Hydrologic and Water-Quality Data for the Weldon Spring Ordnance Works, St. Charles County, Missouri—1992–95

By John G. Schumacher, Leslie M. Merten, Elizabeth A. Hockanson, and Sabrina N. DeRusseau

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CONTENTS

ILLUSTRATIONS

TABLES

Hydrologic and Water-Quality Data for the Weldon Spring Ordnance Works, St. Charles County, Missouri—1992–95

By John G. Schumacher[1], Leslie M. Merten[2], Elizabeth A. Hockanson[1], and Sabrina N. DeRusseau[2]

Abstract

This report contains hydrologic and water-quality data collected during investigations conducted at the Weldon Spring ordnance works from May 1992 through September 1995. The data consist of physical and chemical analysis of soil and water samples from 6 suction lysimeters installed in the unsaturated zone, water-quality data from 35 monitoring wells and 8 springs, discharge and water-quality data collected during stormwater runoff events at 2 continuous record stream gaging stations and 6 ancillary stormwater-runoff monitoring sites, and quarterly water-level data for 153 monitoring wells at the Weldon Spring training area, Weldon Spring chemical plant, and vicinity property.

INTRODUCTION

The Weldon Spring training area (WSTA) consists of 1,655 acres of land owned by the U.S. Army (hereafter referred to as Army) in south-central St. Charles County, Missouri (fig. 1). The WSTA is part of a larger (about 17,000 acres) site formerly owned by the Army known as the Weldon Spring ordnance works (WSOW). The WSOW produced more than 700 million pounds of 2,4,6-trinitrotoluene (TNT) and smaller quantities of dinitrotoluene (DNT) during its operation between 1941 and 1945. The WSOW consisted of 18 nearly identical TNT production lines, 2 DNT production lines (hereafter referred to as TNT or DNT lines), and numerous other production support facilities, such as nitric acid, sulfuric acid, and ammonia oxidation plants. During peak production, the WSOW employed about 3,000 workers (International Technology Corporation, 1993) and produced nearly 1 million pounds of TNT each day. Fifteen of the TNT lines, both DNT production lines, and nearly all of the major production support facilities were within the boundary of the WSTA. The remaining three TNT lines were on a 217-acre tract immediately east of the WSTA currently (1996) owned by the U.S. Department of Energy (USDOE), known as the Weldon Spring chemical plant (WSCP). These three lines were demolished in 1955 during the construction of a USDOE uranium feed materials plant.

At least four major cleanup operations have been conducted at the site since 1944, leaving only foundations and a few of the more than 1,000 buildings on the WSTA intact. Despite these cleanup efforts, concentrations of TNT [less than 1 mg/kg (milligram per kilogram) to more than 100,000 mg/kg] and lead (Pb; as large as 126,000 mg/kg), have been detected in soils from isolated areas around former production buildings (International Technology Corporation, 1993). In addition, detectable concentrations of TNT, Pb, and nickel (Ni) attributable to ordnance production have been detected along former TNT production lines and in areas of fill at the adjacent WSCP (MK-Ferguson Company and Jacobs Engineering Group, 1990). Although large concentrations of TNT have been detected in surficial materials, concentrations generally decrease to less than a few milligrams per kilogram at depths greater than 5 ft (feet) below

[1] U.S. Geological Survey, Rolla, Missouri.
[2] U.S. Geological Survey, Arvada, Colorado.

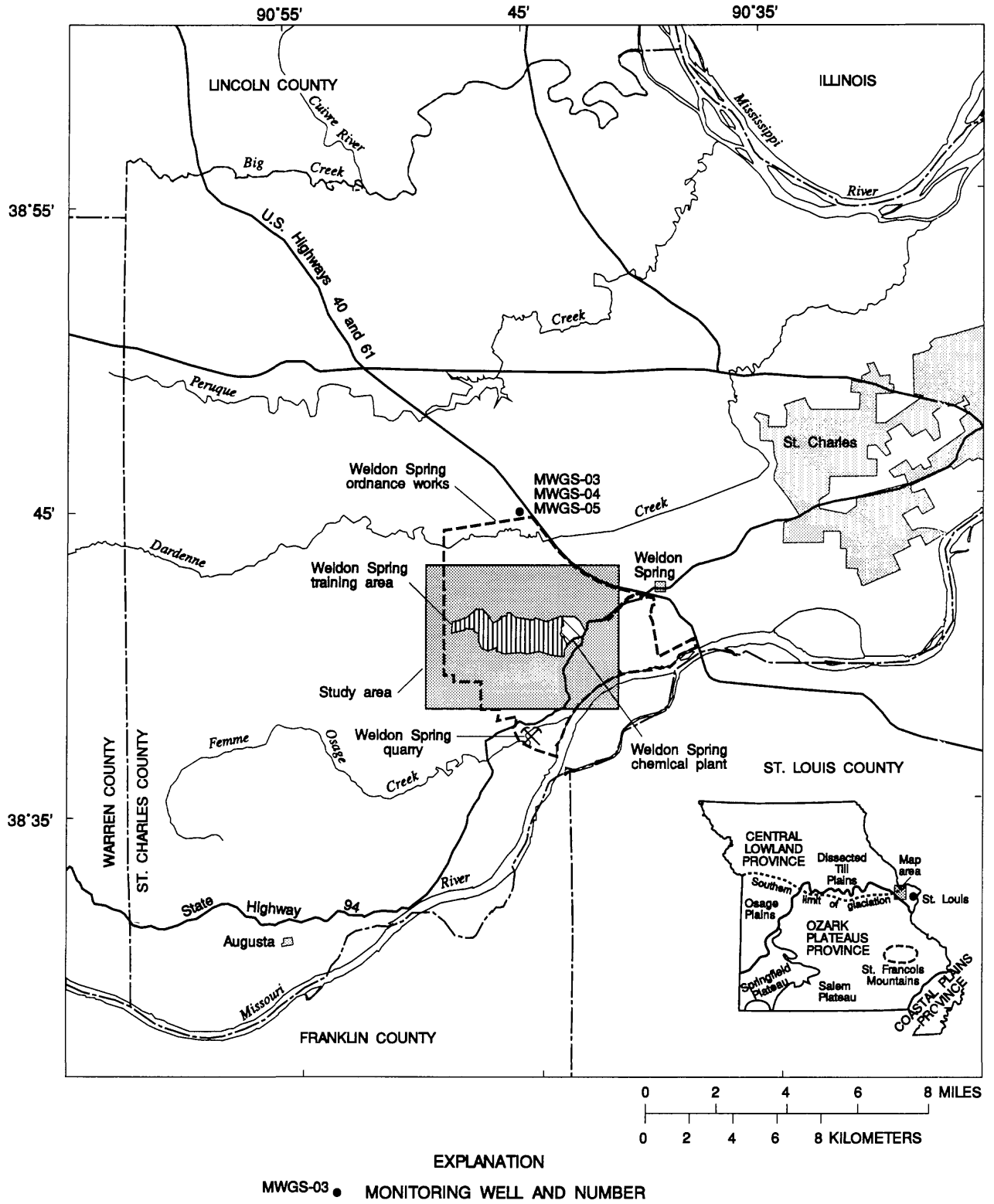

Figure 1. Location of the Weldon Spring training area and boundary of the original Weldon Spring ordnance works, St. Charles County, Missouri.

the surface (Schumacher and others, 1992; International Technology Corporation, 1993). Small concentrations (less than a few tens of micrograms per liter) of nitroaromatic compounds have also been detected in ground-water samples from monitoring wells and springs at and in the vicinity of the WSTA.

Hydrochemical data have been collected by the U.S. Geological Survey (USGS) at the WSTA and adjacent WSCP since 1984. These data are given in reports by Kleeschulte and others (1986), Kleeschulte and Cross (1990), Schumacher (1990), and Schumacher and others (1993). During 1991, the USGS in cooperation with the U.S. Army Corps of Engineers (COE), began studies to characterize the geochemistry of the overburden and investigate the environmental fate of TNT at the WSTA. Preliminary interpretation of the migration and degradation of TNT and other nitroaromatic compounds in the unsaturated zone at the WSTA is discussed in Schumacher and others (1992). This report describes the methods used and presents geochemical, hydrologic, and water-quality data collected by the USGS at the WSTA, WSCP, and vicinity property during subsequent investigations of the environmental fate of TNT and other nitroaromatic compounds.

DESCRIPTION OF THE STUDY AREA

Since the WSOW was declared surplus property during 1946, the Army has transferred ownership of all the original WSOW property, except the 1,655-acre WSTA. Hereafter all of the original WSOW except the 1,655-acre WSTA and 217-acre WSCP will be referred to as vicinity property. The WSTA is situated along the boundary between the Dissected Till Plains of the Central Lowland Province to the north and the Salem Plateau of the Ozark Plateaus Province (Fenneman, 1938) to the south (fig. 1). The topography of the northern part of the WSOW is characterized by a gently undulating surface of unconsolidated Quaternary loess and glacial drift deposited on residuum and the underlying Burlington-Keokuk Limestone[3] (undifferentiated) of Lower Mississippian age. The topography changes to more rugged, steeply dipping slopes with little glacial drift in the southern part of the WSTA. Average annual precipitation is about 38.5 in. (inches) per year (National Oceanic and Atmospheric Administration, 1994).

The WSTA is situated along an east-west trending ridge that serves as a surface- and ground-water divide between the Mississippi River Basin to the north and Missouri River Basin to the south (Kleeschulte and Emmett, 1986; figs. 1, 2). Surface drainage from the northern part of the WSTA flows into several tributaries of Dardenne Creek. The largest of the tributaries, Schote Creek, drains a large part of the WSTA and most of the adjacent WSCP (fig. 2). Seepage-run data collected by Kleeschulte and others (1986) indicated the middle tributary to Schote Creek that drains the northeastern part of the WSTA (fig. 2) was a losing stream. The headwaters and middle segments of the tributary of Dardenne Creek draining the northwestern part of the WSTA (locally known as tributary 6500) also were determined to be losing stream segments (Kleeschulte and Emmett, 1986). Runoff from the southern part of the WSTA flows into Little Femme Osage Creek or its tributaries, which enters the Missouri River about 3 mi (miles) south of the WSTA. Eight burning grounds (areas where impure TNT, DNT, and contaminated materials were burned and buried) are located on vicinity property outside the WSTA. The largest of these, burning ground 1, is located southeast of the WSCP along tributary 5200 (fig. 2).

Ground-water flow beneath the WSTA generally reflects the surface-water drainage. Dye traces conducted by the Missouri Department of Natural Resources (1991) on vicinity property indicate subsurface connections between losing stream segments and several vicinity springs (fig. 2). Several traces to the north indicated interbasin connections, whereas the traces to the south indicated only intrabasin connections. The dye traces generally indicate that ground water is not transferred between the Mississippi River Basin to the north and the Missouri River Basin to the south (Missouri Department of Natural Resources, 1991).

Consolidated rock immediately beneath the overburden consists of the undifferentiated Mississippian Burlington-Keokuk Limestone. These limestones are coarsely crystalline, medium-to-thickly bedded, contain abundant chert, and dip slightly to the northeast at about 50 to 70 ft/mi (feet per mile; Kleeschulte and Emmett, 1986). Detailed borehole data from the adjacent WSCP indicate that the upper part of the limestone is highly weathered, which results in an

[3] Nomenclature follows usage of the Missouri Department of Natural Resources, Division of Geology and Land Survey.

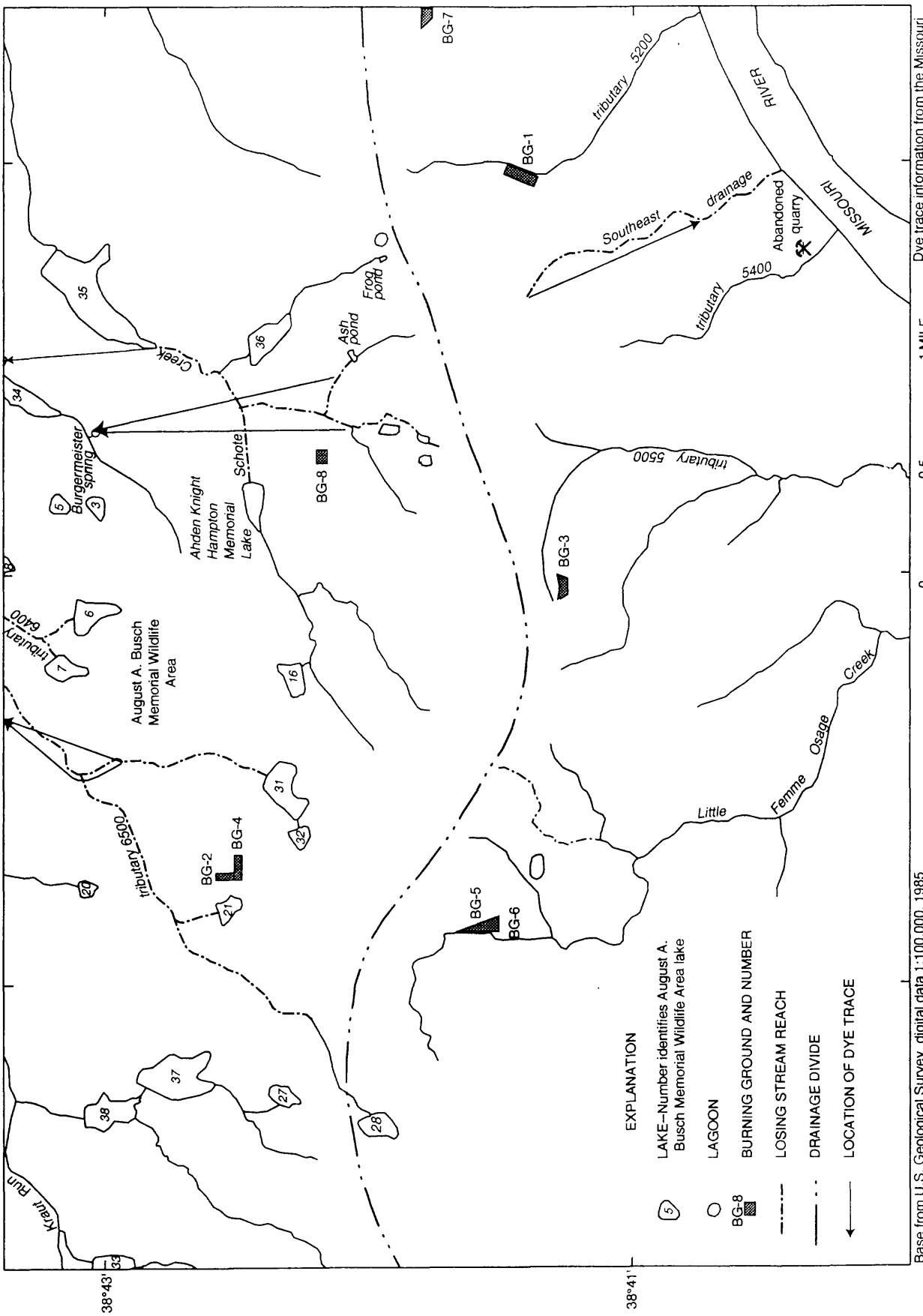

Figure 2. Surface-water features in the vicinity of the Weldon Spring training area, St. Charles County, Missouri.

uneven bedrock surface (MK-Ferguson Company and Jacobs Engineering Group, 1990). The weathered limestone and overlying residuum can be highly permeable, which causes the complete loss of drilling fluid while drilling boreholes in this area. Core logging during recent hydrogeologic investigations at the WSTA, WSCP, and vicinity property has resulted in the Burlington-Keokuk Limestone being separated into three distinct units; weathered limestone, strongly weathered limestone (a subunit of the weathered limestone), and unweathered limestone (D.N. Mugel, U.S. Geological Survey, written commun., 1995). The more permeable parts of the overburden (locally outwash sand within the till, basal till, and residuum), the undifferentiated Burlington-Keokuk Limestone, and the underlying Fern Glen Formation comprise the shallow aquifer at the WSOW (D.N. Mugel, written commun., 1995).

NITROAROMATIC COMPOUNDS IN THE UNSATURATED ZONE

Water-quality samples were collected from six lysimeters installed in the unsaturated zone beneath or adjacent to contaminated surficial soils at two locations at the WSTA (fig. 3). In addition, soil samples were collected at various intervals during installation of the lysimeters and several monitoring wells at the WSTA and submitted for analyses of selected physical properties and chemical constituents. The 6 sampled lysimeters were installed to supplement data collected from 11 existing lysimeters installed during previous investigations of the environmental fate of nitroaromatic compounds at the WSTA.

Seven monitoring wells were installed by the COE to supplement their existing ground-water monitoring program and provide water-quality data for the shallow bedrock aquifer in the vicinity of contaminated surficial soils. Core samples were collected during the installation of five of these monitoring wells and analyzed for selected physical and chemical constituents and nitroaromatic compounds. In addition, core samples of the unsaturated zone (contaminated and non-contaminated topsoil and underlying glacial drift) and saturated zone (residuum and shallow bedrock aquifer) were collected from one of the wells (MWS–24) and submitted to the USGS microbiological laboratory in Columbia, South Carolina, for use in laboratory studies on the microbial degradation of TNT and DNT. Preliminary results of the laboratory studies are given in Chapelle and Bradley (1993), Bradley and Chapelle (1994), and Bradley and others (1994a, 1994b).

Methodology

Three pressure-suction lysimeters (LY22, LY23, and LY24) were installed beneath a former wastewater settling tank along TNT line 11 (location A, fig. 3). These lysimeters were installed to determine the quantity of nitroaromatic compounds migrating to the water table. Three additional pressure-suction lysimeters (LY32, LY33, and LY34; location B, fig. 3) were installed between monitoring wells (MWV–09, MWS–09, and MWD–09) and a shallow (less than a few feet deep) pond about 20 ft to the south. This pond occupies the former location of a group of wastewater settling tanks designed to receive and settle effluent from TNT lines 10, 11, and 12 before it was pumped over the ridge to a wastewater-treatment plant located in the south-central part of the WSTA. Water samples from monitoring well MWV–09 historically have contained the largest concentrations of nitroaromatic compounds detected in the shallow bedrock aquifer, and the lysimeters were installed to determine if large concentrations of these compounds were migrating from contaminated sediments or soils beneath the pond.

The lysimeters consisted of 2-in. diameter PVC (polyvinylchloride) tubes fitted with a porous ceramic cup at the bottom. The top of each lysimeter was sealed with a neoprene stopper. Two polyethylene access lines were fitted through the stopper to facilitate application of a vacuum or pressure for sample collection and removal. Lysimeters LY22, LY23, and LY24 were installed at depths of 2.9, 6.0, and 9.4 ft in a single vertical borehole advanced using a CME-55[4] all-terrain drill rig. To prevent highly contaminated surficial soils from cascading down the borehole, an 11-in. ID (inside diameter) steel surface casing was pushed to a depth of 2 ft. An 8-1/4 in. ID hollow stem auger with a continuous core barrel was advanced inside the surface casing to a depth of 2 ft then removed and cleaned. The inside of the surface casing was thoroughly cleaned with a clean cloth, deionized water, and methanol, and all loose material at the bottom of the borehole was removed before the augers and con-

[4] Use of brand or trade names in this report is for identification purposes only and does not constitute endorsement by the U.S. Geological Survey.

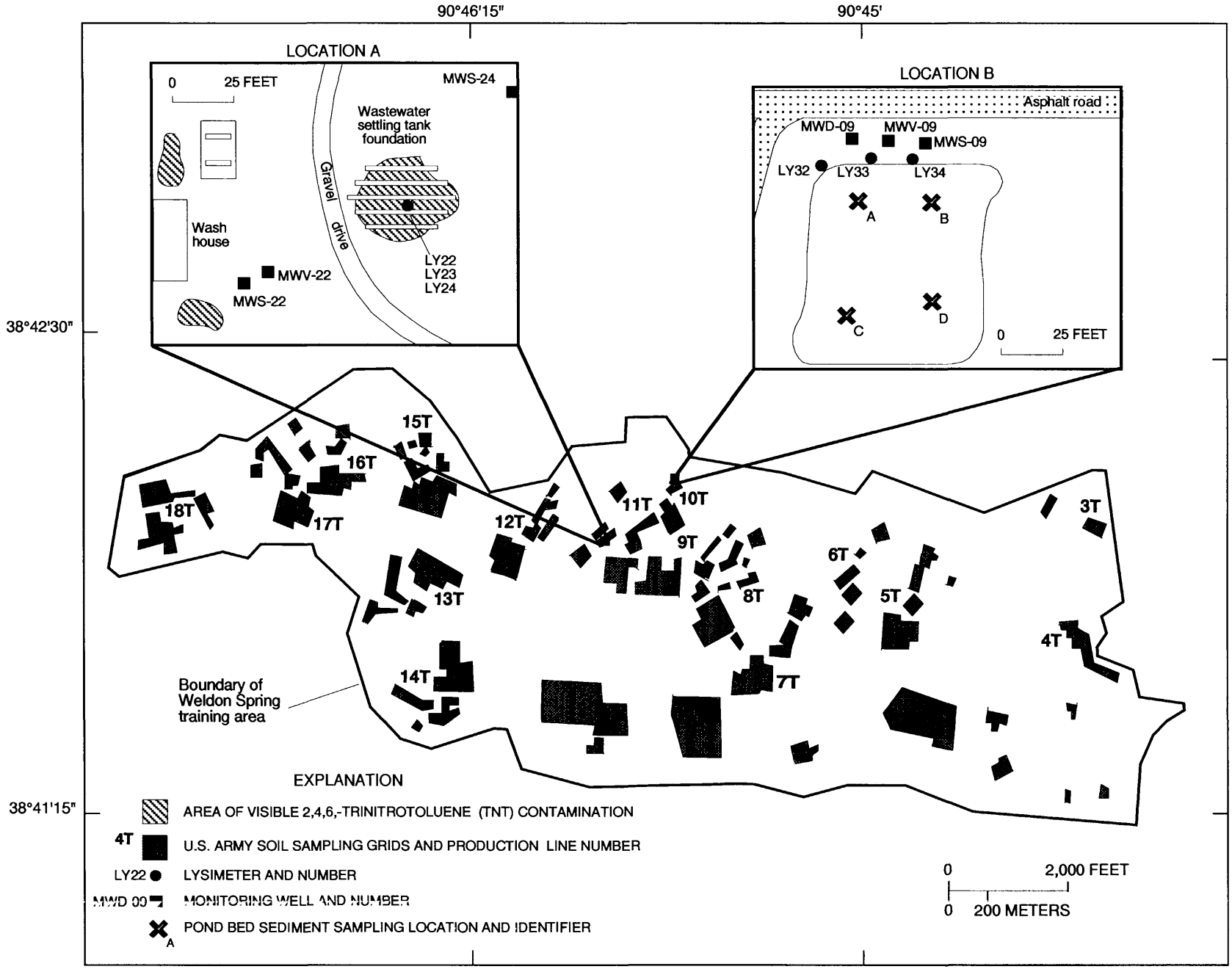

Figure 3. Location of 2,4,6,-trinitrotoluene production areas and lysimeter installations, Weldon Spring training area, St. Charles County, Missouri.

tinuous soil sampler were replaced in the hole. The augers then were advanced to a depth of 6 ft where the continuous soil sampler was removed and a 4-in. ID hollow stem auger was used to advance the borehole to a final depth of 9.5 ft (table 1). A split spoon was used to collect soil samples at depths below 6 ft.

A slurry of 200-mesh silica flour and deionized water was used to ensure the ceramic cups on the lysimeters were in contact with the surrounding soil. A predetermined quantity of the silica flour slurry was poured into the bottom of the borehole, and lysimeter LY24 (prefilled with organic-free deionized water) was pushed to the desired depth. A 1-in. thick layer of dry silica flour and bentonite powder was then added to the borehole followed by a 2-in. thick layer of bentonite chips. This was allowed to set for 6 hours before a volclay slurry was added to a depth of 6.2 ft. The volclay was covered with a 1-in. thick layer of dry silica flour and allowed to set for a additional 2 hours before the silica flour slurry and lysimeter LY23 were installed. Lysimeter LY22 was installed in a similar manner. The remaining annulus was filled with volclay to the surface, and the surface casing was removed.

A sodium bromide (NaBr) solution was applied to the land surface adjacent to lysimeters LY22, LY23, and LY24 during August 1994. The solution was prepared by dissolving 500 g (grams) of NaBr crystals in 6 L (liters) of deionized water. The Br was used to approximate the travel time of a non-reactive solute through the unsaturated zone. This information is important to establish constraints on degradation rates of nitroaromatic compounds in the unsaturated zone and verify degradation rate constants determined in laboratory microcosm studies.

A soil exploration drill rig was used to install the lysimeters at location B (fig. 3). These lysimeters were placed in inclined boreholes at the edge of the pond so the lysimeter cup would be beneath the bottom of the pond. Water was encountered during the drilling of these lysimeter boreholes indicating the presence of perched water beneath the pond. A 2-in. ID by 4 ft long stainless steel core barrel was used to advance the borehole to the desired depth after which the borehole was reamed using 3-in. ID augers. The silica flour slurry was poured into the borehole and the lysimeter pushed several inches beneath the top of the slurry. A 1-in. thick layer of dry silica flour was placed above the slurry before the remaining annulus was filled with volclay grout. The degree of incline varied with the target depth of the lysimeter cup (table 1). The core barrel was cleaned each time prior to inserting into the borehole, and all downhole tools were decontaminated between each borehole.

Soil samples were collected from lysimeter and monitoring well boreholes. Subsamples were submitted to the USGS geochemistry laboratory in Denver, Colorado, for grain-size analysis and carbon content and to the USGS water-quality laboratory in Arvada, Colorado, for nitroaromatic compound analyses. Subsamples also were transferred to the USGS office in

Table 1. Physical description of lysimeter installations at the Weldon Spring training area, St. Charles County, Missouri

[All values reported in feet below land surface unless noted otherwise; NA, not applicable; --, no data]

Lysimeter (fig. 3)	U.S. Army sample grid number	Date installed	Drill angle from vertical (degrees)	Borehole depth, vertical	Depth to lysimeter base	Depth to top of silica flour pack	Static water level depth
			Location A				
LY22	11–T–B	10/19/92	0	NA	2.9	2	--
LY23	11–T–B	10/19/92	0	NA	6.0	3.9	--
LY24	11–T–B	10/19/92	0	9.5	9.4	8.8	--
			Location B				
LY32	9–S	10/06/92	17.0	15.8	15.6	12.1	10.5
LY33	9–S	10/05/92	15.0	11.9	11.6	9.8	11.7
LY34	9–S	10/06/92	17.5	16.7	16.4	15.7	12.7

Rolla, Missouri, for determination of moisture content. Core from the boreholes was separated into approximately 2-in. lengths using a stainless steel knife, split, and transferred to glass sample jars. Grain-size analysis, carbon content, and moisture content determinations were made using modifications of the standard USGS techniques (Starkey and others, 1984) as described in Schumacher and others (1993). Grain-size distributions are reported as percent dry weight of coarse, silt, and clay-size fractions. The coarse fraction is the percent by weight of sand-size particles [0.062 to 2 mm (millimeters)] and greater in diameter. The silt-size fraction is comprised of particles between 0.002 and 0.062 mm in diameter and the clay-size fraction is comprised of particles less than 0.002 mm in diameter. Moisture content and concentrations of chemical constituents in soil or sediment samples throughout this report are reported as dry weight.

Soil samples for explosives analysis were chilled to 4 °C (degrees Celsius) and shipped overnight to the laboratory where they were stored at 4 °C in an explosion-proof refrigerator until extracted. These samples were analyzed for nitroaromatic compounds using the U.S. Environmental Protection Agency draft method 8330 (U.S. Environmental Protection Agency, 1990). Analytes included 1,3-5-trinitrobenzene (TNB); 3,5-dinitroaniline (3,5-DNA); 2-amino-4,6-dinitrotoluene (2-Am); 4-amino-2,6-dinitrotoluene (4-Am); TNT; 2,6-dinitrotoluene (2,6-DNT); 2,4-dinitrotoluene (2,4-DNT); 1,3-dinitrobenzene (DNB); 2-nitrotoluene (2-NT); 4-nitrotoluene (4-NT); 3-nitrotoluene (3-NT); nitrobenzene (NB); tetranitramine (HMX); and cyclonite (RDX). Detection limits ranged from 0.1 mg/kg (milligram per kilogram) for 2-Am, 4-Am, 2,6-DNT, and 2,4-DNT to 2.2 mg/kg for HMX. All blank, matrix, and matrix spike recoveries were within the acceptable limits for these analyses. During the analysis 2,6-DNT and 2,4-DNT generally coeluted and their concentrations were reported as a mixture.

Water samples were collected from the lysimeters by applying a vacuum to the lysimeter using a vacuum pump and crimping the access tubes with a pinch clamp. Water moved from the surrounding soil through the silica flour into the ceramic cup provided the suction inside the cup was greater than the soil suction. Samples were extracted by using a hand pump to pressurize the lysimeter and force the sample out the access tube. About 150 mL (milliliters) of water was collected in a graduated cylinder where the specific conductance, temperature, and pH were measured. The specific conductance was measured using a portable conductivity meter with temperature compensation designed to express values in microsiemens per centimeter at 25 °C. Water temperature was measured using a thermistor attached to the conductivity meter. The pH was measured using a portable pH meter calibrated with standard buffer solutions bracketing the expected sample pH. Samples for analysis of nitroaromatic compounds were placed into baked-glass bottles and chilled to 4 °C and samples for Br analyses were placed in polyethylene bottles.

Water samples from the lysimeters were submitted to the USGS water-quality laboratory for analysis of nitroaromatic compounds and Br concentrations. Water samples for analyses of nitroaromatic compounds were extracted within 7 days and analyzed within 40 days. Samples submitted before December 10, 1994, were extracted using a solid-phase extraction cartridge and analyzed by high-performance liquid chromatography (HPLC; Lindley and others, 1994). The method was acceptable for most nitroaromatic compounds of concern except 2,6-DNT and 2,4-DNT, which coeluted. If these compounds were detected, a split of the samples was analyzed using a modification of the U.S. Army Toxic and Hazardous Materials Agency (1983) method for explosives in water.

Water samples submitted after December 10, 1994, were analyzed using gas chromatography. This method provided an expanded analyte list, including 2,3-dinitrotoluene (2,3-DNT) and increased sensitivity and detection limits for most nitroaromatic compounds, between 0.01 and 0.1 µg/L (micrograms per liter; table 2). Water samples using this method also were extracted within 7 days and analyzed within 40 days. Each sample was extracted using two separate aliquots. One aliquot was extracted using toluene as the solvent and the other using isoamyl acetate. Toluene is used to extract all of the above analytes except 3,5-DNA, 2-Am, 4-Am, and RDX, which are extracted more efficiently using isoamyl acetate. This method is not suitable for the determination of HMX. The use of isoamyl acetate is problematic because stock isoamyl acetate contains a large number of impurities and must be double distilled prior to extraction to prevent interferences. Before extraction, samples are removed from the refrigerator and allowed to equilibrate to room temperature after which a 100-mL aliquot is transferred to a 100-mL volumetric flask.

Table 2. Detection limits and reagent spike recoveries for nitroaromatic compounds in water as determined by gas chromatography

[All concentrations in micrograms per liter; <, less than; --, no data]

Compound	Abbreviation	Solvent	Detection limit	Acceptable recovery (percent)
1,3,5-Trinitrobenzene	TNB	Toluene	<0.01	60 – 158
3,5-Dinitroaniline	3,5-DNA	Isoamyl acetate	<.02	45 – 118
2-Amino-4,6-dinitrotoluene	2-Am	Isoamyl acetate	<.05	53 – 140
4-Amino-2,6-dinitrotoluene	4-Am	Isoamyl acetate	<.05	49 – 129
2,4,6-Trinitrotoluene	TNT	Toluene	<.01	66 – 174
2,6-Dinitrotoluene	2,6-DNT	Toluene	<.01	56 – 147
2,4-Dinitrotoluene	2,4-DNT	Toluene	<.01	57 – 149
2,3-Dinitrotoluene	2,3-DNT	Toluene	<.01	56 – 148
1,3-Dinitrobenzene	DNB	Toluene	<.05	45 – 118
2-Nitrotoluene	2-NT	Toluene	<.2	58 – 152
4-Nitrotoluene	4-NT	Toluene	<.2	49 – 129
3-Nitrotoluene	3-NT	Toluene	<.2	51 – 134
Nitrobenzene	NB	Toluene	<.1	41 – 109
Cyclonite	RDX	Isoamyl acetate	<1	43 – 114
Tetryl	--	Toluene	<.1	60 – 157
3,4-Dinitrotoluene[1]	3,4-DNT	Toluene	<.01	53 – 141

[1] 3,4-Dinitrotoluene is used as the method surrogate.

One milliliter of reagent-grade toluene and the method surrogate [3,4-dinitrotoluene (3,4-DNT)] are added to the sample aliquot. The sample aliquot-toluene mixture is placed on a magnetic stir plate and extracted for 30 minutes. After extraction, the sample aliquot is removed from the stir plate and the toluene is allowed to separate to the top of the sample. The toluene extract is pipeted, using disposable Pasteur pipets, into an amber 2-mL vial. The above procedure is repeated with a second 100-mL sample aliquot using isoamyl acetate as the extraction solvent. A method blank and method spike are extracted with each set of samples—each is prepared by adding 100 mL of deionized water to a 100-mL volumetric flask. The method surrogate solution is added to the blank, and the method surrogate solution and a method spike solution containing all the method analytes are added to the method spike.

The toluene extracts were analyzed using a gas chromatograph equipped with an electron capture detector (GC-ECD) and dual capillary columns. A 30 m (meter) by 0.25 mm ID RTX-5 column was used as the primary column and a 30 m by 0.25 mm RTX-1701 column was used as a confirmation column. The primary and confirmation columns are connected using a 5 m by 0.53 mm ID uncoated guard column and a splitter. The injector temperature is 270 °C and the detector temperature is 350 °C. The temperature program has an initial temperature of 60 °C with an initial hold time of 0 minutes. The analytical run time is 37 minutes with three temperature ramps. The first ramp is 20 °C per minute to 140 °C (0 minute hold time). The second temperature ramp is 5 °C per minute to 230 °C followed by a 13 minute hold time, and the third temperature ramp is 10 °C per minute to 250 °C (0 minute hold time).

The isoamyl acetate extracts were analyzed on a second GC-ECD equipped with dual capillary columns; however, the primary column is a 15 m by 0.25 mm ID RTX-1 column and the confirmation column is a 15 m by 0.25 mm ID RTX-5 column. The injector

temperature is 270 °C and the detector temperature is 350 °C. The temperature program has an initial temperature of 60 °C with a hold time of 0 minutes. The analytical run time is 49 minutes with two temperature ramps. The first ramp is 5 °C per minute to 140 °C with a hold time of 5 minutes, and the second temperature ramp is 5 °C per minute to 230 °C with a 10 minute hold time. Example chromatograms of the toluene and isoamyl acetate fractions using 50 µg/L standards are shown in figure 4.

A rigorous quality assurance-quality control (QA-QC) protocol was followed for nitroaromatic compound sampling and laboratory analyses of water samples. This protocol consisted of field blanks, field duplicates, and split samples submitted to the COE contract laboratory and performance audit samples submitted to the USGS laboratory by the COE. Laboratory QA-QC included a minimum of 10 percent blanks, 10 percent spikes, and 10 percent replicates during a given analytical run. Each analytical run of nitroaromatic compounds was assigned a numerical value (designated as the QC group). The QA-QC data for each analytical run are summarized in table 3 (at the back of this report). Tables listing nitroaromatic compound analyses in this report will have a QC group number associated with each sample indicating the particular analytical run in which the sample was analyzed. In this way, each sample can be cross-referenced to the appropriate QA-QC data summarized in table 3.

Summary of Data

Grain-size, carbon and moisture content, and concentrations of nitroaromatic compounds in soil core samples from lysimeter and monitoring well boreholes are listed in table 4 (at the back of this report). The grain size of samples is highly variable. The coarse fraction ranged from 2 percent by dry weight (MWS–21, 10.0–10.2 ft) to 91 percent (MWS–22, 25.0–25.2 ft) and the silt contents ranged from 5 percent by dry weight (MWS–22, 25.0–25.2 ft) to 91 percent by dry weight (MWS–24, 3.0–3.1 ft). The upper 5 ft of soil at MWS–24 was comprised of alluvial silt and loess as evidenced by the small (less than 10 percent by dry weight) clay contents and large (72–91 percent by dry weight) silt contents. The largest clay content was 41 percent by dry weight in a sample from borehole MWS–22 at 4.0 to 4.2 ft (table 4).

Lysimeters were installed in either glacial drift or residuum. Lysimeter LY22 was completed in glacial drift that extends to about 2 ft below the surface. At depths greater than 2 ft, samples from borehole LY22 generally contained larger quantities of coarse material (31–84 percent by dry weight) and smaller silt contents (9 to 49 percent by dry weight) compared to samples from depths less than 2 ft (19 and 36 percent by dry weight coarse, 56 and 68 percent by dry weight silt). Lysimeters LY23 and LY24 were completed in the residuum. The general decrease in silt contents and corresponding increase in quantities of coarse material at depths greater than 10 ft in samples from boreholes MWV–22, MWS–22, and MWS–23 also coincided with a change in lithology from glacial drift to residuum. The moisture contents from borehole soil samples ranged from 8 to 43 percent by dry weight but were generally from about 15 to 25 percent by dry weight (table 4). The two deepest samples from borehole MWS–22 (30.0–30.2 ft and 35.0–35.2 ft) contained large (37 and 43 percent by dry weight) moisture contents.

Nitroaromatic compounds were detected in 9 of the 13 soil-core samples from lysimeter borehole LY22 and in 8 of the 50 soil-core samples from monitoring well boreholes (table 4). None of the soil core samples from lysimeter boreholes LY32, LY33, or LY34 contained detectable concentrations of nitroaromatic compounds. Concentrations of TNT in soil-core samples from lysimeter borehole LY22 ranged from 98,000 mg/kg at the surface (0–0.2 ft deep) to less than 1 mg/kg at depths greater than 4 ft (a concentration of 3.1 mg/kg from a depth of 10.2–10.4 ft is suspect). Soil core samples from depths less than 2 ft also contained detectable concentrations of TNB (52.3–296 mg/kg), 2-Am (2.08–41.6 mg/kg), 4-Am (1.04–56.9 mg/kg), and DNT (less than 0.25–14.9 mg/kg reported as a mixture of 2,6-DNT and 2,4-DNT). Detectable concentrations of TNB (1–4.2 mg/kg), 2-Am (less than 0.1–1.1 mg/kg), 4-Am (less than 0.1–1.4 mg/kg), and TNT (0.6–38.4 mg/kg) also were present in shallow (less than 3.5 ft deep) soil core samples from borehole MWS–21. Small concentrations of TNT (less than 3 mg/kg) were detected in one sample from borehole MWV–22 (0–0.2 ft), one sample from borehole MWS–22 (3.0–3.2 ft), and two samples from borehole MWS–23 (1.0–1.2 ft and 16.6–16.8 ft).

Water samples have been collected from lysimeters LY22, LY23, and LY24 from October 1992 through September 1995, except for a 5-month hiatus

between July and December 1993. Specific conductance, temperature, pH, and Br concentrations in water samples from the lysimeters are given in table 5 (at the back of this report). Specific conductance values were variable but generally were the largest in water samples from lysimeter LY22 and smallest in water samples from lysimeter LY24. Water temperature varied seasonally with the lowest values occurring in the winter and the highest values occurring in the summer. Bromide concentrations in lysimeter LY22 were generally less than 0.5 mg/L (milligram per liter) before the NaBr tracer was applied (August 1994); however, concentrations began to increase in October 1994 to a maximum of 15 mg/L in September 1995. Concentrations of Br in deeper lysimeters (LY23 and LY24) have not increased during this same period.

Water samples from lysimeters LY22, LY23, and LY24 contained large concentrations of TNB (LY22 only), 2-Am, 4-Am, and TNT, and detectable concentrations of 3,5-DNA, 2,6-DNT, 2,4-DNT, 2,3-DNT, and DNB (table 6, at the back of this report). Water samples from lysimeter LY22 contained the largest concentrations of these compounds and were bright yellow. Concentrations of TNB ranged from 495 to 2,800 µg/L, and concentrations of TNT ranged from 590 to 3,200 µg/L. Water samples from lysimeter LY23 occasionally were faint yellow with TNB concentrations ranging from less than 0.19 to 6.85 µg/L and TNT concentrations ranging from 5.86 to 41.9 µg/L. Concentrations in water samples from lysimeter LY24 were similar to those from lysimeter LY23 with concentrations of TNB (less than 0.19–11.0 mg/L) and TNT (less than 0.5–53.8 µg/L); however, water samples from lysimeter LY24 were clear. Although concentrations of nitroaromatic compounds in samples from lysimeters LY23 and LY24 were much smaller than those in lysimeter LY22, the concentrations generally were larger than those previously detected in ground-water samples by the U.S Army (International Technology Corporation, 1993). Water samples from lysimeters LY32, LY33, and LY34 contained no detectable nitroaromatic compounds; however, these lysimeters were only sampled for a short time between December 1992 and April 1993.

Schumacher and others (1992) observed that concentrations of 2-Am plus 4-Am were smaller than TNT concentrations in the shallow unsaturated zone at the WSTA and suggested that 2-Am and 4-Am were derived from microbial degradation of TNT. Concentrations of 2-Am plus 4-Am also were smaller than TNT concentrations in samples from the shallow lysimeter (LY22) with ratios of 2-Am plus 4-Am to TNT ranging from 0.17 to 0.56 (mean of about 0.30). Concentrations of 2-Am plus 4-Am generally were larger than TNT concentrations in samples from deeper lysimeters with ratios of 2-Am plus 4-Am to TNT ranging from 1.3 to 9.3 (mean of about 5.6) in samples from lysimeter LY23 and from 0.65 to 16.1 (mean of about 4.5) in samples from lysimeter LY24.

Chromatograms of lysimeter samples, especially those from lysimeter LY22, by HPLC or GC-ECD contain numerous unknown peaks. Analysis of a water samples from several lysimeters by gas chromatography/mass spectrometry (GC/MS) identified more than 60 nitroaromatic and aromatic compounds by library search routine. Several of the more prevalent compounds tentatively identified were 2,3-DNT; 3,5-DNT; an unknown TNT isomer (possibly 2,3,5-TNT); 2-methyl-3,5-dinitrobenzenamine; an unknown amino-trinitrotoluene isomer; 2,6-diamino-4-nitrotoluene and 2,4-diamino-6-nitrotoluene; and an unknown amino-dinitrotoluene isomer (possibly 2-amino-3,5-dinitrotoluene).

NITROAROMATIC COMPOUNDS IN THE SHALLOW BEDROCK AQUIFER

During 1993 through 1995, 67 water-quality samples were collected from 35 monitoring wells at the WSTA, WSCP, the August A. Busch Memorial Wildlife Area north of the WSTA, and the Weldon Spring wildlife area south of the WSTA (fig. 5). The samples were collected to provide additional data on the distribution of nitroaromatic compounds (specifically degradation products of TNT such as 2-Am and 4-Am) in the shallow bedrock aquifer and provide quality-control checks for the existing Army ground-water sampling program. In addition to nitroaromatic sampling, tritium concentrations were determined in samples from 47 monitoring wells at the WSTA, WSCP, vicinity property, and Burgermeister spring. The tritium samples were collected by the USGS during various hydrogeologic investigations at the WSTA, WSCP, and vicinity property between 1984 and 1995. Water samples for nitroaromatic analysis also were collected from eight springs in the vicinity of the WSTA.

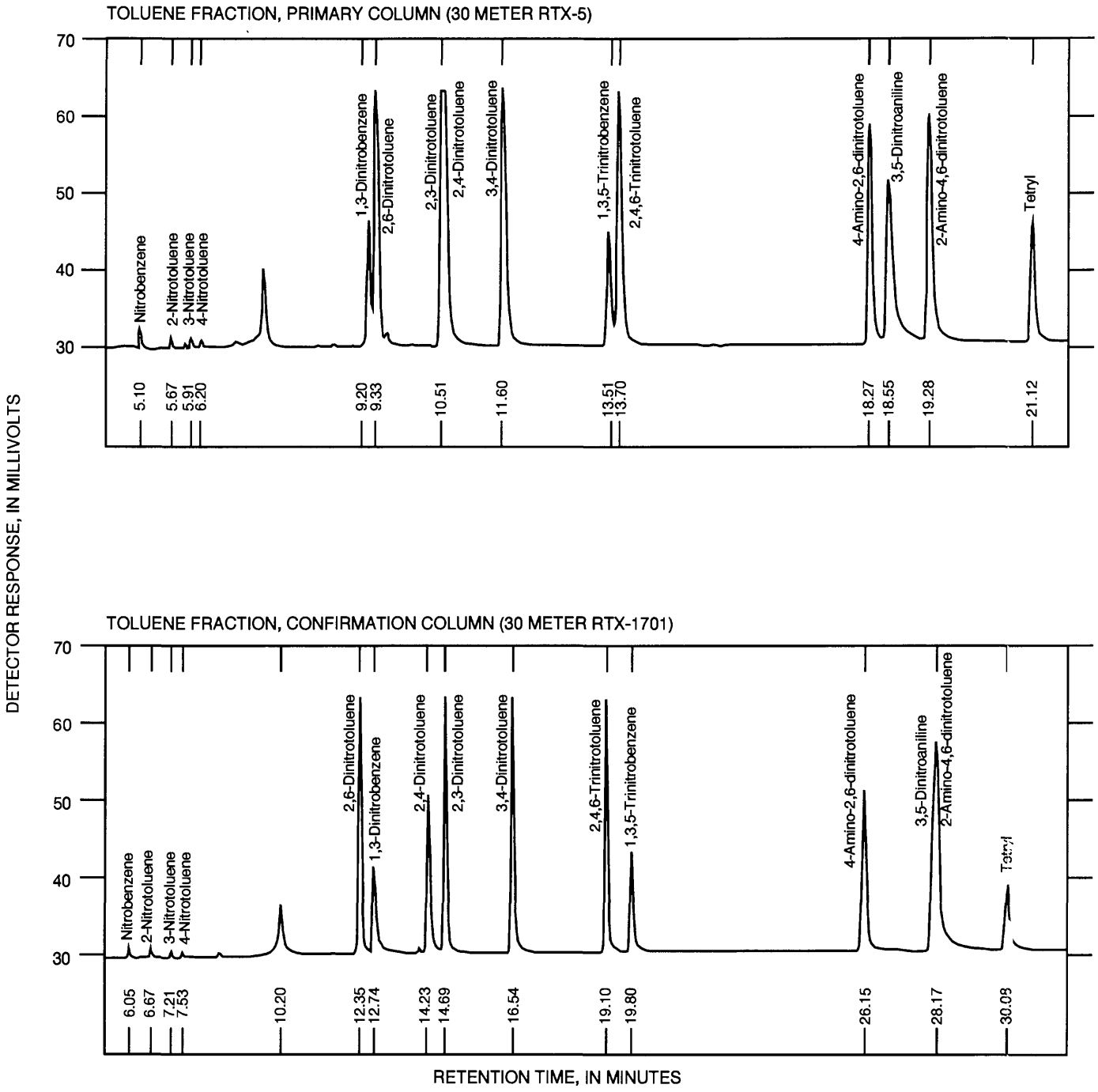

Figure 4. Example chromatograms of the U.S. Geological Survey gas-chromatography method for nitroaromatic compound analysis.

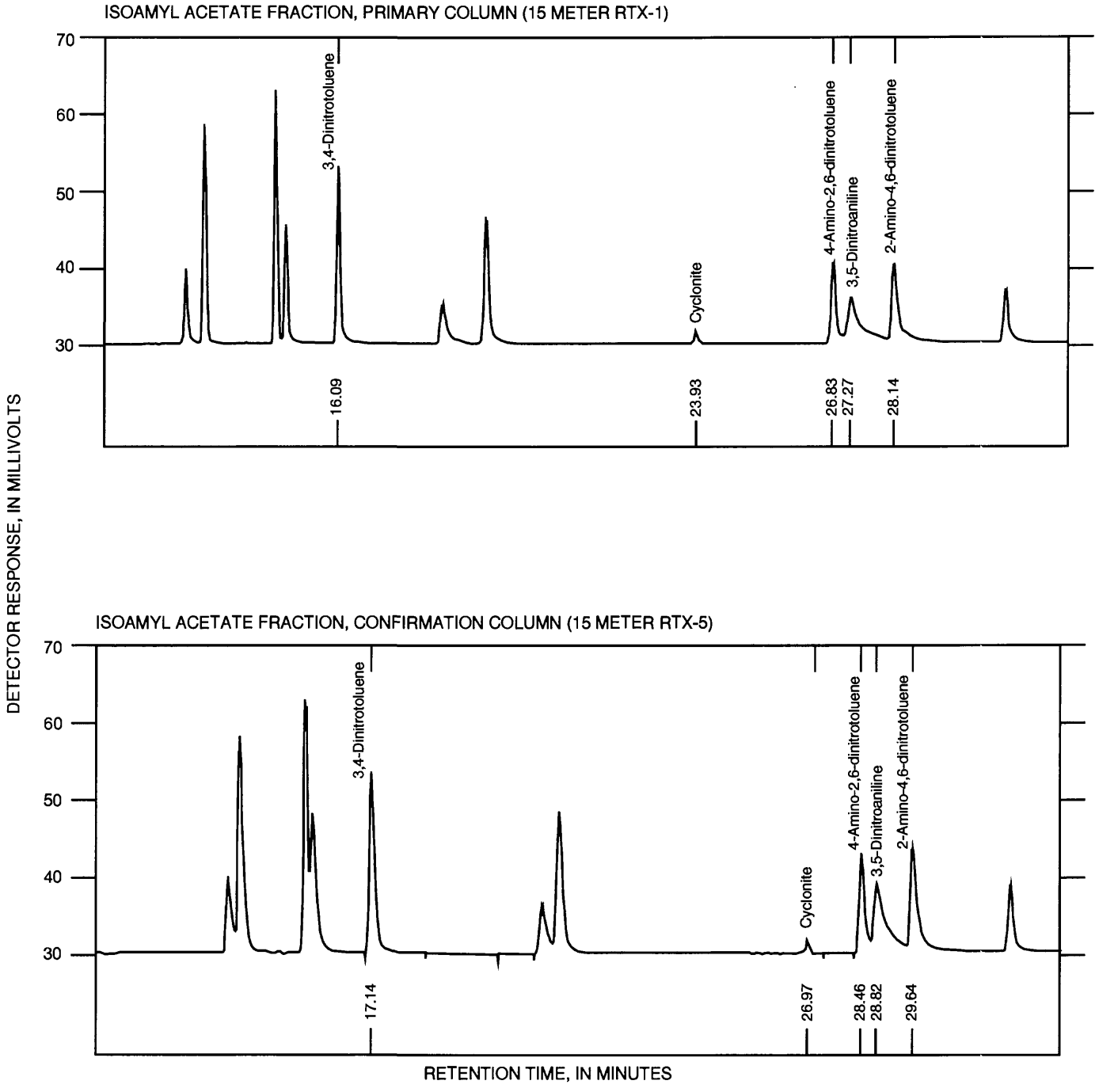

Figure 4. Example chromatograms of the U.S. Geological Survey gas-chromatography method for nitroaromatic compound analysis—Continued.

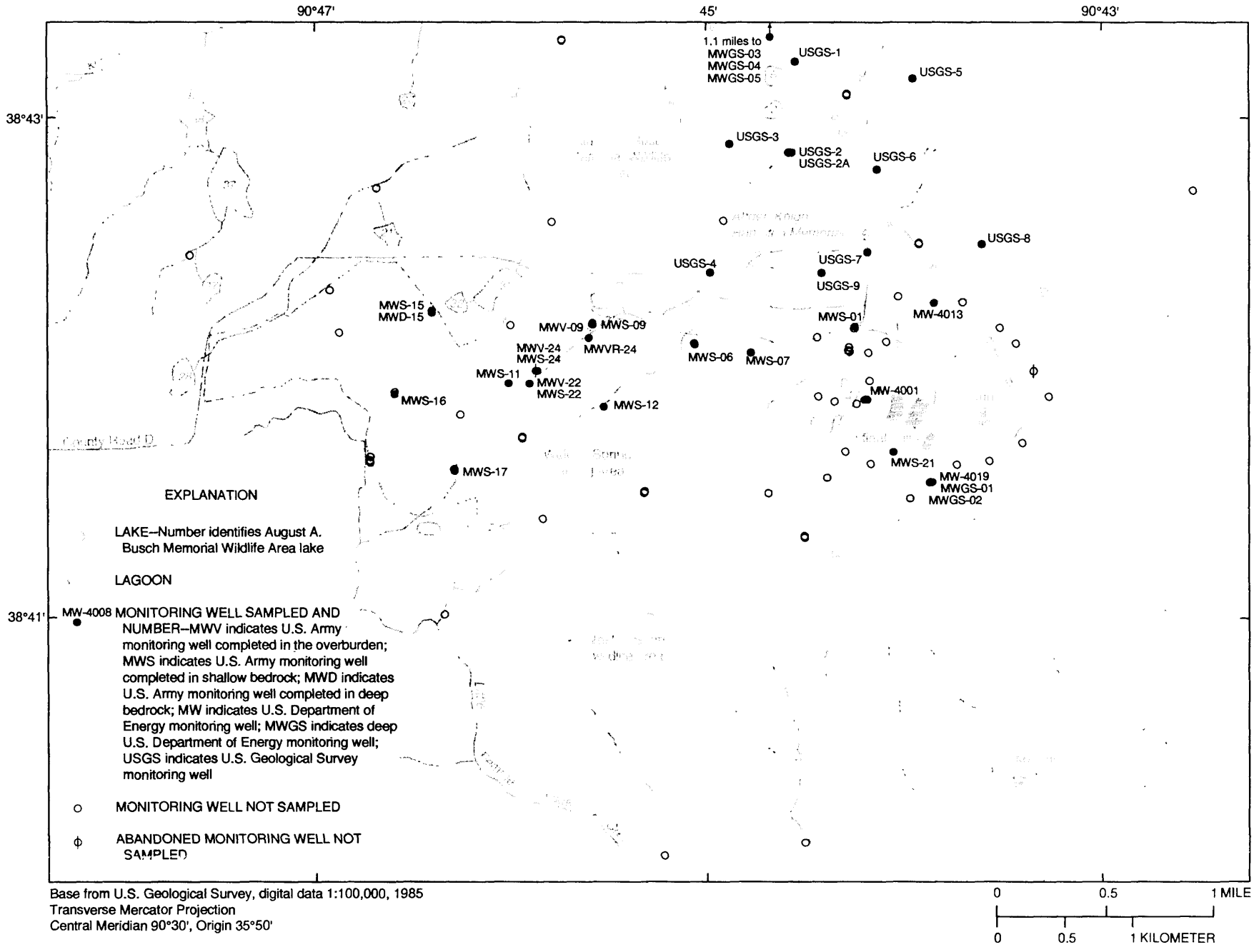

Figure 5. Location of monitoring wells sampled for nitroaromatic compounds between 1993 and 1995, Weldon Spring ordnance works, St. Charles County, Missouri.

Methodology

Before May 1994, water samples for nitroaromatic compound determinations were obtained from Army monitoring wells using a 2-in. diameter submersible pump equipped with stainless steel impellers and a Teflon-lined polyethylene discharge hose. Dedicated submersible bladder pumps were used to obtain water samples from most Army monitoring wells after May 1994. Samples from USDOE monitoring wells MW–4001, MW–4013, and MW–4019 were obtained using dedicated bladder pumps. Samples from the MWGS series monitoring wells and the USGS monitoring wells on the August A. Busch Memorial Wildlife Area were sampled using a 2- or 4-in. diameter submersible pump equipped with stainless steel impellers and a polyethylene discharge hose. Each monitoring well was purged before sample collection. During purging, specific conductance, temperature, pH, and dissolved oxygen concentrations were monitored, and samples were not collected until these measurements stabilized. Stabilization criteria used were as follows: specific conductance (within 2 percent), temperature (within 0.5 °C), pH (within 0.2 standard units), and dissolved oxygen (within 0.5 mg/L). Specific conductance, temperature, and pH were measured as described in the previous section. Dissolved oxygen concentrations were monitored using a diethylene glycol and rhodazine-D method developed by Chemetrics. A minimum of two well volumes (volume of water in the well riser, screen, and filter pack) of water was removed before sampling; however, monitoring wells MWS–06 and MWD–15 recovered slowly and were sampled after removing only one well volume.

Water samples were collected from springs by immersing the appropriate sample bottle beneath the surface of flow near the spring orifice. Spring 5201 emerges from a bedrock face along the edge of tributary 5200 (fig. 6) and flows across a small (about 3 ft wide) rock ledge before falling several feet into the stream channel. This spring was sampled by placing the appropriate sample bottles beneath the rock ledge until they were filled. Spring discharge was measured downstream of the spring orifice at the time of sample collection using a pygmy current meter or estimated if an adequate channel cross section was not available.

Water samples for nitroaromatic analysis were collected in 250-mL or 1-L amber glass bottles, chilled to 4° C, and shipped overnight to the USGS water-quality laboratory for analysis according to the methods described in the previous section. Samples for tritium analysis were collected in 1-L high density polyethylene bottles. Bottles for tritium analysis were filled from the bottom to exclude any trapped air using a small silicon hose attached to the discharge line of the pump. Tritium analyses were made at the USGS isotope laboratory in Menlo Park, California.

Summary of Data

Nitroaromatic compounds were detected in 53 of the 70 monitoring well samples, 3 of which were filtered split samples (table 7, at the back of this report). Most monitoring well samples were collected before the GC-ECD method for nitroaromatic compounds with its lower detection limits was developed. The most frequently detected compounds in monitoring well samples were: 4-Am (52 samples, 74 percent); 2-Am (37 samples, 53 percent); and 2,6-DNT (33 samples, 47 percent). None of the samples contained detectable concentrations of DNB, NB, HMX, RDX, or tetryl. Samples from monitoring well MWV–09 contained the largest unfiltered concentrations of 3,5-DNA (8.9–13.6 µg/L), 2-Am (23.8–38.1 µg/L), 4-Am (18.1–28.3 µg/L), and TNT (22.8–54.6 µg/L), and among the largest concentrations of 2,4-DNT (less than 0.25–22.5 µg/L). Nitroaromatic compound concentrations in samples from monitoring well MWV–09 were comparable to concentrations detected in lysimeters LY23 and LY24. Most samples from monitoring well MWV–09 and a sample from monitoring well MWS–21 were unusual in that 2,4-DNT concentrations were larger than 2,6-DNT concentrations. Samples from monitoring well MWS–12 contained the largest unfiltered concentrations of 2,6-DNT (11.5–29.2 µg/L); 2,4-DNT (4.43–27.0 µg/L); 2-NT (2.88–122 µg/L); 4-NT (1.12–28.8 µg/L); and 3-NT (0.39–7.75 µg/L). Concentrations of nitroaromatic compounds in the three filtered samples were similar to those in unfiltered samples. Concentrations of 2-Am plus 4-Am generally were larger than TNT concentrations and ratios of 2-Am plus 4-Am to TNT ranged from 0.6 to 24 (average of about 9.5) in monitoring well samples. These ratios were generally larger than those from lysimeters LY22, LY23, and LY24.

Tritium was detected in 22 of the 47 monitoring wells sampled at the WSTA, WSCP, and vicinity property and in water samples from Burgermeister spring (table 8, at the back of this report). The largest tritium concentrations detected were in samples from monitoring well MW–2003 [61 and 76 pCi/L (picocuries

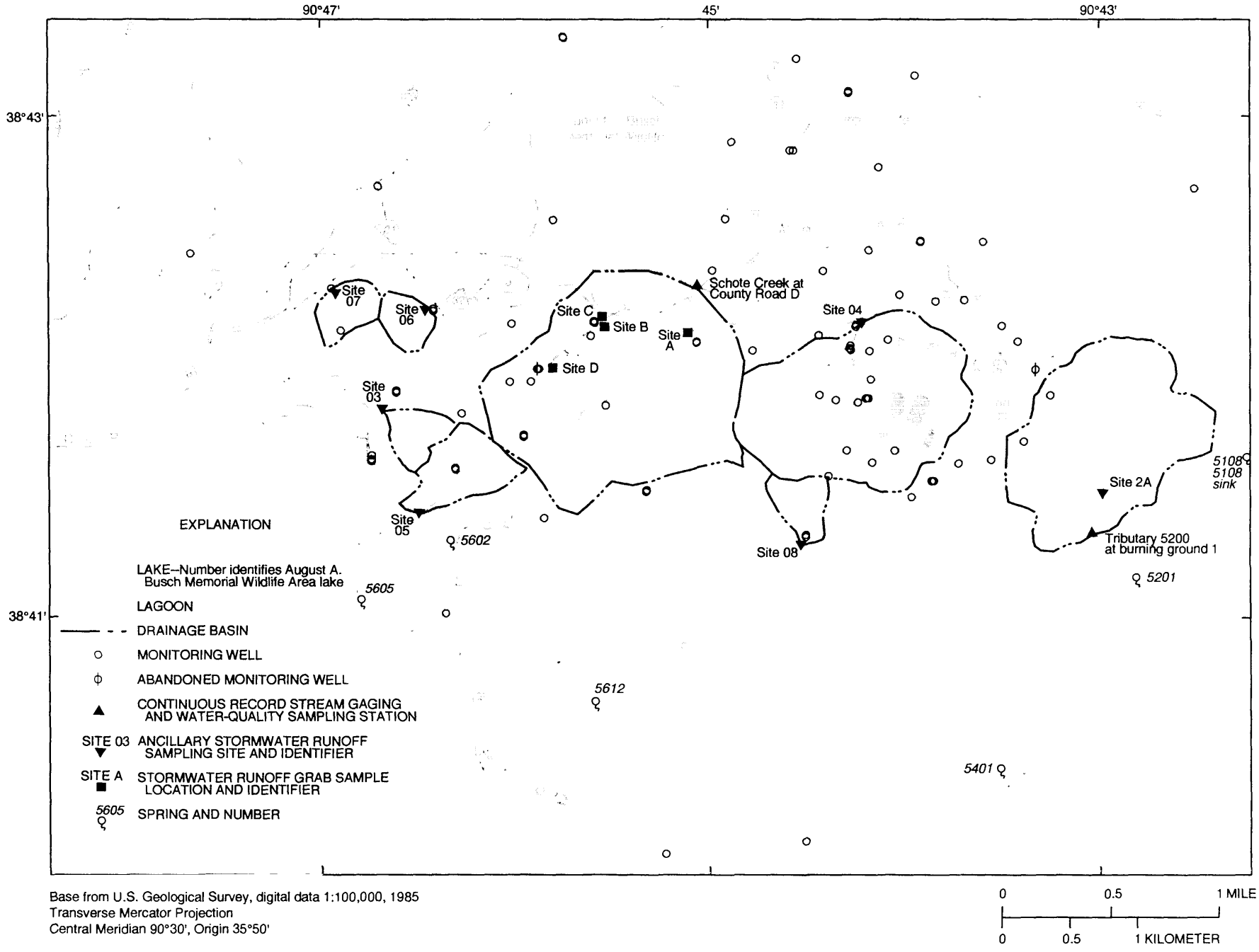

Figure 6. Location of springs sampled at the Weldon Spring ordnance works, surface-water sampling sites, and basin boundaries, St. Charles County, Missouri.

per liter)] located in the northwest part of the WSCP and a sample from monitoring well MWS–14 at the WSTA (69 pCi/L). Except for Army monitoring wells MWS–01 and MWD–15 and USDOE monitoring wells MW–3009 (abandoned in early 1994) and MW–4006, monitoring wells that did not contain detectable concentrations of tritium historically have not contained detectable concentrations of nitroaromatic compounds. Samples from Burgermeister spring also contained detectable concentrations of tritium (38–70 pCi/L).

Twenty of the 23 spring samples contained detectable concentrations of one or more nitroaromatic compounds (table 9, at the back of this report). Samples from spring 5201 contained the largest concentrations of TNB (2.6–4.5 µg/L); 3,5-DNA (1–5.6 µg/L); 2-Am (3.4–14 µg/L); 4-Am (4.1–24 µg/L); TNT (18–39 µg/L); and 2,3-DNT (0.5–1.9 µg/L), and among the largest concentrations of 2,6-DNT (0.17–1.6 µg/L). Generally, an inverse relation between spring discharge and concentration of nitroaromatic compounds was observed in samples from Burgermeister spring and springs 5201 and 5605. Samples from spring 5612, however, exhibited a generally positive relation between discharge and concentration of nitroaromatic compounds. The large recoveries of the surrogate 3,4-DNT in both the isoamyl acetate fraction (332 and 482 percent) and the toluene fraction (280–524 percent) in samples from spring 5201 were caused by the presence of substantial quantities (greater than a few micrograms per liter) of 3,4-DNT actually present in the samples (results confirmed by GC/MS). Similar to monitoring well samples, spring samples generally had concentrations of 2-Am plus 4-Am larger than TNT. Ratios of 2-Am plus 4-Am to TNT ranged from 0.43 to 19 (average of about 4.9) and were intermediate between ratios in samples from lysimeters LY23 and LY24 (0.65–16.1) and ratios in monitoring well samples (0.6–24).

SURFACE-WATER DISCHARGE AND WATER QUALITY

Discharge and runoff water-quality samples were collected from eight streams and tributaries draining the WSTA and burning ground 1 to determine if substantial quantities of contaminants were transported during runoff events. The contaminants of concern were identified by the Army in the remedial investigation of the WSTA (International Technology Corporation, 1993) and were antimony (Sb), arsenic (As), Pb, thallium (Tl), and nitroaromatic compounds. Daily mean discharge and runoff water-quality samples were collected at two continuous record gaging stations in the vicinity of the WSTA, and instantaneous discharge and runoff water-quality samples were collected from six temporary sites (hereafter referred to as ancillary sites). Grab samples were collected from another four sites.

Methodology

Continuous record gaging stations were installed north of the WSTA on Schote Creek at County Road D and southeast of the WSTA on tributary 5200 at burning ground 1 (fig. 6). The Schote Creek gage is located 16 ft upstream of a 8-ft ID pipe arch culvert beneath County Road D. A gravel riffle about 150 ft downstream of County Road D serves as the low-flow control at this site. The gage drains a 0.92 mi^2 (square mile) basin that comprises about one-third of the WSTA. Land use in the basin includes deciduous forest (about 30 percent), grassland and scrub brush (about 65 percent), and feedlot farming by the Missouri Department of Conservation (MDOC) and roads (5 percent). An 8-acre MDOC lake that drains about 2 percent of the basin is located in the northwest part of the basin. The tributary 5200 gaging station is located 25 ft downstream of burning ground 1 and records flow from a 0.61 mi^2 basin that consists of more than 95 percent deciduous forest. Burning ground 1 is approximately a 300-ft wide by 1,000-ft long tract (about 7 acres) along the west bank of tributary 5200. A 25-ft long broad crested weir was constructed at this location to serve as a control.

Both Schote Creek and tributary 5200 are dry during the summer months except during runoff events; however, water remains pooled within the culvert at Schote Creek. These two stations are equipped with a submersible pressure transducer connected to a data collection platform that records the stream level (stage) every hour unless the stage exceeds a predetermined alert level, above which the stage is recorded every 3 minutes. A stage-discharge relation was developed at each station my making current-meter discharge measurements at varying stages.

Water-quality and suspended sediment samples were collected at both gaging stations using two dedicated automatic samplers. Water-quality samplers were equipped with Teflon-lined intake hoses and

eight 1,900-mL glass sample bottles. Sediment samplers were equipped with polyethylene intake hoses and twenty four 300-mL glass jars. Water-quality sample bottles were cleaned after each use according to the following procedure: scrubbed with a 0.01 percent Liquinox-tap water solution, triple rinsed with tap water, rinsed with 10 percent HCl (hydrochloric acid), triple rinsed with deionized water, rinsed with methanol, and double rinsed with certified organic-free deionized water. Sediment sample bottles were scrubbed with a detergent solution and triple rinsed with tap water.

Six ancillary runoff sampling sites were installed at the WSTA (sites 03, 04, 05, 06, 07, and 08) and one ancillary sampling site was installed on tributary 5200 about 50 ft upstream of burning ground 1 (site 2A, fig. 6). Ancillary sites consisted of an automatic water-quality sampler equipped with a submersible pressure transducer to measure stage. The automatic samplers used the Manning equation to convert stage to discharge. The Manning equation was developed for conditions of uniform flow in which the water-surface profile and energy gradient are parallel to the streambed; the area, hydraulic radius, and stage remain constant (Dalrymple and Benson, 1967). Because these assumptions were not met at most ancillary sites and the computed discharges varied from occasional manual discharge measurements, the computed discharges were deemed unreliable and not tabulated in this report. Grab samples were collected at 4 sites (A, B, C, and D). No discharges were measured at the grab sample sites.

Water samples were transported to the USGS office in Rolla, Missouri, after each runoff event where they were split using a decaport Teflon cone splitter, preserved, and shipped to the USGS water-quality laboratory in Ocala, Florida (inorganic constituents), or the USGS water-quality laboratory in Arvada, Colorado (nitroaromatic compounds). Runoff water samples were analyzed for Sb, total antimony (Sb_t), As, total arsenic (As_t), Pb, total lead (Pb_t), Tl, total thallium (Tl_t), and nitroaromatic compounds. Generally analyses were performed on unfiltered (raw water) samples; however, analysis of filtered samples was occasionally done to determine if constituents were transported primarily in the dissolved or particulate phase. Inorganic constituents were filtered using a 0.45 µm (micrometer) nominal-pore size disposable capsule filter that had been prerinsed with 1 L of deionized water. Samples for dissolved nitroaromatic compounds were filtered using a 0.7-µm nominal pore-size baked glass fiber filter placed in an aluminum filter holder. Trace element concentrations were determined using atomic adsorption spectroscopy with a graphite furnace (AA-GF) or AA with hydride generation.

Summary of Data

The continuous record stream gaging station at Schote Creek was installed on October 29, 1993. Between this date and September 30, 1995, 68 days had missing record (table 10, at the back of this report). Schote Creek had no flow (gage height of 2.06 ft or less) 42 percent of the days monitored. The maximum daily mean discharge of 99 ft^3/s (cubic feet per second) occurred on May 17, 1995 (table 10). The maximum recorded instantaneous discharge of 616 ft^3/s at this gage occurred at a stage of 7.18 ft on this same day. The rain gage at the WSCP recorded 2.90 in. of precipitation in the 24 hours preceding this event. Discharge calculated for stages above the maximum measured stage are estimated by extending the known stage-discharge relation linearly on a log-log scale. Recorded stage exceeded the maximum discharge measured stage of 4.94 ft on 4 days and the record on these days is considered poor.

The tributary 5200 gage at burning ground 1 was installed on January 7, 1994. Between this date and September 30, 1995, 40 of the 632 days for the period had missing record. This tributary only flows for a short time following precipitation and was dry 84 percent of the days monitored. The maximum daily mean discharge recorded at this site was 44 ft^3/s on May 17, 1995 (table 11, at the back of this report). The mean stage on this day was 1.60 ft. The highest instantaneous discharge recorded was 214 ft^3/s at a gage height of 3.03 ft, during a storm on April 12, 1994. In the 24 hours preceding this storm, 2.94 in. of precipitation was recorded by the rain gage at the WSTA. Discharges calculated for stages above the maximum measured stage of tributary 5200 are estimated using the same method that was used for Schote Creek. The recorded stage exceeded the maximum discharge measured stage of 1.61 ft on 12 days, and the record for these days is considered poor.

Stormwater-runoff samples were collected during a number of runoff events at the continuous record gaging stations and during one or two representative events at ancillary sites 2A, 03, 04, 05, 06, and 07 (fig.

6). No measurable runoff was detected at site 08. An example stormwater hydrograph showing the position of water-quality samples relative to the peak flow for Schote Creek at County Road D during runoff on January 13 and 14, 1995, is shown in figure 7. An example stormwater hydrograph from an ancillary site during runoff on November 5, 1994, (site 2A) is shown in figure 8.

None of the runoff samples contained detectable concentrations of Sb, Sb_t, or Tl (table 12, at the back of this report). Only two samples (from site 03) contained detectable concentrations of As (1 and 2 µg/L) and only one sample (from site 04) contained a detectable concentration of Tl_t (1 µg/L). Concentrations of As_t ranged from less than the detection limit of 1 to 37 µg/L in a sample from site 06 (table 12). Concentrations of Pb generally were less than the detection limit of 1 µg/L; however, several samples from Schote Creek at County Road D and tributary 5200 at burning ground 1 had small (less than or equal to 2 µg/L) Pb concentrations. Only one sample each from sites 06 and 07 were analyzed for Pb; both samples contained Pb concentrations at the detection limit. Samples from all ancillary sites contained concentrations of Pb_t larger than the detection limit of 1 µg/L with the largest concentrations detected in samples from site 04 (3–230 µg/L), site 05 (39–180 µg/L), and site 06 (2–490 µg/L). Depending on the hardness of the water, the Missouri Department of Natural Resources standard for Pb_t for the protection of aquatic life in water ranges from 80 to 190 µg/L (Missouri Department of Natural Resources, 1994).

All runoff samples, except those from site 2A upstream of burning ground 1 (fig. 6) contained detectable or unconfirmed concentrations of nitroaromatic compounds (table 12). The most frequently detected compounds were 2-Am, 4-Am, TNT, 2,6-DNT, 2,4-DNT, and 2,3-DNT. Concentrations of TNT ranged from less than 0.01 to 15.6 µg/L, and concentrations of 2,6-DNT and 2,4-DNT ranged from less than 0.01 µg/L to 2.55 and 2.32 µg/L. The largest concentrations of TNT (15.6 µg/L), 2,6-DNT (2.55 µg/L), and 2,4-DNT (2.32 µg/L) were detected in a grab sample from tributary 5200 at burning ground 1 on October 4, 1993. This sample was collected after 6-in. of rain fell overnight. A discharge is not available for this event because the gaging station and water-quality samplers had not been installed at this site. Samples from tributary 5200 downstream of burning ground 1 also contained the largest concentrations of 2-Am (less

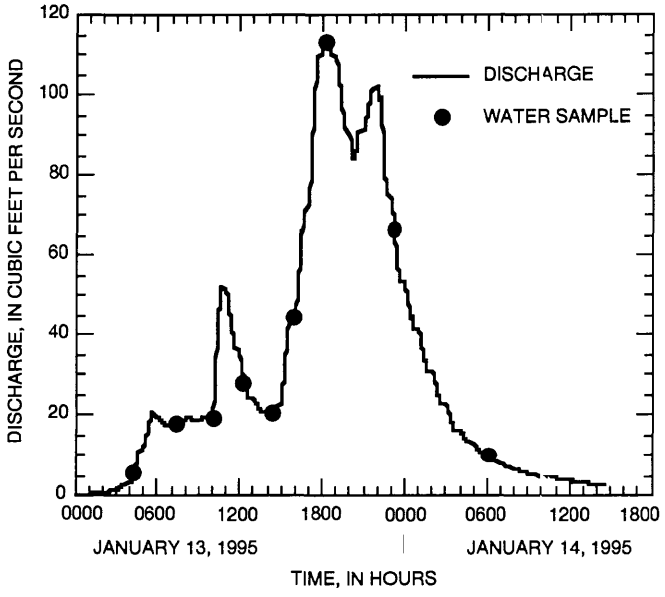

Figure 7. Example stormwater hydrograph from Schote Creek at County Road D, January 13-14, 1995, Weldon Spring ordnance works, St. Charles County, Missouri.

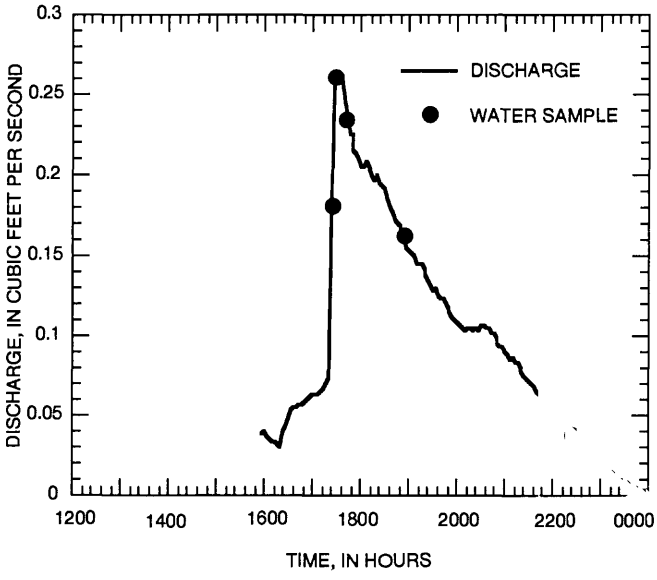

Figure 8. Example stormwater hydrograph from site 2A, tributary 5200 upstream of burning ground 1, November 5, 1994, Weldon Spring ordnance works, St. Charles County, Missouri.

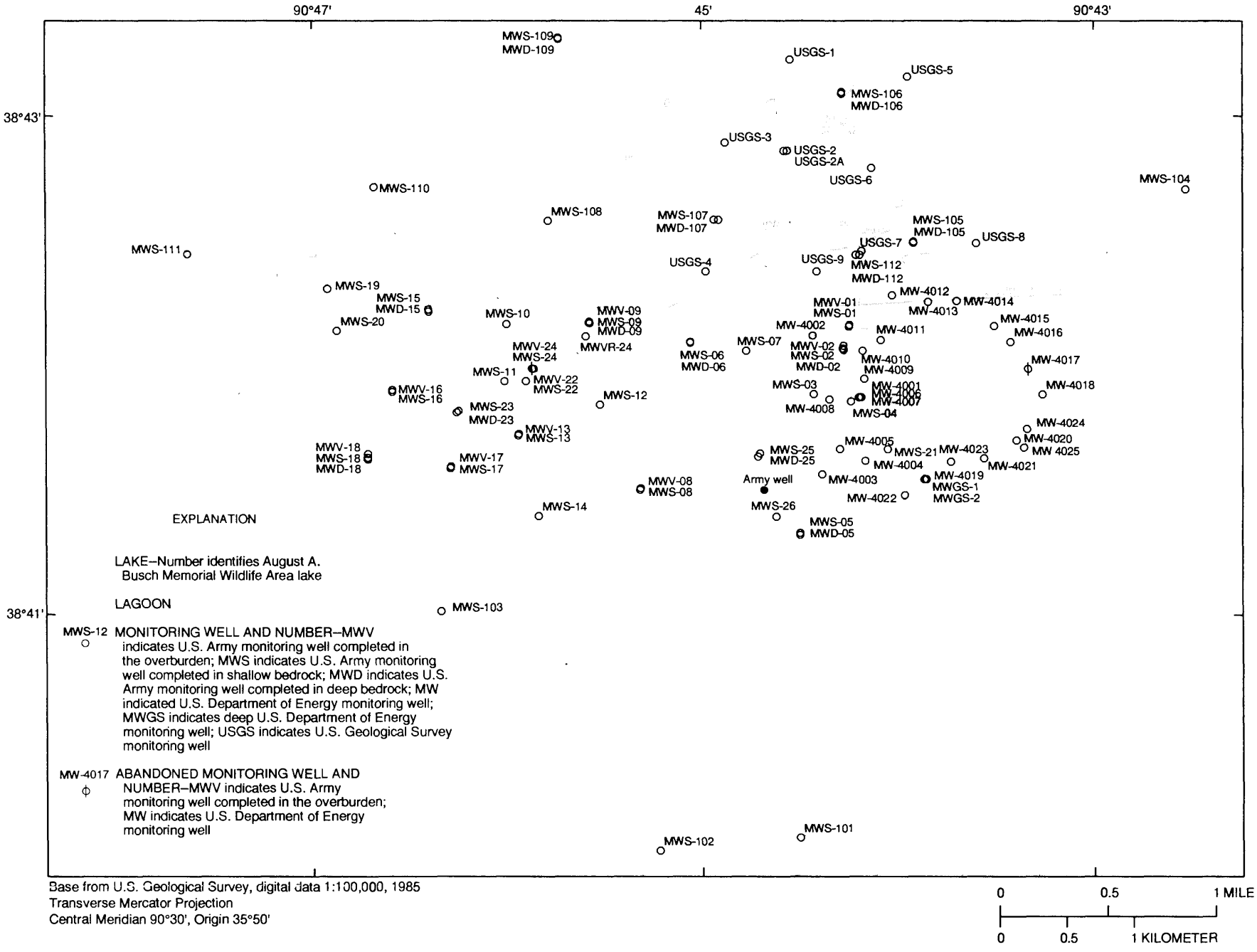

Figure 9. Location of wells used as water-level measurement sites at the Weldon Spring ordnance works, St. Charles County, Missouri.

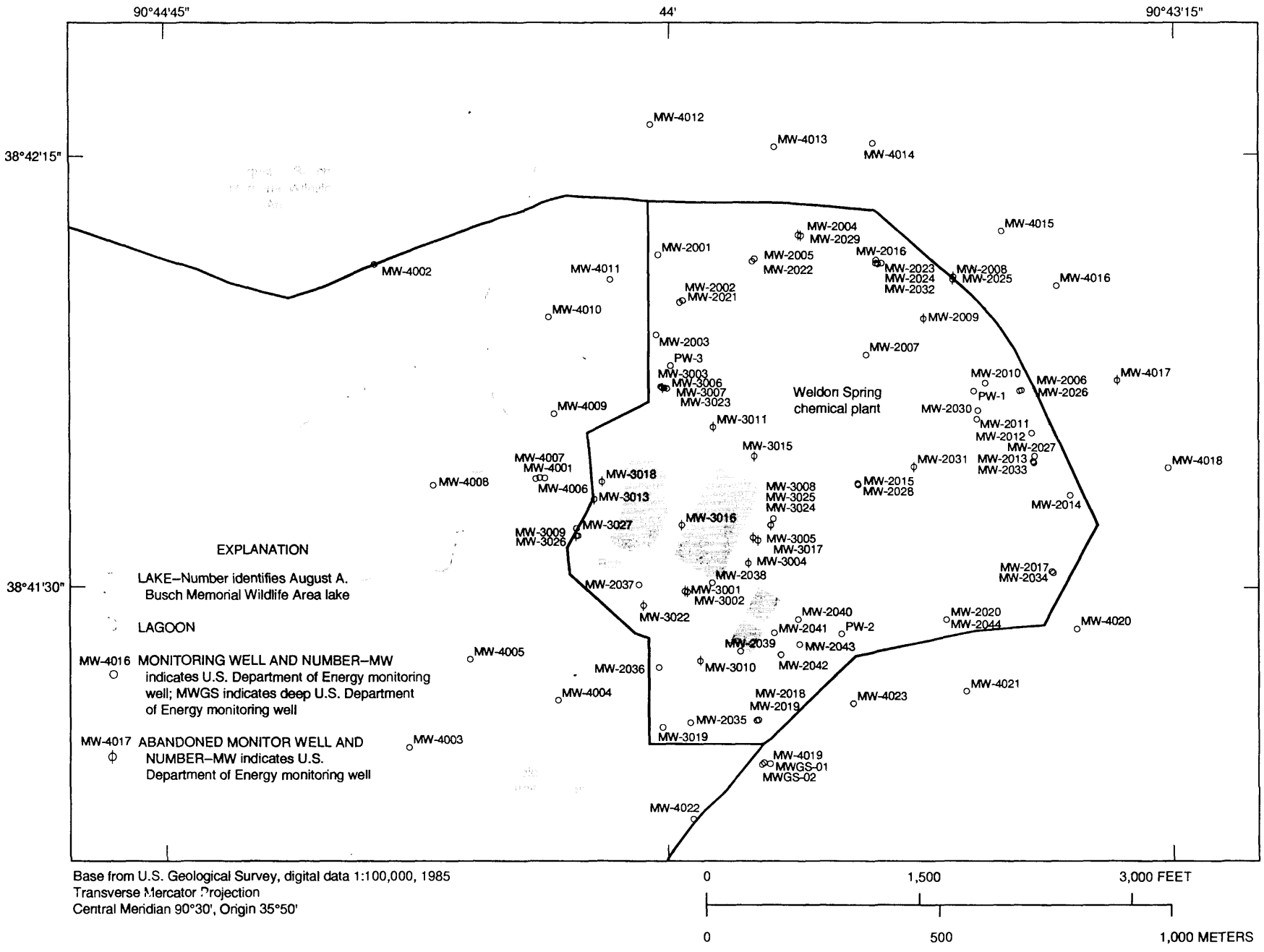

Figure 10. Location of wells used as water-level measurement sites at the Weldon Spring training area, Weldon Spring chemical plant site, and vicinity property, St. Charles County, Missouri.

than 0.1–12 µg/L; table 12), 4-Am (0.02–44 µg/L), 2,6-DNT (less than 0.01–2.55 µg/L), and among the largest concentrations of 2,4-DNT (less than 0.01–2.32 µg/L). A grab sample from site C (outflow of a pond near monitoring well MWV–09, January 21, 1993) also contained large concentrations of 2-Am (2.07 µg/L), 4-Am (8.19 µg/L), and TNT (9.88 µg/L).

GROUND-WATER LEVEL DATA

Quarterly water-level measurements were made in 153 monitoring wells at the WSTA and vicinity property (figs. 9, 10) and the WSCP (fig. 10) from October 1993 through September 1995. Water levels were made by measuring the depth to water below the measuring point (usually a mark on the top of the well riser) using a steel tape (prior to January 1, 1994) or calibrated electric tape. The depths to water generally were measured to the nearest 0.01 ft. The water-level measurements were subtracted from the altitude of the measuring point to obtain the altitude of water listed in table 13 (at the back of this report). After all measurements had been tabulated, sampling records of the COE and USDOE were checked to verify that the wells had not been sampled immediately before the water-level measurements were made. Water-level measurements made shortly after a well was sampled occasionally were much lower than previous measurements, indicating the well had not fully recovered after being pumped and sampled. These measurements were noted as suspect data in table 13. Because of the large number of wells and remoteness of several of the locations, water-level measurements generally were not completed within 1 day.

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TABLES

LIST OF ABBREVIATIONS USED IN TABLES 3 AND 4

QC	Quality assurance-quality control
TNB	1,3,5-Trinitrobenzene
3,5-DNA	3,5-Dinitroaniline
2-Am	2-Amino-4,6-dinitrotoluene
4-Am	4-Amino-2,6-dinitrotoluene
TNT	2,4,6-Trinitrotoluene
2,6-DNT	2,6-Dinitrotoluene
2,4-DNT	2,4-Dinitrotoluene
2,3-DNT	2,3-Dinitrotoluene
DNB	1,3-Dinitrobenzene
2-NT	2-Nitrotoluene
4-NT	4-Nitrotoluene
3-NT	3-Nitrotoluene
NB	Nitrobenzene
HMX	Tetranitramine
RDX	Cyclonite
mg/kg	Milligram per kilogram
LC	High-performance liquid chromatography
GC	Gas chromatography
--	No data
nt	Not tested
<	Less than
µg/L	Microgram per liter
nd	Not detected
Coarse	Particles with a diameter greater than 0.062 millimeter, in percent by dry weight
Silt	Particles with a diameter less than 0.062 millimeter but greater than 0.002 millimeter, in percent by dry weight
Clay	Particles with a diameter less than 0.002 millimeter, in percent by dry weight
TC	Total carbon content, in percent by dry weight
OC	Organic carbon content, in percent by dry weight
Moisture	Moisture content, in percent by dry weight

Table 3. Quality assurance and quality control data for nitroaromatic compound samples at the Weldon Spring ordnance works, St. Charles County, Missouri

[All nitroaromatic compound concentrations in micrograms per liter unless noted otherwise; percent recoveries and concentrations in laboratory blanks are maximum values reported for each run]

QC code	Description	Method	Date	Time	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT	2,4-DNT	2,3-DNT	DNB
3.5	Average percent recovery of seven 10 mg/kg soil spikes	LC	--	--	109	nt	nt	nt	110	105	111	nt	nt
3.5	Lab blank, concentration	LC	--	--	--	--	<0.1	nt	<.1	<.1	<.1	<0.1	<0.1
3.5	MWS-21 0.7-0.9 feet, lab duplicate, concentration	LC	05/04/92	--	4.1	nt	2.4	2.1	610	<.1	<.1	<.1	<.1
3.5	MWS-22 5.0-5.2 feet, lab split, concentration	LC	10/14/92	--	<.1	nt	<.1	<.1	.78	<.1	<.1	<.1	<.1
5.5	Average percent recovery of three 0.5 mg/kg soil spikes	LC	--	--	99	nt	nt	nt	110	105	111	nt	nt
5.5	Lab blank, concentration	LC	--	--	<.1	nt	<.1	<.1	<.1	<.1	<.1	nt	nt
5.5	LY23 0-0.2 feet, lab duplicate, concentration	LC	10/19/92	--	<.1	nt	41	46	70,000	[a]8.6	[a]8.6	nt	nt
5.5	LY23 5.0-5.2 feet, lab duplicate, concentration	LC	10/19/92	--	<.1	nt	<.1	<.1	.9	<.1	<.1	nt	nt
5.5	MWS-22 0-0.2 feet, lab duplicate, concentration	LC	10/14/92	--	<.1	nt	<.1	<.1	<.1	<.1	<.1	nt	nt
7	Average percent recovery of three 1.5 µg/L lysimeter spikes	LC	--	--	70	96	92	92	100	107	86	nt	nt
7	Average percent recovery of three 2.0 µg/L well spikes	LC	--	--	34	67	92	94	81	86	64	nt	nt
7	LY32, lab duplicate, concentration	LC	--	--	<.5	<.5	<.5	<.5	<.5	<.5	<.5	nt	<.5
7	MW-4001, lab duplicate, concentration	LC	--	--	32.1	3.82	16.3	23.4	1.85	4.63	2.93	nt	<.25
7	MWS-24, lab duplicate, concentration	LC	--	--	.81	.25	1.73	3.59	.36	.59	<.1	nt	<.25
7	Lab blank, concentration	LC	--	--	<.1	nt	<.1	<.1	<.1	<.1	<.1	nt	nt
7.5	LY32, 3.0-3.2 feet, lab duplicate, concentration	LC	11/05/92	--	<.25	nt	<.25	<.25	<.25	<.25	<.25	nt	nt
7.5	LY34 3.0-3.2 feet, lab duplicate, concentration	LC	11/06/92	--	<.25	nt	<.25	<.25	<.25	<.25	<.25	nt	nt
8	Percent recovery, 2 µg/L spike	LC	--	--	80	103	78	106	87	95	92	nt	nt
8	Lab blank, concentration	LC	--	--	<.5	<.5	<.5	<.5	<.5	<.5	<.5	nt	<.5
9	Average percent recovery of seven 0.5 µg/L soil spikes	LC	--	--	82	81	nt	nt	105	103	120	nt	<.25
9	MWV-09 pond, sample C (0.8-1.3 feet), lab duplicate, concentration	LC	01/26/93	--	[b]<.25	[b]<.25	<.25	<.25	[b]<.25	<.25	[b]<.25	nt	<.25
9	MWV-09 pond, sample D (0.2-0.6 feet), lab duplicate, concentration	LC	01/26/93	--	<.25	<.25	<.25	<.25	<.25	<.25	<.25	<.25	<.25
10	Average percent recovery, 2.0 µg/L and 4.0 µg/L spikes	LC	--	--	44	72	107	105	78	55	67	nt	--
10	MWS-24, lab duplicate, concentration	LC	02/09/93	0945	.74	.63	1.79	3.52	[a].25	.37	<.25	nd	<.25
10	MWV-09, lab duplicate, concentration	LC	02/18/93	1420	2.84	11.2	35.5	28.3	22.4	3.37	<.25	nd	<.25
10	Lab blank, concentration	LC	--	--	<.25	<.25	<.25	<.25	<.25	<.25	<.25	nd	<.25
11	Lab blank, concentration	LC	--	--	<.5	<.5	<.5	<.5	<.5	<.5	<.5	nd	<.5
11	Percent recovery, 2 µg/L spike	LC	--	--	87	119	103	93	119	113	110	--	--

Table 3. Quality assurance and quality control data for nitroaromatic compound samples at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

QC code	Description	Method	Date	Time	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT	2,4-DNT	2,3-DNT	DNB
11	LY23, lab duplicate, concentration	LC	03/08/93	1350	0.92	0.36	22.4	40.9	24.8	2.36	<0.25	nd	<0.25
11	Lab blank, concentration	LC	--	--	<.5	<.5	<.5	<.5	<.5	<.5	<.5	nd	<.5
12	Percent recovery, 3 µg/L well spike	LC	--	--	41	52	nt	nt	104	94	114	nt	nt
12	Percent recovery, 4 µg/L lysimeter spike	LC	--	--	46	61	75	74	78	78	80	nt	nt
12	Percent recovery, 3 µg/L well spike 1	LC	--	--	40	52	nt	nt	103	95	115	nt	nt
12	Percent recovery, 3 µg/L well spike 2	LC	--	--	40	53	nt	nt	102	92	114	nt	nt
12	Percent recovery, 3 µg/L well spike 3	LC	--	--	43	50	nt	nt	207	94	114	nt	nt
12	Site 07, lab duplicate, concentration	LC	03/22/93	--	<.2	<.2	.25	.52	<.2	<.2	<.2	nd	<.2
12	USGS-7, lab duplicate, concentration	LC	04/05/93	--	<.2	<.2	<.2	<.2	<.2	<.2	<.2	nd	<.2
12	MWS-07, lab duplicate, concentration	LC	04/07/93	--	9.86	.53	5.25	11.5	2.27	.85	[b]<.2	nd	<.2
12	Lab blank (well sample run), concentration	LC	--	--	<.2	<.2	<.2	<.2	<.2	<.2	<.2	nd	<.2
12	Lab blank (lysimeter run), concentration	LC	--	--	<.2	<.2	<.2	<.2	<.2	<.2	<.2	nd	<.2
13	Percent recovery, 0.5 µg/L soil spike	LC	--	--	101	90	95	64	78	105	92	nt	nt
13	Percent recovery, 3 µg/L spike 1	LC	--	--	41	50	nt	nt	96	94	88	nt	nt
13	Percent recovery, 3 µg/L spike 2	LC	--	--	39	45	nt	nt	95	99	98	nt	nt
13	MWGS-01, lab duplicate, concentration	LC	--	--	<.2	<.2	<.2	<.2	<.2	<.2	<.2	nd	<.2
13	MWS-17, lab duplicate, concentration	LC	--	--	<.2	.37	1.77	3.28	<.2	3.24	.53	nd	<.2
13	MWVR-24 (1.0-1.3 feet), lab duplicate, concentration	LC	--	--	<.5	<.5	<.5	<.5	<.5	<.5	<.5	nd	<.5
13	Lab blank (soil sample run), concentration	LC	--	--	<.5	<.5	<.5	<.5	<.5	<.5	<.5	nd	<.5
13	Lab blank (well sample run), concentration	LC	--	--	<.2	<.2	<.2	<.2	<.2	<.2	<.2	nd	<.2
13	MWV-09, lab duplicate, concentration	LC	04/13/93	1701	23.9	13.4	33.7	24.1	54.6	2.96	22.5	nd	<.2
13	MWS-12, lab duplicate, concentration	LC	04/14/93	1201	2.59	2.69	1.18	2.82	<.2	25.5	14.3	nd	<.2
13	MWS-17, lab duplicate, concentration	LC	04/14/93	1001	<.2	.51	1.65	2.77	<.2	3.01	.97	nd	<.2
14	Percent recovery, 1.5 µg/L spike (lysimeter sample run)	LC	--	--	57	64	109	102	113	124	105	nt	nd
14	Lab blank, concentration	LC	--	--	<.19	<.32	<.13	<.26	<.11	<.21	<.18	nd	nt
14	MW-4001, field split, concentration[c]	LC	05/18/93	--	34	nt	16	19	4.2	7.2	<.6	nt	<.6
14	MW-4001, field split, concentration[d]	LC	05/18/93	--	54	nt	nt	nt	1.9	3.2	1.3	nt	nd
14	MW-4013, lab duplicate, concentration	LC	05/18/93	--	22.9	.49	1.6	1.96	<.2	1.01	[b]<.2	0.2	<.2
14	MW-4013, field split, concentration[c]	LC	05/18/93	--	29	nt	.8	1.2	<.3	<.3	<.3	nt	<.3

Table 3. Quality assurance and quality control data for nitroaromatic compound samples at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

QC code	Description	Method	Date	Time	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT	2,4-DNT	2,3-DNT	DNB
14	MW-4013, field split, concentration[d]	LC	05/18/93	--	32	nt	nt	nt	0.05	0.06	0.06	nt	nd
14	MWS-01, field split, concentration[c]	LC	05/18/93	--	nd	nt	<0.3	<0.3	<.3	<.3	<.3	nt	<0.3
14	MWS-01, field split, concentration[d]	LC	05/18/93	--	nd	nt	nt	nt	nd	.53	.05	nt	nd
14	MWS-17, field replicate	LC	05/17/93	1331	<.2	1.02	[c]1,100	[c]1,000	1.11	4.96	[b].45	nd	nt
14	MWS-17, field split, concentration[c]	LC	05/17/93	--	<30	nt	[c]860	[c]880	<30	<30	<30	nt	<30
14	MWS-17, field split, concentration[d]	LC	05/17/93	--	<.3	nt	2.2	5.8	.3	2.1	<.3	nt	<.3
14	MWV-09, field duplicate, concentration	LC	05/18/93	--	16	nt	36	21	40	<2	18	nt	nt
14	MWV-09, field split, concentration[c]	LC	05/18/93	--	23	nt	39	25	42	<.6	20	nt	<.6
14	MWS-12, field split, concentration[d]	LC	05/18/93	--	7	nt	nt	nt	.44	23	19	nt	.96
15	Percent recovery, 1.5 µg/L spike (lysimeter sample run)	LC	--	--	51	64	94	98	108	107	86	nt	nd
15	Lab blank, concentration	LC	--	--	<.5	<.5	<.5	<.5	<.5	<.5	<.5	nd	<.5
17	Percent recovery, 5.0 µg/L spike	LC	--	--	116	91	96	126	87	106	92	nt	nt
17	Lab blank, concentration	LC	--	--	<.19	<.32	<.13	<.26	<.11	<.21	<.18	nd	nt
17b	Percent recovery, 5.0 µg/L spike	LC	--	--	99	97	96	96	96	101	94	nd	nt
17b	Lab blank, concentration	LC	--	--	<.19	<.32	<.13	<.26	<.11	<.21	<.18	nd	nt
17b	LY24, lab duplicate, concentration	LC	02/17/94	--	1.65	5.13	17.1	24	13.2	1.4	.83	nd	nt
17c	Percent recovery, 5.0 µg/L spike	LC	--	--	92	91	91	92	94	89	94	nd	nt
17c	Lab blank, concentration	LC	--	--	<.5	<.5	<.5	<.5	<.5	<.5	<.5	nd	<.5
17c	Schote Creek at County Road D, lab duplicate, concentration	LC	03/02/94	1510	<.19	<.32	1.62	3.1	.75	[a].07	.47	nd	nt
20	Percent recovery, 5.0 µg/L spike	LC	--	--	108	102	99	100	97	96	87	nd	nt
20	Lab blank, concentration	LC	--	--	<.19	<.32	<.13	<.26	<.11	<.21	<.18	nd	nt
20	LY22, lab duplicate, concentration	LC	04/21/94	1530	1,090	65	200	203	1,130	<.21	6.91	nd	nt
21	Lab blank, concentration	LC	--	--	<.19	<.32	<.13	<.26	<.11	<.21	<.18	nd	nt
21	LY22, lab duplicate, concentration	LC	06/08/94	--	1,355	57.3	215	206	1,470	<.21	10.2	nd	nt
22	Percent recovery, 5.0 µg/L spike	LC	--	--	100	94	91	91	92	114	82	nd	nt
22	LY24, lab duplicate, concentration	LC	06/23/94	--	6.1	11.3	35.2	42.7	31.9	3.39	1.6	nd	nt
22	MWS-24, lab duplicate, concentration	LC	07/19/94	1255	2.76	.42	1.53	3.17	.4	.25	<.18	nd	nt
22	Schote Creek at County Road D, lab duplicate, concentration	LC	07/20/94	1954	<.19	<.32	<.13	.87	<.11	<.18	<.21	nd	nt
22	Lab blank, concentration	LC	--	--	<.19	<.32	<.13	<.26	<.11	<.21	<.18	nd	nt

Table 3. Quality assurance and quality control data for nitroaromatic compound samples at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

QC code	Description	Method	Date	Time	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT	2,4-DNT	2,3-DNT	DNB
23	Percent recovery, 5.0 µg/L spike 1	LC	--	--	43	91	86	94	80	88	89	nt	nt
23	Percent recovery, 5.0 µg/L spike 2	LC	--	--	90	84	83	83	82	68	62	nt	nt
23	LY24, lab duplicate, concentration	LC	08/09/94	1205	4.23	8.75	30.2	36.4	23.2	1.97	1.51	nd	nt
23	LY23, lab duplicate, concentration	LC	09/02/94	1210	.84	1.43	19.5	32.2	7.63	.8	<.18	nd	nt
24	Percent recovery, 5.0 µg/L spike 1	LC	--	--	88	92	97	95	92	87	88	nt	nt
24	Percent recovery, 5.0 µg/L spike 2	LC	--	--	85	82	81	80	71	86	76	nt	nt
24	LY24, lab duplicate, concentration	LC	09/14/94	1530	3.42	8.78	33.6	38.8	22.8	.89	.75	nt	nt
24	LY24, lab duplicate, concentration	LC	10/05/94	1000	3.69	7.57	28.9	33	17.3	.24	.38	nt	nt
25	Percent recovery, 5.0 µg/L spike 1	LC	--	--	78	92	94	94	95	86	88	nt	nt
25	Percent recovery, 5.0 µg/L spike 2	LC	--	--	78	80	66	66	80	75	67	nt	nt
25	Site 03, lab duplicate, concentration	LC	11/05/94	1825	<.19	<.32	.36	1.33	<.11	<.18	<.21	nt	nt
25	LY24, lab duplicate, concentration	LC	12/05/94	0935	2.83	9.38	33.9	38.9	21.5	1.15	.73	nt	nt
27	Cone splitter blank, concentration	GC	11/07/94	1700	<.1	<.2	<.05	<.05	<.01	<.01	<.01	<0.01	<0.05
28	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	107	107	79	--	--	--	--	--
28	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	98	--	--	--	149	112	118	114	83
28	Cone splitter blank, concentration	GC	01/19/95	1330	<.1	<.2	<.05	<.05	<.01	<.01	<.01	<.01	<.05
28	Bottle rinsate blank, concentration	GC	01/20/95	1425	.15	<.2	<.05	<.05	.43	<.01	<.01	<.01	<.05
28	Lab blank (2 total), concentration	GC	--	--	<.1	<.2	<.05	<.05	.03	<.01	<.01	<.01	<.05
30	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	99	121	109	--	--	--	--	--
30	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	116	48	60	67	132	109	109	110	89
30	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	127	147	127	--	--	--	--	--
30	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	111	35	56	61	125	103	100	103	83
30	Lab blank (3 total), concentration	GC	--	--	<.1	<.2	<.05	<.05	.13	<.01	<.01	<.01	<.05
30	Bottle rinsate blank, concentration	GC	03/08/95	1400	<.1	<.2	<.05	<.05	<.1	<.01	<.01	<.01	<.05
31	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	0	63	101	68	--	--	--	--	--
31	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	148	42	61	73	120	110	108	110	84
31	Lab blank, concentration	GC	--	--	.3	<.2	<.05	<.05	.2	<.01	<.01	<.01	<.05
32	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	53	101	58	--	--	--	--	--
32	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	136	--	--	--	113	100	99	106	78

Table 3. Quality assurance and quality control data for nitroaromatic compound samples at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

QC code	Description	Method	Date	Time	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT	2,4-DNT	2,3-DNT	DNB
32	Lab blank, concentration	GC	--	--	0.2	<0.2	<0.05	<0.05	0.07	<0.01	<0.01	<0.01	<0.05
34	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	87	60	99	--	--	--	--	--
34	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	101	--	--	--	108	93	94	87	76
34	Lab blank (3 total), concentration	GC	--	--	<.1	<.2	<.05	<.05	<.01	<.01	<.01	<.01	<.05
36	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	66	81	88	--	--	--	--	--
36	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	108	--	--	--	114	101	100	98	82
36	Lab blank (3 2 total), concentration	GC	--	--	<.1	<.2	<.05	<.05	<.01	<.01	<.01	<.01	<.05
38	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	99	124	97	--	--	--	--	--
38	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	101	--	--	--	106	94	95	94	74
38	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	90	121	83	--	--	--	--	--
38	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	119	--	--	--	127	112	112	111	93
38	Lab blank (4 total), concentration	GC	--	--	<.1	<.2	<.05	<.05	<.01	<.01	<.01	<.01	<.05
38a	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	124	130	132	--	--	--	--	--
38a	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	101	--	--	--	111	103	104	104	85
38a	Lab blank (2 total), concentration	GC	--	--	<.1	<.2	<.05	<.05	<.01	<.01	<.01	<.01	<.05
39	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	92	115	80	--	--	--	--	--
39	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	99	--	--	--	109	101	111	108	88
39	Lab blank (3 total), concentration	GC	--	--	<.1	<.2	<.05	<.05	<.01	<.01	<.01	<.01	<.05

Table 3. Quality assurance and quality control data for nitroaromatic compound samples at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

QC code	Description	Method	Date	Time	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl	Surrogate recovery (percent)	
												Toluene fraction	Isoamyl acetate fraction
3.5	Average percent recovery of seven 10 mg/kg soil spikes	LC	--	--	108	116	111	91	123	123	--	--	--
3.5	Lab blank, concentration	LC	--	--	nt	nt	<.25	<.25	<.25	<.25	<0.25	--	--
3.5	MWS-21 0.7-0.9 feet, lab duplicate, concentration	LC	05/04/92	--	nt	nt	<.25	<.25	<.25	<.25	<.25	--	--
3.5	MWS-22 5.0-5.2 feet, lab split, concentration	LC	10/14/92	--	nt	nt	<.25	<.25	<.25	<.25	<.25	--	--
5.5	Average percent recovery of three 0.5 mg/kg soil spikes	LC	--	--	108	116	111	91	123	123	nt	--	--
5.5	Lab blank, concentration	LC	--	--	<.25	<.25	<.25	<.25	<.25	<.25	nt	--	--
5.5	LY23 0-0.2 feet, lab duplicate, concentration	LC	10/19/92	--	<.25	<.25	<.25	<.25	<.25	<.25	nt	--	--
5.5	LY23 5.0-5.2 feet, lab duplicate, concentration	LC	10/19/92	--	<.25	<.25	<.25	<.25	<.25	<.25	nt	--	--
5.5	MWS-22 0-0.2 feet, lab duplicate, concentration	LC	10/14/92	--	<.25	<.25	<.25	<.25	<.25	<.25	nt	--	--
7	Average percent recovery of three 1.5 µg/L lysimeter spikes	LC	--	--	nt	74	88	98	nt	nt	nt	--	--
7	Average percent recovery of three 2.0 µg/L well spikes	LC	--	--	nt	45	59	32	nt	nt	nt	--	--
7	LY32, lab duplicate, concentration	LC	--	--	<.5	<.5	<.5	<.5	nt	nt	nt	--	--
7	MW-4001, lab duplicate, concentration	LC	--	--	<.25	<.25	<.25	<.25	nt	nt	nt	--	--
7	MWS-24, lab duplicate, concentration	LC	--	--	<.25	<.25	<.25	<.25	nt	nt	nt	--	--
7	Lab blank, concentration	LC	--	--	<.25	<.25	<.25	<.25	nt	nt	nt	--	--
7.5	LY32, 3.0-3.2 feet, lab duplicate, concentration	LC	11/05/92	--	nt	nt	nt	nt	nt	nt	nt	--	--
7.5	LY34 3.0-3.2 feet, lab duplicate, concentration	LC	11/06/92	--	nt	nt	nt	nt	nt	nt	nt	--	--
8	Percent recovery, 2 µg/L spike	LC	--	--	nt	70	80	87	nt	nt	nt	--	--
8	Lab blank, concentration	LC	--	--	<.5	<.5	<.5	<.5	nt	nt	nt	--	--
9	Average percent recovery of seven 0.5 µg/L soil spikes	LC	--	--	nt	99	136	115	nt	nt	nt	--	--
9	MWV-09 pond, sample C (0.8-1.3 feet), lab duplicate, concentration	LC	01/26/93	--	<.25	<.25	<.25	<.25	nt	nt	nt	--	--
9	MWV-09 pond, sample D (0.2-0.6 feet), lab duplicate, concentration	LC	01/26/93	--	<.25	<.25	<.25	<.25	nt	nt	nt	--	--
10	Average percent recovery, 2.0 µg/L and 4.0 µg/L spikes	LC	--	--	--	50	53	40	nt	nt	nt	--	--
10	MWS-24, lab duplicate, concentration	LC	02/09/93	0945	<.25	<.25	<.25	<.25	nt	nt	nt	--	--
10	MWV-09, lab duplicate, concentration	LC	02/18/93	1420	<.25	<.25	<.25	<.25	nt	nt	nt	--	--
10	Lab blank, concentration	LC	--	--	<.25	<.25	<.25	<.25	nt	nt	nt	--	--
11	Lab blank, concentration	LC	--	--	<.5	<.5	<.5	<.5	nt	nt	nt	--	--
11	Percent recovery, 2 µg/L spike	LC	--	--	--	--	--	--	nt	nt	nt	--	--

Table 3. Quality assurance and quality control data for nitroaromatic compound samples at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

QC code	Description	Method	Date	Time	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl	Surrogate recovery (percent)	
												Toluene fraction	Isoamyl acetate fraction
11	LY23, lab duplicate, concentration	LC	03/08/93	1350	<0.25	<0.25	<0.25	<0.25	nt	nt	nt	--	--
11	Lab blank, concentration	LC	--	--	<.5	<.5	<.5	<.5	nt	nt	nt	--	--
12	Percent recovery, 3 µg/L well spike	LC	--	--	96	94	109	60	nt	nt	nt	--	--
12	Percent recovery, 4 µg/L lysimeter spike	LC	--	--	81	69	78	64	nt	nt	nt	--	--
12	Percent recovery, 3 µg/L well spike 1	LC	--	--	98	95	102	nt	nt	nt	nt	--	--
12	Percent recovery, 3 µg/L well spike 2	LC	--	--	96	94	107	nt	nt	nt	nt	--	--
12	Percent recovery, 3 µg/L well spike 3	LC	--	--	102	93	120	nt	nt	nt	nt	--	--
12	Site 07, lab duplicate, concentration	LC	03/22/93	--	<.2	<.2	<.2	<.2	nt	nt	nt	--	--
12	USGS-7, lab duplicate, concentration	LC	04/05/93	--	<.2	<.2	<.2	<.2	nt	nt	nt	--	--
12	MWS-07, lab duplicate, concentration	LC	04/07/93	--	<.2	<.2	<.2	<.2	nt	nt	nt	--	--
12	Lab blank (well sample run), concentration	LC	--	--	<.2	<.2	<.2	<.2	nt	nt	nt	--	--
12	Lab blank (lysimeter run), concentration	LC	--	--	<.2	<.2	<.2	<.2	nt	nt	nt	--	--
13	Percent recovery, 0.5 µg/L soil spike	LC	--	--	41	46	124	nt	nt	nt	nt	--	--
13	Percent recovery, 3 µg/L spike 1	LC	--	--	72	60	71	nt	nt	nt	nt	--	--
13	Percent recovery, 3 µg/L spike 2	LC	--	--	89	79	92	nt	nt	nt	nt	--	--
13	MWGS-01, lab duplicate, concentration	LC	--	--	<.2	<.2	<.2	<.2	nt	nt	nt	--	--
13	MWS-17, lab duplicate, concentration	LC	--	--	6.63	<.2	.32	<.2	nt	nt	nt	--	--
13	MWVR-24 (1.0-1.3 feet), lab duplicate, concentration	LC	--	--	<.5	<.5	<.5	<.5	nt	nt	nt	--	--
13	Lab blank (soil sample run), concentration	LC	--	--	<.5	<.5	<.5	<.5	nt	nt	nt	--	--
13	Lab blank (well sample run), concentration	LC	--	--	<.2	<.2	<.2	<.2	nt	nt	nt	--	--
13	MWV-09, lab duplicate, concentration	LC	04/13/93	1701	.71	<.2	<.2	<.2	nt	nt	nt	--	--
13	MWS-12, lab duplicate, concentration	LC	04/14/93	1201	111	28.9	7.6	<.2	nt	nt	nt	--	--
13	MWS-17, lab duplicate, concentration	LC	04/14/93	1001	6.68	<.2	.37	<.2	nt	nt	nt	--	--
14	Percent recovery, 1.5 µg/L spike (lysimeter sample run)	LC	--	--	99	103	102	56	nt	nt	nt	--	--
14	Lab blank, concentration	LC	--	--	<.24	<.29	<.13	<.18	<0.12	<0.14	nt	--	--
14	MW-4001, field split, concentration[c]	LC	05/18/93	--	<.6	<.6	<.6	<.6	nt	nt	nt	--	--
14	MW-4001, field split, concentration[d]	LC	05/18/93	--	nt	nt	nt	nd	nt	nt	nt	--	--
14	MW-4013, lab duplicate, concentration	LC	05/18/93	--	<.2	<.2	<.2	<.2	nt	nt	nt	--	--
14	MW-4013, field split, concentration[c]	LC	05/18/93	--	<.3	<.3	<.3	<.3	nt	nt	nt	--	--

Table 3. Quality assurance and quality control data for nitroaromatic compound samples at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

QC code	Description	Method	Date	Time	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl	Surrogate recovery (percent)	
												Toluene fraction	Isoamyl acetate fraction
14	MW-4013, field split, concentration[d]	LC	05/18/93	--	nt	nt	nt	nd	nt	nt	nt	--	--
14	MWS-01, field split, concentration[c]	LC	05/18/93	--	<0.3	<0.3	<0.3	<0.3	nt	nt	nt	--	--
14	MWS-01, field split, concentration[d]	LC	05/18/93	--	nt	nt	nt	nd	nt	nt	nt	--	--
14	MWS-17, field replicate	LC	05/17/95	1331	[b]1.51	<.2	<.2	<.2	<0.12	<0.14	nt	--	--
14	MWS-17, field split, concentration[c]	LC	05/17/93	--	<30	<30	<30	<30	nt	nt	nt	--	--
14	MWS-17, field split, concentration[d]	LC	05/17/93	--	<.3	<.3	<.3	<.3	nt	nt	nt	--	--
14	MWV-09, field duplicate, concentration	LC	05/18/93	--	<2	<2	<2	8.5	nt	nt	nt	--	--
14	MWV-09, field split, concentration[c]	LC	05/18/93	--	<.6	<.6	<.6	8.7	nt	nt	nt	--	--
14	MWS-12, field split, concentration[d]	LC	05/18/93	--	nt	nt	nt	nd	nt	nt	nt	--	--
15	Percent recovery, 1.5 µg/L spike (lysimeter sample run)	LC	--	--	96	82	97	58	nt	nt	nt	--	--
15	Lab blank, concentration	LC	--	--	<.5	<.5	<.5	<.5	nt	nt	nt	--	--
17	Percent recovery, 5.0 µg/L spike	LC	--	--	79	80	92	79	90	80	nt	--	--
17	Lab blank, concentration	LC	--	--	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
17b	Percent recovery, 5.0 µg/L spike	LC	--	--	97	89	88	93	nt	nt	nt	--	--
17b	Lab blank, concentration	LC	--	--	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
17b	LY24, lab duplicate, concentration	LC	02/17/94	--	<.24	<.29	<.13	<.18	nt	nt	nt	--	--
17c	Percent recovery, 5.0 µg/L spike	LC	--	--	84	91	88	86	nt	nt	nt	--	--
17c	Lab blank, concentration	LC	--	--	<.5	<.5	<.5	<.5	nt	nt	nt	--	--
17c	Schote Creek at County Road D, lab duplicate, concentration	LC	03/02/94	1510	<.24	<.29	<.13	<.18	nt	nt	nt	--	--
20	Percent recovery, 5.0 µg/L spike	LC	--	--	78	77	74	85	nt	102	nt	--	--
20	Lab blank, concentration	LC	--	--	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
20	LY22, lab duplicate, concentration	LC	04/21/94	1530	<.24	<.29	<.13	<.18	nt	nt	nt	--	--
21	Lab blank, concentration	LC	--	--	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
21	LY22, lab duplicate, concentration	LC	06/08/94	--	<.24	<.29	<.13	<.18	nt	nt	nt	--	--
22	Percent recovery, 5.0 µg/L spike	LC	--	--	82	78	82	87	nt	nt	nt	--	--
22	LY24, lab duplicate, concentration	LC	06/23/94	--	<.24	<.29	<.13	<.18	nt	nt	nt	--	--
22	MWS-24, lab duplicate, concentration	LC	07/19/94	1255	<.24	<.29	<.13	<.18	nt	nt	nt	--	--
22	Schote Creek at County Road D, lab duplicate, concentration	LC	07/20/94	1954	<.24	<.29	<.13	<.18	nt	nt	nt	--	--
22	Lab blank, concentration	LC	--	--	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--

Table 3. Quality assurance and quality control data for nitroaromatic compound samples at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

QC code	Description	Method	Date	Time	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl	Surrogate recovery (percent)	
												Toluene fraction	Isoamyl acetate fraction
23	Percent recovery, 5.0 µg/L spike 1	LC	--	--	96	88	92	92	nt	nt	nt	--	--
23	Percent recovery, 5.0 µg/L spike 2	LC	--	--	74	70	70	75	nt	nt	nt	--	--
23	LY24, lab duplicate, concentration	LC	08/09/94	1205	<.24	<.29	<.13	<.18	nt	nt	nt	--	--
23	LY23, lab duplicate, concentration	LC	09/02/94	1210	<.24	<.29	<.13	<.18	nt	nt	nt	--	--
24	Percent recovery, 5.0 µg/L spike 1	LC	--	--	92	94	95	97	nt	nt	nt	--	--
24	Percent recovery, 5.0 µg/L spike 2	LC	--	--	63	65	61	73	nt	nt	nt	--	--
24	LY24, lab duplicate, concentration	LC	09/14/94	1530	<.24	<.29	<.13	<.18	nt	nt	nt	--	--
24	LY24, lab duplicate, concentration	LC	10/05/94	1000	<.24	<.29	<.13	<.18	nt	nt	nt	--	--
25	Percent recovery, 5.0 µg/L spike 1	LC	--	--	95	97	94	94	nt	nt	nt	--	--
25	Percent recovery, 5.0 µg/L spike 2	LC	--	--	68	66	66	80	nt	nt	nt	--	--
25	Site 03, lab duplicate, concentration	LC	11/05/94	1825	<.24	<.29	<.13	<.18	nt	nt	nt	--	--
25	LY24, lab duplicate, concentration	LC	12/05/94	0935	<.24	<.29	<.13	<.18	nt	nt	nt	--	--
27	Cone splitter blank, concentration	GC	11/07/94	1700	<.2	<.2	<.2	<.05	<0.05	<1	<0.1	100	--
28	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	--	--	--	--	22	--	--	101
28	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	105	102	106	86	--	--	--	113	--
28	Cone splitter blank, concentration	GC	01/19/95	1330	<.2	<.2	<.2	<.05	nt	<1	<.1	112	105
28	Bottle rinsate blank, concentration	GC	01/20/95	1425	<.2	<.2	<.2	<.05	nt	<1	<.1	94	98
28	Lab blank (3 total), concentration	GC	--	--	<.2	<.2	<.2	<.05	nt	<1	<.1	119	112
30	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	--	--	--	--	nt	--	--	125
30	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	118	87	93	79	--	--	116	84	--
30	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	--	--	--	--	nt	--	--	127
30	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	94	71	81	69	--	--	108	119	--
30	Lab blank, concentration	GC	--	--	<.2	<.2	<.2	<.05	nt	<1	<.1	106	141
30	Bottle rinsate blank, concentration	GC	03/08/95	1400	<.2	<.2	<.2	<.05	nt	nt	<.1	84	95
31	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	0	0	0	0	--	179	0	--	106
31	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	92	87	83	76	--	0	84	76	--
31	Lab blank, concentration	GC	--	--	<.2	<.2	<.2	<.05	nt	<1	<.1	94	107
32	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	--	--	--	--	44	--	--	106
32	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	48	88	71	73	--	--	93	87	--

Table 3. Quality assurance and quality control data for nitroaromatic compound samples at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

QC code	Description	Method	Date	Time	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl	Surrogate recovery (percent)	
												Toluene fraction	Isoamyl acetate fraction
32	Lab blank, concentration	GC	--	--	<0.2	<0.2	<0.2	<0.05	nt	<1	<0.1	89	96
34	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	--	--	--	--	35	--	--	95
34	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	106	78	48	55	--	--	116	98	--
34	Lab blank, concentration	GC	--	--	<0.2	<.2	<.2	<.05	nt	<1	<.1	85	104
36	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	--	--	--	nt	75	--	--	102
36	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	140	112	115	112	--	--	117	111	--
36	Lab blank (2 total), concentration	GC	--	--	<.2	<.2	<.2	<.05	nt	<1	<.1	100	120
38	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	--	--	--	--	179	--	--	136
38	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	113	98	91	62	nt	--	97	100	--
38	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	--	--	--	--	144	--	--	124
38	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	125	118	107	89	nt	--	131	94	--
38	Lab blank, concentration	GC	--	--	<.2	<.2	<.2	<.05	nt	<1	<.1	89	111
38a	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	--	--	--	--	128	--	--	116
38a	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	138	50	103	87	nt	--	98	83	--
38a	Lab blank, concentration	GC	--	--	<.2	<.2	<.2	<.05	nt	<1	<.1	100	81
39	Percent recovery, 0.5 µg/L spike (isoamyl acetate fraction)	GC	--	--	--	--	--	--	--	151	--	--	108
39	Percent recovery, 0.5 µg/L spike (toluene fraction)	GC	--	--	128	103	100	74	nt	--	110	93	--
39	Lab blank, concentration	GC	--	--	<.2	<.2	<.2	<.05	nt	<1	<.1	91	109

[a] Concentration reported as both 2,6-DNT and 2,4-DNT.
[b] Compound may be present at or below the reported value but could not be specterally confirmed.
[c] Split sample results from U.S. Department of Energy contract laboratory (Mary Jank, International Technology Corporation, written commun., 1994).
[d] Split sample results from U.S. Army contract laboratory (Mary Jank, International Technology Corporation, written commun., 1994).
[e] Field spike of 2-Am and 4-Am prepared by the U.S. Army Corps of Engineers.

Table 4. Grain size, carbon and moisture contents, and concentrations of nitroaromatic compounds in soil and sediment samples, Weldon Spring training area, St. Charles County, Missouri

[Concentrations of nitroaromatic compounds are in milligrams per kilogram]

Depth (feet)	QC code (table 3)	Method	Date	Grain size			Carbon content		Moisture	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT[a]	2,4-DNT[a]
				Coarse	Silt	Clay	TC	OC								
Lysimeter LY22 borehole (fig. 3)																
0-0.2	5.5	LC	10/19/92	--	--	--	--	--	24	264	nt	41.6	56.9	98,000	[b]5.8	[b]5.8
0.5-0.7	5.5	LC	10/19/92	36	56	8	6.42	3.1	24	296	nt	8.2	2.9	83,800	[b]14.9	[b]14.9
1.0-1.2	5.5	LC	10/19/92	19	68	13	.62	.2	20	52.3	nt	2.08	1.04	116	<.25	<.25
2.5-2.7	5.5	LC	10/19/92	65	26	9	<.05	<.05	26	4.75	nt	<.25	<.25	2.08	<.25	<.25
3.0-3.2	5.5	LC	10/19/92	69	21	10	<.05	<.05	16	13.2	nt	<.25	<.25	10.9	<.25	<.25
4.0-4.2	5.5	LC	10/19/92	78	14	8	<.05	<.05	21	1.49	nt	<.25	<.25	.82	<.25	<.25
5.0-5.2	5.5	LC	10/19/92	31	49	20	<.05	<.05	21	<.25	nt	<.25	<.25	<.25	<.25	<.25
6.0-6.2	5.5	LC	10/19/92	84	9	7	<.05	<.05	19	<.25	nt	<.25	<.25	.37	<.25	<.25
6.8-7.0	5.5	LC	10/19/92	76	13	11	<.05	<.05	22	<.25	nt	<.25	<.25	<.25	<.25	<.25
7.5-7.7	5.5	LC	10/19/92	60	26	14	<.05	<.05	19	<.25	nt	<.25	<.25	.68	<.25	<.25
8.5-8.7	5.5	LC	10/19/92	77	14	9	<.05	<.05	18	<.25	nt	<.25	<.25	<.25	<.25	<.25
9.3	5.5	LC	10/19/92	--	--	--	--	--	14	<.25	nt	<.25	<.25	.31	<.25	<.25
10.2-10.4	5.5	LC	10/19/92	68	21	11	<.05	<.05	20	<.25	nt	<.25	<.25	[c]3.1	<.25	<.25
Lysimeter LY32 borehole (fig. 3)																
0-0.9	7.5	LC	11/06/92	--	--	--	--	--	18	<0.25	nt	<0.25	<0.25	<0.25	<0.25	<0.25
2.9-3.1	7.5	LC	11/06/92	--	--	--	--	--	17	<.25	nt	<.25	<.25	<.25	<.25	<.25
4.8-5.0	7.5	LC	11/06/92	--	--	--	--	--	21	<.25	nt	<.25	<.25	<.25	<.25	<.25
9.6-9.8	7.5	LC	11/06/92	--	--	--	--	--	17	<.25	nt	<.25	<.25	<.25	<.25	<.25
11.5-11.7	7.5	LC	11/06/92	--	--	--	--	--	20	<.25	nt	<.25	<.25	<.25	<.25	<.25
15.1-15.3	7.5	LC	11/06/92	--	--	--	--	--	21	<.25	nt	<.25	<.25	<.25	<.25	<.25
Lysimeter LY33 borehole (fig. 3)																
5.7-6.0	7.5	LC	11/06/92	--	--	--	--	--	20	<0.25	nt	<0.25	<0.25	<0.25	<0.25	<0.25

Table 4. Grain size, carbon and moisture contents, and concentrations of nitroaromatic compounds in soil and sediment samples, Weldon Spring training area, St. Charles County, Missouri—Continued

Depth (feet)	QC code (table 3)	Method	Date	Grain size			Carbon content		Moisture	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT[a]	2,4-DNT[a]
				Coarse	Silt	Clay	TC	OC								
Lysimeter LY34 borehole (fig. 3)																
0-0.2	7.5	LC	11/05/92	--	--	--	--	--	18	<0.25	nt	<0.25	<0.25	<0.25	<0.25	<0.25
0.9-1.1	7.5	LC	11/05/92	--	--	--	--	--	18	<.25	nt	<.25	<.25	<.25	<.25	<.25
2.8-3.0	7.5	LC	11/05/92	--	--	--	--	--	23	<.25	nt	<.25	<.25	<.25	<.25	<.25
3.8-4.0	7.5	LC	11/05/92	--	--	--	--	--	21	<.25	nt	<.25	<.25	<.25	<.25	<.25
4.7-4.9	7.5	LC	11/05/92	--	--	--	--	--	20	<.25	nt	<.25	<.25	<.25	<.25	<.25
5.7-5.9	7.5	LC	11/05/92	--	--	--	--	--	16	<.25	nt	<.25	<.25	<.25	<.25	<.25
6.6-6.8	7.5	LC	11/05/92	--	--	--	--	--	14	<.25	nt	<.25	<.25	<.25	<.25	<.25
7.6-7.8	7.5	LC	11/05/92	--	--	--	--	--	18	<.25	nt	<.25	<.25	<.25	<.25	<.25
10.3-10.5	7.5	LC	11/05/92	--	--	--	--	--	22	<.25	nt	<.25	<.25	<.25	<.25	<.25
16.6	7.5	LC	11/05/92	--	--	--	--	--	26	<.25	nt	<.25	<.25	<.25	<.25	<.25
Monitoring well MWS-21 borehole (fig. 9)																
0-0.2	7.5	LC	05/04/92	36	54	10	4.3	2.8	17	1	nt	0.4	0.7	0.6	<0.1	<0.1
0.7-0.9	7.5	LC	05/04/92	47	43	10	5.2	.2	17	1.2	nt	1.1	1.4	38.4	<.1	<.1
2.0-2.2	7.5	LC	05/04/92	10	59	31	.12	.12	18	2.3	nt	<.1	<.1	.8	<.1	<.1
3.0-3.2	7.5	LC	05/04/92	13	60	27	.11	.11	17	4.2	nt	<.1	<.1	1.3	<.1	<.1
3.5-3.7	7.5	LC	05/04/92	16	60	24	.16	.16	21	<.1	nt	<.1	<.1	<.1	<.1	<.1
4.0-4.2	7.5	LC	05/04/92	19	56	25	.05	.05	16	<.1	nt	<.1	<.1	<.1	<.1	<.1
5.0-5.2	7.5	LC	05/04/92	25	40	35	.16	.16	16	<.1	nt	<.1	<.1	<.1	<.1	<.1
10.0-10.2	7.5	LC	05/04/92	2	60	38	<.05	<.05	20	<.1	nt	<.1	<.1	<.1	<.1	<.1
15.0-15.2	7.5	LC	05/04/92	15	58	27	<.05	<.05	21	<.1	nt	<.1	<.1	<.1	<.1	<.1
20.0-20.2	7.5	LC	05/04/92	13	49	38	.24	<.01	31	<.1	nt	<.1	<.1	<.1	<.1	<.1
25.0-25.2	7.5	LC	05/04/92	86	10	4	<.05	<.05	10	<.1	nt	<.1	<.1	<.1	<.1	<.1
29.3-29.5	7.5	LC	05/04/92	86	11	4	.11	<.01	16	<.1	nt	<.1	<.1	<.1	<.1	<.1
35.0-35.2	7.5	LC	05/04/92	81	12	7	.37	.01	18	<.1	nt	<.1	<.1	<.1	<.1	<.1

Table 4. Grain size, carbon and moisture contents, and concentrations of nitroaromatic compounds in soil and sediment samples, Weldon Spring training area, St. Charles County, Missouri—Continued

Depth (feet)	QC code (tabie 3)	Method	Date	Grain size			Carbon content		Moisture	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT[a]	2,4-DNT[a]
				Coarse	Slit	Clay	TC	OC								
Monitoring well MWV-22 borehole (fig. 9)																
0-0.2	3.5	LC	05/02/92	77	18	5	10.1	0.83	12	<0.1	nt	<0.1	<0.1	0.62	<0.1	<0.1
1.0-1.2	3.5	LC	05/02/92	9	75	16	.2	.18	18	<.1	nt	<.1	<.1	<.1	<.1	<.1
2.0-2.2	3.5	LC	05/02/92	10	62	28	.08	.07	18	<.1	nt	<.1	<.1	<.1	<.1	<.1
3.0-3.2	3.5	LC	05/02/92	7	54	39	.08	.08	22	<.1	nt	<.1	<.1	<.1	<.1	<.1
4.0-4.2	3.5	LC	05/02/92	9	52	39	<.05	<.05	17	<.1	nt	<.1	<.1	<.1	<.1	<.1
5.0-5.2	3.5	LC	05/02/92	9	54	37	.09	.07	18	<.1	nt	<.1	<.1	<.1	<.1	<.1
10.0-10.2	3.5	LC	05/02/92	55	29	16	<.05	<.05	13	<.1	nt	<.1	<.1	<.1	<.1	<.1
20.0-20.2	3.5	LC	05/02/92	66	22	12	<.05	<.05	24	<.1	nt	<.1	<.1	<.1	<.1	<.1
30.0-30.2	3.5	LC	05/02/92	--	--	--	--	--	--	<.1	nt	<.1	<.1	<.1	<.1	<.1
Monitoring well MWS-22 borehole (fig. 9)																
0-0.2	5.5	LC	10/14/92	34	57	9	3.75	1.2	14	<0.1	nt	<0.1	<0.1	<0.1	<0.1	<0.1
1.0-1.2	5.5	LC	10/14/92	10	77	13	.12	.12	18	<.1	nt	<.1	<.1	<.1	<.1	<.1
2.0-2.2	5.5	LC	10/14/92	14	62	24	.06	<.05	16	<.1	nt	<.1	<.1	<.1	<.1	<.1
3.0-3.2	5.5	LC	10/14/92	5	64	31	<.05	<.05	23	1.3	nt	<.1	<.1	2.9	<.1	<.1
4.0-4.2	5.5	LC	10/14/92	6	53	41	<.05	<.05	21	<.1	nt	<.1	<.1	<.1	<.1	<.1
5.0-5.2	5.5	LC	10/14/92	7	65	28	<.05	<.05	17	<.1	nt	<.1	<.1	<.1	<.1	<.1
10.0-10.2	5.5	LC	10/14/92	60	27	13	<.05	<.05	16	<.1	nt	<.1	<.1	<.1	<.1	<.1
15.0-15.2	5.5	LC	10/14/92	87	8	5	<.05	<.05	20	<.1	nt	<.1	<.1	<.1	<.1	<.1
20.0-20.2	5.5	LC	10/14/92	80	11	9	<.05	<.05	15	<.1	nt	<.1	<.1	<.1	<.1	<.1
25.0-25.2	5.5	LC	10/14/92	91	5	4	<.05	<.05	28	<.1	nt	<.1	<.1	<.1	<.1	<.1
30.0-30.2	5.5	LC	10/14/92	76	12	12	<.05	<.05	37	<.1	nt	<.1	<.1	<.1	<.1	<.1
35.0-35.2	5.5	LC	10/14/92	51	25	24	<.05	<.05	43	<.1	nt	<.1	<.1	<.1	<.1	<.1

Table 4. Grain size, carbon and moisture contents, and concentrations of nitroaromatic compounds in soil and sediment samples, Weldon Spring training area, St. Charles County, Missouri—Continued

Depth (feet)	QC code (table 3)	Method	Date	Grain size			Carbon content		Moisture	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT[a]	2,4-DNT[a]
				Coarse	Silt	Clay	TC	OC								
Monitoring well MWS-23 borehole (fig. 9)																
0-0.2	3.5	LC	05/02/92	24	68	8	2.56	1.52	30	<0.1	nt	<0.1	<0.1	<0.1	<0.1	<0.1
1.0-1.2	3.5	LC	05/02/92	6	82	12	.81	.81	22	<.1	nt	<.1	<.1	.7	<.1	<.1
2.0-2.2	3.5	LC	05/02/92	2	78	20	.73	.73	24	<.1	nt	<.1	<.1	<.1	<.1	<.1
5.0-5.5	3.5	LC	05/02/92	3	75	22	.13	.13	19	<.1	nt	<.1	<.1	<.1	<.1	<.1
9.5-9.7	3.5	LC	05/02/92	4	60	36	.17	.17	18	<.1	nt	<.1	<.1	<.1	<.1	<.1
16.6-16.8	3.5	LC	05/02/92	29	44	27	<.05	<.05	16	<.1	nt	<.1	<.1	.9	<.1	<.1
26.2-26.4	3.5	LC	05/02/92	66	16	18	<.05	<.05	20	<.1	nt	<.1	<.1	<.1	<.1	<.1
39.8-40.0	3.5	LC	05/02/92	86	11	3	<.05	<.05	14	<.1	nt	<.1	<.1	<.1	<.1	<.1
Monitoring well MWS-24 borehole (fig. 9)																
0-0.3	5.5	LC	10/19/92	23	72	5	--	--	23	<0.1	nt	<0.1	<0.1	<0.1	<0.1	<0.1
1.0-1.2	5.5	LC	10/19/92	15	80	5	0.74	0.7	11	<.1	nt	<.1	<.1	<.1	<.1	<.1
2.0-2.1	5.5	LC	10/19/92	6	88	6	.98	--	9	<.1	nt	<.1	<.1	<.1	<.1	<.1
3.0-3.1	5.5	LC	10/19/92	5	91	4	.68	.68	8	<.1	nt	<.1	<.1	<.1	<.1	<.1
4.0-4.1	5.5	LC	10/19/92	12	79	9	1.04	--	15	<.1	nt	<.1	<.1	<.1	<.1	<.1
5.0-5.1	5.5	LC	10/19/92	10	82	8	.48	.36	11	<.1	nt	<.1	<.1	<.1	<.1	<.1
13.0-13.0	5.5	LC	10/19/92	4	66	30	--	--	25	<.1	nt	<.1	<.1	<.1	<.1	<.1
30.0-30.1	5.5	LC	10/19/92	27	51	22	4.4	--	14	<.1	nt	<.1	<.1	<.1	<.1	<.1
Bottom sediment, pond near monitoring well MWV-09 (fig. 3)																
A, 0-0.5	9	LC	01/26/93	--	--	--	--	--	33	<0.25	[d]<0.25	0.65	0.68	3.68	<0.25	[d]<0.25
A, 0.5-1.0	9	LC	01/26/93	--	--	--	--	--	25	<.25	<.25	131	34.3	828	<.25	[d]<2.5
A, 1.7-1.9	9	LC	01/26/93	--	--	--	--	--	23	<.25	<.25	[d].43	[d]<.25	6.11	<.25	<.25
B, 0-0.4	9	LC	01/26/93	--	--	--	--	--	39	<.25	<.25	<.25	<.25	<.25	<.25	<.25
B, 0.4-1.0	9	LC	01/26/93	--	--	--	--	--	34	<.25	<.25	<.25	<.25	<.25	<.25	<.25
B, 1.0-1.4	9	LC	01/26/93	--	--	--	--	--	26	[d]<.25	<.25	2.83	1.61	9.02	<.25	[d]<.25

Table 4. Grain size, carbon and moisture contents, and concentrations of nitroaromatic compounds in soil and sediment samples, Weldon Spring training area, St. Charles County, Missouri—Continued

Depth (feet)	QC code (table 3)	Method	Date	Grain size			Carbon content		Moisture	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT[a]	2,4-DNT[a]
				Coarse	Silt	Clay	TC	OC								
Bottom sediment, pond near monitoring well MWV-09 (fig. 3)—Continued																
B, 1.4-1.6	9	LC	01/26/93	--	--	--	--	--	23	3.91	<0.25	9.87	4.95	101	<0.25	<2.5
B, 1.6-1.9	9	LC	01/26/93	--	--	--	--	--	19	1.64	<.25	3.18	.91	32.6	<.25	[d]<.25
C, 0-0.3	9	LC	01/26/93	--	--	--	--	--	72	<.25	<.25	<.25	<.25	<.25	<.25	<.25
C, 0.3-0.8	9	LC	01/26/93	--	--	--	--	--	28	<.25	<.25	<.25	<.25	<.25	<.25	<.25
C, 0.8-1.3	9	LC	01/26/93	--	--	--	--	--	23	[d]<.25	[d]<.25	<.25	<.25	[d].29	<.25	[d]<.25
C, 1.3-1.9	9	LC	01/26/93	--	--	--	--	--	22	[d]<.25	[d]<.25	<.25	<.25	[d].48	<.25	[d]<.25
D, 0.2-0.6	9	LC	01/26/93	--	--	--	--	--	39	<.25	<.25	<.25	<.25	<.25	<.25	<.25
D, 0.6-1.0	9	LC	01/26/93	--	--	--	--	--	27	<.25	<.25	<.25	<.25	<.25	<.25	<.25
D, 1.2-1.4	9	LC	01/26/93	--	--	--	--	--	17	8.98	4.87	6.99	5.26	728	<.25	7.39
D, 1.4-1.7	9	LC	01/26/93	--	--	--	--	--	13	.67	.75	3.62	2.1	29.9	<.25	.7

Table 4. Grain size, carbon and moisture contents, and concentrations of nitroaromatic compounds in soil and sediment samples, Weldon Spring training area, St. Charles County, Missouri—Continued

Depth (feet)	QC code (table 3)	Method	Date	DNB	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl
Lysimeter LY22 borehole (fig. 3)											
0-0.2	5.5	LC	10/19/92	nt	<0.25	<0.25	<0.25	<0.26	<2.2	<1.0	<0.65
0.5-0.7	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
1.0-1.2	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
2.5-2.7	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
3.0-3.2	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
4.0-4.2	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
5.0-5.2	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
6.0-6.2	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
6.8-7.0	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
7.5-7.7	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
8.5-8.7	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
9.3	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
10.2-10.4	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
Lysimeter LY32 borehole (fig. 3)											
0-0.9	7.5	LC	11/06/92	nt	<0.25	<0.25	<0.25	<0.26	<2.2	<1.0	<0.65
2.9-3.1	7.5	LC	11/06/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
4.8-5.0	7.5	LC	11/06/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
9.6-9.8	7.5	LC	11/06/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
11.5-11.7	7.5	LC	11/06/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
15.1-15.3	7.5	LC	11/06/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
Lysimeter LY33 borehole (fig. 3)											
5.7-6.0	7.5	LC	11/06/92	nt	<0.25	<0.25	<0.25	<0.26	<2.2	<1.0	<0.65

Table 4. Grain size, carbon and moisture contents, and concentrations of nitroaromatic compounds in soil and sediment samples, Weldon Spring training area, St. Charles County, Missouri—Continued

Depth (feet)	QC code (table 3)	Method	Date	DNB	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl
Lysimeter LY34 borehole (fig. 3)											
0-0.2	7.5	LC	11/05/92	nt	<0.25	<0.25	<0.25	<0.26	<2.2	<1.0	<0.65
0.9-1.1	7.5	LC	11/05/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
2.8-3.0	7.5	LC	11/05/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
3.8-4.0	7.5	LC	11/05/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
4.7-4.9	7.5	LC	11/05/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
5.7-5.9	7.5	LC	11/05/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
6.6-6.8	7.5	LC	11/05/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
7.6-7.8	7.5	LC	11/05/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
10.3-10.5	7.5	LC	11/05/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
16.6	7.5	LC	11/05/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	<.65
Monitoring well MWS-21 borehole (fig. 3)											
0-0.2	7.5	LC	05/04/92	nt	<0.25	<0.25	<0.25	<0.26	<2.2	<1.0	nt
0.7-0.9	7.5	LC	05/04/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
2.0-2.2	7.5	LC	05/04/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
3.0-3.2	7.5	LC	05/04/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
3.5-3.7	7.5	LC	05/04/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
4.0-4.2	7.5	LC	05/04/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
5.0-5.2	7.5	LC	05/04/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
10.0-10.2	7.5	LC	05/04/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
15.0-15.2	7.5	LC	05/04/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
20.0-20.2	7.5	LC	05/04/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
25.0-25.2	7.5	LC	05/04/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
29.3-29.5	7.5	LC	05/04/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
35.0-35.2	7.5	LC	05/04/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt

Table 4. Grain size, carbon and moisture contents, and concentrations of nitroaromatic compounds in soil and sediment samples, Weldon Spring training area, St. Charles County, Missouri—Continued

Depth (feet)	QC code (table 3)	Method	Date	DNB	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl
Monitoring well MWV-22 borehole (fig. 3)											
0-0.2	3.5	LC	05/02/92	nt	<0.25	<0.25	<0.25	<0.26	<2.2	<1.0	nt
1.0-1.2	3.5	LC	05/02/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
2.0-2.2	3.5	LC	05/02/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
3.0-3.2	3.5	LC	05/02/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
4.0-4.2	3.5	LC	05/02/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
5.0-5.2	3.5	LC	05/02/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
10.0-10.2	3.5	LC	05/02/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
20.0-20.2	3.5	LC	05/02/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
30.0-30.2	3.5	LC	05/02/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
Monitoring well MWS-22 borehole (fig. 3)											
0-0.2	5.5	LC	10/14/92	nt	<0.25	<0.25	<0.25	<0.26	<2.2	<1.0	nt
1.0-1.2	5.5	LC	10/14/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
2.0-2.2	5.5	LC	10/14/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
3.0-3.2	5.5	LC	10/14/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
4.0-4.2	5.5	LC	10/14/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
5.0-5.2	5.5	LC	10/14/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
10.0-10.2	5.5	LC	10/14/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
15.0-15.2	5.5	LC	10/14/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
20.0-20.2	5.5	LC	10/14/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
25.0-25.2	5.5	LC	10/14/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
30.0-30.2	5.5	LC	10/14/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
35.0-35.2	5.5	LC	10/14/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt

Table 4. Grain size, carbon and moisture contents, and concentrations of nitroaromatic compounds in soil and sediment samples, Weldon Spring training area, St. Charles County, Missouri—Continued

Depth (feet)	QC code (table 3)	Method	Date	DNB	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl
Monitoring well MWS-23 borehole (fig. 3)											
0-0.2	3.5	LC	05/02/92	nt	<0.25	<0.25	<0.25	<0.26	<2.2	<1.0	nt
1.0-1.2	3.5	LC	05/02/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
2.0-2.2	3.5	LC	05/02/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
5.0-5.5	3.5	LC	05/02/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
9.5-9.7	3.5	LC	05/02/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
16.6-16.8	3.5	LC	05/02/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
26.2-26.4	3.5	LC	05/02/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
39.8-40.0	3.5	LC	05/02/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
Monitoring well MWS-24 borehole (fig. 3)											
0-0.3	5.5	LC	10/19/92	nt	<0.25	<0.25	<0.25	<0.26	<2.2	<1.0	nt
1.0-1.2	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
2.0-2.1	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
3.0-3.1	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
4.0-4.1	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
5.0-5.1	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
13.0-13.0	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
30.0-30.1	5.5	LC	10/19/92	nt	<.25	<.25	<.25	<.26	<2.2	<1.0	nt
Bottom sediment, pond near monitoring well MWV-09 (fig. 3)											
A, 0-0.5	9	LC	01/26/93	<0.5	<0.5	<0.5	<0.5	<0.5	<2.2	<1.0	nt
A, 0.5-1.0	9	LC	01/26/93	<.5	<.5	<.5	<.5	<.5	<2.2	<1.0	nt
A, 1.7-1.9	9	LC	01/26/93	<.5	<.5	<.5	<.5	<.5	<2.2	<1.0	nt
B, 0-0.4	9	LC	01/26/93	<.25	<.25	<.25	<.25	<.25	<2.2	<1.0	nt
B, 0.4-1.0	9	LC	01/26/93	<.25	<.25	<.25	<.25	<.25	<2.2	<1.0	nt
B, 1.0-1.4	9	LC	01/26/93	<.25	<.25	<.25	<.25	<.25	<2.2	<1.0	nt

Table 4. Grain size, carbon and moisture contents, and concentrations of nitroaromatic compounds in soil and sediment samples, Weldon Spring training area, St. Charles County, Missouri—Continued

Depth (feet)	QC code (table 3)	Method	Date	DNB	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl
Bottom sediment, pond near monitoring well MWV-09 (fig. 3)—Continued											
B, 1.4-1.6	9	LC	01/26/93	<0.25	<0.25	<0.25	<0.25	<0.25	<2.2	<1.0	nt
B, 1.6-1.9	9	LC	01/26/93	<.25	<.25	<.25	<.25	<.25	<2.2	<1.0	nt
C, 0-0.3	9	LC	01/26/93	<.25	<.25	<.25	<.25	<.25	<2.2	<1.0	nt
C, 0.3-0.8	9	LC	01/26/93	<.25	<.25	<.25	<.25	<.25	<2.2	<1.0	nt
C, 0.8-1.3	9	LC	01/26/93	<.25	<.25	<.25	<.25	<.25	<2.2	<1.0	nt
C, 1.3-1.9	9	LC	01/26/93	<.25	<.25	<.25	<.25	<.25	<2.2	<1.0	nt
D, 0.2-0.6	9	LC	01/26/93	<.25	<.25	<.25	<.25	<.25	<2.2	<1.0	nt
D, 0.6-1.0	9	LC	01/26/93	<.25	<.25	<.25	<.25	<.25	<2.2	<1.0	nt
D, 0.2-1.4	9	LC	01/26/93	<.25	<.25	<.25	<.25	<.25	<2.2	<1.0	nt
D, 0.4-1.7	9	LC	01/26/93	<.25	<.25	<.25	<.25	<.25	<2.2	<1.0	nt

[a] Concentration reported is a mixture of 2,6-DNT and 2,4-DNT.
[b] Concentration estimated due to interference.
[c] Concentration may be the result of contamination at the time of collection.
[d] Constituent may be present at or below the reported value but could not be spectrally confirmed.
[e] Sample contained 2,6-diamino-4-nitrotoluene and 2,4-diamino-6-nitrotoluene up to 100 milligrams per kilogram (identified by gas chromatography/mass spectrometry).

Table 5. Physical properties and bromide concentrations in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri

[cb, centibars; mL, milliliter; SC, specific conductance in microsiemens per centimeter at 25 degrees Celsius; Temp, temperature, in degrees Celsius; pH, in standard units; Br, bromide, in milligrams per liter; --, no data; e, estimated]

Date	Time	Lysimeter vacuum		Sample volume (mL)	SC	Temp	pH	Br
		Initial (cb)	Applied (cb)					
				Lysimeter LY22 (fig. 3)				
10/19/92	0800	--	92	--	--	--	--	--
10/28/92	0810	30	92	750	--	--	--	--
11/04/92	1100	20	92	700	--	--	--	--
11/10/92	1310	42	80	500	--	--	--	--
11/23/92	1132	34	92	625	--	--	--	--
12/02/92	1240	35	92	770	1,350	7.5	--	--
12/10/92	--	43	90	670	1,410	5.3	--	--
12/15/92	0820	78	92	450	1,440	--	6.6	--
01/21/93	--	82	92	390	1,280	4.8	--	--
02/04/93	--	80	93	510	1,220	4.6	--	--
02/09/93	0915	82	94	300	1,200	5.8	--	--
02/18/93	1005	70	92	550	1,180	2.2	--	--
03/01/93	--	62	93	650	1,120	3.8	--	--
03/08/93	1345	80	94	400	1,130	5.4	5.3	--
03/18/93	1145	61	94	500	1,110	4.5	--	<0.01
03/23/93	0715	87	93	300	1,070	5.4	6	--
04/02/93	1000	64	94	550	1,070	6.7	6	--
04/07/93	1200	88	92	400	--	--	7	--
04/16/93	1030	48	80	520	--	--	6	--
04/21/93	1540	63	92	300e	--	--	--	--
04/27/93	1015	76	90	370	1,040	14	6	--
05/11/93	--	6	90	650	1,033	--	--	--
05/18/93	--	56	88	575	1,030	15.7	--	--
05/28/93	--	30	92	620	989	17.3	6.5	--
06/03/93	--	64	90	505	979	19.3	6.5	--
06/11/93	0925	57	82	590	952	20.2	6.5	--
06/17/93	0810	56	92	400	--	--	--	--
06/28/93	1120	4	86	650	984	24.5	--	--
07/08/93	1655	5	90	710	977	22.2	--	--
12/07/93	0800	20	86	730	1,080	--	--	--
12/14/93	--	10	93	750	1,060	--	--	--
12/27/93	1015	--	--	--	--	--	--	--
01/05/94	1415	18	96	700	1,030	9.1	--	--
01/12/94	1210	12	94	650	1,020	4.3	--	--
02/02/94	1240	--	--	--	--	--	--	--
02/17/94	1210	--	--	--	--	--	--	--
03/01/94	1210	--	90	650	958	3.4	--	--
03/09/94	--	10	90	670	937	6.1	--	--
04/05/94	1500	8	86	650	949	8.6	--	--
04/13/94	1420	18	96	630	928	10.7	--	--
04/21/94	1530	--	--	--	--	--	--	--
05/09/94	0945	8	100	720	917	14.8	--	--
05/25/94	1325	12	100	725	903	20	--	.3?
06/03/94	1135	8	100	740	890	18	--	--

Table 5. Physical properties and bromide concentrations in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri—Continued

Date	Time	Lysimeter vacuum		Sample volume (mL)	SC	Temp	pH	Br
		Initial (cb)	Applied (cb)					
				Lysimeter LY22 (fig. 3)—Continued				
06/08/94	1355	--	--	--	--	--	--	--
06/23/94	0820	16	100	750	791	21.1	--	--
07/19/94	1325	32	98	550	870	23.2	--	--
07/26/94	--	14	100	720	887	21.3	--	--
08/09/94	1215	18	100	900	893	21.8	--	--
08/17/94	--	38	98	--	902	22.5	--	0.52
08/24/94	0755	22	91	--	904	22	--	.5
09/02/94	1215	12	98	750	922	20	--	.67
09/14/94	1540	28	94	--	936	20.6	--	.69
09/22/94	1425	26	96	750	914	18.6	--	.54
10/05/94	0950	12	98	660	916	17.5	--	.58
10/14/94	0950	16	98	730	910	14.5	--	--
10/20/94	1010	30	98	700	884	17	--	.84
10/26/94	1515	40	94	600	910	14.2	--	.92
11/01/94	1325	48	98	650	939	13.2	--	1.1
12/07/94	0935	13	98	800	934	10.0	--	.68
12/15/94	1247	6	96	750	877	7.5	--	--
12/20/94	1231	19	98	800	874	6.1	--	3.6
01/07/95	1000	15	98	720	878	3.0	--	4.7
01/18/95	1038	13	98	725	847	4.9	--	--
01/27/95	1000	11	98	720	848	2.8	--	7.3
01/31/95	1150	14	98	700	832	2.9	--	8.2
02/14/95	1040	10	98	710	822	2.9	--	8.1
03/03/95	1010	10	98	700	799	3.9	--	9
03/09/95	1030	18	98	720	781	5.7	--	--
03/16/95	1532	20	98	710	751	9.8	--	--
03/27/95	1438	20	98	690	743	10.9	--	--
04/04/95	1235	24	98	750	738	9.2	--	--
04/19/95	1402	20	98	700	725	14.8	--	11
05/04/95	1110	2	96	750	654	12.1	--	11
05/16/95	1355	--	--	--	--	--	--	12
05/30/95	0845	19	98	720	711	16.3	--	12
06/16/95	1125	--	--	--	--	--	--	13
06/22/95	1030	14	90	750	739	20.8	--	--
07/06/95	1755	18	90	--	750	20.5	--	12
07/21/95	0730	17	90	700	733	21.7	--	12
07/27/95	1220	17	90	700	733	21.7	--	--
08/01/95	1234	10	88	700	754	23.5	--	13
08/14/95	1730	--	--	--	--	--	--	--
08/31/95	1005	20	90	700			--	--
09/08/95	0910	14	90	700	743	21.3	--	--
09/14/95	0909	21	90	700	747	20.3	--	--
09/22/95	0923	20	90	725	767	17.4	--	--
09/28/95	0748	--	--	--	--	--	--	15

Table 5. Physical properties and bromide concentrations in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri—Continued

Date	Time	Lysimeter vacuum		Sample volume (mL)	SC	Temp	pH	Br
		Initial (cb)	Applied (cb)					
				Lysimeter LY23 (fig. 3)				
10/19/92	0900	--	92	--	--	--	--	--
10/28/92	0815	34	92	750	--	--	--	--
11/04/92	--	40	92	725	--	--	--	--
11/10/92	1310	46	85	500	--	--	--	--
11/23/92	1129	37	92	625	--	--	--	--
12/10/92	0053	53	90	645	543	8.9	--	--
12/15/92	0825	77	92	400	550	--	6.6	--
01/21/93	--	78	94	525	744	6.7	--	--
02/04/93	--	60	93	700	725	7	--	--
02/09/93	1020	78	94	450	708	7	--	--
02/18/93	1000	--	92	700	673	4.8	--	--
03/01/93	1105	41	92	730	647	6.6	--	--
03/08/93	1350	72	94	600	654	7.4	5.5	--
03/18/93	1130	33	94	700	644	5.9	--	0.03
03/23/93	0710	83	93	500	628	6.3	6.5	--
04/02/93	1000	45	92	580	651	6.7	5.5	--
04/07/93	1205	82	92	300	--	--	6	--
04/16/93	1030	32	80	570	661	8.4	5.5	--
04/21/93	1525	62	92	500	--	--	--	--
04/27/93	1015	74	95	370	625	11.7	5.5	--
05/11/93	--	22	90	750	600	--	--	--
05/18/93	--	52	88	610	602	13.9	--	--
05/28/93	--	22	94	665	621	15	6	--
06/03/93	--	67	90	520	596	16.1	5.5	--
06/11/93	0925	0	88	625	595	17.8	6	--
06/17/93	0800	64	92	650	614	18.8	--	--
06/28/93	1127	4	82	735	614	21	--	--
07/08/93	1650	16	90	650	628	19.2	--	--
12/07/93	0800	24	86	810	703	--	--	--
12/14/93	--	12	94	750	600	7	--	--
12/27/93	--	--	--	--	--	--	--	--
01/05/94	1420	18	93	800	636	6.4	--	--
01/24/94	1205	--	--	--	--	--	--	--
02/02/94	1235	6	82	670	539	6.4	--	--
02/17/94	1215	8	90	680	513	7	--	--
03/01/94	1205	4	90	600	545	5.6	--	--
03/09/94	--	--	--	--	--	--	--	--
04/05/94	1455	4	84	650	526	8.5	--	--
04/13/94	1420	10	96	670	541	11.2	--	--
04/21/94	1530	--	--	--	--	--	--	--
05/09/94	0953	20	100	750	540	13.4	--	--
05/25/94	1330	15	100	755	526	15.9	--	<.01
06/03/94	1142	12	100	760	535	15.7	--	--
06/23/94	0815	16	100	720	449	17.4	--	--
07/19/94	1320	32	98	750	537	20.3	--	--

Table 5. Physical properties and bromide concentrations in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri—Continued

Date	Time	Lysimeter vacuum		Sample volume (mL)	SC	Temp	pH	Br
		Initial (cb)	Applied (cb)					
				Lysimeter LY23 (fig. 3)—Continued				
07/26/94	--	14	98	740	603	18.9	--	--
08/09/94	1210	20	100	950	405	20.5	--	--
08/17/94	--	18	98	780	617	21.8	--	--
08/24/94	--	20	98	--	631	20.5	--	<0.01
09/02/94	1210	9	98	750	628	19.2	--	<.05
09/14/94	1535	32	83	--	642	20.1	--	<.05
09/22/94	--	18	96	650	616	17.6	--	<.05
10/05/94	--	--	--	--	--	--	--	<.05
10/14/94	--	10	98	340	608	15.4	--	<.05
10/20/94	--	--	--	--	--	--	--	<.05
10/26/94	--	20	94	650	670	15.7	--	<.01
11/01/94	--	10	98	750	661	14.9	--	<.01
12/05/94	0935	11	98	800	640	11.5	--	<.01
12/15/94	1245	8	96	700	655	10.8	--	--
12/20/94	1222	12	98	730	662	9.1	--	<.01
01/07/95	0950	12	98	680	641	6.5	--	.01
01/18/95	1030	15	98	730	624	7.0	--	--
01/27/95	0950	12	98	750	612	6	--	--
01/31/95	1140	16	98	750	585	6	--	<.01
02/14/95	1030	11	98	740	563	6	--	<.01
03/03/95	1000	14	96	680	525	5.7	--	<.01
03/09/95	1020	16	98	740	518	6.3	--	--
03/16/95	1525	18	98	740	517	9.2	--	--
03/27/95	1430	14	98	725	493	10	--	--
04/04/95	1230	12	98	745	483	9.6	--	<.01
04/14/95	0918	18	98	740	478	10.2	--	--
04/19/95	1356	18	98	740	476	12.7	--	<.01
05/04/95	1102	4	96	730	422	11.6	--	<.01
05/16/95	1350	--	--	--	--	--	--	<.01
05/30/95	0840	18	98	740	452	15.1	--	<.01
06/16/95	1120	--	--	--	--	--	--	<.01
06/22/95	1035	--	90	750	487	18.2	--	--
07/06/95	1750	26	90	--	488	19.4	--	<.01
07/21/95	0722	15	93	740	476	19.8	--	<.01
07/27/95	1215	13	90	750	499	20	--	--
08/01/95	1224	12	86	730	510	21.5	--	<.01
08/14/95	1725	--	--	--	--	--	--	--
08/31/95	1000	21	90	700	--	--	--	<.01
09/08/95	0906	20	90	730	512	19.7	--	--
09/14/95	0905	17	90	730	496	19.8	--	--
09/22/95	0919	18	90	730	499	17.6	--	<.01
09/28/95	0745	--	--	--	--	--	--	--

Table 5. Physical properties and bromide concentrations in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri—Continued

Date	Time	Lysimeter vacuum		Sample volume (mL)	SC	Temp	pH	Br
		Initial (cb)	Applied (cb)					
				Lysimeter LY24 (fig. 3)				
10/19/92	1000	--	92	--	--	--	--	--
10/28/92	0820	32	92	750	--	--	--	--
11/04/92	--	92	82	--	--	--	--	--
11/10/92	1310	30	80	400	--	--	--	--
11/23/92	1125	24	92	730	--	--	--	--
12/10/92	--	37	90	770	317	11.5	--	--
12/15/92	0830	0	92	500	290	--	6.4	--
01/21/93	--	20	92	925	261	8.2	--	--
02/04/93	--	20	92	--	257	8	--	--
02/09/93	1025	28	94	850	256	8.6	--	--
02/18/93	0955	77	91	710	262	6.8	--	--
03/01/93	1110	26	93	700	263	8.5	--	--
03/08/93	1355	22	94	800	264	9.2	5.5	--
03/18/93	1100	15	--	50	284	5.5	--	--
03/23/93	0705	6	92	760	258	7.7	--	--
04/02/94	1000	31	92	740	294	7.4	5.5	--
04/07/93	1210	22	92	600	280	9.6	6	--
04/16/93	1030	0	66	690	359	8.4	5.5	--
04/21/93	1530	0	92	700	306	10.8	--	--
04/27/93	1015	14	92	530	338	12.3	6	--
05/11/93	--	0	90	750	315	--	--	--
05/18/93	--	10	88	760	327	13.2	--	--
05/28/93	--	7	92	700	350	13.9	5.8	--
06/03/93	--	7	91	745	334	15.3	5.5	--
06/11/93	0925	16	90	750	331	19.2	5.5	--
06/17/93	0805	20	92	650	291	15	--	--
06/28/93	1130	4	82	720	308	18.5	--	--
07/08/93	1645	5	90	700	300	17.6	--	--
12/07/93	0800	20	84	820	291	--	--	--
12/12/93	--	10	94	900	281	9.1	--	--
12/14/93	--	6	94	750	251	12.2	--	--
01/05/94	1425	20	94	800	295	9.1	--	--
01/12/94	1200	--	--	--	--	--	--	--
02/02/94	1200	0	88	700	272	8.2	--	--
02/17/94	1220	8	92	700	272	9.7	--	--
03/01/94	1200	6	90	700	288	7.2	--	--
03/09/94	--	10	92	730	285	8.3	--	--
04/05/94	1450	8	86	750	298	9	--	--
04/13/94	1415	6	96	670	308	12.6	--	--
04/21/94	1530	--	--	--	--	--	--	--
04/27/94	1525	4	98	750	310	10.5	--	--
05/09/94	0958	12	100	770	308	12.6	--	--
05/25/94	1335	12	100	770	309	14.1	--	--
06/03/94	1150	14	100	780	323	13.5	--	--

Table 5. Physical properties and bromide concentrations in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri—Continued

Date	Time	Lysimeter vacuum		Sample volume (mL)	SC	Temp	pH	Br
		Initial (cb)	Applied (cb)					
Lysimeter LY24 (fig. 3)—Continued								
06/08/94	1405	--	--	--	--	--	--	--
06/23/94	0815	12	100	730	283	16.8	--	--
07/19/94	1317	23	96	800	327	19.8	--	--
07/26/94		10	100	710	305	17	--	--
08/09/94	1205	18	98	950	172	19.3	--	--
08/17/94	1350	10	96	700e	282	20.2	--	0.04
08/24/94	0745	16	92	--	282	17.4	--	.1
09/02/94	1205	8	98	790	280	18.8	--	.14
09/14/94	1530	--	87	--	326	20.2	--	.07
09/22/94	1415	8	94	700	263	16.5	--	.16
10/05/94	1000	10	98	780	240	21.5	--	.12
10/14/95	--	8	98	800	285	15.2	--	--
10/20/95	1000	10	98	800	270	17.1	--	.05
10/26/94	1500	22	94	700	308	--	--	.03
11/01/94	1310	12	98	800	275	15.8	--	.03
12/05/94	0935	12	98	800	262	13.1	--	.07
12/15/94	1240	6	96	750	257	12.5	--	--
12/20/94	1215	10	98	750	260	11.4	--	<.01
01/07/95	0940	10	90	760	246	7	--	.01
01/18/95	1020	12	98	740	253	9.5	--	--
01/27/95	0940	14	98	770	252	8.8	--	<.01
01/31/95	1130	12	98	760	255	10	--	<.01
02/14/95	1020	10	98	680	250	8.3	--	--
03/03/95	0935	12	92	760	256	8.1	--	<.01
03/09/95	1010	16	98	750	268	8.2	--	--
03/16/95	1515	18	98	750	273	11.6	--	--
03/27/95	1420	14	98	740	282	10.7	--	--
04/04/95	1220	10	98	700	292	9.9	--	--
04/14/95	0913	12	98	755	290	11	--	--
04/19/95	1350	18	98	760	302	12.2	--	.02
05/04/95	1053	6	94	750	273	11.7	--	<.01
05/16/95	1335	--	--	--	--	--	--	<.01
05/30/95	0835	18	98	750	316	14.6	--	.02
06/16/95	1115	--	--	--	--	--	--	<.01
06/22/95	1040	12	90	750	327	17.2	--	--
07/06/95	1745	18	90	--	348	19.4	--	<.01
07/21/95	0715	16	94	760	290	19.3	--	.03
07/27/95	1220	12	92	720	739	22.5	--	--
08/01/95	1212	10	90	700	344	23.6	--	<.01
08/14/95	1720	--	--	--	--	--	--	--
08/31/95	0950	18	90	720	--	--	--	.02
09/08/95	0900	18	90	740	298	17.5	--	--
09/14/95	0900	18	90	720	280	19.3	--	--
09/22/95	0915	12	90	740	295	16.1	--	--
09/28/95	0740	--	--	--	--	--	--	.02

Table 5. Physical properties and bromide concentrations in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri—Continued

Date	Time	Lysimeter vacuum		Sample volume (mL)	SC	Temp	pH	Br
		Initial (cb)	Applied (cb)					
				Lysimeter LY32 (fig. 3)				
11/06/92	0800	--	92	--	--	--	--	--
11/16/92	1100	2	80	950	--	--	--	--
11/23/92	1000	30	85	590	--	--	--	--
12/02/92	1211	26	85	700	496	13.4	--	--
12/10/92	--	56	90	430	525	12.1	--	--
12/15/92	0850	66	92	500	550	--	6.2	--
01/27/93	--	74	92	500	647	9.8	--	--
02/04/93	--	70	92	650	643	9.9	--	--
02/09/93	--	79	92	425	636	11	--	--
02/18/93	1125	60	92	575	630	9.2	--	--
03/01/93	--	30	94	675	625	9.5	--	--
				Lysimeter LY33 (fig. 3)				
11/05/92	0900	--	92	--	--	--	--	--
11/16/92	1100	30	80	980	--	--	--	--
11/23/92	1005	10	80	680	--	--	--	--
12/02/92	1206	8	80	740	510	12.5	--	--
12/10/92	--	9	91	690	534	4.4	--	--
12/15/92	0855	62	92	800	540	--	6.3	--
01/27/93	--	24	92	800	512	8.8	--	--
02/04/93	--	24	92	875	497	7.9	--	--
02/09/93	--	29	94	875	494	9.9	--	--
02/18/93	1120	28	91	760	490	7.2	--	--
03/01/93	--	28	96	765	481	7.6	--	--
				Lysimeter LY34 (fig. 3)				
11/05/92	0900	--	92	--	--	--	--	--
11/16/92	1105	2	80	980	--	--	--	--
11/23/92	1010	0	80	750	--	--	--	--
12/02/92	1201	0	85	800	848	13.1	--	--
12/10/92	--	4	88	840	795	11.8	--	--
12/15/92	0900	80	92	900	710	--	6.4	--
01/27/93	--	8	92	960	601	10.7	--	--
02/04/93	--	14	92	900	562	11.4	--	--
02/09/94	--	15	93	970	551	12.3	--	--
02/18/93	1110	18	90	860	536	9.3	--	--
03/01/93	--	12	94	850	538	9.5	--	--

LIST OF ABBREVIATIONS USED IN TABLES 6 AND 7

QC	Quality assurance-quality control
TNB	1,3,5-Trinitrobenzene
3,5-DNA	3,5-Dinitroaniline
2-Am	2-Amino-4,6-dinitrotoluene
4-Am	4-Amino-2,6-dinitrotoluene
TNT	2,4,6-Trinitrotoluene
2,6-DNT	2,6-Dinitrotoluene
2,4-DNT	2,4-Dinitrotoluene
2,3-DNT	2,3-Dinitrotoluene
DNB	1,3-Dinitrobenzene
2-NT	2-Nitrotoluene
4-NT	4-Nitrotoluene
3-NT	3-Nitrotoluene
NB	Nitrobenzene
HMX	Tetranitramine
RDX	Cyclonite
LC	High-performance liquid chromatography
GC	Gas chromatography
--	No data
<	Less than
nt	Not tested
nd	Not detected
t	Trace

Table 6. Concentrations of nitroaromatic compounds in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri

[All concentrations in micrograms per liter unless noted otherwise]

Date	Time	QC code (table 3)	Method	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT	2,4-DNT	2,3-DNT	DNB
						Lysimeter LY22 (fig. 3)						
12/15/92	0820	7	LC	495	28.4	131	139	1,480	<0.5	8.3	nt	nt
01/21/93	--	8	LC	634	29.4	140	155	1,240	<.5	5.71	nt	nt
02/09/93	0915	8	LC	812	30.6	175	184	1,298	<.5	9.63	nd	nt
03/01/93	1100	11	LC	1,150	25.3	185	184	1,300	<.5	6	nd	nt
03/08/93	1345	11	LC	1,210	21.8	183	180	1,240	<.5	5	nd	nt
03/18/93	1145	12	LC	1,370	31.1	196	199	1,290	<.5	13.3	nd	nt
03/23/93	0715	12	LC	1,260	23.9	194	198	1,269	<.5	13.7	nd	nt
04/02/93	1000	12	LC	<1,400	<25	<300	<200	<1350	[a]<2	[a]<2	nd	nt
04/07/93	1200	12	LC	1,300	30.7	196	199	1,225	<.5	12.4	nd	nt
04/21/93	1540	13	LC	1,180	34.1	197	208	1,210	<.5	9.43	nd	nt
04/27/93	1015	14	LC	1,320	36	221	219	1,160	<.5	10.7	nd	nt
12/27/93	--	16	LC	626	56	175	194	664	<.21	6.21	nd	nt
01/05/94	1415	17	LC	640	82	157	175	590	<.21	6	nd	nt
01/12/94	1210	17	LC	745	67	160	180	710	<.21	6	nd	nt
02/02/94	1240	17b	LC	924	107	198	205	923	<.21	7.82	nd	nt
02/17/94	1210	17b	LC	1,046	59.2	200	204	1,116	<.21	10.8	nd	nt
03/01/94	1210	17c	LC	941	54.7	187	188	1,012	<.21	7.01	nd	nt
04/05/94	1500	18	LC	1,140	58.1	236	248	1,440	<.21	20.1	nd	nt
04/05/94	1500	18	LC	1,300	52.4	224	234	1,310	<.21	6.61	nd	nt
04/21/94	1530	20	LC	1,300	75.4	240	241	1,350	<.21	6.72	nd	nt
05/25/94	1325	21	LC	1,220	70.8	215	219	1,370	<.21	nd	nd	nt
06/08/94	1355	21	LC	1,360	57	215	206	1,470	<.21	10.1	nd	nt
06/23/94	0820	22	LC	1,160	68.1	216	205	1,410	<.21	14.3	nd	nt
07/19/94	1325	22	LC	1,010	80.9	207	200	1,320	<.21	15.5	nd	nt
08/09/94	1215	23	LC	1,460	78.5	256	246	1,800	<.21	<.18	nd	nt
09/02/94	1215	23	LC	1,100	39.5	187	198	1,500	<.21	<.18	nd	nt
09/14/94	1540	24	LC	1,290	40.5	224	216	1,710	<.21	<.18	nd	nt
10/05/94	0950	24	LC	824	22.7	149	142	1,210	<.21	<.18	nd	nt

Table 6. Concentrations of nitroaromatic compounds in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT	2,4-DNT	2,3-DNT	DNB
						Lysimeter LY22 (fig. 3)—Continued						
12/07/94	0935	25	LC	1,210	34.7	211	206	2,120	<0.21	<0.18	nd	nt
12/15/94	1247	26	GC	840	17	400	180	1,600	1.6	3.6	1.5	0.08
12/20/95	1231	29	GC	1,700	70	250	250	2,600	3.4	5.8	3.8	<.05
01/07/95	1000	26	GC	880	59	410	280	1,600	2.5	<.2	.4	.09
01/18/95	1038	28	GC	1,400	34	209	260	2,700	4.2	7.6	3	<.05
01/27/95	1000	29	GC	1,300	41	[b]103	[b]110	2,300	3	5.9	3.2	<.05
01/31/95	1150	29	GC	1,800	72	266	260	2,700	4	8.3	4.3	<.05
02/14/95	1040	29	GC	2,200	64	270	270	2,900	4	8.3	4.2	<.05
03/03/95	1010	31	GC	1,800	58	240	220	2,400	2	6.1	1.8	<.05
03/09/95	1030	31	GC	2,100	53	290	290	2,500	2.4	5.2	2.1	.08
03/16/95	1532	30	GC	2,800	67	290	320	2,900	2.4	7.4	2.1	.09
03/27/95	1438	32	GC	1,700	88	300	320	2,200	2.8	6.6	3.5	.1
04/04/95	1235	33	GC	1,600	140	320	330	3,000	3.1	8.5	4	.1
04/19/95	1402	33	GC	1,900	140	385	397	2,900	2.9	7.8	3.9	.12
05/04/95	1110	34	GC	2,200	60	300	305	2,600	3.2	7.3	1.9	.1
05/16/95	1355	34	GC	2,400	59	310	310	2,800	3.4	7	2	.1
06/16/95	1125	36	GC	2,200	82	330	330	2,700	3.1	5	3.3	.12
06/22/95	1030	36	GC	1,900	72	320	310	2,400	2.9	4.4	3.7	2.9
07/06/95	1755	36	GC	2,200	110	380	370	2,700	4.1	5.7	4.6	.06
07/21/95	0730	38	GC	1,800	80	300	350	2,200	3.1	3.6	3.3	.2
08/01/95	1234	38	GC	1,900	76	300	330	2,300	3.9	4.5	4.5	.25
08/14/95	1730	38	GC	1,900	81	300	340	2,200	2.6	2.4	3.1	.11
08/31/95	0950	38a	GC	1,700	78	340	350	2,200	2.5	3	4	.11
09/14/95	0909	38a	GC	2,500	52	330	350	2,500	2.9	2.5	3.1	.21
09/28/95	0748	39	GC	2,200	80	310	320	3,200	3.1	2.5	3.8	.1

Table 6. Concentrations of nitroaromatic compounds in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT	2,4-DNT	2,3-DNT	DNB
						Lysimeter LY23 (fig. 3)						
12/15/92	0825	7	LC	0..5	0.8	12.5	30.3	20.4	0.72	<0.5	nt	nt
01/21/93	--	8	LC	<.5	<.5	17	38.2	29	<.5	<.5	nt	nt
02/09/93	1020	10	LC	.55	.39	25.9	62.9	36.3	<.5	<.5	nd	nt
03/01/93	1105	11	LC	1.71	.6	25.4	47	27.2	2.74	<.5	nd	nt
03/08/93	1350	11	LC	1.6	.44	23.3	41.7	25.2	2.25	<.5	nd	nt
03/18/93	1130	12	LC	1.54	.62	21.3	39.4	22.2	1.24	<.5	nd	nt
03/23/93	0710	12	LC	[a]1.06	[a].35	21.8	39.9	22.4	1.37	<.5	nd	nt
04/02/93	1000	12	LC	[a]<2	[a]<2	<35	<25	<25	[a]<2	[a]<2	nd	nt
04/07/93	1205	12	LC	1.47	<.5	19.2	34.7	41.9	<.5	<.5	nd	nt
04/21/93	1525	13	LC	[a].72	<.5	17	31.5	14	<.5	<.5	nd	nt
04/27/93	1015	14	LC	5.76	.54	18	31.1	13.8	[a]2.01	<.5	nd	nt
12/27/93	--	16	LC	.86	<.32	9.75	21	5.86	<.21	<.18	nd	nt
01/05/94	1420	17	LC	<.19	<.32	14	29	7.9	<.21	<.18	nd	nt
01/24/94	1205	17	LC	<.19	<.32	18.4	35.4	10	<.21	<.18	nd	nt
02/02/94	1235	17b	LC	2.82	1	25.3	43.8	12.5	3.12	<.18	nd	nt
02/17/94	1215	17b	LC	.95	1.08	24.1	41.5	11	1.24	<.18	nd	nt
03/01/94	1205	17c	LC	1.61	1.73	28.5	49.3	12.6	1.09	<.18	nd	nt
04/05/94	1455	18	LC	2.02	1.84	40.4	65.2	14.7	1.88	<.18	nd	nt
04/21/94	1530	20	LC	6.85	2.54	39.2	62.7	23.4	1.22	<.18	nd	nt
05/25/94	1330	21	LC	4.65	2.04	34.9	56.3	17.6	<.21	<.18	nd	nt
06/23/94	0815	22	LC	3.77	2.54	43.6	69.8	21.3	3.7	<.18	nd	nt
07/19/94	1320	22	LC	1.57	2.32	26.6	41.7	10.5	2.51	<.18	nd	nt
08/09/94	1210	23	LC	1.46	2.09	22.8	33.6	8.59	[a].85	<.18	nd	nt
09/02/94	1210	23	LC	.97	1.29	18.9	30.9	7.57	.8	<.18	nd	nt
09/14/94	1535	24	LC	1.44	1.93	22.6	34.7	9.1	.34	<.18	nd	nt
12/05/94	0935	25	LC	1	1.77	18.2	28.1	8.75	<.21	<.18	nd	nt
12/15/94	1245	26	GC	.2	.8	21	28	6.4	.57	.1	0.04	<0.05
12/20/94	1222	29	GC	.29	2.7	25	37	10	.96	.12	.12	<.05
01/07/95	0950	26	GC	.6	.41	29	33	9.8	.83	.13	.04	<.05

Table 6. Concentrations of nitroaromatic compounds in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT	2,4-DNT	2,3-DNT	DNB
						Lysimeter LY23 (fig. 3)—Continued						
01/18/95	1030	28	GC	0.59	4.4	27	59	20	1.2	0.13	0.16	<0.05
01/27/95	0950	29	GC	1.1	4.1	43	64	16	1.2	.15	.17	<.05
01/31/95	1140	29	GC	1.2	3.8	39	60	20	1.2	.13	.18	<.05
02/14/95	1030	29	GC	3.1	4	57	86	29	1.6	.21	.25	<.05
03/03/95	1000	30	GC	1.5	3.9	66	110	24	1.4	.2	.25	<.05
03/09/95	1020	31	GC	2.7	3.2	61	100	22	1.7	.17	.25	<.05
03/16/95	1525	31	GC	3.2	3.3	63	100	26	1.7	.17	.25	<.05
03/27/95	1430	32	GC	6.1	2.2	47	88	22	1.9	.18	.31	<.05
04/04/95	1230	33	GC	4	4.2	53	92	22	2	.21	.32	<.05
04/19/95	1356	33	GC	4.8	4.5	56	92	25	1.8	.22	.34	<.05
05/04/95	1102	34	GC	2.8	4.5	69	120	25	1.7	.25	.38	<.05
05/16/95	--	34	GC	4.4	4.1	70	110	24	1.7	.25	.33	<.05
06/16/95	1120	36	GC	3.4	5	62	110	23	1.9	.28	.37	<.05
06/22/95	--	36	GC	4.1	5.1	60	100	27	2.5	.42	.6	<.05
07/06/95	1750	36	GC	4.8	5.7	74	130	23	1.8	.3	.38	<.05
07/21/95	0722	38	GC	2.2	6	41	98	15	1.5	.2	.28	<.05
08/01/95	1224	38	GC	2.1	6	38	75	14	1.3	.18	.25	<.05
08/14/95	1725	38	GC	2.5	6.5	41	99	16	1.5	.2	.27	<.05
08/31/95	1000	38a	GC	1.7	6.4	51	86	15	1.2	.24	.23	<.05
09/14/95	0905	38a	GC	3.6	6.4	51	81	16	1.2	.19	.22	<.05
09/28/95	0745	39	GC	2.8	5.5	44	84	18	1.5	.25	.27	<.05
						Lysimeter LY24 (fig. 3)						
12/15/92	0830	7	LC	<0.5	[a]<0.5	1.47	3.34	<0.5	<0.5	<0.5	nt	nt
01/21/93	--	8	LC	<.5	3.19	12	23	53.8	<.5	<.5	nt	nt
02/09/93	1025	10	LC	<.5	2.4	12.8	20.5	6.88	<.5	<.5	nd	nt
03/01/93	1110	11	LC	<.5	1.91	14.6	23.8	2.39	1.08	.38	nd	nt
03/08/93	1355	11	LC	<.5	2.22	12.3	19.7	2.72	1.07	.47	nd	nt
03/18/93	1100	12	LC	[a]<2	[a]<2	<40	<90	<6	[a]<2	[a]<2	nd	nt

Table 6. Concentrations of nitroaromatic compounds in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT	2,4-DNT	2,3-DNT	DNB
						Lysimeter LY24 (fig. 3)—Continued						
03/23/93	0705	12	LC	[a]<2	[a]<3	<30	<85	<5	[a]<2	[a]<2	nd	nt
04/02/93	1000	12	LC	<4	<5	<60	<45	<5	[a]<2	[a]<2	nd	nt
04/07/93	1210	12	LC	.99	3.79	17.8	26.7	13.6	[a]1.28	[a].66	nd	nt
04/21/93	1530	13	LC	1.42	2.72	12.3	18.7	10.2	1.3	.33	nd	nt
04/27/93	1015	14	LC	2.73	4.97	21.8	30.7	16.3	1.85	.66	nd	nt
01/05/94	1425	17	LC	<.19	5.49	17.4	23.5	12.4	<.21	<.18	nd	nt
01/12/94	1200	17	LC	<.19	5.17	15.2	20	13.2	<.21	<.18	nd	nt
02/02/94	1200	17b	LC	1.37	5.26	16.9	21.6	12.0	<.21	<.18	nd	nt
02/17/94	1220	17b	LC	1.56	5.56	19.1	24.3	14.9	1.67	1.3	nd	nt
03/01/94	1200	17c	LC	2.23	5.65	20.8	25.9	16.6	1.11	.46	nd	nt
04/05/94	1450	18	LC	4.57	7.83	26.8	33.3	21.9	1.19	[a].6	nd	nt
04/21/94	1530	20	LC	4.16	8.47	27.7	34.4	23.1	1.26	.59	nd	nt
05/25/94	1335	21	LC	5.21	8.14	22.8	29.2	19.3	<.21	<.18	nd	nt
06/08/94	1405	21	LC	5.74	9.04	26.8	31.7	24	1.17	<.18	nd	nt
06/23/94	0815	22	LC	6.64	12	35.8	43.5	32.5	2.85	1.16	nd	nt
07/19/94	1317	22	LC	3.38	8.27	27.6	32.9	20.2	2.32	1.6	nd	nt
08/09/94	1205	23	LC	3.91	8.89	31.2	37.2	23.9	2.07	1.7	nd	nt
09/02/94	1205	23	LC	2.86	8.26	30.2	38.2	23	2.2	1.76	nd	nt
09/14/94	1530	24	LC	3.43	8.42	32.8	38.5	20.8	.87	.72	nd	nt
10/05/94	1000	24	LC	3.66	7.34	28.1	31.9	17.3	.22	.45	nd	nt
12/05/94	0935	25	LC	2.89	9.27	33.3	38.5	21.3	1.11	.6	nd	nt
12/15/94	1240	26	GC	2.5	10	40	29	17	.76	.69	0.04	<0.05
12/20/94	1215	29	GC	--	8	39	47	8.2	.7	.52	.1	<.05
01/07/95	0940	26	GC	2.5	13	49	42	17	.92	.82	.04	<.05
01/18/95	1020	28	GC	3.6	9.2	29	43	28	1	.71	.1	.09
01/27/95	0940	29	GC	5.2	15	56	64	27	1.1	.84	.19	.1
02/14/95	1020	29	GC	7.7	15	51	70	40	1.3	1	.23	.16
03/03/95	0935	30	GC	7.7	13	44	51	25	.98	.78	.18	.12
03/09/95	1010	31	GC	4.2	12	52	65	19	1	.79	.17	.12

Table 6. Concentrations of nitroaromatic compounds in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT	2,4-DNT	2,3-DNT	DNB
						Lysimeter LY24 (fig. 3)—Continued						
03/16/95	1515	31	GC	6.7	16	66	82	29	1.3	0.93	0.21	0.14
03/27/95	1420	32	GC	8	17	58	73	23	1.2	.92	.2	.13
04/04/95	1220	33	GC	8.4	15	50	60	22	1	.91	.22	.13
04/19/95	1350	33	GC	11.0	17	50	61	28	1.3	.92	.22	.15
05/04/95	1053	34	GC	3.9	20	60	74	26	1.4	.96	.22	.14
05/16/95	1335	34	GC	8	20	57	66	24	1.1	.9	.22	.14
06/16/95	1115	36	GC	9.3	23	66	83	30	1.7	1.2	.29	.2
06/22/95	1040	36	GC	6.6	21	60	69	18	1.3	.1	.23	.15
07/06/95	1745	36	GC	6.7	20	53	62	22	1.3	.94	.23	.13
07/21/95	0715	38	GC	5.2	11	34	55	19	1	.81	.18	.2
08/01/95	1212	38	GC	3.8	12	34	47	12	.88	.7	.16	.15
08/14/95	1720	38	GC	9.4	23	62	86	36	1.4	1.1	.24	.24
08/31/95	1005	38a	GC	5.1	17	49	67	19	.98	.85	.19	<.2
09/14/95	0900	38a	GC	6.4	19	52	61	19	.95	.76	.16	.16
09/28/95	0740	39	GC	6.1	15	48	58	25	1.2	.99	.21	.18
						Lysimeter LY32 (fig. 3)						
12/15/92	--	7	LC	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	nt	nt
01/21/93	--	8	LC	<.5	<.5	<.5	<.5	<.5	<.5	<.5	nt	nt
						Lysimeter LY33 (fig. 3)						
12/15/92	--	7	LC	<0.5	0..5	<0.5	<0.5	<0.5	<0.5	<0.5	nt	nt
01/21/93	--	8	LC	<.5	<.5	<.5	<.5	<.5	<.5	<.5	nt	nt
03/08/93	1420	11	LC	<.5	<.5	<.5	<.5	<.5	<.5	<.5	nd	nt
04/07/93	1315	12	LC	<.5	<.5	<.5	<.5	<.5	<.5	<.5	nd	nt
						Lysimeter LY34 (fig. 3)						
12/15/92	--	7	LC	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	nt	nt
01/21/93	--	8	LC	<.5	<.5	<.5	<.5	<.5	<.5	<.5	nt	nt

Table 6. Concentrations of nitroaromatic compounds in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl	Surrogate recovery (percent)	
											Toluene fraction	Isoamyl acetate fraction
						Lysimeter LY22 (fig. 3)						
12/15/92	0820	7	LC	<0.5	<0.5	<0.5	<0.5	<0.12	<0.14	nt	--	--
01/21/93	--	8	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
02/09/93	0915	8	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
03/01/93	1100	11	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
03/08/93	1345	11	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
03/18/93	1145	12	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
03/23/93	0715	12	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
04/02/93	1000	12	LC	<2	<2	<2	<2	<.12	<.14	nt	--	--
04/07/93	1200	12	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
04/21/93	1540	13	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
04/27/93	1015	14	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
12/27/93	--	16	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
01/05/94	1415	17	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
01/12/94	1210	17	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
02/02/94	1240	17b	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
02/17/94	1210	17b	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
03/01/94	1210	17c	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
04/05/94	1500	18	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
04/05/94	1500	18	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
04/21/94	1530	20	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
05/25/94	1325	21	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
06/08/94	1355	21	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
06/23/94	0820	22	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
07/19/94	1325	22	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
08/09/94	1215	23	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
09/02/94	1215	23	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
09/14/94	1540	24	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
10/05/94	0950	24	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--

Table 6. Concentrations of nitroaromatic compounds in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl	Surrogate recovery (percent)	
											Toluene fraction	Isoamyl acetate fraction
Lysimeter LY22 (fig. 3)—Continued												
12/07/94	0935	25	LC	<0.24	<0.29	<0.13	<0.18	<0.12	<0.14	nt	--	--
12/15/94	1247	26	GC	<.2	<.2	<.2	<.05	nt	<1	<0.1	--	--
12/20/95	1231	29	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	150	186
01/07/95	1000	26	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	--	--
01/18/95	1038	28	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	123	141
01/27/95	1000	29	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	145	170
01/31/95	1150	29	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	--	--
02/14/95	1040	29	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	168	144
03/03/95	1010	31	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	128	--
03/09/95	1030	31	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	106	118
03/16/95	1532	30	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	106	121
03/27/95	1438	32	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	101	106
04/04/95	1235	33	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	108	113
04/19/95	1402	33	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	111	153
05/04/95	1110	34	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	61	108
05/16/95	1355	34	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	74	107
06/16/95	1125	36	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	106	114
06/22/95	1030	36	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	73	109
07/06/95	1755	36	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	79	62
07/21/95	0730	38	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	98	218
08/01/95	1234	38	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	101	146
08/14/95	1730	38	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	96	160
08/31/95	0950	38a	GC	<.2	<.3	<.2	<.1	nt	<1	<.1	86	141
09/14/95	0909	38a	GC	<.3	<.4	<.2	<.1	nt	<1	<.1	103	141
09/28/95	0748	39	GC	<.2	<.2	<.2	<.1	nt	<1	<.1	110	124

Table 6. Concentrations of nitroaromatic compounds in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl	Surrogate recovery (percent)	
											Toluene fraction	isoamyl acetate fraction
						Lysimeter LY23 (fig. 3)						
12/15/92	0825	7	LC	<0.5	<0.5	<0.5	<0.5	<0.12	<0.14	nt	--	--
01/21/93	--	8	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
02/09/93	1020	10	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
03/01/93	1105	11	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
03/08/93	1350	11	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
03/18/93	1130	12	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
03/23/93	0710	12	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
04/02/93	1000	12	LC	<2	<2	<2	<2	<.12	<.14	nt	--	--
04/07/93	1205	12	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
04/21/93	1525	13	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
04/27/93	1015	14	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
12/27/93	--	16	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
01/05/94	1420	17	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
01/24/94	1205	17	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
02/02/94	1235	17b	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
02/17/94	1215	17b	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
03/01/94	1205	17c	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
04/05/94	1455	18	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
04/21/94	1530	20	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
05/25/94	1330	21	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
06/23/94	0815	22	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
07/19/94	1320	22	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
08/09/94	1210	23	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
09/02/94	1210	23	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
09/14/94	1535	24	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
12/05/94	0935	25	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
12/15/94	1245	26	GC	<.2	<.2	<.2	<.05	nt	<1	<0.1	--	--
12/20/94	1222	29	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	--	--
01/07/95	0950	26	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	--	--

Table 6. Concentrations of nitroaromatic compounds in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl	Surrogate recovery (percent)	
											Toluene fraction	Isoamyl acetate fraction
Lysimeter LY23 (fig. 3)—Continued												
01/18/95	1030	28	GC	<0.2	<0.2	<0.2	<0.05	nt	<1	<0.1	113	115
01/27/95	0950	29	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	125	151
01/31/95	1140	29	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	121	166
02/14/95	1030	29	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	151	172
03/03/95	1000	30	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	113	--
03/09/95	1020	31	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	93	118
03/16/95	1525	31	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	91	110
03/27/95	1430	32	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	88	95
04/04/95	1230	33	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	89	97
04/19/95	1356	33	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	109	108
05/04/95	1102	34	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	86	86
05/16/95	--	34	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	70	113
06/16/95	1120	36	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	116	119
06/22/95	--	36	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	81	115
07/06/95	1750	36	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	115	126
07/21/95	0722	38	GC	<.3	<.2	<.2	<1	nt	<1	<.1	87	140
08/01/95	1224	38	GC	<.3	<.2	<.2	<1	nt	<1	<.1	85	141
08/14/95	1725	38	GC	<.3	<.2	<.2	<1	nt	<1	<.1	82	140
08/31/95	1000	38a	GC	<.4	<.2	<.2	<.1	nt	<1	<.1	85	124
09/14/95	0905	38a	GC	<.3	<.2	<.2	<.1	nt	<1	<.1	77	142
09/28/95	0745	39	GC	<.3	<.2	<.2	<.1	nt	<1	<.1	90	124
Lysimeter LY24 (fig. 3)												
12/15/92	0830	7	LC	<0.5	<0.5	<0.5	<0.5	<0.12	<0.14	nt	--	--
01/21/93	--	8	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
02/09/93	1025	10	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
03/01/93	1110	11	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
03/08/93	1355	11	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
03/18/93	1100	12	LC	<2	<2	<2	<2	<.12	<.14	nt	--	--

Table 6. Concentrations of nitroaromatic compounds in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl	Surrogate recovery (percent)	
											Toluene fraction	Isoamyl acetate fraction
						Lysimeter LY24 (fig. 3)—Continued						
03/23/93	0705	12	LC	<2	<2	<2	<2	<0.12	<0.14	nt	--	--
04/02/93	1000	12	LC	<2	<2	<2	<2	<.12	<.14	nt	--	--
04/07/93	1210	12	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
04/21/93	1530	13	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
04/27/93	1015	14	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
01/05/94	1425	17	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
01/12/94	1200	17	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
02/02/94	1200	17b	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
02/17/94	1220	17b	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
03/01/94	1200	17c	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
04/05/94	1450	18	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
04/21/94	1530	20	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
05/25/94	1335	21	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
06/08/94	1405	21	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
06/23/94	0815	22	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
07/19/94	1317	22	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
08/09/94	1205	23	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
09/02/94	1205	23	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
09/14/94	1530	24	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
10/05/94	1000	24	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
12/05/94	0935	25	LC	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
12/15/94	1240	26	GC	<.2	<.2	<.2	<.05	nt	<1	<0.1	--	--
12/20/94	1215	29	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	128	144
01/07/95	0940	26	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	--	--
01/18/95	1020	28	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	101	111
01/27/95	0940	29	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	128	154
02/14/95	1020	29	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	153	167
03/03/95	0935	30	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	116	--
03/09/95	1010	31	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	89	115

Table 6. Concentrations of nitroaromatic compounds in water samples from lysimeters at the Weldon Spring training area, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl	Surrogate recovery (percent)	
											Toluene fraction	Isoamyl acetate fraction
Lysimeter LY24 (fig. 3)—Continued												
03/16/95	1515	31	GC	<0.2	<0.2	<0.2	<0.05	nt	<1	<0.1	107	134
03/27/95	1420	32	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	98	93
04/04/95	1220	33	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	93	97
04/19/95	1350	33	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	109	110
05/04/95	1053	34	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	106	114
05/16/95	1335	34	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	102	115
06/16/95	1115	36	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	111	107
06/22/95	1040	36	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	106	111
07/06/95	1745	36	GC	<.2	<.2	<.2	<.05	nt	<1	<.1	115	133
07/21/95	0715	38	GC	<.3	<.2	<.2	<.05	nt	<1	<.1	93	146
08/01/95	1212	38	GC	<.3	<.2	<.2	<.05	nt	<1	<.1	90	138
08/14/95	1720	38	GC	<.4	<.2	<.2	<.05	nt	<1	<.1	92	145
08/31/95	1005	38a	GC	<.4	<.2	<.2	<.1	nt	<1	<.1	82	135
09/14/95	0900	38a	GC	<.3	<.2	<.2	<.1	nt	<1	<.1	92	132
09/28/95	0745	39	GC	<.4	<.2	<.2	<.05	nt	<1	<.1	94	118
Lysimeter LY32 (fig. 3)												
12/15/92	--	7	LC	<0.5	<0.5	<0.5	<0.5	<0.12	<0.14	nt	nt	--
01/21/93	--	8	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	nt	--
Lysimeter LY33 (fig. 3)												
12/15/92	--	7	LC	<0.5	<0.5	<0.5	<0.5	<0.12	<0.14	nt	nt	--
01/21/93	--	8	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	nt	--
03/08/93	1420	11	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	nt	--
04/07/93	1315	12	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	nt	--
Lysimeter LY34 (fig. 3)												
12/15/92	--	7	LC	<0.5	<0.5	<0.5	<0.5	<0.12	<0.14	nt	nt	--
01/21/93	--	8	LC	<.5	<.5	<.5	<.5	<.12	<.14	nt	nt	--

[a] Constituent probably present at or below the reported value but could not be spectrally confirmed.
[b] Concentration estimated because of interference or insufficient sample size.

Table 7. Concentrations of nitroaromatic compounds in water samples from monitoring wells at the Weldon Spring ordnance works, St. Charles County, Missouri

[All concentrations in micrograms per liter]

Well (figs. 1 and 5)	QC code (table 3)	Method	Date	Time	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT	2,4-DNT	2,3-DNT	DNB
MW-4001	13	LC	04/15/93	1130	52.8	2.75	13.4	19.9	2.45	4.33	1.3	nd	nt
	14	LC	05/18/93	0935	45.6	2.36	16.2	23.1	2.64	4.71	1.47	nd	nt
MW-4013	14	LC	05/18/93	1042	26.2	.5	1.79	1.8	<.2	.92	[a]<.2	nd	nt
MW-4019	13	LC	04/15/93	1000	<.2	<.2	<.2	<.2	<.2	<.2	<.2	nd	nt
MWS-01	14	LC	05/18/93	0945	<.2	<.2	<.2	<.2	<.2	.75	[a]<.2	nd	nt
MWS-06	10	LC	02/18/93	1300	<.25	<.25	<.25	<.25	<.25	<.25	<.25	nd	nt
	12	LC	04/08/93	1100	<.2	<.2	<.2	[a]<.2	<.2	<.2	<.2	nd	nt
MWS-07	12	LC	04/07/93	1330	7.57	.6	5.5	11.7	1.82	1.07	[a]<.2	nd	nt
MWV-09	10	LC	02/18/93	1420	3.64	13.6	35.5	28.3	22.8	3.12	<.25	nd	nt
	13	LC	04/13/93	1700	23.9	13.4	33.7	24.1	54.6	2.96	22.5	nd	nt
	13	LC-filtered	04/13/93	1701	24	15	36.5	25.7	55.7	2.73	26.7	nd	nt
	14	LC	05/18/93	1015	16.7	12.3	38.1	26.7	53.2	2.83	20.7	nd	nt
	21	LC	06/08/94	1430	19.6	8.9	23.8	18.1	33.9	1.93	11.4	nd	nt
MWS-09	13	LC	04/13/93	1345	<.2	<.2	<.2	<.2	<.2	<.2	<.2	nd	nt
MWS-11	12	LC	04/08/93	0930	<.2	.31	.52	2.49	<.2	.89	<.2	t	nt
MWS-12	10	LC	02/18/93	1400	2.53	2.76	.87	1.85	<.25	11.5	4.43	t	nt
	13	LC	04/14/93	1200[b]	3.22	2.28	.93	2.2	<.2	17.6	11.4	nd	nt
	13	LC-filtered	04/14/93	1201	2.73	2.7	1.1	2.7	<.2	24.7	15.1	nd	nt
	14	LC	05/18/93	0915	7.48	4.23	1.16	2.43	2.24	29.2	27.0	nd	nt
MWS-15	12	LC	04/08/93	1045	2.7	.6	10.4	17.3	10.6	1.6	<.2	nd	nt
MWD-15	13	LC	04/08/93	1230	<.2	.27	.88	2.17	<.2	1.95	<.2	t	nt
MWS-16	13	LC	04/08/93	1315	6.75	1.19	4.49	8.49	3.24	2.2	<.2	nd	nt
MWS-17	10	LC	02/18/93	1530	<.25	.44	1.72	1.19	<.25	6.73	2.06	nd	nt
	13	LC	04/14/93	1000	<.2	.52	1.7	2.99	<.2	3.19	.91	nd	nt
	13	LC-filtered	04/14/93	1001	[a].26	.69	1.7	2.85	<.2	3.22	.80	nd	nt
	14	LC	05/17/93	1330	<.2	.75	3.28	6.69	.75	2.14	[a]<.2	nd	nt

Table 7. Concentrations of nitroaromatic compounds in water samples from monitoring wells at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Well (figs. 1 and 5)	QC code (table 3)	Method	Date	Time	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT	2,4-DNT	2,3-DNT	DNB
MWS-21	13	LC	04/14/93	1600	[a]<0.2	0.33	0.32	0.49	0.23	<0.2	0.76	nd	nt
MWV-22	12	LC	04/07/93	1030	<.2	<.2	[a]<.2	.21	<.2	.26	<.2	nd	nt
	17	LC	01/12/94	1100	<.19	<.32	<.13	<.26	<.11	<.21	<.18	nd	nt
	17b	LC	02/01/94	1200	<.19	[a].05	<.13	.05	<.11	[a].36	<.18	nd	nt
	17b	LC	02/17/94	1330	<.19	<.32	[a].03	.09	<.11	[a].28	<.18	nd	nt
	17c	LC	03/01/94	1340	<.19	<.32	<.13	[a].4	<.11	[a].14	<.18	nd	nt
	18	LC	04/05/94	1235	<.19	<.32	[a]<.13	.07	<.11	[a].16	<.18	nd	nt
	22	LC	07/19/94	1226	<.19	[a].16	[a].09	.16	<.11	[a].16	<.18	nd	nt
	36	GC	06/15/95	1040	<.1	<.2	.06	.18	<.01	.13	.01	<0.01	<0.05
MWS-22	12	LC	04/07/93	1000	<.2	<.2	<.2	.2	<.2	.3	<.2	nd	nt
	17b	LC	02/01/94	1150	<.19	<.32	[a].07	.12	<.11	[a].08	<.18	nd	nt
	17b	LC	02/17/94	1130	<.19	<.32	[a].04	.12	<.11	[a].18	[a].06	nd	nt
	17c	LC	03/01/94	1300	<.19	<.32	<.13	[a].44	<.11	<.21	<.18	nd	nt
	18	LC	04/05/94	1425	<.19	<.32	[a].03	.16	<.11	<.21	<.18	nd	nt
	21	LC	06/07/94	1735	<.19	<.32	[a].03	.1	<.11	<.21	<.18	nd	nt
	22	LC	07/19/94	1303	<.19	<.32	[a].04	.11	<.11	<.21	<.18	nd	nt
	36	GC	06/15/95	1055	<.1	<.2	.06	.18	.01	.13	.02	.03	<.05
MWV-24	10	LC	02/09/93	0915	.6	1.04	1.25	2.42	[a].28	<.5	<.5	nd	nt
MWVR-24	14	LC	05/18/93	1245	3.38	.5	.72	1.82	1.03	2.48	[a]<.2	nd	nt
	21	LC	06/08/94	1135	15	1.2	1.22	2.4	5.9	2.2	<.18	nd	nt
MWS-24	10	LC	02/09/93	0945	1.02	.72	1.77	3.47	[a].3	[a].1	<.5	nd	nt
	12	LC	04/07/93	1230	2.5	.66	1.88	4.01	.47	.56	[a]<.2	nd	nt
	17	LC	01/12/94	1340	2.79	<.32	1.86	3.45	.27	<.21	<.18	nd	nt
	17b	LC	02/01/94	1830	2.86	.52	1.58	3.27	.31	.45	<.18	nd	nt

Table 7. Concentrations of nitroaromatic compounds in water samples from monitoring wells at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Well (figs. 1 and 5)	QC code (table 3)	Method	Date	Time	TNB	3,5-DNA	2-Am	4-Am	TNT	2,6-DNT	2,4-DNT	2,3-DNT	DNB
MWS-24—Continued	17b	LC	02/17/94	1440	2.52	0.44	1.42	3.13	0.27	[a]0.32	[a]0.1	nd	nt
	17c	LC	03/01/94	1500	3.04	.45	<.18	3.65	.45	.25	<.18	nd	nt
	18	LC	04/05/94	1655	4.23	.68	2.29	4.72	.52	.64	<.18	nd	nt
	21	LC	06/07/94	1305	3.2	.5	1.4	3.1	.34	<.21	<.18	nd	nt
	22	LC	07/19/94	1255	2.56	.42	1.37	2.96	.36	.39	<.18	nd	nt
MWGS-01	13	LC	04/14/93	1720	<.2	<.2	<.2	<.2	<.2	<.2	<.2	nd	nt
MWGS-02	12	LC	04/07/93	1230	<.2	<.2	<.2	<.2	<.2	<.2	<.2	nd	nt
MWGS-03	12	LC	04/07/93	1900	<.2	<.2	<.2	<.2	<.2	<.2	<.2	nd	nt
MWGS-04	13	LC	04/16/93	1130	<.2	<.2	<.2	<.2	<.2	<.2	<.2	nd	nt
MWGS-05	13	LC	04/15/93	1715	<.2	<.2	<.2	<.2	<.2	<.2	<.2	nd	nt
USGS-1	12	LC	04/05/93	1530	[a]<.2	.39	[a]<.2	.2	<.2	<.2	<.2	nd	nt
USGS-2	12	LC	04/05/93	1410	<.2	<.2	<.2	<.2	<.2	<.2	<.2	nd	nt
USGS-2A	12	LC	04/05/93	1650	<.2	<.2	<.2	<.2	<.2	<.2	<.2	nd	nt
USGS-3	12	LC	04/05/93	1720	[a]<.2	[a]<.2	<.2	.28	[a]<.2	<.2	<.2	nd	nt
USGS-4	12	LC	04/06/93	1600	.34	.84	1.13	1.34	<.2	<.2	<.2	nd	nt
USGS-5	12	LC	04/06/93	1715	.35	<.2	<.2	.22	<.2	<.2	<.2	nd	nt
USGS-6	12	LC	04/06/93	1400	<.2	<.2	<.2	<.2	<.2	<.2	<.2	nd	nt
USGS-7[b]	12	LC	04/05/93	1750	<.2	<.2	<.2	<.2	<.2	<.2	<.2	nd	nt
USGS-8	12	LC	04/06/93	1015	<.2	<.2	<.2	<.2	<.2	<.2	<.2	nd	nt
USGS-9	12	LC	04/05/93	1650	<.2	.45	3.97	7.5	<.2	<.2	[a]<.2	nd	nt

Table 7. Concentrations of nitroaromatic compounds in water samples from monitoring wells at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Well (figs. 1 and 5)	QC code (table 3)	Method	Date	Time	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl	Surrogate recovery (percent)	
												Toluene fraction	Isoamyl acetate fraction
MW-4001	13	LC	04/15/93	1130	0.73	<0.2	<0.2	<0.02	<0.12	<0.14	nt	--	--
	14	LC	05/18/93	0935	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
MW-4013	14	LC	05/18/93	1042	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
MW-4019	13	LC	04/15/93	1000	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
MWS-01	14	LC	05/18/93	0945	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
MWS-06	10	LC	02/18/93	1300	<.25	<.25	<.25	<.25	<.12	<.14	nt	--	--
	12	LC	04/08/93	1100	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
MWS-07	12	LC	04/07/93	1330	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
MWV-09	10	LC	02/18/93	1420	<.25	<.25	<.25	<.25	<.12	<.14	nt	--	--
	13	LC	04/13/93	1700	.71	<.2	<.2	<.2	<.12	<.14	nt	--	--
	13	LC-filtered	04/13/93	1701	1.06	<.2	<.2	<.2	<.12	<.14	nt	--	--
	14	LC	05/18/93	1015	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
	21	LC	06/08/94	1430	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
MWS-09	13	LC	04/13/93	1345	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
MWS-11	12	LC	04/08/93	0930	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
MWS-12	10	LC	02/18/93	1400	2.88	1.12	.39	<.25	<.12	<.14	nt	--	--
	13	LC	04/14/93[b]	1200	73.1	22.1	4.7	<.2	<.12	<.14	nt	--	--
	13	LC-filtered	04/14/93	1201	119	36.9	7.6	<.2	<.12	<.14	nt	--	--
	14	LC	05/18/93	0915	122	28.8	7.75	<.2	<.12	<.14	nt	--	--
MWS-15	12	LC	04/08/93	1045	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
MWD-15	13	LC	04/08/93	1230	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
MWS-16	13	LC	04/08/93	1315	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
MWS-17	10	LC	02/18/93	1530	7.95	.28	[a].83	<.25	<.12	<.14	nt	--	--
	13	LC	04/14/93	1000	5.99	.33	.26	<.2	<.12	<.14	nt	--	--
	13	LC-filtered	04/14/93	1001	4.17	<.2	<.2	<.2	<.12	<.14	nt	--	--
	14	LC	05/17/93	1330	[a]1.10	<.2	<.2	<.2	<.12	<.14	nt	--	--

Table 7. Concentrations of nitroaromatic compounds in water samples from monitoring wells at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Well (figs. 1 and 5)	QC code (table 3)	Method	Date	Time	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl	Surrogate recovery (percent)	
												Toluene fraction	Isoamyl acetate fraction
MWS-21	13	LC	04/14/93	1600	<0.2	<0.2	<0.2	<0.2	<0.12	<0.14	nt	--	--
MWV-22	12	LC	04/07/93	1030	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
	17	LC	01/12/94	1100	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
	17b	LC	02/01/94	1200	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
	17b	LC	02/17/94	1330	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
	17c	LC	03/01/94	1340	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
	18	LC	04/05/94	1235	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
	22	LC	07/19/94	1226	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
	36	GC	06/15/95	1040	<.2	<.2	<.2	<.1	nt	<1	<0.1	110	132
MWS-22	12	LC	04/07/93	1000	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
	17b	LC	02/01/94	1150	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
	17b	LC	02/17/94	1130	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
	17c	LC	03/01/94	1300	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
	18	LC	04/05/94	1425	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
	21	LC	06/07/94	1735	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
	22	LC	07/19/94	1303	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
	36	GC	06/15/95	1055	<.2	<.2	<.2	<.1	nt	<1	<.1	105	132
MWV-24	10	LC	02/09/93	0915	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
MWVR-24	14	LC	05/18/93	1245	.95	<.2	<.2	<.2	<.12	<.14	nt	--	--
	21	LC	06/08/94	1135	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
MWS-24	10	LC	02/09/93	0945	<.5	<.5	<.5	<.5	<.12	<.14	nt	--	--
	12	LC	04/07/93	1230	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
	17	LC	01/12/94	1340	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
	17b	LC	02/01/94	1830	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--

Table 7. Concentrations of nitroaromatic compounds in water samples from monitoring wells at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Well (figs. 1 and 5)	QC code (table 3)	Method	Date	Time	2-NT	4-NT	3-NT	NB	HMX	RDX	Tetryl	Surrogate recovery (percent)	
												Toluene fraction	Isoamyl acetate fraction
MWS-24—Continued	17b	LC	02/17/94	1440	<0.24	<0.29	<0.13	<0.18	<0.12	<0.14	nt	--	--
	17c	LC	03/01/94	1500	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
	18	LC	04/05/94	1655	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
	21	LC	06/07/94	1305	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
	22	LC	07/19/94	1255	<.24	<.29	<.13	<.18	<.12	<.14	nt	--	--
MWGS-01	13	LC	04/14/93	1720	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
MWGS-02	12	LC	04/07/93	1230	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
MWGS-03	12	LC	04/07/93	1900	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
MWGS-04	13	LC	04/16/93	1130	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
MWGS-05	13	LC	04/15/93	1715	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
USGS-1	12	LC	04/05/93	1530	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
USGS-2	12	LC	04/05/93	1410	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
USGS-2A	12	LC	04/05/93	1650	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
USGS-3	12	LC	04/05/93	1720	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
USGS-4	12	LC	04/06/93	1600	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
USGS-5	12	LC	04/06/93	1715	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
USGS-6	12	LC	04/06/93	1400	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
USGS-7[b]	12	LC	04/05/93	1750	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
USGS-8	12	LC	04/06/93	1015	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--
USGS-9	12	LC	04/05/93	1650	<.2	<.2	<.2	<.2	<.12	<.14	nt	--	--

[a] Constituent probably present at or below the reported value but could not be spectrally confirmed.
[b] 3,4-dinitrotoluene was tentatively identified in this sample.

Table 8. Tritium concentrations in ground-water samples from the Weldon Spring ordnance works, St. Charles County, Missouri

[pCi/L, picocuries per liter; <, less than]

Site (figs. 1, 9, and 10)	Date	Tritium concentration (pCi/L)	Site (figs. 1, 9, and 10)	Date	Tritium concentration (pCi/L)
Burgermeister spring	09/04/84	70	MWV-09	12/08/92	29
	09/10/85	59	MWS-09	12/08/92	<5.7
	03/16/89[a]	38	MWD-09[c]	08/21/90	<5.7
MW-2003[a]	03/13/89	61	MWS-11	12/08/92	14
	06/06/89	76	MWS-14	02/05/95	69
MW-2005[a]	06/06/89	10	MWS-15	08/21/90[c]	42
MW-2006[a]	03/14/89	45		12/09/92	37
	06/06/89	55	MWD-15	12/09/92[b]	<5.7
MW-3002	10/31/88	<5.7	MWS-16	12/09/92	26
MW-3006	10/27/88	33	MWS-17	12/09/92	26
MW-3008[a]	03/15/89	22	MWD-18[c]	08/20/90	<5.7
	06/06/89	22.4	MWS-21	12/15/92	30
MW-3009[a]	03/15/89	<5.7	MWS-22	12/10/92	14
	06/08/89	<5.7	MWS-23	02/05/95	23
MW-3010	02/18/86	<1.0	MWD-105[c]	08/24/90	<5.7
MW-4001	12/17/92	36	MWD-106	02/07/95	<5.7
MW-4002	02/20/86	17	MWS-107	02/03/95	17
MW-4006	02/20/86	<1.0	MWGS-01	01/10/89	<5.7
MW-4013	06/01/90	20	MWGS-02	01/05/89	<5.7
MWS-01	02/04/95	<5.7	MWGS-03	12/08/88	<5.7
MWS-02	08/23/90[b]	<5.7	MWGS-04	12/15/88	<5.7
	02/04/95	<5.7	MWGS-05	01/06/89	<5.7
MWD-02[b]	08/23/90	<5.7	PW-3	12/16/92	<5.7
MWS-04	02/08/95	35	USGS-1	12/16/92	45
MWS-05[b]	08/22/90	<5.7	USGS-2	03/16/89	<5.7
MWS-06[b]	08/22/90	<5.7	USGS-3	02/03/95	<5.7
MWD-06[b]	08/22/90	<5.7	USGS-4	12/16/92	9
MWS-07	12/15/92	32	USGS-7	03/10/86	<1.0

[a] Data from Schumacher (1990).
[b] Data from Schumacher and others (1993).
[c] Data from Kleeschulte and Cross (1990).

LIST OF ABBREVIATIONS USED IN TABLE 9

QC	Quality assurance-quality control
Q	Discharge, in cubic feet per second
SC	Specific conductance, in microseimens per centimeter at 25 degress Celsius
Temp	Temperature, in degrees Celsius
TNB	1,3,5-Trinitrobenzene
3,5-DNA	3,5-Dinitroaniline
2-Am	2-Amino-4,6-dinitrotoluene
4-Am	4-Amino-2,6-dinitrotoluene
TNT	2,4,6-Trinitrotoluene
2,6-DNT	2,6-Dinitrotoluene
2,4-DNT	2,4-Dinitrotoluene
2,3-DNT	2,3-Dinitrotoluene
DNB	1,3-Dinitrobenzene
2-NT	2-Nitrotoluene
4-NT	4-Nitrotoluene
3-NT	3-Nitrotoluene
NB	Nitrobenzene
RDX	Cyclonite
LC	High-performance liquid chromatography
GC	Gas chromatography
e	Estimated value
--	No data
<	Less than
nt	Not tested
nd	Not detected

Table 9. Discharge, physical properties, and concentrations of nitroaromatic compounds in water samples from springs at the Weldon Spring ordnance works, St. Charles County, Missouri

[All concentrations in micrograms per liter unless noted otherwise]

Site (fig. 6)	Date	Time	QC code (table 3)	Method	Q	Temp	SC	TNB	3,5-DNA	2-Am	4-Am	TNT
Burgermeister spring	04/05/93	1630	12	LC	0.38e	--	--	<0.2	<0.2	0.61	1.01	<0.2
	06/08/94	1530	21	LC	.42e	--	--	<.19	.12	.33	.54	<.11
	12/21/94	1350	26	GC	.60e	--	--	<.1	<.2	.11	.29	.02
	02/03/95	0930	29	GC	.55e	--	--	<.3	<.2	.17	.63	.18
	03/16/95	1330	31	GC	.36e	--	--	<.2	<.2	.51	.76	[a].16
	08/14/95	1020	38	GC	.29	13.6	570	<.1	.2	.7	1	.47
Spring 5108	03/17/95	1000	31	GC	--	--	--	<.1	<.2	<.05	<.05	<.1
Spring 5108 sink	03/17/95	1015	31	GC	<.01	10.4	371	<.1	<.2	.53	1.5	.38
Spring 5201[c]	12/22/94	0920	26	GC	.3e	10.7	248	2.9	[b]1.5	6.2	4.1	18
	03/17/95	0900	31	GC	.23	8.2	511	4.5	1	3.4	4.8	19
	08/14/95	1000	38	GC	.02e	14.2	575	2.6	5.6	14	24	39
Spring 5401	12/22/94	0945	26	GC	.02	11.3	252	.1	<.2	.18	.51	.05
	03/17/95	1320	31	GC	.015e	9.2	511	[a].1	<.2	<.05	<.05	[a].05
	08/15/95	1200	38	GC	.01e	14.2	545	<.1	<.2	<.05	<.05	<.01
Spring 5602	12/21/94	1500	26	GC	.09	--	--	.2	[b].26	.49	1.1	1.4
	03/16/95	1420	31	GC	.06	11.7	514	1.0	1.3	1.7	2.6	2.3
	08/15/95	0945	38	GC	.08	18.3	272	<.1	.46	.63	1	.24
Spring 5605	12/21/94	1625	26	GC	.28	10.1	352	<.1	<.2	.25	.71	.95
	03/16/95	1450	31	GC	.28	9	408	<.2	<.2	.58	.71	1.2
	08/15/95	0915	38	GC	.09	14.7	503	.27	.6	1.1	2.4	2.8
Spring 5612	12/22/94	1400	26	GC	.09e	11.4	219	<.1	<.2	.77	.98	2.8
	03/16/95	1600	31	GC	.015e	11.4	494	<.1	<.2	.53	.74	.38
	08/15/95	1045	38	GC	<.01	13.3	505	<.1	<.2	.54	.59	.08

Table 9. Discharge, physical properties, and concentrations of nitroaromatic compounds in water samples from springs at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Site (fig. 6)	Date	2,6-DNT	2,4-DNT	2,3-DNT	DNB	2-NT	4-NT	3-NT	NB	RDX	Tetryl	Surrogate recovery (percent)	
												Toluene fraction	Isoamyl acetate fraction
Burgermeister spring	04/05/93	[b]<0.2	<0.2	nd	<0.2	<0.2	<0.2	<0.2	<0.02	nt	nt	--	--
	06/08/94	<.21	<.18	nd	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
	12/21/94	.09	.3	0.03	<.05	<.2	<.2	<.2	<.05	<1	<1	104	nt
	02/03/95	.13	.16	.02	<.05	<.2	<.2	<.2	<.05	<1	<1	106	100
	03/16/95	.17	.03	.1	<.05	<.2	<.2	<.2	<.05	<1	<1	121	130
	08/14/95	.31	.06	.16	<.05	<.2	<.2	<.2	<.1	<1	<.1	138	126
Spring 5108	03/17/95	<.01	<.01	<.1	<.05	<.2	<.2	<.2	<.05	<1	<1	90	105
Spring 5108 sink	03/17/95	<.01	.05	<.1	<.05	<.2	<.2	<.2	<.05	<1	<1	102	105
Spring 5201[c]	12/22/94	.17	.08	.5	<.05	<.2	<.2	<.2	<.05	nt	nt	--	280
	03/17/95	.4	.06	.88	<.05	<.2	<.2	<.2	<.05	<1	<.1	332	374
	08/14/95	1.6	.05	1.9	<.05	<.2	<.2	<.2	<.1	<1	<.1	482	524
Spring 5401	12/22/94	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	nt	nt	--	103
	03/17/95	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	90	106
	08/15/95	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	--	94	131
Spring 5602	12/21/94	.78	.47	.06	<.05	<.2	<.2	<.2	<.05	nt	nt	--	118
	03/16/95	2.2	.06	.2	<.05	<.2	<.2	<.2	<.05	<1	<.1	144	180
	08/15/95	.85	.03	.07	<.05	<.2	<.2	<.2	<.05	<1	<.1	103	131
Spring 5605	12/21/94	.04	.07	.02	<.05	<.2	<.2	<.2	<.05	nt	nt	--	107
	03/16/95	.08	.04	.02	<.05	<.2	<.2	<.2	<.05	<1	<.1	90	108
	08/15/95	.26	.1	.27	<.05	<.2	<.2	<.2	<.05	<1	<.1	98	139
Spring 5612	12/22/94	<.02	.02	.02	<.05	<.2	<.2	<.2	<.05	nt	nt	--	113
	03/16/95	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	87	108
	08/15/95	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	79	113

[a] Constituent detected in laboratory blank associated with this sample (see table 3) at or above the reported value, concentration is suspect.
[b] Constituent probably present at or below the reported value but could not be specterally confirmed.
[c] 3,4-dinitrotoluene was tentatively identified in samples from this site by gas chromatography/mass spectrometry, which resulted in the large surrogate (3,4-dinitrotoluene) recoveries.

Table 10. Daily mean discharge for Schote Creek at County Road D, October 29, 1993, through September 1995, Weldon Spring ordnance works, St. Charles County, Missouri

[Discharge in cubic feet per second; --, no data]

	Daily mean discharge											
Day	Oct 1993	Nov	Dec 1993	Jan 1994	Feb	Mar	Apr	May	June	July	Aug	Sept 1994
1	--	--	0.06	0.00	0.00	--	--	0.57	0.00	0.00	--	0.00
2	--	--	11	.00	.00	0.63	--	.03	.00	.00	0.00	.00
3	--	--	1.3	.00	.00	.32	--	.00	.00	.00	.00	.00
4	--	--	--	.00	.00	.22	--	.00	.00	.00	.00	.00
5	--	0.02	--	.00	.00	.06	--	.00	.00	.00	.00	.00
6	--	.01	.35	.00	.00	.05	--	.00	.00	.00	.00	.00
7	--	.01	.08	.00	.00	1.6	--	2.0	.00	.00	.00	.00
8	--	.01	.05	.00	.00	.43	--	.04	.00	.00	.00	.00
9	--	.01	.04	.00	.00	.08	--	.02	.00	.00	.00	.00
10	--	.01	.04	.00	.00	.04	--	.01	.00	.00	.00	.00
11	--	.01	.04	.00	.00	.04	--	.00	.00	.00	.00	.00
12	--	6.6	.04	.00	.01	.03	--	.01	.00	.00	.00	.00
13	--	7.0	1.0	.00	.01	.04	--	.00	.00	--	.00	.00
14	--	50	2.1	.00	.01	.03	0.25	.29	.00	--	.00	.00
15	--	1.7	1.1	.00	.01	.03	6.2	.38	.00	--	.00	.00
16	--	7.2	.48	.00	.01	.02	.52	.01	.00	--	.00	.00
17	--	11	.40	.00	.01	.02	.05	.00	.00	--	.00	.00
18	--	1.3	.40	.00	--	.03	.03	--	.00	--	.00	.00
19	--	.70	.40	.00	--	.02	.02	--	.00	--	.00	.00
20	--	.25	.40	.00	--	.03	.00	--	.00	--	.00	.00
21	--	.20	.40	.00	--	.02	.00	--	.00	--	.00	.00
22	--	.10	.40	.00	--	.02	.00	.00	.00	--	.00	.00
23	--	.08	.40	.00	--	.01	.00	.00	.00	--	.00	.00
24	--	.05	.40	.00	--	.01	.00	.00	.00	--	.00	.00
25	--	.06	.40	.00	--	.01	.00	.01	.00	.04	.00	.00
26	--	.48	.40	.22	--	.88	.00	.00	.00	--	.00	.00
27	--	.21	.40	.67	--	1.3	.00	.00	.00	--	.00	.00
28	--	.36	.43	.14	--	.09	48	.00	.00	--	.00	.00
29	0.03	.09	.27	.01	--	.03	1.2	.00	.00	--	.00	.00
30	--	.07	.00	.01	--	.03	8.1	.00	.00	--	.00	.00
31	--	--	.00	.00	--	.02	--	.00	--	--	.00	--
TOTAL	--	--	--	1.05	--	--	--	--	0.00	--	--	0.00
MEAN	--	--	--	.034	--	--	--	--	.000	--	--	.000
MAXIMUM	--	--	--	.67	--	--	--	--	.00	--	--	.00
MINIMUM	--	--	--	.00	--	--	--	--	.00	--	--	.00
ACRE-FEET	--	--	--	2.1	--	--	--	--	.00	--	--	.00

Table 10. Daily mean discharge for Schote Creek at County Road D, October 29, 1993, through September 1995, Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Day	Daily mean discharge—Continued											
	Oct 1994	Nov	Dec 1994	Jan 1995	Feb	Mar	Apr	May	June	July	Aug	Sept 1995
1	0.00	0.02	0.00	0.01	0.12	0.06	0.03	11	0.02	0.00	0.00	0.00
2	.00	.01	.00	.00	.20	.05	.03	1.4	.30	.00	.00	.00
3	.00	.00	.00	.00	5.3	.04	.03	.30	.35	.00	.00	.00
4	.00	.14	.00	.00	1.2	.06	.02	1.7	.07	.00	.01	.00
5	.00	7.1	.00	.00	.20	.13	.02	.48	.06	.00	.02	.00
6	.00	.51	.00	.00	.05	.12	.02	.05	.04	.00	16	.00
7	.00	.01	.00	.00	.04	47	.01	.04	.04	.00	27	.00
8	.00	.00	.00	.00	.03	2.1	.01	3.0	.04	.00	3.4	.00
9	.00	1.8	.00	.00	.08	.94	.01	.67	.04	.00	2.6	.00
10	.00	.02	.00	.00	.36	.74	.01	.05	.06	.00	2.4	.00
11	.00	.00	.00	.02	.07	.54	.04	.03	.04	.00	1.9	.00
12	.00	.00	.00	.34	.03	.32	.05	.03	.03	.00	1.4	.00
13	.00	.01	.00	41	.02	.03	.04	.04	.02	.00	.91	.00
14	.00	.01	.01	9.2	.02	.02	.04	.03	.01	.00	.05	.00
15	.00	.01	.01	.56	.04	.02	.04	.07	.00	.00	.88	.00
16	.00	.00	.46	.04	.10	.02	.09	1.9	.00	.00	1.8	.00
17	.00	.00	.04	.01	.08	.01	.15	99	.00	.00	1.2	.00
18	.05	.00	.01	.16	.07	.01	.35	23	.00	.00	.73	.00
19	.01	.01	.01	8.0	.08	.00	.28	1.7	.00	.00	.19	.00
20	--	7.1	.77	.28	.32	.02	8.6	.04	.00	.00	.04	.00
21	--	2.4	4.2	.02	.57	.01	.91	.04	.00	.00	.03	.00
22	--	.03	4.0	.01	.24	.00	.29	.03	.00	.00	.03	.00
23	--	.01	.17	.01	.04	.00	2.2	.03	.00	.00	.01	.01
24	--	.00	.03	.02	.03	.00	1.4	.04	.00	.00	.00	.01
25	--	.00	.02	.04	.03	.00	.33	.03	.00	.00	.00	.01
26	--	.00	.01	.03	.23	2.3	.07	.03	.00	.00	.00	.01
27	--	.01	.01	.03	.75	3.1	.05	.03	.00	.00	.00	.01
28	--	.00	.00	.11	.20	.13	.04	.03	.00	.00	.00	.01
29	--	.00	.00	.00	--	.04	4.4	.03	.00	.00	.00	.01
30	--	.00	.00	.40	--	.03	1.6	.56	.00	.00	.00	.00
31	--	--	.01	.01	--	.03	--	.02	--	.00	.00	--
TOTAL	--	19.20	9.76	60.30	10.50	57.87	21.16	145.40	1.12	0.00	60.60	0.07
MEAN	--	.64	.31	1.95	.37	1.87	.71	4.69	.037	.000	1.95	.002
MAXIMUM	--	7.1	4.2	41	5.3	47	8.6	99	.35	.00	27	.01
MINIMUM	--	.00	.00	.00	.02	.00	.01	.02	.00	.00	.00	.00
ACRE-FEET	--	38	19	120	21	115	42	288	2.2	.00	120	.1

Table 11. Daily mean discharge for tributary 5200 downstream of burning ground 1, January 07, 1994, through September 1995, Weldon Spring ordnance works, St. Charles County, Missouri

[Discharge in cubic feet per second; --, no data]

	Daily mean discharge								
Day	Jan 1994	Feb	Mar	Apr	May	June	July	Aug	Sept 1994
1	--	0.00	--	--	0.43	0.00	0.00	0.00	0.00
2	--	.00	0.00	--	.16	.00	.00	.00	.00
3	--	.00	.00	--	.01	.00	.00	.00	.00
4	--	.00	.00	--	.01	.00	.00	.00	.00
5	--	.00	.00	0.67	.01	.00	.00	.00	.00
6	--	.00	.00	.84	.01	.00	.00	.00	.00
7	0.00	.00	.53	.18	.86	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.01	.00	.00
9	.00	.00	.00	.20	.00	.00	.12	.00	.00
10	.00	.00	.00	9.7	.00	.00	.01	.00	.00
11	.00	.00	.00	24	.00	.00	.20	.00	.00
12	.00	.00	.00	19	.01	.00	2.3	.00	.00
13	.00	.00	.00	1.2	.00	.00	--	.00	.00
14	.00	.00	.00	.13	.61	.00	--	.00	.00
15	.00	.00	.00	4.4	.36	.00	--	.00	.00
16	.00	.00	.00	.62	.00	.00	--	.00	.00
17	.00	.00	.00	.00	--	.00	--	.00	.00
18	.00	--	.00	.00	--	.00	--	.00	.00
19	.00	--	.00	.00	--	.00	--	.00	.00
20	.00	--	.00	.00	--	.00	--	.00	.00
21	.00	--	.00	.00	--	.00	.00	.00	.00
22	.00	--	.00	.00	.00	.00	.00	.00	.00
23	.52	--	.00	.00	.00	.00	.00	.00	.00
24	1.1	--	.00	.00	.00	.00	.00	.00	.00
25	2.3	--	.00	.00	.00	.00	.00	.00	.00
26	.56	--	.26	.01	.00	.00	.00	.00	.00
27	1.3	--	.29	.01	.00	.00	.00	.00	.00
28	.81	--	.00	27	.00	.00	.00	.00	.00
29	.00	--	.00	1.2	.00	.00	.00	.00	.00
30	.00	--	.00	3.5	.00	.00	.00	.00	.00
31	.00	--	.00	--	.00	--	.00	.00	--
MEAN	--	--	--	--	--	0.000	--	0.000	0.000
MAXIMUM	--	--	--	--	--	.00	--	.00	.00
MINIMUM	--	--	--	--	--	.00	--	.00	.00

Table 11. Daily mean discharge for tributary 5200 downstream of burning ground 1, January 07, 1994, through September 1995, Weldon Spring ordnance works, St. Charles County, Missouri—Continued

	Daily mean discharge—Continued											
Day	Oct 1994	Nov	Dec 1994	Jan 1995	Feb	Mar	Apr	May	June	July	Aug	Sept 1995
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.9	0.96	0.00	0.00	0.00
2	.00	.00	.00	.00	.00	.00	.00	.66	.16	.00	.00	.00
3	.00	.00	.00	.00	2.5	.00	.00	.01	.00	.00	.00	.00
4	.00	.01	.00	.00	.53	.00	.00	.33	.00	.00	.00	.00
5	.00	.56	.00	.00	17	.00	.00	.01	.00	.00	.00	.00
6	.00	.02	.00	.00	.00	.01	.00	.00	.00	.00	3.6	.00
7	.00	.00	.00	.00	.00	17	.00	.00	.00	.00	4.1	.00
8	.00	.00	.00	.00	.00	.50	.00	1.3	.00	.00	.00	.00
9	.00	.39	.00	.00	.00	.00	.00	.29	.00	.00	.00	.00
10	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	17	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	4.8	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.09	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.01	.00	23	.00	.00	1.1	.00	.00	.00	.00
17	.00	.00	.00	.00	--	.00	.00	44	.00	.00	.00	.00
18	.01	.00	.00	.00	.25	.00	.00	14	.00	.00	.00	.00
19	.00	.00	.00	.00	.51	.00	.00	2.0	.00	.00	.00	.00
20	.00	3.7	.10	.00	12	.00	3.5	--	.00	.00	.00	.00
21	.00	.40	1.7	.00	.01	.00	.07	--	.00	.00	.00	.00
22	.00	.00	.89	.00	.44	.00	.00	--	.00	.00	.00	.00
23	.00	.00	.00	.00	.01	.00	.16	--	.00	.00	.00	.00
24	.00	.00	.00	.00	3.9	.00	.09	--	.00	.00	.00	.00
25	.00	.00	.00	.00	3.8	.00	.00	--	.00	.00	.00	.00
26	.00	.00	.00	.00	.02	.17	.00	--	.00	.00	.00	.00
27	.00	.00	.00	.00	.01	.29	.00	--	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	--	.00	.00	.00	.00
29	.00	.00	.00	.00	--	.00	.71	--	.00	.00	.00	.00
30	.00	.00	.00	.00	--	.00	.39	.00	.00	.00	.00	.00
31	.00	--	.00	.00	--	.00	--	.00	--	.00	.00	--
MEAN	0.000	0.17	0.087	0.71	--	0.58	0.16	--	0.037	0.000	0.25	0.000
MAXIMUM	.01	3.7	1.7	17	--	17	3.5	--	.96	.00	4.1	.00
MINIMUM	.00	.00	.00	.00	--	.00	.00	--	.00	.00	.00	.00

LIST OF ABBREVIATIONS USED IN TABLE 12

QC	Quality assurance-quality control
Q	Discharge, in cubic feet per second
SC	Specific conductance, in microseimens per centimeter at 25 degress Celsius
Sb	Antimony, dissolved, in micrograms per liter
Sb_t	Antimony, total, in micrograms per liter
As	Arsenic, dissolved, in micrograms per liter
As_t	Arsenic, total, in micrograms per liter
Pb	Lead, dissolved, in micrograms per liter
Pb_t	Lead, total, in micrograms per liter
Tl	Thallium, dissolved, in micrograms per liter
Tl_t	Thallium, total, in micrograms per liter
TNB	1,3,5-Trinitrobenzene
3,5-DNA	3,5-Dinitroaniline
2-Am	2-Amino-4,6-dinitrotoluene
4-Am	4-Amino-2,6-dinitrotoluene
TNT	2,4,6-Trinitrotoluene
2,6-DNT	2,6-Dinitrotoluene
2,4-DNT	2,4-Dinitrotoluene
2,3-DNT	2,3-Dinitrotoluene
DNB	1,3-Dinitrobenzene
2-NT	2-Nitrotoluene
4-NT	4-Nitrotoluene
3-NT	3-Nitrotoluene
NB	Nitrobenzene
RDX	Cyclonite
LC	High-performance liquid chromatography
GC	Gas chromatography
--	No data
<	Less than
e	Estimated value
nt	Not tested
nd	Not detected

Table 12. Instantaneous discharge and stormwater quality data for continuous record gaging stations and ancillary sites at the Weldon Spring ordnance works, St. Charles County, Missouri

[Concentrations of trace elements and nitroaromatic compounds are in micrograms per liter; sites shown on figure 6]

Date	Time	QC code (table 3)	Method	Q	SC	Sb	Sb_t	As	As_t	Pb	Pb_t	Tl	Tl_t	TNB	3,5-DNA	2-Am	4-Am	TNT
Trihutary 5200 at burning ground 1																		
10/04/93	0800	15	LC	--	--	--	--	--	--	--	--	--	--	<0.19	2.51	2.7	6.76	15.6
04/11/94	1150	19	LC	40	96	--	--	<1	1	1	7	--	--	.28	<.32	.42	1.01	9.34
04/11/94	1300	19	LC	19	110	--	--	<1	<1	2	3	--	--	.24	<.32	.36	1.01	8.93
04/28/94	1120	20	LC	22	--	--	--	--	--	--	--	--	--	<.19	<.32	.42	1.78	1.83
04/28/94	1330	20	LC	133	--	--	--	--	--	--	--	--	--	<.19	.16	1.19	4.68	12.1
07/20/94	2345	22	LC	--	--	--	--	--	--	--	--	--	--	<.19	<.32	.74	1.91	<.11
11/05/94	1745	25	LC	5.8	--	--	--	--	--	--	--	--	--	<.19	<.32	.61	2.04	[a].16
11/05/94	1745	27	GC	5.8	--	--	--	--	--	--	--	--	--	<.1	.2	.42	1.3	.1
11/20/94	1854	26	GC	27	236	--	<3	--	4	<1	17	<1	<1	<.1	<.2	.42	1.9	.01
11/20/94	1912	26	GC	29	145	--	<3	--	4	<1	14	<1	<1	<.1	<.2	.01	.06	.01
11/20/94	1915	26	GC	28	151	--	<3	--	3	<1	12	<1	<1	<.1	<.2	.09	.56	.01
01/13/95	0621	28	GC	5.0	431	--	<3	--	2	--	5	--	<1	<.1	<.2	.09	.35	.04
01/13/95	0845	28	GC	3.4	258	--	<3	--	1	--	3	--	<1	<.1	<.4	<.1	.3	[b].01
01/13/95	0845	28	GC-filter	3.4	--	--	--	--	--	--	--	--	--	<.1	<.2	.07	.4	[b].03
01/13/95	1012	28	GC	2.0	226	--	<3	--	1	--	10	--	<1	<.1	<.2	.09	.38	.08
01/13/95	1030	28	GC	38	154	--	<3	--	6	--	19	--	<1	<.1	<.2	<.05	.1	.05
01/13/95	1200	28	GC	19	135	--	<3	--	1	--	4	--	<1	<.1	<.2	<.05	.12	.05
01/13/95	1201	28	GC	19	--	--	--	--	1	--	5	--	--	<.1	<.2	<.05	.02	.08
01/13/95	1415	28	GC	12	150	--	<3	--	1	--	2	--	<1	<.1	<.2	<.05	.1	.05
01/13/95	1539	28	GC	18e	147	--	<3	--	1	--	5	--	<1	<.1	<.2	<.05	.15	[b].03
01/13/95	1716	28	GC	38e	114	--	<3	--	4	--	15	--	<1	<.1	<.2	<.05	.14	.05
01/13/95	1919	28	GC	38e	102	--	<3	--	2	--	8	--	<1	<.1	<.4	.08	.45	.05
01/13/95	2122	28	GC	39.5	91	--	<3	--	1	--	5	--	<1	<.1	<.4	.15	.94	.1
01/13/95	2122	28	GC-filter	39.5	--	--	--	--	--	--	--	--	--	<.1	<.2	.15	.69	.14
01/13/95	2325	28	GC	27.5e	98	--	<3	--	<1	--	2	--	<1	<.1	<.2	.25	1.1	.24
01/14/95	0453	--	--	10	126	--	<3	--	<1	--	2	--	<1	--	--	--	--	--
01/14/95	1643	28	GC	1.1e	--	--	--	--	--	--	--	--	--	<.1	<.2	.31	1.4	.78
03/07/95	0040	30	GC	31.3e	305	--	<1	--	15	--	83	--	<1	<.1	<.2	[c].63	[c]1.3	.33
03/07/95	0040	30	GC-filter	31.3e	--	--	--	--	--	--	--	--	--	<.1	<.2	[c].24	[c].58	.33

Table 12. Instantaneous discharge and stormwater quality data for continuous record gaging stations and ancillary sites at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	Q	SC	Sb	Sb_t	As	As_t	Pb	Pb_t	Tl	Tl_t	TNB	3,5-DNA	2-Am	4-Am	TNT
Tributary 5200 at burning ground 1—Continued																		
03/07/95	0111	30	GC	45	139	--	--	--	14	--	48	--	<1	<0.1	<0.2	0.09	0.08	<0.2
03/07/95	0153	30	GC	42	104	--	<1	--	4	--	17	--	<1	<.1	<.2	.08	.11	[b].04
03/07/95	0511	30	GC	63	75	--	<1	--	8	--	35	--	<1	<.1	<.2	.3	.73	.5
03/07/95	1000	30	GC	13	118	<1	<1	<1	<1	1	7	<1	<1	<.1	<.2	.39	1.1	1.5
03/07/95	1147	30	GC	7.6	137	--	<1	--	<1	--	3	--	<1	<.1	<.2	.49	1.8	1.3
05/16/95	2051	34	GC	.01	--	--	--	--	--	--	--	--	--	<.1	<.2	<.05	.15	<.02
05/16/95	2348	34	GC	6.2	--	--	--	--	--	--	--	--	--	<.1	<.2	<.05	.17	.02
05/17/95	0010	34	GC	10	--	--	--	--	--	--	--	--	--	<.1	<.2	<.05	.15	<.02
05/17/95	0019	34	GC	12	--	--	--	--	--	--	--	--	--	<.1	<.4	.08	.36	.09
05/17/95	0037	34	GC	64e	--	--	--	--	--	--	--	--	--	<.1	<.4	12	44	.57
05/17/95	0106	34	GC	61e	--	--	--	--	--	--	--	--	--	<.1	<.4	[c].64	[c]4.4	.07
05/17/95	1306	34	GC	44e	--	--	--	--	--	--	--	--	--	<.1	<.2	[c].13	.56	.1
Site 2A (tributary 5200 upstream of burning ground 1)																		
11/05/94	1725	27	GC	1.8	252	--	--	<1	1	<1	2	--	--	<0.1	<0.2	<0.05	<0.05	<0.01
11/05/94	1729	27	GC	2.6	350	--	--	<1	<1	<1	2	--	--	<.1	<.2	<.05	<.05	<.01
11/05/94	1729	27	GC-filter	2.6	--	--	--	--	--	--	--	--	--	<.1	<.2	<.05	<.05	<.01
11/05/94	1744	27	GC	2.4	241	--	--	<1	<1	<1	2	--	--	<.1	<.2	<.05	<.05	<.01
11/05/94	1854	27	GC	1.6	191	--	--	<1	1	<1	2	--	--	<.1	<.2	<.05	<.05	<.01
11/05/94	2224	27	GC	.4	--	--	--	<1	1	<1	2	--	--	<.1	<.2	<.05	<.05	<.01
Schote Creek at County Road D																		
02/22/94	1408	17c	LC	46.7	--	--	--	--	--	--	--	--	--	<0.19	<0.32	[a]1.83	1.75	<0.11
03/02/94	1510	17c	LC	.40	--	--	--	--	--	--	--	--	--	<.19	[c].06	1.8	3.62	.68
04/09/94	2318	19	LC	--	340	--	--	--	6	--	24	--	--	<.19	<.32	1.31	2.83	.17
04/10/94	0121	19	LC	--	200	--	--	<1	<1	2	4	--	--	<.19	<.32	1.53	3.57	<.11
04/10/94	0245	19	LC	--	162	--	--	--	3	--	10	--	--	<.19	<.32	.87	2.32	[a].13
04/10/94	0303	19	LC	--	147	--	--	--	6	--	22	--	--	<.19	<.32	.65	1.4	[a].13
04/10/94	0318	19	LC	--	131	--	--	<1	<1	1	3	--	--	<.19	<.32	.8	1.65	[a].11

Table 12. Instantaneous discharge and stormwater quality data for continuous record gaging stations and ancillary sites at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	Q	SC	Sb	Sb_t	As	As_t	Pb	Pb_t	Tl	Tl_t	TNB	3,5-DNA	2-Am	4-Am	TNT
Schote Creek at County Road D—Continued																		
04/10/94	0333	19	LC	--	120	--	--	--	6	--	37	--	--	<0.19	<0.32	0.57	1.44	0.43
04/10/94	0400	19	LC	--	107	--	--	--	8	--	37	--	--	<.19	<.32	.47	1.37	.5
04/10/94	0454	19	LC	--	105	--	--	<1	4	2	16	--	--	[a].47	<.32	.6	.8	.63
04/11/94	1045	19	LC	79.3	103	--	--	<1	2	2	6	--	--	<.19	<.32	[a].07	.14	.45
04/11/94	1350	19	LC	27.5	115	--	--	<1	<1	2	6	--	--	<.19	<.32	.4	.96	3.78
04/28/94	0212	20	LC	5.4	--	--	--	--	--	--	--	--	--	<.19	<.32	[a].02	[a].11	<.11
04/28/94	0239	20	LC	31.0	--	--	--	--	--	--	--	--	--	<.19	<.32	.26	.54	<.11
04/28/94	0254	20	LC	79.0	--	--	--	--	--	--	--	--	--	<.19	<.32	<.13	[a].15	<.11
04/28/94	0524	20	LC	52e	--	--	--	--	--	--	--	--	--	<.19	<.32	<.13	[a].07	<.11
04/28/94	1230	20	LC	302	--	--	--	--	--	--	--	--	--	<.19	<.32	.38	1.28	.81
07/20/94	1954	22	LC	7.4	--	--	--	--	--	--	--	--	--	<.19	<.32	<.13	.89	<.11
11/05/94	1729	27	GC	40e	--	--	--	--	--	--	--	--	--	<.1	<.2	[a].55	1.8	.06
11/05/94	1729	27	GC-filter	40e	--	--	--	--	--	--	--	--	--	<.1	<.2	.84	1.4	.06
11/05/94	1929	25	LC	18.0	122	--	--	<1	<1	<1	3	--	--	<.19	<.32	1.03	3.69	[a].07
01/13/95	0427	28	GC	5.4	--	--	--	--	--	--	5	--	<1	<.1	<.4	.2	.68	[b].01
01/13/95	0730	28	GC	17.5	128	--	<3	--	1	--	4	--	<1	<.1	<.2	.82	2	.56
01/13/95	1000	28	GC	19.0	117	--	<3	--	2	--	7	--	<1	<.1	<.2	.46	1.1	.59
01/13/95	1230	28	GC	29.0	108	--	<3	--	2	--	10	--	<1	<.1	<.2	.47	.8	.82
01/13/95	1231	28	GC	29.0	108	--	<3	--	2	--	5	--	<1	<.1	<.2	.58	1.5	.5
01/13/95	1445	28	GC	20.0	117	--	<3	--	1	--	3	--	<1	<.3	<.2	.44	1.4	1.4
01/13/95	1600	28	GC	44.0	--	--	<3	--	2	--	5	--	<1	<.1	<.2	.52	1.1	1.6
01/13/95	1824	28	GC	113	--	--	<3	--	6	--	17	--	<1	<.2	<2	[c].31	[c]1.2	.09
01/13/95	2321	28	GC	81e	--	--	<3	--	2	--	5	--	<1	<.1	<2	[c].21	[c].96	.09
01/14/95	0612	28	GC	10.0	--	--	<3	--	<1	--	4	--	<1	<.2	<2	[c].34	[c]1.4	.1
01/19/95	0018	28	GC	3.4e	72	--	<3	--	<1	--	3	--	<1	<.1	<.2	.72	1.7	1.6
01/19/95	0221	28	GC	7.8e	151	--	<3	--	<1	--	4	--	<1	<.1	<.2	.56	1.1	4.4
01/19/95	0524	28	GC	27.0	97	--	<3	--	1	--	4	--	<1	<.1	<.2	.31	.64	2.2
01/19/95	0718	28	GC	14.0	105	--	<3	--	<1	--	3	--	<1	<.1	<.2	.4	.7	3.6
01/19/95	1245	28	GC	6.0e	124	--	<3	--	<1	--	2	--	<1	<.1	<.2	.6	1	4.6

Table 12. Instantaneous discharge and stormwater quality data for continuous record gaging stations and ancillary sites at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	Q	SC	Sb	Sb_t	As	As_t	Pb	Pb_t	Tl	Tl_t	TNB	3,5-DNA	2-Am	4-Am	TNT
Schote Creek at County Road D—Continued																		
01/19/95	1521	28	GC	4.0	--	--	--	--	--	--	--	--	--	<0.1	<0.2	0.57	1.4	3.9
01/19/95	1521	28	GC-filter	4.0	--	--	--	--	--	--	--	--	--	<.1	<.2	.42	.84	4.4
01/28/95	1009	29	GC	<.01	--	--	<3	--	<1	--	3	--	<1	<.1	<.2	.74	1.6	.12
01/28/95	1415	29	GC	.54e	--	--	<3	--	<1	--	2	--	<1	<.1	<.2	.51	1.2	.03
03/26/95	2142	32	GC	15.0	--	--	--	--	--	--	--	--	--	<.2	<.2	.15	.16	[b].07
03/26/95	2225	32	GC	24.5	140	--	<1	--	3	--	14	--	<1	<.2	<.2	.74	1.2	.14
05/16/95	2141	34	GC	11.1	--	--	--	--	--	--	--	--	--	<.1	<.2	.1	.34	<.02
05/17/95	0019	34	GC	79e	--	--	--	--	--	--	--	--	--	<.1	<.2	.08	.36	.09
05/17/95	0035	34	GC	135e	--	--	--	--	--	--	--	--	--	<.1	<.2	.19	.66	.04
05/17/95	0047	34	GC	170e	--	--	--	--	--	--	--	--	--	<.1	<.2	.34	1.3	.02
05/17/95	0142	34	GC	383	--	--	--	--	--	--	--	--	--	<.1	<.2	.19	.98	.04
05/17/95	0154	34	GC	546e	--	--	--	--	--	--	--	--	--	<.1	<.2	.23	1	.07
05/17/95	0257	34	GC	369e	--	--	--	--	--	--	--	--	--	<.1	<.2	.33	.52	[c].04
05/17/95	0327	34	GC	143	--	--	--	--	--	--	--	--	--	<.1	<.2	.32	1.6	.04
05/17/95	1415	34	GC	66e	--	--	--	--	--	--	--	--	--	<.1	<.2	.36	1.5	.35
Site 03 (tributary west of firing range)																		
11/04/94	1331	27	GC	0.026	--	--	--	<1	1	<1	4	--	--	<0.1	<0.2	5	1.9	0.04
11/04/94	1351	27	GC	.031	136	--	--	--	<1	--	5	--	--	--	--	--	--	--
11/04/94	1421	27	GC	.028	136	--	--	<1	1	<1	5	--	--	<.1	<.2	.74	6.2	.02
11/04/94	1521	27	GC	.025	143	--	--	--	<1	--	4	--	--	--	--	--	--	--
11/04/94	1621	27	GC	--	114	--	--	--	<1	--	4	--	--	--	--	--	--	--
11/04/94	1821	27	GC	.044	105	--	--	--	1	--	4	--	--	<.1	<.2	[a]1.6	6	.04
11/04/94	2021	27	GC	.042	114	--	--	--	<1	--	4	--	--	--	--	--	--	--
11/04/94	2221	27	GC	.033	154	--	--	--	<1	--	3	--	--	--	--	--	--	--
11/05/94	1635	27	GC	.038	72	--	--	<1	6	<1	30	--	--	<.1	<.2	.94	2.6	.05
11/05/94	1655	27	GC	.327	75	--	--	<1	5	<1	12	--	--	<.1	<.2	[a].12	.43	.03
11/05/94	1725	27	GC	.158	88	--	--	<1	2	<1	5	--	--	<.1	<.2	.26	.57	.02
11/05/94	1725	27	GC-filter	.158	--	--	--	--	--	--	--	--	--	<.1	<.2	.11	.6	.03

Table 12. Instantaneous discharge and stormwater quality data for continuous record gaging stations and ancillary sites at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	Q	SC	Sb	Sb_t	As	As_t	Pb	Pb_t	Tl	Tl_t	TNB	3,5-DNA	2-Am	4-Am	TNT
Site 03 (tributary west of firing range)—Continued																		
11/05/94	1825	25	LC	0.097	107	--	--	1	<1	<1	2	--	--	<0.19	<0.32	0.25	1.38	<0.01
11/05/94	1825	27	GC	.097	--	--	--	--	--	--	--	--	--	<.1	<.2	.33	.79	.04
11/05/94	1925	27	GC	.085	110	--	--	--	<1	--	3	--	<1	--	--	--	--	--
11/05/94	2125	27	GC	.045	116	--	--	--	<1	--	3	--	<1	--	--	--	--	--
11/05/94	2320	25	LC	.025	125	--	--	2	<1	<1	1	--	--	<.19	<.32	.83	2.81	1.14
11/05/94	2320	27	GC	.025	--	--	--	--	--	--	--	--	--	<.1	<.2	[a].55	1.8	.81
11/06/94	0225	27	GC	.015	132	--	--	--	<1	--	2	--	<1	--	--	--	--	--
Site 04 (creek near monitoring well MWS-01)																		
03/07/95	0035	30	GC	--	216	--	<1	--	7	--	27	--	<1	<0.1	<0.2	[c]0.84	[c]2	0.4
03/07/95	0050	30	GC	--	152	--	<1	--	9	--	45	--	<1	<.1	<.2	[c].78	[c]1.0	.46
03/07/95	0255	30	GC	--	93	--	<1	--	17	--	230	--	1	<.1	<.2	[c].18	[c].48	.47
03/07/95	0455	30	GC	--	86	--	<1	--	8	<1	75	<1	<1	<.1	<.2	[c].45	[c].81	.69
03/07/95	0755	30	GC	--	107	--	<1	--	2	--	8	--	<1	<.1	<.2	[c].61	[c]1.1	.27
03/07/95	1330	30	GC	--	--	--	<1	--	1	--	3	--	<1	<.1	<.2	[c].75	[c]1.5	.99
03/07/95	1330	30	GC-filter	--	--	--	--	--	--	--	--	--	--	<.1	<.2	[c].36	[c]1.1	.88
03/26/95	2154	32	GC	--	226	--	<1	--	3	--	18	--	<1	<.2	<.2	.21	.5	.11
03/26/95	2159	32	GC	--	241	--	<1	--	3	--	19	--	<1	<.2	<.2	.18	.24	[b].04
03/26/95	2214	32	GC	--	210	--	<1	--	4	--	16	--	<1	<.6	<.2	1.1	5.4	.27
03/26/95	2234	32	GC	--	173	--	<1	--	3	--	12	--	<1	<.2	<.2	.34	1.2	[b].07
03/27/95	0219	32	GC	--	166	--	<1	--	<1	--	6	--	<1	<.2	<.2	.52	1.4	.2
Site 05 (creek downstream of monitoring well MWS-17)																		
03/22/93	1710	12	LC	--	--	--	--	--	--	--	--	--	--	<0.2	<0.2	[a]0.23	0.48	<0.2
03/07/95	0020	30	GC	--	44	--	<1	--	34	--	140	--	<1	<.1	<.2	.23	.32	.2
03/07/95	0040	30	GC	--	64	--	<1	--	11	--	39	--	<1	<.1	<.2	.67	1.1	<.2
03/07/95	0145	30	GC	--	76	--	<1	--	29	--	180	--	<1	<.1	<.2	.95	2	.69
05/15/95	2027	34	GC	--	--	--	--	--	--	--	--	--	--	<.1	<.2	.06	.12	<.01
05/16/95	2032	34	GC	--	--	--	--	--	--	--	--	--	--	<.1	<.2	.41	1	.04

Table 12. Instantaneous discharge and stormwater quality data for continuous record gaging stations and ancillary sites at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	Q	SC	Sb	Sb_t	As	As_t	Pb	Pb_t	Tl	Tl_t	TNB	3,5-DNA	2-Am	4-Am	TNT
Site 05 (creek downstream of monitoring well MWS-17)—Continued																		
05/16/95	2047	34	GC	--	--	--	--	--	--	--	--	--	--	<0.1	<0.2	0.79	1.9	0.07
05/16/95	2152	34	GC	--	--	--	--	--	--	--	--	--	--	<.1	<.2	.53	1.5	.25
05/17/95	0122	34	GC	--	--	--	--	--	--	--	--	--	--	<.1	<.2	.69	4.3	1.5
05/17/95	0422	34	GC	--	--	--	--	--	--	--	--	--	--	<.1	<.2	.79	4.4	1.5
Site 06 (creek near monitoring well MWS-15)																		
03/06/95	2359	30	GC	--	--	--	<1	--	3	--	10	--	<1	<0.1	<0.2	0.67	1.5	<0.2
03/07/95	0019	30	GC	--	114	--	<1	--	2	--	11	--	<1	<.1	<.2	[c].5	[c]1	.04
03/07/95	0039	30	GC	--	78	--	<1	--	7	--	37	--	<1	<.1	<.2	[c].72	[c]1.4	.14
03/07/95	0254	30	GC	--	54	--	<1	<1	37	1	490	<1	<1	<.1	<.2	.18	.19	<.05
03/07/95	0754	30	GC	--	55	--	<1	--	2	--	17	--	<1	<.1	<.2	[c].44	[c].99	.1
03/07/95	1535	30	GC	--	--	--	<1	--	<1	--	2	--	<1	<.1	<.2	[c].44	[c].76	.12
03/07/95	1535	30	GC-filter	--	--	--	--	--	--	--	--	--	--	<.1	<.2	[c].32	[c].4	.13
03/26/95	2038	32	GC	--	137	--	<1	--	5	--	19	--	<1	<.1	<.2	.1	.33	[b].03
03/26/95	2043	32	GC	--	--	--	--	--	--	--	--	--	--	<.1	<.2	.06	.13	.15
03/26/95	2058	32	GC	--	111	--	<1	--	3	--	16	--	<1	<.1	<.2	.23	.4	.12
03/26/95	2118	32	GC	--	82	--	<1	--	<1	--	25	--	<1	<.1	<.2	.16	.37	[b].03
03/27/95	0133	32	GC	--	104	--	<1	--	<1	--	3	--	<1	<.1	<.2	.2	.69	[b].04
Site 07 (creek near monitoring well MWS-19)																		
03/07/95	0054	30	GC	--	79	--	<1	--	7	--	30	--	<1	<0.1	<0.2	0.76	1.1	0.48
03/07/95	0224	30	GC	--	63	<1	<1	<1	2	1	9	<1	<1	<.1	<.2	.43	.93	.47
03/07/95	0224	30	GC-filter	--	--	--	--	--	--	--	--	--	--	<.1	<.2	.37	.04	.52
03/07/95	0424	30	GC	--	58	--	<1	--	1	--	8	--	<1	<.1	<.2	.47	.7	.68
03/07/95	0515	30	GC	--	67	--	<1	--	20	--	58	--	<1	<.1	<.2	.77	1.4	1.7
03/07/95	0624	30	GC	--	56	--	<1	--	<1	--	2	--	<1	<.1	<.2	.59	.97	.71
03/07/95	0924	30	GC	--	72	--	<1	--	<1	--	4	--	<1	<.1	<.2	.65	1.2	1.4
03/07/95	1545	30	GC	--	--	--	<1	--	<1	--	2	--	<1	<.1	.12	1.2	1.3	2.1

Table 12. Instantaneous discharge and stormwater quality data for continuous record gaging stations and ancillary sites at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	Q	SC	Sb	Sb_t	As	As_t	Pb	Pb_t	Tl	Tl_t	TNB	3,5-DNA	2-Am	4-Am	TNT
Site A (unnamed tributary to Schote Creek at monitoring well MWS-06)																		
03/22/93	1700	12	LC	--	--	--	--	--	--	--	--	--	--	<0.2	<0.2	1.62	4.35	0.93
Site B (unnamed trihutary to Schote Creek at monitoring well MWV-09)																		
03/22/93	1650	12	LC	--	--	--	--	--	--	--	--	--	--	<0.2	<0.2	1.93	5.29	1.78
Site C (pond outflow near monitoring well MWV-09)																		
01/21/93	--	8	LC	--	--	--	--	--	--	--	--	--	--	<0.5	<0.5	2.07	8.19	9.88
Site D (Schote Creek near monitoring well MWS-24)																		
02/09/93	0930	10	LC	--	--	--	--	--	--	--	--	--	--	<0.5	<0.25	0.41	0.75	[a]0.2

Table 12. Instantaneous discharge and stormwater quality data for continuous record gaging stations and ancillary sites at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	2,6-DNT	2,4-DNT	2,3-DNT	DNB	2-NT	4-NT	3-NT	NB	RDX	Tetryl	Surrogate recovery (percent)	
														Toluene fraction	Isoamyl acetate fraction
Tributary 5200 at burning ground 1															
10/04/93	0800	15	LC	2.55	2.32	<0.2	<0.2	<0.24	<0.29	<0.13	3.25	nt	nt	--	--
04/11/94	1150	19	LC	[a].15	[a].25	nt	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
04/11/94	1300	19	LC	[a].18	.25	nt	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
04/28/94	1120	20	LC	[a].08	[a].15	nt	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
04/28/94	1330	20	LC	1.43	.86	nt	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
07/20/94	2345	22	LC	<.26	<.18	nt	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
11/05/94	1745	25	LC	<.26	<.18	nt	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
11/05/94	1745	27	GC	.01	.02	.04	<.05	<.2	<.2	<.2	<.05	<1	<0.1	100	nt
11/20/94	1854	26	GC	<.01	<.01	.02	<.05	<.2	<.2	<.2	<.05	<1	<.1	111	nt
11/20/94	1912	26	GC	<.01	<.01	.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	102	nt
11/20/94	1915	26	GC	<.01	<.01	.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	108	nt
01/13/95	0621	28	GC	<.01	<.01	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	76	96
01/13/95	0845	28	GC	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	78	109
01/13/95	0845	28	GC-filter	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	86	97
01/13/95	1012	28	GC	<.01	<.01	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	75	111
01/13/95	1030	28	GC	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	96	82
01/13/95	1200	28	GC	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	100	88
01/13/95	1201	28	GC	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	118	102
01/13/95	1415	28	GC	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<1	96	50
01/13/95	1539	28	GC	<.01	<.01	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	101	107
01/13/95	1716	28	GC	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	74	98
01/13/95	1919	28	GC	.11	.03	.02	<.05	<.2	<.2	<.2	<.05	<1	<.1	93	78
01/13/95	2122	28	GC	.17	.11	.08	<.05	<.2	<.2	<.2	<.05	<1	<.1	128	91
01/13/95	2122	28	GC-filter	.14	.09	.07	<.05	<.2	<.2	<.2	<.05	<1	<.1	125	123
01/13/95	2325	28	GC	.24	.2	.13	<.05	<.2	<.2	<.2	<.05	<1	<.1	157	132
01/14/95	0453	--	--	--	--	--	--	--	--	--	--	--	--	--	--
01/14/95	1643	28	GC	.29	.23	.23	<.05	<.2	<.2	<.2	<.05	<1	<.1	163	158
03/07/95	0040	30	GC	.01	.02	.02	<.05	<.2	<.2	<.2	<.05	<1	<.1	118	78
03/07/95	0040	30	GC-filter	.01	.02	.02	<.05	<.2	<.2	<.2	<.05	<1	<.1	122	101

Table 12. Instantaneous discharge and stormwater quality data for continuous record gaging stations and ancillary sites at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	2,6-DNT	2,4-DNT	2,3-DNT	DNB	2-NT	4-NT	3-NT	NB	RDX	Tetryl	Surrogate recovery (percent)	
														Toluene fraction	Isoamyl acetate fraction
Tributary 5200 at burning ground 1—Continued															
03/07/95	0111	30	GC	0.01	<0.01	0.01	<0.05	<0.2	<0.2	<0.2	<0.05	<1	<0.1	115	100
03/07/95	0153	30	GC	.01	<.01	.02	<.05	<.2	<.2	<.2	<.05	<1	<.1	129	116
03/07/95	0511	30	GC	.01	.01	.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	107	137
03/07/95	1000	30	GC	.27	.28	.24	<.05	<.2	<.2	<.2	<.05	<1	<.1	213	192
03/07/95	1147	30	GC	.22	.23	.22	<.05	<.2	<.2	<.2	<.05	<1	<.1	204	193
05/16/95	2051	34	GC	.01	<.01	.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	92	106
05/16/95	2348	34	GC	.01	<.01	.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	103	103
05/17/95	0010	34	GC	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	72	89
05/17/95	0019	34	GC	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	90	77
05/17/95	0037	34	GC	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	95	83
05/17/95	0106	34	GC	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	nt	<.1	102	nt
05/17/95	1306	34	GC	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	118	92
															nt
Site 2A (tributary 5200 upstream burning ground 1)															
11/05/94	1725	27	GC	<0.01	<0.01	<0.01	<0.05	<0.2	<0.2	<0.2	<0.05	<1	<0.1	87	nt
11/05/94	1729	27	GC	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	77	nt
11/05/94	1729	27	GC-filter	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	96	nt
11/05/94	1744	27	GC	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	90	nt
11/05/94	1854	27	GC	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	97	nt
11/05/94	2224	27	GC	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	74	nt
Schote Creek at County Road D															
02/22/94	1408	17c	LC	[a]1.28	[a]0.34	nd	<0.25	<0.25	<0.25	<0.25	<0.25	nt	nt	--	--
03/02/94	1510	17c	LC	[a].02	.48	nd	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
04/09/94	2318	19	LC	<.21	<.18	nd	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
04/10/94	0121	19	LC	<.21	<.18	nd	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
04/10/94	0245	19	LC	<.21	<.18	nd	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
04/10/94	0303	19	LC	<.21	<.18	nd	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
04/10/94	0318	19	LC	<.21	<.18	nd	nt	<.24	<.29	<.13	<.18	nt	nt	--	--

Table 12. Instantaneous discharge and stormwater quality data for continuous record gaging stations and ancillary sites at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	2,6-DNT	2,4-DNT	2,3-DNT	DNB	2-NT	4-NT	3-NT	NB	RDX	Tetryl	Surrogate recovery (percent)	
														Toluene fraction	Isoamyl acetate fraction
Schote Creek at County Road D—Continued															
04/10/94	0333	19	LC	<0.21	<0.18	nd	nt	<0.24	<0.29	<0.13	<0.18	nt	nt	--	--
04/10/94	0400	19	LC	<.21	<.18	nd	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
04/10/94	0454	19	LC	<.21	[a].11	nd	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
04/11/94	1045	19	LC	<.21	<.18	nd	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
04/11/94	1350	19	LC	<.21	.18	nd	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
04/28/94	0212	20	LC	<.21	<.18	nd	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
04/28/94	0239	20	LC	<.21	<.18	nd	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
04/28/94	0254	20	LC	<.21	<.18	nd	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
04/28/94	0524	20	LC	<.21	<.18	nd	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
04/28/94	1230	20	LC	<.21	.27	nd	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
07/20/94	1954	22	LC	<.21	<.18	nd	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
11/05/94	1729	27	GC	.05	.1	0.01	<0.05	<.2	<.2	<.2	<.05	<1	<0.1	87	nt
11/05/94	1729	27	GC-filter	.04	.09	.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	90	nt
11/05/94	1929	25	LC	<.26	<.18	nt	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
01/13/95	0427	28	GC	.1	.08	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	105	113
01/13/95	0730	28	GC	.08	.16	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	122	105
01/13/95	1000	28	GC	.06	.13	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	122	91
01/13/95	1230	28	GC	.08	.18	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	125	60
01/13/95	1231	28	GC	.07	.15	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	105	100
01/13/95	1445	28	GC	.15	.23	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	138	37
01/13/95	1600	28	GC	.09	.18	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	117	78
01/13/95	1824	28	GC	.2	.19	<.02	<.05	<.2	<.2	<.2	<.05	<1	<1	112	nt
01/13/95	2321	28	GC	.08	.13	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	108	nt
01/14/95	0612	28	GC	.1	.22	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	99	nt
01/19/95	0018	28	GC	.21	.55	.02	<.05	<.2	<.2	<.2	<.05	<1	<1	87	99
01/19/95	0221	28	GC	.18	.39	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	80	74
01/19/95	0524	28	GC	.1	.12	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	82	96
01/19/95	0718	28	GC	.08	.16	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	109	82
01/19/95	1245	28	GC	.1	.27	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	102	97

Table 12. Instantaneous discharge and stormwater quality data for continuous record gaging stations and ancillary sites at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	2,6-DNT	2,4-DNT	2,3-DNT	DNB	2-NT	4-NT	3-NT	NB	RDX	Tetryl	Surrogate recovery (percent)	
														Toluene fraction	Isoamyl acetate fraction
Schote Creek at County Road D—Continued															
01/19/95	1521	28	GC	0.11	0.28	0.01	<0.05	<0.2	<0.2	<0.2	<0.05	<1	<1	104	83
01/19/95	1521	28	GC-filter	.09	.23	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	104	71
01/28/95	1009	29	GC	.1	.29	.02	<.05	<.2	<.2	<.2	<.05	<1	<1	118	124
01/28/95	1415	29	GC	.05	.1	.01	<.05	<.2	<.2	<.2	<.05	<1	<1	105	122
03/26/95	2142	32	GC	<.02	<.01	<.02	<.05	<.2	<.2	<.2	<.05	<1	<.1	96	89
03/26/95	2225	32	GC	.18	.16	<.02	<.05	<.2	<.2	<.2	<.05	<1	<.1	92	110
05/16/95	2141	34	GC	.02	<.01	.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	104	108
05/17/95	0019	34	GC	.03	<.01	.02	<.05	<.2	<.2	<.2	<.05	<1	<.1	90	77
05/17/95	0035	34	GC	.04	.03	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	79	91
05/17/95	0047	34	GC	.03	.04	.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	101	106
05/17/95	0142	34	GC	.11	.06	.02	<.05	<.2	<.2	<.2	<.05	<1	<.1	99	68
05/17/95	0154	34	GC	.12	.16	.02	<.05	<.2	<.2	<.2	<.05	<1	<.1	101	97
05/17/95	0257	34	GC	[c].08	[c].13	[c].02	<.05	<.2	<.2	<.2	<.05	<1	<.1	nt	105
05/17/95	0327	34	GC	.08	.17	.02	<.05	<.2	<.2	<.2	<.05	<1	<.1	101	97
05/17/95	1415	34	GC	.05	.23	.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	102	110
Site 03 (tributary west of firing range)															
11/04/94	1331	27	GC	0.24	0.72	0.01	<0.05	<0.2	<0.2	<0.2	<0.05	<1	<0.1	89	nt
11/04/94	1351	27	GC	--	--	--	--	--	--	--	--	--	--	--	--
11/04/94	1421	27	GC	.09	.34	.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	99	nt
11/04/94	1521	27	GC	--	--	--	--	--	--	--	--	--	--	--	--
11/04/94	1621	27	GC	--	--	--	--	--	--	--	--	--	--	--	--
11/04/94	1821	27	GC	.1	.36	.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	87	nt
11/04/94	2021	27	GC	--	--	--	--	--	--	--	--	--	--	--	--
11/04/94	2221	27	GC	--	--	--	--	--	--	--	--	--	--	--	--
11/05/94	1635	27	GC	<.01	.28	<.02	<.05	<.4	<.4	<.4	<.1	<1	<.2	74	nt
11/05/94	1655	27	GC	<.01	.05	.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	115	nt
11/05/94	1725	27	GC	<.01	.05	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	95	nt
11/05/94	1725	27	GC-filter	<.01	.04	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	112	nt

Table 12. Instantaneous discharge and stormwater quality data for continuous record gaging stations and ancillary sites at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	2,6-DNT	2,4-DNT	2,3-DNT	DNB	2-NT	4-NT	3-NT	NB	RDX	Tetryl	Surrogate recovery (percent)	
														Toluene fraction	Isoamyl acetate fraction
Site 03 (tributary west of firing range)—Continued															
11/05/94	1825	25	LC	<0.26	<0.18	nt	nt	<0.24	<0.29	<0.13	<0.18	nt	nt	--	--
11/05/94	1825	27	GC	<.01	.04	<0.01	<0.05	<.2	<.2	<.2	<.05	<1	<0.1	92	nt
11/05/94	1925	27	GC	--	--	--	--	--	--	--	--	--	--	--	--
11/05/94	2125	27	GC	--	--	--	--	--	--	--	--	--	--	--	--
11/05/94	2320	25	LC	<.26	<.18	nt	nt	<.24	<.29	<.13	<.18	nt	nt	--	--
11/05/94	2320	27	GC	.02	.07	.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	100	nt
11/06/94	0225	27	GC	--	--	--	--	--	--	--	--	--	--	--	--
Site 04 (creek near monitoring well MWS-01)															
03/07/95	0035	30	GC	0.39	0.96	0.08	<0.05	<0.2	<0.2	<0.2	<0.05	nt	<0.1	130	105
03/07/95	0050	30	GC	.28	.71	.03	<.05	<.2	<.2	<.2	<.05	nt	<.1	88	160
03/07/95	0255	30	GC	.44	.92	.03	<.05	<.2	<.2	<.2	<.05	nt	<.1	116	88
03/07/95	0455	30	GC	.37	.67	.02	<.05	<.2	<.2	<.2	<.05	nt	<.1	115	169
03/07/95	0755	30	GC	.27	1	.04	<.05	<.2	<.2	<.2	<.05	nt	<.1	116	173
03/07/95	1330	30	GC	.4	1.4	.07	<.05	<.2	<.2	<.2	<.05	nt	<.1	135	89
03/07/95	1330	30	GC-filter	.31	1.9	.06	<.05	<.2	<.2	<.2	<.05	nt	<.1	126	100
03/26/95	2154	32	GC	1.2	1.7	.07	<.05	<.2	<.2	<.2	<.05	<1	<.1	97	108
03/26/95	2159	32	GC	.36	.75	.04	<.05	<.2	<.2	<.2	<.05	<1	<.1	97	97
03/26/95	2214	32	GC	.22	1.4	.04	<.05	<.2	<.2	<.2	<.05	<1	<.1	86	99
03/26/95	2234	32	GC	.21	1.8	.03	<.05	<.2	<.2	<.2	<.05	<1	<.1	85	102
03/27/95	0219	32	GC	.37	2.3	.04	<.05	<.2	<.2	<.2	<.05	<1	<.1	90	109
Site 05 (creek downstream of monitoring well MWS-17)															
03/22/93	1710	12	LC	<0.2	<0.2	nd	<0.2	<0.2	<0.2	<0.2	<0.2	nt	nt	--	--
03/07/95	0020	30	GC	.03	.02	0.02	<.05	<.2	<.2	<.2	<.05	nt	<0.1	122	140
03/07/95	0040	30	GC	.04	.03	.01	<.05	<.2	<.2	<.2	<.05	nt	<.1	115	163
03/07/95	0145	30	GC	.18	.13	.02	<.05	<.2	<.2	<.2	<.05	nt	<.1	115	165
05/16/95	2027	34	GC	.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	96	107
05/16/95	2032	34	GC	.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	89	102

Table 12. Instantaneous discharge and stormwater quality data for continuous record gaging stations and ancillary sites at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	2,6-DNT	2,4-DNT	2,3-DNT	DNB	2-NT	4-NT	3-NT	NB	RDX	Tetryl	Surrogate recovery (percent)	
														Toluene fraction	Isoamyl acetate fraction
Site 05 (creek downstream of monitoring well MWS-17)—Continued															
05/16/95	2047	34	GC	0.02	0.02	0.01	<0.05	<0.2	<0.2	<0.2	<0.05	<1	<0.1	75	104
05/16/95	2152	34	GC	.03	.05	.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	100	95
05/17/95	0122	34	GC	.27	.29	.02	<.05	<.2	<.2	<.2	<.05	<1	<.1	101	100
05/17/95	0422	34	GC	.53	.54	.04	<.05	<.2	<.2	<.2	<.05	<1	<.1	102	25
Site 06 (creek near monitoring well MWS-15)															
03/06/95	2359	30	GC	0.01	<0.01	0.01	<0.05	<0.2	<0.2	<0.2	<0.05	nt	<0.1	112	147
03/07/95	0019	30	GC	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	nt	<.1	75	173
03/07/95	0039	30	GC	.01	<.01	.01	<.05	<.2	<.2	<.2	<.05	nt	<.1	113	167
03/07/95	0254	30	GC	.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	nt	<.1	111	125
03/07/95	0754	30	GC	.01	<.01	.01	<.05	<.2	<.2	<.2	<.05	nt	<.1	121	173
03/07/95	1535	30	GC	<.01	<.01	<.01	<.05	<.2	<.2	<.2	<.05	nt	<.1	112	94
03/07/95	1535	30	GC-filter	<.01	<.01	<.02	<.05	<.2	<.2	<.2	<.05	nt	<.1	114	94
03/26/95	2038	32	GC	<.01	<.01	<.02	<.05	<.2	<.2	<.2	<.05	<1	<.1	83	107
03/26/95	2043	32	GC	<.01	<.01	<.02	<.05	<.2	<.2	<.2	<.05	<1	<.1	84	100
03/26/95	2058	32	GC	<.02	.01	<.02	<.05	<.2	<.2	<.2	<.05	<1	<.1	85	122
03/26/95	2118	32	GC	<.01	.01	<.01	<.05	<.2	<.2	<.2	<.05	<1	<.1	64	105
03/27/95	0133	32	GC	<.02	<.01	<.02	<.05	<.2	<.2	<.2	<.05	<1	<.1	84	100
														--	--
Site 07 (creek near monitoring well MWS-19)															
03/07/95	0054	30	GC	0.04	0.02	0.01	<0.05	<0.2	<0.2	<0.2	<0.05	nt	<0.1	128	136
03/07/95	0224	30	GC	.02	.05	.01	<.05	<.2	<.2	<.2	<.05	nt	<.1	112	119
03/07/95	0224	30	GC-filter	.02	.05	.01	<.05	<.2	<.2	<.2	<.05	nt	<.1	78	152
03/07/95	0424	30	GC	.03	.11	.01	<.05	<.2	<.2	<.2	<.05	nt	<.1	114	136
03/07/95	0515	30	GC	.37	.35	.03	<.05	<.2	<.2	<.2	<.05	nt	<.1	118	141
03/07/95	0624	30	GC	.02	.11	.01	<.05	<.2	<.2	<.2	<.05	nt	<.1	114	134
03/07/95	0924	30	GC	.06	.26	.02	<.05	<.2	<.2	<.2	<.05	nt	<.1	117	129
03/07/95	1545	30	GC	.06	.23	.01	<.05	<.2	<.2	<.2	<.05	nt	<.1	113	150

Table 12. Instantaneous discharge and stormwater quality data for continuous record gaging stations and ancillary sites at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Date	Time	QC code (table 3)	Method	2,6-DNT	2,4-DNT	2,3-DNT	DNB	2-NT	4-NT	3-NT	NB	RDX	Tetryl	Surrogate recovery (percent)	
														Toluene fraction	Isoamyl acetate fraction
Site A (unnamed tributary to Schote Creek at monitoring well MWS-06)															
03/22/93	1700	12	LC	<0.2	<0.2	nd	<0.2	<0.2	<0.2	<0.2	<0.2	nt	nt	--	--
Site B (unnamed tributary to Schote Creek at monitoring well MWV-09)															
03/22/93	1650	12	LC	0.8	0.88	nd	<0.25	<0.2	<0.2	<0.2	<0.25	nd	<0.1	--	--
Site C (pond outflow near monitoring well MWV-09)															
01/21/93	--	8	LC	<0.5	<0.5	nt	<0.5	<0.5	<0.5	<0.5	<0.5	nt	nt	--	--
Site D (Schote Creek near monitoring well MWS-24)															
02/09/93	0930	10	LC	<0.25	[a]0.15	nd	<0.25	<0.25	<0.25	<0.25	<0.25	nt	nt	--	--

[a] Constituent probably present at or below the reported value but could not be spectrally confirmed.
[b] Constituent detected in laboratory blank associated with this sample (see table 3) at or above the reported value, concentration is suspect.
[c] Concentration estimated because of interference or insufficient sample size.

Table 13. Altitude of water in monitoring wells at the Weldon Spring ordnance works, St. Charles County, Missouri

[Altitude in feet above mean sea level; mp, measuring point; --, no data]

Well (figs. 1, 9, and 10)	Altitude of mp	10/06/93 to 10/07/93	04/05/94 to 04/06/94	06/27/94	09/28/94 to 10/06/94	12/20/94	03/14/95	07/06/95 to 07/07/95	09/25/95 to 09/26/95	Maximum difference
MW-2001	613.44	589.08	589.14	588.74	588.32	588.59	589.14	588.62	588.41	0.82
MW-2002	625.75	594.73	594.32	594.22	593.2	593.4	594.41	594.03	593.28	1.53
MW-2003	638.78	599.08	598.24	598.2	598.02	597.97	598.66	598.14	597.99	1.11
MW-2004	644.64	583.68	583.86	583.81	583.6	584.62	--	--	--	1.02
MW-2005	637.38	[a]584.85	588.05	587.97	587.73	587.77	587.8	587.8	587.75	.32
MW-2006	635.92	600.87	600.62	600.49	600.29	600.55	600.5	600.56	--	.58
MW-2007	653.6	592.93	592.83	592.81	592.83	592.81	592.76	592.76	592.79	.17
MW-2008	624.71	588.98	589.05	588.99	588.86	588.81	--	--	--	.24
MW-2009	638.6	597.61	597.83	597.96	597.57	597.46	--	--	--	.5
MW-2010	644.67	601.02	600.71	600.78	600.4	600.51	600.52	600.88	600.38	.64
MW-2011	655.28	601.01	600.82	600.85	600.8	600.84	600.85	600.89	600.8	.21
MW-2012	636.61	607.13	606.44	606.03	605.73	606.29	606.67	--	--	1.4
MW-2013	647.13	608.19	606.43	606.58	605.68	605.86	605.89	606.06	605.52	2.67
MW-2014	649.37	605.04	604.72	604.85	604.43	604.44	604.44	604.64	[a]595.44	.61
MW-2015	659.99	604.02	604.04	603.98	604	604.04	603.92	603.84	604.12	.28
MW-2017	659.84	606.03	606.44	606.66	605.82	605.5	605.56	606.03	605.77	1.16
MW-2018	663.5	615.79	615.89	616.14	615.96	615.67	615.69	615.97	616.1	.47
MW-2019	663.24	593.2	593.91	594.05	592.69	592.21	592.71	593.43	592.95	1.84
MW-2021	626.19	590.34	590.22	589.98	589.44	589.58	590.11	589.79	589.62	.9
MW-2022	637.24	586.05	586.07	585.92	585.62	585.63	585.77	585.8	585.71	.45
MW-2023	637.29	582.72	582.85	582.87	582.71	582.74	582.77	582.91	582.91	.2
MW-2024	636.7	569.97	570.05	--	569.08	569.02	569.3	[b]577.82	568.99	1.06
MW-2025	624.03	583.84	584.05	583.98	583.62	583.63	--	--	--	.43
MW-2026	637.22	591.71	591.84	591.8	591.27	591.25	591.38	591.58	--	.59
MW-2027	646.83	592.88	593	592.96	592.23	592.24	592.45	592.66	592.35	.77
MW-2028	659.74	595.98	596.05	596.04	595.49	595.42	595.53	595.77	[b]573.6	.63
MW-2029	645.28	[a]578.14	582.85	582.76	[a]556.30	582.55	--	--	--	.3
MW-2030 (GT58-P)	654.63	601.11	600.92	601.23	600.92	600.97	600.95	601.02	600.92	.31
MW-2032 (GT-65P)	637.48	583.25	583.21	583.21	583.18	583.22	583.19	583.21	583.16	.09
MW-2033 (GT66-P)	647.51	608.23	606.81	607.12	606.11	606.29	606.23	606.43	605.94	2.29
MW-2034 (GT67-P)	660.83	606.69	607.84	608.75	606.79	606.46	606.52	607.11	606.82	2.29

Table 13. Altitude of water in monitoring wells at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Well (figs. 1, 9, and 10)	Altitude of mp	10/06/93 to 10/07/93	04/05/94 to 04/06/94	06/27/94	09/28/94 to 10/06/94	12/20/94	03/14/95	07/06/95 to 07/07/95	09/25/95 to 09/26/95	Maximum difference
MW-2035	668.4	614.72	614.81	614.91	614.86	614.67	614.58	614.7	614.92	0.34
MW-2036	658.01	613.84	613.94	613.99	613.69	613.45	613.56	613.83	613.91	.54
MW-2037	659.08	614.13	614.32	614.26	613.93	613.81	613.93	614.18	[b]602.88	.51
MW-2038	667.19	613.48	613.49	613.43	613.34	613.29	613.26	613.35	613.54	.28
MW-2039	665.25	--	613.99	613.96	613.91	613.83	613.75	613.84	614.12	.37
MW-2040	662.39	--	--	--	612.79	612.71	612.9	613.03	613.24	.53
MW-2041	661.50	--	--	--	613.10	613.16	613.18	613.3	613.46	.36
MW-2042	662.68	--	--	--	614.14	614.89	614.15	614.28	614.41	.75
MW-2043	662.3	--	--	614	613.74	613.59	613.77	613.9	614.1	.51
MW-2044	657.11	--	614.21	614.24	614.13	614.14	614.08	614.04	613.89	.35
MW-3003	646.96	600.17	600.13	600.05	599.78	599.94	600.06	600.01	599.9	.39
MW-3004	655.52	638.98	638.54	638.64	--	--	--	--	--	.44
MW-3006	647.13	594.23	594.15	593.95	593.26	593.31	593.87	593.75	593.48	.97
MW-3008	646.37	612.68	--	--	--	--	--	--	--	--
MW-3009	647.26	609.49	--	--	--	--	--	--	--	--
MW-3018	633.15	612.72	613.21	612.73	612	612.07	612.7	612.94	--	1.21
MW-3019	662.03	606.72	608.16	608.3	607.52	607.13	607.32	607.88	607.73	1.58
MW-3023 (GT64-P)	648.07	602.92	602.93	602.88	602.85	602.87	602.83	602.82	602.81	.12
MW-3024	647.9	--	613.5	612.56	612.36	612.27	612.34	612.43	612.44	1.23
MW-3025	648.53	--	611.58	611.24	611.05	611.06	610.91	610.98	611.17	.67
MW-3026	647.07	--	611.12	610.84	609.47	609.5	610.29	610.88	610	1.65
MW-3027	647.41	--	612.79	613.82	612.98	612.86	613.27	613.51	613.14	1.03
MW-4001	622.83	603.93	604.16	603.86	602.55	603.64	604.55	603.81	602.9	2
MW-4002	635.2	582.6	581.43	568.97	568.91	575.06	584.23	568.93	568.84	15.39
MW-4003	671.52	615.09	615.35	615.72	613.71	613.18	614.61	615.65	614.25	2.54
MW-4004	653.19	612.93	613.37	613.39	611.76	612.26	612.76	613.04	612.66	1.63
MW-4005	657.25	610.78	610.99	611.18	610.19	609.84	610.45	610.93	610.29	1.34
MW-4006	622.95	604.39	604.42	604.21	602.8	603.06	604.47	604.12	603.25	1.67
MW-4007	624.13	597.47	597.56	597.29	596.1	596.21	597.45	597.14	596.5	1.46
MW-4008	637.47	598.41	598.55	598.42	597.63	597.58	598.25	598.19	597.69	.97
MW-4009	625.89	595.82	595.73	595.49	594.36	594.47	595.7	595.26	594.7	1.46

Table 13. Altitude of water in monitoring wells at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Well (figs. 1, 9, and 10)	Altitude of mp	10/06/93 to 10/07/93	04/05/94 to 04/06/94	06/27/94	09/28/94 to 10/06/94	12/20/94	03/14/95	07/06/95 to 07/07/95	09/25/95 to 09/26/95	Maximum difference
MW-4010	630.7	590.99	590.74	589.82	588.8	589.26	590.93	589.64	589.14	2.19
MW-4011	628.16	596.1	591.68	591.93	591.45	591.58	592.68	591.88	591.59	4.65
MW-4012	617.38	571.68	571.7	571.28	570.72	570.97	571.53	571.33	569.03	2.67
MW-4013	608.73	560.6	560.59	560.49	560.48	560.45	560.52	560.5	560.47	.15
MW-4014	609.3	561.59	561.6	561.54	561.44	561.42	561.55	561.53	561.47	.18
MW-4015	619.58	581.85	582.63	581.94	581.49	581.25	582.47	581.84	--	1.38
MW-4016	643.91	588.73	589.81	589.83	589.76	589.62	589.74	589.78	--	1.1
MW-4017	651.75	593.55	593.37	593.34	593.35	593.2	--	--	--	.35
MW-4018	649.93	598.91	599.16	599.04	598.09	597.98	598.51	598.76	598.29	1.18
MW-4019	647.34	612.8	613.13	613.47	613.07	613.19	613.11	613.35	613.53	.73
MW-4020	659.17	606.28	607.12	607.6	605.89	605.45	605.58	606.34	605.84	2.15
MW-4021	651.91	608.19	608.48	608.77	608.35	608.16	608.07	608.28	608.14	.7
MW-4022	667.98	597.75	598.71	599.04	597.78	596.99	597.05	598.08	597.91	2.05
MW-4023	648.53	615.61	615.65	615.83	615.29	615.5	615.65	615.79	615.75	.54
MW-4024	657.54	--	--	--	--	--	--	606.47	605.77	.7
MW-4025	648.46	--	--	--	--	--	--	606.28	605.1	1.18
MWV-01	597.84	583.67	587.68	Dry	580.94	582.14	583	Dry	Dry	6.74
MWS-01	597.83	583.49	583.92	581.8	581.2	582.05	583.5	581.88	581.35	2.72
MWV-02	604.57	588.59	591.48	Dry	587.03	587.1	Dry	Dry	Dry	4.45
MWS-02	605.25	586.17	585.45	582.99	582.4	583.39	586.4	583.02	582.51	4
MWD-02	605.88	586.84	586.33	584.85	584.14	584.78	586.94	584.88	584.32	2.8
MWS-03	635.39	595.49	596.1	596.06	595.87	595.82	595.97	596.02	595.96	.61
MWS-04	624.09	603.6	603.87	603.2	601.99	602.69	604.03	603.06	602.39	2.04
MWS-05	600.6	565.46	566.13	565.43	565.23	565.06	565.7	564.96	564.68	1.45
MWD-05	600.68	581.1	581.3	581.43	579.58	579.06	580.15	581.36	579.4	2.37
MWS-06	621.32	602.75	604.16	601.52	603.52	602.84	603.05	603.9	603.4	2.64
MWD-06	621.56	603.26	604.63	604.85	603.81	603.23	603.46	604.24	603.71	1.62
MWS-07	641.49	598.37	599.69	600.21	599.39	598.75	598.76	599.54	599.21	1.84
MWV-08	690.15	Dry	666.26	Dry	Dry	Dry	Dry	Dry	Dry	--
MWS-08	690.36	656.05	656.47	654.69	654.13	653.33	656.04	655.8	654.35	3.14
MWV-09	635.79	618.2	619.25	618.53	617.35	617.49	617.89	617.94	619.25	1.9

Table 13. Altitude of water in monitoring wells at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Well (figs. 1, 9, and 10)	Altitude of mp	10/06/93 to 10/07/93	04/05/94 to 04/06/94	06/27/94	09/28/94 to 10/06/94	12/20/94	03/14/95	07/06/95 to 07/07/95	09/25/95 to 09/26/95	Maximum difference
MWS-09	635.37	619.65	620.89	620.19	618.97	619.11	619.44	619.67	618.99	1.92
MWD-09	636.08	618.75	619.84	619.55	618.58	618.48	618.69	619.1	618.69	1.36
MWS-10	654.19	629.73	631.51	631.29	629.27	630.15	631	631.17	630.08	2.24
MWS-11	676.35	649.07	648.55	650.56	649.25	648.91	649.41	650.15	649.47	2.01
MWS-12	657.11	636.59	637.31	637.24	636.23	636.23	636.52	636.79	636.33	1.08
MWV-13	692.39	651.99	654.74	654.81	653.48	652.77	653.44	654.08	653.28	2.82
MWS-13	692.18	652.81	654.54	654.51	653.25	652.48	653.03	653.73	652.99	2.06
MWS-14	705.07	667.93	668.21	668	666.74	666.85	667.85	667.9	667	1.47
MWS-15	656.72	628.24	629.38	629.72	625.77	625.45	628.86	629.49	625.85	4.27
MWD-15	655.76	626.5	628.01	628.21	625.35	624.85	626.77	627.69	625.55	3.36
MWV-16	651.78	634.83	637.24	637.33	630.77	629.68	633.69	636.84	631.86	7.65
MWS-16	651.24	633.75	635.62	636.16	629.87	628.79	632.51	635.65	630.96	7.37
MWV-17	660.28	Dry	643.07	Dry	Dry	Dry	Dry	Dry	Dry	--
MWS-17	659.6	639.12	638.75	638.21	637.35	638.17	639.24	638.07	636.78	2.46
MWV-18	601.43	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	--
MWS-18	601.91	532.82	532.39	532.69	533.19	532.89	532.6	533.79	533.3	1.4
MWD-18	601.55	574.57	581.63	580.45	581.35	584.01	585.71	579.66	583.41	11.14
MWS-19	648.66	628.32	629.51	627.22	624.64	625.15	627.29	626.69	624.64	4.87
MWS-20	668.48	633.16	634.34	635.06	633.21	632.13	632.95	634.31	633.03	2.93
MWS-21	642.28	614.18	614.49	614.53	614.13	613.93	614.1	614.34	614.4	.6
MWV-22	663.8	648.13	649.47	649.52	647.96	648.15	648.65	649.16	648.58	1.56
MWS-22	664.14	648.15	649.47	649.54	648.63	648.16	648.63	649.15	648.59	1.39
MWS-23	710.32	655.66	655.79	655.03	652.8	652.38	655.8	655.75	653.02	3.42
MWD-23	710.8	--	--	--	--	--	--	--	651.9	--
MWVR-24	642.19	620.9	622.39	621.44	619.9	619.91	620.47	620.81	619.87	2.52
MWS-24	657.23	634	635.07	635.18	634.21	634.34	634.53	634.86	634.42	1.18
MWS-25	683.46	--	--	--	--	--	--	--	626.81	--
MWD-25	683.84	--	--	--	--	--	--	--	622.66	--
MWS-26	675.19	--	--	--	--	--	--	--	619.07	--
MWS-102	481.13	468.67	--	--	--	--	--	--	--	--
MWS-104	566.95	--	559.01	557.26	552.8	553.34	557.18	557.37	553.62	6.21

Table 13. Altitude of water in monitoring wells at the Weldon Spring ordnance works, St. Charles County, Missouri—Continued

Well (figs. 1, 9, and 10)	Altitude of mp	10/06/93 to 10/07/93	04/05/94 to 04/06/94	06/27/94	09/28/94 to 10/06/94	12/20/94	03/14/95	07/06/95 to 07/07/95	09/25/95 to 09/26/95	Maximum difference
MWS-105	575.48	555.09	555.98	554.65	554.09	554.67	555.47	555.15	554.85	1.89
MWD-105	575.45	--	556.75	555.9	555.28	555.59	556.28	555.95	555.56	1.47
MWS-106	532.93	531.03	531.64	530.17	529.87	530.62	531.52	530.12	529.3	2.34
MWD-106	532.03	Flowing	Flowing	Flowing	531.93	531.93	Flowing	Flowing	533.02	1.09
MWS-107	608.99	585.24	587.89	585.37	583.89	--	584.76	584.15	583.42	4.47
MWD-107	609.83	--	--	--	--	--	--	584.54	583.63	.91
MWS-108	606.56	586.54	587.47	586.73	585.48	586.59	586.99	586.67	585.68	1.99
MWS-109	552.17	546.09	545.38	543.86	544.01	543.9	545.07	543.49	542.78	3.31
MWD-109	552.31	546.57	546.48	545.45	545.58	544.33	545.77	545.28	544.4	2.24
MWS-110	607.03	548.63	547.53	--	546.91	547.18	547.4	547.07	546.85	1.78
MWS-111	622.9	622.74	623.89	620.78	616.39	618.47	621.24	620.49	617.7	7.5
MWS-112	575.36	--	--	--	--	--	--	546.64	547.03	.39
MWD-112	573.66	--	--	--	--	--	--	557.75	557.36	.39
Army well	670	613.36	613.17	614.2	610.15	609.25	611.61	613.47	--	4.95
MWGS-01	649.99	512.39	515.19	515.39	514.61	513.14	512.4	512.97	513.57	3
MWGS-02	649.39	430.39	429.89	426.39	410.95	412.89	420.39	423.69	421.11	19.44
MWGS-03	486.77	Flowing	Flowing	Flowing	485.26	Flowing	Flowing	Flowing	487.76	2.5
MWGS-04	487.11	Flowing	Flowing	Flowing	Flowing	Flowing	Flowing	Flowing	488.1	--
MWGS-05	487.51	387.69	--	386.97	380.65	384.39	389.93	384.37	379.46	10.47
USGS WELL-1	591	544.97	545	545.12	544.52	544.37	544.58	542.99	543.1	2.13
USGS WELL-2	555	551.88	552.47	551.34	550.25	550.39	547.5	551.36	545.69	6.78
USGS WELL-2A	560	552.73	553.09	551.82	550.53	551.37	556.7	551.82	555.28	6.17
USGS WELL-3	586.5	564.03	564.69	564.84	564.25	564.06	564.08	564.23	563.97	.87
USGS WELL-4	602	589.42	590.84	590.39	588.52	588.29	589.06	589.47	588.29	2.55
USGS WELL-5	581	540.75	540.56	540.38	538.44	537.91	539.39	540.29	539.4	2.84
USGS WELL-6	591	535.24	535.45	534.91	533.52	533.25	535.19	534.94	533.69	2.2
USGS WELL-7	571	544.45	544.41	544.6	544.02	544.35	544.41	--	--	.58
USGS WELL-8	626	571.83	572.27	572.64	572.67	572.24	572.29	572.4	571.99	.84
USGS WELL-9	591	576.58	576.3	574.53	573.33	574.74	576.37	574.81	573.69	3.25

[a] Well was recently sampled prior to water-level measurement.
[b] Water-level measurement is suspect and cannot be confirmed.