
Lead		110	–	300	17	140	32
Thallium		<1.3	–	<1.2 J	<1.4	<1.2	<5.7
Selenium		<1.3 J	–	<1.2 J	<1.4 J	<1.2 J	<11
Mercury		0.17 J	–	0.94 J	0.031 J	0.21 J	0.046
Total Cyanide		<1.2	<1.3 J	–	–	–	<1.1
Sulfide		–	–	–	–	–	–

mg/kg Milligrams per kilogram.
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** Elevated detection limits reported due to sample matrix interference.
J The associated numerical value is an estimated quantity.
I The data are unusable (compound may or may not be present).
– Parameters not analyzed.
(1) Depth in ft. below land surface.

Table 4-6. Volatile Organic Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	Sample ID: GM-1 Laboratory Log Number: 33672-3 Date Sampled: 6/4/91	GM-1 37211-9 11/1/91	GM-2 33672-4 6/4/91	GM-2 37211-8 11/1/91	GM-3 33672-5 6/4/91	GM-3 37211-7 11/1/91
Acetonitrile	<500,000 I	<1,000,000 I	<500,000 I	<500,000 I	<250,000 I	<250,000 I
Acetone	<100,000	<200,000	<100,000	<100,000	<50,000	<50,000
Benzene	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
Bromodichloromethane	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
Bromomethane	<10,000	<20,000	<10,000	<10,000	<5,000	<5,000
Carbon disulfide	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
Chlorobenzene	**140,000**	**280,000**	**72,000**	**140,000**	**52,000**	**49,000 J**
Dibromochloromethane	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
Chloroethane	<10,000	<20,000	<10,000	<10,000	<5,000	<5,000
2-Chloroethylvinyl ether	<10,000	<20,000	<10,000	<10,000	<5,000	<5,000
Chloromethane	<10,000	<20,000	<10,000	<10,000	<5,000	<5,000
Chloroform	<5,000	<10,000	<5,000	<5000	<2,500	<2,500
3-Chloropropene (allylchloride)	<10,000	<20,000	<10,000	<10,000	<5,000	<5,000
1,2-Dibromo-3-chloropropane	<10,000	<20,000	<10,000	<10,000	<5,000	<5,000
Dibromoethane (EDB)	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
Dibromomethane	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
trans-1,4-Dichloro-2-butene	<10,000	<20,000	<10,000	<10,000	<5,000	<5,000
Dichlorodifluoromethane	<50,000	<100,000	<50,000	<50,000	<25,000	<25,000
1,1-Dichloroethane	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
1,2-Dichloroethane	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
trans-1,2-Dichloroethene	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
1,1-Dichloroethene	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
Methylene chloride	<5,000	**15,000 J**	<5,000	<5,000	<2,500	<2,500
1,2-Dichloropropane	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
cis-1,3-Dichloropropene	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
trans-1,3-Dichloropropene	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
Ethyl benzene	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
2-Butanone (MEK)	<100,000 I	<200,000 I	<100,000 I	<100,000 I	<50,000 I	<50,000 I
Iodomethane	<5,000	<10,000	<5,000	<5,000	<25,000	<2,500
Methacrylonitrile	<100,000	<200,000	<100,000	<100,000	<50,000	<50,000
4-Methyl-2-pentanone (MIBK)	<50,000	<100,000	<50,000	<50,000	<25,000	<25,000
Pentachloroethane	<10,000 I	<20,000 I	<10,000 I	<10,000 I	<5,000 I	<5,000 I
Styrene	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
1,1,1,2-Tetrachloroethane	<5,000 I	<10,000 I	<5,000 I	<5,000 I	<2,500 I	<2,500 I
1,1,2,2-Tetrachloroethane	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
Tetrachloroethene	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
Carbon tetrachloride	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
Toluene	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
Bromoform	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
1,1,2-Trichloroethane	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
1,1,1-Trichloroethane	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
Trichloroethene	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
Trichlorofluoromethane	<10,000	<20,000	<10,000	<10,000	<5,000	<5,000
1,2,3-Trichloropropane	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
Vinyl acetate	<50,000	<100,000	<50,000	<50,000	<25,000	<25,000
Vinyl chloride	<10,000	<20,000	<10,000	<10,000	<5,000	<5,000
Xylenes	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
2-Hexanone	<50,000	<100,000	<50,000	<50,000	<25,000	<25,000
Propionitrile	<100,000	<200,000 I	<100,000	<100,000 I	<50,000	<50,000 I
Methyl methacrylate	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
Acrolein	<100,000 I	<200,000 I	<100,000 I	<100,000 I	<50,000 I	<50,000 I
Acrylonitrile	<100,000	<200,000	<100,000	<100,000	<50,000	<50,000
Ethyl methacrylate	<5,000	<10,000	<5,000	<5,000	<2,500	<2,500
Isobutyl alcohol	<1,000,000 I	<2,000,000 I	<1,000,000 I	<1,000,000 I	<500,000	<500,000 I
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Not analyzed.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-6. Volatile Organic Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	GM-4 33672-6 6/4/91	GM-4 37211-6 11/1/91	GM-5 33672-7 6/4/91	GM-5 37211-5 11/1/91	MW-2A 33733-3 6/6/91	MW-2A 37265-8 11/5/91
Acetonitrile	<50,000 I	<5,000 I	<50,000 I	<50,000 I	<500 I	<500 I
Acetone	<10,000	<1,000	<10,000	<10,000	<100	<100
Benzene	<500	<50	<500	<500	<5.0	<5.0
Bromodichloromethane	<500	<50	<500	<500	<5.0	<5.0
Bromomethane	<1,000	<100	<1,000	<1,000	<10	<10
Carbon disulfide	<500	<50	<500	<500	<5.0	<5.0
Chlorobenzene	**990**	**1,700**	**11,000**	**8500/10000 J**	<5.0	<5.0
Dibromochloromethane	<500	<50	<500	<500	<5.0	<5.0
Chloroethane	<1,000	<100	<1,000	<1,000	<10	<10
2-Chloroethylvinyl ether	<1,000	<100	<1,000	<1,000	<10	<10
Chloromethane	<1,000	<100	<1,000	<1,000	<10	<10
Chloroform	<500	<50	<500	<500	<5.0	<5.0
3-Chloropropene (allylchloride)	<1,000	<100	<1,000	<1,000	<10	<10
1,2-Dibromo-3-chloropropane	<1,000	<100	<1,000	<1,000	<10	<10
Dibromoethane (EDB)	<500	<50	<500	<500	<5.0	<5.0
Dibromomethane	<500	<50	<500	<500	<5.0	<5.0
trans-1,4-Dichloro-2-butene	<1,000	<100	<1,000	<1,000	<10	<10
Dichlorodifluoromethane	<5,000	<500	<5,000	<5,000	<50	<50
1,1-Dichloroethane	<500	<50	<500	<500	<5.0	<5.0
1,2-Dichloroethane	<500	<50	<500	<500	<5.0	<5.0
trans-1,2-Dichloroethene	<500	<50	<500	<500	<5.0	<5.0
1,1-Dichloroethene	<500	<50	<500	<500	<5.0	<5.0
Methylene chloride	<500	<50	<500	<500	<5.0	<5.0
1,2-Dichloropropane	<500	<50	<500	<500	<5.0	<5.0
cis-1,3-Dichloropropene	<500	<50	<500	<500	<5.0	<5.0
trans-1,3-Dichloropropene	<500	<50	<500	<500	<5.0	<5.0
Ethyl benzene	<500	<50	<500	<500	<5.0	<5.0
2-Butanone (MEK)	<10,000 I	<1,000 I	<10,000 I	<10,000 I	<100 I	<100 I
Iodomethane	<500	<50	<500	<500	<5.0	<5.0
Methacrylonitrile	<10,000	<1,000	<10,000	<10,000	<100	<100
4-Methyl-2-pentanone (MIBK)	<5,000	<500	<5,000	<5,000	<50	<50
Pentachloroethane	<1,000 I	<100 I	<1,000 I	<1,000 I	<10 I	<10 I
Styrene	<500	<50	<500	<500	<5.0	<5.0
1,1,1,2-Tetrachloroethane	<500 I	<50 I	<500 I	<500 I	<5.0 I	<5.0 I
1,1,2,2-Tetrachloroethane	<500	<50	<500	<500	<5.0	<5.0
Tetrachloroethene	<500	<50	<500	<500	<5.0	<5.0
Carbon tetrachloride	<500	<50	<500	<500	<5.0	<5.0
Toluene	<500	<50	<500	<500	<5.0	<5.0
Bromoform	<500	<50	<500	<500	<5.0	<5.0
1,1,2-Trichloroethane	<500	<50	<500	<500	<5.0	<5.0
1,1,1-Trichloroethane	<500	<50	<500	<500	<5.0	<5.0
Trichloroethene	<500	<50	<500	<500	<5.0	<5.0
Trichlorofluoromethane	<1,000	<100	<1,000	<1,000	<10	<10
1,2,3-Trichloropropane	<500	<50	<500	<500	<5.0	<5.0
Vinyl acetate	<5,000	<500	<5,000	<5,000	<50	<50
Vinyl chloride	<1,000	<100	<1,000	<1,000	<10	<10
Xylenes	<500	<50	<500	<500	<5.0	<5.0
2-Hexanone	<5,000	<500	<5,000	<5,000	<50	<50
Propionitrile	<10,000	<1,000 I	<10,000	<10,000 I	<100	<100 I
Methyl methacrylate	<500	<50	<500	<500	<5.0	<5.0
Acrolein	<10,000	<1,000 I	<10,000 I	<10,000 I	<100 I	<100 I
Acrylonitrile	<10,000	<1,000	<10,000	<10,000	<100	<100
Ethyl methacrylate	<500	<50	<500	<500	<5.0	<5.0
Isobutyl alcohol	<100,000 I	<10,000 I	<100,000 I	<100,000 I	<1,000 I	<1,000 I
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Not analyzed.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-6. Volatile Organic Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	MW-2B 33733-4 6/6/91	MW-2B 37265-9 11/5/91	MW-2R 32911-1 4/25/91	MW-2R 37265-5 11/5/91	MW-3 33805-2 6/11/91	MW-3 37265-1 11/5/91
Acetonitrile	<500 I	<500 I	<500 I	<500 I	<5,000 I	<25,000 I
Acetone	<100	<100	<100	<100	<1,000	<5,000
Benzene	<5.0	<5.0	<5.0	<5.0	<50	<250
Bromodichloromethane	<5.0	<5.0	<5.0	<5.0	<50	<250
Bromomethane	<10	<10	<10	<10	<100	<500
Carbon disulfide	<5.0	<5.0	<5.0	<5.0	<50	<250
Chlorobenzene	<5.0	<5.0	<5.0	<5.0	**840**	**1,300**
Dibromochloromethane	<5.0	<5.0	<5.0	<5.0	<50	<250
Chloroethane	<10	<10	<10	<10	<100	<500
2-Chloroethylvinyl ether	<10	<10	<10	<10	<100	<500
Chloromethane	<10	<10	<10	<10	<100	<500
Chloroform	<5.0	<5.0	<5.0	<5.0	<50	<250
3-Chloropropene (allylchloride)	<10	<10	<10	<10	<100	<500
1,2-Dibromo-3-chloropropane	<10	<10	<10	<10	<100	<500
Dibromoethane (EDB)	<5.0	<5.0	<5.0	<5.0	<50	<250
Dibromomethane	<5.0	<5.0	<5.0	<5.0	<50	<250
trans-1,4-Dichloro-2-butene	<10	<10	<10	<10	<100 I	<500
Dichlorodifluoromethane	<50	<50	<50	<50	<500	<2,500
1,1-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<50	<250
1,2-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<50	<250
trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<50	<250
1,1-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<50	<250
Methylene chloride	<5.0	<5.0	<5.0	<5.0	<50	<250
1,2-Dichloropropane	<5.0	<5.0	<5.0	<5.0	<50	<250
cis-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<50	<250
trans-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<50	<250
Ethyl benzene	<5.0	<5.0	<5.0	<5.0	<50	<250
2-Butanone (MEK)	<100 I	<100 I	<100 I	<100 I	<1,000 I	<5,000 I
Iodomethane	<5.0	<5.0	<5.0	<5.0	<50	<250
Methacrylonitrile	<100	<100	<100	<100	<1,000	<5,000
4-Methyl-2-pentanone (MIBK)	<50	<50	<50	<50	<500	<2,500
Pentachloroethane	<10 I	<10 I	<10 I	<10 I	<100 I	<500 I
Styrene	<5.0	<5.0	<5.0	<5.0	<50	<250
1,1,1,2-Tetrachloroethane	<5.0 I	<5.0 I	<5.0 I	<5.0 I	<50 I	<250 I
1,1,2,2-Tetrachloroethane	<5.0	<5.0	<5.0	<5.0	<50	<250
Tetrachloroethene	<5.0	<5.0	<5.0	<5.0	**97**	**380**
Carbon tetrachloride	<5.0	<5.0	<5.0	<5.0	<50	<250
Toluene	<5.0	<5.0	<5.0	<5.0	<50	<250
Bromoform	<5.0	<5.0	<5.0	<5.0	<50	<250
1,1,2-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<50	<250
1,1,1-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<50	<250
Trichloroethene	<5.0	<5.0	<5.0	<5.0	**510**	**670**
Trichlorofluoromethane	<10	<10	<10	<10	<100	<500
1,2,3-Trichloropropane	<5.0	<5.0	<5.0	<5.0	<50	<250
Vinyl acetate	<50	<50	<50	<50	<500	<2,500
Vinyl chloride	<10	<10	<10	<10	<100	<5,000
Xylenes	<5.0	<5.0	<5.0	<5.0	<50	<250
2-Hexanone	<50	<50	<50	<50	<500	<2,500
Propionitrile	<100	<100 I	<100	<100 I	<1,000	<5,000 I
Methyl methacrylate	<5.0	<5.0	<5.0	<5.0	<50	<250
Acrolein	<100 I	<100 I	<100	<100 I	<1,000	<5,000 I
Acrylonitrile	<100	<100	<100	<100	<1,000	<5,000
Ethyl methacrylate	<5.0	<5.0	<5.0	<5.0	<50	<250
Isobutyl alcohol	<1,000 I	<1,000 I	<1,000	<1,000 I	<10,000 I	<50,000 I
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Not analyzed.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-6. Volatile Organic Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	MW-3	MW-4	MW-4	MW-8A	MW-8A Dup	MW-8A
Sample ID:	MW-3	MW-4	MW-4	MW-8A	MW-8A Dup	MW-8A
Laboratory Log Number:	46405-22	33805-4	37166-1	33748-3	33748-4	37146-5
Date Sampled:	11/10/93	6/11/91	10/30/91	6/7/91	6/7/91	10/29/91
Acetonitrile	<12000	<5,000 I	<2,500 I	<100,000 I	<100,000 I	<100,000 I
Acetone	<2500	<1,000	<500	<20,000	<20,000	<20,000
Benzene	<120	<50	<25	<1,000	<1,000	<1,000
Bromodichloromethane	<120	<50	<25	<1,000	<1,000	<1,000
Bromomethane	<250	<100	<50	<2,000	<2,000	<2,000
Carbon disulfide	<120	<50	<25	<1,000	<1,000	<1,000
Chlorobenzene	**640**	**880**	**760**	**17,000**	**17,000**	**16,000**
Dibromochloromethane	<120	<50	<25	<1,000	<1,000	<1,000
Chloroethane	<250	<100	<50	<2,000	<2,000	<2,000
2-Chloroethylvinyl ether	<250	<100	<50	<2,000	<2,000	<2,000 I
Chloromethane	<250	<100	<50	<2,000	<2,000	<2,000
Chloroform	<120	<50	<25	<1,000	<1,000	<1,000
3-Chloropropene (allylchloride)	<250	<100	<50	<2,000	<2,000	<2,000
1,2-Dibromo-3-chloropropane	<250	<100	<50	<2,000	<2,000	<2,000
Dibromoethane (EDB)	<120	<50	<25	<1,000	<1,000	<1,000
Dibromomethane	<120	<50	<25	<1,000	<1,000	<1,000
trans-1,4-Dichloro-2-butene	<250 I	<100 I	<50	<2,000	<2,000	<2,000
Dichlorodifluoromethane	<1200	<500	<250	<10,000	<10,000	<10,000
1,1-Dichloroethane	<120	<50	<25	<1,000	<1,000	<1,000
1,2-Dichloroethane	<120	<50	<25	<1,000	<1,000	<1,000
trans-1,2-Dichloroethene	<120	<50	<25	<1,000	<1,000	<1,000
1,1-Dichloroethene	<120	<50	<25	<1,000	<1,000	<1,000
Methylene chloride	<120	<50	<25	<1,000	<1,000	<1,000
1,2-Dichloropropane	<120	<50	<25	<1,000	<1,000	<1,000
cis-1,3-Dichloropropene	<120	<50	<25	<1,000	<1,000	<1,000
trans-1,3-Dichloropropene	<120	<50	<25	<1,000	<1,000	<1,000
Ethyl benzene	<120	<50	<25	<1,000	<1,000	<1,000
2-Butanone (MEK)	<2500	<1,000 I	<500 I	<20,000 I	<20,000 I	<20,000 I
Iodomethane	<120	<50	<25	<1,000	<1,000	<1,000
Methacrylonitrile	<2500	<1,000	<500	<20,000	<20,000	<20,000
4-Methyl-2-pentanone (MIBK)	<1200	<500	<25 I	<10,000	<10,000	<10,000
Pentachloroethane	<250	<100 I	<500 I	<2000 I	<2000 I	<2000 I
Styrene	<120	<50	<250	<1,000	<1,000	<1,000
1,1,1,2-Tetrachloroethane	<120	<50 I	<25 I	<1,000 I	<1,000 I	<1,000 I
1,1,2,2-Tetrachloroethane	<120	<50	<25	<1,000	<1,000	<1,000
Tetrachloroethene	**560**	<50	<25	<1,000	<1,000	<1,000
Carbon tetrachloride	<120	<50	<25	<1,000	<1,000	<1,000
Toluene	<120	<50	<25	<1,000	<1,000	<1,000
Bromoform	,120	<50	<25	<1,000	<1,000	<1,000
1,1,2-Trichloroethane	<120	<50	<25	<1,000	<1,000	<1,000
1,1,1-Trichloroethane	<120	<50	<25	<1,000	<1,000	<1,000
Trichloroethene	**420**	<50	<25	<1,000	<1,000	<1,000
Trichlorofluoromethane	<250	<100	<50	<2,000	<2,000	<2,000
1,2,3-Trichloropropane	<120	<50	<25	<1,000	<1,000	<1,000
Vinyl acetate	<250	<500	<250	<10,000	<10,000	<10,000
Vinyl chloride	<250	<100	<50	<2,000	<2,000	<2,000
Xylenes	<120	<50	<25	<1,000	<1,000	<1,000
2-Hexanone	<1200	<500	<250	<10,000	<10,000	<10,000
Propionitrile	<2500	<1,000	<500 I	<20,000	<20,000	<20,000 I
Methyl methacrylate	<120	<50	<25	<1,000	<1,000	<1,000
Acrolein	<2500 I	<1,000	<500 I	<20,000	<20,000	<20,000 I
Acrylonitrile	<2500	<1,000	<500	<20,000	<20,000	<20,000
Ethyl methacrylate	<120	<50	<25	<1,000	<1,000	<1,000
Isobutyl alcohol	<25000 I	<10,000 I	<5,000 I	<200,000 I	<200,000 I	<200,000 I
1,1,2-Trichloro-1,2,2-trifluoroethane	<250	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	**770**	NA	NA	NA	NA	NA

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Not analyzed.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-6. Volatile Organic Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	Sample ID: MW-8A Laboratory Log Number: 46405-20 Date Sampled: 11/10/93	MW-8B 33748-5 6/7/91	MW-8B Dup 33748-6 6/7/91	MW-8B 37146-4 10/29/91	MW-8B Rep 37146-7 10/29/91	MW-8R 37146-3 10/29/91
Acetonitrile	<100000	<500 I	<500 I	<500 I	<500 I	<500 I
Acetone	<20000	**110 J**	**120 J**	<100	<100	<100
Benzene	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
Bromodichloromethane	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane	<2000	<10	<10	<10	<10	<10
Carbon disulfide	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene	**19,000**	<5.0	<5.0	<5.0	<5.0	**11**
Dibromochloromethane	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroethane	<2000	<10	<10	<10	<10	<10
2-Chloroethylvinyl ether	<2000	<10	<10	<10 I	<10 I	<10 I
Chloromethane	<2000	<10	<10	<10	<10	<10
Chloroform	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
3-Chloropropene (allylchloride)	<2000	<10	<10	<10	<10	<10
1,2-Dibromo-3-chloropropane	<2000	<10	<10	<10	<10	<10
Dibromoethane (EDB)	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
Dibromomethane	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,4-Dichloro-2-butene	<2000 I	<10	<10	<10	<10	<10
Dichlorodifluoromethane	<10000	<50	<50	<50	<50	<50
1,1-Dichloroethane	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,2-Dichloroethene	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
Methylene chloride	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,3-Dichloropropene	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
Ethyl benzene	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
2-Butanone (MEK)	<20000	<100 I	<100 I	<100 I	<100 I	<100 I
Iodomethane	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
Methacrylonitrile	<20000	<100	<100	<100	<100	<100
4-Methyl-2-pentanone (MIBK)	<10000	<50	<50	<50	<50	<50
Pentachloroethane	<2000	<10 I	<10 I	<10 I	<10 I	<10 I
Styrene	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,1,2-Tetrachloroethane	<1000	<5.0 I	<5.0 I	<5.0 I	<5.0 I	<5.0 I
1,1,2,2-Tetrachloroethane	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon tetrachloride	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
Bromoform	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,1-Trichloroethane	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethene	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane	<2000	<10	<10	<10	<10	<10
1,2,3-Trichloropropane	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
Vinyl acetate	<2000	<50	<50	<50	<50	<50
Vinyl chloride	<2000	<10	<10	<10	<10	<10
Xylenes	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone	<10000	<50	<50	<50	<50	<50
Propionitrile	<20000	<100	<100	<100 I	<100 I	<100 I
Methyl methacrylate	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
Acrolein	<20000 I	<100 I	<100	<100 I	<100 I	<100 I
Acrylonitrile	<20000	<100	<100	<100	<100	<100
Ethyl methacrylate	<1000	<5.0	<5.0	<5.0	<5.0	<5.0
Isobutyl alcohol	<200000 I	<1,000	<1,000 I	<1,000 I	<1,000 I	<1,000 I
1,1,2-Trichloro-1,2,2-trifluoroethane	<2000	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	<1000	NA	NA	NA	NA	NA

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Not analyzed.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-6. Volatile Organic Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	Sample ID: MW-8R Rep Laboratory Log Number: 37146-8 Date Sampled: 10/29/91	MW-9 33748-1 6/7/91	MW-9 37181-6 10/31/91	MW-10 33780-1 6/10/91	MW-10 37166-2 10/30/91	MW-11A 33780-2 6/10/91
Acetonitrile	<500 I	<500 I	<500 I	<500 I	<500 I	<500 I
Acetone	<100	<100	<100	<100	<100	<100
Benzene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromodichloromethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane	<10	<10	<10	<10	<10	<10
Carbon disulfide	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene	6.5	<5.0	<5.0	<5.0	<5.0	<5.0
Dibromochloromethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroethane	<10	<10	<10	<10	<10	<10
2-Chloroethylvinyl ether	<10 I	<10	<10	<10	<10	<10
Chloromethane	<10	<10	<10	<10	<10	<10
Chloroform	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
3-Chloropropene (allylchloride)	<10	<10	<10	<10	<10	<10
1,2-Dibromo-3-chloropropane	<10	<10	<10	<10	<10	<10
Dibromoethane (EDB)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dibromomethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,4-Dichloro-2-butene	<10	<10	<10	<10	<10	<10
Dichlorodifluoromethane	<50	<50	<50	<50	<50	<50
1,1-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methylene chloride	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Ethyl benzene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Butanone (MEK)	<100 I	<100 I	<100 I	<100 I	<100 I	<100 I
Iodomethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methacrylonitrile	<100	<100	<100	<100	<100	<100
4-Methyl-2-pentanone (MIBK)	<50	<50	<50	<50	<50	<50
Pentachloroethane	<10 I	<10 I	<10 I	<10 I	<10 I	<10 I
Styrene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,1,2-Tetrachloroethane	<5.0 I	<5.0 I	<5.0 I	<5.0 I	<5.0 I	<5.0 I
1,1,2,2-Tetrachloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon tetrachloride	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromoform	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,1-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane	<10	<10	<10	<10	<10	<10
1,2,3-Trichloropropane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Vinyl acetate	<50	<50	<50	<50	<50	<50
Vinyl chloride	<10	<10	<10	<10	<10	<10
Xylenes	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone	<50	<50	<50	<50	<50	<50
Propionitrile	<100 I	<100	<100 I	<100	<100 I	<100
Methyl methacrylate	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Acrolein	<100 I	<100 I	<100 I	<100	<100 I	<100
Acrylonitrile	<100	<100	<100	<100	<100	<100
Ethyl methacrylate	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Isobutyl alcohol	<1,000 I	<1,000	<1,000 I	<1,000 I	<1,000 I	<1,000 I
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Not analyzed.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-6. Volatile Organic Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	MW-11A 37265-3 11/5/91	MW-11B 33780-3 6/10/91	MW-11B 37265-4 11/5/91	MW-13 33780-4 6/10/91	MW-13 Dup 33780-5 6/10/91	MW-13 37166-3 10/30/91
Acetonitrile	<500 I	<500 I	<500 I	<5,000 I	<5,000 I	<2,500 I
Acetone	<100	<100	<100	<1,000	<1,000	<500
Benzene	<5.0	<5.0	<5.0	<50	<50	<25
Bromodichloromethane	<5.0	<5.0	<5.0	<50	<50	<25
Bromomethane	<10	<10	<10	<100	<100	<50
Carbon disulfide	<5.0	<5.0	<5.0	<50	<50	<25
Chlorobenzene	<5.0	<5.0	<5.0	**520**	**530**	**620**
Dibromochloromethane	<5.0	<5.0	<5.0	<50	<50	<25
Chloroethane	<10	<10	<10	<100	<100	<50
2-Chloroethylvinyl ether	<10	<10	<10	<100	<100	<50
Chloromethane	<10	<10	<10	<100	<100	<50
Chloroform	<5.0	<5.0	<5.0	<50	<50	<25
3-Chloropropene (allylchloride)	<10	<10	<10	<100	<100	<50
1,2-Dibromo-3-chloropropane	<10	<10	<10	<100	<100	<50
Dibromoethane (EDB)	<5.0	<5.0	<5.0	<50	<50	<25
Dibromomethane	<5.0	<5.0	<5.0	<50	<50	<25
trans-1,4-Dichloro-2-butene	<10	<10	<10	<100 I	<100 I	<25
Dichlorodifluoromethane	<50	<50	<50	<500	<500	<250
1,1-Dichloroethane	<5.0	<5.0	<5.0	<50	<50	<25
1,2-Dichloroethane	<5.0	<5.0	<5.0	<50	<50	<25
trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<50	<50	<25
1,1-Dichloroethene	<5.0	<5.0	<5.0	<50	<50	<25
Methylene chloride	<5.0	<5.0	<5.0	<50	<50	<25
1,2-Dichloropropane	<5.0	<5.0	<5.0	<50	<50	<25
cis-1,3-Dichloropropene	<5.0	<5.0	<5.0	<50	<50	<25
trans-1,3-Dichloropropene	<5.0	<5.0	<5.0	<50	<50	<25
Ethyl benzene	<5.0	<5.0	<5.0	<50	<50	<25
2-Butanone (MEK)	<100 I	<100 I	<100 I	<1,000 I	<1,000 I	<500 I
Iodomethane	<5.0	<5.0	<5.0	<50	<50	<25
Methacrylonitrile	<100	<100	<100	<1,000	<1,000	<500
4-Methyl-2-pentanone (MIBK)	<50	<50	<50	<500	<500	<250 I
Pentachloroethane	<10 I	<10 I	<10 I	<100 I	<100 I	<50 I
Styrene	<5.0	<5.0	<5.0	<50	<50	<25
1,1,1,2-Tetrachloroethane	<5.0 I	<5.0 I	<5.0 I	<50 I	<50 I	<25 I
1,1,2,2-Tetrachloroethane	<5.0	<5.0	<5.0	<50	<50	<25
Tetrachloroethene	<5.0	<5.0	<5.0	<50	<50	<25
Carbon tetrachloride	<5.0	<5.0	<5.0	<50	<50	<25
Toluene	<5.0	<5.0	<5.0	<50	<50	<25
Bromoform	<5.0	<5.0	<5.0	<50	<50	<25
1,1,2-Trichloroethane	<5.0	<5.0	<5.0	<50	<50	<25
1,1,1-Trichloroethane	<5.0	<5.0	<5.0	<50	<50	<25
Trichloroethene	<5.0	<5.0	<5.0	<50	<50	<25
Trichlorofluoromethane	<10	<10	<10	<100	<100	<50
1,2,3-Trichloropropane	<5.0	<5.0	<5.0	<50	<50	<25
Vinyl acetate	<50	<50	<50	<500	<500	<250
Vinyl chloride	<10	<10	<10	<100	<100	<50
Xylenes	<5.0	<5.0	<5.0	<50	<50	<25
2-Hexanone	<50	<50	<50	<500	<500	<250
Propionitrile	<100 I	<100	<100 I	<1,000	<1,000	<500 I
Methyl methacrylate	<5.0	<5.0	<5.0	<50	<50	<25
Acrolein	<100 I	<100	<100 I	<1,000	<1,000	<500 I
Acrylonitrile	<100	<100	<100	<1,000	<1,000	<500
Ethyl methacrylate	<5.0	<5.0	<5.0	<50	<50	<25
Isobutyl alcohol	<1,000 I	<1,000 I	<1,000 I	<10,000 I	<10,000 I	<5,000 I
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Not analyzed.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-6. Volatile Organic Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	MW-13	MW-13R	MW-14	MW-14 Dup	MW-14	MW-14A
Sample ID:	MW-13	MW-13R	MW-14	MW-14 Dup	MW-14	MW-14A
Laboratory Log Number:	46405-1	37181-1	33672-8	33672-9	37211-1	46432-2
Date Sampled:	11/9/93	10/31/91	6/4/91	6/4/91	11/1/91	11/12/93
Acetonitrile	<500	<500 I	<500,000 I	<500,000 I	<250,000 I	<500000
Acetone	<100	<100	<100,000	<100,000	<50,000	<100000
Benzene	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
Bromodichloromethane	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
Bromomethane	<10	<10	<10,000	<10,000	<5,000	<10000
Carbon disulfide	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
Chlorobenzene	**570**	<5.0	**55,000**	**47,000**	**100,000**	**83,000**
Dibromochloromethane	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
Chloroethane	<10	<10	<10,000	<10,000	<5,000	<10000
2-Chloroethylvinyl ether	<10	<10	<10,000	<10,000	<5,000	<10000
Chloromethane	<10	<10	<10,000	<10,000	<5,000	<10000
Chloroform	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
3-Chloropropene (allylchloride)	<10	<10	<10,000	<10,000	<5,000	<10000
1,2-Dibromo-3-chloropropane	<10	<10	<10,000	<10,000	<5,000	<10000
Dibromoethane (EDB)	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
Dibromomethane	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
trans-1,4-Dichloro-2-butene	<10 I	<10	<10,000	<10,000	<5,000	<10000
Dichlorodifluoromethane	<50	<50	<50,000	<50,000	<25,000	<50000
1,1-Dichloroethane	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
1,2-Dichloroethane	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
trans-1,2-Dichloroethene	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
1,1-Dichloroethene	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
Methylene chloride	<5.0	**13 U**	<5,000	<5,000	<2,500	<5000
1,2-Dichloropropane	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
cis-1,3-Dichloropropene	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
trans-1,3-Dichloropropene	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
Ethyl benzene	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
2-Butanone (MEK)	<100	<100 I	<100,000 I	<100,000 I	<50,000 I	<100000
Iodomethane	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
Methacrylonitrile	<100	<100	<100,000	<100,000	<50,000	<100000
4-Methyl-2-pentanone (MIBK)	<50	<50	<50,000	<50,000	<25,000	<50000
Pentachloroethane	<10	<10 I	<10,000 I	<10,000 I	<5,000 I	<10000
Styrene	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
1,1,1,2-Tetrachloroethane	<5.0	<5.0 I	<5,000 I	<5,000 I	<2,500 I	<5000
1,1,2,2-Tetrachloroethane	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
Tetrachloroethene	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
Carbon tetrachloride	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
Toluene	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
Bromoform	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
1,1,2-Trichloroethane	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
1,1,1-Trichloroethane	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
Trichloroethene	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
Trichlorofluoromethane	<5.0	<10	<10,000	<10,000	<5,000	<10000
1,2,3-Trichloropropane	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
Vinyl acetate	<5.0	<50	<50,000	<50,000	<25,000	<10000
Vinyl chloride	<5.0	<10	<10,000	<10,000	<5,000	<10000
Xylenes	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
2-Hexanone	<50	<50	<50,000	<50,000	<25,000	<50000
Propionitrile	<100	<100 I	<100,000	<100,000	<50,000 I	<100000
Methyl methacrylate	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
Acrolein	<10 I	<100 I	<100,000 I	<100,000 I	<50,000 I	<100000
Acrylonitrile	<100	<100	<100,000	<100,000	<50,000	<100000
Ethyl methacrylate	<5.0	<5.0	<5,000	<5,000	<2,500	<5000
Isobutyl alcohol	<1000 I	<1,000 I	<1,000,000 I	<1,000,000 I	<500,000 I	<1000000 I
1,1,2-Trichloro-1,2,2-trifluoroethane	<10	NA	NA	NA	NA	<10000
cis-1,2-Dichloroethene	<5.0	NA	NA	NA	NA	<5000

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Not analyzed.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-6. Volatile Organic Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	MW-15 33805-3 6/11/91	MW-15 37265-2 11/5/91	MW-20 33748-2 6/7/91	MW-20 37265-6 11/5/91	TW-1 33672-1 6/4/91	TW-1 37181-4 10/31/91
Acetonitrile	<500 I	<500 I	<500 I	<500 I	<50,000 I	<50,000 I
Acetone	<100	<100	<100	<100	<10,000	<10,000
Benzene	<5.0	<5.0	<5.0	<5.0	<500	<500
Bromodichloromethane	<5.0	<5.0	<5.0	<5.0	<500	<500
Bromomethane	<10	<10	<10	<10	<1,000	<1,000
Carbon disulfide	<5.0	<5.0	<5.0	<5.0	<500	<500
Chlorobenzene	**29**	<5.0	<5.0	<5.0	**6,500**	**4,900**
Dibromochloromethane	<5.0	<5.0	<5.0	<5.0	<500	<500
Chloroethane	<10	<10	<10	<10	<1,000	<1,000
2-Chloroethylvinyl ether	<10	<10	<10	<10	<1,000	<1,000
Chloromethane	<10	<10	<10	<10	<1,000	<1,000
Chloroform	<5.0	<5.0	<5.0	<5.0	<500	<500
3-Chloropropene (allylchloride)	<10	<10	<10	<10	<1,000	<1,000
1,2-Dibromo-3-chloropropane	<10	<10	<10	<10	<1,000	<1,000
Dibromoethane (EDB)	<5.0	<5.0	<5.0	<5.0	<500	<500
Dibromomethane	<5.0	<5.0	<5.0	<5.0	<500	<500
trans-1,4-Dichloro-2-butene	<10	<10	<10	<10	<1,000	<1,000
Dichlorodifluoromethane	<50	<50	<50	<50	<5,000	<5,000
1,1-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<500	<500
1,2-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<500	<500
trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<500	<500
1,1-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<500	<500
Methylene chloride	<5.0	<5.0	<5.0	<5.0	<500	<500
1,2-Dichloropropane	<5.0	<5.0	<5.0	<5.0	<500	<500
cis-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<500	<500
trans-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<500	<500
Ethyl benzene	<5.0	<5.0	<5.0	<5.0	<500	<500
2-Butanone (MEK)	<100 I	<100 I	<100 I	<100 I	<10,000 I	<10,000 I
Iodomethane	<5.0	<5.0	<5.0	<5.0	<500	<500
Methacrylonitrile	<100	<100	<100	<100	<10,000	<10,000
4-Methyl-2-pentanone (MIBK)	<50	<50	<50	<50	<5,000	<5,000
Pentachloroethane	<10 I	<10 I	<10 I	<10 I	<1,000 I	<1,000 I
Styrene	<5.0	<5.0	<5.0	<5.0	<500	<500
1,1,1,2-Tetrachloroethane	<5.0 I	<5.0 I	<5.0 I	<5.0 I	<500 I	<500 I
1,1,2,2-Tetrachloroethane	<5.0	<5.0	<5.0	<5.0	<500	<500
Tetrachloroethene	<5.0	<5.0	<5.0	<5.0	<500	<500
Carbon tetrachloride	<5.0	<5.0	<5.0	<5.0	<500	<500
Toluene	<5.0	<5.0	<5.0	<5.0	<500	<500
Bromoform	<5.0	<5.0	<5.0	<5.0	<500	<500
1,1,2-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<500	<500
1,1,1-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<500	<500
Trichloroethene	<5.0	<5.0	<5.0	<5.0	<500	<500
Trichlorofluoromethane	<10	<10	<10	<10	<1,000	<1,000
1,2,3-Trichloropropane	<5.0	<5.0	<5.0	<5.0	<500	<500
Vinyl acetate	<50	<50	<50	<50	<5,000	<5,000
Vinyl chloride	<10	<10	<10	<10	<1,000	<1,000
Xylenes	<5.0	<5.0	<5.0	<5.0	<500	<500
2-Hexanone	<50	<50	<50	<50	<5,000	<5,000
Propionitrile	<100	<100 I	<100	<100 I	<10,000	<10,000 I
Methyl methacrylate	<5.0	<5.0	<5.0	<5.0	<500	<500
Acrolein	<100	<100 I	<100 I	<100 I	<10,000 I	<10,000 I
Acrylonitrile	<100	<100	<100	<100	<10,000	<10,000
Ethyl methacrylate	<5.0	<5.0	<5.0	<5.0	<500	<500
Isobutyl alcohol	<1,000	<1,000 I	<1,000	<1,000 I	<100,000	<100,000 I
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Not analyzed.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-6. Volatile Organic Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	Sample ID: OBS-1 Laboratory Log Number: 33693-3 Date Sampled: 6/5/91	OBS-1 37181-2 10/31/91	OBS-1 46405-21 11/10/93	HW-1B 33693-1 6/5/91	HW-1B 37211-4 11/1/91	QS-1 33693-2 6/5/91
Acetonitrile	<13,000 I	<5,000 I	<5000	<5,000 I	<5,000 I	<500 I
Acetone	<2,500	<1,000	<1000	<1,000	<1,000	<100
Benzene	**290**	<50	**76**	<50	<50	<5.0
Bromodichloromethane	<130	<50	<50	<50	<50	<5.0
Bromomethane	<25	<100	<100	<100	<100	<10
Carbon disulfide	<130	<50	<50	<50	<50	<5.0
Chlorobenzene	**4,700**	**900**	**1,800**	<50	<50	<5.0
Dibromochloromethane	<130	<50	<50	<50	<50	<5.0
Chloroethane	<250	<100	<100	<100	<100	<10
2-Chloroethylvinyl ether	<250	<100	<100	<100	<100	<10
Chloromethane	<250	<100	<100	<100	<100	<10
Chloroform	<130	<50	<50	<50	<50	<5.0
3-Chloropropene (allylchloride)	<250	<100	<100	<100	<100	<10
1,2-Dibromo-3-chloropropane	<250	<100	<100	<100	<100	<10
Dibromoethane (EDB)	<130	<50	<50	<50	<50	<5.0
Dibromomethane	<130	<50	<50	<50	<50	<5.0
trans-1,4-Dichloro-2-butene	<250	<100	<100	<100	<100	<10
Dichlorodifluoromethane	<1,300	<500	<500	<500	<500	<50
1,1-Dichloroethane	<130	<50	<50	<50	<50	<5.0
1,2-Dichloroethane	<130	<50	<50	<50	<50	<5.0
trans-1,2-Dichloroethene	<130	<50	<50	<50	<50	<5.0
1,1-Dichloroethene	<130	<50	<50	<50	<50	<5.0
Methylene chloride	<130	<50	<50	<50	<50	<5.0
1,2-Dichloropropane	<130	<50	<50	<50	<50	<5.0
cis-1,3-Dichloropropene	<130	<50	<50	<50	<50	<5.0
trans-1,3-Dichloropropene	<130	<50	<50	<50	<50	<5.0
Ethyl benzene	<130	<50	<50	<50	<50	<5.0
2-Butanone (MEK)	<2,500 I	<1,000 I	<1000	<1,000 I	<1,000 I	<100 I
Iodomethane	<130	<50	<50	<50	<50	<5.0
Methacrylonitrile	<2,500	<1,000	<1000	<1,000	<1,000	<100
4-Methyl-2-pentanone (MIBK)	<1,300	<500 I	<500	<500	<500	<50
Pentachloroethane	<250 I	<100 I	<100	<100 I	<100 I	<10 I
Styrene	<130	<50	<50	<50	<50	<5.0
1,1,1,2-Tetrachloroethane	<130 I	<50 I	<50	<50 I	<50 I	<5.0 I
1,1,2,2-Tetrachloroethane	<130	<50	<50	<50	<50	<5.0
Tetrachloroethene	<130	<50	<50	<50	<50	<5.0
Carbon tetrachloride	<130	<50	<50	<50	<50	<5.0
Toluene	<130	<50	<50	<50	<50	<5.0
Bromoform	<130	<50	<50	<50	<50	<5.0
1,1,2-Trichloroethane	<130	<50	<50	<50	<50	<5.0
1,1,1-Trichloroethane	<130	<50	<50	<50	<50	<5.0
Trichloroethene	<130	<50	<50	**1,100**	**330**	<5.0
Trichlorofluoromethane	<250	<100	<100	<100	<100	<10
1,2,3-Trichloropropane	<130	<50	<50	<50	<50	<5.0
Vinyl acetate	<1,300	<500	<100	<500	<500	<50
Vinyl chloride	<250	<100	<100	<100	<100	<10
Xylenes	<130	<50	<50	<50	<50	<5.0
2-Hexanone	<1,300	<500	<500	<500	<500	<50
Propionitrile	<2,500	<1,000 I	<1000	<1,000	<1,000 I	<100
Methyl methacrylate	<130	<50	<50	<50	<50	<5.0
Acrolein	<2,500 I	<1,000 I	<1000	<1,000 I	<1,000 I	<100 I
Acrylonitrile	<2,500	<1,000	<1000	<1,000	<1,000	<100
Ethyl methacrylate	<130	<50	<50	<50	<50	<5.0
Isobutyl alcohol	<2,500 I	<1,000 I	<10000 I	<10,000 I	<10,000 I	<1,000 I
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	<100	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	<50	NA	NA	NA

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Not analyzed.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-6. Volatile Organic Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	QS-1	VW-2	VW-2	VW-2	VW-2A	VW-2B
Sample ID:	QS-1	VW-2	VW-2	VW-2	VW-2A	VW-2B
Laboratory Log Number:	37181-3	33733-1	37146-1	46405-19	46432-1	33733-2
Date Sampled:	10/31/91	6/6/91	10/29/91	11/10/93	11/12/93	6/6/91
Acetonitrile	<500 I	<25,000 I	<50,000 I	<25000	<25000	<5,000 I
Acetone	<100	<5,000	<10,000	<5000	<5000	<1,000
Benzene	<5.0	**1,900**	**1,300**	<250	<250	<50
Bromodichloromethane	<5.0	<250	<500	<250	<250	<50
Bromomethane	<10	<500	<1,000	<500	<500	<100
Carbon disulfide	<5.0	<250	<500	<250	<250	<50
Chlorobenzene	<5.0	**7,500**	**8,000**	**5,700**	**3,500**	<50
Dibromochloromethane	<5.0	<250	<500	<250	<250	<50
Chloroethane	<10	<500	<1,000	<500	<500	<100
2-Chloroethylvinyl ether	<10	<500	<1,000	<500	<500	<100
Chloromethane	<10	<500	<1,000	<500	<500	<100
Chloroform	<5.0	<250	<500	<250	<250	<50
3-Chloropropene (allylchloride)	<10	<500	<1,000	<500	<500	<100
1,2-Dibromo-3-chloropropane	<10	<500	<1,000	<500	<500	<100
Dibromoethane (EDB)	<5.0	<250	<500	<250	<250	<50
Dibromomethane	<5.0	<250	<500	<250	<250	<50
trans-1,4-Dichloro-2-butene	<10	<500	<1,000	<500 I	<500	<100
Dichlorodifluoromethane	<50	<2,500	<5,000	<2500	<2500	<500
1,1-Dichloroethane	<5.0	<250	<500	<250	<250	<50
1,2-Dichloroethane	<5.0	<250	<500	<250	<250	<50
trans-1,2-Dichloroethene	<5.0	<250	<500	<250	<250	<50
1,1-Dichloroethene	<5.0	<250	<500	<250	<250	<50
Methylene chloride	<5.0	<250	<500	<250	<250	<50
1,2-Dichloropropane	<5.0	<250	<500	<250	<250	<50
cis-1,3-Dichloropropene	<5.0	<250	<500	<250	<250	<50
trans-1,3-Dichloropropene	<5.0	<250	<500	<250	<250	<50
Ethyl benzene	<5.0	<250	<500	<250	<250	<50
2-Butanone (MEK)	<100 I	<5,000 I	<10,000 I	<5000	<5000	<1,000 I
Iodomethane	<5.0	<250	<500	<250	<250	<50
Methacrylonitrile	<100	<5,000	<10,000	<5000	<5000	<1,000
4-Methyl-2-pentanone (MIBK)	<50	<2,500	<5,000 I	<2500	<2500	<500
Pentachloroethane	<10 I	<500 I	<1,000 I	<500	<500	<100 I
Styrene	<5.0	<250	<500	<250	<250	<50
1,1,1,2-Tetrachloroethane	<5.0 I	<250 I	<500 I	<250	<250	<50 I
1,1,2,2-Tetrachloroethane	<5.0	<250	<500	<250	<250	<50
Tetrachloroethene	<5.0	<250	<500	<250	<250	<50
Carbon tetrachloride	<5.0	<250	<500	<250	<250	<50
Toluene	<5.0	<250	<500	<250	<250	<50
Bromoform	<5.0	<250	<500	<250	<250	<50
1,1,2-Trichloroethane	<5.0	<250	<500	<250	<250	<50
1,1,1-Trichloroethane	<5.0	<250	<500	<250	<250	<50
Trichloroethene	<5.0	<250	<500	<250	**470 J**	<50
Trichlorofluoromethane	<10	<500	<500	<500	<500	<100
1,2,3-Trichloropropane	<5.0	<250	<500	<250	<250	<50
Vinyl acetate	<50	<2,500	<1,000	<500	<500	<500
Vinyl chloride	<10	<500	<500	<500	<500	<100
Xylenes	<5.0	<250	<500	<250	<250	<50
2-Hexanone	<50	<2,500	<5,000	<2500	<2500	<500
Propionitrile	<100 I	<5,000	<10,000 I	<5000	<5000	<1,000
Methyl methacrylate	<5.0	<250	<500	<250	<250	<50
Acrolein	<100 I	<5,000 I	<10,000 I	<5000 I	<5000	<1,000 I
Acrylonitrile	<100	<25,000	<10,000	<5000	<5000	<1,000
Ethyl methacrylate	<5.0	<250	<500	<250	<250	<50
Isobutyl alcohol	<1,000 I	<50,000 I	<100,000 I	<50000 I	<50000 I	<10,000 I
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	<500	<500	NA
cis-1,2-Dichloroethene	NA	NA	NA	<250	<250	NA

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Not analyzed.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-6. Volatile Organic Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	Sample ID: VW-2B Laboratory Log Number: 37211-3 Date Sampled: 11/1/91	Rinsate Blk. 46432-3 11/12/93	Trip Blank A 46405-34 11/9/93
Acetonitrile	<50,000 I	<500	<500
Acetone	<10,000	<100	<100
Benzene	<500	<5.0	<5.0
Bromodichloromethane	<500	<5.0	<5.0
Bromomethane	<1,000	<10	<10
Carbon disulfide	<500	<5.0	<5.0
Chlorobenzene	1,800	<5.0	<5.0
Dibromochloromethane	<500	<5.0	<5.0
Chloroethane	<1,000	<10	<10
2-Chloroethylvinyl ether	<1,000	<10	<10
Chloromethane	<1,000	<10	<10
Chloroform	<500	<5.0	<5.0
3-Chloropropene (allylchloride)	<1,000	<10	<10
1,2-Dibromo-3-chloropropane	<1,000	<10	<10
Dibromoethane (EDB)	<500	,5.0	<5.0
Dibromomethane	<500	<5.0	<5.0
trans-1,4-Dichloro-2-butene	<1,000	<10	<10 I
Dichlorodifluoromethane	<5,000	<50	<50
1,1-Dichloroethane	<500	<5.0	<5.0
1,2-Dichloroethane	<500	<5.0	<5.0
trans-1,2-Dichloroethene	<500	<5.0	<5.0
1,1-Dichloroethene	<500	<5.0	<5.0
Methylene chloride	<500	<5.0	<5.0
1,2-Dichloropropane	<500	<5.0	<5.0
cis-1,3-Dichloropropene	<500	<5.0	<5.0
trans-1,3-Dichloropropene	<500	<5.0	<5.0
Ethyl benzene	<500	<5.0	<5.0
2-Butanone (MEK)	<10,000 I	<100	<100
Iodomethane	<500	<5.0	<5.0
Methacrylonitrile	<10,000	<100	<100
4-Methyl-2-pentanone (MIBK)	<5,000	<50	<50
Pentachloroethane	<1,000 I	<10	<10
Styrene	<500	<5.0	<5.0
1,1,1,2-Tetrachloroethane	<500 I	<5.0	<5.0
1,1,2,2-Tetrachloroethane	<500	<5.0	<5.0
Tetrachloroethene	<500	<5.0	<5.0
Carbon tetrachloride	<500	<5.0	<5.0
Toluene	<500	<5.0	<5.0
Bromoform	<500	<5.0	<5.0
1,1,2-Trichloroethane	<500	<5.0	<5.0
1,1,1-Trichloroethane	<500	<5.0	<5.0
Trichloroethene	<500	<5.0	<5.0
Trichlorofluoromethane	<1,000	<10	<10
1,2,3-Trichloropropane	<500	<5.0	<5.0
Vinyl acetate	<5,000	<10	<10
Vinyl chloride	<1,000	<10	<10
Xylenes	<500	<5.0	<5.0
2-Hexanone	<5,000	<50	<50
Propionitrile	<10,000 I	<100	<100
Methyl methacrylate	<500	<5.0	<5.0
Acrolein	<10,000 I	<100	<100 I
Acrylonitrile	<10,000	<100	<100
Ethyl methacrylate	<500	<5.0	<5.0
Isobutyl alcohol	<100,000 I	<1000 I	<1000 I
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	<10	<10
cis-1,2-Dichloroethene	NA	<5.0	<5.0

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Not analyzed.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-2A	MW-2B	MW-2R	MW-3	MW-4	MW-4
Laboratory Log Number:	33733-3	33733-4	32911-1	33805-2	33805-4	37166-1
Date Sampled:	6/6/91	6/6/91	4/25/91	6/11/91	6/11/91	10/29/91
Parameter (concentrations in ug/L)						
Acenaphthene	<10	<10	<10	<10	<10	<10
Acenaphthylene	<10	<10	<10	<10	<10	<10
Acetophenone	<10	<10	<10	<10	<10	<10
2-Acetylaminofluorene	<20	<20	<20	<20	<20	<20
4-Aminobiphenyl	<20	<20	<20	<20	<20	<20
Anthracene	<10	<10	<10	<10	<10	<10
Aniline	<10	<10	<10	<10	<10	<10
Benzo(a)anthracene	<10	<10	<10	<10	<10	<10
Benzo(k)fluoranthene	<10	<10	<10	<10	<10	<10
Benzo(b)fluoranthene	<10	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene	<10	<10	<10	<10	<10	<10
Benzo(a)pyrene	<10	<10	<10	<10	<10	<10
Benzyl alcohol	<10	<10	<10	<10	<10	<10
bis(2-Chloroethoxy)methane	<10	<10	<10	<10	<10	<10
bis(2-Choroethyl)ether	<10	<10	<10	<10	<10	<10
bis(2-Chloroisopropyl)ether	<10	<10	<10	<10	<10	<10
bis(2-Ethylhexyl)phthalate	<10	<10	<10	<10	<10	<10
4-Bromophenyl-phenyl-ether	<10	<10	<10	<10	<10	<10
Butylbenzylphthalate	<10	<10	<10	<10	<10	<10
2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	<50	<50	<50	<50	<50	<50
p-Chloroaniline	<20	<20	<20	<20	<20	<20
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	14
1,2-Dichlorobenzene	<10	<10	<10	<10	<10	<10
4-Chlorophenyl-phenyl ether	<10	<10	<10	<10	<10	<10
2-Chloronaphthalene	<10	<10	<10	<10	<10	<10
Chrysene	<10	<10	<10	<10	<10	<10
Dibenz(a,h)anthracene	<10	<10	<10	<10	<10	<10
Di-n-butylphthalate	<10	<10	<10	<10	<10	<10
3,3'-Dichlorobenzidine	<20	<20	<20	<20	<20	<20
3,3'-Dimethylbenzidine	<10	<10	<10	<10	<10	<10
Diethylphthalate	<10	<10	<10	<10	<10	<10
p-(Dimethylamino)azobenzene	<10	<10	<10	<10	<10	<10
7,12-Dimethylbenz(a)anthracene	<10	<10	<10	<10	<10	<10
a-a-Dimethylphenethylamine	<50	<50	<50	<50	<50	<50
Dimethylphthalate	<10	<10	<10	<10	<10	<10
m-Dinitrobenzene	<50	<50	<50	<50	<50	<10
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10
2,6-Dinitrotoluene	<10	<10	<10	<10	<10	<10
Di-n-octylphthalate	<10	<10	<10	<10	<10	<10
N-Nitroso-di-n-propylamine	<10	<10	<10	<10	<10	<10
Fluoranthene	<10	<10	<10	<10	<10	<10
Fluorene	<10	<10	<10	<10	<10	<10
Hexachlorobenzene	<10	<10	<10	<10	<10	<10
Hexachlorobutadiene	<10	<10	<10	<10	<10	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	Sample ID: MW-2A Laboratory Log Number: 33733-3 Date Sampled: 6/6/91	MW-2B 33733-4 6/6/91	MW-2R 32911-1 4/25/91	MW-3 33805-2 6/11/91	MW-4 33805-4 6/11/91	MW-4 37166-1 10/29/91
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10
Hexachloroethane	<10	<10	<10	<10	<10	<10
Hexachloropropene	<10	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene	<10	<10	<10	<10	<10	<10
Isophorone	<10	<10	<10	<10	<10	<10
Isosafrole	<10	<10	<10	<10	<10	<10
Methapyrilene	<100	<100	<100	<100	<100	<100
3-Methylcholanthrene	<10	<10	<10	<10	<10	<10
Methylmethanesulfonate	<10	<10	<10	<10	<10	<10
2-Methylnaphthalene	<10	<10	<10	<10	<10	<10
Naphthalene	<10	<10	<10	<10	<10	<10
1,4-Naphthoquinone	<10	<10	<10	<10	<10	<10
1-Naphthylamine	<10	<10	<10	<10	<10	<10
2-Naphthylamine	<10	<10	<10	<10	<10	<10
2-Nitroaniline	<50	<50	<50	<50	<50	<50
3-Nitroaniline	<50	<50	<50	<50	<50	<50
4-Nitroaniline	<50	<50	<50	<50	<50	<50
Nitrobenzene	<10	<10	<10	<10	<10	<10
N-Nitrosodi-n-butylamine	<10	<10	<10	<10	<10	<10
N-Nitrosodiethylamine	<20	<20	<20	<20	<20	<20
N-Nitrosodimethylamine	<10	<10	<10	<10	<10	<10
N-Nitrosomethylethylamine	<10	<10	<10	<10	<10	<10
N-Nitrosodiphenylamine/Diphenylamine	<10	<10	<10	<10	<10	<10
N-Nitrosomorpholine	<10	<10	<10	<10	<10	<10
N-Nitrosopiperidine	<20	<20	<20	<20	<20	<20
Nitrosopyrrolidine	<40	<40	<40	<40 I	<40	<40
5-Nitro-o-toluidine	<10	<10	<10	<10	<10	<10
Pentachlorobenzene	<10	<10	<10	<10	<10	<10
Pentachloronitrobenzene	<100	<100	<100	<100	<100	<100
Phenacetin	<20	<20	<20	<20	<20	<20
Phenanthrene	<10	<10	<10	<10	<10	<10
2-Picoline	<10	<10	<10	<10	<10	<10
Pronamide	<10	<10	<10	<10	<10	<10
Pyrene	<10	<10	<10	<10	<10	<10
Safrole	<10	<10	<10	<10	<10	<10
1,2,4,5-Tetrachlorobenzene	<10	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene	<10	<10	<10	<10	13	22
2-Chlorophenol	<10	<10	<10	<10	<10	<10
Cresol m&p	<10	<10	<10	<10	<10	<10
o-Cresol	<10	<10	<10	<10	<10	<10
4-Nitrophenol	<50	<50	<50	<50	<50	<50
2,4-Dichlorophenol	<10	<10	<10	<10	<10	<10
2,6-Dichlorophenol	<10	<10	<10	<10	<10	<10
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	Sample ID: MW-2A Laboratory Log Number: 33733-3 Date Sampled: 6/6/91	MW-2B 33733-4 6/6/91	MW-2R 32911-1 4/25/91	MW-3 33805-2 6/11/91	MW-4 33805-4 6/11/91	MW-4 37166-1 10/29/91
4,6-Dinitro-2-methylphenol	<50	<50	<50	<50	<50	<50
2,4-Dinitrophenol	<50	<50	<50	<50	<50	<50
Pentachlorophenol	<50	<50	<50	<50	<50	<50
Phenol	<10	<10	<10	<10	<10	<10
2,4,5-Trichlorophenol	<50	<50	<50	<50	<50	<50
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10
2,3,4,6-Tetrachlorophenol	<10	<10	<10	<10	<10	<10
2-Nitrophenol	<10	<10	<10	<10	<10	<10
Diallate	<10	<10	<10	<10	<10	<10
Ethyl methanesulfonate	<20	<20	<20	<20	<20	<20
4-Nitroquinoline 1-oxide	<100 I	<100 I	<100 I	<100 I	<100 I	<100 I
p-Phenylenediamine	<10	<10	<10	<10	<10	<10
o-Toluidine	<10	<10	<10	<10	<10	<10
o,o,o-Triethyl phosphorothioate	<10	<10	<10	<10	<10	<10
1,3,5-Trinitrobenzene	<50	<50	<50	<50	<50	<50
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10
Dibenzofuran	<10	<10	<10	<10	<10	<10
Pyridine	<10	<10	<10	<10	<10	<10
1,4-Dioxane	<10	<10	<10	<10	<10	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-8A	MW-8A Dup	MW-8A	MW-8A Dup	MW-8B	MW-8B Dup
Laboratory Log Number:	33748-3	33748-4	37146-5	37146-6	33748-5	33748-6
Date Sampled:	6/7/91	6/7/91	10/29/91	10/29/91	6/7/91	6/7/91
Parameter (concentrations in ug/L)						
Acenaphthene	<10	<10	<10	<10	<10	<10
Acenaphthylene	<10	<10	<10	<10	<10	<10
Acetophenone	<10	<10	<10	<10	<10	<10
2-Acetylaminofluorene	<20	<20	<20	<20	<20	<20
4-Aminobiphenyl	<20	<20	<20	<20	<20	<20
Anthracene	<10	<10	<10	<10	<10	<10
Aniline	<10	<10	<10	<10	<10	<10
Benzo(a)anthracene	<10	<10	<10	<10	<10	<10
Benzo(k)fluoranthene	<10	<10	<10	<10	<10	<10
Benzo(b)fluoranthene	<10	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene	<10	<10	<10	<10	<10	<10
Benzo(a)pyrene	<10	<10	<10	<10	<10	<10
Benzyl alcohol	<10	<10	<10	<10	<10	<10
bis(2-Chloroethoxy)methane	<10	<10	<10	<10	<10	<10
bis(2-Choroethyl)ether	<10	<10	<10	<10	<10	<10
bis(2-Chloroisopropyl)ether	<10	<10	<10	<10	<10	<10
bis(2-Ethylhexyl)phthalate	<10	<10	**120**	<10	<10	<10
4-Bromophenyl-phenyl-ether	<10	<10	<10	<10	<10	<10
Butylbenzylphthalate	<10	<10	<10	<10	<10	<10
2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	<50	<50	<50	<50	<50	<50
p-Chloroaniline	**22**	**21**	<20	<20	<20	<20
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10
1,4-Dichlorobenzene	**23**	**22**	**27**	**27**	<10	<10
1,2-Dichlorobenzene	**15**	**15**	**19**	**19**	<10	<10
4-Chlorophenyl-phenyl ether	<10	<10	<10	<10	<10	<10
2-Chloronaphthalene	<10	<10	<10	<10	<10	<10
Chrysene	<10	<10	<10	<10	<10	<10
Dibenz(a,h)anthracene	<10	<10	<10	<10	<10	<10
Di-n-butylphthalate	<10	<10	<10	<10	<10	<10
3,3'-Dichlorobenzidine	<20	<20	<20	<20	<20	<20
3,3'-Dimethylbenzidine	<10	<10	<10	<10	<10	<10
Diethylphthalate	<10	<10	<10	<10	<10	<10
p-(Dimethylamino)azobenzene	<10	<10	<10	<10	<10	<10
7,12-Dimethylbenz(a)anthracene	<10	<10	<10	<10	<10	<10
a-a-Dimethylphenethylamine	<50	<50	<50	<50	<50	<50
Dimethylphthalate	<10	<10	<10	<10	<10	<10
m-Dinitrobenzene	<50	<50	<50	<50	<50	<50
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10
2,6-Dinitrotoluene	<10	<10	<10	<10	<10	<10
Di-n-octylphthalate	<10	<10	<10	<10	<10	<10
N-Nitroso-di-n-propylamine	<10	<10	<10	<10	<10	<10
Fluoranthene	<10	<10	<10	<10	<10	<10
Fluorene	<10	<10	<10	<10	<10	<10
Hexachlorobenzene	<10	<10	<10	<10	<10	<10
Hexachlorobutadiene	<10	<10	<10	<10	<10	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	Sample ID: MW-8A Laboratory Log Number: 33748-3 Date Sampled: 6/7/91	MW-8A Dup 33748-4 6/7/91	MW-8A 37146-5 10/29/91	MW-8A Dup 37146-6 10/29/91	MW-8B 33748-5 6/7/91	MW-8B Dup 33748-6 6/7/91
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10
Hexachloroethane	<10	<10	<10	<10	<10	<10
Hexachloropropene	<10	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene	<10	<10	<10	<10	<10	<10
Isophorone	<10	<10	<10	<10	<10	<10
Isosafrole	<10	<10	<10	<10	<10	<10
Methapyrilene	<100	<100	<100	<100	<100	<100
3-Methylcholanthrene	<10	<10	<10	<10	<10	<10
Methylmethanesulfonate	<10	<10	<10	<10	<10	<10
2-Methylnaphthalene	<10	<10	<10	<10	<10	<10
Naphthalene	**15**	<10	<10	<10	<10	<10
1,4-Naphthoquinone	<10	<10	<10	<10	<10	<10
1-Naphthylamine	<10	<10	<10	<10	<10	<10
2-Naphthylamine	<10	<10	<10	<10	<10	<10
2-Nitroaniline	<50	<50	<50	<50	<50	<50
3-Nitroaniline	<50	<50	<50	<50	<50	<50
4-Nitroaniline	<50	<50	<50	<50	<50	<50
Nitrobenzene	<10	<10	<10	<10	<10	<10
N-Nitrosodi-n-butylamine	<10	<10	<10	<10	<10	<10
N-Nitrosodiethylamine	<20	<20	<20	<20	<20	<20
N-Nitrosodimethylamine	<10	<10	<10	<10	<10	<10
N-Nitrosomethylethylamine	<10	<10	<10	<10	<10	<10
N-Nitrosodiphenylamine/Diphenylamine	<10	<10	<10	<10	<10	<10
N-Nitrosomorpholine	<10	<10	<10	<10	<10	<10
N-Nitrosopiperidine	<20	<20	<20	<20	<20	<20
Nitrosopyrrolidine	<40	<40	<40	<40	<40	<40
5-Nitro-o-toluidine	<10	<10	<10	<10	<10	<10
Pentachlorobenzene	<10	<10	<10	<10	<10	<10
Pentachloronitrobenzene	<100	<100	<100	<100	<100	<100
Phenacetin	<20	<20	<20	<20	<20	<20
Phenanthrene	<10	<10	<10	<10	<10	<10
2-Picoline	<10	<10	<10	<10	<10	<10
Pronamide	<10	<10	<10	<10	<10	<10
Pyrene	<10	<10	<10	<10	<10	<10
Safrole	<10	<10	<10	<10	<10	<10
1,2,4,5-Tetrachlorobenzene	<10	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene	<10	<10	<10	<10	<10	<10
2-Chlorophenol	**25**	**20**	**36**	**25**	<10	<10
Cresol m&p	<10	<10	<10	<10	<10	<10
o-Cresol	<10	<10	<10	<10	<10	<10
4-Nitrophenol	<50	<50	<50	<50	<50	<50
2,4-Dichlorophenol	<10	<10	<10	<10	<10	<10
2,6-Dichlorophenol	<10	<10	<10	<10	<10	<10
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	Sample ID: MW-8A Laboratory Log Number: 33748-3 Date Sampled: 6/7/91	MW-8A Dup 33748-4 6/7/91	MW-8A 37146-5 10/29/91	MW-8A Dup 37146-6 10/29/91	MW-8B 33748-5 6/7/91	MW-8B Dup 33748-6 6/7/91
4,6-Dinitro-2-methylphenol	<50	<50	<50	<50	<50	<50
2,4-Dinitrophenol	<50	<50	<50	<50	<50	<50
Pentachlorophenol	<50	<50	<50	<50	<50	<50
Phenol	<10	<10	<50	<50	<10	<10
2,4,5-Trichlorophenol	<50	<50	<50	<50	<50	<50
2,4,6-Trichlorophenol	<10	<10	<50	<50	<10	<10
2,3,4,6-Tetrachlorophenol	<10	<10	<10	<10	<10	<10
2-Nitrophenol	<10	<10	<10	<10	<10	<10
Diallate	<10	<10	<10	<10	<10	<10
Ethyl methanesulfonate	<20	<20	<20	<20	<20	<20
4-Nitroquinoline 1-oxide	<100 I	<100 I	<100 I	<100 I	<100 I	<100 I
p-Phenylenediamine	<10	<10	<10	<10	<10	<10
o-Toluidine	<10	<10	<10	<10	<10	<10
o,o,o-Triethyl phosphorothioate	<10	<10	<10	<10	<10	<10
1,3,5-Trinitrobenzene	<50	<50	<50	<50	<50	<50
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10
Dibenzofuran	<10	<10	<10	<10	<10	<10
Pyridine	<10	<10	<10	<10	<10	<10
1,4-Dioxane	<10	<10	<10	<10	<10	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	Sample ID: MW-8B Laboratory Log Number: 37146-4 Date Sampled: 10/29/91	MW-8R 37146-3 10/29/91	MW-9 33748-1 6/7/91	MW-10 33780-1 6/10/91	MW-10 37166-2 10/29/91	MW-11A 33780-2 6/10/91
Acenaphthene	<10	<10	<10	<10	<10	<10
Acenaphthylene	<10	<10	<10	<10	<10	<10
Acetophenone	<10	<10	<10	<10	<10	<10
2-Acetylaminofluorene	<20	<20	<20	<20	<20	<20
4-Aminobiphenyl	<20	<20	<20	<20	<20	<20
Anthracene	<10	<10	<10	<10	<10	<10
Aniline	<10	<10	<10	<10	<10	<10
Benzo(a)anthracene	<10	<10	<10	<10	<10	<10
Benzo(k)fluoranthene	<10	<10	<10	<10	<10	<10
Benzo(b)fluoranthene	<10	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene	<10	<10	<10	<10	<10	<10
Benzo(a)pyrene	<10	<10	<10	<10	<10	<10
Benzyl alcohol	<10	<10	<10	<10	<10	<10
bis(2-Chloroethoxy)methane	<10	<10	<10	<10	<10	<10
bis(2-Choroethyl)ether	<10	<10	<10	<10	<10	<10
bis(2-Chloroisopropyl)ether	<10	<10	<10	<10	<10	<10
bis(2-Ethylhexyl)phthalate	<10	<10	<10	<10	<10	<10
4-Bromophenyl-phenyl-ether	<10	<10	<10	**11**	<10	<10
Butylbenzylphthalate	<10	<10	<10	<10	<10	<10
2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	<50	<50	<50	**15**	<10	<10
p-Chloroaniline	<20	<20	<20	<20	<20	<20
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10
1,2-Dichlorobenzene	<10	<10	<10	<10	<10	<10
4-Chlorophenyl-phenyl ether	<10	<10	<10	<10	<10	<10
2-Chloronaphthalene	<10	<10	<10	<10	<10	<10
Chrysene	<10	<10	<10	<10	<10	<10
Dibenz(a,h)anthracene	<10	<10	<10	<10	<10	<10
Di-n-butylphthalate	<10	<10	<10	<10	<10	<10
3,3'-Dichlorobenzidine	<20	<20	<20	<20	<20	<20
3,3'-Dimethylbenzidine	<10	<10	<10	<10	<10	<10
Diethylphthalate	<10	<10	<10	<10	<10	<10
p-(Dimethylamino)azobenzene	<10	<10	<10	<10	<10	<10
7,12-Dimethylbenz(a)anthracene	<10	<10	<10	<10	<10	<10
a-a-Dimethylphenethylamine	<50	<50	<50	<50	<50	<50
Dimethylphthalate	<10	<10	<10	<10	<10	<10
m-Dinitrobenzene	<50	<50	<50	<50	<50	<50
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10
2,6-Dinitrotoluene	<10	<10	<10	<10	<10	<10
Di-n-octylphthalate	<10	<10	<10	<10	<10	<10
N-Nitroso-di-n-propylamine	<10	<10	<10	<10	<10	<10
Fluoranthene	<10	<10	<10	<10	<10	<10
Fluorene	<10	<10	<10	<10	<10	<10
Hexachlorobenzene	<10	<10	<10	<10	<10	<10
Hexachlorobutadiene	<10	<10	<10	<10	<10	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-8B	MW-8R	MW-9	MW-10	MW-10	MW-11A
Laboratory Log Number:	37146-4	37146-3	33748-1	33780-1	37166-2	33780-2
Date Sampled:	10/29/91	10/29/91	6/7/91	6/10/91	10/29/91	6/10/91
Parameter (concentrations in ug/L)						
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10
Hexachloroethane	<10	<10	<10	<10	<10	<10
Hexachloropropene	<10	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene	<10	<10	<10	<10	<10	<10
Isophorone	<10	<10	<10	<10	<10	<10
Isosafrole	<10	<10	<10	<10	<10	<10
Methapyrilene	<100	<100	<100	<100	<100	<100
3-Methylcholanthrene	<10	<10	<10	<10	<10	<10
Methylmethanesulfonate	<10	<10	<10	<10	<10	<10
2-Methylnaphthalene	<10	<10	<10	<10	<10	<10
Naphthalene	<10	<10	<10	<10	<10	<10
1,4-Naphthoquinone	<10	<10	<10	<10	<10	<10
1-Naphthylamine	<10	<10	<10	<10	<10	<10
2-Naphthylamine	<10	<10	<10	<10	<10	<10
2-Nitroaniline	<50	<50	<50	<50	<50	<50
3-Nitroaniline	<50	<50	<50	<50	<50	<50
4-Nitroaniline	<50	<50	<50	<50	<50	<50
Nitrobenzene	<10	<10	<10	<10	<10	<10
N-Nitrosodi-n-butylamine	<10	<10	<10	<10	<10	<10
N-Nitrosodiethylamine	<20	<20	<20	<20	<20	<20
N-Nitrosodimethylamine	<10	<10	<10	<10	<10	<10
N-Nitrosomethylethylamine	<10	<10	<10	<10	<10	<10
N-Nitrosodiphenylamine/Diphenylamine	<10	<10	<10	<10	<10	<10
N-Nitrosomorpholine	<10	<10	<10	<10	<10	<10
N-Nitrosopiperidine	<20	<20	<20	<20	<20	<20
Nitrosopyrrolidine	<40	<40	<40	<40	<40	<40
5-Nitro-o-toluidine	<10	<10	<10	<10	<10	<10
Pentachlorobenzene	<10	<10	<10	<10	<10	<10
Pentachloronitrobenzene	<100	<100	<100	<100	<100	<100
Phenacetin	<20	<20	<20	<20	<20	<20
Phenanthrene	<10	<10	<10	<10	<10	<10
2-Picoline	<10	<10	<10	<10	<10	<10
Pronamide	<10	<10	<10	<10	<10	<10
Pyrene	<10	<10	<10	<10	<10	<10
Safrole	<10	<10	<10	<10	<10	<10
1,2,4,5-Tetrachlorobenzene	<10	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene	<10	<10	<10	<10	<10	<10
2-Chlorophenol	<10	<10	<10	<10	<10	<10
Cresol m&p	<10	<10	<10	<10	<10	<10
o-Cresol	<10	<10	<10	<10	<10	<10
4-Nitrophenol	<50	<50	<50	<50	<50	<50
2,4-Dichlorophenol	<10	<10	<10	<10	<10	<10
2,6-Dichlorophenol	<10	<10	<10	<10	<10	<10
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-8B	MW-8R	MW-9	MW-10	MW-10	MW-11A
Laboratory Log Number:	37146-4	37146-3	33748-1	33780-1	37166-2	33780-2
Date Sampled:	10/29/91	10/29/91	6/7/91	6/10/91	10/29/91	6/10/91
Parameter (concentrations in ug/L)						
4,6-Dinitro-2-methylphenol	<50	<50	<50	<50	<50	<50
2,4-Dinitrophenol	<50	<50	<50	<50	<50	<50
Pentachlorophenol	<50	<50	<50	<50	<50	<50
Phenol	<10	<10	<10	<10	<10	<10
2,4,5-Trichlorophenol	<50	<50	<50	<50	<50	<50
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10
2,3,4,6-Tetrachlorophenol	<10	<10	<10	<10	<10	<10
2-Nitrophenol	<10	<10	<10	<10	<10	<10
Diallate	<10	<10	<10	<10	<10	<10
Ethyl methanesulfonate	<20	<20	<20	<20	<20	<20
4-Nitroquinoline 1-oxide	<100 I	<100 I	<100 I	<100 I	<100 I	<100 I
p-Phenylenediamine	<10	<10	<10	<10	<10	<10
o-Toluidine	<10	<10	<10	<10	<10	<10
o,o,o-Triethyl phosphorothioate	<10	<10	<10	<10	<10	<10
1,3,5-Trinitrobenzene	<50	<50	<50	<50	<50	<50
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10
Dibenzofuran	<10	<10	<10	<10	<10	<10
Pyridine	<10	<10	<10	<10	<10	<10
1,4-Dioxane	<10	<10	<10	<10	<10	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-11B	MW-13	MW-13 Dup	MW-13	MW-13	MW-13A
Laboratory Log Number:	33780-3	33780-4	33780-5	37166-3	46405-1	46405-18
Date Sampled:	6/10/91	6/10/91	6/10/91	10/29/91	11/9/93	11/9/93
Parameter (concentrations in ug/L)						
Acenaphthene	<10	11	14	<10	<200	3.7 J
Acenaphthylene	<10	<10	<10	<10	<200	1.6 J
Acetophenone	<10	<10	<10	<10	<200	<10
2-Acetylaminofluorene	<20	<20	<20	<20	<400	<20
4-Aminobiphenyl	<20	<20	<20	<20	<400	<20
Anthracene	<10	<10	13	<10	<200	7.7 J
Aniline	<10	<10	54	<10	<200	<10
Benzo(a)anthracene	<10	<10	<10	<10	<200	5.8 J
Benzo(k)fluoranthene	<10	<10	<10	<10	<200	2.5 J
Benzo(b)fluoranthene	<10	<10	<10	<10	<200	5.4 J
Benzo(g,h,i)perylene	<10	<10	<10	<10	<200	2.0 J
Benzo(a)pyrene	<10	<10	<10	<10	<200	<10
Benzyl alcohol	<10	<10	<10	<10	<200	<10
bis(2-Chloroethoxy)methane	<10	<10	<10	<10	<200	<10
bis(2-Choroethyl)ether	<10	<10	<10	<10	<200	<10
bis(2-Chloroisopropyl)ether	<10	<10	<10	<10	<200	<10
bis(2-Ethylhexyl)phthalate	<10	<10	23	59	<200	<10
4-Bromophenyl-phenyl-ether	<10	<10	<10	<10	<200	<10
Butylbenzylphthalate	<10	<10	<10	<10	<200	<10
2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	<50	<50	<50	<50	<1000	<50
p-Chloroaniline	<20	1,200	4,000	270	2,700	<20
1,3-Dichlorobenzene	<10	<10	<10	<10	<200	<10
1,4-Dichlorobenzene	<10	<10	<10	<10	<200	<10
1,2-Dichlorobenzene	<10	<10	<10	<10	<200	<10
4-Chlorophenyl-phenyl ether	<10	<10	<10	<10	<200	<10
2-Chloronaphthalene	<10	<10	<10	<10	<200	<10
Chrysene	<10	<10	<10	<10	<200	6.6 J
Dibenz(a,h)anthracene	<10	<10	<10	<10	<200	<10
Di-n-butylphthalate	<10	<10	22	<10	<200	<10
3,3'-Dichlorobenzidine	<20	<20	<20	<20	<400	<20
3,3'-Dimethylbenzidine	<10	<10	<10	<10	<200	<10
Diethylphthalate	<10	<10	<10	<10	<200	<10
p-(Dimethylamino)azobenzene	<10	<10	<10	<10	<200	<10
7,12-Dimethylbenz(a)anthracene	<10	<10	<10	<10	<200	<10
a-a-Dimethylphenethylamine	<50	<50	<50	<50	<1000	<50
Dimethylphthalate	<10	<10	<10	<10	<200	<10
m-Dinitrobenzene	<50	<50	<50	<50	<1000	<50
2,4-Dinitrotoluene	<10	<10	<10	<10	<200	<10
2,6-Dinitrotoluene	<10	<10	<10	<10	<200	<10
Di-n-octylphthalate	<10	<10	<10	<10	<200	<10
N-Nitroso-di-n-propylamine	<10	<10	<10	<10	<200	<10
Fluoranthene	<10	21	22	<10	<200	15
Fluorene	<10	12	18	<10	<200	8.4 J
Hexachlorobenzene	<10	<10	<10	<10	<200	<10
Hexachlorobutadiene	<10	<10	<10	<10	<200	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-11B	MW-13	MW-13 Dup	MW-13	MW-13	MW-13A
Laboratory Log Number:	33780-3	33780-4	33780-5	37166-3	46405-1	46405-18
Date Sampled:	6/10/91	6/10/91	6/10/91	10/29/91	11/9/93	11/9/93
Parameter (concentrations in ug/L)						
Hexachlorocyclopentadiene	<10	<10	<10	<10	<200	<10
Hexachloroethane	<10	<10	<10	<10	<200	<10
Hexachloropropene	<10	<10	<10	<10	<200	<10
Indeno(1,2,3-cd)pyrene	<10	<10	<10	<10	<200	**2.0 J**
Isophorone	<10	<10	<10	<10	<200	<10
Isosafrole	<10	<10	<10	<10	<200	<10
Methapyrilene	<100	<100	<100	<100	<2000	<100
3-Methylcholanthrene	<10	<10	<10	<10	<200	<10
Methylmethanesulfonate	<10	<10	<10	<10	<200	<10
2-Methylnaphthalene	<10	<10	<10	<10	<200	**5.8 J**
Naphthalene	<10	<10	<10	<10	<200	**13**
1,4-Naphthoquinone	<10	<10	<10	<10	<200	<10
1-Naphthylamine	<10	<10	<10	<10	<200	<10
2-Naphthylamine	<10	<10	<10	<10	<200	<10
2-Nitroaniline	<50	<50	<50	<50	<1000	<50
3-Nitroaniline	<50	<50	<50	<50	<1000	<50
4-Nitroaniline	<50	<50	<50	<50	<1000	<50
Nitrobenzene	<10	<10	<10	<10	<200	<10
N-Nitrosodi-n-butylamine	<10	<10	<10	<10	<200	<10
N-Nitrosodiethylamine	<20	<20	<20	<20	<400	<20
N-Nitrosodimethylamine	<10	<10	<10	<10	<200	<10
N-Nitrosomethylethylamine	<10	<10	<10	<10	<200	<10
N-Nitrosodiphenylamine/Diphenylamine	<10	<10	<10	<10	<200	<10
N-Nitrosomorpholine	<10	<10	<10	<10	<200	<10
N-Nitrosopiperidine	<20	<20	<20	<20	<400	<20
Nitrosopyrrolidine	<40	<40	<40	<40	<800	<40
5-Nitro-o-toluidine	<10	<10	<10	<10	<200	<10
Pentachlorobenzene	<10	<10	<10	<10	<200	<10
Pentachloronitrobenzene	<100	<100	<100	<100	<2000	<100
Phenacetin	<20	<20	<20	<20	<400	<20
Phenanthrene	<10	<10	**16**	<10	<200	**22**
2-Picoline	<10	<10	<10	<10	<200	<10
Pronamide	<10	<10	<10	<10	<200	<10
Pyrene	<10	**22**	**24**	<10	<200	**13**
Safrole	<10	<10	<10	<10	<200	<10
1,2,4,5-Tetrachlorobenzene	<10	<10	<10	<10	<200	<10
1,2,4-Trichlorobenzene	<10	<10	<10	<10	<200	<10
2-Chlorophenol	<10	<10	<10	<10	NA	NA
Cresol m&p	<10	<10	<10	<10	NA	NA
o-Cresol	<10	<10	<10	<10	NA	NA
4-Nitrophenol	<50	<50	<50	<50	NA	NA
2,4-Dichlorophenol	<10	<10	<10	<10	NA	NA
2,6-Dichlorophenol	<10	<10	<10	<10	NA	NA
2,4-Dimethylphenol	<10	<10	<10	<10	NA	NA

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	Sample ID: MW-11B Laboratory Log Number: 33780-3 Date Sampled: 6/10/91	MW-13 33780-4 6/10/91	MW-13 Dup 33780-5 6/10/91	MW-13 37166-3 10/29/91	MW-13 46405-1 11/9/93	MW-13A 46405-18 11/9/93
4,6-Dinitro-2-methylphenol	<50	<50	<50	<50	NA	NA
2,4-Dinitrophenol	<50	<50	<50	<50	NA	NA
Pentachlorophenol	<50	<50	<50	<50	NA	NA
Phenol	<10	<10	<10	<10	NA	NA
2,4,5-Trichlorophenol	<50	<50	<50	<50	NA	NA
2,4,6-Trichlorophenol	<10	<10	<10	<10	NA	NA
2,3,4,6-Tetrachlorophenol	<10	<10	<10	<10	NA	NA
2-Nitrophenol	<10	<10	<10	<10	NA	NA
Diallate	<10	<10	<10	<10	<200	<10
Ethyl methanesulfonate	<20	<20	<20	<20	<400	<20
4-Nitroquinoline 1-oxide	<100 I	<100 I	<100 I	<100 I	<2000 I	<100
p-Phenylenediamine	<10	<10	<10	<10	<200	<10
o-Toluidine	<10	<10	<10	<10	<200	<10
o,o,o-Triethyl phosphorothioate	<10	<10	<10	<10	<200	<10
1,3,5-Trinitrobenzene	<50	<50	<50	<50	<1000	<50
4-Chloro-3-methylphenol	<10	<10	<10	<10	NA	NA
Dibenzofuran	<10	<10	<10	<10	<200	5.0 J
Pyridine	<10	<10	<10	<10	<200	<10
1,4-Dioxane	<10	<10	<10	<10	<200	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	MW-13B	MW-13C	MW-13D	MW-13F	MW-13R	MW-15
Sample ID:	MW-13B	MW-13C	MW-13D	MW-13F	MW-13R	MW-15
Laboratory Log Number:	46405-16	46405-17	46405-15	46405-14	37181-1	33805-3
Date Sampled:	11/9/93	11/9/93	11/10/93	11/10/93	10/31/91	6/11/91
Acenaphthene	14	2.2 J	<10	5.4 J	<10	<10
Acenaphthylene	<10	<10	<10	<10	<10	<10
Acetophenone	4.2 J	<10	<10	<10	<10	<10
2-Acetylaminofluorene	<20	<20	<20	<20	<20	<20
4-Aminobiphenyl	<20	<20	<20	<20	<20	<20
Anthracene	39	11	2.2 J	6.1 J	<10	<10
Aniline	<10	<10	<10	<10	<10	<10
Benzo(a)anthracene	28	1.0 J	4.7 J	14	<10	<10
Benzo(k)fluoranthene	7.0 J	<10	2.6 J	6.3 J	<10	<10
Benzo(b)fluoranthene	53	<10	6.4 J	18	<10	<10
Benzo(g,h,i)perylene	12	<10	2.2 J	6.0 J	<10	<10
Benzo(a)pyrene	28	<10	<10	14	<10	<10
Benzyl alcohol	<10	<10	<10	<10	<10	<10
bis(2-Chloroethoxy)methane	<10	<10	<10	<10	<10	<10
bis(2-Choroethyl)ether	<10	<10	<10	<10	<10	<10
bis(2-Chloroisopropyl)ether	<10	<10	<10	<10	<10	<10
bis(2-Ethylhexyl)phthalate	<10	<10	1.8 J	<10	10 J	<10
4-Bromophenyl-phenyl-ether	<10	<10	<10	<10	<10	<10
Butylbenzylphthalate	<10	<10	<10	<10	<10	<10
2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	<50	<50	<50	<50	<50	<50
p-Chloroaniline	<20	<20	<20	120 J	<20	<20
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10
1,2-Dichlorobenzene	<10	<10	<10	<10	<10	<10
4-Chlorophenyl-phenyl ether	<10	<10	<10	<10	<10	<10
2-Chloronaphthalene	<10	<10	<10	<10	<10	<10
Chrysene	34	<10	6.3 J	18	<10	<10
Dibenz(a,h)anthracene	3.6 J	<10	<10	1.9 J	<10	<10
Di-n-butylphthalate	<10	<10	<10	<10	<10	<10
3,3'-Dichlorobenzidine	<20	<20	<20	<20	<20	<20
3,3'-Dimethylbenzidine	<10	<10	<10	<10	<10	<10
Diethylphthalate	63	<10	4.2 J	2.9 J	<10	<10
p-(Dimethylamino)azobenzene	<10	<10	<10	<10	<10	<10
7,12-Dimethylbenz(a)anthracene	<10	<10	<10	<10	<10	<10
a-a-Dimethylphenethylamine	<50	<50	<50	<50	<50	<50
Dimethylphthalate	<10	<10	<10	<10	<10	<10
m-Dinitrobenzene	<50	<50	<50	<50	<50	<50
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10
2,6-Dinitrotoluene	<10	<10	<10	<10	<10	<10
Di-n-octylphthalate	<10	<10	<10	<10	<10	<10
N-Nitroso-di-n-propylamine	<10	<10	<10	<10	<10	<10
Fluoranthene	80	3.6 J	12	31	<10	<10
Fluorene	74	3.2 J	1.7 J	5.1 J	<10	<10
Hexachlorobenzene	<10	<10	<10	<10	<10	<10
Hexachlorobutadiene	<10	<10	<10	<10	<10	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	MW-13B	MW-13C	MW-13D	MW-13F	MW-13R	MW-15
Sample ID:	MW-13B	MW-13C	MW-13D	MW-13F	MW-13R	MW-15
Laboratory Log Number:	46405-16	46405-17	46405-15	46405-14	37181-1	33805-3
Date Sampled:	11/9/93	11/9/93	11/10/93	11/10/93	10/31/91	6/11/91
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10
Hexachloroethane	<10	<10	<10	<10	<10	<10
Hexachloropropene	<10	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene	**14**	<10	**2.3 J**	**6.6 J**	<10	<10
Isophorone	<10	<10	<10	<10	<10	<10
Isosafrole	<10	<10	<10	<10	<10	<10
Methapyrilene	<100	<100	<100	<100	<100	<100
3-Methylcholanthrene	<10	<10	<10	<10	<10	<10
Methylmethanesulfonate	<10	<10	<10	<10	<10	<10
2-Methylnaphthalene	**28**	<10	<10	**1.6 J**	<10	<10
Naphthalene	**29**	<10	**3.1 J**	**2.6 J**	<10	<10
1,4-Naphthoquinone	<10	<10	<10	<10	<10	<10
1-Naphthylamine	<10	<10	<10	<10	<10	<10
2-Naphthylamine	<10	<10	<10	<10	<10	<10
2-Nitroaniline	<50	<50	<50	<50	<50	<50
3-Nitroaniline	<50	<50	<50	<50	<50	<50
4-Nitroaniline	<50	<50	<50	<50	<50	<50
Nitrobenzene	<10	<10	<10	<10	<10	<10
N-Nitrosodi-n-butylamine	<10	<10	<10	<10	<10	<10
N-Nitrosodiethylamine	<20	<20	<20	<20	<20	<20
N-Nitrosodimethylamine	<10	<10	<10	<10	<10	<10
N-Nitrosomethylethylamine	<10	<10	<10	<10	<10	<10
N-Nitrosodiphenylamine/Diphenylamine	<10	<10	<10	<10	<10	<10
N-Nitrosomorpholine	<10	<10	<10	<10	<10	<10
N-Nitrosopiperidine	<20	<20	<20	<20	<20	<20
Nitrosopyrrolidine	<40	<40	<40	<40	<40	<40
5-Nitro-o-toluidine	<10	<10	<10	<10	<10	<10
Pentachlorobenzene	<10	<10	<10	<10	<10	<10
Pentachloronitrobenzene	<100	<100	<100	<100	<100	<100
Phenacetin	<20	<20	<20	<20	<20	<20
Phenanthrene	**140**	**6.3 J**	**6.9 J**	**16**	<10	<10
2-Picoline	<10	<10	<10	<10	<10	<10
Pronamide	<10	<10	<10	<10	<10	<10
Pyrene	**84**	**3.3 J**	**11**	**31**	<10	<10
Safrole	<10	<10	<10	<10	<10	<10
1,2,4,5-Tetrachlorobenzene	**2.5 J**	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene	**1.3 J**	<10	<10	<10	<10	<10
2-Chlorophenol	NA	NA	NA	NA	<10	<10
Cresol m&p	NA	NA	NA	NA	<10	<10
o-Cresol	NA	NA	NA	NA	<10	<10
4-Nitrophenol	NA	NA	NA	NA	<50	<50
2,4-Dichlorophenol	NA	NA	NA	NA	<10	<10
2,6-Dichlorophenol	NA	NA	NA	NA	<10	<10
2,4-Dimethylphenol	NA	NA	NA	NA	<10	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	Sample ID: MW-13B Laboratory Log Number: 46405-16 Date Sampled: 11/9/93	MW-13C 46405-17 11/9/93	MW-13D 46405-15 11/10/93	MW-13F 46405-14 11/10/93	MW-13R 37181-1 10/31/91	MW-15 33805-3 6/11/91
4,6-Dinitro-2-methylphenol	NA	NA	NA	NA	<50	<50
2,4-Dinitrophenol	NA	NA	NA	NA	<50	<50
Pentachlorophenol	NA	NA	NA	NA	<50	<50
Phenol	NA	NA	NA	NA	<10	<10
2,4,5-Trichlorophenol	NA	NA	NA	NA	<50	<50
2,4,6-Trichlorophenol	NA	NA	NA	NA	<10	<10
2,3,4,6-Tetrachlorophenol	NA	NA	NA	NA	<10	<10
2-Nitrophenol	NA	NA	NA	NA	<10	<10
Diallate	<10	<10	<10	<10	<10	<10
Ethyl methanesulfonate	<20	<20	<20	<20	<20	<20
4-Nitroquinoline 1-oxide	<100	<100	<100	<100	<100 I	<100 I
p-Phenylenediamine	<10	<10	<10	<10	<10	<10
o-Toluidine	<10	<10	<10	<10	<10	<10
o,o,o-Triethyl phosphorothioate	<10	<10	<10	<10	<10	<10
1,3,5-Trinitrobenzene	<50	<50	<50	<50	<50	<50
4-Chloro-3-methylphenol	NA	NA	NA	NA	<10	<10
Dibenzofuran	**9.5 J**	<10	<10	**1.8 J**	<10	<10
Pyridine	<10	<10	<10	<10	<10	<10
1,4-Dioxane	<10	<10	<10	<10	<10	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	Sample ID: MW-20	TW-1	TW-1	OBS-1	OBS-1	HW-1B
Laboratory Log Number:	33748-2	33672-1	37181-4	33693-3	37181-2	33693-1
Date Sampled:	6/7/91	6/4/91	10/31/91	6/5/91	10/31/91	6/5/91
Acenaphthene	<10	<10	<10	<10	<10	<10
Acenaphthylene	<10	<10	<10	<10	<10	<10
Acetophenone	<10	<10	<10	<10	<10	<10
2-Acetylaminofluorene	<20	<20	<20	<20	<20	<20
4-Aminobiphenyl	<20	<20	<20	<20	<20	<20
Anthracene	<10	<10	<10	<10	<10	<10
Aniline	<10	**27/11**	<10	<10	<10	<10
Benzo(a)anthracene	<10	<10	<10	<10	<10	<10
Benzo(k)fluoranthene	<10	<10	<10	<10	<10	<10
Benzo(b)fluoranthene	<10	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene	<10	<10	<10	<10	<10	<10
Benzo(a)pyrene	<10	<10	<10	<10	<10	<10
Benzyl alcohol	<10	<10	<10	<10	<10	<10
bis(2-Chloroethoxy)methane	<10	<10	<10	<10	<10	<10
bis(2-Choroethyl)ether	<10	<10	<10	<10	<10	<10
bis(2-Chloroisopropyl)ether	<10	<10	<10	<10	<10	<10
bis(2-Ethylhexyl)phthalate	<10	<10	<10	<10	<10	<10
4-Bromophenyl-phenyl-ether	<10	<10	<10	<10	<10	<10
Butylbenzylphthalate	<10	<10	<10	<10	<10	<10
2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	<50	<50	<50	<50	<50	<50
p-Chloroaniline	<20	<20	<20	**97**	**82**	<20
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10
1,4-Dichlorobenzene	<10	**35/18**	**15**	**43**	**13**	<10
1,2-Dichlorobenzene	<10	**28/15**	**9.8**	**38**	**10**	<10
4-Chlorophenyl-phenyl ether	<10	<10	<10	<10	<10	<10
2-Chloronaphthalene	<10	<10	<10	<10	<10	<10
Chrysene	<10	<10	<10	<10	<10	<10
Dibenz(a,h)anthracene	<10	<10	<10	<10	<10	<10
Di-n-butylphthalate	<10	<10	<10	<10	<10	<10
3,3'-Dichlorobenzidine	<20	<20	<20	<20	<20	<20
3,3'-Dimethylbenzidine	<10	<10	<10	<10	<10	<10
Diethylphthalate	<10	<10	<10	<10	<10	<10
p-(Dimethylamino)azobenzene	<10	<10	<10	<10	<10	<10
7,12-Dimethylbenz(a)anthracene	<10	<10	<10	<10	<10	<10
a-a-Dimethylphenethylamine	<50	<50	<50	<50	<50	<50
Dimethylphthalate	<10	<10	<10	<10	<10	<10
m-Dinitrobenzene	<50	<50	<50	<50	<50	<50
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10
2,6-Dinitrotoluene	<10	<10	<10	<10	<10	<10
Di-n-octylphthalate	<10	<10	<10	<10	<10	<10
N-Nitroso-di-n-propylamine	<10	<10	<10	<10	<10	<10
Fluoranthene	<10	<10	<10	<10	<10	<10
Fluorene	<10	<10	<10	<10	<10	<10
Hexachlorobenzene	<10	<10	<10	<10	<10	<10
Hexachlorobutadiene	<10	<10	<10	<10	<10	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	Sample ID: MW-20 Laboratory Log Number: 33748-2 Date Sampled: 6/7/91	TW-1 33672-1 6/4/91	TW-1 37181-4 10/31/91	OBS-1 33693-3 6/5/91	OBS-1 37181-2 10/31/91	HW-1B 33693-1 6/5/91
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10
Hexachloroethane	<10	<10	<10	<10	<10	<10
Hexachloropropene	<10	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene	<10	<10	<10	<10	<10	<10
Isophorone	<10	<10	<10	<10	<10	<10
Isosafrole	<10	<10	<10	<10	<10	<10
Methapyrilene	<100	<100	<100	<100	<100	<100
3-Methylcholanthrene	<10	<10	<10	<10	<10	<10
Methylmethanesulfonate	<10	<10	<10	<10	<10	<10
2-Methylnaphthalene	<10	<10	<10	<10	<10	<10
Naphthalene	<10	<10	<10	<10	<10	<10
1,4-Naphthoquinone	<10	<10	<10	<10	<10	<10
1-Naphthylamine	<10	<10	<10	<10	<10	<10
2-Naphthylamine	<10	<10	<10	<10	<10	<10
2-Nitroaniline	<50	<50	<50	<50	<50	<50
3-Nitroaniline	<50	<50	<50	<50	<50	<50
4-Nitroaniline	<50	<50	<50	<50	<50	<50
Nitrobenzene	<10	<10	<10	<10	<10	<10
N-Nitrosodi-n-butylamine	<10	<10	<10	<10	<10	<10
N-Nitrosodiethylamine	<20	<20	<20	<20	<20	<20
N-Nitrosodimethylamine	<10 I	<10	<10	<10 I	<10	<10 I
N-Nitrosomethylethylamine	<10	<10	<10	<10	<10	<10
N-Nitrosodiphenylamine/Diphenylamine	<10	<10	<10	<10	<10	<10
N-Nitrosomorpholine	<10	<10	<10	<10	<10	<10
N-Nitrosopiperidine	<20	<20	<20	<20	<20	<20
Nitrosopyrrolidine	<40	<40	<40	<40	<40	<40
5-Nitro-o-toluidine	<10	<10	<10	<10	<10	<10
Pentachlorobenzene	<10	<10	<10	<10	<10	<10
Pentachloronitrobenzene	<100	<100	<100	<100	<100	<100
Phenacetin	<20	<20	<20	<20	<20	<20
Phenanthrene	<10	<10	<10	<10	<10	<10
2-Picoline	<10	<10	<10	<10	<10	<10
Pronamide	<10	<10	<10	<10	<10	<10
Pyrene	<10	<10	<10	<10	<10	<10
Safrole	<10	<10	<10	<10	<10	<10
1,2,4,5-Tetrachlorobenzene	<10	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene	<10	<10	<10	<10	<10	<10
2-Chlorophenol	<10	<10 I	<10	<10	<10	<10
Cresol m&p	<10	<10 I	<10	<10	<10	<10
o-Cresol	<10	<10 I	<10	<10	<10	<10
4-Nitrophenol	<50	<50 I	<50	<50	<50	<50
2,4-Dichlorophenol	<10	<10 I	<10	<10	<10	<10
2,6-Dichlorophenol	<10	<10 I	<10	<10	<10	<10
2,4-Dimethylphenol	<10	<10 I	<10	<10	<10	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-20	TW-1	TW-1	OBS-1	OBS-1	HW-1B
Laboratory Log Number:	33748-2	33672-1	37181-4	33693-3	37181-2	33693-1
Date Sampled:	6/7/91	6/4/91	10/31/91	6/5/91	10/31/91	6/5/91
Parameter (concentrations in ug/L)						
4,6-Dinitro-2-methylphenol	<50	<50 I	<50	<50	<50	<50
2,4-Dinitrophenol	<50	<50 I	<50	<50	<50	<50
Pentachlorophenol	<50	<50 I	<50	<50	<50	<50
Phenol	<10	<10 I	<10	<10	<10	<10
2,4,5-Trichlorophenol	<50	<50 I	<50	<50	<50	<50
2,4,6-Trichlorophenol	<10	<10 I	<10	<10	<10	<10
2,3,4,6-Tetrachlorophenol	<10	<10 I	<10	<10	<10	<10
2-Nitrophenol	<10	<10 I	<10	<10	<10	<10
Diallate	<10	<10	<10	<10	<10	<10
Ethyl methanesulfonate	<20	<20	<20	<20	<20	<20
4-Nitroquinoline 1-oxide	<100 I	<100 I	<100 I	<100 I	<100 I	<100 I
p-Phenylenediamine	<10	<10	<10	<10	<10	<10
o-Toluidine	<10	<10	<10	<10	<10	<10
o,o,o-Triethyl phosphorothioate	<10	<10	<10	<10	<10	<10
1,3,5-Trinitrobenzene	<50	<50	<50	<50	<50	<50
4-Chloro-3-methylphenol	<10	<10 I	<10	<10	<10	<10
Dibenzofuran	<10	<10	<10	<10	<10	<10
Pyridine	<10	<10	<10	<10	<10	<10
1,4-Dioxane	<10	<10	<10	<10	<10	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	Sample ID: QS-1 Laboratory Log Number: 33693-2 Date Sampled: 6/5/91	QS-1 37181-3 10/31/91	VW-2 33733-1 6/6/91	VW-2 37146-1 10/29/91	VW-2B 33733-2 6/6/91
Acenaphthene	**11**	<10	<10	<1,000	<10
Acenaphthylene	<10	<10	<10	<1,000	<10
Acetophenone	<10	<10	<10	<1,000	<10
2-Acetylaminofluorene	<20	<20	<20	<2,000	<20
4-Aminobiphenyl	<20	<20	<20	<2,000	<20
Anthracene	<10	<10	<10	<1,000	<10
Aniline	<10	<10	<10	<1,000	<10
Benzo(a)anthracene	<10	<10	<10	<1,000	<10
Benzo(k)fluoranthene	<10	<10	<10	<1,000	<10
Benzo(b)fluoranthene	<10	<10	<10	<1,000	<10
Benzo(g,h,i)perylene	<10	<10	<10	<1,000	<10
Benzo(a)pyrene	<10	<10	<10	<1,000	<10
Benzyl alcohol	<10	<10	<10	<1,000	<10
bis(2-Chloroethoxy)methane	<10	<10	<10	<1,000	<10
bis(2-Choroethyl)ether	<10	<10	<10	<1,000	<10
bis(2-Chloroisopropyl)ether	<10	<10	<10	<1,000	<10
bis(2-Ethylhexyl)phthalate	<10	**56 J**	<10	<1,000	<10
4-Bromophenyl-phenyl-ether	<10	<10	<10	<1,000	<10
Butylbenzylphthalate	<10	<10	<10	<1,000	<10
2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	<50	<50	<50	<5,000	<50
p-Chloroaniline	<20	<20	<20	<2,000	<20
1,3-Dichlorobenzene	<10	<10	<10	<1,000	<10
1,4-Dichlorobenzene	<10	<10	<10	<1,000	<10
1,2-Dichlorobenzene	<10	<10	<10	<1,000	<10
4-Chlorophenyl-phenyl ether	<10	<10	<10	<1,000	<10
2-Chloronaphthalene	<10	<10	<10	<1,000	<10
Chrysene	<10	<10	<10	<1,000	<10
Dibenz(a,h)anthracene	<10	<10	<10	<1,000	<10
Di-n-butylphthalate	<10	<10	<10	<1,000	<10
3,3'-Dichlorobenzidine	<20	<20	<20	<2,000	<20
3,3'-Dimethylbenzidine	<10	<10	<10	<1,000	<10
Diethylphthalate	<10	<10	<10	<1,000	<10
p-(Dimethylamino)azobenzene	<10	<10	<10	<1,000	<10
7,12-Dimethylbenz(a)anthracene	<10	<10	<10	<1,000	<10
a-a-Dimethylphenethylamine	<50	<50	<50	<5,000	<50
Dimethylphthalate	<10	<10	<10	<1,000	<10
m-Dinitrobenzene	<50	<50	<50	<5,000	<50
2,4-Dinitrotoluene	<10	<10	<10	<1,000	<10
2,6-Dinitrotoluene	<10	<10	<10	<1,000	<10
Di-n-octylphthalate	<10	<10	**23**	<1,000	<10
N-Nitroso-di-n-propylamine	<10	<10	<10	<1,000	<10
Fluoranthene	**14**	<10	<10	<1,000	<10
Fluorene	**10**	<10	<10	<1,000	<10
Hexachlorobenzene	<10	<10	<10	<1,000	<10
Hexachlorobutadiene	<10	<10	<10	<1,000	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	Sample ID: QS-1 Laboratory Log Number: 33693-2 Date Sampled: 6/5/91	QS-1 37181-3 10/31/91	VW-2 33733-1 6/6/91	VW-2 37146-1 10/29/91	VW-2B 33733-2 6/6/91
Hexachlorocyclopentadiene	<10	<10	<10	<1,000	<10
Hexachloroethane	<10	<10	<10	<1,000	<10
Hexachloropropene	<10	<10	<10	<1,000	<10
Indeno(1,2,3-cd)pyrene	<10	<10	<10	<1,000	<10
Isophorone	<10	<10	<10	<1,000	<10
Isosafrole	<10	<10	<10	<1,000	<10
Methapyrilene	<100	<100	<100	<10,000	<100
3-Methylcholanthrene	<10	<10	<10	<1,000	<10
Methylmethanesulfonate	<10	<10	<10	<1,000	<10
2-Methylnaphthalene	<10	<10	<10	<1,000	<10
Naphthalene	**31**	**29**	<10	<1,000	<10
1,4-Naphthoquinone	<10	<10	<10	<1,000	<10
1-Naphthylamine	<10	<10	<10	<1,000	<10
2-Naphthylamine	<10	<10	<10	<1,000	<10
2-Nitroaniline	<50	<50	<50	<5,000	<50
3-Nitroaniline	<50	<50	<50	<5,000	<50
4-Nitroaniline	<50	<50	<50	<5,000	<50
Nitrobenzene	<10	<10	<10	<1,000	<10
N-Nitrosodi-n-butylamine	<10	<10	<10	<1,000	<10
N-Nitrosodiethylamine	<20	<20	<20	<2,000	<20
N-Nitrosodimethylamine	<10 I	<10	<10	<1,000	<10
N-Nitrosomethylethylamine	<10	<10	<10	<1,000	<10
N-Nitrosodiphenylamine/Diphenylamine	<10	<10	<10	<1,000	<10
N-Nitrosomorpholine	<10	<10	<10	<1,000	<10
N-Nitrosopiperidine	<20	<20	<20	<2,000	<20
Nitrosopyrrolidine	<40	<40	<40	<4,000	<40
5-Nitro-o-toluidine	<10	<10	<10	<1,000	<10
Pentachlorobenzene	<10	<10	<10	<1,000	<10
Pentachloronitrobenzene	<100	<100	<100	<10,000	<100
Phenacetin	<20	<20	<20	<2,000	<20
Phenanthrene	**31**	**15**	<10	<1,000	<10
2-Picoline	<10	<10	<10	<1,000	<10
Pronamide	<10	<10	<10	<1,000	<10
Pyrene	**15**	<10	<10	<1,000	<10
Safrole	<10	<10	<10	<1,000	<10
1,2,4,5-Tetrachlorobenzene	<10	<10	<10	<1,000	<10
1,2,4-Trichlorobenzene	<10	<10	<10	<1,000	<10
2-Chlorophenol	<10	<10	**16**	<1,000	<10
Cresol m&p	<10	<10	<10	<1,000	<10
o-Cresol	<10	<10	<10	<1,000	<10
4-Nitrophenol	<50	<50	<50	<5,000	<50
2,4-Dichlorophenol	<10	<10	<10	<1,000	<10
2,6-Dichlorophenol	<10	<10	<10	<1,000	<10
2,4-Dimethylphenol	<10	<10	<10	<1,000	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-7. Acid and Base/Neutral Compounds in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Parameter (concentrations in ug/L)	Sample ID: QS-1 Laboratory Log Number: 33693-2 Date Sampled: 6/5/91	QS-1 37181-3 10/31/91	VW-2 33733-1 6/6/91	VW-2 37146-1 10/29/91	VW-2B 33733-2 6/6/91
4,6-Dinitro-2-methylphenol	<50	<50	<50	<5,000	<50
2,4-Dinitrophenol	<50	<50	<50	<5,000	<50
Pentachlorophenol	<50	<50	<50	<5,000	<50
Phenol	<10	<10	<10	<1,000	<10
2,4,5-Trichlorophenol	<50	<50	<50	<5,000	<50
2,4,6-Trichlorophenol	<10	<10	<10	<1,000	<10
2,3,4,6-Tetrachlorophenol	<10	<10	<10	<1,000	<10
2-Nitrophenol	<10	<10	<10	<1,000	<10
Diallate	<10	<10	<10	<1,000	<10
Ethyl methanesulfonate	<20	<20	<20	<2,000	<20
4-Nitroquinoline 1-oxide	<100 I	<100 I	<100 I	<10,000 I	<100 I
p-Phenylenediamine	<10	<10	<10	<1,000	<10
o-Toluidine	<10	<10	<10	<1,000	<10
o,o,o-Triethyl phosphorothioate	<10	<10	<10	<1,000	<10
1,3,5-Trinitrobenzene	<50	<50	<50	<5,000	<50
4-Chloro-3-methylphenol	<10	<10	<10	<1,000	<10
Dibenzofuran	<10	<10	<10	<1,000	<10
Pyridine	<10	<10	<10	<1,000	<10
1,4-Dioxane	<10	<10	<10	<1,000	<10

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.
NA Parameter not analyzed.

Table 4-8. Concentrations of Pesticides, Polychlorinated Biphenyls, Herbicides, Chlorinated Dioxins, and Furans in Groundwater Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-2A	MW-2B	MW-2R	MW-3	MW-4	MW-8A	MW-8A Dup
Laboratory Log Number:	33733-3	33733-4	32911-1	33805-2	33805-4	33748-3	33748-4
Date Sampled:	6/6/91	6/6/91	4/25/91	6/11/91	6/11/91	6/7/91	6/7/91
Parameter (concentrations in ug/L)							
Disulfoton	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Methyl parathion	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Ethyl parathion	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sulfotepp	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Famphur	<10	<10	<10	<10	<10	<10	<10
Phorate	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Thionazin	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dimethoate	<10	<10	<10	<10	<10	<10	<10
Aldrin	<0.010	<0.050	<0.010	<0.010	<0.10	<0.020	<0.020
Isodrin	<0.020	<0.10	<0.020	<0.020	<0.20	<0.040	<0.040
alpha-Chlordane	<0.010	<0.050	<0.010	<0.010	<0.10	<0.020	<0.020
gamma-Chlordane	<0.010	<0.050	<0.010	<0.010	<0.10	<0.020	<0.020
Chlorobenzilate	<0.50	<2.5	<0.50	<0.50	<5.0	<1.0	<1.0
DDD	<0.020	<0.10	<0.020	<0.020	<0.20	<0.040	<0.040
DDE	<0.020	<0.10	<0.020	<0.020	<0.20	<0.040	<0.040
DDT	<0.050	<0.25	<0.050	<0.050	<0.50	<0.10	<0.10
Dieldrin	<0.020	<0.10	<0.020	<0.020	<0.20	<0.040	<0.040
Endosulfan I	<0.020	<0.10	<0.020	<0.020	<0.20	<0.040	<0.040
Endosulfan II	<0.050	<0.25	<0.050	<0.050	<0.50	<0.10	<0.10
Endosulfan sulfate	<0.10	<0.50	<0.10	<0.10	<1.0	<0.20	<0.20
Endrin	<0.020	<0.10	<0.020	<0.020	<0.20	<0.020	<0.020
Endrin aldehyde	<0.10	<0.50	<0.10	<0.10	<1.0	<0.20	<0.20
Heptachlor	<0.010	<0.050	<0.010	<0.010	<0.10	<0.020	<0.020
Heptachlor epoxide	<0.020	<0.10	<0.020	<0.020	<0.20	<0.040	<0.040
alpha-BHC	<0.010	<0.050	<0.010	<0.010	<0.10	<0.020	<0.020
beta-BHC	<0.010	<0.050	<0.010	<0.010	<0.10	<0.020	<0.020
gamma-BHC	<0.010	<0.050	<0.010	<0.010	<0.10	<0.020	<0.020
delta-BHC	<0.010	<0.050	<0.010	<0.010	<0.10	<0.020	<0.020
Kepone	<0.050	<0.25	<0.050	<0.050	<0.50	<0.10	<0.10
Methoxychlor	<0.50	<2.5	<0.50	<0.50	<5.0	<1.0	<1.0
Toxaphene	<1.0	<5.0	<1.0	<1.0	<10	<2.0	<2.0
Aroclor-1016	<0.50	<2.5	<0.50	<0.50	<5.0	<1.0	<1.0
Aroclor-1221	<0.50	<2.5	<0.50	<0.50	<5.0	<1.0	<1.0
Aroclor-1232	<0.50	<2.5	<0.50	<0.50	<5.0	<1.0	<1.0
Aroclor-1242	<0.50	<2.5	<0.50	<0.50	<5.0	<1.0	<1.0
Aroclor-1248	<0.50	<2.5	<0.50	<0.50	<5.0	<1.0	<1.0
Aroclor-1254	<0.50	<2.5	<0.50	<0.50	<5.0	<1.0	<1.0
Aroclor-1260	<0.50	<2.5	<0.50	<0.50	<5.0	<1.0	<1.0
2,4-D	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2,4,5-T	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
2,4,5-TP Silvex	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tetra-CCD	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Tetra-CDF	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Penta-CDD	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Penta-CDF	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Hexa-CDD	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dioxin-2,3,7 TCDD	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

ug/L Micrograms per liter.

Table 4-8. Concentrations of Pesticides, Polychlorinated Biphenyls, Herbicides, Chlorinated Dioxins, and Furans in Groundwater Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-8B	MW-8B Dup	MW-9	MW-10	MW-11A	MW-11B	MW-13
Laboratory Log Number:	33748-5	33748-6	33748-1	33780-1	33780-2	33780-3	33780-4
Date Sampled:	6/7/91	6/7/91	6/7/91	6/10/91	6/10/91	6/10/91	6/10/91
Parameter (concentrations in ug/L)							
Disulfoton	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Methyl parathion	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Ethyl parathion	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sulfotepp	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Famphur	<10	<10	<10	<10	<10	<10	<10
Phorate	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Thionazin	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dimethoate	<10	<10	<10	<10	<10	<10	<10
Aldrin	<0.020	<0.020	<0.020	<0.050	<0.10	<0.050	<0.50
Isodrin	<0.040	<0.040	<0.040	<0.10	<0.20	<0.10	<1.0
alpha-Chlordane	<0.020	<0.020	<0.020	<0.050	<0.10	<0.050	<0.50
gamma-Chlordane	<0.020	<0.020	<0.020	<0.050	<0.10	<0.050	<0.50
Chlorobenzilate	<1.0	<1.0	<1.0	<2.5	<5.0	<2.5	<25
DDD	<0.040	<0.040	<0.040	<0.10	<0.20	<0.10	<1.0
DDE	<0.040	<0.040	<0.040	<0.10	<0.20	<0.10	<1.0
DDT	<0.10	<0.10	<0.10	<0.25	<0.50	<0.25	<2.5
Dieldrin	<0.040	<0.040	<0.040	<0.10	<0.20	<0.10	<1.0
Endosulfan I	<0.040	<0.040	<0.040	<0.10	<0.20	<0.10	<1.0
Endosulfan II	<0.10	<0.10	<0.10	<0.25	<0.50	<0.25	<2.5
Endosulfan sulfate	<0.20	<0.20	<0.20	<0.50	<1.0	<0.50	<5.0
Endrin	<0.020	<0.020	<0.020	<0.10	<0.20	<0.10	<1.0
Endrin aldehyde	<0.20	<0.20	<0.20	<0.50	<1.0	<0.50	<5.0
Heptachlor	<0.020	<0.020	<0.020	<0.050	<0.10	<0.050	<0.50
Heptachlor epoxide	<0.040	<0.040	<0.040	<0.10	<0.20	<0.10	<1.0
alpha-BHC	<0.020	<0.020	<0.020	<0.050	<0.10	<0.050	<0.50
beta-BHC	<0.020	<0.020	<0.020	<0.050	<0.10	<0.050	<0.50
gamma-BHC	<0.020	<0.020	<0.020	<0.050	<0.10	<0.050	<0.50
delta-BHC	<0.020	<0.020	<0.020	<0.050	<0.10	<0.050	<0.50
Kepone	<0.10	<0.10	<0.10	<0.25	<0.50	<0.25	<2.5
Methoxychlor	<1.0	<1.0	<1.0	<2.5	<5.0	<2.5	<25
Toxaphene	<2.0	<2.0	<2.0	<5.0	<10	<5.0	<50
Aroclor-1016	<1.0	<1.0	<1.0	<2.5	<5.0	<2.5	<25
Aroclor-1221	<1.0	<1.0	<1.0	<2.5	<5.0	<2.5	<25
Aroclor-1232	<1.0	<1.0	<1.0	<2.5	<5.0	<2.5	<25
Aroclor-1242	<1.0	<1.0	<1.0	<2.5	<5.0	<2.5	<25
Aroclor-1248	<1.0	<1.0	<1.0	<2.5	<5.0	<2.5	<25
Aroclor-1254	<1.0	<1.0	<1.0	<2.5	<5.0	<2.5	<25
Aroclor-1260	<1.0	<1.0	<1.0	<2.5	<5.0	<2.5	<25
2,4-D	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50	<2.5
2,4,5-T	<0.30	<0.30	<0.30	<1.5	<0.30	<0.30	<1.5
2,4,5-TP Silvex	<0.10	<0.10	<0.10	<0.50	<0.10	<0.10	<0.50
Tetra-CCD	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Tetra-CDF	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Penta-CDD	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Penta-CDF	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Hexa-CDD	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dioxin-2,3,7 TCDD	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

ug/L Micrograms per liter.

Table 4-8. Concentrations of Pesticides, Polychlorinated Biphenyls, Herbicides, Chlorinated Dioxins, and Furans in Groundwater Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-13 Dup	MW-15	MW-20	QS-1	TW-1	OBS-1	HW-1B
Laboratory Log Number:	33780-5	33805-3	33748-2	33693-2	33672-1	33693-3	33693-1
Date Sampled:	6/10/91	6/11/91	6/7/91	6/5/91	6/4/91	6/5/91	6/5/91
Parameter (concentrations in ug/L)							
Disulfoton	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Methyl parathion	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Ethyl parathion	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sulfotepp	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Famphur	<10	<10	<10	<10	<10	<10	<10
Phorate	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Thionazin	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dimethoate	<10	<10	<10	<10	<10	<10	<10
Aldrin	<0.50	<0.010	<0.20	<0.10	<0.010	<0.10	<0.020
Isodrin	<1.0	<0.020	<0.40	<0.20	<0.020	<0.20	<0.040
alpha-Chlordane	<0.50	<0.010	<0.20	<0.10	<0.010	<0.10	<0.020
gamma-Chlordane	<0.50	<0.010	<0.20	<0.10	<0.010	<0.10	<0.020
Chlorobenzilate	<25	<0.50	<10	<5.0	<0.50	<5.0	<1.0
DDD	<1.0	<0.020	<0.40	<0.20	<0.020	<0.20	<0.040
DDE	<1.0	<0.020	<0.40	<0.20	<0.020	<0.20	<0.040
DDT	<2.5	<0.050	<1.0	<0.50	<0.050	<0.50	<0.10
Dieldrin	<1.0	<0.020	<0.40	<0.20	<0.020	<0.20	<0.040
Endosulfan I	<1.0	<0.020	<0.40	<0.20	<0.020	<0.20	<0.040
Endosulfan II	<2.5	<0.050	<1.0	<0.50	<0.050	<0.50	<0.10
Endosulfan sulfate	<5.0	<0.10	<2.0	<1.0	<0.10	<1.0	<0.20
Endrin	<1.0	<0.020	<0.20	<0.20	<0.020	<0.20	<0.040
Endrin aldehyde	<5.0	<0.10	<2.0	<1.0	<0.10	<1.0	<0.20
Heptachlor	<0.50	<0.010	<0.20	<0.10	<0.010	<0.10	<0.020
Heptachlor epoxide	<1.0	<0.020	<0.40	<0.20	<0.020	<0.20	<0.040
alpha-BHC	<0.50	<0.010	<0.20	<0.10	<0.010	<0.10	<0.020
beta-BHC	<0.50	<0.010	<0.20	<0.10	<0.010	<0.10	<0.020
gamma-BHC	<0.50	<0.010	<0.20	<0.10	<0.010	<0.10	<0.020
delta-BHC	<0.50	<0.010	<0.20	<0.10	<0.010	<0.10	<0.020
Kepone	<2.5	<0.050	<1.0	<0.50	<0.050	<0.50	<0.10
Methoxychlor	<25	<0.50	<10	<5.0	<0.50	<5.0	<1.0
Toxaphene	<50	<1.0	<20	<10	<1.0	<10	<2.0
Aroclor-1016	<25	<0.50	<10	<5.0	<0.50	<5.0	<1.0
Aroclor-1221	<25	<0.50	<10	<5.0	<0.50	<5.0	<1.0
Aroclor-1232	<25	<0.50	<10	<5.0	<0.50	<5.0	<1.0
Aroclor-1242	<25	<0.50	<10	<5.0	<0.50	<5.0	<1.0
Aroclor-1248	<25	<0.50	<10	<5.0	<0.50	<5.0	<1.0
Aroclor-1254	<25	<0.50	<10	<5.0	<0.50	<5.0	<1.0
Aroclor-1260	<25	<0.50	<10	<5.0	<0.50	<5.0	<1.0
2,4-D	<5.0	<0.50	<10	<2.5	<0.50	<0.50	<0.50
2,4,5-T	<3.0	<0.30	<6.0	<1.0	<0.30	<0.30	<0.30
2,4,5-TP Silvex	<1.0	<0.10	<2.0	<0.50	<0.10	0.40	<0.10
Tetra-CCD	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Tetra-CDF	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Penta-CDD	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Penta-CDF	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Hexa-CDD	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dioxin-2,3,7 TCDD	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

ug/L Micrograms per liter.

Table 4-8. Concentrations of Pesticides, Polychlorinated Biphenyls, Herbicides, Chlorinated Dioxins, and Furans in Groundwater Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	VW-2	VW-2B
Laboratory Log Number:	33733-1	33733-2
Date Sampled:	6/6/91	6/6/91
Parameter (concentrations in ug/L)		
Disulfoton	<2.0	<2.0
Methyl parathion	<0.30	<0.30
Ethyl parathion	<1.0	<1.0
Sulfotepp	<1.5	<1.5
Famphur	<10	<10
Phorate	<1.5	<1.5
Thionazin	<1.0	<1.0
Dimethoate	<10	<10
Aldrin	<0.10	<0.050
Isodrin	<0.20	<0.10
alpha-Chlordane	<0.10	<0.050
gamma-Chlordane	<0.10	<0.050
Chlorobenzilate	<5.0	<2.5
DDD	<0.20	<0.10
DDE	<0.20	<0.10
DDT	<0.50	<0.25
Dieldrin	<0.20	<0.10
Endosulfan I	<0.20	<0.10
Endosulfan II	<0.50	<0.25
Endosulfan sulfate	<1.0	<0.50
Endrin	<0.20	<0.10
Endrin aldehyde	<1.0	<0.50
Heptachlor	<0.10	<0.050
Heptachlor epoxide	<0.20	<0.10
alpha-BHC	<0.10	<0.050
beta-BHC	<0.10	<0.050
gamma-BHC	<0.10	<0.050
delta-BHC	<0.10	<0.050
Kepone	<0.50	<0.25
Methoxychlor	<5.0	<2.5
Toxaphene	<10	<5.0
Aroclor-1016	<5.0	<2.5
Aroclor-1221	<5.0	<2.5
Aroclor-1232	<5.0	<2.5
Aroclor-1242	<5.0	<2.5
Aroclor-1248	<5.0	<2.5
Aroclor-1254	<5.0	<2.5
Aroclor-1260	<5.0	<2.5
2,4-D	<5.0	<0.50
2,4,5-T	<3.0	<0.30
2,4,5-TP Silvex	<1.0	<0.10
Tetra-CCD	<0.0050	<0.0050
Tetra-CDF	<0.0050	<0.0050
Penta-CDD	<0.0050	<0.0050
Penta-CDF	<0.0050	<0.0050
Hexa-CDD	<0.0050	<0.0050
Dioxin-2,3,7 TCDD	<0.0050	<0.0050

ug/L Micrograms per liter.

Table 4-9. Concentrations of Alachlor in Groundwater, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	GM-1	GM-1A	GM-1B	GM-1C	GM-3	GM-5	MW-3	MW-4	MW-5	MW-11B	MW-13	MW-14	MW-15	QS-1
aboratory Sample Number:	46405-2	46405-7	46405-8	46405-6	46405-3	46405-4	46405-9	46405-10	46405-11	46405-12	46405-1	46405-5	46405-25	46405-13
Date Sampled:	11/9/93	11/10/93	11/10/93	11/10/93	11/9/93	11/8/93	11/10/93	11/9/93	11/9/93	11/9/93	11/9/93	11/9/93	11/10/93	11/9/93
Parameter (concentrations in ug/L)														
Alachlor	67,000	1.4 J	<1.0	<1.0	710	1.2 J	1.0	36	<1.0	<1.0 I	<0.1	85,000	18 J	2.3 J

ug/L Micrograms per liter.
I Data invalid.
J Estimated value.

Table 4-10. Concentrations of Metals, Total Cyanide, and Sulfide in Groundwater Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-2A		MW-2B		MW-2R		MW-2R		MW-3	
Laboratory Log Number:	33733-3		33733-4		32911-1		37265-5		33805-2	
Date Sampled:	6/6/91		6/6/91		4/25/91		11/5/91		6/11/91	
Parameter (concentrations in ug/L)	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Antimony	<50	<50	<50	<50	<50	NA	<50	<50	<50	<50
Barium	270	96 J	150	150 J	83 J	NA	460	270	130	140
Beryllium	<5.0	<5.0	<5.0	<5.0	<5.0	NA	<5.0	<5.0	<5.0	<5.0
Cadmium	<5.0	<5.0	<5.0	<5.0	11	NA	<5.0	<5.0	7	<5.0
Chromium	<10	<10	<10	10	19	NA	69	<10	<10	<10
Cobalt	<10	<10	<10	<10	<10	NA	52	12	<10	<10
Copper	<25	<25	<25	<25	26	NA	99	<25	<25	<25
Nickel	<40	<40	43	<40	<40	NA	150	<40	<40	<40
Silver	<10	<10 I	<10	<10 I	<10	NA	<5.0	<10	<10	<10
Tin	<50	<50	<50	<50	<50	NA	<50	<50	<50	<50
Vanadium	<10	<10	<10	<10	12	NA	89	<10	14	<10
Zinc	58	30	40	41	89	NA	230	20	25	26
Arsenic	<10	<10	<10	<10	15	NA	60 J	<10	<10	<10
Lead	<5.0	<5.0	<5.0	<5.0	<5	NA	38	<5.0	9	<5.0
Thallium	<10	<10	<10	<10	<10	NA	<10	<10	<10	<10
Selenium	<25	<25	<25	<25	<10	NA	<100	<25	<10	<10
Mercury	<0.20	NA	<0.20	NA	<0.20	NA	<0.20	<0.20	<0.20	NA
Total Cyanide	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA
Sulfide	<100	NA	<100	NA	<100	NA	<100	NA	<100	NA

ug/L Micrograms per liter.
NA Not analyzed.
I Data invalid.
J Estimated value.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-10. Concentrations of Metals, Total Cyanide, and Sulfide in Groundwater Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-3		MW-4		MW-4		MW-8A		MW-8A Dup	
Laboratory Log Number:	37265-1		33805-4		37166-1		33748-3		33748-4	
Date Sampled:	11/5/91		6/11/91		10/30/91		6/7/91		6/7/91	
Parameter (concentrations in ug/L)	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Antimony	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Barium	460	120	45	61	260 J	80 U	880 J	720 J	920 J	630 J
Beryllium	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium	38	<10	<10	<10	21	<10	<10	<10	<10	<10
Cobalt	24	<10	<10	<10	11	<10	<10	<10	<10	<10
Copper	66	<25	<25	<25	25	<25	<25	<25	<25	<25
Nickel	69	<40	<40	<40	<40	<40	<40	<40	<40	<40
Silver	<5.0	<10	<10	<10 I	<10	<10	<10	<10 I	10	10 J
Tin	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Vanadium	73	<10	<10	<10	27 J	<10	<10	<10	<10	<10
Zinc	210	22	49	24	95 U	24 U	450	40 J	260	32 J
Arsenic	22 J	<10	45 J	24	55	40	17	15	20	<10
Lead	36	14	15	<5.0	13 J	<5.0	28	<5.0	33	<5.0
Thallium	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Selenium	<100	<10	<10	<10	<10	<10	<50	<25	<25	<25
Mercury	<0.20	<0.20	<0.20	NA	<0.020	<0.20	<0.20	NA	<0.20	NA
Total Cyanide	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA
Sulfide	<100	NA	<100	NA	<100	NA	<100	NA	<100	NA

ug/L Micrograms per liter.
NA Not analyzed.
I Data invalid.
J Estimated value.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-10. Concentrations of Metals, Total Cyanide, and Sulfide in Groundwater Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-8A		MW-8A Dup		MW-8B		MW-8B Dup		MW-8B	
Laboratory Log Number:	37146-5		37146-6		33748-5		33748-6		37146-4	
Date Sampled:	10/29/91		10/29/91		6/7/91		6/7/91		10/29/91	
Parameter (concentrations in ug/L)	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Antimony	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Barium	1,200 J	700 J	1,200 J	710 J	640 J	320 J	710	310 J	490 J	330 J
Beryllium	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium	16	<10	13	<10	<10	<10	<10	<10	<10	<10
Cobalt	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Copper	46	<25	38	<25	<25	<25	<25	<25	<25	<25
Nickel	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40
Silver	<10	<10	<10	<10	11	<10 I	12	<10 I	<10	<10
Tin	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Vanadium	16	<10	14	<10	<10	<10	<10	<10	<10	<10
Zinc	110 U	26 U	97 U	30 U	620	32 J	800	37 J	<20	30 U
Arsenic	16	<10	<10	<10	19	<10	19	<10	<10	<10
Lead	65 J	<5.0	56 J	<25	16	<5.0	34	<5.0	<5.0	<5.0 I
Thallium	<10	<25	<25	<25	<10	<10	<10	<10	<10	<10
Selenium	<10	<250	<50	<250	<10	<10	<10	<10	<10	<10
Mercury	<0.20	<0.20	<0.20	<0.20	<0.20	NA	<0.20	NA	<0.20	<0.20
Total Cyanide	<10	NA	NA	NA	<10	NA	<10	NA	<10	NA
Sulfide	<100	NA	NA	NA	<100	NA	<100	NA	<100	NA

ug/L Micrograms per liter.
NA Not analyzed.
I Data invalid.
J Estimated value.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-10. Concentrations of Metals, Total Cyanide, and Sulfide in Groundwater Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-8R		MW-9		MW-9		MW-10		MW-10	
Laboratory Log Number:	37146-3		33748-1		37181-6		33780-1		37166-2	
Date Sampled:	10/29/91		6/7/91		10/31/91		6/10/91		10/30/91	
Parameter (concentrations in ug/L)	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Antimony	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Barium	160 J	140 J	47 J	50 J	85	33	1,600	590	2,000 J	660 J
Beryllium	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium	120	<10	<10	<10	<10	<10	58	<10	76	<10
Cobalt	<10	<10	<10	<10	<10	<10	40	<10	46	<10
Copper	<25	<25	<25	<25	<25	<25	71	<25	88	<25
Nickel	64	<40	<40	<40	<40	<40	100	<40	120	<40
Silver	<10	<10	<10	<10 I	<10	<10	26	<10 I	<10	<10
Tin	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Vanadium	<10	<10	<10	<10	<10	<10	140	<10	130	<10
Zinc	62 U	<20	370	30	28 U	22 U	510	43	390 U	38 U
Arsenic	<10	<10	41	34 J	40 J	29	95 J	34	64	36
Lead	6.9 J	<5.0	<5.0	<5.0	<5.0	<5.0	75	<5.0	56 J	<5.0
Thallium	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Selenium	<10	<10	<25	<10	<10	<25	<10	<10	<10	<25
Mercury	<0.20	<0.20	<0.20	NA	<0.20	<0.20	0.30	NA	<0.020	<0.20
Total Cyanide	<10	NA	18	NA	13	NA	18	NA	13	NA
Sulfide	<100	NA	<100	NA	<100	NA	<100	NA	160 J	NA

ug/L Micrograms per liter.
NA Not analyzed.
I Data invalid.
J Estimated value.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-10. Concentrations of Metals, Total Cyanide, and Sulfide in Groundwater Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-11A		MW-11A		MW-11B		MW-11B		MW-13	
Laboratory Log Number:	33780-2		37265-3		33780-3		37265-4		33780-4	
Date Sampled:	6/10/91		11/5/91		6/10/91		11/5/91		6/10/91	
Parameter (concentrations in ug/L)	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Antimony	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Barium	180	120	340	160	1,100	780	1,000	680	2,200	500 J
Beryllium	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	10	<5.0
Chromium	<10	<10	29	<10	<10	<10	<10	<10	68	<10
Cobalt	<10	<10	10	<10	<10	<10	<10	<10	60	<10
Copper	47	<25	100	<25	<25	<25	<25	<25	350	<25
Nickel	<40	<40	<40	<40	<40	<40	<40	<40	160	<40
Silver	<10	<10 I	<5.0	<10	16	<10 I	<5.0	<10	56	<10 I
Tin	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Vanadium	17	<10	33	<10	15	<10	<10	<10	200	<10
Zinc	200	22	320	<20	160	33	81	22	1,300	25
Arsenic	54 J	40	61 J	46	35 J	<10	56 J	<10	38 J	<10
Lead	170	<5.0	460	<5.0	74	<5.0	55	<5.0	560	<5.0
Thallium	<25	<10	<10	<10	<10	<10	<10	<10	<10	<10
Selenium	<10	<10	<10	<25	<25	<25	<100	<25	<25	<10
Mercury	0.25	NA	0.70	<0.20	0.25	NA	<0.20	<0.20	4.1	NA
Total Cyanide	<10	NA	<10	NA	24	NA	23	NA	20	NA
Sulfide	<100	NA	110	NA	<100	NA	<100	NA	960	NA

ug/L Micrograms per liter.
NA Not analyzed.
I Data invalid.
J Estimated value.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-10. Concentrations of Metals, Total Cyanide, and Sulfide in Groundwater Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-13 Dup		MW-13		MW-13	MW-13R		MW-14	
Laboratory Log Number:	33780-5		37166-3		46405-1	37181-1		37211-4	
Date Sampled:	6/10/91		10/30/91		11/9/93	10/31/91		11/01/91	
Parameter (concentrations in ug/L)	Total	Dissolved	Total	Dissolved	Total	Total	Dissolved	Total	Dissolved
Antimony	<50	<50	<50	<50	<50	<50	<50	<50	<50
Barium	2,100	510	1,000 J	400 J	300	210	220	1,400	1,300
Beryllium	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	8	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium	66	<10	47	<10	<10	89	<10	90	<10
Cobalt	63	<10	29	<10	<10	<10	<10	24	<10
Copper	310	<25	140	<25	<25	<25	<25	130	<25
Nickel	180	<40	63	<40	<40	320	79	63	<40
Silver	60	<10 I	<10	<10	<10	<10	<10	<10	<10
Tin	<50	<50	<50	<50	<50	<50	<50	<50	<50
Vanadium	210	<10	77 J	<10	<10	<10	<10	50	<10
Zinc	1,400	43	430 U	31 U	33	56 U	22 U	390 U	52 J
Arsenic	45 J	<10	26	<10	13	<10	<10	36 J	20
Lead	1,000	<5.0	570 J	<25	26	<5.0	<5.0	240	<5.0
Thallium	<10	<10	<10	<10	<10	<10	<10	<10	<10
Selenium	<25	<10	<50	<25	<10	<50	<10	<100	<25
Mercury	3.7	NA	<0.020	<0.20	<0.20	<0.20	<0.20	0.32	<0.20
Total Cyanide	26	NA	26	NA	NA	<10	NA	<10	NA
Sulfide	1,600	NA	24,000 J	NA	NA	780 J	NA	320 J	NA

ug/L Micrograms per liter.
NA Not analyzed.
I Data invalid.
J Estimated value.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-10. Concentrations of Metals, Total Cyanide, and Sulfide in Groundwater Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-15		MW-15		MW-15	MW-20		MW-20	
Laboratory Log Number:	33805-3		37265-2		46405-25	33748-2		37265-6	
Date Sampled:	6/11/91		11/5/91		11/10/93	6/7/91		11/5/91	
Parameter (concentrations in ug/L)	Total	Dissolved	Total	Dissolved	Total	Total	Dissolved	Total	Dissolved
Antimony	<50	<50	<50	<50	<50	<50	<50	<50	<50
Barium	2,000	260	1,700	150	160	830 J	510 J	830	480
Beryllium	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	9	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium	57	<10	68	<10	<10	<10	<10	17	<10
Cobalt	110	<10	67	<10	<10	52	<10	27	<10
Copper	140	<25	110	<25	<25	35	<25	<25	<25
Nickel	200	<40	150	<40	<40	72	<40	<40	<40
Silver	30	<10 I	<5.0	<10	<10	32	32 J	<10	<10
Tin	<50	<50	<50	<50	<50	<50	<50	<50	<50
Vanadium	170	<10	130	<10	<10	65	<10	45	<10
Zinc	820	47	430	27	<20	540	35 J	260	<20
Arsenic	280 J	59	270 J	64	180	54	<10	45 J	<10
Lead	100	<5.0	160	6.8	<5.0	430	<5.0	410	<5.0
Thallium	<10	<10	<10	<10	<10	<10	<10	<10	<10
Selenium	<10	<10	<10	<25	<10	<25	<25	<100	<25
Mercury	0.37	NA	0.26	<0.20	<0.20	1.6	NA	1.5	<0.20
Total Cyanide	<10	NA	<10	NA	NA	6,500	NA	27,000	NA
Sulfide	<100	NA	<100	NA	NA	7,600	NA	530	NA

ug/L Micrograms per liter.
NA Not analyzed.
I Data invalid.
J Estimated value.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-10. Concentrations of Metals, Total Cyanide, and Sulfide in Groundwater Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	MW-20	MW-20B	TW-1		TW-1		OBS-1		OBS-1	
Laboratory Log Number:	46405-24	46405-23	33672-1		37181-3		33693-3		37181-2	
Date Sampled:	11/10/93	11/10/93	6/4/91		10/31/91		6/5/91		10/31/91	
Parameter (concentrations in ug/L)	Total	Total	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Antimony	<50	NA	<50	<50	<50	<50	<50	<50	<50	<50
Barium	430	NA	280	230	140	110	250	23 J	380	270
Beryllium	<5.0	NA	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	<5.0	NA	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium	<10	NA	<10	<10	<10	<10	21	<10	<10	13
Cobalt	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10
Copper	<25	NA	<25	<25	<25	<25	28	<25	<25	<25
Nickel	<40	NA	<40	<40	<40	<40	<40	<40	<40	<40
Silver	<10	NA	<10	<10	<10	<10	<10	<10 I	<10	<10
Tin	<50	NA	<50	<50	<50	<50	<50	<50	<50	<50
Vanadium	<10	NA	<10	<10	<10	<10	15	<10	<10	<10
Zinc	<20	NA	59	36	240 U	22 U	240	<20	47 U	20 U
Arsenic	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10
Lead	<5.0	NA	<5	<5	<5.0	<5.0	88 J	<5.0	13	<5.0
Thallium	<50.	NA	<10	<10	<10	<10	<25	<10	<10	<10
Selenium	<10	NA	<10	<10	<10	<25	<10	<10	<100	<25
Mercury	<0.20	NA	<0.20	NA	<0.20	<0.20	0.37 J	NA	<0.20	<0.20
Total Cyanide	490	18	<10	NA	<10	NA	<10	NA	<10	NA
Sulfide	NA	NA	<100	NA	<100	NA	<100	NA	<100	NA

ug/L Micrograms per liter.
NA Not analyzed.
I Data invalid.
J Estimated value.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-10. Concentrations of Metals, Total Cyanide, and Sulfide in Groundwater Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

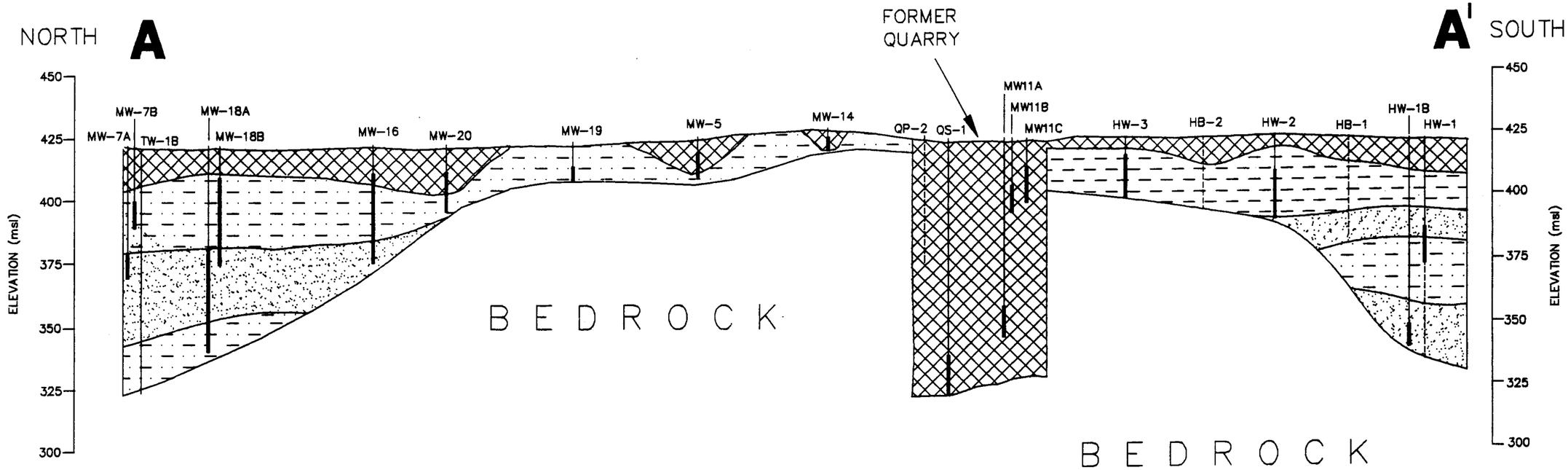
Sample ID:	HW-1B		HW-1B		QS-1		QS-1		VW-2	
Laboratory Log Number:	33693-1		37211-4		33693-2		37181-3		33733-1	
Date Sampled:	6/5/91		11/1/91		6/5/91		10/31/91		6/6/91	
Parameter (concentrations in ug/L)	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Antimony	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Barium	1,400	20 J	71	35	2,200	1,400 J	2,600	2,500	810	410
Beryllium	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium	85	<10	11	<10	10	<10	<10	<10	<10	<10
Cobalt	62	<10	<10	<10	<10	<10	<10	<10	<10	<10
Copper	140	<25	<25	<25	31	<25	<25	<25	27	<25
Nickel	160	<40	<40	<40	<40	<40	<40	<40	<40	<40
Silver	30	<10 I	<10	<10	<10	<10 I	<10	<10	<10	<10
Tin	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Vanadium	160	<10	<10	<10	14	<10	<10	<10	20	11
Zinc	410	<20	31 U	<20	170	<20	46 U	<20	110	40
Arsenic	53	<10	<10	<10	10	<10	<10	<10	13	<10
Lead	85 J	<5.0	25	<5.0	120 J	<5.0	18	<5.0	70 J	<5.0
Thallium	<25	<10	<10	<50	<25	<25	<10	<10	<25	<25
Selenium	<25	<10	<50	<25	<10	<10	<10	<25	<10	<10
Mercury	1.6 J	NA	<0.20	<0.20	0.24 J	NA	<0.20	<0.20	<0.20	NA
Total Cyanide	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA
Sulfide	<100	NA	<100	NA	<100	NA	<100	NA	850 J	NA

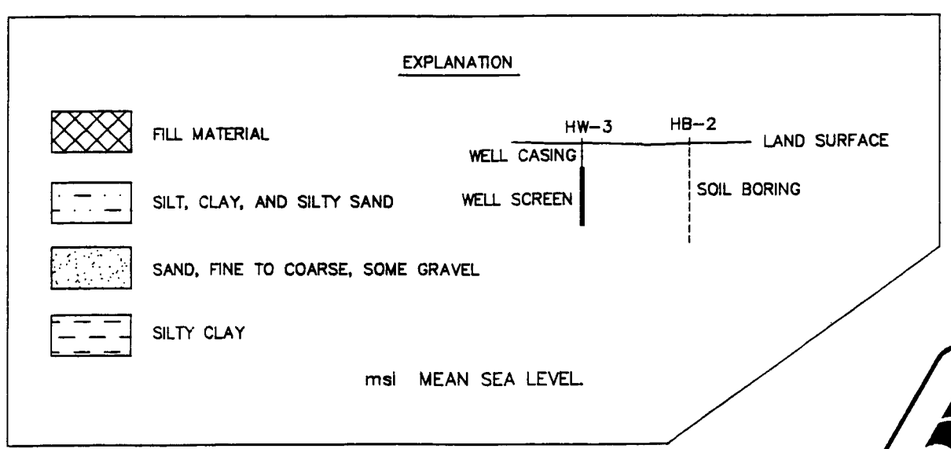
ug/L Micrograms per liter.
NA Not analyzed.
I Data invalid.
J Estimated value.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.

Table 4-10. Concentrations of Metals, Total Cyanide, and Sulfide in Groundwater Samples, J.F. Queeny Plant, Monsanto Company, St. Louis, Missouri.

Sample ID:	VW-2		VW-2B		VW-2B	
Laboratory Log Number:	37146-1		33733-2		37211-3	
Date Sampled:	10/29/91		6/6/91		11/1/91	
Parameter (concentrations in ug/L)	Total	Dissolved	Total	Dissolved	Total	Dissolved
Antimony	<50	<50	<50	<50	<50	<50
Barium	1,200 J	480 J	190	96 J	130	110
Beryllium	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium	16	<10	10	<10	<10	<10
Cobalt	24	<10	10	<10	<10	<10
Copper	95	<25	<25	<25	<25	<25
Nickel	56	<40	<40	<40	<40	<40
Silver	<10	<10	11	<10 I	<10	<10
Tin	<50	<50	<50	<50	<50	<50
Vanadium	35	<10	20	<10	<10	<10
Zinc	300 U	39 U	52	48 J	46 U	31 J
Arsenic	15	<10	53	16	36 J	<10
Lead	230 J	5.4	15 J	<5.0	8.0	<5.0
Thallium	<10	<10	<10	<10	<10	<10
Selenium	<10	<10	<10	<25	<50	<25
Mercury	<0.20	<0.20	<0.20	NA	<0.20	<0.20
Total Cyanide	10	NA	<10	NA	<10	NA
Sulfide	480 J	NA	<100	NA	<100	NA

ug/L Micrograms per liter.
NA Not analyzed.
I Data invalid.
J Estimated value.
U Value was less than five times the concentration detected in the associated blank; therefore, the value is considered to be not detected.





0 700 FEET

(VERTICAL EXAGGERATION = 5X)

GERAGHTY & MILLER, INC.
Environmental Services

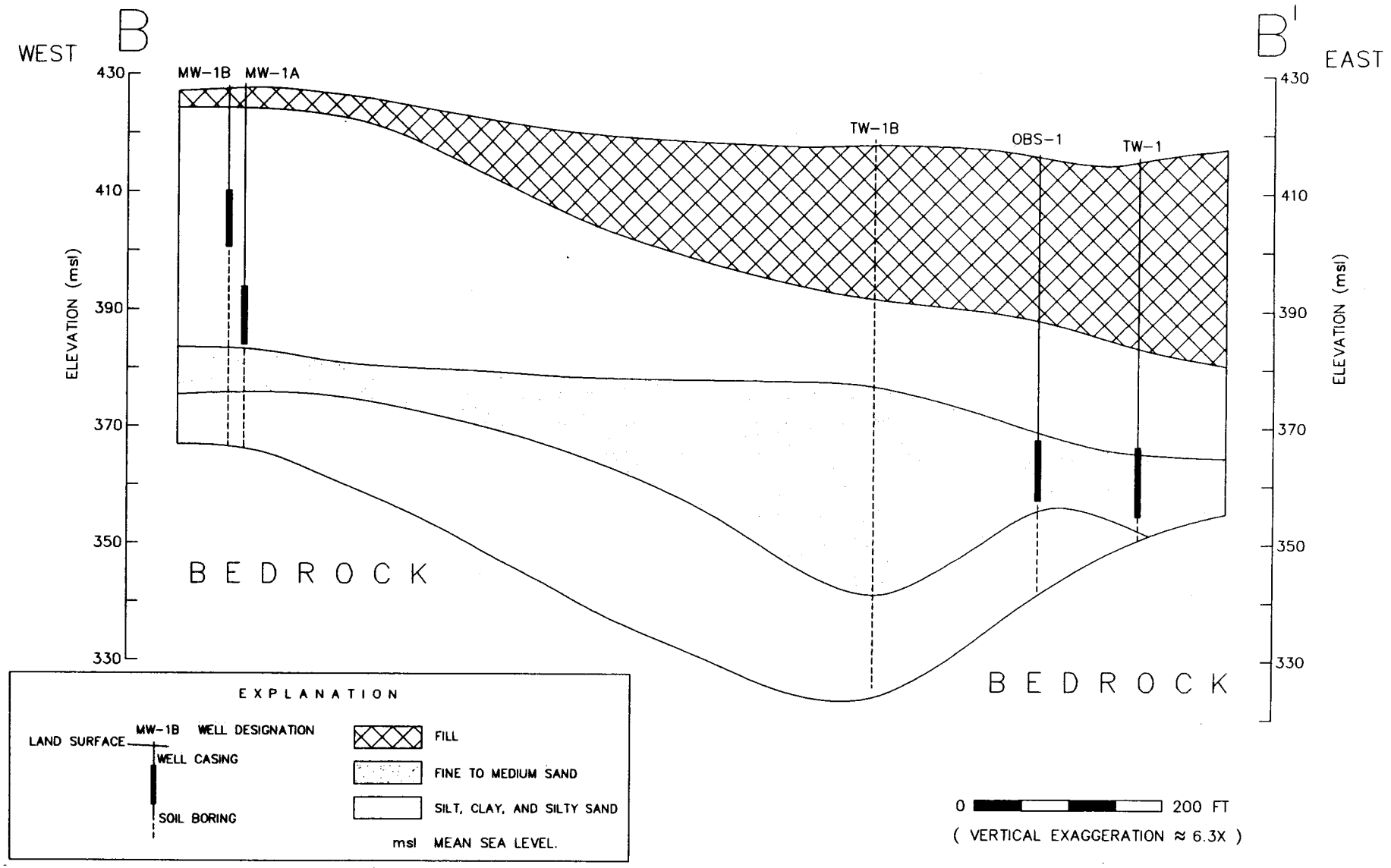
NORTH-SOUTH GEOLOGIC CROSS SECTION A-A'

MONSANTO COMPANY
J.F. QUEENY PLANT ST. LOUIS, MISSOURI

FIGURE
2-2

DRAFTER: V. CARUNCHO | APPROVED: D. COLTON | CHECKED: L. MUSIKER | DRAWING: SEC-AA2 | FILE NO.: 1700 | PRJCT NO.: NY0788001 | DWG DATE: 6-3-94

DWG DATE: 6-3-94	PRJCT NO.: NY0788001	FILE NO.: 1700	DRAWING: SEC-BB	CHECKED: DC	APPROVED: LM	DRAFTER: GS



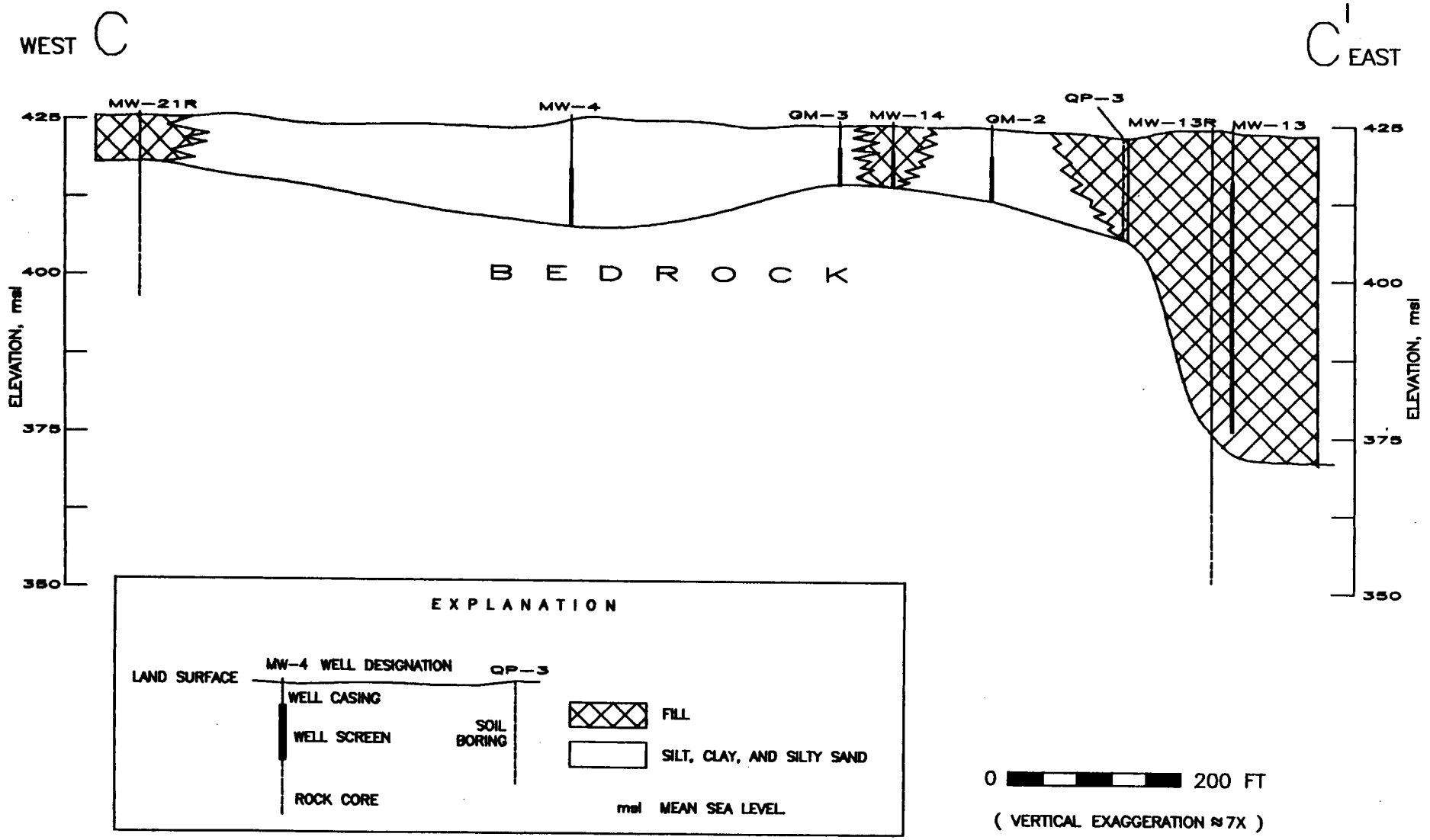
GERAGHTY & MILLER, INC.
Environmental Services

EAST-WEST GEOLOGIC CROSS SECTION B-B'

MONSANTO COMPANY
J.F. QUEENY PLANT ST. LOUIS MISSOURI

FIGURE
2-3

DWG DATE: 6-28-94	PRJCT NO.: NY0788001	FILE NO.: 1700	DRAWING: SEC-CC2	CHECKED: DC	APPROVED: LM	DRAFTER: GS



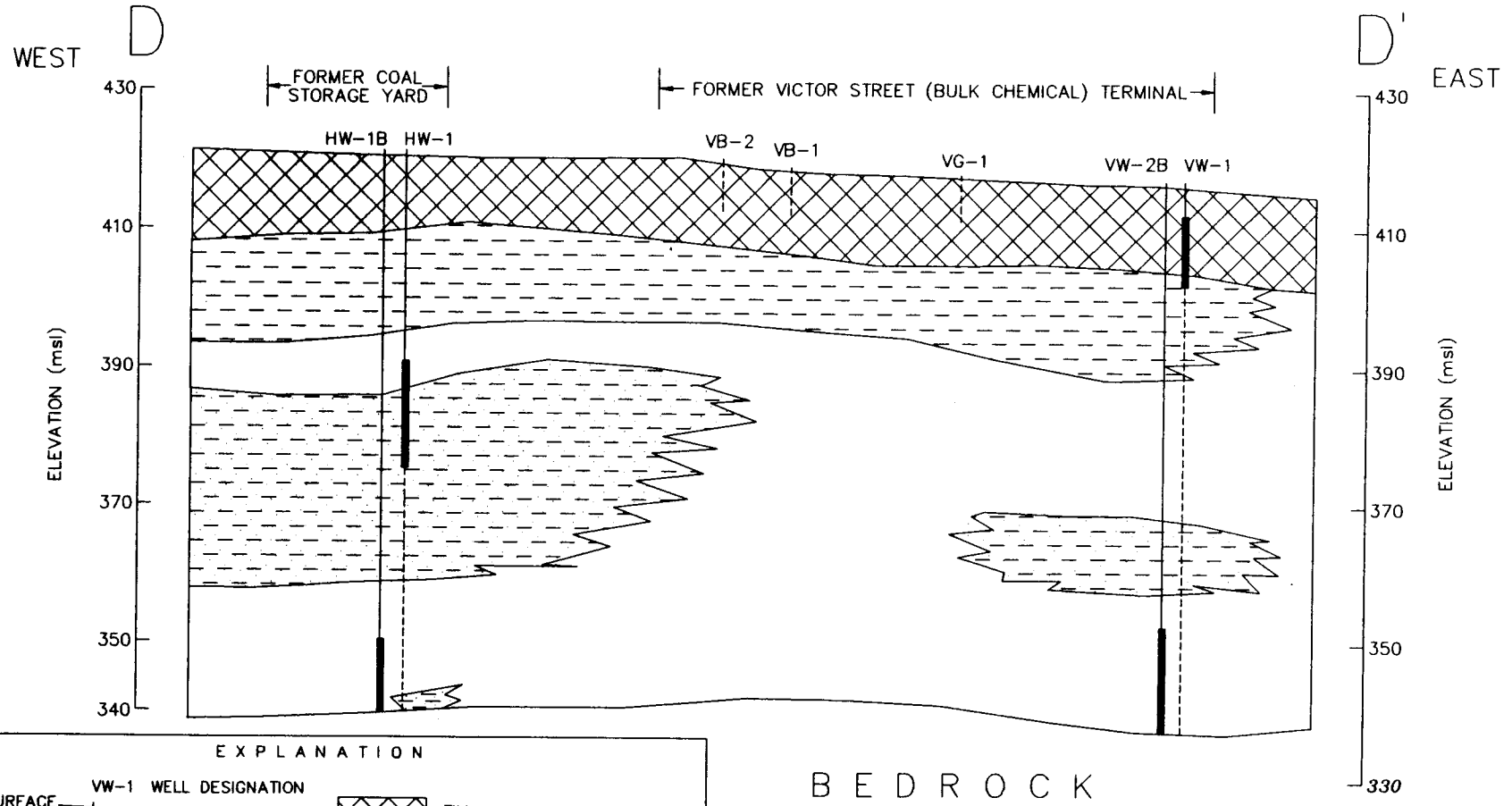
GERAGHTY & MILLER, INC.
Environmental Services

EAST-WEST GEOLOGIC CROSS SECTION C-C'

MONSANTO COMPANY
J.F. QUEENY PLANT ST. LOUIS MISSOURI

FIGURE
2-4

DWG DATE: 6-3-94 | PRJCT NO.: NY0788001 | FILE NO.: 1700 | DRAWING: SEC-DD | CHECKED: DC | APPROVED: LM | DRAFTER: GS



EXPLANATION

VW-1 WELL DESIGNATION

LAND SURFACE

WELL CASING

WELL SCREEN

SOIL BORING

FILL

SILTY CLAY

FINE TO MEDIUM SILTY SAND

FINE TO COARSE SAND

msl MEAN SEA LEVEL.

0 100 FT

(VERTICAL EXAGGERATION ≈ 4X)

GERAGHTY & MILLER, INC.
Environmental Services

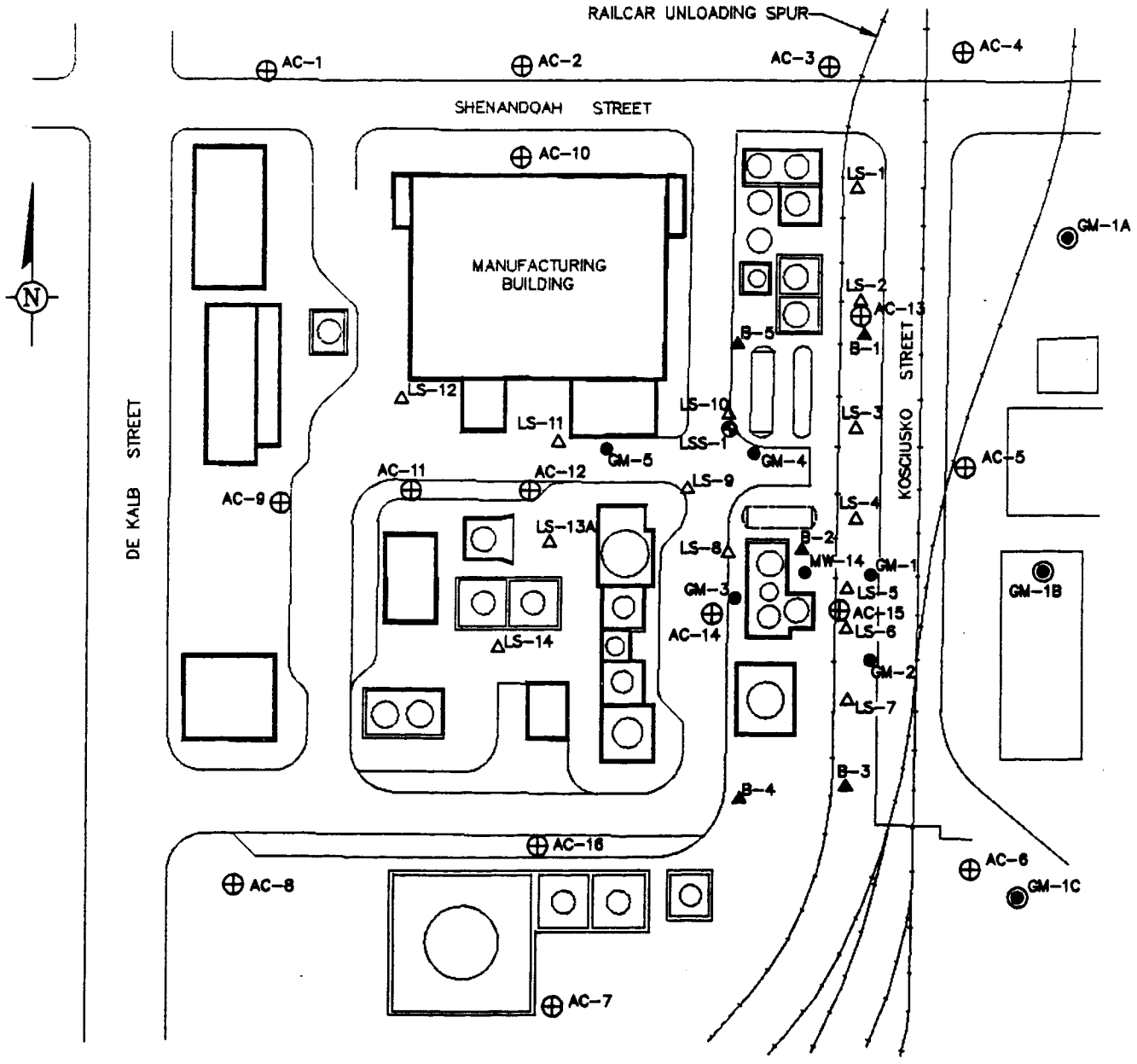
EAST-WEST GEOLOGIC CROSS SECTION D-D'

MONSANTO COMPANY

J.F. QUEENY PLANT ST. LOUIS MISSOURI

FIGURE

2-5



EXPLANATION

- GM-2 ● PREVIOUS MONITORING WELL LOCATION AND DESIGNATION
- B-1 ▲ PRE-RFI SOIL BORING LOCATION AND DESIGNATION
- LS-6 △ PHASE I RFI SOIL SAMPLING LOCATION AND DESIGNATION
- LSS-1 SOIL BORING DRILLED FOR INTERIM MEASURES LOCATION AND DESIGNATION
- AC-9 ⊕ PHASE II RFI SOIL SAMPLING LOCATION AND DESIGNATION
- GM-1A ◉ GEOPROBE GROUNDWATER SAMPLING LOCATION AND DESIGNATION

0 — 100 FT

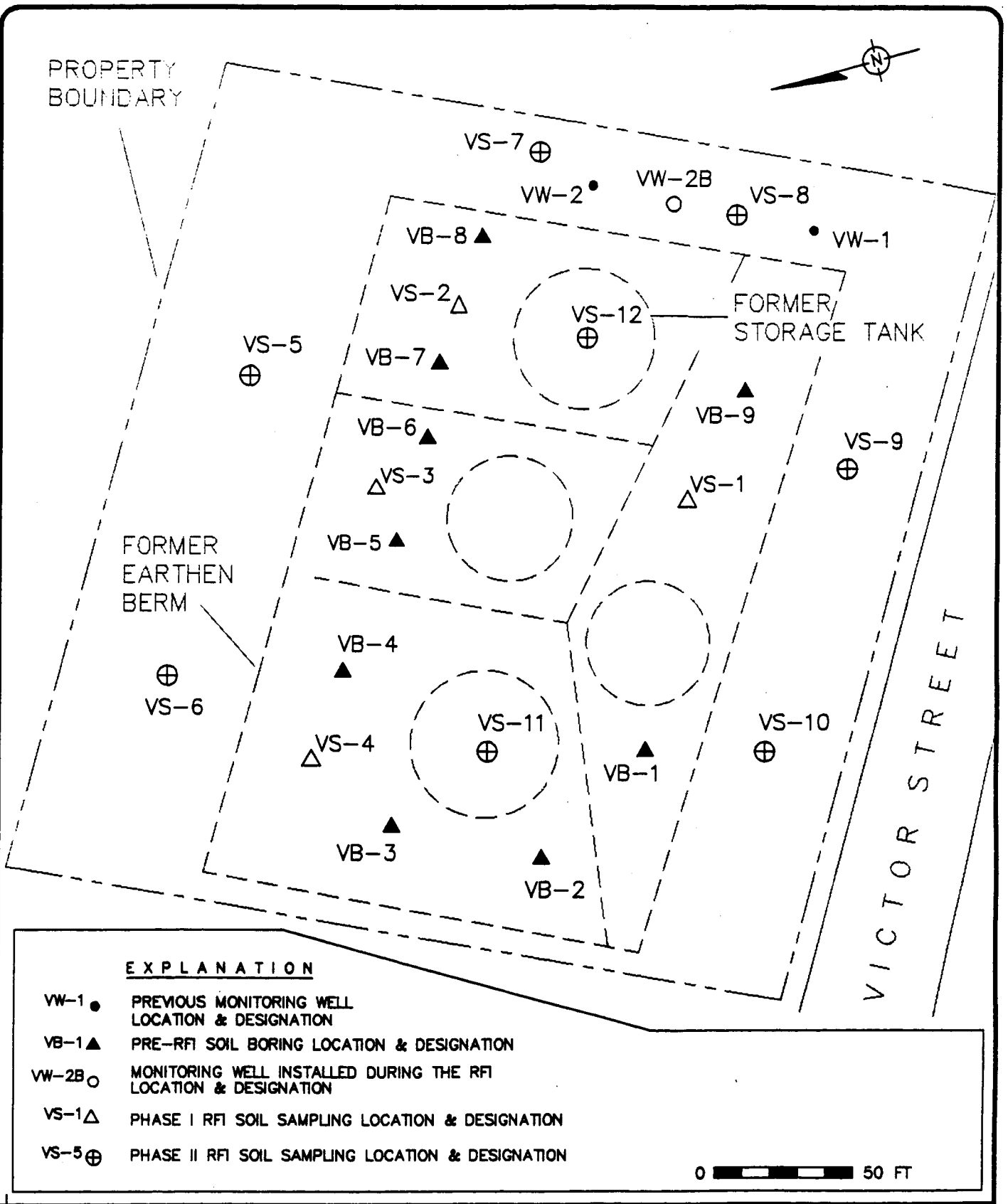
GERAGHTY & MILLER, INC.
Environmental Services

SOIL AND GROUNDWATER SAMPLING LOCATIONS IN THE VICINITY OF THE FORMER ACETANILIDES PRODUCTION/RAILCAR UNLOADING AREA

MONSANTO COMPANY
J.F. QUEENY PLANT, ST. LOUIS, MISSOURI

FIGURE **3-2**

DRAFTER: W.H.C./G.S. | APPROVED: D. COLTON | CHECKED: D. COLTON | DRAWING: ACESAMPS | FILE NO.: 1700 | PRJCT NO.: NY07788.001 | DWG DATE: 28JUN94



GERAGHTY & MILLER, INC.
Environmental Services

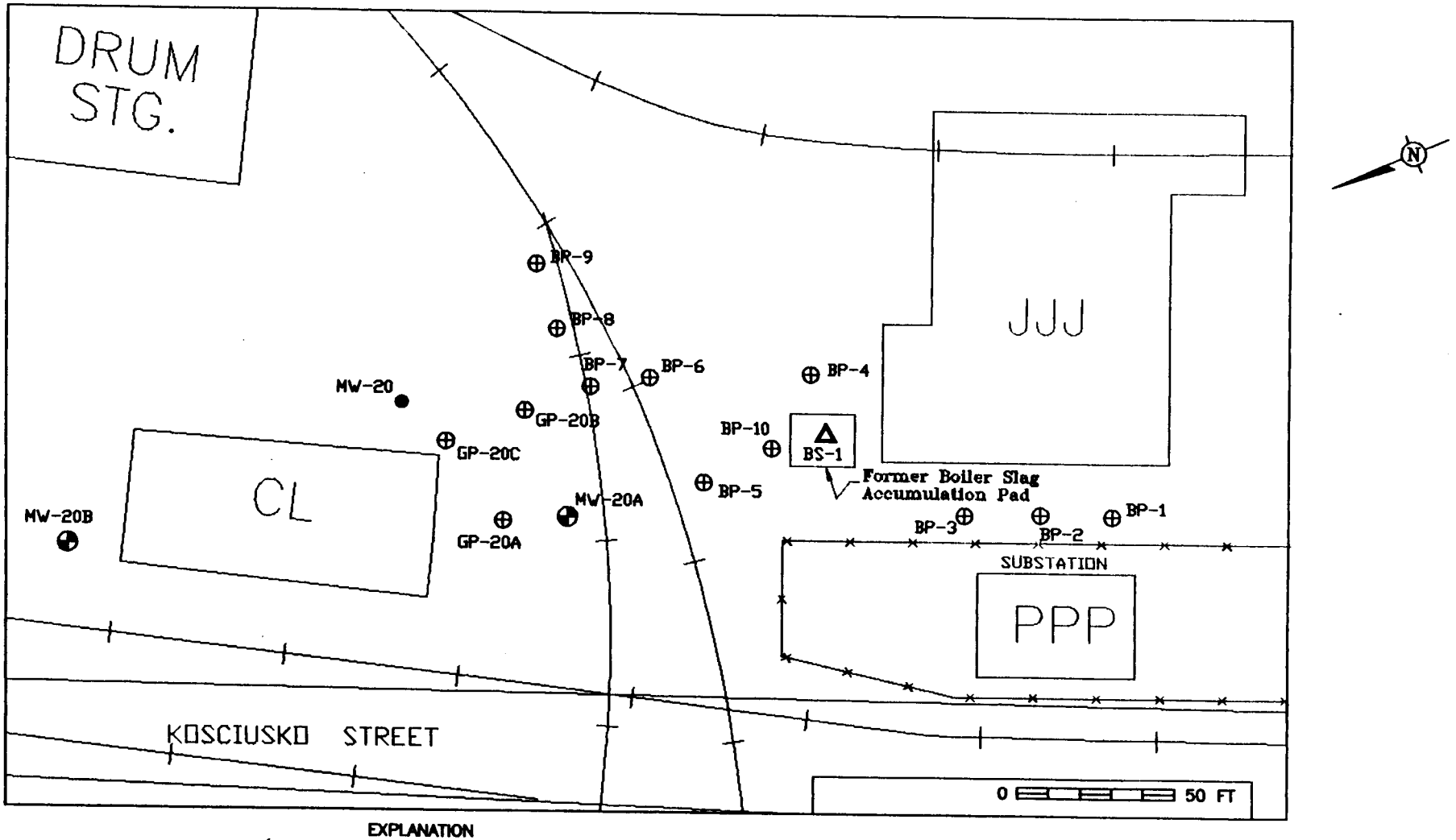
SOIL AND GROUNDWATER SAMPLING LOCATIONS IN THE VICINITY OF THE FORMER BULK CHEMICAL STORAGE TERMINAL

MONSANTO COMPANY
J.F. QUEENY PLANT, ST. LOUIS, MISSOURI

FIGURE **3-3**

DRAFTER: W.H.C./G.S. | APPROVED: D. COLTON | CHECKED: D. COLTON | DRAWING: BULSAMPS | FILE NO.: 1700 | PRJCT NO.: NY0788.001 | DWG DATE: 28JUN94

DWG DATE: 28JUN94	PRJCT NO.: NY0788001	FILE: 1700	DRAWING: BSLAG-B	CHECKED: L. MUSIKER	APPROVED: D. COLTON	DRAFTER: W.H.C./G.S.



EXPLANATION

MW-20 ● MONITORING WELL

BS-1 △ PHASE I RFI SOIL SAMPLING LOCATION

MW-20B GEOPROBE GROUNDWATER SAMPLING LOCATION

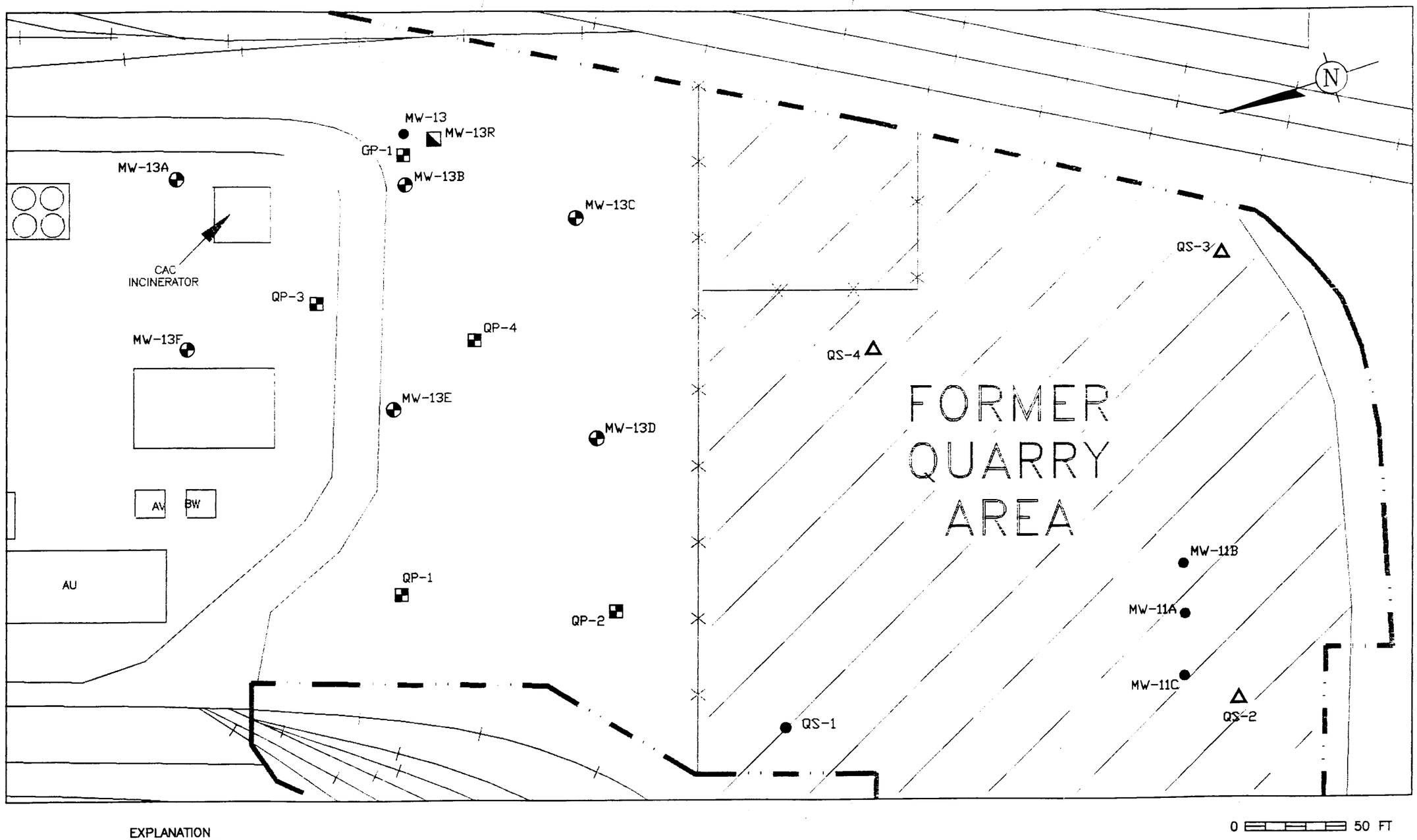
BP-9 ⊕ PHASE II RFI SOIL SAMPLING LOCATION

GERAGHTY & MILLER, INC.
Environmental Services

SOIL AND GROUNDWATER SAMPLING LOCATIONS IN THE VICINITY OF WELL MW-20 AND THE FORMER BOILER SLAG ACCUMULATION PAD

MONSANTO COMPANY
J.F. QUEENY PLANT ST. LOUIS, MISSOURI

FIGURE **3-4**



EXPLANATION

MW-13 ●	MONITORING WELL	QS-3 △	PHASE I RFI SOIL SAMPLING LOCATION
MW-13-R ◪	BEDROCK WELL	QP-1 ■	PHASE II RFI SOIL SAMPLING LOCATION
		MW-13-A ◕	PHASE II RFI GEOPROBE GROUNDWATER SAMPLING LOCATION

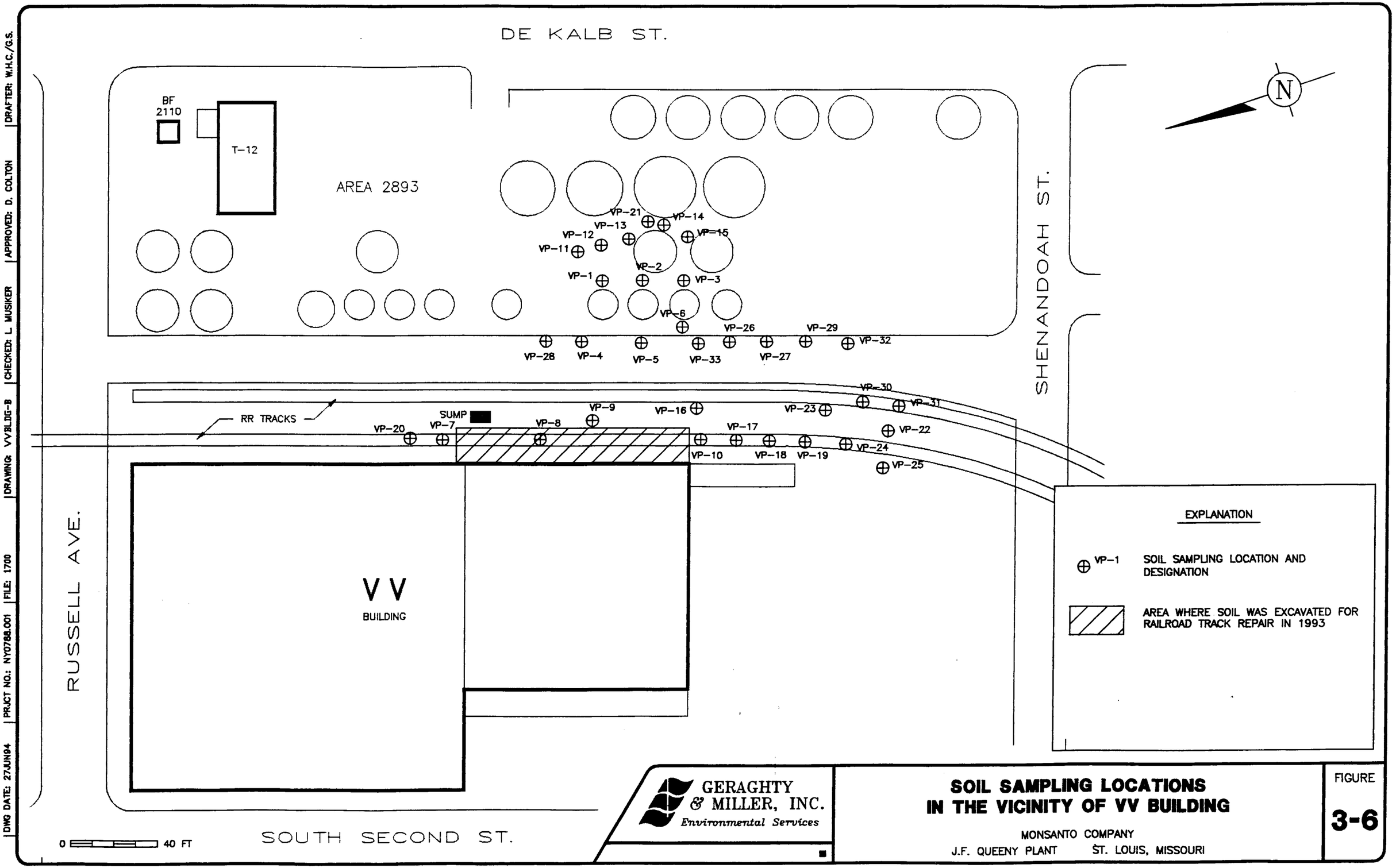
GERAGHTY & MILLER, INC.
Environmental Services

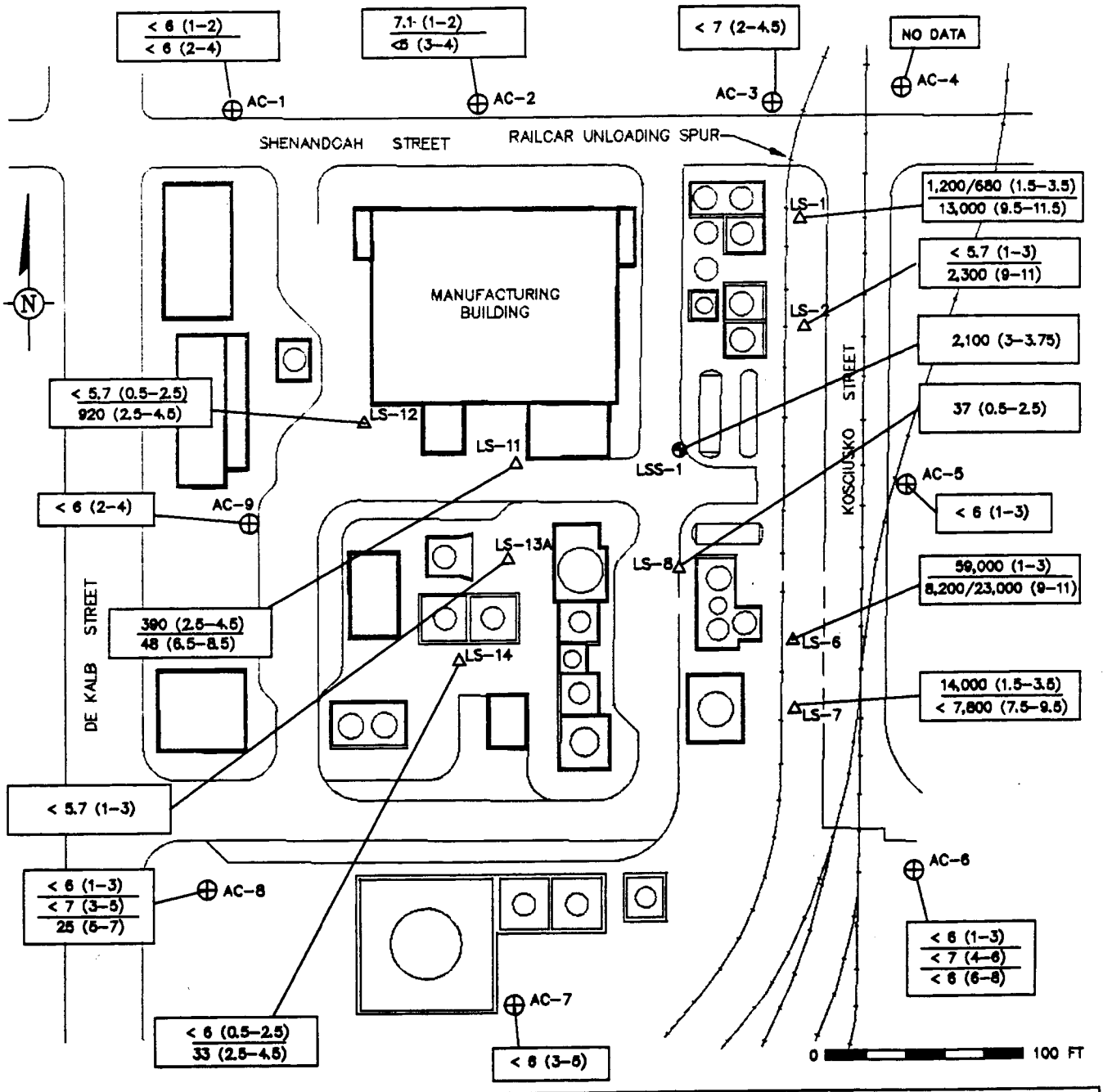
SOIL AND GROUNDWATER SAMPLING LOCATIONS IN THE VICINITY OF WELL MW-13 AND THE FORMER QUARRY

MONSANTO COMPANY
J.F. QUEENY PLANT ST. LOUIS, MISSOURI

FIGURE
3-5

DRAFTER: W.H.C./G.S. | APPROVED: D. COLTON | CHECKED: L. MUSIKER | DRAWING: FQUARSMP | FILE: 1700 | PRJCT NO.: NY0788001 | DWG DATE: 27JUN94


DE KALB ST.
BF 2110
T-12
AREA 2893
VP-21
VP-14
VP-13
VP-12
VP-15
VP-11
VP-2
VP-1
VP-3
VP-6
VP-26
VP-29
VP-28
VP-4
VP-5
VP-33
VP-27
VP-32
VP-30
VP-31
RR TRACKS
SUMP
VP-9
VP-16
VP-23
VP-20
VP-7
VP-8
VP-17
VP-22
VP-10
VP-18
VP-19
VP-24
VP-25
SHENANDOAH ST.
N
RUSSELL AVE.
VV
BUILDING
SOUTH SECOND ST.
0
40 FT
EXPLANATION
VP-1
SOIL SAMPLING LOCATION AND DESIGNATION
AREA WHERE SOIL WAS EXCAVATED FOR RAILROAD TRACK REPAIR IN 1993
GERAGHTY & MILLER, INC.
Environmental Services
SOIL SAMPLING LOCATIONS IN THE VICINITY OF VV BUILDING
MONSANTO COMPANY
J.F. QUEENY PLANT ST. LOUIS, MISSOURI
FIGURE
3-6
DWG DATE: 27JUN94
PRJCT NO.: NY0788.001
FILE: 1700
DRAWING: VVBLDG-B
CHECKED: L. MUSIKER
APPROVED: D. COLTON
DRAFTER: W.H.C./G.S.



EXPLANATION

LS-6 △ PHASE I RFI SOIL SAMPLING LOCATION AND DESIGNATION

LSS-1 ⊗ SOIL BORING DRILLED FOR INTERIM MEASURES LOCATION AND DESIGNATION

AC-9 ⊕ PHASE II RFI SOIL SAMPLING LOCATION AND DESIGNATION

1,200/680 (1.5-3.5)
13,000 (9.5-11.5)

CHLOROBENZENE CONCENTRATION IN MICROGRAMS PER KILOGRAM (DEPTH IN FEET, SAMPLE WAS COLLECTED)

GERAGHTY & MILLER, INC.
Environmental Services

CONCENTRATIONS OF CHLOROBENZENE IN SOIL IN THE VICINITY OF THE FORMER ACETANILIDES PRODUCTION/RAILCAR UNLOADING AREA

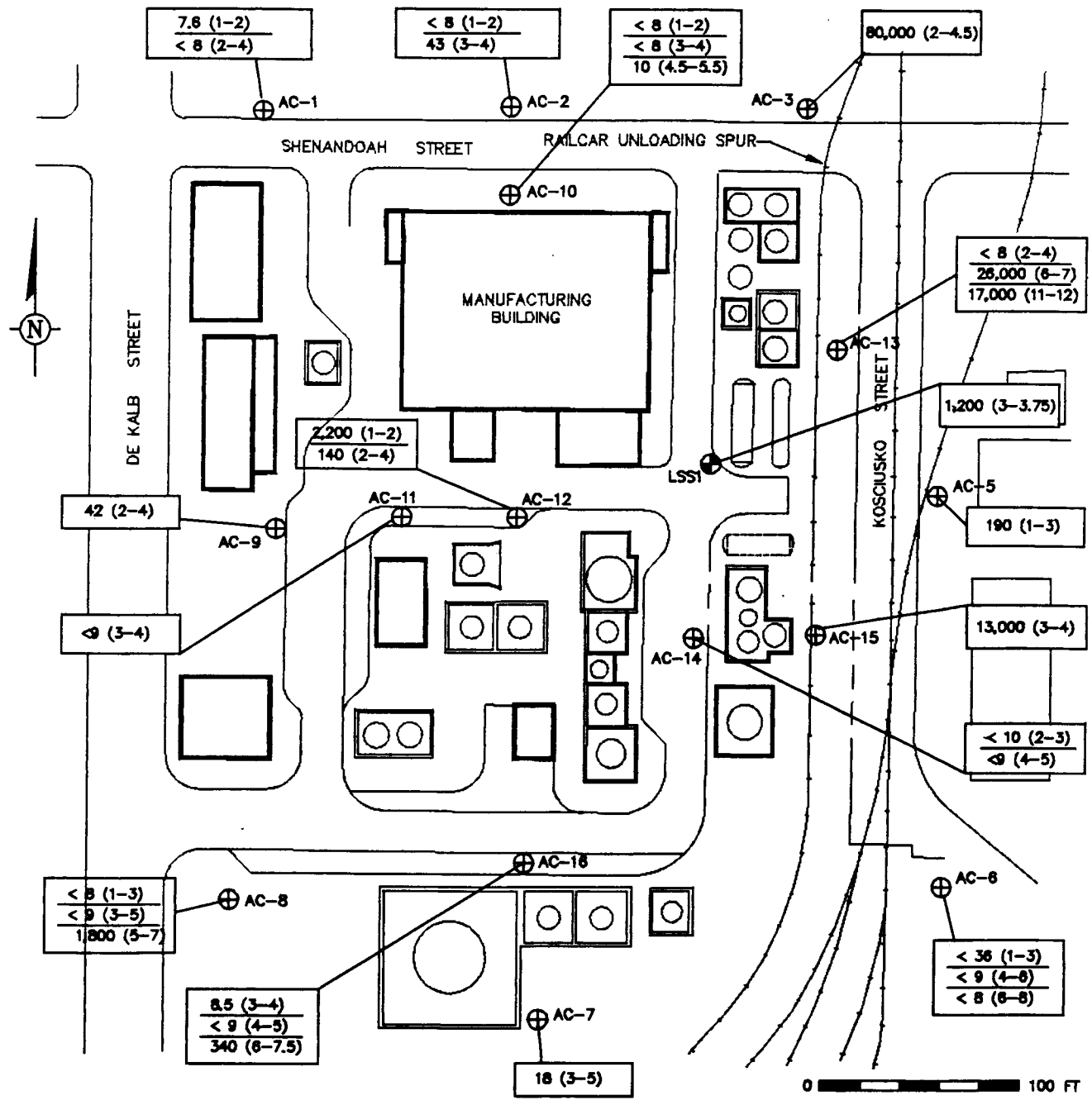
MONSANTO COMPANY

J.F. QUEENY PLANT, ST. LOUIS, MISSOURI

FIGURE

4-1

DRAFTER: W.H.C./G.S. | APPROVED: D. COLTON | CHECKED: D. COLTON | DRAWING: ACECHLDR | FILE NO.: 1700 | PRJCT NO.: NY0788.001 | DWG DATE: 28JUN94



EXPLANATION

AC-9 ⊕ PHASE II RFI SOIL SAMPLING LOCATION AND DESIGNATION

LSS1 SOIL BORING DRILLED FOR INTERIM MEASURES LOCATION AND DESIGNATION

< 8 (1-2)
43 (3-4)

ALACHLOR CONCENTRATION IN MICROGRAMS PER KILOGRAM (DEPTH IN FEET, SAMPLE WAS COLLECTED)

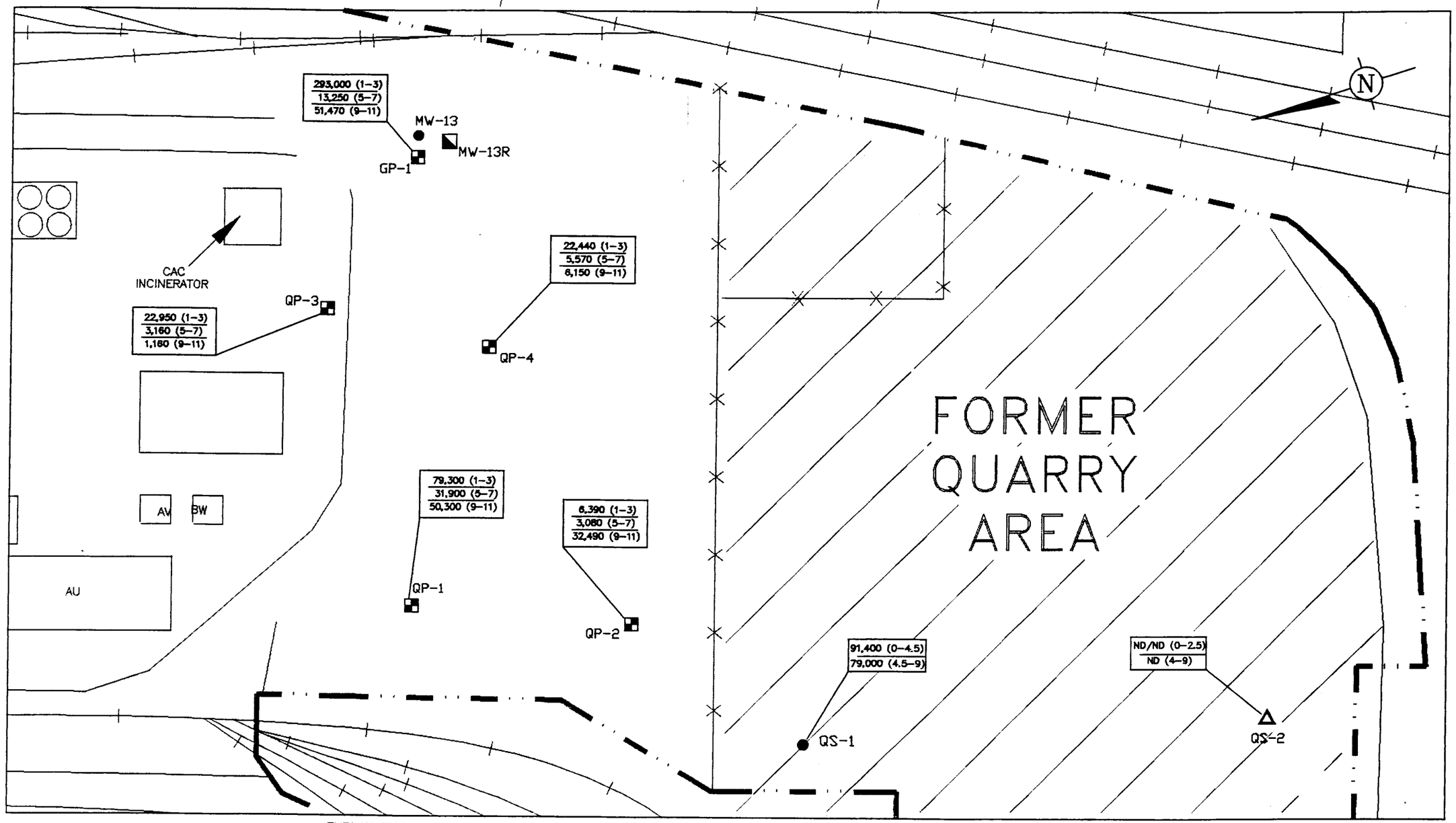
GERAGHTY & MILLER, INC.
Environmental Services

CONCENTRATIONS OF ALACHLOR IN SOIL IN THE VICINITY OF THE FORMER ACETANILIDES PRODUCTION/RAILCAR UNLOADING AREA

MONSANTO COMPANY
J.F. QUEENY PLANT, ST. LOUIS, MISSOURI

FIGURE
4-2

DRAFTER: V.C./G.S. | APPROVED: D. COLTON | CHECKED: D. COLTON | DRAWING: ACEALAC | FILE NO.: 1700 | PRJCT NO.: NY0788.001 | DWG DATE: 28JUN94



EXPLANATION

MW-13 ●	MONITORING WELL
MW-13R ◪	BEDROCK MONITORING WELL
QS-2 △	PHASE I RFI SOIL SAMPLING LOCATION AND DESIGNATION
QP-1 ◪	PHASE II RFI SOIL SAMPLING LOCATION AND DESIGNATION
6,390 (1-3) / 3,080 (5-7) / 32,490 (9-11)	TOTAL BASE/NEUTRAL ORGANIC COMPOUNDS IN MICROGRAMS PER KILOGRAM (DEPTH IN FEET, SAMPLE WAS COLLECTED)
ND	NOT DETECTED

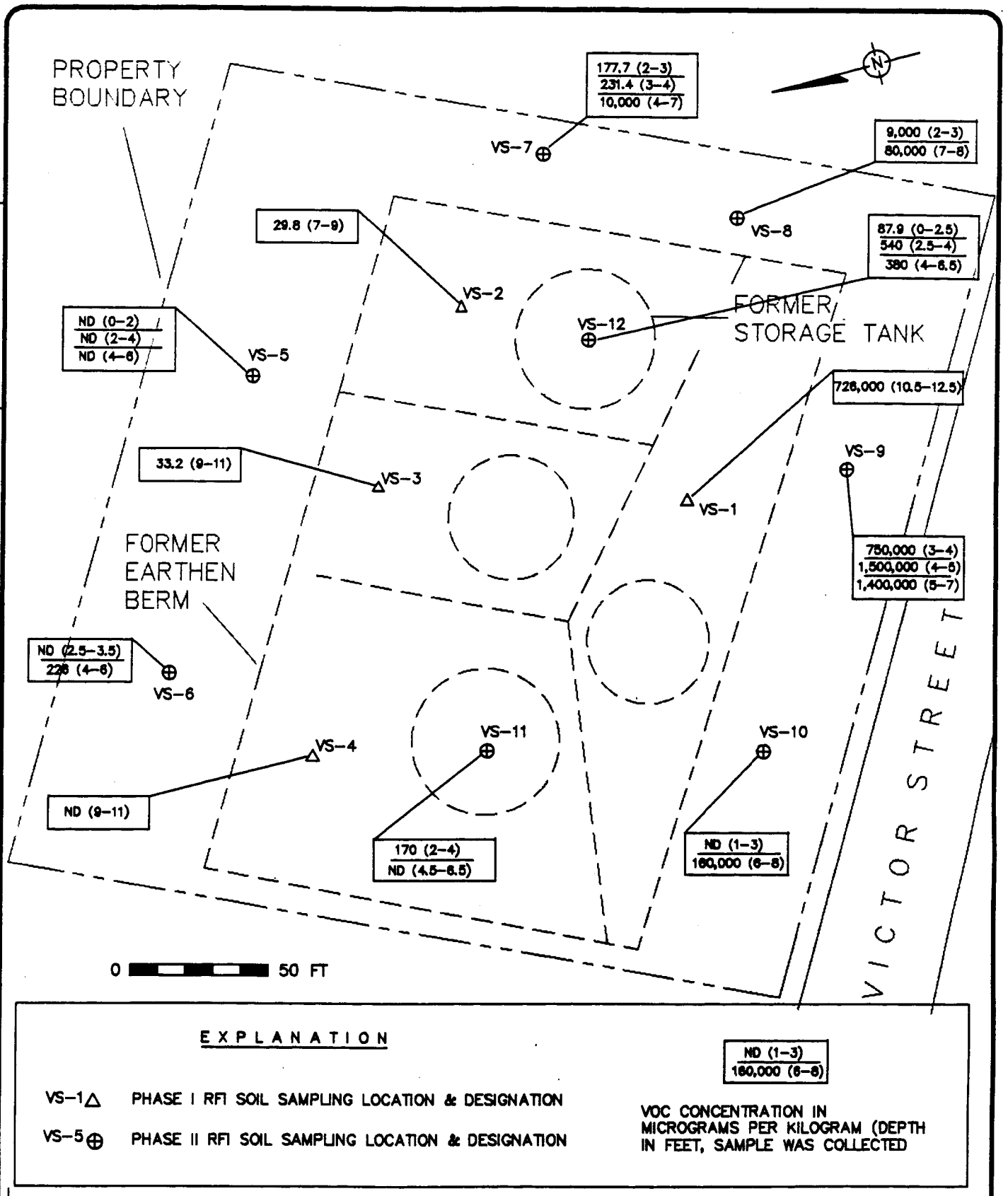
GERAGHTY & MILLER, INC.
Environmental Services

CONCENTRATIONS OF TOTAL BASE/NEUTRAL ORGANIC COMPOUNDS IN SOIL IN THE VICINITY OF WELL MW-13 AND THE FORMER QUARRY

MONSANTO COMPANY
J.F. QUEENY PLANT ST. LOUIS, MISSOURI

FIGURE
4-3

DRAFTER: V.C./G.S. | APPROVED: D. COLTON | CHECKED: L. MUSIKER | DRAWING: BASENEUT | FILE: 1700 | PRJCT NO.: NY0788001 | DWG DATE: 27JUN94



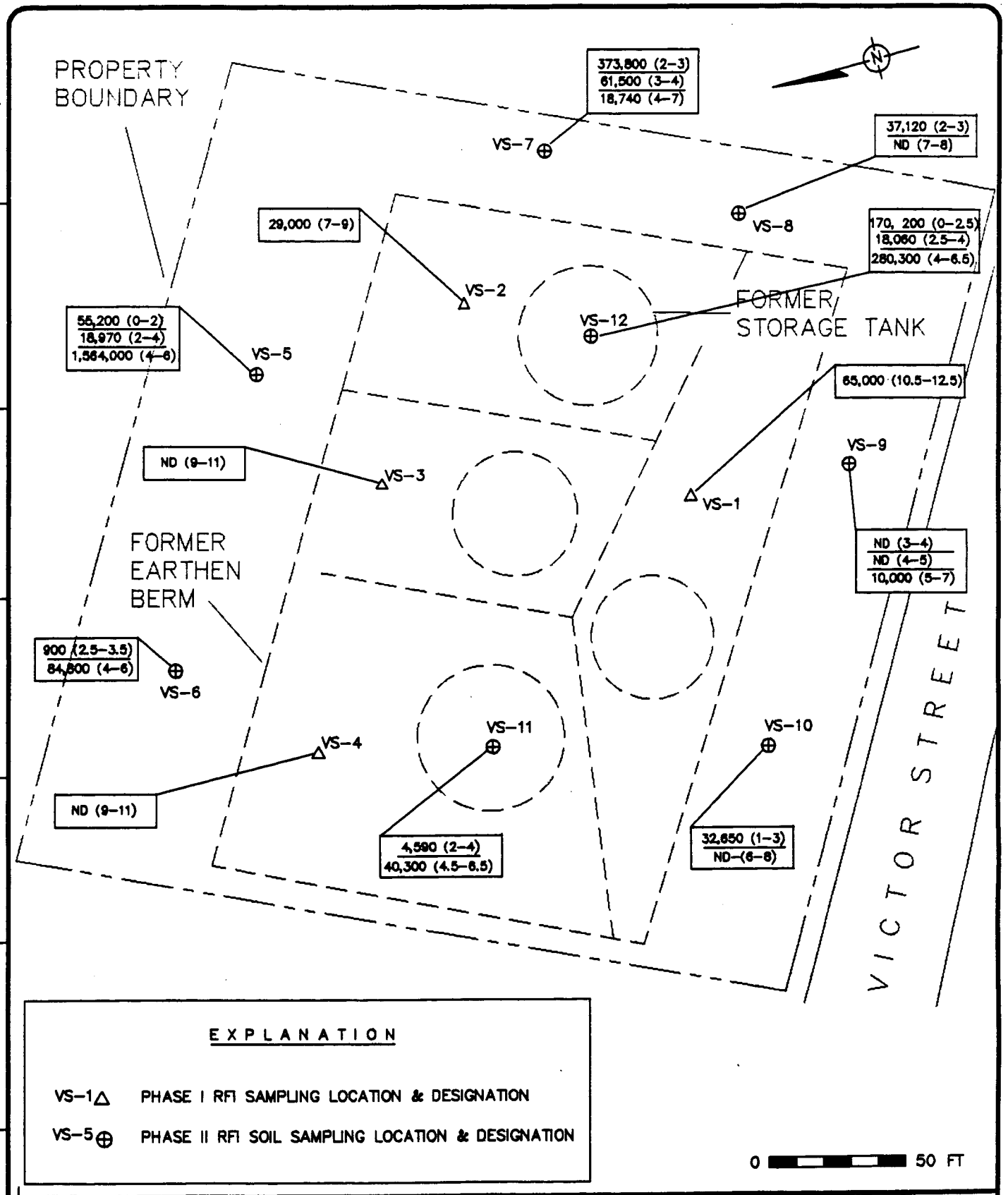
GERAGHTY & MILLER, INC.
Environmental Services

CONCENTRATIONS OF VOLATILE ORGANIC COMPOUNDS IN SOIL IN THE VICINITY OF THE FORMER BULK CHEMICAL STORAGE TERMINAL

MONSANTO COMPANY
J.F. QUEENY PLANT, ST. LOUIS, MISSOURI

FIGURE **4-4**

DRAFTER: V.C./G.S. | APPROVED: D. COLTON | CHECKED: D. COLTON | DRAWING: BULKVOCS | FILE NO.: 1700 | PRJCT NO.: NY07788.001 | DWG DATE: 28JUN94



GERAGHTY & MILLER, INC.
Environmental Services

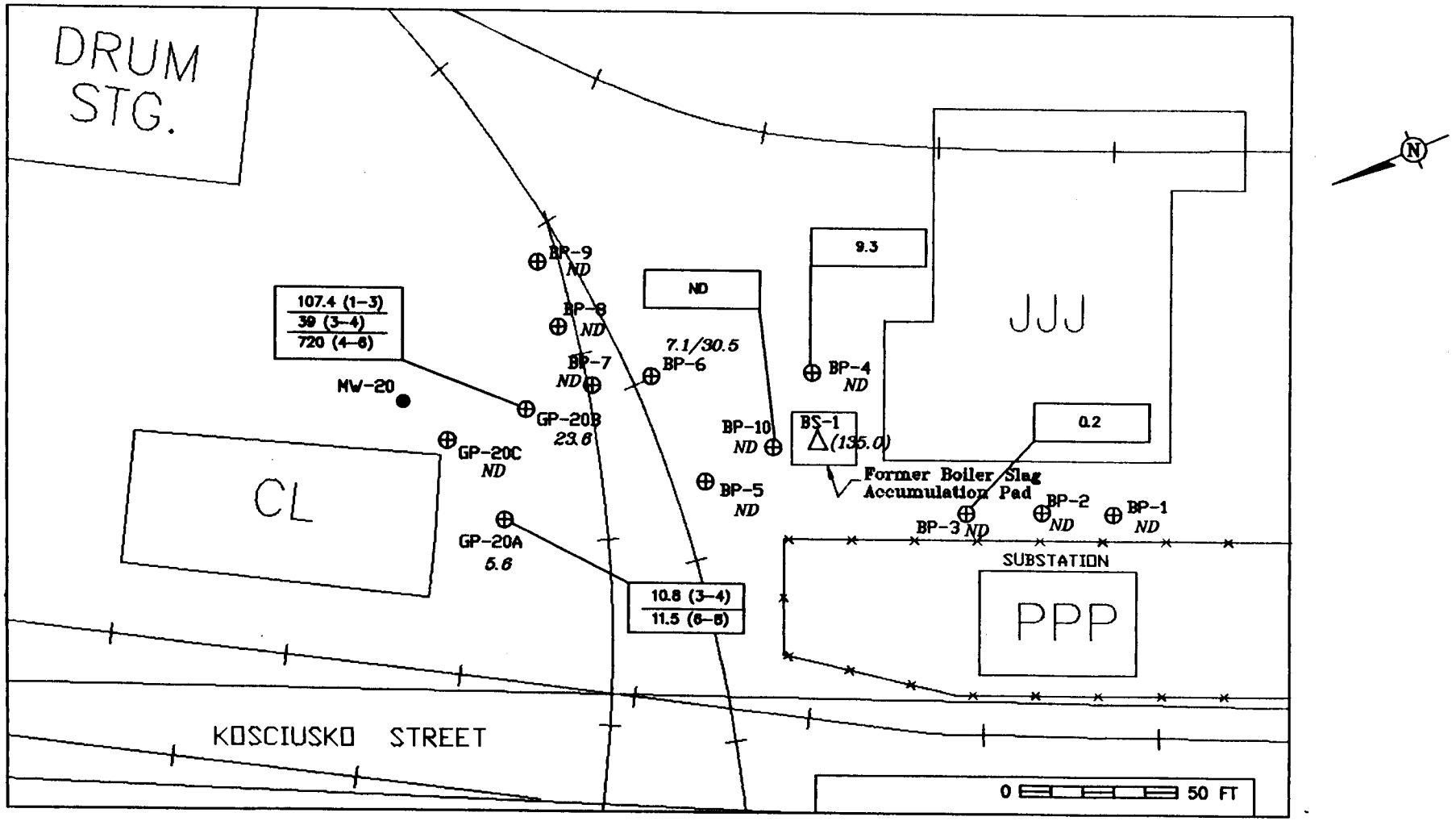
CONCENTRATIONS OF BASE/NEUTRAL ORGANIC COMPOUNDS IN SOIL IN THE VICINITY OF THE FORMER BULK CHEMICAL STORAGE TERMINAL

MONSANTO COMPANY
J.F. QUEENY PLANT, ST. LOUIS, MISSOURI

FIGURE **4-5**

DRAFTER: V.C./G.S. | APPROVED: D. COLTON | CHECKED: D. COLTON | DRAWING: BLKBASNU | FILE NO.: 1700 | PRJCT NO.: NY0788.001 | DWG DATE: 28JUN94

DWG DATE: 28JUN94	PRJCT NO.: NY0788001	FILE: 1700	DRAWING: POLY-BI	CHECKED: L. MUSIKER	APPROVED: D. COLTON	DRAFTER: V.C./G.S.



MW-20 ● MONITORING WELL

BS-1 △ PHASE I RFI SOIL SAMPLING LOCATION

BP-9 ⊕ PHASE II RFI SOIL SAMPLING LOCATION

23.6 PCB CONCENTRATION IN PARTS PER MILLION (PPM) ANALYZED BY ESC

ND NOT DETECTED

10.8 (3-4) / 11.5 (6-8) PCB CONCENTRATION IN PPM (DEPTH IN FEET, SAMPLE WAS COLLECTED) ANALYZED BY SAVANNAH LABORATORIES

NOTE: ALL SAMPLES WERE COLLECTED AT 1-3 FEET BELOW GRADE UNLESS SPECIFIED

GERAGHTY & MILLER, INC.
Environmental Services

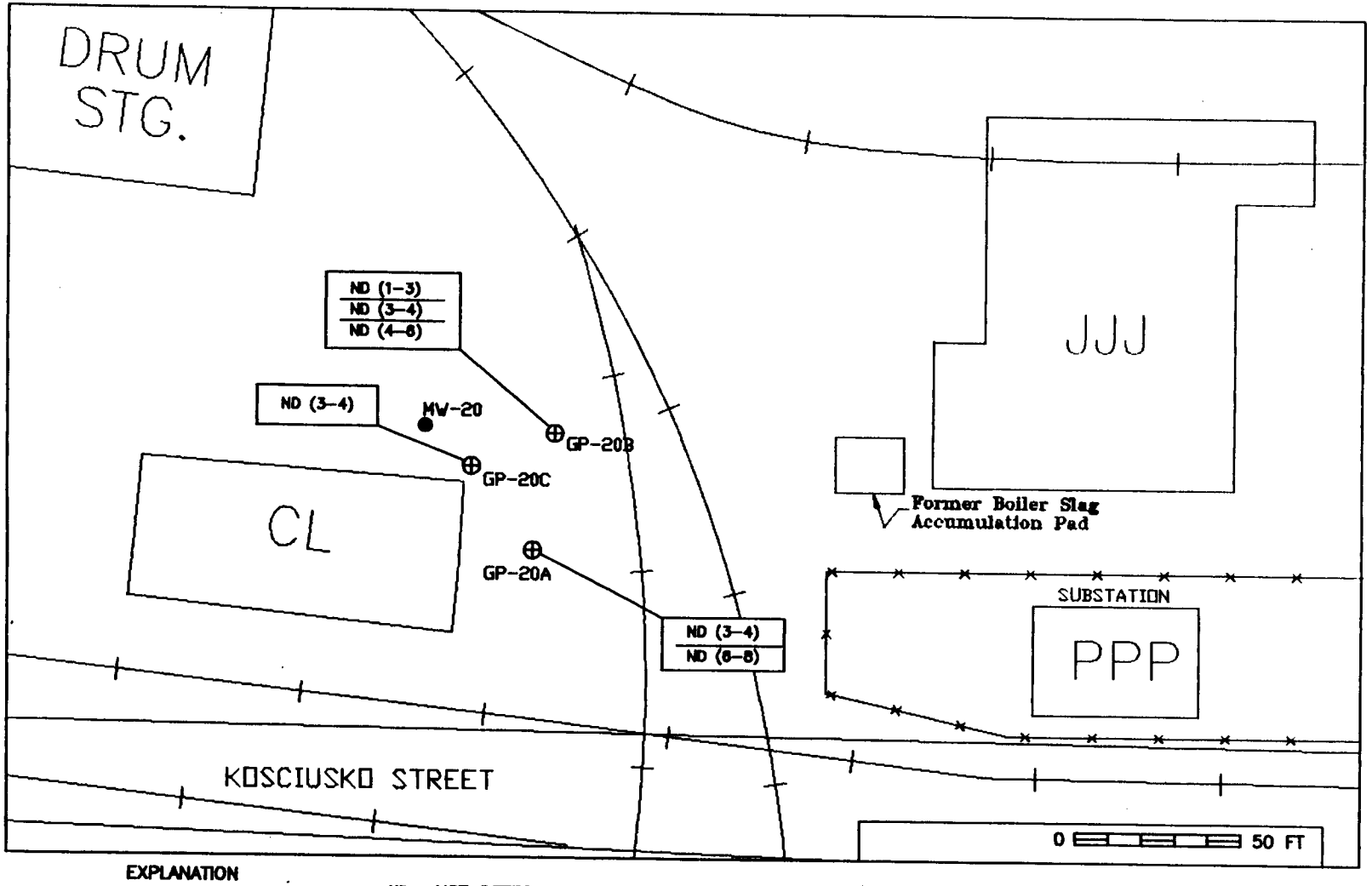
CONCENTRATIONS OF POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL IN THE VICINITY OF WELL MW-20 AND THE FORMER BOILER SLAG ACCUMULATION PAD

MONSANTO COMPANY

J.F. QUEENY PLANT ST. LOUIS, MISSOURI

FIGURE **4-6**

DWG DATE: 28JUN94	PRJCT NO.: NY0788001	FILE: 1700	DRAWING: CYANIDE	CHECKED: L. MUSIKER	APPROVED: D. COLTON	DRAFTER: V.C./G.S.



EXPLANATION

ND NOT DETECTED

MW-20 MONITORING WELL

GP-20A PHASE II RFI SOIL SAMPLING LOCATION

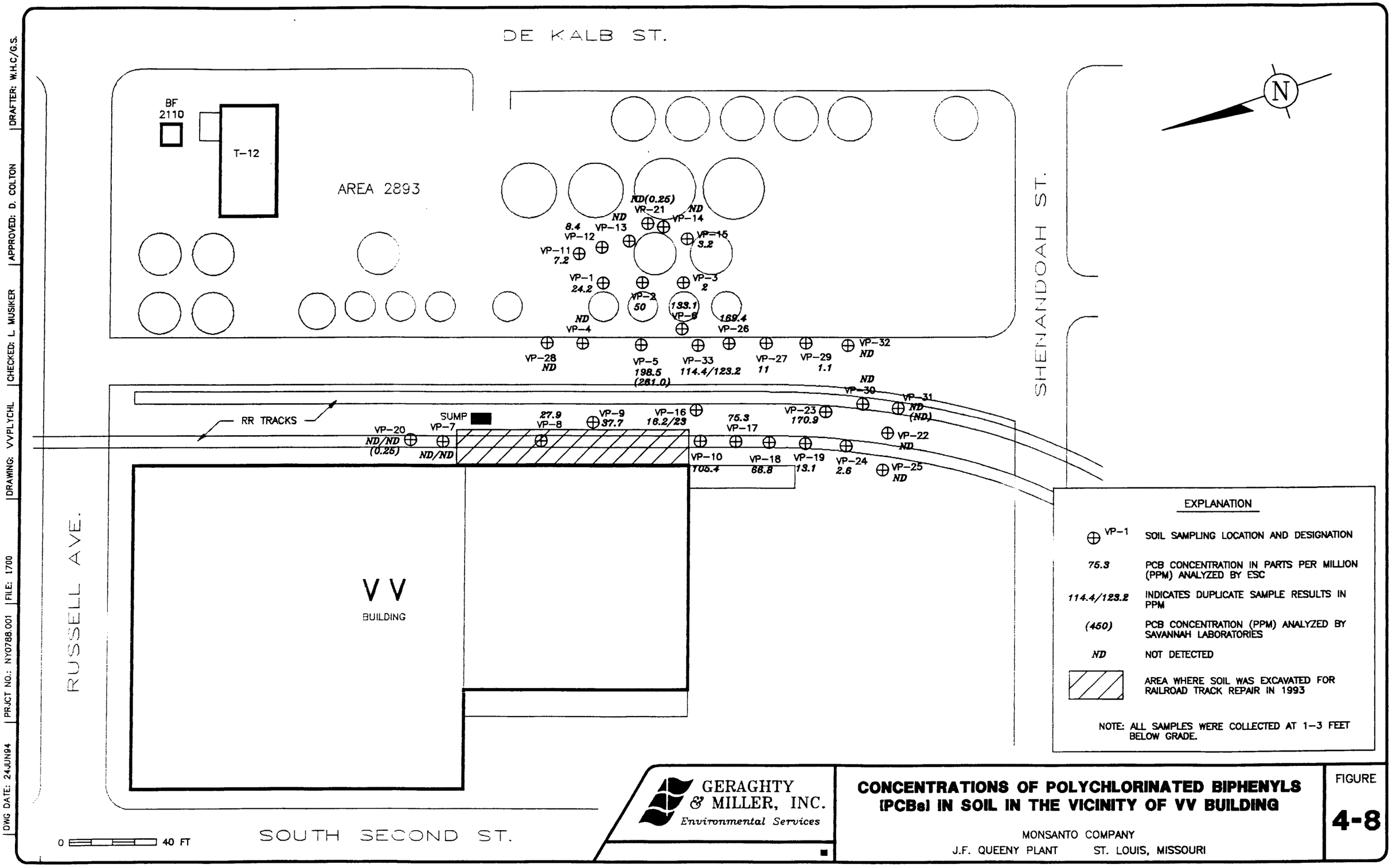
ND (3-4) / ND (6-8) CYANIDE CONCENTRATION IN MICROGRAMS PER KILOGRAM (DEPTH IN FEET, SAMPLE WAS COLLECTED)

GERAGHTY & MILLER, INC.
Environmental Services

CONCENTRATIONS OF CYANIDE IN SOIL IN THE VICINITY OF WELL MW-20

MONSANTO COMPANY
J.F. QUEENY PLANT ST. LOUIS, MISSOURI

FIGURE 4-7



GERAGHTY & MILLER, INC.
Environmental Services

CONCENTRATIONS OF POLYCHLORINATED BIPHENYLS (PCBs) IN SOIL IN THE VICINITY OF VV BUILDING

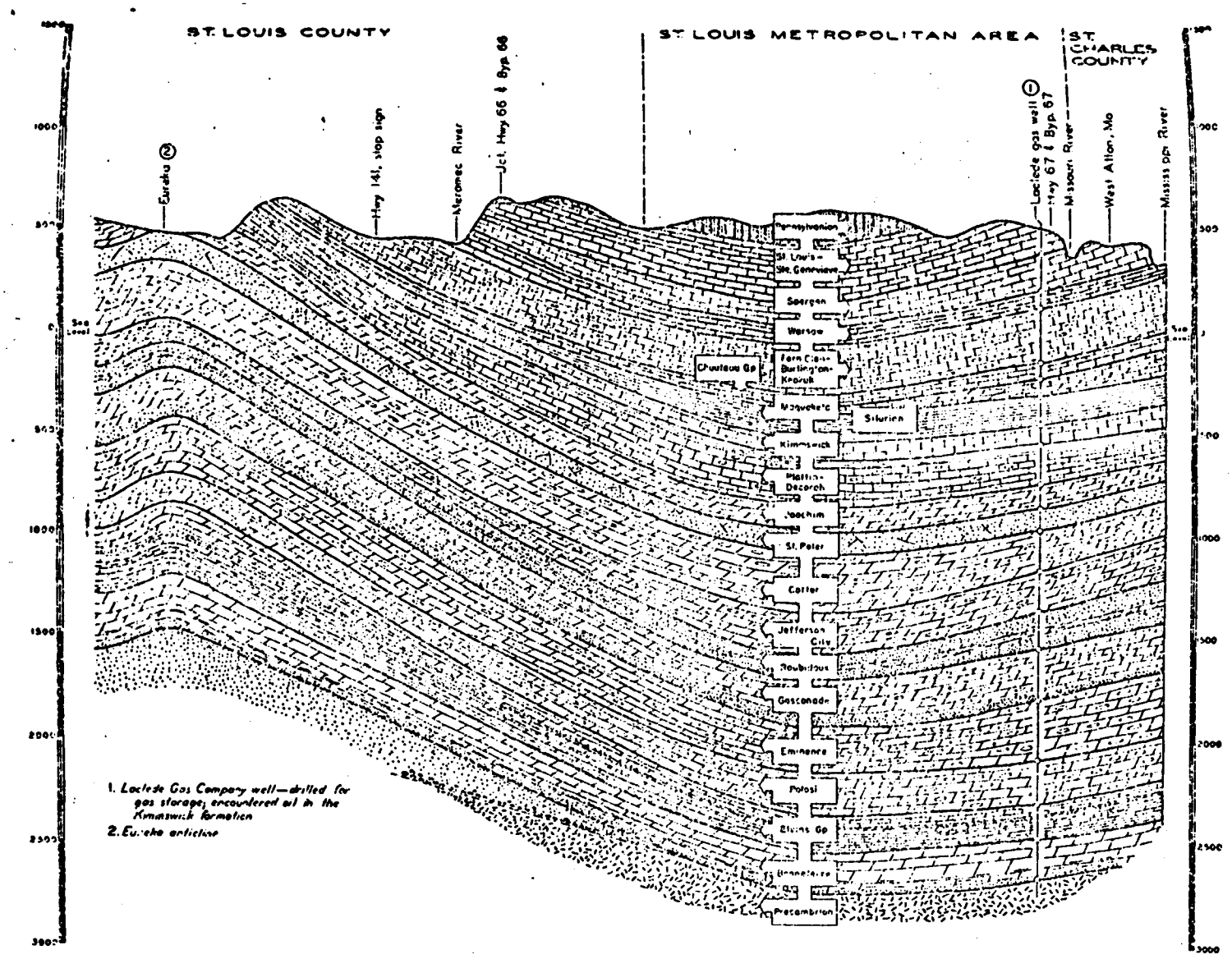
MONSANTO COMPANY
J.F. QUEENY PLANT ST. LOUIS, MISSOURI

FIGURE **4-8**

DRAFTER: W.H.C/G.S. | APPROVED: D. COLTON | CHECKED: L. MUSIKER | DRAWING: VVPLYCHL | FILE: 1700 | PRJCT NO.: NY0788.001 | DWG DATE: 24JUN94

APPENDIX A

REGIONAL GEOLOGIC CROSS SECTION



STRUCTURE SECTION THROUGH THE ST. LOUIS AREA

FROM: SAEGER, 1975, UNPUBLISHED MASTERS THESIS

APPENDIX B

SOIL BORING LOGS

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.001	Monsanto - JF Queeny	St. Louis	VP-1		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START FINISH: 1P 115P 3/7/94	DEVEL. START FINISH:
STATIC DTW DTO / TIME DATE	DRILLED BY: GTI Brian, Mike John
ELEVATION TOC GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3	FILL		Grayish blue to gray 20% snd, 30% GVL, 30% cly, 20% slt. Cohesive snd is v.c. gr, angular	M		VP-1			

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
AM0788.001	Monsanto-JF Queeny	St. Louis	VP-2	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Large bore
DRILLING START / FINISH: 3/7/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	1-2	1-3			dk brown to dlk grayish brn.			VP-2			
					20% cly, 30% slt, 50% v.f. snd.						
					gr color is in bands (stain).						
					alternating 2-3 in thick with						
					brown. non-plastic, but cohesive						
					some distinct olive brn mottles						
					v. strong odor.						
	2-3				color as above 10% f snd, 40% slt,						
					50% cly semi-plastic firm						
					v. strong odor. few roots +						
					root channels						

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N40788.001	JF Monsanto Queeny	St. Louis	VP-3		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 3/7/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	1-14				blk to dk gray (as below) odor						
	1.4-3	1-3			olive gray to lt olive, non plastic	M		VP-3			
					firm and cohesive, 10% f. snd,						
					30% SLT, 60% cly odor						
					Some faint olive brn mottles						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.007	Monsanto · JF Queeny	St. Louis	VP-4		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 3/7/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Vater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	0-1		concrete		Fill and 6" concrete - water under	W					
		1-3			concrete. 10% f. snd, 40% cly	M		VP-4			
					50% SLT, plastic, soft to						
					m. soft. dk. olive gray						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.001	Monsanto-SF Queeny	St. Louis	VP-5		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 3/7/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			Red brick chips, some gray clay (20% c. snd, 30% slt, 50% cly)	M		VP-5		20	

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N 40768.001	Monsanto - JF Queeny	St. Louis	VP-6		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 3/7/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			Dk grayish brn 10% f. snd, 40% SLT, 50% clay odor plastic m soft	M		VP-6			

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
N40788.001	Monsanto - JF Queeny	St. Louis	VP-7	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 3/7/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Mike, Brian John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	1-2.8	1-3			Dk brown and dk gray 10% f. snd,	M		VP-7			
					40% cly, 50% SLT, semi-plastic						
					to nonplastic						
	28-3				Red brick fragments						

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.001	Monsanto - JF Queeny	St. Louis	VP-8		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Large bore
DRILLING START 240P FINISH 255P 3/7/94	DEVEL. START FINISH
STATIC DTW DTO TIME DATE	DRILLED BY: GTI Brian, Mike John
ELEVATION TOC GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			dk brownish gray 10% f. snd, 30% cly, 60% SLT, nonplastic but cohesive soft to m soft, odor			VP-8			

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N40788ut	Monsanto - JE Queeny	St. Louis	VP-9		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START FINISH: 215P 230P 3/7/94	DEVEL. START FINISH:
STATIC DTW / DTO: TIME / DATE:	DRILLED BY: GTI Brian Mike John
ELEVATION TOC / GL:	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		F3			v. dk gray 10% f. sand, 30% cly	M		VP-9			
					60% SLT, nonplastic but						
					cohesive, odor						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N40788.001	Monsanto JF Queeny	St. Louis	VP-10		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 3/7/94	DEVEL START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GII Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Vater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			sample is wet and blk. v. strong odor	W				20	
	2.5-2.7				dk brown to blk silty (50%) clay			VP-10			
					(50%).						
	2.7-3				gvl; black stained v. angular	W					
					with some red colored brick						
					like fragments in shoe						

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.001	Monsanto - JF Queen Y	St. Louis	VP-11		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 3/7/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: Brian, Mike GTI John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			dk. olive gray						
	1-1 2				v. c. snd			VP-11			
	1 2-3				10% f. snd, 40% SLT, 50% cly						
					m. soft, plastic						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
NY0788.001	Monsanto - JF Queeny	St. Louis	VP-12	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 3/7/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			V. dk gray to olive gray	M					
	1-1.3				v.c. sand						
	1.3-3				10% F snd, 30% SLT, 60% cly	M		VP-12			
					v-plastic moist m soft to firm						

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
NY0788.001	Monsanto - JFQueen	St. Louis	VP-13	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 3/7/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			dk gray to dk olive gray	M		VP-13			
					10% f-m snd, 40% slt, 40% cly						
					plastic to semi-plastic						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N40788.001	Monsanto JF Queenll	St. Louis	VP-14		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 3/7/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3								50	
	2-2.5				dk brown 10% GVL, 40% snd	M		VP-14			
					30% silt, 20% cly cohesive						
					v. soft, nonplastic odor						
					snd is m-vc gr.						
	2.5-3				black 40% GVL, 30% snd, 30% SLT,	W					
					Wet and soft.						

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
N70788.001	Monsanto JF Queeny	St. Louis	VP-15	

WELL LOCATION SKETCH

DRILLING METHOD: GeoProbe	SAMPLING METHOD: large bore
DRILLING START FINISH: 3/7/94	DEVEL. START FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian Mike John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3				M				50	
	2-2.5				40% SILT, 60% clay, brown, very firm			VP-15			
					high plasticity						
	2.5-3				GVL mixed with silty clay as	W					
					above, gray, wet						

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N40788.001	Monsanto - JF Queeny	St. Louis	VP-16		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 3/7/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			dk olive gray with blk mottles	M		VP-16			
					10% f. snd, 40% slt, 50% cly						
					semi-plas to plastic, odor						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY6788.001	Monsanto - JF Queeny	St. Louis	VP-17		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START 415P FINISH 430P 3/7/94	DEVEL. START FINISH
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Mike, Brian, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3									
	1-2.				Auger refusal at 2.5'	M		VP17			
					red brick fragments mixed with						
					red clay odor						
	3.3 2.5				blk stained same as above, odor	W					

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.001	Monsanto - SF Queeny	St. Louis	VP-18		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 3/7/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3									
	1-2.3				Brown silty (20%), clay (70%),	M		VP-18			
					plastic w/ few gvl, odor						
	2.3-2.7				gray sandy fill 90% m. snd, 10% SLT	M					
	2.7-3				lge brick chips, wet	W					

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788001	Monsanto - JF Queeny	St. Louis	VP-19		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 3/7/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Mike, Brian, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3	FILL		Gvl and brick fragments saturated with free product/water v. Strng odor	W		VP-19			

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
MY0788.001	Monsanto - JF Queeny	St. Louis	VP-20		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 915A 3/10/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	1-28	1-3			Dk brown and dk gray 10% f.snd	M		VP-2			
					40% cly, 50% SLT, semi-plastic						
					to non plastic						
	28-3				Red brick fragments						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
N0788.001	Monsanto SF Queeny	St. Louis	VP-21	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START 940A FINISH 3/10/94	DEVEL. START FINISH
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Mike, Brian John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3									
	2-25				dk brown 10% GVL, 40% snd, 30% SLT,	M		VP-21			
					20% cly, cohesive, v. soft, non-plastic						
					snd is f-vc gr.						
	25-3				dk brown 40% GVL, 30% snd,	M					
					30% SLT soft						

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
W10788.001	Monsanto JF Queeny	St. Louis	VP-22	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START / FINISH: 3/10/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		2-4			Dk. gray silty clay - plastic odor	M		VP-22			

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
W10788.001	Monsanto JF Quarry	St. Louis	VP-23	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START FINISH: 830A 3/10/94	DEVEL. START FINISH:
STATIC DTW DTO / TIME DATE	DRILLED BY: GTI Brian, Mike John
ELEVATION TOC GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			Dk. gray silty clay with blk water or free product?, sand seams 1in thick w/ m-c gr. snd odor	W		VP-23			

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
W10788.001	Monsanto JF Queeny	St. Louis	VP-24	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START 845A / FINISH 3/10/94	DEVEL. START / FINISH
STATIC DTW / DTO / TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			Dk. olive gray silty clay plastic and soft	M		VP24			

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
W40788.001	Monsanto JF Quarry	St. Louis	VP-25	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START FINISH: 3/10/94	DEVEL. START FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			grayish brown silty clay w/ 10% f. snd	M		VP-25			

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
NY0788.00	JF Monsanto Queeny	St. Louis	VP-26	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START / FINISH: 1025A 3/10/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			olive gray silty 60% clay 40%	M		VP-26			
					semi-plastic, slight odor						

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.001	JF Monsanto Queeny	St. Louis	VP-27		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START / FINISH: 11A / 3/10/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			olive gray silty 60% clay semi-plastic firm	M		VP-27			

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
W40788.001	Monsanto JF Queeny	St. Louis	VP-29	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START FINISH: 3/11/94	DEVEL. START FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			olive gray silty 60%, clay 40% semi-plastic, slight odor	M		VP29			

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
W40788.001	Monsanto JF Queeny	St. Louis	VP-30	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START 1130A FINISH 3/11/94	DEVEL START FINISH
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			Dk. grayish olive silty clay semi-plastic	M		VP-30			

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
W40788.001	Monsanto JF Queeny	St. Louis	VP-31	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START / FINISH: 3/11/94	DEVEL START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			olive green silty clay to brown silty clay	M		VP31			

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.00	Monsanto JF Queeny	St. Louis	VP-32		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 1:15P 3/11/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Mike, Brian John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			olive gray silty 60%, clay 40% semi-plastic, firm			VP-32			

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
W40788.001	Monsanto JF Quarry	St. Louis	VP-33		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START / FINISH: 3/11/94	DEVEL START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3						VP-33	(Esc)		
		3-5			Dk. olive gray silty clay, Plastic	M		VP 33	(Lab)		
	5-6	5-7			Same as above	M					
	6-7				Gray 30% v.f. snd, 30% SLT, 40% cly, Cohesive, soft, wet at 6'	W					

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
N40788.00	Monsanto JF Queeny	St. Louis	GP-1	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START FINISH: 3/9/94	DEVEL. START FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian Mike John
ELEVATION TOC / GL	LOGGED BY: Laurie Musiker

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
											LB
		1-3			FILL, Black with some olive			GP-1S		50%	
					silty clay						
		5-7			as above			GP-1M		50%	
		9-11			as above			GP-1D		50%	
					DTB 58.1'						
					12' weathered zone (46-58)						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N40788.001	SF Monsanto Queeny	St. Louis	GP-2		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START / FINISH: 3/9/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian
ELEVATION TOC / GL	LOGGED BY: Laurie Musiker

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			fill, Black sandy layers						MC
					with brick and glass fragments			GP-2S			
					staining and odor						
		5-7			same as above			GP-2M			
		9-11			same as above			GP-2D			
					DTW~13'						
					Probed to 48', difficulty						
					@ 30' Lost poles in hole						
					3/11/94						
					Tried probing for bedrock						
					again. Went to 33 ft and						
					rods bent - lost 6 rods in hole						

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.001	Monsanto - SF Queeny	St. Louis	QP-3		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Large bore
DRILLING START FINISH: 330P 3/9/94	DEVEL. START FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian
ELEVATION TOC / GL	LOGGED BY: Laurie Musiker

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
											LB
		1-3			Fill, black very fine sandy silt						
					some brick and glass, not abundant			QP-3S		75%	
		5-7			same as above			QP-3M		50%	
	9-10	9-11			Same as above			QP-3D		60%	
	10-11				olive green clayey silt						
					Bedrock at 18.5'						
					2-3' weathered zone above						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N40788.001	SF Monsanto Queeny	St. Louis	QP-4		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Large bore
DRILLING START / FINISH	DEVEL. START / FINISH
STATIC DTW / DTO — TIME / DATE	DRILLED BY
ELEVATION TOC / GL	LOGGED BY: Laurie Musiker

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
											LG
	1-3	1-3			FILL, Black and olive clayey silt			QP-4S		75%	
					plastic, v.f snd, grl and						
					brick fragments also						
	5-6	5-7			Same as above			QP-4M		75%	
	6-7				more clayey silt, black + olive						
					less fill-type material						
		9-11			Same as 6-7			QP-4D		50%	
					DTW ~ 12'						
					DTB ~ 33.2'						
					weathered zone from 30-33'						
					then hard solid rock.						

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.00	Monsanto - S.F. Queeny	St. Louis	BG-1		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START FINISH: 445 545 3/10/94	DEVEL. START FINISH:
STATIC DTW DTO / TIME DATE	DRILLED BY: GTI Brian, Mike
ELEVATION TOC GL	LOGGED BY: Laurie Musiker

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		0-4			FILL. Black brown, and red						MC
					sand, silt, brick and rock fragments						
		4-8			Same as above						
		8-12			Grayish brown clay. very stiff						
					(12-16) NOT COLLECTED DUE						
					TO SAME PROBLEM AS WITH BG-2 →						
					STIFF CLAY STUCK IN MACROCORE,						
					COULDN'T EXTEND DEPTH						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
N40788.001	Monsanto - J.F. Queeny	St. Louis	BG-2	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START 345 FINISH 425 3/10/94	DEVEL. START FINISH
STATIC DTW DTO TIME DATE	DRILLED BY GTI Brian, Mike
ELEVATION TOC GL	LOGGED BY Laurie Musiker

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	0-4	0-4			FILL Gray and brown sandy gvl						GP-Mc
	4-8	4-8			Fill Brown, mostly clay						GP-Mc
	8-11	8-12			FILL - sandy clay with limestone fragments						
	11-12				Dark brown very stiff clay with some silt.						GP-Mc
		12-16			Dk. brown silty clay V. stiff clay - HAd to stop geoprobing because Macrocore (Mc) was jammed inside shaft, and subsequent 4' interval was hard to retrieve because so stiff						GP-Mc

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.001	Monsanto - JF Queeny	St. Louis (near MW-13)	GP-1		

DRILLING METHOD: GEOPROBE	SAMPLING METHOD: Large bore
DRILLING START / FINISH	DEVEL. START / FINISH
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GT1 Brian John Mike
ELEVATION TOC / GL	LOGGED BY: Laurie Musiker

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			FILL, Black clayey silt with fine sand, gvl and red brick chips plastic			GP-1S			
		5-7			same as above			GP-1M			
		9-11			same as above			GP-1D			

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N Y0788.001	Monsanto JF Quarry	St. Louis	AC-1		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START / FINISH: 3/9/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM) HNU	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	1-2	1-5			Dk brown 50% SLT, 50% CLY	M	140				
					mixed w/ gvl fill semi-plastic			AC-	15		
					in some zones - others all			11-2			
					gvl. firm tom soft, loose gvl						
	2-3				gray stnd as above but soft	M		AC-	10		
	3-4.5				same as 1-2	M		12-4			
	4.5-5				Wet - same as above	W					

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N Y0788.001	Monsanto JF Quechy	St. Louis	AC-2		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START FINISH: 3/9/94	DEVEL. START FINISH:
STATIC DTW DTO / TIME DATE:	DRILLED BY: GTI Brian Mike, John
ELEVATION TOC GL:	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	0-1		FILL		GVL and Concrete						
	1-2	1-5			Dk gray gvl fill	M	65	AC-2S			
	2-3				dk gray silty clay fill			(1-2)			
	3-5				lt brown gravel fill			AC-2D			
					slight odor throughout sample			(3-4)			
					Wet at 5'						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N Y0788.001	Monsanto JF Queeny	St. Louis	AC-3		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START / FINISH: 430P 3/9/94	DEVEL. START / FINISH:
STATIC DTW / DTO: TIME / DATE:	DRILLED BY: GTI Brian Mike, John
ELEVATION TOC / GL:	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	0-1		FILL		Concrete + gvl						
		1-5			GVL fill pieces of slag, some	M		AC-3S			
					silty clay that is pink and			(245)			
					blk stnd (purple) loose to						
					cohesive in silty clay zones						
		6-9			Saturated pinky layer	W					

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N Y0788.00	Monsanto JF Quarry	St. Louis	AC-5		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START / FINISH: 515P / 3/9/94	DEVEL START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Vater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM) HNU	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-5			Tan Gvl fill	M	1	AC-5 (1-3 ft)	S		
					Refusal at 5'						
					But wet	W					

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
NY0788001	Monsanto Queeny SF	St. Louis	AC-6	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macro core
DRILLING START FINISH: 5:30pm 3/9/94	DEVEL. START FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Mike Brian, John
ELEVATION TOC / GL	LOGGED BY: Laurie Musiker

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	1-3	0-4			FILL Black, brown, olive clayey silt with med gr. snd. glass brick chips	M		AC-6 (1-3)	6S		MC
								AC-6 (4-6)	6M		
		4-8			same as above	M		AC-6 (6-8)	6D		MC

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N Y0788.001	Monsanto JF Queeny	St. Louis	AC-7		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START FINISH: 3/9/94	DEVEL. START FINISH:
STATIC DTW DTO / TIME DATE:	DRILLED BY: GTI Brian Mike, John
ELEVATION TOC GL:	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	0-1		FILL								
	1-3	1-5			Tan GVL fill to 3'	M		AC-7S			
	3-5				brownish gray to dk gray	M		(3-5)			
					very sticky & plastic silty (40%) cly (60%)						
					soft odor few distinct blk						
					mottles						
		5-9			Wet at 5' same as above	W					
					with gvl layers						

GRAVEL SND - SAND SLT - SILT CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N Y0788DN	Monsanto JF Queeny	St Louis	AC-8		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START FINISH: 625P 3/9/94	DEVEL. START FINISH:
STATIC DTW DTO / TIME DATE	DRILLED BY: GTI Brian Mike, John
ELEVATION TOC GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-5			Brown to gray silty clay	M		AC-8S			
					soft and plastic			(1-3)			
								AC-8M			
	5-7.5	5-9			SAME AS ABOVE	M		(3-5)			
	7.5-9				sandy (40%) silty (40%) cly (20%)	W					
								AC-8D			
								(5-7)			

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N Y0788.001	Monsanto JF Quincy	St. Louis	AC-9		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START FINISH: 530P 3/10/94	DEVEL. START FINISH:
STATIC DTW DTO: TIME DATE:	DRILLED BY: GTI Brian Mike, John
ELEVATION TOC GL:	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	~~GVA~~ (PPM) PNu	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	0-2				No Recovery						
	2-4	0-4			All white to lt gray gvl fill	M	0	AC-	95		
					loose			(2-4)			
		4-8			all gvl fill sample is	W					
					saturated + pink + blk						
					Stnd. Wet at 4' loose						

[illegible] - SOARSE M - MEDIUM F - FINE GRVL - GRAVEL SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N Y0788.001	Monsanto JF Queeny	St. Louis	AC-10		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START FINISH: 3/9/94	DEVEL. START FINISH:
STATIC DTW DTO / TIME DATE	DRILLED BY: GTI Brian Mike, John
ELEVATION TOC GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	~~GVA~~ HNu (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	0-2	0-4	FILL		GVL + Brick fragments	M	6	AC-10S			
	2-4				Gray to dk brown silty (50)			(1-2)			
					clay (50) w/ some gvl			AC-10M			
								(3-4)			
	4-6	4-8			olive gray to dk gray 20% SLT, 80% cly	M	19	AC-10D			
					plastic and sticky			(4.5-5.5)			
	6-8				same as above but wet	W					

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N Y0788001	Monsanto JF Quarry	St. Louis	AC-11		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START/FINISH: 1120A 3/9/94	DEVEL. START/FINISH:
STATIC DTW/DTO: TIME/DATE:	DRILLED BY: GTI Brian Mike, John
ELEVATION TOC/GL:	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	~~GVA~~ (PPM) HNu	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	0-2	0-4	FILL		GVL + Concrete	M		AC-11S			
	2-4				very sticky orange brown	M	0	(3-4)			
					clay (90%), 10% SLT. very						
					plastic						
		4-8			V. low recovery - some pink stnd	W					
					gvl and brick						

[illegible] - MEDIUM F - FINE GRVL - GRAVEL SND - SAND SLT - SILT CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N Y0788.001	Monsanto JF Queeny	St. Louis	AC-12		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START FINISH: 3/9/94	DEVEL. START FINISH:
STATIC DTW DTO / TIME DATE	DRILLED BY: GTI Brian Mike, John
ELEVATION TOC GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM) HNu	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	1-4	0-4	FILL		purple and blk stained gvl	M	1	AC-12S			
					with some silty clay - mixed fill			(1-2)			
								AC-12D			
								(2-4)			
		4-8			Entire sample saturated	W					
					gvl fill with free product						
					purple in color						
					Wet at 4'						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
N 10788.00	Monsanto JF Quarry	St. Louis	AC-13	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START / FINISH: 3/9/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM) HNU	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		0-4	FILL		Dk brown 50% SILT, 50% clay	M	15	AC-13S			
					w/ some angular gvl. Plastic			(2-4)			
					where gvl is lacking soft						
					to m. firm						
		4-8			orangish brown 20% snd, 40% SLT,	M		AC-13M			
					40% cly. snd is v.f. gr.			(6-7)			
					plastic to semi plastic. v. dk						
					brown accumulations firm						
					to v. firm						
	8-11.5	8-12			same as above						
	11.5-12				20% f. snd, 20% cly, 60% SLT	M	100	AC-13D			
					non plastic - olive green ODOR			(11-12)			
					Refusal at 12'						

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N Y0788.00	Monsanto JF Quincy	St. Louis	AC-14		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START 950A FINISH 1030A 3/9/94	DEVEL. START FINISH
STATIC DTW DTO TIME DATE	DRILLED BY: GTI Brian Mike, John
ELEVATION TOC GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM) HNu	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	0-1		GVL FILL								
	1-2	1-5	FILL		GVL and Brick fragments	M	4	AC-	45		
	2-5				Blk silty(50) clay(50), very plastic			(23)			
					Soft.			AC-	4D		
								(4-5)			
		5-9			Same as above - but wet	W					

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N Y0788.001	Monsanto JF Quarry	St. Louis	AC-15		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START FINISH: 3/9/94	DEVEL. START FINISH:
STATIC DTW DTO / TIME DATE	DRILLED BY: GTI Brian Mike, John
ELEVATION TOC GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM) HNu	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	0-3	0-4	FILL		GVL - lg - small angular	M	25				
	3-4				water at bndry bet fill	W		AC-15S			
					and very sticky firm dk	M		(3-4)			
					gray to blk clay (20% SLT,						
					80% cly) very plastic ODOR						
					only wet from 3-3.2'						
		4-8			Water at 4'. Entire sample saturated	W					
					40% snd, 30% SLT, 30% cly						
					dk gray to blk						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.001	Monsanto JF Quarry	St. Louis	AC-16		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START FINISH: 1100A 3/9/94	DEVEL. START FINISH:
STATIC DTW DTO / TIME DATE:	DRILLED BY: GTI Brian Mike, John
ELEVATION TOC GL:	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	~~GVA~~ (PPM) HNu	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	0-1		FILL		GVL FILL						
	1-3.5	1-5			GVL FILL TO 3.5' Brown to 2'	M	0				
					Blk 2-2.5', then mixed			AC-16S			
					with red brick frags from 2.5-3.5			(3-4)			
	3.5-5				olive gray 40% SLT, 60% CLY			AC-16M			
					Very plastic, blk mottles			(4-5)			
					abundant, moist						
		5-9			Lt. Brown 10% snd, 40% SLT,	M	0	AC-16D			
					50% cly snd is v.f. gr.			(6-7.5)			
					plastic, few blk mottles						
					m soft to firm						
					Wet at 8'	W					

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
W0788.001	Monsanto JF Queeny	St. Louis	VS-5		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START / FINISH: 3/8/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI - Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Janine Yates

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		0-4			Gvl fill - same silty clay	M		VS-5S			
					tan gray, & orange as other			(0-2)			
					VS locations, glass, wood			VS-5M			
								(2-4)			
	4-5	4-8			same as above with blk gvl	M					
	6.5				Wet at 6.5'	W		VS-5D			
	5.8				Dk brown silty clay mixed with			(4-6)			
					wood, glass, metal, slag etc						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.001	Monsanto JF Queeny	St. Louis	VS-6		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START FINISH: 3/8/94	DEVEL. START FINISH:
STATIC DTW DTO / TIME DATE	DRILLED BY: GTI Brian, Mike John
ELEVATION TOC GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		0-4									
	0-1				GVL fill - gray	M					
	1-3				Brown silty (35%), clay (50%)	M		VS6S			
					with some gvl (20%)			(25-35)			
	3-4				GVL fill rect orange stn odor	M					
		4-8			Black to dk gray silty clay	M		VS6D			
					30% snd, 30% SILT, 40% CLY			(4-6)			
					snd is coarse. Wet at 7'	W					
					Slight odor						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
N40788 001	Monsanto - JF Queeny	St. Louis	VS-7	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START / FINISH: 3/8/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Vater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		0-4			Dk brown silty (70%) clay (30%)	M					
					with some sand & gvl fill						
					also red brick frags. Sand is						
					v. c gr. semi-plastic in silty			VS7S			
					clay layers. colors vary, blue			(2-3)			
					gray to yellowish orange						
					crumbly - loose			VS7M			
								(3-4)			
	4-7.5	4-8			olive gray sandy (60%) silt (40%)	M					
					sand is v.f. gr nonplastic, but						
					cohesive, interlayered with			VS7D			
					blk sand gvl and red brick			(4-7)			
					frags. Wet at 8'	W					

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION (Bulk chemical)	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N40788.001	Monsanto - JF Queeny	St. Louis	VS-8		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START FINISH: 730A 3/8/94	DEVEL. START FINISH:
STATIC DTW DTO / TIME DATE	DRILLED BY: GTI Brian, John Mike
ELEVATION TOC GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		0-4									
	1-3.7		FILL		mostly lg gvl and fill. gvl is gray	M					
					w/ red brick frags. soil is						
					dk grayish brn to blk 30% f-vc			VS 8S			
					Snd, 20% cly 50% SLT. pieces			(2-3)			
					lt wood, metal						
	3.7-4				red brick like fragments.						
	4-5	4-8			red brick frags and gray gvl	M					
	5-8				v. dk olive gray to blueish gray						
					50% cly, 50% SLT, plastic, f. soft.			VS-8D			
					odor, some blk. stain			(7-8)			
					Wet at 8'	W					

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.001	Monsanto JF Queeny	St. Louis	VS-9		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START / FINISH: 3/8/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Mike, Brian, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	0-2	0-4			snd and gvl fill, lt brown, loose	M					
					Snd is v.c gr gvl is 5mm-8mm	D					
	2-4				20% clay, 40% snd, 40% SLT						
					snd is v.c gr. loose to cohesive						
					in spots interlayered with blk			VS-8			
					stained debris - wood chunks,			(3-4)			
					brick, gvl. some red stain						
					and orange yellow stn at 3.5'						
					ODOR						
								VS-9M			
		4-8			Gvl fill stned red and black	M		(4-5)			
					pieces of glass, wood. Very			VS-9D			
					angular ODOR WET AT 8'	W		(5-7)			

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
WY0788.001	Monsanto-JFQueen V	St. Louis	VS-10	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START / FINISH: 3/8/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Mike, Brian, John
ELEVATION TOC / GL	LOGGED BY: Jamie Vater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	0-1	0-4			GVL, concrete and v.c snd fill						
					lt gray, loose						
	1-2.5				Brown silty clay with pieces			VS-10S			
					of glass and brick odor			(1-3)			
	2.5-4				Black to dk brown fill						
					same as above (1-2.5)						
		4-8			same as above			VS-10D			
								(6-8)			

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
NY0788.001	JF Monsanto Queeny	St. Louis	VS-11	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START / FINISH: 3/8/94	DEVEL START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	0-3	0-4	FILL		silty clay with gvl in layers of	M					
					dk brown with pieces of glass						
					wood, metal etc loose zones			VS-11S			
	3-3.5		FILL		snd - m-cgr lt brown, mostly	M		(2-4)			
					qtz v. well sorted						
	3.5-4				purple snd brown silty clay (50) (50)	M					
					v. plastic soft.						
	4-6.5	4-8			Black, brown, GVL fill and pieces	M		VS-11D			
					of slag with silty clay as above			(4.5-6.5)			
	6.5				Wet at 6.5'. Purple layer (1in)	W					
					just above water						
	6.5-8				Red brick fragments mixed	W					
					with silty clay as above						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.001	SF Monsanto Queeny	St. Louis	VS-12		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START / FINISH: 3/8/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Vater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	0-4	04	FILL		GVL and brick fragments	M					
					stained orange yellow, red			VS-12S			
					Some dk brown silty clay.			(0-2.5)			
					pieces of glass, wood + metallics			VS-12M			
								(2.5-4)			
	4-7	4-8	FILL		Blk sand gvl fill v. strong odor	M		VS-12D			
	6.5				Water at 6.5'	W		(4-6.5)			
	7-8				Dk gray to blk 20% cly, 20% snd	W					
					60% cly, non plastic but						
					cohesive, also wood + metallics						
					soft.						

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
NY0788.001	JE Monsanto-Quincy	St. Louis	GP-20A	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START / FINISH: 3/8/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM) HNU	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		0-4	FILL		GVL with brown silty clay						
					some olive color loose gvl	M	0	GP-20	AS		
					brown silty clay is semi-plastic			(3-4)			
		4-8			Blk to olive gray silty (40%)	M	20	GP-20	AM		
					Clay (60%) plastic to semi-plastic			(4-6)			
					some brick fragments and gvl						
								GP-20	AD		
		8-12			Same as above	M		(6-8)			
	9-12				Wet at 9'	W					

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
NY0788.001	JF Monsanto Queeny	St. Louis	GP-20B	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START / FINISH: 3/8/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian Mike John
ELEVATION TOC / GL	LOGGED BY: Jamie Vater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA HNu (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	0-3	0-4	FILL		olive gray silty (20%) clay (80%)	M	5	GP-20	BS		
					very plastic with blk stain			(1-3)			
					some gvl layers			GP-20	BM		
	3-4				Brown silty clay as 0-3			(3-4)			
	4-7	4-8			same as above	M	130	GP-20	BD		
	7-8				Wet at 7' - as above	W		(4-6)			

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
N46788.001	Monsanto JF Quarry	St. Louis	GP-20C	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START / FINISH: 3/8/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM) HNu	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		0-4			Blk angular gvl fill with	M	4	GP-20	CS		
					some gray to blk silty clay			(3-4)			
					as GP-20B						
					Wet at 4'	W					

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.001	Monsanto - SP Quincy	St. Louis	BP-1		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 1300 / 3/8/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	~~OVA~~ (PPM) HNu	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			Blk + gray silty (50) clay (50) w/ sand seams. snd is f-m gr. plastic to semi-plastic with orange brown mottles.		0	BP-1			

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
NY6788.001	JF Monsanto Queeny	St. Louis	BP-2	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START / FINISH: 1450 / 3/8/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Mike, Brian, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	~~OVA~~ HNu (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			Blk + gray silty (50%), clay (50%) w/ few sm sand seams. Snd is f-m gr plastic to semi-plastic with yellowish brn mottles	M	0	BP-2			

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N40B8001	JF Monsanto Queeny	St. Louis	BP-3		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START / FINISH: SP 3/8/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Mike John Brian
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			Gray to Dk gray 50% silt, 50% cly thin sand seams snd is f-mgr plastic to semi-plas. w/ yellowish brown distinct mottles	M		BP-3			

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.001	Monsanto JF Queeny	St. Louis	BP-4		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Macrocore
DRILLING START / FINISH: 3/8/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE:	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL:	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	~~OVA~~ HNu (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			Dk brown to brown silty clay with angular grl 10% snd, 30% clay, 60% silt, nonplastic, loose	M	0	BP-4			

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N40788.001	Monsanto JF Queeny	St. Louis	BP-5		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 3/8/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, John Mike
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	~~OVA~~ HNu (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			Brown clayey (20%), sandy (40%) silt (40%) snd is m-f gr with gvl layers, cohesive, non-plastic	M	0	BP-5			

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
N40788.001	JF Monsanto Queeny	St. Louis	BP-6	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 3/8/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI - Mike, John, Brian
ELEVATION TOC / GL	LOGGED BY: Jamie Vater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA HNu (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
					(50) (50)						
	1-1.5	1-3			blk to gray silty clay with	M	20	BP6			
					some v.c. sand seams 1in thick						
					odor						
	1.5-3				same as above	M	50				

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788.001	JF Monsanto Queeny	St. Louis	BP-7		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START / FINISH: 3/8/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM) HNu	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		13			olive and blk silty clay with gvl as BP-5	M	1	BP-7			

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N40788.00	JF Monsanto Queeny	St. Louis	BP-8		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START / FINISH: 4P 3/10/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM) HNu	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			olive and black 50% SILT, 50%	M	1	BP-8			
					cly with few gvl seams						
					cohesive, non-plastic						

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
N40788001	Monsanto JF Queeny	St. Louis	BP-9	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START / FINISH: 4P 3/10/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA HNu (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3			olive and black 50% SILT, 50% cly with few gvl throughout, cohesive, non-plas to semi-plas	M	1	BP-9			

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
NY0788.001	Monsanto JF Queeny	St. Louis	BP-10	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Largebore
DRILLING START / FINISH: 3P 3/11/94	DEVEL. START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike, John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		3-5			Brown 40% SLT, 40% cly with 20% f. snd. black shiny slivers throughout non-plastic	M		BP-10	(3-5)		
		5-7			Brown clayey (20%) sndy (40%) SILT (40%) snd is m-fgr well sorted subrnd to subang cohesive to loose	M		BP-10	(5-7)		
		9-11			Sample is wet - lithology as above - but cohesive	W					

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N40788.001	SF Monsanto Queeny	St. Louis (Coal Storage Yard)	HB-26P		

DRILLING METHOD: GEOPROBE	SAMPLING METHOD: Large bore
DRILLING START FINISH: 9AM 940AM 3/10/94	DEVEL. START FINISH
STATIC DTW DTO / TIME DATE	DRILLED BY: GTI Mike Brian John
ELEVATION TOC GL	LOGGED BY: Laurie Musiker

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA HNu (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		19-21			firm silty clay		BG	HB-2 GP			
	20-20.3				coal like - or peat like material						
	20.3-21				firm silty clay						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N10788.001	JF Monsanto-Queeny	(Coal Storage Yard) St. Louis	HW-2GP		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START 8am FINISH 9am 3/10/94	DEVEL. START FINISH
STATIC DTW TIME / DTO DATE	DRILLED BY: GTI Mike Brian, John
ELEVATION TOC GL	LOGGED BY: Laurie Musiker

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM) HNu	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		12-14			Dark brown silt and v.f. snd uniform, few gvl		BG	HW-	2GP		
		14-16			same as above		BG				

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
NY0788001	JF Monsanto Queeny	St. Louis	HB-36P		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: Large bore
DRILLING START 940A FINISH 11A 3/10/94	DEVEL. START FINISH
STATIC DTW DTO TIME DATE	DRILLED BY GTI Mike, Brian John
ELEVATION TOC GL	LOGGED BY Laurie Musiker

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM) HNu	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		8-10			silty sand with some clay snd is mostly v. fine, somemed gr. mostly brown, some tan and orange		BK	HB-36P			

ABBREVIATIONS: C – COARSE, M – MEDIUM, F – FINE, GRVL – GRAVEL, SND – SAND, SLT – SILT, CLY – CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
W40788.001	Monsanto JF Queeny	St. Louis	KP-1	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START FINISH: 1307 3/10/94	DEVEL. START FINISH:
STATIC DTW DTO / TIME DATE	DRILLED BY: GTI Brian, Mike John
ELEVATION TOC GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM) HNu	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
		1-3	FILL		GVL fill - possibly perched water	W					
		3-5			Blk gvl and dk gray to blk silty clay mixed. same v.c. snd in gvl layers - loose to plastic in layers with no gvl	M	0	KP-15 (3-5)			
		11-13			same as above	W					
					E.O.B @ 13'						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF	WELL LOCATION SKETCH
N40788.001	Monsanto - JF Queeny	St. Louis	KP-2		

DRILLING METHOD: Geoprobe	SAMPLING METHOD: large bore
DRILLING START FINISH: 1125A 3/10/94	DEVEL. START FINISH:
STATIC DTW DTO / TIME DATE	DRILLED BY: GTI Mike, Brian John
ELEVATION TOC GL	LOGGED BY: Laurie Musiker

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	1-2.5	1-3			Fill, mostly black sand, some	M		KP-	2S		
					glass, chert and brick flakes			(1-3)			
	2.5-3				more blk fill, but coarser						
					more chat chunks, loose						
		4-6			same as 2.5-3			KP	2M		
								(4-6)			
					Wet at 7.5'						

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
W40788.001	Monsanto JF Quarry	St. Louis	KP-3	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START FINISH: 3/10/94	DEVEL. START FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA (PPM) HNu	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	1-2	1-3			GVL fill - gray	M	35	KP-	35		
	2-3				Blk GVL fill and red brick frags.			(2-3)			
					loose with some blk shiny						
					angular "coal" type material						
	4-6	4-6			Dk brown silty clay with blk gvl	M	3	KP-	30		
					and a slight pink stain. Bottom			(4-6)			
	6				of sample is wet	W					
		7-9			sandy GVL FILL	W					

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

GERAGHTY & MILLER, INC.
Environmental Services

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE OF
W40788.001	Monsanto JF Quarry	St. Louis	KP-4	

WELL LOCATION SKETCH

DRILLING METHOD: Geoprobe	SAMPLING METHOD: largebore
DRILLING START / FINISH: 3/10/94	DEVEL START / FINISH:
STATIC DTW / DTO — TIME / DATE	DRILLED BY: GTI Brian, Mike John
ELEVATION TOC / GL	LOGGED BY: Jamie Yater

WELL CONST.	DEPTH FEET	SAMPLE INTERVAL	NAME	CLASS	DESCRIPTION: COLOR, DENSITY, GRAIN SIZE, ODOR, PLASTICITY STAINING, REMARKS	MOISTURE CONTENT	OVA HNU (PPM)	SAMPLE NO.	BLOWS	RECOVERY PERCENT	SAMPLE TYPE
	1-2	1-3	FILL		GVL FILL	M	0				
	2-3				Dk brown to brown 50% SILT,	M		KP-4S			
					50% cly with slivers of glass.			(2-3)			
					plastic to semi-plastic						
		5-7			Brown silty clay as above, few	M	0				
					blk mottles & glass slivers						
	11-12.5	11-13			Dk. gray silty (50%) clay (50%)	M	3	KP-	4M		
					semi-plastic			(11-13)			
	12.5-13				20% snd, 30% SLT, 50% clay	M					
					plastic and cohesive. snd is v.f gr						
					and well sorted						
		22-24			Gray to Dk. gray 30% snd, 30% SLT,	M	0	KP-	4D		
					40% cly, non-plastic, but cohesive	↓		(22-24)			
					moist to v. moist with depth	VM					

ABBREVIATIONS: C - COARSE, M - MEDIUM, F - FINE, GRVL - GRAVEL, SND - SAND, SLT - SILT, CLY - CLAY

APPENDIX C

WELL ABANDONMENT CERTIFICATION

0606

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

REGISTRATION RECORD

OFFICE USE ONLY	DATE RECEIVED
REF. NO.	CHECK NO.
ROUTE	TRANSMITTAL NO.
STATE WELL NUMBER	CROSS REFERENCE NO.
CHECKED BY	ENTERED Ph 1 Ph 2 Ph 3
APPROVED BY	DATE APPROVED

INFORMATION SUPPLIED BY OWNER

NAME: MONSANTO

TELEPHONE: 314/622-1432

ADDRESS: 1700 S. 2nd St.

CITY: St. Louis

STATE: MO

ZIP CODE: 63177

ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE):

CITY:

STATE:

ZIP CODE:

OWNER STATUS:
☐ PRIVATE HOME OWNER ☐ BUILDER ☐ DEVELOPER ☒ OTHER (SPECIFY) Chemical Plant

PURPOSE OF REGISTRATION FORM
☒ ABANDONED WELL ☐ TEST HOLE REPORT
☐ WELL RECONSTRUCTION ☐ OTHER _____

EXISTING WELL CERTIFICATION NUMBER: N/A

SIGNATURE (WELL OWNER) DATE

INFORMATION SUPPLIED BY CONTRACTOR

LOCATION OF WELL
SHOW LOCATION IN SECTION PLAT

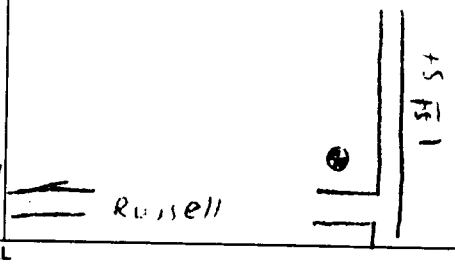
COUNTY: St. Louis
ELEVATION: _____
AREA NO.: 1

SMALLEST ¼ "See map" LARGEST ¼
____¼ ____¼ ____¼ ____¼

SEC. - TWN. 45 N,RNG. 7 (E) OR W

LAT. ____° ____' ____" LONG. ____° ____' ____"

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS



DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL
ON N.W. corner of Russell & 1st St.

CONTRACTOR'S NAME ▶ Charles W. Roberts

PERMIT NUMBER ▶ 001148

[redacted]

DEPTH OF THE WELL: 67'

DATE ABANDONED: 3-8-1994

TYPE OF REPAIR
☐ RAISED CASING ☐ LINING OF WELL
☐ DEEPENING OF WELL ☐ OTHER _____

FORMER USE OF WELL
☐ DOMESTIC (1 TO 3 CONNECTIONS) ☐ PUBLIC WATER SUPPLY

LENGTH OF CASING ADDED ____ FT.

RECYCLED PAPER

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

CAHOKIA, IL-MO MAP
STATE OF MISSOURI
GEOLOGICAL SURVEY AND WATER RESOURCE

APPENDIX D

WATER SAMPLING LOGS

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NY0788001.002 MONSANTO - J.F. QUEENY Page 1 of 1

Site Location ST. LOUIS, MISSOURI

Site/Well No. GM-1 Coded/ Replicate No. GM-1 Date 11-9-93

Weather SUNNY/50'S/SLT. WIND Time Sampling Began 4PM Time Sampling Completed 4:30PM

EVACUATION DATA

Description of Measuring Point (MP) TOP OF WELL CASING

Height of MP Above/Below Land Surface _____ MP Elevation 425.48

Total Sounded Depth of Well Below MP 13.50 Water-Level Elevation 416.04

Held _____ Depth to Water Below MP 9.44 Diameter of Casing 2"

Wet _____ Water Column in Well 4.06 Gallons Pumped/Bailed Prior to Sampling 2 GALS

Gallons per Foot 0.16

Gallons in Well .649 Sampling Pump Intake Setting (feet below land surface) 13.50

Evacuation Method PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color CLOUDY/CLEAR Odor ——— Appearance CLOUDY Temperature 66/66 °F °C

Other (specific ion; OVA; HNU; etc.) 0 PPM AT WELLHEAD

Specific Conductance, umhos/cm ——— pH 7.12/7.15/7.15/7.17

Sampling Method and Material PERISTALTIC PUMP

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
ALACHLOR	(2) 1 LTR AMBER	———

Remarks CHECKED FOR DNAPLS - NO DNAPL LAYER DETECTED

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSIKER & DEONNE MILESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NN0788001.002 MONSANTO - J.F. QUEENY Page 1 of 1

Site Location ST. LOUIS, MISSOURI

Site/Well No. GM-1A Coded/ Replicate No. GM-1A Date 11-10-93

Weather CLEAR / 30'S Time Sampling Began 9:40AM Time Sampling Completed 10:30AM

EVACUATION DATA

Description of Measuring Point (MP) —

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below ~~MP~~ GRADE 24'.6" Water-Level Elevation —

Held _____ Depth to Water Below MP — Diameter of Casing —

Wet _____ Water Column in Well — Gallons Pumped/Bailed Prior to Sampling —

Gallons per Foot —

Gallons in Well — Sampling Pump Intake Setting (feet below land surface) —

Evacuation Method GEOPROBE & PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color DK BROWN Odor — Appearance V. SILTY Temperature — °F/°C

Other (specific ion; OVA; HNU; etc.) —

Specific Conductance, umhos/cm — pH —

Sampling Method and Material GEOPROBE & PERISTALTIC

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
ALACHLOR	(2) 1 LTR AMBER	—

Remarks

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSIKER, DEONNE MILESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NY0788001.002 MONSANTO - J.F. QUEENY Page 1 of 1

Site Location ST. LOUIS, MISSOURI

Site/Well No. GM-1B Coded/ Replicate No. GM-1B Date 11-10-93

Weather CLEAR / COLD (40'S) Time Sampling Began 9:40AM Time Sampling Completed 11:30AM

EVACUATION DATA

Description of Measuring Point (MP) —

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below ~~MP~~ GRADE — Water-Level Elevation —

Held ____ Depth to Water Below ~~MP~~ GRADE 13'.6" Diameter of Casing —

Wet ____ Water Column in Well — Gallons Pumped/Bailed Prior to Sampling —

Gallons per Foot —

Gallons in Well — Sampling Pump Intake Setting (feet below land surface) —

Evacuation Method GEOPROBE & PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color DK BROWN Odor — Appearance V. SILTY Temperature — °F/°C

Other (specific ion; OVA; HNU; etc.) —

Specific Conductance, umhos/cm — pH —

Sampling Method and Material GEOPROBE & PERISTALTIC PUMP

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
ALACHLOR	(2) 1 LTR AMBER	—

Remarks

Sampling Personnel RUSS SCHLUKEBER, LAURIE MUSTER, DEONNE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

G&M Form 12 6-86

Southprint 89-1473

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NY0788001.002 MONSANTO - J.F. QUEENY Page 1 of 1

Site Location ST. LOUIS, MISSOURI

Site/Well No. GM-1C Coded/ Replicate No. GM-1C Date 11-10-93

Weather SUNNY/50'S/SLT. WIND Time Sampling Began 12:45 PM Time Sampling Completed 2:45PM

EVACUATION DATA

Description of Measuring Point (MP) —

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP — Water-Level Elevation —

Held ____ Depth to Water Below MP — Diameter of Casing —

Wet ____ Water Column in Well — Gallons Pumped/Bailed Prior to Sampling —

Gallons per Foot —

Gallons in Well — Sampling Pump Intake Setting (feet below land surface) —

Evacuation Method GEOPROBE & PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color DK BROWN Odor — Appearance V. SILTY Temperature — °F/°C

Other (specific ion; OVA; HNU; etc.) —

Specific Conductance, umhos/cm — pH —

Sampling Method and Material GEOPROBE & PERISTALTIC PUMP

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
ALACHLOR	(2) 1 LTR AMBER	—

Remarks NO PARAMETERS COLLECTED FOR THIS SAMPLE

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSTKER & DEONNE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NY0788.001.002 MONSANTO - J.F. QUEENY Page 1 of 1

Site Location ST. LOUIS, MISSOURI

Site/Well No. GM-2 Coded/ Replicate No. — Date 11-9-93

Weather SUNNY / 50's Time Sampling Began 4:30 PM Time Sampling Completed 4:45 PM

EVACUATION DATA

Description of Measuring Point (MP) TOP OF WELL CASING

Height of MP Above/Below Land Surface _____ MP Elevation 425.47

Total Sounded Depth of Well Below MP 11.75 Water-Level Elevation 415.63

Held _____ Depth to Water Below MP 9.84 Diameter of Casing 2"

Wet _____ Water Column in Well 1.91 Gallons Pumped/Bailed Prior to Sampling —

Gallons per Foot 0.16

Gallons in Well .305 Sampling Pump Intake Setting (feet below land surface) 11.75

Evacuation Method PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color CLEAR Odor — Appearance CLEAR Temperature — °F/°C

Other (specific ion; OVA; HNU; etc.) 0 PPM AT WELL HEAD

Specific Conductance, umhos/cm — pH —

Sampling Method and Material PERISTALTIC PUMP

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
—	—	—

Remarks CHECKED FOR DNAPLS ONLY - NO DNAPL LAYER DETECTED - NO SAMPLE TAKEN

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSICKER & DEONNE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NY0788001.002 MONSANTO - J.F. QUEENY Page 1 of 1

Site Location ST. LOUIS, MISSOURI

Site/Well No. GM-3 Coded/ Replicate No. GM-3 Date 11-9-93

Weather SUNNY/50'S/SLT WIND Time Sampling Began 2:52 PM Time Sampling Completed 3:15PM

EVACUATION DATA

Description of Measuring Point (MP) TOP OF WELL CASING

Height of MP Above/Below Land Surface _____ MP Elevation 427.48

Total Sounded Depth of Well Below MP 12.50 Water-Level Elevation 422.55

Held _____ Depth to Water Below MP 7.57 Diameter of Casing 2"

Wet _____ Water Column in Well 4.93 Gallons Pumped/Bailed Prior to Sampling 2.4

Gallons per Foot 0.16

Gallons in Well .788 Sampling Pump Intake Setting (feet below land surface) 12.50

Evacuation Method PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color CLEAR Odor ——— Appearance CLEAR Temperature 68 °F/°C

Other (specific ion; OVA/HNU etc.) 1 PPM AT WELLHEAD / 0 PPM IN B.Z.

Specific Conductance, umhos/cm ——— pH 6.76/6.80/6.82

Sampling Method and Material PERISTALTIC PUMP

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
ALACHLOR	(2) 1 LTR AMBER	———

Remarks CHECKED FOR DNAPLS - NO DNAPL LAYER DETECTED

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSIKER & DEONNE MILESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

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Site Location ST. LOUIS, MISSOURI

Site/Well No. GM-4 Coded/ Replicate No. — Date 11-9-93

Weather SUNNY/50'S/SLT WIND Time Sampling Began 3:40PM Time Sampling Completed 3:45PM

EVACUATION DATA

Description of Measuring Point (MP) TOP OF WELL CASING

Height of MP Above/Below Land Surface _____ MP Elevation 424.28

Total Sounded Depth of Well Below MP 9.50 Water-Level Elevation 419.78

Held _____ Depth to Water Below MP 4.50 Diameter of Casing 2"

Wet _____ Water Column in Well 5.00 Gallons Pumped/Bailed Prior to Sampling —

Gallons per Foot 0.16

Gallons in Well 0.8 Sampling Pump Intake Setting (feet below land surface) _____

Evacuation Method PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color — Odor — Appearance — Temperature — °F/°C

Other (specific ion; OVA; HNU; etc.) .2 PPM AT WELLHEAD

Specific Conductance, umhos/cm — pH —

Sampling Method and Material —

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
—	—	—

Remarks CHECKED FOR DNAPLS ONLY - NO SAMPLE TAKEN

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSIKER, DEONNE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NY0788001.002 MONSANTO - J.F. QUEENY Page 1 of 1

Site Location ST. LOUIS, MISSOURI

Site/Well No. GM-5 Coded/ Replicate No. GM-5 Date 11-8-93

Weather SUNNY / 40'S Time Sampling Began 4:05PM Time Sampling Completed 5:07PM

EVACUATION DATA

Description of Measuring Point (MP) TOP OF WELL CASING

Height of MP Above/Below Land Surface 0 MP Elevation 424.53

Total Sounded Depth of Well Below MP 16.50 Water-Level Elevation 419.78

Held _____ Depth to Water Below MP 4.75 Diameter of Casing 2"

Wet _____ Water Column in Well 11.75 Gallons Pumped/Bailed Prior to Sampling 6 GALS

Gallons per Foot 0.16

Gallons in Well 1.88 Sampling Pump Intake Setting (feet below land surface) 16.50

Evacuation Method PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color CLEAR/GREY Odor YES Appearance ——— Temperature 68 °F/°C

Other (specific ion; OVA; HNU; etc.) ———

Specific Conductance, umhos/cm ——— pH 6.76/6.89

Sampling Method and Material PERISTALTIC PUMP

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
ALACHLOR	(2) 1 LTR AMBER	———

Remarks NO HNU READING TAKEN - CHECKED FOR DNAPLS - NONE DETECTED

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSIKER & DEONNE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NY0788001.002 MONSANTO - J.F. QUEENY Page 1 of 1

Site Location ST. LOUIS, MISSOURI

Site/Well No. QS-1 Coded/ Replicate No. QS-1 Date 11-9-93

Weather SUNNY / 40'S Time Sampling Began 7:30AM Time Sampling Completed 8:20AM

EVACUATION DATA

Description of Measuring Point (MP) TOP OF WELL CASING

Height of MP Above/Below Land Surface _____ MP Elevation 427.51

Total Sounded Depth of Well Below MP 102.88 Water-Level Elevation 412.95

Held _____ Depth to Water Below MP 14.56 Diameter of Casing 4"

Wet _____ Water Column in Well 88.32 Gallons Pumped/Bailed Prior to Sampling 175

Gallons per Foot 0.65

Gallons in Well 57.408 Sampling Pump Intake Setting (feet below land surface) 45 FT

Evacuation Method 4" SUBMERSABLE PUMP

SAMPLING DATA/FIELD PARAMETERS

Color CLEAR Odor ——— Appearance CLEAR Temperature 63 °F/°C

Other (specific ion; OVA/HNU etc.) 0 PPM AT WELLHEAD

Specific Conductance, umhos/cm ——— pH 6.89/6.88

Sampling Method and Material P.E. BAILER

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
ALACHLOR	(2) 1 LTR AMBER	———

Remarks

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSTIKER & DEONNE MILESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

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Site Location ST. LOUIS, MISSOURI

Site/Well No. VW-2 Coded/ Replicate No. VW-2 Date 11-10-93

Weather DARK/40'S/WINDY Time Sampling Began 5:20PM Time Sampling Completed 6:30PM

EVACUATION DATA

Description of Measuring Point (MP) TOP OF WELL CASING

Height of MP Above/Below Land Surface _____ MP Elevation 419.40

Total Sounded Depth of Well Below MP 14.00 Water-Level Elevation 409.42

Held _____ Depth to Water Below MP 9.98 Diameter of Casing 2"

Wet _____ Water Column in Well 4.02 Gallons Pumped/Bailed Prior to Sampling 2

Gallons per Foot 0.16

Gallons in Well .64 Sampling Pump Intake Setting (feet below land surface) _____

Evacuation Method TOP FILLING BAILER

SAMPLING DATA/FIELD PARAMETERS

Color GREY/CLEAR Odor STRONG Appearance OILY/GREY PARTICLES Temperature 64/64 °F °C

Other (specific ion; OVA; HNU; etc.) 0PPM AT WELLHEAD

Specific Conductance, umhos/cm _____ pH 7.26/7.20

Sampling Method and Material TOP FILLING BAILER

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
VOC'S	(2) 40 ML VIAL	HCl

Remarks WELL APPEARS TO HAVE A MEASURABLE LNAPL PRODUCT LAYER - WHEN SAMPLED IT ONLY HAD A V. THIN - NOTHING LAYER.

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSIKER & DEONNE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

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Site Location ST. LOUIS, MISSOURI

Site/Well No. OBS-1 Coded/ Replicate No. OBS-1 OBS-1 MS OBS-1 MSD Date 11-10-93

Weather SUNNY/40'S/SLT WIND Time Sampling Began 8:30AM Time Sampling Completed 10AM

EVACUATION DATA

Description of Measuring Point (MP) TOP OF WELL CASING

Height of MP Above/Below Land Surface _____ MP Elevation 423.79

Total Sounded Depth of Well Below MP 62.67 Water-Level Elevation 399.43

Held _____ Depth to Water Below MP 24.36 Diameter of Casing 4"

Wet _____ Water Column in Well 38.31 Gallons Pumped/Bailed Prior to Sampling 75 GALS

Gallons per Foot 0.65

Gallons in Well 24.90 Sampling Pump Intake Setting (feet below land surface) 50 FT

Evacuation Method 4" SUBMERSABLE PUMP

SAMPLING DATA/FIELD PARAMETERS

Color CLEAR/CLOUDY Odor ——— Appearance CLOUDY Temperature 65/66 °F °C

Other (specific ion; OVA HNU; etc.) .2 PPM AT WELLHEAD

Specific Conductance, umhos/cm ——— pH 7.05/6.98/6.94

Sampling Method and Material P.E. BAILER

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
VOC'S	(4) 40 ML VIALS	HCl

Remarks DID MS/MSD ON THIS SAMPLE FOR VOC'S

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSTIKER & DEONNE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

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Site Location ST. LOUIS, MISSOURI

Site/Well No. MW-3 Coded/ Replicate No. MW-3 Date 11-10-93

Weather CLEAR / 30'S Time Sampling Began 8:35 AM Time Sampling Completed 8:50 AM

EVACUATION DATA

Description of Measuring Point (MP) TOP OF WELL CASING

Height of MP Above/Below Land Surface _____ MP Elevation 425.41

Total Sounded Depth of Well Below MP 33.00 Water-Level Elevation 414.05

Held _____ Depth to Water Below MP 11.36 Diameter of Casing 2"

Wet _____ Water Column in Well 21.64 Gallons Pumped/Bailed Prior to Sampling 11 GALS

Gallons per Foot 0.16

Gallons in Well 3.46 Sampling Pump Intake Setting (feet below land surface) ——

Evacuation Method P.E. BAILER

SAMPLING DATA/FIELD PARAMETERS

Color CLEAR Odor NONE Appearance SLIGHTLY SILTY Temperature 62 °F °C

Other (specific ion; OVA; HNU etc.) 1 PPM AT WELL HEAD

Specific Conductance, umhos/cm —— pH 7.19/7.19/7.20/7.20

Sampling Method and Material P.E. BAILER

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOC'S	(2) 40 ML VIALS	HCl
ALACHLOR	(2) 1 LTR AMBER	—

Remarks

Sampling Personnel RUSS SCHLUKEBIR, LARRY MUSZKER, DEANE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

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Site Location ST. LOUIS, MISSOURI

Site/Well No. MW-4 Coded/ Replicate No. MW-4 Date 11-9-93

Weather OVERCAST/DARK/40'S Time Sampling Began 5:35 PM Time Sampling Completed 5:40 PM

EVACUATION DATA

Description of Measuring Point (MP) TOP OF WELL CASING

Height of MP Above/Below Land Surface _____ MP Elevation 427.33

Total Sounded Depth of Well Below MP 19.00 Water-Level Elevation 418.10

Held _____ Depth to Water Below MP 9.23 Diameter of Casing 2"

Wet _____ Water Column in Well 9.77 Gallons Pumped/Bailed Prior to Sampling 3 GALS * WELL BAILED DRY

Gallons per Foot 0.16

Gallons in Well 1.6 Sampling Pump Intake Setting (feet below land surface) _____

Evacuation Method P.E. BAILER

SAMPLING DATA/FIELD PARAMETERS

Color CLOUDY Odor YES Appearance CLOUDY Temperature 62 °F °C

Other (specific ion; OVA, HNU, etc.) 5 PM AT WELLHEAD

Specific Conductance, umhos/cm _____ pH 7.14/7.16/7.18/7.20

Sampling Method and Material P.E. BAILER

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
ALACHLOR	(2) 1 LTR AMBER	_____

Remarks WELL WAS LEFT TO RECHARGE 1/2 HR THEN SAMPLED

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSTIKER & DEONNE MILESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

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Site Location ST. LOUIS, MISSOURI

Site/Well No. MW-5 Coded/ Replicate No. MW-5 Date 11-9-93

Weather SUNNY/50S/SLT. WIND Time Sampling Began 4:10PM Time Sampling Completed 4:20PM

EVACUATION DATA

Description of Measuring Point (MP) TOP OF WELL CASING

Height of MP Above/Below Land Surface _____ MP Elevation 426.11

Total Sounded Depth of Well Below MP 17.00 Water-Level Elevation 414.72

Held _____ Depth to Water Below MP 11.39 Diameter of Casing 2"

Wet _____ Water Column in Well 5.61 Gallons Pumped/Bailed Prior to Sampling 3 GALS

Gallons per Foot 0.16

Gallons in Well .9 Sampling Pump Intake Setting (feet below land surface) _____

Evacuation Method DEDICATED TEFLON BAILER

SAMPLING DATA/FIELD PARAMETERS

Color _____ Odor _____ Appearance CLOUDY Temperature 68 °F/°C

Other (specific ion; OVA; HNU; etc.) _____

Specific Conductance, umhos/cm _____ pH 7.02/7.01

Sampling Method and Material DEDICATED TEFLON BAILER

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
ALACHLOR	(2) 1 LTR BAILER	_____

Remarks _____

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSTIKER & DEONNE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

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Site Location ST. LOUIS, MISSOURI

Site/Well No. MW-8A Coded/ Replicate No. MW-8A Date 11-10-93

Weather SUNNY / 50'S Time Sampling Began 2PM Time Sampling Completed 2:35PM

EVACUATION DATA

Description of Measuring Point (MP) TOP OF WELL CASING

Height of MP Above/Below Land Surface _____ MP Elevation 423.79

Total Sounded Depth of Well Below MP 49.00 Water-Level Elevation 397.84

Held _____ Depth to Water Below MP 25.95 Diameter of Casing 2"

Wet _____ Water Column in Well 23.05 Gallons Pumped/Bailed Prior to Sampling 12 GAL

Gallons per Foot 0.16

Gallons in Well 3.7 Sampling Pump Intake Setting (feet below land surface) _____

Evacuation Method P.E. BAILER

SAMPLING DATA/FIELD PARAMETERS

Color CLEAR Odor YES Appearance CLEAR Temperature 67 °F °C

Other (specific ion; OVA, HNU, etc.) 1 PPM AT WELLHEAD

Specific Conductance umhos/cm ——— pH 6.84/6.81/6.81

Sampling Method and Material P.E. BAILER

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
VOC'S	(2) 40 ML VIALS	HCl

Remarks _____

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSTIKER & DEONNE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

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Site Location ST. LOUIS, MISSOURI

Site/Well No. MW-11B Coded/ Replicate No. MW-11B Date 11-9-93

Weather SUNNY/40'S/SLT. WIND Time Sampling Began 8:05 AM Time Sampling Completed 9:30AM

EVACUATION DATA

Description of Measuring Point (MP) TOP OF WELL CASING

Height of MP Above/Below Land Surface _____ MP Elevation 426.35

Total Sounded Depth of Well Below MP 32.00 Water-Level Elevation 412.86

Held _____ Depth to Water Below MP 13.49 Diameter of Casing 2"

Wet _____ Water Column in Well 18.51 Gallons Pumped/Bailed Prior to Sampling 10 GALS

Gallons per Foot 0.16

Gallons in Well 2.96 Sampling Pump Intake Setting (feet below land surface) _____

Evacuation Method P.E. BAILER

SAMPLING DATA/FIELD PARAMETERS

Color GREY OLIVE Odor _____ Appearance SILTY Temperature 62 °F/°C

Other (specific ion; OVA; HNU; etc.) 0 PPM AT WELLHEAD

Specific Conductance, umhos/cm _____ pH 6.92/7.05

Sampling Method and Material P.E. BAILER

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
ALACHLOR	(2) 1 LTR AMBER	_____

Remarks * LOST BAILER IN WELL - ROPE SNAPPED - UNABLE TO RETRIEVE

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSIKER & DEONNE MILESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

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Site Location ST. LOUIS, MISSOURI

Site/Well No. MW-13 Coded/ Replicate No. MW-13 MW-13MS MW-13MSD > BN & METALS Date 11-9-93

Weather SUNNY / 50'S Time Sampling Began 10:15AM Time Sampling Completed 12:30PM

EVACUATION DATA

Description of Measuring Point (MP) TOP OF WELL CASING

Height of MP Above/Below Land Surface _____ MP Elevation 425.91

Total Sounded Depth of Well Below MP 50.50 Water-Level Elevation 413.00

Held _____ Depth to Water Below MP 12.91 Diameter of Casing 2"

Wet _____ Water Column in Well 37.59 Gallons Pumped/Bailed Prior to Sampling 18 GALS

Gallons per Foot 0.16

Gallons in Well 6.01 Sampling Pump Intake Setting (feet below land surface) _____

Evacuation Method P.E. BAILER - ALSO COLLECTED METALS WITH PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color _____ Odor _____ Appearance _____ Temperature 66 °F/°C

Other (specific ion; OVA; HNU etc.) 6PPM AT WELLHEAD - 0PPM IN B.Z.

Specific Conductance, umhos/cm ——— pH 7.06/7.01

Sampling Method and Material _____

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
VOC'S	(2) 40 ML VIALS	HCl
ALACHLOR	(2) 1 LTR AMBERS	———
BN	(2) 1 LTR AMBERS	———
METALS	(1) 500 ML PLASTIC	HNO3

Remarks _____

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSTIKER & DEONNE MILESON

DID MS & MSD ON THIS SAMPLE FOR BN & METALS ONLY.

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

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Site Location ST. LOUIS, MISSOURI

Site/Well No. MW-13A Coded/ Replicate No. MW-13A Date 11-9-93

Weather 40's/DARK Time Sampling Began 6:10PM Time Sampling Completed 6:20PM

EVACUATION DATA

Description of Measuring Point (MP) —

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP — Water-Level Elevation —

Held ____ Depth to Water Below ~~MP~~ GRADE 6.0 Diameter of Casing —

Wet ____ Water Column in Well — Gallons Pumped/Bailed Prior to Sampling —

Gallons per Foot —

Gallons in Well — Sampling Pump Intake Setting (feet below land surface) —

Evacuation Method GEOPROBE & PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color CLEAR Odor — Appearance SILTY Temperature 65 °F °C

Other (specific ion; OVA; HNU; etc.) —

Specific Conductance, umhos/cm — pH 7.13/7.12/7.11/7.12

Sampling Method and Material GEOPROBE & PERISTALTIC PUMP

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
BN	(2) 1 LTR AMBER	—

Remarks

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSTIKER & DEONNE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

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Site Location ST. LOUIS, MISSOURI

Site/Well No. MW-13B Coded/ Replicate No. MW-13B Date 11-9-93

Weather SUNNY/40'S/SLT WIND Time Sampling Began 10AM Time Sampling Completed 11:45AM

EVACUATION DATA

Description of Measuring Point (MP) —

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP — Water-Level Elevation —

Held ____ Depth to Water Below MP APPROX. 12.6 Diameter of Casing —

Wet ____ Water Column in Well — Gallons Pumped/Bailed Prior to Sampling —

Gallons per Foot —

Gallons in Well — Sampling Pump Intake Setting (feet below land surface) —

Evacuation Method GEOPROBE & PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color DK BROWN Odor — Appearance V. SILTY Temperature — °F/°C

Other (specific ion; OVA; HNU; etc.) —

Specific Conductance umhos/cm — pH —

Sampling Method and Material GEOPROBE & PERISTALTIC PUMP

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
BN	(2) 1 LTR AMBER	—

Remarks NO FIELD PARAMETERS COLLECTED FROM THIS SAMPLE

Sampling Personnel RUSS SCHLUKEBER, LAURIE MUSIKER & DEONNE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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Site Location ST. LOUIS, MISSOURI

Site/Well No. MW-13C Coded/ Replicate No. MW-13C Date 11-9-93

Weather SUNNY / 50'S / SLT. WIND Time Sampling Began 12N Time Sampling Completed 12:50PM

EVACUATION DATA

Description of Measuring Point (MP) —

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP — Water-Level Elevation —

Held ____ Depth to Water Below ~~MP~~ GRADE 10.7 Diameter of Casing —

Wet ____ Water Column in Well — Gallons Pumped/Bailed Prior to Sampling —

Gallons per Foot —

Gallons in Well — Sampling Pump Intake Setting (feet below land surface) —

Evacuation Method GEOPROBE & PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color DK BROWN Odor NONE Appearance SILTY Temperature 66 °F °C

Other (specific ion; OVA; HNU; etc.) —

Specific Conductance, umhos/cm — pH 6.80 / 6.74 / 6.68 / 6.66

Sampling Method and Material GEOPROBE & PERISTALTIC PUMP

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
BN	(2) 1 LTR AMBER	—

Remarks

Sampling Personnel RUSS SCHLUKEBER, LAURIE MUSIKER & DEONNE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NY0788001.002 MONSANTO - J.F. QUEENY Page 1 of 1

Site Location ST. LOUIS, MISSOURI

Site/Well No. MW-13D Coded/ Replicate No. MW-13D Date 11-10-93

Weather SUNNY/50'S/SLT. WIND Time Sampling Began 9AM Time Sampling Completed 9:20AM

EVACUATION DATA

Description of Measuring Point (MP) —

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP — Water-Level Elevation —

Held ____ Depth to Water Below ~~MP~~ GRADE 20' Diameter of Casing —

Wet ____ Water Column in Well — Gallons Pumped/Bailed Prior to Sampling —

Gallons per Foot —

Gallons in Well — Sampling Pump Intake Setting (feet below land surface) —

Evacuation Method GEOPROBE & PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color DK BROWN Odor — Appearance V. SILTY Temperature — °F/°C

Other (specific ion; OVA; HNU; etc.) —

Specific Conductance, umhos/cm — pH —

Sampling Method and Material GEOPROBE & PERISTALTIC PUMP

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
BN	(2) 1 LITER AMBER	—

Remarks LOW SAMPLE VOLUME - JACOB'S BILL GRESHAM DIDN'T GET A SAMPLE - LEFT GEOPROBE AUGERS IN OVERNIGHT TO GET SAMPLE

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSIKER, DEONNE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NY0788001.002 MONSANTO - J.F. QUEENY Page 1 of 1

Site Location ST. LOUIS, MISSOURI

Site/Well No. MW-13E Coded/ Replicate No. MW-13E Date 11-10-93

Weather SUNNY/40'S/SLT WIND Time Sampling Began 7:20AM Time Sampling Completed 8:05AM

EVACUATION DATA

Description of Measuring Point (MP) ——

Height of MP Above/Below Land Surface —— MP Elevation ——

Total Sounded Depth of Well Below MP —— Water-Level Elevation ——

Held ____ Depth to Water Below MP —— Diameter of Casing ——

Wet ____ Water Column in Well —— Gallons Pumped/Bailed Prior to Sampling ——

Gallons per Foot ——

Gallons in Well —— Sampling Pump Intake Setting (feet below land surface) ——

Evacuation Method PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color ____ Odor ____ Appearance ____ Temperature ____ °F/°C

Other (specific ion; OVA; HNU; etc.) ——

Specific Conductance umhos/cm —— pH ____

Sampling Method and Material PERISTALTIC PUMP

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
BN	(1) 1 LTR AMBER	——

Remarks GEOPROBE AUGER IN GROUND OVERNIGHT TO GET ENOUGH SAMPLE

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSIKER & DEONNE MILESON

ONLY GOT ENOUGH SAMPLE FOR 1 LTR - JACOBS DID NOT GET A SAMPLE.

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NY0788001.002 MONSANTO - J.F. QUEENY Page 1 of 1

Site Location ST. LOUIS, MISSOURI

Site/Well No. MW-13F Coded/ Replicate No. MW-13F Date 11-10-93

Weather CLEAR/COLD Time Sampling Began 10:50AM Time Sampling Completed 11:25AM

EVACUATION DATA

Description of Measuring Point (MP) —

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP — Water-Level Elevation —

Held ____ Depth to Water Below MP — Diameter of Casing —

Wet ____ Water Column in Well — Gallons Pumped/Bailed Prior to Sampling —

Gallons per Foot —

Gallons in Well — Sampling Pump Intake Setting (feet below land surface) —

Evacuation Method GEOPROBE & PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color DK BROWN Odor — Appearance V. SILTY Temperature — °F/°C

Other (specific ion; OVA; HNU; etc.) —

Specific Conductance, umhos/cm — pH —

Sampling Method and Material GEOPROBE & PERISTALTIC PUMP

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
BN	(2) 1 LTR AMBER	—

Remarks NO FIELD PARAMETERS COLLECTED FOR THIS SAMPLE

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSICKER & DEONNE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NY0788001.002 MONSANTO - J.F. QUEENY Page 1 of 1

Site Location ST. LOUIS, MISSOURI

Site/Well No. MW-14 Coded/ Replicate No. MW-14 Date 11-9-93

Weather SUNNY/40'S/SLT. WIND Time Sampling Began 5PM Time Sampling Completed 5:45PM

EVACUATION DATA

Description of Measuring Point (MP) TOP OF WELL CASING

Height of MP Above/Below Land Surface _____ MP Elevation 425.92

Total Sounded Depth of Well Below MP 12.00 Water-Level Elevation 419.54

Held _____ Depth to Water Below MP 6.38 Diameter of Casing 2"

Wet _____ Water Column in Well 5.62 Gallons Pumped/Bailed Prior to Sampling 3 GAL

Gallons per Foot 0.16

Gallons in Well .899 Sampling Pump Intake Setting (feet below land surface) 12.00

Evacuation Method PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color CLEAR Odor STRONG Appearance CLEAR Temperature 66/64 °F °C

Other (specific ion; OVA; HNU; etc.) 11 PPM AT WELLHEAD - 0PPM IN B.Z.

Specific Conductance, umhos/cm ——— pH 7.14/7.18/7.10

Sampling Method and Material PERISTALTIC PUMP

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
ALACHLOR	(2) 1 LTR AMBER	———

Remarks * FLOATING PRODUCT IN PURGE WATER - CHECKED FOR LNAPL

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSTIER, DEONNE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NY0788001.002 MONSANTO - J.F. QUEENY Page 1 of 1

Site Location ST. LOUIS, MISSOURI

Site/Well No. MW-15 Coded/ Replicate No. MW-15 MW-15MS MW-15MSD Date 11-10-93

Weather SUNNY/40'S/SLT WIND Time Sampling Began 4PM Time Sampling Completed 4:35PM

EVACUATION DATA

Description of Measuring Point (MP) TOP OF WELL CASING

Height of MP Above/Below Land Surface _____ MP Elevation 426.63

Total Sounded Depth of Well Below MP 18.00 Water-Level Elevation 412.66

Held _____ Depth to Water Below MP 13.97 Diameter of Casing 2"

Wet _____ Water Column in Well 4.03 Gallons Pumped/Bailed Prior to Sampling 2 GAL

Gallons per Foot 0.16

Gallons in Well .644 Sampling Pump Intake Setting (feet below land surface) 18.00

Evacuation Method PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color CLEAR/CLOUDY Odor ——— Appearance SLIGHTLY CLOUDY Temperature 63/64 °F °C

Other (specific ion; OVA; HNU; etc.) 0PPM AT WELLHEAD

Specific Conductance, umhos/cm ——— pH 7.20/7.18/7.19

Sampling Method and Material PERISTALTIC PUMP

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
ALACHLOR	(2) 1 LTR AMBER	———
METALS	(1) 500 ML PLASTIC	HNO3

Remarks DID MS/MSD ON THIS SAMPLE FOR ALACHLOR ONLY.

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSIKER & DEONNE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NY0788.001.002 MONSANTO - J.F. QUEENY Page 1 of 1

Site Location ST. LOUIS, MISSOURI

Site/Well No. MW-20 Coded/ Replicate No. MW-20 MW-20MS MW-20MSD Date 11-10-93

Weather CLEAR/40'S Time Sampling Began 1:30PM Time Sampling Completed 1:45PM

EVACUATION DATA

Description of Measuring Point (MP) TOP OF WELL CASING

Height of MP Above/Below Land Surface _____ MP Elevation 423.27

Total Sounded Depth of Well Below MP 26.50 Water-Level Elevation 414.15

Held _____ Depth to Water Below MP 9.12 Diameter of Casing 2"

Wet _____ Water Column in Well 17.38 Gallons Pumped/Bailed Prior to Sampling 9 GALS

Gallons per Foot .16

Gallons in Well 2.78 Sampling Pump Intake Setting (feet below land surface) 20.00

Evacuation Method PERISTALTIC PUMP & P.E. BAILER

SAMPLING DATA/FIELD PARAMETERS

Color CLOUDY/CLEAR Odor YES Appearance CLOUDY Temperature 70 °F °C

Other (specific ion; OVA; HNU; etc.) 0 PPM AT WELLHEAD

Specific Conductance umhos/cm _____ pH 7.13/7.15/7.16

Sampling Method and Material P.E. BAILER & PERISTALTIC PUMP

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
METALS	(1) 500 ML PLASTIC	HNO3
CN	(1) 500 ML PLASTIC	NAOH

Remarks DID CN FIELD TEST (850 PPB) DID MS/MSD ON THIS SAMPLE

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSIKER & DEONNE MILESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

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Site Location ST. LOUIS, MISSOURI

Site/Well No. MW-20B Coded/ Replicate No. MW-20B Date 11-10-93

Weather SUNNY / 40'S / SLT Time Sampling Began 2:35PM Time Sampling Completed 2:50PM

EVACUATION DATA

Description of Measuring Point (MP) —

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below ~~MP~~ GRADE 14'.6" Water-Level Elevation —

Held ____ Depth to Water Below MP — Diameter of Casing —

Wet ____ Water Column in Well — Gallons Pumped/Bailed Prior to Sampling —

Gallons per Foot —

Gallons in Well — Sampling Pump Intake Setting (feet below land surface) —

Evacuation Method GEOPROBE & PERISTALTIC PUMP

SAMPLING DATA/FIELD PARAMETERS

Color CLEAR Odor — Appearance CLEAR Temperature — °F/°C

Other (specific ion; OVA; HNU; etc.) —

Specific Conductance, umhos/cm — pH —

Sampling Method and Material GEOPROBE & PERISTALTIC PUMP

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
CN	(1) 500 ML PLASTIC	NAOH

Remarks DID CN FIELD TEST (ND)

Sampling Personnel RUSS SCHLUKEBIR, LAURIE MUSIKER & DEONNE MILLESON

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NY0788001.002 MONSANTO - J.F. QUEENY Page 1 of 1

Site Location ST. LOUIS, MISSOURI

Site/Well No. MW-14 Coded/ Replicate No. MW-14A Date 11-12-93

Weather INSIDE Time Sampling Began 6:10PM Time Sampling Completed 6:20PM

EVACUATION DATA

Description of Measuring Point (MP) —

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP — Water-Level Elevation —

Held ____ Depth to Water Below MP — Diameter of Casing —

Wet ____ Water Column in Well — Gallons Pumped/Bailed Prior to Sampling —

Gallons per Foot —

Gallons in Well — Sampling Pump Intake Setting (feet below land surface) —

Evacuation Method TOP FILLING BAILER

SAMPLING DATA/FIELD PARAMETERS

Color CLEAR Odor STRONG Appearance CLEAR Temperature — °F/°C

Other (specific ion; OVA; HNU; etc.) —

Specific Conductance, umhos/cm — pH —

Sampling Method and Material TOP FILLING BAILER

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOC'S	(1) 40 ML VIAL	HCl

Remarks * 11-11-93 CHECKED FOR LNAPL LAYER - PLACED SAMPLE IN 4 OZ JAR - THERE DIDN'T APPEAR TO BE ANY LNAPL LAYER - SAMPLE WAS PLACED ON ICE. 11-12-93 ET

Sampling Personnel RUSS SCHLUKEBIR

→ WAS DECIDED TO SUBMIT SAMPLE FOR LAB ANALYSIS. THE SAMPLE WAS TRANSFERRED TO (1) 40 ML VIAL (LOW SAMPLE VOLUME)

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NY0788001.002 MONSANTO - J.F. QUEENY Page 1 of 1

Site Location ST. LOUIS, MISSOURI

Site/Well No. VW-2A Coded/ Replicate No. VW-2A Date 11-12-93

Weather INSIDE Time Sampling Began 5:50PM Time Sampling Completed 6PM

EVACUATION DATA

Description of Measuring Point (MP) —

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP — Water-Level Elevation —

Held ____ Depth to Water Below MP — Diameter of Casing —

Wet ____ Water Column in Well — Gallons Pumped/Bailed Prior to Sampling —

Gallons per Foot —

Gallons in Well — Sampling Pump Intake Setting (feet below land surface) —

Evacuation Method TOP FILLING BAILER

SAMPLING DATA/FIELD PARAMETERS

Color CLEAR/GREY Odor STRONG Appearance OILY CLEAR Temperature — °F/°C

Other (specific ion; OVA; HNU; etc.) —

Specific Conductance, umhos/cm — pH —

Sampling Method and Material TOP FILLING BAILER

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOC'S	(2) 40 ML VIAL	HCl

Remarks 11-10-93 CHECKED FOR LNAPL LAYER - PLACED SAMPLE IN 4OZ JAR - THERE APPEARED TO BE A VERY THIN LNAPL LAYER PRESENT - SAMPLE WAS PLACED ON ICE.

Sampling Personnel RUSS SCHLUKEBIR

11-12-93 IT WAS DECIDED TO SUBMIT SAMPLE FOR LAB ANALYSIS. THE SAMPLE WAS TRANSFERRED TO (2) 40 ML VIALS

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NY0788001.002 MONSANTO - J.F. QUEENY Page 1 of 1

Site Location ST. LOUIS, MISSOURI

Site/Well No. ——— Coded/ Replicate No. RINSATE BLK Date 11-12-93

Weather INSIDE Time Sampling Began 6:05 PM Time Sampling Completed 6:10PM

EVACUATION DATA

Description of Measuring Point (MP) ———

Height of MP Above/Below Land Surface ——— MP Elevation ———

Total Sounded Depth of Well Below MP ——— Water-Level Elevation ———

Held ——— Depth to Water Below MP ——— Diameter of Casing ———

Wet ——— Water Column in Well ——— Gallons Pumped/Bailed Prior to Sampling ———

Gallons per Foot ———

Gallons in Well ——— Sampling Pump Intake Setting (feet below land surface) ———

Evacuation Method TOP FILLING BAILER

SAMPLING DATA/FIELD PARAMETERS

Color CLEAR Odor ——— Appearance CLEAR Temperature ——— °F/°C

Other (specific ion; OVA; HNU; etc.) ———

Specific Conductance, umhos/cm ——— pH ———

Sampling Method and Material TOP FILLING BAILER

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
VOC'S	(4) 40 ML VOAS	HCl

Remarks 11-11-93 AFTER SAMPLING VW-2 - THE TEFLON BAILER WAS DECONNED - RINSATE BLANK WAS TAKEN.* IT SHOULD BE NOTED THAT BAILER STILL WAS STAINED.
*IT SHOULD BE NOTED THAT THE SAMPLE WAS ORIGINALLY TAKEN IN (2) 1 LTR AMBER BOTTLES - PLACED ON ICE. THE SAMPLE WAS TRANSFERRED 11-12-93 TO (4) 40 ML VOAS AND SENT FOR LAB ANALYSIS.

Sampling Personnel RUSS SCHLUKEBIR

WELL CASING VOLUMES
1-½" = 0.09 2-½" = 0.26 3-½" = 0.50 6" = 1.47

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APPENDIX E

DATA VALIDATION MEMORANDA

MEMORANDUM

TO: Laurie Musiker

FROM: Lauren Sjogren

DATE: February 15, 1994

RE: Data Validation Report, Monsanto Chemical Company, John F. Queeny Facility, St. Louis, MO, Project Number NY0788001

Twenty-nine samples were collected during the period from November 8 to November 12, 1993 and submitted to Savannah Laboratories & Environmental Services, Inc. for analysis. The twenty-nine samples submitted consisted of twenty-seven water samples, one rinsate blank, and one trip blank. The methods of analysis, sample identification and requested parameters are listed below:

Methods of analysis:

Volatile Organic Compounds (VOC)	- SW-846, Method 8240
Base Neutral and Acid Extractables (SVOC)	- SW-846, Method 8270
Alachlor	- SW-846, Method 8080
Inorganics	
Metals	- SW-846, Methods 6010, 7060, 7421, 7841, 7740
Mercury	- SW-846, Method 7470
Cyanide	- SW-846, Method 9010

G&M ID	Savannah ID	Parameters Determined
MW-13	S346405-1	VOC, SVOC, Alachlor, Metals
VW-2	S346405-19	VOC
MW-8A	S46405-20	VOC
OBS-1	S346405-21	VOC
MW-3	S346405-22	VOC
Trip Blank A	S346405-34	VOC
VW-2A	S346432-1	VOC
MW-14A	S346432-2	VOC
Rinsate Blank	S346432-3	VOC
MW-13F	S346405-15	SVOC
MW-13D	S346405-16	SVOC

G&M ID	Savannah ID	Parameters Determined
MW-13B	S346405-17	SVOC
MW13-C	S346405-18	SVOC
MW-13A	S346405-19	SVOC
GM-1	S346405-2	Alachlor
GM-3	S346405-3	Alachlor
GM-5	S346405-4	Alachlor
MW-14	S346405-5	Alachlor
GM-1C	S346405-6	Alachlor
GM-1A	S346405-7	Alachlor
GM-1B	S346405-8	Alachlor
MW-3	S346405-9	Alachlor
MW-4	S346405-10	Alachlor
MW-5	S346405-11	Alachlor
MW-11B	S346405-12	Alachlor
QS-1	S346405-13	Alachlor
MW-15	S346405-25	Alachlor, Metals
MW-20B	S346405-23	Metals
MW-20	S346405-24	Metals

Organics

The organic data were reviewed according to the "Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses", February 1, 1988 revision, as modified for USEPA Region VII.

1. TECHNICAL HOLDING TIMES AND PRESERVATION

A. All extraction and analysis holding times, and required preservation were within quality control limit requirements for all volatile (8240) and semivolatile (8270) compounds.

B. Samples GM-5, MW-11B, QS-1, and MW-15 were extracted beyond the seven day holding time from time of collection. Therefore, the alachlor detected in samples GM-5, QS-1, and MW-15 was qualified as estimated (J). The non-detect alachlor result for sample MW-11B was qualified as invalid (I) since the extraction of this sample was performed well beyond the extraction holding time.

2. GC/MS TUNING

A. All volatile and extractable organic GC/MS tunings and mass calibrations were within quality control limit requirements for bromofluorobenzene (BFB) and decafluorotriphenylphosphine (DFTPP), respectively.

3. INITIAL AND CONTINUING CALIBRATION

A. Initial calibration average response factors and continuing calibration response factors were below the quality control limit requirement of 0.05 for several volatile compounds and one semivolatile compound. The volatile compounds include acrolein, isobutanol, and trans-1,4-dichloro-2-butene; and the semivolatile compound was 4-nitroquioline-1-oxide. All non-detect results associated with low response factors have been qualified as invalid and flagged "I"; and all positive results associated with low response factors have been qualified as estimated, and flagged "J". The samples qualified based on calibration response factor outliers are listed below.

Calibration Response Factor Outlier Summary

Parameter	Samples Qualified
Acrolein	MW-13, VW-2, MW-8A, MW-3, Trip Blank A
Isobutanol	All samples
1,4-Dichloro-2-butene	MW-13, VW-2, MW-8A, MW-3, Trip Blank A
4-Nitroquinoline-1-oxide	MW-13

B. Several volatile and semivolatile compounds were outside the quality control limit requirements for percent relative standard deviation (%RSD greater than 30%) for initial calibrations, and for percent difference (%D greater than 25%) for continuing calibrations. Most of these calibration precision outliers were associated with non-detect results, which were not qualified. There were a few calibration precision outliers associated with positive results, which have been qualified as estimated values and flagged "J". The samples qualified based on calibration precision outliers are listed below.

Calibration Precision Outlier Summary

Parameter	Samples Qualified
Trichloroethylene	VW-2A
bis (2-Ethylhexyl)phthalate	MW-13D
p-Chloroaniline	MW-13F

C. The initial and continuing calibration criteria for the analysis of the samples for alachlor were met.

4. BLANKS

A. The reported results for all method blanks were non-detects for all volatile and extractable organic analyses. No data have been qualified due to method blank

contamination.

B. One trip blank was analyzed for VOCs. No compounds were detected in the trip blank, therefore, no qualification of the data was necessary.

C. One rinsate was analyzed for VOCs. No compounds were detected in the rinsate blank, therefore, no qualification of the data was necessary.

5. SURROGATE RECOVERIES

A. Surrogate recoveries were within control limits for all VOC sample analyses.

B. A few of the extractable organic field samples had one or more surrogate recoveries which were outside of the quality control limits or were not reported due to dilution of the sample. Since no more than one surrogate was outside of the quality control limit for the SVOC sample analyses, no data have been qualified due to surrogate recoveries.

C. Low surrogate recoveries were reported for the alachlor analysis of samples GM-1A and GM-1B. The alachlor detected in sample GM-1A was qualified as estimated (J) based on the surrogate spike recoveries. Since alachlor was not detected in sample GM-1B, no qualification was performed.

The laboratory indicated that the high surrogate spike recoveries reported for MW-15, MW-15MS and MW-15MSD were due to a compound coeluting with the surrogate compound spiked in these samples.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

A. Matrix spike and matrix spike duplicate (MS/MSD) analyses were performed using sample OBS-1 during the analysis of samples for VOCs. Both of the reported percent recoveries and the relative percent difference value for the VOC MS/MSD analyses were outside of the quality control limit for chlorobenzene. Chlorobenzene was detected in the sample at a concentration over four times the amount used for spiking and can account for the poor spike recoveries and RPD value. The only other spike recovery outside quality control limits was for trichloroethene. Since the MS/MSD quality control limits for volatile analyses are advisory, no data have been qualified due to MS/MSD quality control outliers.

B. MS/MSD analyses were performed on sample MW-13 during the analysis of samples for semivolatiles. The percent recoveries and relative percent difference values for these MS/MSD analyses were within quality control limits with the exception of 2,4-dinitrotoluene. The 2,4-dinitrotoluene spike recoveries were above quality control limits. Since the MS/MSD quality control limits for semivolatile analyses are advisory, no data have been qualified due to MS/MSD quality control outliers.

C. MS/MSD analyses were performed on sample MW-15 during the analysis of samples for alachlor. Several of the reported percent recoveries for these MS/MSD analyses were above of the quality control limits. All relative percent difference values were within quality control limits. Since the MS/MSD quality control limits for the extractable organics analyses are advisory, no data have been qualified due to MS/MSD quality control outliers.

7. COMPOUND IDENTIFICATION AND QUANTITATION

A. Due to high concentration of organic compounds found in several of the samples from this site, these samples were routinely diluted prior to initial analyses.

B. Because no raw data was required to be supplied by the laboratory, a check of the compound identification and quantitation was not possible.

C. Due to the reporting format established by the QAPjP for this sampling and analysis program, sample weight or volume used for analyses and dilution factors were not included in the summary report for review. Due to this omission, the adjusted quantitation limits cannot be verified for this group of analyses. No data have been qualified based upon this omission.

8. SUMMARY

A. Initial calibration average response factors and continuing calibration response factors were below the quality control limit requirement of 0.05 for several volatile compounds, and one semivolatile compound. The volatile compounds include acrolein, isobutanol and trans-1,4-dichloro-2butene; and the semivolatile compound was 4-nitroquinoline-1-oxide. All non-detect results associated with low response factors have been qualified as invalid and flagged "I"; and all positive results associated with low response factors have been qualified as estimated, and flagged "J" as discussed in Section 3.

B. Several volatile and semivolatile compounds were outside the quality control limit requirements for percent relative standard deviation (%RSD greater than 30%) for initial calibrations, and for percent difference (%D greater than 25%) for continuing calibrations. Most of these calibration precision outliers were associated with non-detect results, which were not qualified. There were a few calibration precision outliers associated with positive results, which have been qualified as estimated values and flagged "J". This is further discussed in Section 3.

C. Overall, the quality of the data was found to be acceptable with the qualifiers discussed in this memorandum.

Inorganics

The inorganic data were reviewed according to the "Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses", July 1987 revision, as modified for USEPA Region VII.

1. TECHNICAL HOLDING TIMES AND PRESERVATION

A. All technical holding times and preservation of samples were with the quality control requirements.

2. INITIAL AND CONTINUING CALIBRATION

A. The initial calibration and continuing calibration verification standard requirements were met.

3. BLANKS

A. The method blank associated with the samples was reported with no analytes detected in this method blank.

4. ICP INTERFERENCE CHECK

A. All analytes contained in the ICP interference check sample were within quality control limits.

5. LABORATORY CONTROL SAMPLE

A. The laboratory control sample analyzed was within quality control limits.

6. DUPLICATES

A. Sample MW-13 was designated for the duplicate analysis. Duplicate relative percent difference (RPD) criteria were within quality control criteria.

7. MATRIX SPIKES

A. Sample MW-13 was designated for the matrix spike analyses. All matrix spike recoveries were within quality control limits.

8. GRAPHITE FURNACE ATOMIC ABSORPTION SPECTROSCOPY

A. Arsenic, lead, selenium and thallium were analyzed for using graphite furnace atomic absorption spectroscopy. All post-digestion spike recoveries were within quality control limits with the exception of selenium for samples MW-13, MW-20, and MW-15. Because selenium was not detected in any of these samples, no data were qualified.

9. ICP SERIAL DILUTION

A. All analytes met ICP serial dilution quality control requirements.

10. SUMMARY

A. Overall, the quality of the data were found to be acceptable.

A:VALIDRPT/LS:bd

MEMORANDUM

TO: Laurie Musiker

FROM: Lauren Sjogren LS

DATE: June 16, 1994

RE: Data Validation Report for the March 1994 Data, Monsanto Chemical Company, John F. Queeny Facility, St. Louis, Missouri (Project Number NY0788.001)

Ninety-seven samples were collected from March 8 to March 11, 1994 and submitted to Savannah Laboratories & Environmental Services, Inc. for analysis. The methods of analysis, sample identification numbers and requested parameters are listed below.

Methods of analysis:

Volatile Organic Compounds (VOCs)	- SW-846, Method 8240
Semivolatile Organic Compounds (SVOCs)	- SW-846, Method 8270
Alachlor	- SW-846, Method 8080
Inorganics	
Metals	- SW-846, Methods 6010, 7060, 7421, 7841, 7740
Mercury	- SW-846, Method 7470
Cyanide	- SW-846, Method 9010
Sulfide	- SW-846, Method 9030

G&M ID	Savannah ID	Parameters Determined
VS-5S	S441233-1	VOCs, SVOCs, Metals, Sulfide
VS-5M	S441233-2	VOCs, SVOCs, Metals, Sulfide
VS-5D	S441233-3	VOCs, SVOCs, Metals, Sulfide
VS-6S	S441233-4	VOCs, SVOCs, Metals, Sulfide
VS-6D	S441233-5	VOCs, SVOCs, Metals, Sulfide
VS-7S	S441233-6	VOCs, SVOCs, Metals, Sulfide
VS-7M	S441233-7	VOCs, SVOCs, Metals, Sulfide
VS-7D	S441233-8	VOCs, SVOCs, Metals, Sulfide
VS-8S	S441233-9	VOCs, SVOCs, Metals, Sulfide
VS-8D	S441233-10	VOCs, SVOCs, Metals, Sulfide
VS-9S	S441233-11	VOCs, SVOCs, Metals, Sulfide
VS-9M	S441233-12	VOCs, SVOCs, Metals, Sulfide
VS-9D	S441233-13	VOCs, SVOCs, Metals, Sulfide
VS-10S	S441233-14	VOCs, SVOCs, Metals, Sulfide
VS-10D	S441233-15	VOCs, SVOCs, Metals, Sulfide

G&M ID	Savannah ID	Parameters Determined
VS-11S	S441233-16	VOCs, SVOCs, Metals, Sulfide
VS-11D	S441233-17	VOCs, SVOCs, Metals, Sulfide
VS-12S	S441233-18	VOCs, SVOCs, Metals, Sulfide
VS-12M	S441233-19	VOCs, SVOCs, Metals, Sulfide
VS-12D	S441233-20	VOCs, SVOCs, Metals, Sulfide
GP-20AS	S441233-21	Cyanide
GP-20AD	S441233-22	Cyanide
GP-20BS	S441233-23	Cyanide
GP-20BM	S441233-24	Cyanide
GP-20BD	S441233-25	Cyanide
GP-20CS	S441233-26	Cyanide
HW-2GP	S441312-1	VOCs
HB-2GP	S441312-2	VOCs
HB-3GP	S441312-3	VOCs
KP-1S	S441312-4	VOCs
KP-2S	S441312-5	VOCs
KP-3S	S441312-6	VOCs
KP-4S	S441312-7	VOCs
KP-2M	S441312-8	VOCs
KP-4M	S441312-9	VOCs
KP-3D	S441312-10	VOCs
KP-4D	S441312-11	VOCs
AC-11S	S441312-12	Alachlor
AC-13S	S441312-13	Alachlor
AC-13M	S441312-14	Alachlor
AC-13D	S441312-15	Alachlor
AC-14S	S441312-16	Alachlor
AC-15S	S441312-17	Alachlor
AC-16S	S441312-18	Alachlor
AC-10S	S441312-19	Alachlor
AC-10M	S441312-20	Alachlor
AC-10D	S441312-21	Alachlor
AC-12S	S441312-22	Alachlor
AC-12D	S441312-23	Alachlor
AC-14D	S441312-24	Alachlor
AC-16M	S441312-25	Alachlor
AC-16D	S441312-26	Alachlor
AC-9S	S441312A-1	VOCs, Alachlor
AC-1S	S441312A-2	VOCs, Alachlor
AC-1D	S441312A-3	VOCs, Alachlor
AC-2S	S441312A-4	VOCs, Alachlor

G&M ID	Savannah ID	Parameters Determined
AC-2D	S441312A-5	VOCs, Alachlor
AC-3S	S441312A-6	VOCs, Alachlor
AC-5S	S441312A-7	VOCs, Alachlor
AC-7S	S441312A-8	VOCs, Alachlor
AC-8S	S441312A-9	VOCs, Alachlor
AC-8M	S441312A-10	VOCs, Alachlor
AC-8D	S441312A-11	VOCs, Alachlor
AC-6S	S441312A-12	VOCs, Alachlor
AC-6M	S441312A-13	VOCs, Alachlor
AC-6D	S441312A-14	VOCs, Alachlor
QP-1S	S441312B-1	VOCs, SVOCs, Alachlor, Metals
QP-2S	S441312B-2	VOCs, SVOCs, Alachlor, Metals
QP-4D	S441312B-3	VOCs, SVOCs, Alachlor, Metals
QP-1M	S441312B-4	SVOCs, Metals
QP-1D	S441312B-5	SVOCs, Metals
QP-2M	S441312B-6	SVOCs, Metals
QP-2D	S441312B-7	SVOCs, Metals
QP-3S	S441312B-8	SVOCs, Metals
QP-3M	S441312B-9	SVOCs, Metals
QP-3D	S441312B-10	SVOCs, Metals
QP-4S	S441312B-11	SVOCs, Metals
QP-4M	S441312B-12	SVOCs, Metals
GP-1S	S441312B-13	SVOCs
GP-1D	S441312B-14	SVOCs
GP-1M	S441312B-15	SVOCs
GP-20BK	S441233A-1	PCBs, Metals
GP-20BD	S441233A-2	PCBs, Metals
GP-20AD	S441233A-3	PCBs, Metals
VP-31	S441309-1	PCBs
VP-33 (3-5)	S441309-2	PCBs
BP-10 (5-7)	S441309A-1	PCBs, Metals
VP-5	S441312C-1	PCBs
VP-20	S441312C-2	PCBs
VB-21	S441312C-3	PCBs
GP-20AS	S441312C-4	PCBs, Metals
GP-20BS	S441312C-5	PCBs, Metals
BP-3	S441312C-6	PCBs, Metals
BP-4	S441312C-7	PCBs, Metals
BG-1	S441312C-8	Metals
BG-2	S441312C-9	Metals
BG-3	S441312C-10	Metals

ORGANICS

The organic data were reviewed according to the U.S. Environmental Protection Agency (USEPA) "Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses," February 1, 1988 revision. The sample delivery groups (SDGs) were review separately and are discussed below.

SDG GMQ022

1. Technical Holding Times and Preservation

A. All volatile and semivolatile analysis holding times were within quality control limit requirements.

2. Gas Chromatograph/Mass Spectrometer (GC/MS) Tuning

A. All volatile and extractable organic GC/MS tunings and mass calibrations were within quality control limit requirements for bromofluorobenzene (BFB) and decafluorotriphenylphosphine (DFTPP), respectively.

3. Initial and Continuing Calibration

A. Initial calibration average response factors and continuing calibration response factors were within the quality control limit requirement of 0.05 for all the semivolatile compounds. Initial calibration average response factors and continuing calibration response factors were below the quality control limit requirement of 0.05 for several volatile compounds. These compounds are listed below.

Initial Volatile Calibration Date: 03/01/94

Compound	Relative Response Factor (RRF)
Acrolein	0.041
Isobutanol	0.015
1,4-Dichloro-2-butene	0.035

Associated samples: VS-8D, VS-7D, VS-8SMS, VS-8SMSD

Initial Volatile Calibration Date: 03/12/94

Compound	RRF
Acrolein	0.017
Isobutanol	0.019

Associated samples: VS-5S, VS-5M, VS-5D, VS-6S, VS-12S, VS-11D, VS-10S, VS-11S, VS-12M, VS-12D, VS-6D, VS-7S, VS-7M

Initial Volatile Calibration Date: 03/16/94

Compound	RRF
Acrolein	0.012
Isobutanol	0.031
1,4-Dichloro-2-butene	0.029

Associated samples: VS-8S, VS-9D, VS-9S, VS-10D, VS-9M

Continuing Volatile Calibration Date: 3/14/94

Compound	RRF
Acrolein	0.014
Isobutanol	0.017

Associated samples: VS-5S, VS-5M, VS-5D, VS-6S

Continuing Volatile Calibration Date: 3/18/94

Compound	RRF
Dichlorodifluoromethane	0.032
Acrolein	0.009
Isobutanol	0.024
1,4-Dichloro-2-butene	0.024

Associated samples: VS-8S

Continuing Volatile Calibration Date: 3/21/94 Time: 09:49

Compound	RRF
Acrolein	0.016
Isobutanol	0.019

Associated samples: VS-12S, VS-11D, VS-10S

Continuing Volatile Calibration Date: 3/21/94 Time: 21:58

Compound	RRF
Acrolein	0.013
Isobutanol	0.010

Associated samples: VS-11S

Continuing Volatile Calibration Date: 3/22/94
Instrument ID: MSA

Compound	RRF
Acrolein	0.006
Isobutanol	0.032
1,4-Dichloro-3-butene	0.020

Associated samples: VS-9D, VS-9S, VS-10D, VS-9M

Continuing Volatile Calibration Date: 3/22/94 Time: 10:47
Instrument ID: MSH

Compound	RRF
Acrolein	0.017
Isobutanol	0.013

Associated samples: VS-12M, VS-12D

Continuing Volatile Calibration Date: 3/22/94 Time: 20:23
Instrument ID: MSH

Compound	RRF
Acrolein	0.007
Isobutanol	0.010

Associated samples: VS-6D, VS-7S, VS-7M

Continuing Volatile Calibration Date: 3/22/94
Instrument ID: MSI

Compound	RRF
Acrolein	0.018
Isobutanol	0.018

Associated samples: VS-8D, VS-7D, VS-8SMS, VS-8SMSD

All non-detect sample results associated with the low response factors listed above were qualified as invalid and flagged "I"; all positive sample results associated with the low response factors listed above were qualified as estimated, and flagged "J." The samples that were qualified based on calibration response factor outliers are listed below.

Calibration Response Factor Outlier Summary

Parameter	Samples Qualified
Acrolein	All samples
Isobutanol	All samples
1,4-Dichloro-2-butene	VS-8D, VS-7D, VS-8SMS, VS-8SMSD, VS-8S, VS-9D, VS-9S, VS-10D, VS-9M
Dichlorodifluoromethane	VS-8S

B. Several volatile and semivolatile compounds were outside the quality control limit requirements for percent relative standard deviation (%RSD) (greater than 30%) for initial calibrations, and for percent difference (%D) (greater than 25%) for continuing calibrations. Most of these calibration precision outliers were associated with non-detect results, which were not qualified. There were a few calibration precision outliers associated with positive results that have been qualified as estimated values and flagged "J." The samples that were qualified based on calibration precision outliers are listed below.

Calibration Precision Outlier Summary

Parameter	Samples Qualified
Acetone	VS-11S, VS-12S, VS-12M
Benzo(a)anthracene	VS-5S, VS-5D, VS-7S, VS-6D, VS-7D, VS-11D, VS-12D
Indeno(1,2,3-cd)pyrene	VS-7D, VS-11D, VS-12D
Benzo(g,h,i)perylene	VS-7D, VS-11D, VS-12D

C. The initial and continuing calibration criteria for the analysis of the samples for alachlor were met.

4. Blanks

A. The reported results for all method blanks were non-detects for all volatile and extractable organic analyses. No data have been qualified due to the method blank results.

5. Surrogate Recoveries

A. A few of the field samples analyzed for VOCs had one or more surrogate recoveries that were not reported due to dilution of the sample.

B. Two volatile surrogate recoveries were above control limits for sample VS-10D. However, since no VOCs were detected in VS-10D, qualification of the data was not necessary. Surrogate recoveries were within control limits for all other VOC sample analyses.

C. A few of the field samples analyzed for SVOCs had one surrogate recovery that was outside of the quality control limits or was not reported due to dilution of the sample. Since no more than one surrogate was outside of the quality control limit for the SVOC sample analyses, no data have been qualified due to surrogate recoveries. Surrogate recoveries were within control limits for all other SVOC sample analyses.

6. Matrix Spike/Matrix Spike Duplicate

A. Matrix spike and matrix spike duplicate (MS/MSD) analyses were performed using samples VS-9S and VS-8S during the analysis of samples for VOCs. All spike recoveries and relative percent difference (RPD) values were within control limits.

B. MS/MSD analyses were performed using sample VS-9S during the analysis of samples for SVOCs. All spike recoveries and RPD values were within control limits.

7. Internal Standards

A. At least one internal standard area count was below control limits for VOC samples VS-5S, VS-12D, VS-6D, and VS-7S. All three internal standard area counts were below control limits for samples VS-5S and VS-12D. The internal standard area count for chlorobenzene-d5 was below control limits for sample VS-6D. The internal standard area counts for bromochloromethane and chlorobenzene-d5 were below control limits for sample VS-7S. All compounds detected in samples VS-5S and VS-12D were qualified as estimated (J) and all non-detects were qualified as estimated (UJ). The compounds quantified using internal standard chlorobenzene-d5 for sample VS-6D were qualified as estimated (J) if detected and estimated (UJ) if not detected. The compounds quantified using internal standards bromochloromethane and chlorobenzene-d5 for sample VS-7S were qualified as estimated (J) if detected and estimated (UJ) if not detected. A list of the compounds associated with each volatile internal standard can be found in Table 1. Internal standard area counts were within control limits for all other VOC sample analyses.

B. One internal standard area count was below the control limit for SVOC sample VS-9D. The compounds quantified using internal standard phenanthrene-d10 for sample VS-9D were qualified as estimated (J) if detected and estimated (UJ) if not detected. A list of the compounds associated with each semivolatile internal standards can be found in Table 2. Internal standard area counts were within control limits for all other SVOC sample analyses.

8. Compound Identification and Quantitation

A. Samples from this site that were found to contain high concentrations of organic compounds were routinely diluted prior to initial analyses.

B. Because limited raw data were required to be supplied by the laboratory, a check of the compound identification and quantitation was not possible.

C. Due to the reporting format established by the Quality Assurance Project Plan (QAPjP) for this sampling and analysis program, sample weight or volume used for analyses and dilution factors were not included in the summary report for review. Due to this omission, the adjusted quantitation limits cannot be verified for this group of analyses. No data have been qualified based upon this omission.

9. Overall Assessment of Data for the Case

A. Overall, the quality of the data was found to be acceptable with the qualifiers discussed in this memorandum.

SDG GMQ023

1. Technical Holding Times and Preservation

A. All volatile analysis holding times were within quality control limit requirements.

B. All alachlor extraction and analysis holding times were within quality control limit requirements.

C. All of the samples contained in this data package arrived at the laboratory later than expected due to shipping problems. None of the samples was qualified based on this situation because all of the samples are soils and holding times used to evaluate the samples started from the time of collection.

2. GC/MS Tuning

A. All volatile GC/MS tunings and mass calibrations were within quality control limit requirements for BFB.

3. Initial and Continuing Calibration

A. Initial calibration average response factors and continuing calibration response factors were outside the quality control limit requirement of 0.05 for several volatile compounds. These compounds are listed below.

Initial Volatile Calibration Date: 03/01/94
Instrument ID: MSI

Compound	RRF
Acrolein	0.041
Isobutanol	0.015
1,4-Dichloro-2-butene	0.035

Associated samples: KP-3S, KP-4S, KP-3D

Initial Volatile Calibration Date: 03/12/94
Instrument ID: MSH

Compound	RRF
Acrolein	0.017
Isobutanol	0.019

Associated samples: KP-1S, HB-3GP, KP-4M, KP-4D, HB-2GP, HW-2GP, KP-2S, KP-2M

Continuing Volatile Calibration Date: 03/23/94
Instrument ID: MSH

Compound	RRF
Acrolein	0.008
Isobutanol	0.019

Associated samples: KP-1S, HB-3GP, KP-4M, KP-4D, HB-2GP, HW-2GP

Continuing Volatile Calibration Date: 03/24/94
Instrument ID: MSI

Compound	RRF
Acrolein	0.034
Isobutanol	0.019
1,4-Dichloro-2-butene	0.024

Associated samples: KP-3S, KP-4S, KP-3D

Continuing Volatile Calibration Date: 03/24/94 Time: 10:15
Instrument ID: MSH

Compound	RRF
Acrolein	0.009
Isobutanol	0.013

Associated samples: HW-2GP, KP-2S

Continuing Volatile Calibration Date: 03/24/94 Time: 22:03
Instrument ID: MSH

Compound	RRF
Acrolein	0.009
Isobutanol	0.013

Associated samples: KP-2M

All non-detect sample results associated with the low response factors listed above were qualified as invalid and flagged "I"; all positive sample results associated with the low

response factors listed above were qualified as estimated, and flagged "J." The samples that were qualified based on calibration response factor outliers are listed below.

Calibration Response Factor Outlier Summary

Parameter	Samples Qualified
Acrolein	All samples
Isobutanol	All samples
1,4-Dichloro-2-butene	KP-3S, KP-4S, KP-3D

B. Several volatile compounds were outside the quality control limit requirements for %RSD (greater than 30%) for initial calibrations, and for %D (greater than 25%) for continuing calibrations. Most of these calibration precision outliers were associated with non-detect results, which were not qualified. There were a few calibration precision outliers associated with positive results, that have been qualified as estimated values and flagged "J." The samples qualified based on calibration precision outliers are listed below.

Calibration Precision Outlier Summary

Parameter	Samples Qualified
Acetone	HW-2GP, KP-2M
Chloromethane	KP-3S

C. The initial and continuing calibration criteria for the analysis of the samples for alachlor were met.

4. Blanks

A. The reported results for all method blanks were non-detects for all volatile organic and alachlor analyses. No data have been qualified due to the method blank results.

5. Surrogate Recoveries

A. A few of the field samples analyzed for VOCs had one or more surrogate recoveries that were not reported due to dilution of the sample. Surrogate recoveries were within control limits for all other VOC sample analyses.

B. A few of the field samples analyzed for alachlor had one or both surrogate recoveries that were not reported due to dilution of the sample. Surrogate recoveries were within control limits for all other alachlor sample analyses.

6. Matrix Spike/Matrix Spike Duplicate

A. MS/MSD analyses were performed using sample KP-1S during the analysis of samples for VOCs. The percent recoveries and RPD values for these MS/MSD analyses were within quality control limits with the exception of chlorobenzene and toluene. The chlorobenzene and toluene spike recoveries were above quality control limits. Since the MS/MSD quality control limits for volatile analyses are advisory, no data have been qualified due to MS/MSD quality control outliers.

B. MS/MSD analyses were performed on sample AC-16S during the analysis of samples for alachlor. Several of the reported percent recoveries for these MS/MSD analyses were outside of the quality control limits. Matrix spike compound heptachlor was not recovered at all. A very high RPD value was outside quality control limits for matrix spike compound aldrin. Since the MS/MSD quality control limits for the extractable organics analyses are advisory, no data have been qualified due to MS/MSD quality control outliers.

7. Internal Standards

A. At least one internal standard area count was below control limits for VOC samples HW-2GP, KP-2S, KP-1S and KP-4M. The internal standard area count for chlorobenzene-d5 was below control limits for samples KP-1S and KP-4M. The internal standard area counts for 1,4-difluorobenzene and chlorobenzene-d5 were below control limits for samples HW-2GP and KP-2S. The compounds quantified using internal standard chlorobenzene-d5 for samples KP-1S and KP-4M were qualified as estimated (J) if detected and estimated (UJ) if not detected. The compounds quantified using internal standards for 1,4-difluorobenzene and chlorobenzene-d5 for samples HW-2GP and KP-2S were qualified as estimated (J) if detected and estimated (UJ) if not detected. A list of the compounds associated with each of the volatile internal standards can be found in Table 1. Internal standard area counts were within control limits for all other VOC sample analyses.

8. Compound Identification and Quantitation

A. Samples from this site that were found to contain high concentrations of organic compounds were routinely diluted prior to initial analyses.

B. Because limited raw data were required to be supplied by the laboratory, a check of the compound identification and quantitation was not possible.

C. Due to the reporting format established by the QAPjP for this sampling and analysis program, sample weight or volume used for analyses and dilution factors were not included in the summary report for review. Due to this omission, the adjusted quantitation limits cannot be verified for this group of analyses. No data have been qualified based upon this omission.

9. Overall Assessment of Data for the Case

A. Overall, the quality of the data was found to be acceptable with the qualifiers discussed in this memorandum.

SDG GMQ024

1. Technical Holding Times and Preservation

A. All volatile analysis holding times were within quality control limit requirements.

B. All alachlor extraction and analysis holding times were within quality control limit requirements.

C. All of the samples contained in this data package arrived at the laboratory later than expected due to shipping problems. None of the samples was qualified based on this situation because all of the samples are soils and holding times used to evaluate the samples started from the time of collection.

2. GC/MS Tuning

A. All volatile GC/MS tunings and mass calibrations were within quality control limit requirements for BFB.

3. Initial and Continuing Calibration

A. Initial calibration average response factors and continuing calibration response factors were outside the quality control limit requirement of 0.05 for several volatile compounds. These compounds are listed below.

Initial Volatile Calibration Date: 03/12/94
Instrument ID: MSH

Compound	RRF
Acrolein	0.017
Isobutanol	0.019

Associated samples: AC-9S, AC-1S, AC-1D, AC-2S, AC-2D, AC-3S, AC-5S, AC-7S, AC-8S, AC-8M, AC-8D, AC-6S, AC-6M, AC-6D

Continuing Volatile Calibration Date: 03/21/94
Instrument ID: MSH

Compound	RRF
Acrolein	0.013
Isobutanol	0.010

Associated samples: AC-1S, AC-1D

Continuing Volatile Calibration Date: 03/22/94
Instrument ID: MSH

Compound	RRF
Acrolein	0.007
Isobutanol	0.010

Associated samples: AC-9S, AC-2S

Continuing Volatile Calibration Date: 03/23/94 Time: 08:49
Instrument ID: MSH

Compound	RRF
Acrolein	0.005
Isobutanol	0.011

Associated samples: AC-2D, AC-2S, AC-5S, AC-7S, AC-8S, AC-8M, AC-8D, AC-6S, AC-6M, AC-6D

Continuing Volatile Calibration Date: 03/23/94 Time: 20:22
Instrument ID: MSH

Compound	RRF
Acrolein	0.008
Isobutanol	0.019

Associated samples: AC-3S

All non-detect sample results associated with the low response factors listed above were qualified as invalid and flagged "I"; all positive sample results associated with the low response

response factors listed above were qualified as estimated, and flagged "J." The samples that were qualified based on calibration response factor outliers are listed below.

Calibration Response Factor Outlier Summary

Parameter	Samples Qualified
Acrolein	All samples
Isobutanol	All samples

B. Several volatile compounds were outside the quality control limit requirements for %RSD (greater than 30%) for initial calibrations, and for %D (greater than 25%) for continuing calibrations. Most of these calibration precision outliers were associated with non-detect results, which were not qualified. There were a few calibration precision outliers associated with positive results that have been qualified as estimated values and flagged "J." The samples qualified based on calibration precision outliers are listed below.

Calibration Precision Outlier Summary

Parameter	Samples Qualified
Acetone	AC-1S, AC-1D, AC-9S, AC-2S

C. The initial calibration criteria for the analysis of the samples for alachlor were met. The continuing calibration criteria for one of the alaclor verification standards was not met. However, since none of the samples was associated with this standard, further qualification of the data was not necessary.

4. Blanks

A. The reported results for all method blanks were non-detects for all volatile organic and alachlor analyses. No data have been qualified due to the method blank results.

5. Surrogate Recoveries

A. A few of the field samples analyzed for VOCs had one or more surrogate recoveries that were not reported due to dilution of the sample. Surrogate recoveries were within control limits for all other VOC sample analyses.

B. A few of the field samples analyzed for alachlor had one surrogate recovery that was not reported due to a collating matrix interference present in these samples. The recovery of surrogate compound dibutylchlorendate was below control limits for samples AC-1D and AC-2S. The non-detect alachlor result for both these samples was qualified as estimated (UJ)

based on the surrogate results. Surrogate recoveries were within control limits for all other alachlor sample analyses.

6. Matrix Spike/Matrix Spike Duplicate

A. MS/MSD analyses were performed using sample AC-3S during the analysis of samples for VOCs. The percent recoveries and RPD values for these MS/MSD analyses were within quality control limits.

B. MS/MSD analyses were performed on sample AC-3S during the analysis of samples for alachlor. None of the matrix spikes was recovered because of the sample dilution required prior to analysis. Since the MS/MSD quality control limits for the extractable organics analyses are advisory, no data have been qualified due to these MS/MSD results.

7. Internal Standards

A. At least one internal standard area count was below control limits for VOC samples AC-9S, AC-2S, AC-5S, and AC-6M. All three internal standard area counts were below control limits for sample AC-5S. The internal standard area count for chlorobenzene-d5 was below control limits for samples AC-9S and AC-2S. The internal standard area counts for 1,4-difluorobenzene and chlorobenzene-d5 were below control limits for sample AC-6M. All compounds detected in sample AC-5S were qualified as estimated (J) and all non-detects were qualified as estimated (UJ). The compounds quantified using internal standard chlorobenzene-d5 for samples AC-9S and AC-2S were qualified as estimated (J) if detected and estimated (UJ) if not detected. The compounds quantified using internal standards for 1,4-difluorobenzene and chlorobenzene-d5 for sample AC-6M was qualified as estimated (J) if detected and estimated (UJ) if not detected. A list of the compounds associated with each of the volatile internal standards can be found in Table 1. Internal standard area counts were within control limits for all other VOC sample analyses.

8. Compound Identification and Quantitation

A. The samples from this site that were found to contain high concentrations of organic compounds were routinely diluted prior to initial analyses.

B. Because limited raw data were required to be supplied by the laboratory, a check of the compound identification and quantitation was not possible.

C. Due to the reporting format established by the QAPjP for this sampling and analysis program, sample weight or volume used for analyses and dilution factors were not included in the summary report for review. Due to this omission, the adjusted quantitation limits cannot be verified for this group of analyses. No data have been qualified based upon this omission.

9. Overall Assessment of Data for the Case

A. Sample AC-2S was diluted and reanalyzed for VOCs since the concentration of acetone detected in the initial analysis exceeded the calibration range of the instrument. Acetone was not detected in the reanalysis of sample AC-2S. It is this data reviewer's professional opinion, that the initial analysis of sample AC-2S should be used when reporting the data.

B. Overall, the quality of the data was found to be acceptable with the qualifiers discussed in this memorandum.

SDG GMQ025

1. Technical Holding Times and Preservation

A. All volatile analysis holding times were within quality control limit requirements.

B. The reextraction of sample GP-1M was performed outside the semivolatile 14-day holding time from the time of collection by 21 days. Because an excessive amount of time had passed, all semivolatile compounds detected in GP-1M were qualified as estimated (J) and all non-detects were qualified as invalid (I). All other semivolatile holding times were within quality control limit requirements.

C. The extraction of sample QP-4D was performed outside the alachlor 14-day holding time from the time of collection by 13 days. Therefore, the non-detect alachlor result was qualified as estimated (UJ). All other extractions and all analyses for alachlor were performed within the proper holding times.

D. All of the samples contained in this data package arrived at the laboratory later than expected due to shipping problems. None of the samples was qualified based on this situation because all of the samples are soils and holding times used to evaluate the samples started from the time of collection.

2. GC/MS Tuning

A. All volatile and extractable organic GC/MS tunings and mass calibrations were within quality control limit requirements for BFB and DFTPP, respectively.

3. Initial and Continuing Calibration

A. Initial calibration average response factors and continuing calibration response factors were within the quality control limit requirement of 0.05 for all the semivolatile compounds. Initial calibration average response factors and continuing calibration response factors were below

the quality control limit requirement of 0.05 for several volatile compounds. These compounds are listed below.

Initial Volatile Calibration Date: 03/12/94

Compound	RRF
Acrolein	0.017
Isobutanol	0.019

Associated samples: QP-1S, QP-2S, QP-4D

Continuing Volatile Calibration Date: 3/23/94 Time: 08:49
Instrument ID: MSH

Compound	RRF
Acrolein	0.005
Isobutanol	0.011

Associated samples: QP-1S, QP-2S, QP-4D

Continuing Volatile Calibration Date: 3/23/94 Time: 20:22
Instrument ID: MSH

Compound	RRF
Acrolein	0.008
Isobutanol	0.019

Associated samples: QP-4DRE

Continuing Volatile Calibration Date: 3/22/94
Instrument ID: MSI

Compound	RRF
Acrolein	0.018
Isobutanol	0.018

Associated samples: VS-8D, VS-7D, VS-8SMS, VS-8SMSD

Continuing Volatile Calibration Date: 4/13/94
Instrument ID: MSG

Compound	RRF
4-Nitroquinoline-1-oxide	0.014

Associated samples: QP-3D, QP-4S, QP-2S, QP-2M, QP-3S, QP-3M

Continuing Volatile Calibration Date: 4/14/94
Instrument ID: MSG

Compound	RRF
4-Nitroquinoline-1-oxide	0.025

Associated samples: QP-1S, QP-4M, QP-4MRE, QP-1D, QP-2D

Continuing Volatile Calibration Date: 4/14/94
Instrument ID: MSD

Compound	RRF
4-Nitroquinoline-1-oxide	0.033

Associated samples: none

All non-detect sample results associated with the low response factors listed above were qualified as invalid and flagged "I"; and all positive sample results associated with the low response factors listed above were qualified as estimated, and flagged "J." The samples that were qualified based on calibration response factor outliers are listed below.

Calibration Response Factor Outlier Summary

Parameter	Samples Qualified
Acrolein	All samples
Isobutanol	All samples
4-Nitroquinoline-1-oxide	QP-3D, QP-4S, QP-2S, QP-2M, QP-3S, QP-3M, QP-1S, QP-4M, QP-1D, QP-2D

B. Several volatile and semivolatile compounds were outside the quality control limit requirements for %RSD (greater than 30%) for initial calibrations, and for percent difference

%D (greater than 25%) for continuing calibrations. All of these calibration precision outliers were associated with non-detect results, which were not qualified.

C. The initial calibration criteria for the analysis of the samples for alachlor were met. The continuing calibration criteria for the analysis of samples QP-1S and QP-2S were above control limits. However, since alachlor was not detected in these two samples, qualification of the alachlor results was not necessary.

4. Blanks

A. The reported results for all method blanks were non-detects for all volatile and extractable organic analyses. No data have been qualified due to the method blank results.

5. Surrogate Recoveries

A. A few of the field samples analyzed for VOCs had one or more surrogate recoveries that were not reported due to dilution of the sample.

B. Two SVOC surrogate recoveries were above control limits for sample GP-1D. All positive results for GP-1D were qualified as estimated (J). Surrogate recoveries were within control limits for all other VOC sample analyses.

C. The surrogate compounds were inadvertently omitted prior to the extraction of sample GP-1M. All positive results for GP-1M were qualified as estimated (J) and all non-detects were qualified as estimated (UJ). Sample GP-1M was reextracted and reanalyzed with all the surrogate compounds found to be within quality control limits. However, since the reextraction of GP-1M was performed far beyond the holding time, the initial analysis of GP-1M will be used when reporting the data. A few of the other field samples analyzed for SVOCs had one or more surrogate recoveries that were outside of the quality control limits or were not reported due to dilution of the sample. Since no more than one surrogate was outside of the quality control limit for these SVOC sample analyses, no other data have been qualified due to surrogate recoveries.

D. For the field samples analyzed for alachlor, one of the surrogates was not reported due to a collating matrix interference in these samples and the other surrogate was recovered outside of control limits. Since the non-detect alachlor results for these samples have already been qualified based on the holding times, further qualification was not necessary.

6. Matrix Spike/Matrix Spike Duplicate

A. MS/MSD analyses were performed using sample QP-2S during the analysis of samples for VOCs. All spike recoveries and RPD values were within control limits.

B. MS/MSD analyses were performed using sample QP-2S during the analysis of samples for SVOCs. The 2,4-dinitrotoluene spike recovery was below quality control limits and the pyrene spike recovery was above quality control limits. All other spike recoveries and all RPD values were within control limits. Since the MS/MSD quality control limits for the SVOC analyses are advisory, no data have been qualified due to MS/MSD quality control outliers.

C. MS/MSD analyses were performed using sample QP-2S during the analysis of samples for alachlor. The aldrin, 4,4'-DDT, and gamma-BHC spike recoveries were below quality control limits and all the RPD values were above quality control limits. All other spike recoveries were within control limits. Since the MS/MSD quality control limits for the alachlor analyses are advisory, no data have been qualified due to MS/MSD quality control outliers.

7. Internal Standards

A. All three internal standard area counts were below control limits for VOC sample QP-2SMSD. All compounds detected in sample QP-2SMSD were qualified as estimated (J) and all non-detects were qualified as estimated (UJ). All other internal standard results were within quality control limits.

B. One internal standard area count was below the control limit for SVOC samples QP-4D, GP-1D and GP-1M. The compounds quantified using internal standard perylene-d12 for samples QP-4D, GP-1D and GP-1M were qualified as estimated (J) if detected and estimated (UJ) if not detected. Two internal standard area counts were below the control limits for SVOC samples QP-1S, QP-2S, QP-1M, QP-1D, QP-2M, QP-2D, QP-3S, QP-3M, QP-3D, QP-4S, and QP-4M. The compounds quantified using internal standards chrysene-d12 and perylene-d12 for samples QP-1S, QP-2S, QP-1M, QP-1D, QP-2M, QP-2D, QP-3S, QP-3M, QP-3D, QP-4S, and QP-4M were qualified as estimated (J) if detected and estimated (UJ) if not detected. A list of the compounds associated with the semivolatile internal standards can be found in Table 2. All other internal standard results were within quality control limits.

8. Compound Identification and Quantitation

A. Samples from this site that were found to contain high concentrations of organic compounds were routinely diluted prior to initial analyses.

B. Because limited raw data were required to be supplied by the laboratory, a check of the compound identification and quantitation was not possible.

C. Due to the reporting format established by the QAPjP for this sampling and analysis program, sample weight or volume used for analyses and dilution factors were not included in the summary report for review. Due to this omission, the adjusted quantitation limits cannot be verified for this group of analyses. No data have been qualified based upon this omission.

9. Overall Assessment of Data for the Case

A. The surrogate compounds were inadvertently omitted prior to the extraction of sample GP-1M. Sample GP-1M was reextracted and reanalyzed with all the surrogate compounds found to be within quality control limits. However, since the reextraction of GP-1M was performed far beyond the holding time, the initial analysis of GP-1M will be used when reporting the data.

B. Overall, the quality of the data was found to be acceptable with the qualifiers discussed in this memorandum.

SDG GMQ026

1. Technical Holding Times and Preservation

A. The extraction and analysis of all samples for polychlorinated biphenyls (PCBs) was within the proper holding times.

2. GC/MS Tuning

A. Not applicable.

3. Initial and Continuing Calibration

A. The initial calibration criteria for the PCB analysis of the samples were met. The continuing calibration criteria for the analysis of arochlor 1260 were above control limits with this compound detected in several associated samples. The arochlor 1260 detected in samples GP-20AS, GP-20BS, BP-4, VP-5, GP-20BM, GP-20BD and GP-20AD was qualified as estimated (J) based on the continuing calibration results.

4. Blanks

A. No compounds were detected in any of the method blanks. No data have been qualified due to the method blank results.

5. Surrogate Recoveries

A. A few of the field samples analyzed had one or both surrogate recoveries that were not reported due to dilution of the sample or a collating matrix interference in these samples. Surrogate recoveries were within control limits for all other PCB sample analyses.

6. Matrix Spike/Matrix Spike Duplicate

A. MS/MSD analyses were performed using sample BP-3 during the analysis of samples for PCBs. 4, 4'-DDT and endrin were not recovered when the MS and MSD were analyzed due to matrix interference present in sample BP-3. The aldrin, heptachlor, and gamma-BHC spike recoveries were below quality control limits and all the heptachlor RPD value was above quality control limits. All other spike recoveries and RPD values were within control limits. Since the MS/MSD quality control limits for the PCB analyses are advisory, no data have been qualified due to MS/MSD quality control outliers.

7. Internal Standards

A. Not applicable.

8. Compound Identification and Quantitation

A. Due to high concentration of organic compounds found in several of the samples from this site, these samples were routinely diluted prior to initial analyses.

B. Because limited raw data were required to be supplied by the laboratory, a check of the compound identification and quantitation was not possible.

C. Due to the reporting format established by the QAPjP for this sampling and analysis program, sample weight or volume used for analyses and dilution factors were not included in the summary report for review. Due to this omission, the adjusted quantitation limits cannot be verified for this group of analyses. No data have been qualified based upon this omission.

9. Overall Assessment of Data for the Case

A. Overall, the quality of the data was found to be acceptable with the qualifiers discussed in this memorandum.

INORGANICS

The inorganic data were reviewed according to the USEPA's "Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses", July 1987 revision, as modified for USEPA Region VII. The SDGs were reviewed separately and are discussed below.

SDG GMQ022

1. Technical Holding Times and Preservation

A. All technical holding times and preservation of samples were with the quality control requirements.

2. Initial and Continuing Calibration

A. The initial calibration and continuing calibration verification standard requirements were met.

3. Blanks

A. No analytes were detected in any of the blanks.

4. Inductively Coupled Plasma Spectroscopy (ICP Interference) Check

A. All analytes contained in the ICP interference check sample were within quality control limits.

5. Laboratory Control Sample

A. The laboratory control sample analyzed was within quality control limits.

6. Duplicates

A. Sample VS-10S was designated for the sulfide duplicate analysis. Sample GP-20AD was designated for the cyanide duplicate analysis. Samples VS-8S and VS-9S were designated for the metal duplicate analyses. Duplicate RPD results were within quality control criteria except for antimony, barium, and selenium. All positive antimony, barium, and selenium sample results were qualified as estimated (J) and all non-detect antimony, barium, and selenium sample results were qualified as estimated (UJ). All other duplicate results were within control limits.

7. Matrix Spikes

A. Sample VS-10S was designated for the sulfide matrix spike analysis. Sample GP-20AD was designated for the cyanide matrix spike analysis. Samples VS-8S and VS-9S were designated for the metal matrix spike analyses. All matrix spike recoveries were within quality control limits except for sulfide, cyanide, lead, antimony, copper, zinc, arsenic, thallium and selenium. The lead spike recovery was below criteria; however, because the amount of lead in the sample was greater than four times the amount of lead spiked into the sample, qualification of the lead results was not necessary.

A zero recovery was reported for the sulfide matrix spike analysis. Therefore, the non-detect sulfide result for sample VS-10S was qualified as invalid and flagged with an "I" All other sample results were flagged with a "J" if sulfide was detected or flagged with a "UJ" if sulfide was not detected.

The cyanide, antimony, copper, zinc, arsenic, thallium, and selenium matrix spike recoveries were below criteria but above 10%. Therefore, sample results for these analytes were flagged with a "J" if detected or flagged with a "UJ" if not detected.

The barium matrix spike recovery was above criteria. Therefore, sample results for barium were flagged with a "J" if detected.

All other matrix spike results were within control limits.

8. Graphite Furnace Atomic Absorption Spectroscopy

A. Arsenic, lead, selenium and thallium were analyzed for using graphite furnace atomic absorption spectroscopy. All post-digestion spike recoveries were within quality control limits except for the samples listed below.

Sample	Analyte	%Recovery	Qualifier
VS-5M	Lead	84	J
VS-6D	Thallium	64	UJ
VS-5S	Selenium	55	UJ
VS-5M	Selenium	61	UJ
VS-5D	Selenium	72	UJ
VS-6S	Selenium	51	UJ
VS-6D	Selenium	68	UJ
VS-8S	Thallium	82	UJ
VS-7S	Selenium	74	UJ
VS-7M	Selenium	81	UJ
VS-7D	Selenium	56	UJ
VS-8S	Selenium	60	UJ
VS-8D	Selenium	45	UJ
VS-9S	Thallium	47	UJ
VS-9S	Selenium	50	UJ
VS-9M	Selenium	70	UJ
VS-9D	Selenium	59	UJ
VS-10S	Selenium	41	UJ
VS-10D	Selenium	42	UJ
VS-11D	Thallium	65	UJ
VS-11S	Selenium	54	UJ

Sample	Analyte	%Recovery	Qualifier
VS-11D	Selenium	57	UJ
VS-12S	Selenium	57	UJ
VS-12M	Selenium	60	UJ
VS-12D	Selenium	68	UJ

9. ICP Serial Dilution

A. All analytes met ICP serial dilution quality control requirements with the exception of chromium, copper, lead, vanadium, and zinc. All positive chromium, copper, lead, vanadium, and zinc sample results were qualified as estimated (J).

10. Overall Assessment of Data for the Case

A. Overall, the quality of the data were found to be acceptable with the qualifications discussed in this memorandum.

SDG GMQ025

1. Technical Holding Times and Preservation

A. All technical holding times were within quality control requirements.

B. All of the samples contained in this data package arrived at the laboratory later than expected due to shipping problems. None of the samples was qualified based on this situation because all of the samples are soils and holding times used to evaluate the samples started from time of collection.

2. Initial and Continuing Calibration

A. The initial calibration and continuing calibration verification standard requirements were met.

3. Blanks

A. No analytes were detected in any of the blanks.

4. ICP Interference Check

A. All analytes contained in the ICP interference check sample were within quality control limits.

5. Laboratory Control Sample

A. The laboratory control sample analyzed was within quality control limits.

6. Duplicates

A. Sample QP-2S was designated for the duplicate analyses. All duplicate RPD results were within quality control criteria.

7. Matrix Spikes

A. Sample QP-2S was designated for the matrix spike analyses. All matrix spike recoveries were within quality control limits except for antimony, silver, zinc, arsenic, lead, and selenium. The antimony, silver, zinc, lead, and selenium matrix spike recoveries were below criteria but above 10%. Therefore, sample results for these analytes were flagged with a "J" if detected or flagged with a "UJ" if not detected.

The arsenic matrix spike recovery was above criteria. Therefore, sample results for arsenic were flagged with a "J" if detected.

8. Graphite Furnace Atomic Absorption Spectroscopy

A. Arsenic, lead, selenium, and thallium were analyzed for using graphite furnace atomic absorption spectroscopy. All post-digestion spike recoveries were within quality control limits except for the samples listed below.

Sample	Analyte	%Recovery	Qualifier
QP-1S	Thallium	81	UJ
QP-2S	Thallium	69	UJ
QP-1S	Selenium	56	UJ
QP-2S	Selenium	45	UJ
QP-4D	Selenium	41	UJ
QP-1M	Thallium	51	UJ
QP-2D	Thallium	51	UJ
QP-3S	Thallium	74	UJ
QP-1M	Selenium	46	UJ
QP-1D	Selenium	67	UJ
QP-2M	Selenium	51	UJ
QP-2D	Selenium	40	UJ
QP-3S	Selenium	66	UJ
QP-3M	Selenium	82	UJ
QP-3D	Selenium	71	UJ
QP-4S	Selenium	83	UJ
QP-4M	Selenium	71	UJ

9. ICP Serial Dilution

A. All analytes met ICP serial dilution quality control requirements.

10. Overall Assessment of Data for the Case

A. Overall, the quality of the data was found to be acceptable with the qualifiers discussed in this memorandum.

SDG GMQ026

1. Technical Holding Times and Preservation

A. Samples GP-20BD and GP-20AD were analyzed for mercury beyond the holding time of 28 days from the time of collection by 2 days. All other technical holding times were within quality control requirements. The mercury detected in samples GP-20BD and GP-20AD was qualified as estimated (J) based on the holding times.

2. Initial and Continuing Calibration

A. The initial calibration and continuing calibration verification standard requirements were met.

3. Blanks

A. No analytes were detected in any of the blanks.

4. ICP Interference Check

A. All analytes contained in the ICP interference check sample were within quality control limits.

5. Laboratory Control Sample

A. The laboratory control sample analyzed was within quality control limits.

6. Duplicates

A. Sample BP-3 was designated for the duplicate analyses. The barium and arsenic duplicate RPD results were above the quality control criteria. All positive barium and arsenic sample results were qualified as estimated (J) and all non-detect barium and arsenic sample results were qualified as estimated (UJ). All other duplicate RPD results were within quality control criteria.

7. Matrix Spikes

A. Sample BP-3 was designated for the matrix spike analyses. All matrix spike recoveries were within quality control limits except for antimony, zinc, arsenic, selenium, and mercury. The antimony, zinc, arsenic, selenium, and mercury matrix spike recoveries were below criteria but above 10%. Therefore, sample results for these analytes were flagged with a "J" if detected or flagged with a "UJ" if not detected. The lead spike recovery was outside the criteria; however, because the amount of lead in the sample was greater than four times the amount of lead spiked into the sample, qualification of the lead results was not necessary.

8. Graphite Furnace Atomic Absorption Spectroscopy

A. Arsenic, lead, selenium, and thallium were analyzed using graphite furnace atomic absorption spectroscopy. All post-digestion spike recoveries were within quality control limits except for the samples listed below.

Sample	Analyte	%Recovery	Qualifier
GP-20BD	Thallium	59	UJ
GP-20BM	Selenium	73	UJ
GP-20AD	Selenium	83	UJ
BP-10 (5-7)	Selenium	68	UJ
GP-20AS	Thallium	66	UJ
GP-20AS	Selenium	78	UJ
GP-20BS	Selenium	49	UJ
BP-3	Selenium	74	UJ
BG-1	Thallium	71	UJ
BG-1	Selenium	83	UJ
BG-2	Selenium	67	UJ
BG-3	Selenium	79	UJ

9. ICP Serial Dilution

A. All analytes met ICP serial dilution quality control requirements.

10. Overall Assessment of Data for the Case

A. Overall, the quality of the data were found to be acceptable with the qualifiers discussed in this memorandum.

Table 1. Volatile Internal Standards With Corresponding Analytes Assigned for Quantitation

Bromochloromethane	1,4-Difluorobenzene	Chlorobenzene-d_5
Acetone	Benzene	Bromofluorobenzene (surrogate)
Acrolein	Bromodichloromethane	Chlorobenzene
Acrylonitrile	Bromoform	Ethylbenzene
Bromomethane	2-Butanone	Ethyl methacrylate
Carbon disulfide	Carbon tetrachloride	2-Hexanone
Chloroethane	Chlorodibromomethane	4-Methyl-2-pentanone
Chloroform	2-Chloroethyl vinyl ether	Styrene
Chloromethane	Dibromomethane	1,1,2,2-Tetrachloroethane
Dichlorodifluoromethane	1,4-Dichloro-2-butene	Tetrachloroethane
1,1-Dichloroethane	1,2-Dichloropropane	Toluene
1,2-Dichloroethane	cis-1,3-Dichloropropene	Toluene-d_8 (surrogate)
1,2-Dichloroethane-d_4 (surrogate)	trans-1,3-Dichloropropene	1,2,3-Trichloropropane
1,1-Dichloroethene	1,1,1-Trichloroethane	Xylene
trans-1,2-Dichloroethene	1,1,2-Trichloroethane	
Idomethane	Trichloroethene	
Methylene chloride	Vinyl acetate	
Trichlorofuloromethane		
Vinyl chloride		

Table 2. Semivolatile Internal Standards With Corresponding Analytes Assigned for Quantitation

1,4-Dichlorobenzene-d_4	Naphthalene-d_8	Acenaphthene-d_{10}
Aniline	Acetophenone	Acenaphthene
Benzyl alcohol	Benzoic acid	Acenaphthylene
bis(2-Chlorethyl)ether	bis(2-Chloroethoxy)methane	1-Chloronaphthalene
bis(2-Chloroisopropyl)ether	4-Chloroaniline	2-Chloronaphthalene
2-Chlorophenol	4-Chloro-3-methylphenol	4-Chlorophenyl phenyl ether
1,3-Dichlorobenzene	2,4-Dichlorophenol	Dibenzofuran
1,4-Dichlorobenzene	2,6-Dichlorophenol	Diethyl phthalate
1,2-Dichlorobenzene	a,a-Dimethyl-phenethylamine	Dimethyl phthalate
Ethyl methanesulfonate	2,4-Dimethylphenol	2,4-Dinitrophenol
2-Fluorophenol (surr.)	Hexachlorobutadiene	2,4-Dinitrotoluene
Hexachloroethane	Isophorone	2,6-Dinitrotoluene
Methyl methanesulfonate	2-Methylnaphthalene	Fluorene
2-Methylphenol	Naphthalene	2-Fluorobiphenyl (surrogate)
4-Methylphenol	Nitrobenzene	Hexachlorocyclopentadiene
N-Nitrosodimethylamine	Nitrobenzene-d_8 (surrogate)	1-Naphthylamine
N-Nitroso-di-n-propylamine	2-Nitrophenol	2-Naphthylamine
Phenol	N-Nitrosodibutylamine	2-Nitroaniline
Phenol-d_6 (surrogate)	N-Nitrosopiperidine	3-Nitroaniline
2-Picoline	1,2,4-Trichlorobenzene	4-Nitroaniline
		4-Nitrophenol
		Pentachlorobenzene
		1,2,4,5-Tetrachlorobenzene
		2,3,4,6-Tetrachlorophenol
		2,4,6-Tribromophenol (surrogate)
		2,4,6-Trichlorophenol
		2,4,5-Trichlorophenol

Table 2. Semivolatile Internal Standards With Corresponding Analytes Assigned for Quantitation (Continued)

Phenanthrene-d_{10}	Chrysene-d_{12}	Perylene-d_{12}
4-Aminobiphenyl	Benzidine	Benzo(b)fluoranthene
Anthracene	Benzo(a)anthracene	Benzo(k)fluoroanthene
4-Bromophenyl phenyl ether	bis-(2-Ethylhexyl)phthalate	Benzo(g,h,i)perylene
Di-n-butyl phthalate	Butyl benzyl phthalate	Benzo(a)pyrene
4,6-Dinitro-2-methylphenol	Chrysene	Dibenz(a,j)acridine
Diphenylamine	3,3'-Dichlorobenzidine	Dibenz(a,h)anthracene
1,2-Diphenylhydrazine	p-Dimethylaminoazobenzene	7,12-Dimethylbenz-(a)anthracene
Fluoranthene	Pyrene	Di-n-octyl phthalate
Hexachlorobenzene	Terphenyl-d_{14} (surrogate)	Indeno(1,2,3-cd)pyrene
N-Nitrosodiphenylamine		3-Methylcholanthrene
Pentachlorophenol		
Pentachloronitrobenzene		
Phenacetin		
Phenanthrene		
Pronamide		