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Pinellas Environmental Restoration Project

Sitewide Environmental Monitoring Quarterly Progress Report for the Young-Rainey STAR Center April Through June 2004

July 2004

U.S. Department of Energy

Work Performed Under DOE Contract No. DE–AC01–02GJ79491
for the U.S. Department of Energy Office of Legacy Management.
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Acronyms and Abbreviations

bls	below land surface
°C	degrees Celsius
CMS	Corrective Measures Study
CMIP	Corrective Measures Implementation Plan
COPC	contaminant of potential concern
DCE	dichloroethene
DOE	U.S. Department of Energy
EA	environmental assessment
EPA	U.S. Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
FONSI	Finding of No Significant Impacts
ft	feet
ft/ft	feet per foot
gpm	gallons per minute
HSWA	Hazardous and Solid Waste Amendment
HRC	Hydrogen Release Compound®
ICM	interim corrective measures
IMW	Interim Measures Work (Plan)
IWNF	Industrial Wastewater Neutralization Facility
MCL	maximum contaminant level
MSL	mean sea level
µmhos/cm	micromhos per centimeter
µg/L	micrograms per liter
mg/L	milligrams per liter
mV	millivolt
NAPL	non-aqueous phase liquid
NEPA	National Environmental Policy Act
NGVD	national geodetic vertical datum
NTU	Nephelometric Turbidity Units
PCIC	Pinellas County Industrial Council
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RPD	relative percent difference
SEC	Safety and Ecology Corporation
STAR Center	Young - Rainey Science, Technology, and Research Center
SWMU	solid-waste management unit
TCE	trichloroethene
TCOPC	total contaminant of potential concern
VOCs	volatile organic compounds
WWNA	Wastewater Neutralization Area

1.0 Introduction

The Young - Rainey Science, Technology, and Research Center (STAR Center) is a former U.S. Department of Energy (DOE) facility constructed in the mid-1950s in Pinellas County, Florida. The 99-acre STAR Center is located in Largo, Florida, and lies in the northeast quarter of Section 13, Township 30 South, Range 15 East (Figure 1). The STAR Center, while owned by DOE, primarily manufactured neutron generators for nuclear weapons. Other products manufactured at the STAR Center have included radioisotopically powered thermoelectric generators, thermal batteries, specialty capacitors, crystal resonators, neutron detectors, lightning-arrestor connectors, and vacuum-switch tubes. In 1987, the U.S. Environmental Protection Agency (EPA) performed a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) at the site to gather information on potential releases of hazardous materials. In February of 1990, EPA issued a Hazardous and Solid Waste Amendment (HSWA) permit to DOE, enabling DOE to investigate and perform remediation activities in those areas contaminated by hazardous materials resulting from DOE operations. On March 17, 1995, DOE sold the facility to the Pinellas County Industrial Council (PCIC). The sales contract included clauses to ensure continued compliance with Federal, State, and local regulations while DOE remediates the site. On July 1, 1999, the PCIC was disestablished and ownership of the STAR Center changed to the Pinellas County government. In November 2000, the State of Florida received HSWA authorization from the EPA. The Florida Department of Environmental Protection (FDEP) issued a new HSWA Permit to DOE in January 2002.

Administration of DOE activities at the facility is the responsibility of the DOE Idaho Operations Office. Responsibility for environmental restoration activities, conducted under the EPA RCRA Corrective Action Program of 1984, was transferred from DOE's Pinellas Area Office to DOE's Grand Junction Office in October 1997. S.M. Stoller Corporation (Stoller), a prime contractor to DOE's Office of Legacy Management (formerly DOE's Grand Junction Office), provides technical support to DOE for remediation and closure of all active solid-waste management units (SWMUs) on site.

The EPA RFA Report and the HSWA permit identified 15 sites at the former DOE facility that may have experienced environmental contamination as a result of past activities. Upon completion of the RCRA Facility Investigation, 11 of the 15 SWMUs were recommended by DOE and approved by EPA Region IV and the FDEP for no further action (DOE 1994). A twelfth site, the Former Pistol Range Site, was remediated in 1993 and recommended by DOE and approved by EPA Region IV and the FDEP for no further action.

Two additional SWMUs, the West Fenceline Site and the Wastewater Neutralization Area/ Building 200 (WWNA/Building 200), were identified after the HSWA permit was issued, bringing the total to 17 SWMUs that have been identified and investigated at the STAR Center. Remediation of the West Fenceline Site was completed in 1997 and DOE recommended, and EPA Region IV and FDEP approved, no further action. A Corrective Measures Study (CMS)/Corrective Measures Implementation Plan (CMIP) was prepared and submitted in 1997 to EPA Region IV and FDEP to address the contamination at the WWNA/Building 200 Area.

Therefore, there are currently four sites that have contamination in the surficial aquifer ground water at levels in excess of protective standards. These four SWMUs, the Old Drum Storage Site (PIN06), the Industrial Drain Leaks-Building 100 Area (PIN12), the Northeast Site (PIN15), and the WWNA/Building 200 Area (PIN18), are undergoing remediation activities. Two SWMUs,

PIN06 and PIN12, are currently being remediated together because of their similar ground water contamination and proximity. These two SWMUs are collectively known as the Building 100 Area. Figure 2 depicts the location of the four SWMUs.

Additional background information relative to each SWMU is briefly described below. This document also serves as the quarterly progress report for each of these four SWMUs. The results of monitoring activities, a summary of the treatment system performance, and a summary of ongoing and projected work are provided in this report.

1.1 Building 100 Area

The Building 100 Area (PIN06 and PIN12) is located in the southeast portion of the STAR Center. The Old Drum Storage Site is the former location of a concrete storage pad equipped with a drain and containment system used to store hazardous waste including dichloromethane (also known as methylene chloride), ignitable liquids, arsenic, and calcium chromate solids (DOE 1987a). Empty drums containing residual waste solvents were also stored in this area (DOE 1987b). The concrete pad was located near the northwest corner of Building 100. The pad was removed in October 1983 in accordance with an FDEP closure permit (DOE 1987a), and a closure report was submitted to the FDEP in August 1986 (DOE 1986). The decommissioning of the pad and the cessation of drum storage effectively removed the potential for a future contaminant source at PIN06.

Building 100 is the largest building at the STAR Center and covers approximately 11 acres. In the past, offices, laboratories, and production facilities for the DOE were housed in the building. SWMU PIN12 consists of the liquid waste drainage system serving Building 100. Four individual drainage systems (sanitary, chemical, health physics, and storm water) were present within the building. In 1989, all four drainage systems were investigated, including verifying the system routing and the condition of underground and above-ground piping and ancillary equipment (EMC 1989). As a result of this investigation, the health physics and chemical drainage systems were flushed, grouted, and abandoned (DOE 1997). Some of the chemical drain lines were replaced by an above-ground system currently used by tenants of the building.

A CMS and CMIP were completed and approved for the Building 100 Area because volatile organic compounds (VOCs) concentrations measured in ground water at the Old Drum Storage Site (PIN06) and one monitoring well located at the northwest corner of Building 100 (PIN12) exceeded the Safe Drinking Water Act and FDEP maximum contaminant levels (MCLs). Subsequent investigations revealed elevated VOCs concentrations under Building 100 and downgradient to the southeast as well. On August 15, 2000, EPA approved the Building 100 CMIP Addendum. FDEP approved this same document on November 15, 1999.

Commencing in May 2001, DOE began an analysis of the potential remediation strategies for the three Building 100 Area tasks: plume control, source treatment, and dissolved phase treatment. The *Building 100 Area Remediation Technology Screening Report* (DOE 2001) was prepared and assembled a list of remediation technologies, categorized them into the remediation tasks, and conducted an initial screening of the technologies. This initial screening eliminated the technologies that obviously would not work and recommended technologies that should be retained for detailed evaluation at a later time. The final technology for each task will be identified at a later date.

The *Building 100 Area Plume Control Technology Selection Report*, prepared in February 2002, conducted a detailed evaluation of five plume control technologies and recommended a technology that should be implemented for plume control at the Building 100 Area. Based on this evaluation, enhanced bioremediation was recommended to control the contaminant plume.

In-situ enhanced bioremediation to control the plume of dissolved contaminants at the Building 100 Area began as a pilot study on March 11, 2003. Hydrogen Release Compound® (HRC) was injected around three ground water monitoring wells through nine injection points surrounding each monitoring well. Ground water samples have been collected from each of the three monitoring wells at approximately 2-month intervals through May 2004 to track the progress of HRC at remediating site contaminants in the subsurface. HRC was selected because it is an effective technology for optimizing degradation rates of chlorinated hydrocarbons dissolved in ground water. The continuous hydrogen source provided by the HRC can reduce the concentration of dissolved phase chlorinated hydrocarbons by greatly enhancing the reductive declorination process that occurs naturally at the Building 100 Area. The *In-Situ Enhanced Bioremediation Technology to Control the Plume of Dissolved Contaminants at the Building 100 Area of the Young - Rainey STAR Center Pilot Test* final report was received from the subcontractor on April 5, 2004. The results of the pilot test indicate that the injection of HRC had a limited influence in the pilot test area. This conclusion is based on increasing concentrations of the metabolic acids (as produced from HRC) and the decreasing concentrations of sulfate and iron and the observation of ethene at one location. A supplemental sampling event was conducted in May 2004, after which the pilot test was considered complete. Stoller is continuing to assess the factors that potentially limit the biodegradation process.

1.2 Northeast Site

In the late 1960s, before construction of the East Pond, drums of waste and construction debris were disposed of in the swampy area of the Northeast Site. The East Pond was excavated in 1968 as a borrow pit. In 1986, an expansion of the East Pond was initiated to create additional storm-water retention capacity. Excavation activities ceased when contamination was detected directly west of the East Pond. EPA identified the Northeast Site as a SWMU. An Interim Corrective Measures (ICM) Study was developed and submitted to EPA and approval of this document was received in October 1991. An interim ground water recovery system for the Northeast Site was installed, and operation commenced in January 1992. The implementation of this ICM system at this site is consistent with the regulatory goals of the EPA's RCRA Corrective Actions (Subpart S).

The ICM system, as initially installed, consisted of four recovery wells equipped with pneumatic recovery pumps, a holding tank, centrifugal transfer pumps, and approximately 2,500 feet (ft) of transfer and secondary containment piping. During 1993, DOE proposed a reconfigured system for the site consisting of four shallow and three deep recovery wells. After EPA approved the system upgrade, the system was reconfigured and became operational on March 1, 1994.

Between August and October 1995, after EPA and FDEP approval, a portion of the Northeast Site was excavated to remove debris and other materials that could inhibit future corrective measures. Location of the areas of excavation was based primarily on the results of a geophysical survey and knowledge of existing utility locations. Detailed descriptions of the debris removal activities were submitted to EPA and FDEP as part of the *Northeast Site Interim Measures Quarterly Progress Report* (DOE 1996).

In 1996, DOE submitted a CMIP to EPA Region IV and FDEP. This plan was approved by both regulatory agencies in 1997. As part of the Northeast Site CMS and CMIP, a pump-and-treat system in conjunction with a subsurface hydrogeologic barrier wall to prevent migration of the contaminant plume was identified as the best available technology. A pretreatment system for iron removal, an air stripper unit, and a tank for holding treated ground water before discharge to the Pinellas County Publicly Owned Treatment Works were recommended. The treatment system was constructed in early 1997 and became operational by July 1997 with seven Northeast Site recovery wells and two Building 100 recovery wells pumping to the system influent tank. Subsequently several additional recovery wells were installed, and some of the old recovery wells were abandoned.

During 1997, anaerobic bioremediation and rotary steam stripping pilot tests were conducted in the northern and southern portions of the Northeast Site, respectively. These tests were designed by an Innovative Treatment Remediation Demonstration group of regulatory and industry members to provide remedial options at the STAR Center. At the conclusion of the field tests in July 1997, pump-and-treat technology resumed at the Northeast Site.

An *Interim Measures Work* (IMW) *Plan for Remediation of Non-Aqueous Phase Liquids at the Northeast Site* was submitted to FDEP in late November 2001. The purpose of this document was to present the plan for the interim measure to remediate non-aqueous phase liquids (NAPLs) at the Northeast Site. An ICM is warranted because it supports the long-term corrective action to remediate the dissolved phase contamination in the surficial aquifer to FDEP drinking water MCLs. Without this measure, NAPLs will continue to act as a source of dissolved contamination, resulting in contaminant concentrations in ground water well above the MCLs. FDEP approved this document on January 10, 2002.

Concurrent with the preparation of the IMW Plan, an Environmental Checklist recommending a Categorical Exclusion was prepared and approved by DOE on December 19, 2001. The Categorical Exclusion pathway was approved based upon the fact that the NAPL remediation of Area A is a small-scale, short-term cleanup action and the siting, construction, and operation of treatment facilities are temporary and pilot-scale in size.

A National Environmental Policy Act (NEPA) Action Review was conducted for the interim measure source removal action at Area B in October of 2002. A summary of the review concluded that Area B remediation would impact an area of approximately 38,000 square ft. The footprint of the above ground treatment system would be about 80 ft by 80 ft, and an estimated 84,000 gallons per day of ground water would be processed over a 24-week period of operation. The proposed interim measure, although not specifically identified in the 1995 *Environmental Assessment of Corrective Action at the Northeast Site* (EA), was determined to be within the scope of the proposed actions. The remedial activity would occur within the same physical boundaries and address the same contaminants identified in the EA, but in a more concentrated form. Because the EA provided for “design modifications to reflect technological advances or site-specific conditions,” it was determined that the NAPL remediation of Area B was within the scope of the existing EA. However, this flexibility was not mentioned in the Finding of No Significant Impacts (FONSI) document signed in May 1995. Therefore, it was determined that the appropriate action under NEPA would require an amendment to the FONSI to include the broader scope of activities from the EA and any additional impacts from the NAPL removal

action. The FONSI was amended, reviewed by the DOE-Idaho NEPA Planning Board, and approved by the DOE Grand Junction Office NEPA Compliance Officer on February 24, 2003.

Construction of the NAPL Area A treatment system began in late May 2002, and system startup occurred on September 26, 2002. NAPL treatment was partially complete on January 31, 2003, and totally finished on February 28, 2003. Three post-treatment sampling events occurred in March, May, and August 2003. Demobilization activities began in early March and were completed in September. The *Northeast Site Area A NAPL Remediation Final Report* (DOE 2003), describing thermal remediation of Area A, was sent to stakeholders on September 25, 2003.

At the end of February 2004, a contract was awarded for the remediation of NAPL Area B using Electro-Thermal Dynamic Stripping Process. Construction of the NAPL Area B treatment system is scheduled to begin in July 2004, and system startup is scheduled for mid-2005. Significant events associated with NAPL remediation during this reporting period are presented in the *Northeast Site Non-Aqueous Phase Liquids Interim Measures Progress Report April through June 2004* (DOE 2004).

1.3 WWNA/Building 200 Area

The WWNA/Building 200 Area includes the active Industrial Wastewater Neutralization Facility (IWNF), the area around Building 200, and the area south of the neutralization facility. The IWNF refers to the physical treatment facility that currently receives sanitary and industrial wastewater and has been in operation since 1957.

A CMS Report and CMIP were completed in 1997 for this SWMU because vinyl chloride, trichloroethene (TCE), and arsenic were detected in surficial aquifer ground water at concentrations above Federal and State MCLs. The recommended remediation alternative for the WWNA/Building 200 Area was ground water recovery with the Building 100 Area wells and an additional recovery well located in the WWNA. The CMIP recommended that recovered water from the additional well be discharged directly to the IWNF and that the recovery well in the WWNA/Building 200 Area will withdraw surficial aquifer ground water directly from the arsenic plume and thereby reduce the contaminant mass and prevent contaminant migration.

FDEP response to the CMS/CMIP concerning arsenic soil contamination in the upper 2 ft suggested that a treatment technology, air sparging, was eliminated too early. DOE then proposed a multi-phased Interim Action that included operating the recovery well for 6 months, then pulsing the system, as well as performing geochemical analyses and leaching studies of the site. On January 21, 1999, FDEP approved the proposed interim remedial action.

Additionally, EPA Region IV also approved the interim remedial action and concurred with the FDEP's position regarding the arsenic contamination. EPA also requested an addendum or modification to the CMIP that addresses DOE's final selection of the remediation technology and a timeline for the completion of these activities.

In early June 1999, the WWNA recovery well commenced operation. All arsenic concentrations from the WWNA recovery well, PIN18−RW01, were below the STAR Center's daily maximum discharge standard for arsenic in wastewater of 0.20 milligrams per liter (mg/L) until shutdown.

Additional details concerning the impacts of ground water extraction are reported in the WWNA/Building 200 Area CMIP Addendum (DOE 2000b). Modifications to the recovery of ground water were proposed based on data collected through November 1999 and consisted of the installation of two new recovery wells screened at shallow intervals. The CMIP Addendum was submitted to the regulators and approved by FDEP and EPA. A Statement of Basis (DOE 2000a) was issued by DOE in late September 2000. This document provides a summary of environmental investigations and proposed cleanup alternatives for the WWNA/Building 200 Area. Current activities at the WWNA include ground water extraction from three recovery wells, PIN18−RW02, −RW03, and −RW0501, that discharge to the STAR Center's wastewater system. Table 1 depicts the results of the analysis of arsenic in ground water that is being recovered from these three wells.

1.4 Site Update

Safety and Ecology Corporation (SEC), the vendor that implemented the in-situ enhanced bioremediation to control the plume of dissolved contaminants at the Building 100 Area, conducted ground water sampling activities at three ground water monitoring wells to track contaminant concentrations and other ground water parameters. Ground water sampling as part of SEC's contract was completed in March 2004. A final report was submitted by SEC on April 5, 2004. As a continuation of the pilot test, Stoller performed an additional sampling event in May 2004 and analyzed ground water samples for parameters similar to those analyzed during previous events. Ground water quality results from this additional sampling event indicated no significant deviation from the previous sampling results. The data continue to indicate that the injection of HRC is having a limited influence in the pilot test area based on increasing concentrations of the metabolic acids (as produced from HRC) and the decreasing concentrations of sulfate and iron and ethane production in one well. In a letter to DOE dated June 16, 2004, Stoller recommended ending the pilot test and in a letter dated June 21, 2004, DOE concurred.

As a precursor to the Northeast Site NAPL Area B remediation activities, seven monitoring wells (PIN15−0533, −0536, −0538, −M17D, −M17S, −M35D, −M36D) and two recovery wells (PIN15−RW11 and −RW13) were abandoned in early April 2004 and the Northeast Site treatment system was permanently shut down on April 27, 2004. Additionally, the following nine Northeast Site wells were capped and may be used to support NAPL Area B remediation activities: PIN15−M34D, −M37D, −RW04, −RW06, −RW07, −RW10, −RW14, −RW15, and −RW17. Well PIN15−RW16 will be changed from a recovery well to an observation well to support future sampling activities. Construction activities impacted two Northeast Site recovery wells, PIN15−RW03 and −RW12, that resulted in these two wells having to be abandoned.

Six new monitoring wells (PIN15−0573, −0574, −0575, −0576, −0577, and –0578) were installed at the Northeast Site NAPL Area A in early June 2004. These wells will be monitored to assess if there has been any rebound in the concentrations of contaminants since the Area A NAPL remediation was completed in February 2003. These wells will be sampled for the first time in July.

Five small diameter observation wells (OWS1, OWS2, OWS3, OWS4, and OWD1) and one 2-inch recovery well (PWS1) were installed to support two aquifer tests that were conducted in the area north of Building 1400. The aquifer tests were done to determine hydraulic parameters of the upper and lower portions of the surficial aquifer beneath Building 1400. The aquifer tests

information was used to design the ground water and vapor extraction systems that will be installed under Building 1400.

A new low profile tray air stripper treatment system was constructed and placed into operation at the Northeast Site to treat the contaminated ground water from the two recovery wells at Building 100. On May 5, 2004, this system became operational.

Significant events associated with NAPL remediation during this reporting period are presented in the *Northeast Site Non Aqueous Phase Liquids Interim Measures Progress Report April through June 2004* (DOE 2004).

1.5 Quarterly Site Activities

Stoller personnel conducted the following tasks at the STAR Center to fulfill the requirements of the scope of work for quarterly sampling:

- Obtained water-level measurements from all accessible monitoring wells, recovery wells, and ponds on April 14, 2004.
- Conducted the annual sampling event in April 2004. The sampling event included collecting water samples from 157 monitoring and recovery wells. VOCs samples were collected at 157 wells and arsenic was sampled at 26 monitoring and three recovery wells.
- Reported the results of annual sampling events (this document).
- Performed the eighth round of sampling for the Building 100 Pilot Test (Ad Hoc PIN-AO).
- Characterized drummed drill cuttings for disposal (Ad Hoc PIN-AQ). The cuttings were generated during drilling of soil borings at the Building 100 Area.

2.0 Water-Level Elevations

2.1 Work Conducted and Methods

Within an 8-hour period on April 14, 2004, depth-to-water measurements were taken at all accessible monitoring wells and extraction wells at the STAR Center. The water levels were measured with an electronic water-level indicator with the exception of some of the ponds, which are measured with gauging stations. Ground water and surface-water elevations are listed in Table 2.

2.2 Ground Water Flow

Ground water and surface-water elevations were used to construct sitewide ground water contour maps of the shallow and deep surficial aquifers (Plates 1 and 2, respectively). Individual contour maps were also constructed for the shallow and deep surficial aquifers at the Northeast Site and the Building 100 Area (Figure 3 through Figure 6, respectively).

The water levels throughout the STAR Center indicate that the water table is highest in the north-central parts of the site (Plates 1 and 2). As ground water flows from this recharge area, it essentially disperses to the west, south, and east. These flow patterns are similar for both the shallow and deep surficial aquifers, and are consistent with previously observed flow patterns.

Along the northern boundary of the Northeast Site, the contours near the slurry wall indicate that the wall continues to be a significant barrier to ground water flow. As seen on Figure 4, there is a differential of about 1.1 ft between the downgradient and upgradient sides of the wall as measured in monitoring wells PIN15−M24D and −M33D. This differential is slightly less than the historical range of about 2 to 5 ft, but similar to that observed the previous three quarters. The flow patterns suggest that only a minimal amount of ground water recharge to the deep surficial aquifer is derived from the pond. Otherwise, the differential between these two wells would be smaller and the ground water gradient would be steeper near the pond, indicating recharge to the ground water system. Water-table elevations indicate that the shallow surficial aquifer was slightly recharging the East Pond in April 2004 (Figure 3). This recharge pattern is changed from previously observed patterns, most likely due to the ground water recovery system having been turned off in early April in preparation for well abandonment activities in NAPL Area B.

In the shallow surficial aquifer in the west-central part of the Northeast Site, the hydraulic gradient was approximately 0.002 feet per foot (ft/ft), with general components of flow toward the east-southeast (Plate 1). The gradient around the East Pond was essentially flat. This flow pattern is similar to previously observed flow patterns under static, non-pumping conditions. Using Darcy's Law, along with approximations of 1 ft/day for hydraulic conductivity and 0.3 for effective porosity, ground water at the Northeast Site is estimated to move about 20 ft/year. This velocity is similar to previous estimates of 17 and 22 ft/year. Similar flow patterns were observed in the deep surficial aquifer (Plate 2).

In the south-central part of the STAR Center, surficial aquifer flow is influenced by ground water withdrawals from recovery wells PIN18−RW02, −RW03, and –RW0501 at the WWNA, and recovery wells PIN12−RW01 and –RW02 at Building 100 (Figures 5 and 6). During the previous four quarters, shallow ground water beneath Building 100 was observed to flow to the southeast under a very slight gradient. In April 2004, the overall general component of ground water flow was again to the southeast. The hydraulic gradient beyond the influence of pumping at the Building 100 Area was about 0.001 ft/ft. Using the approximations mentioned above, ground water flow velocity in these areas is estimated to be less than 2 ft/year. Shallow ground water at the WWNA flows to the southeast, except where affected by recovery well withdrawals.

Water-level elevations in the three wells screened in the upper part of the Floridan aquifer are presented in Table 3. The elevations in these wells indicate that the potentiometric surface of the Floridan aquifer at the site was up to 0.5 ft higher in April 2004 than in January 2004.

A downward vertical hydraulic differential of approximately 8.2 ft existed between the surficial aquifer wells and Floridan aquifer wells at the Northeast Site. Table 4 illustrates the vertical hydraulic differential. This differential is consistent with the historical range of 5 to 9 ft.

Surface-water elevations were recorded from the East, South, West, and Southwest Ponds at the site and are presented in Table 5. The ponds are hydraulically connected to the shallow surficial aquifer system (Plate 1). The South and Southwest Ponds elevations have always been essentially the same. The West Pond elevation was below the lowest currently available

measuring point elevation of 17.18 ft. A new staff gauge, which will allow for readings several feet below the current measuring point, was installed in the West Pond on June 9, 2004.

3.0 Ground Water Sampling and Analytical Results

3.1 Work Performed

During annual sampling in April 2004, ground water samples were collected from 157 monitoring and recovery wells. VOCs analyses were performed on 157 samples using EPA Method SW-8260. Arsenic was analyzed in 29 samples using EPA Method SW-846-6010B. Laboratory reports are provided in Appendix A.

During the period of April 1 to June 30, 2004, the remediation system at the Northeast Site was decommissioned and a new remediation system in the Building 100 Area began operation in May 2004. Influent and effluent at the Northeast Site, as well as selected recovery wells from the Building 100 Area were sampled in April. During May and June the Building 100 influent and effluent were sampled. Analytical results for both remediation system VOCs, SVOCs, iron, and hardness (as $CaCO_3$) sampling are provided in Appendix B. Laboratory reports for the three recovery wells and the two effluent samples from the WWNA are provided in Appendix C.

All samples were collected in accordance with the Stoller *Sampling Procedures for the Young - Rainey STAR Center* (DOE 2002), using FDEP procedures. All samples collected were submitted to Accutest Laboratories for analysis. Accutest is accredited by the Florida Department of Health in accordance with the National Environmental Laboratory Accreditation Conference, certification number E83510. All but two of the monitoring wells were micropurged using a dedicated bladder pump, and sampling was performed when the field measurements stabilized. The remaining wells were conventionally purged with a peristaltic pump or a 2-inch diameter stainless-steel submersible pump; purging was considered complete once field measurements had stabilized. Extraction wells were sampled using their associated flowlines with dedicated sampling ports. Table 6 lists field measurements of pH, specific conductance, dissolved oxygen, oxidation-reduction potential, turbidity, and temperature recorded at the time the samples were collected. Measurements were made with a flow cell and a multiparameter instrument.

3.2 Analytical Results

3.2.1 Northeast Site (PIN15)

Concentrations of contaminants of potential concern (COPCs) in samples collected from wells at the Northeast Site (PIN15) are included in Table 7, which also shows the previous four quarters of data for comparison purposes. Figure 7 shows the total COPCs (TCOPCs) concentrations.

No COPCs were detected in the 37 monitoring wells listed below:

PIN15–0507	PIN15–0530	PIN15–0565	PIN15–M12S	PIN15–M29S
PIN15–0510	PIN15–0534	PIN15–0568	PIN15–M14D	PIN15–M31S
PIN15–0513	PIN15–0559	PIN15–0570	PIN15–M14S	PIN15–M32D
PIN15–0515	PIN15–0560	PIN15–0571	PIN15–M16D	PIN15–M32S
PIN15–0516	PIN15–0561	PIN15–0572	PIN15–M16S	PIN15–M33D
PIN15–0518	PIN15–0562	PIN15–M03D	PIN15–M24D	
PIN15–0520	PIN15–0563	PIN15–M03S	PIN15–M27S	
PIN15–0523	PIN15–0564	PIN15–M12D	PIN15–M29D	

The 13 monitoring and recovery wells listed below contained detectable COPCs:

PIN15–0506	PIN15–0537	PIN15–0567	PIN15–M30D	PIN15–RW16
PIN15–0514	PIN15–0557	PIN15–0569	PIN15–M30S	
PIN15–0535	PIN15–0566	PIN15–M27D	PIN15–M31D	

TCOPCs concentrations ranged from below detection limit to 11,290 micrograms per liter (µg/L). Well PIN15–M30D contained the highest TCOPC value, and the COPC compound detected at the highest concentration was cis-1,2-dichloroethene (DCE) at 8,550 µg/L.

3.2.2 Building 100 Area (PIN06, PIN09, PIN10, PIN12, and PIN21)

TCOPCs concentrations in samples collected from wells sampled at the Building 100 Area are included in Table 8, which also shows the previous four quarters of data for comparison purposes. Figure 8 shows the TCOPCs concentrations.

No COPCs were detected in the 31 monitoring wells listed below:

PIN06–0500	PIN12–0515	PIN12–0528	PIN12–S69B	PIN21–0503
PIN06–0501	PIN12–0516	PIN12–S31B	PIN12–S72B	PIN21–0504
PIN12–0508	PIN12–0517	PIN12–S36B	PIN12–S72C	PIN21–0505
PIN12–0509	PIN12–0518	PIN12–S59D	PIN12–S72D	
PIN12–0510	PIN12–0522	PIN12–S60C	PIN12–S73B	
PIN12–0511	PIN12–0523	PIN12–S60D	PIN21–0500	
PIN12–0512	PIN12–0527	PIN12–S68B	PIN21–0502	

Samples from the 47 monitoring and recovery wells listed below contained COPCs at detectable levels. They are:

PIN09–0500	PIN12–RW02	PIN12−S56B	PIN12–S67C	PIN12–S71C
PIN10–0500	PIN12–S29C	PIN12–S56C	PIN12–S67D	PIN12–S71D
PIN12–0513	PIN12–S30B	PIN12–S56D	PIN12–S68C	PIN12–S73C
PIN12–0514	PIN12–S32B	PIN12–S57B	PIN12–S68D	PIN12–S73D
PIN12–0520	PIN12–S33C	PIN12–S57C	PIN12–S69C	PIN12–TE03
PIN12–0521	PIN12–S35B	PIN12–S57D	PIN12–S69D	PIN21–0501
PIN12–0524	PIN12–S37B	PIN12–S59B	PIN12–S70B	PIN21–0512
PIN12–0525	PIN12–S54D	PIN12–S59C	PIN12–S70C	
PIN12–0526	PIN12–S55B	PIN12–S60B	PIN12–S70D	
PIN12–RW01	PIN12–S55C	PIN12–S67B	PIN12–S71B	

TCOPCs concentrations ranged from below detection limits to 102,600 µg/L. The COPC compound detected at the highest concentration was cis-1,2-DCE at 62,900 µg/L in PIN12−S35B.

3.2.3 Wastewater Neutralization Area (PIN18)

The volatile COPC at the WWNA is vinyl chloride. It was detected in one well, PIN18−0519 at a concentration of 4.9 µg/L during annual sampling.

Arsenic samples were collected from 26 monitoring wells and three recovery wells. Results of arsenic samples from the three recovery wells that are sampled monthly are presented in Table 1. Concentrations of COPCs from quarterly sampling are listed in Table 9 and TCOPCs (arsenic and vinyl chloride) are shown in Figure 9.

No arsenic was detected in the 22 wells listed below.

PIN18–0503	PIN18–0508	PIN18–0513	PIN18–0518	PIN18−0523
PIN18–0504	PIN18–0509	PIN18–0514	PIN18–0519	PIN18−0526
PIN18–0505	PIN18–0510	PIN18–0515	PIN18–0520	
PIN18–0506	PIN18–0511	PIN18–0516	PIN18–0521	
PIN18–0507	PIN18–0512	PIN18–0517	PIN18−0522	

The seven monitoring and recovery wells listed below had detectable arsenic concentrations.

PIN18–0500	PIN18–0524	PIN18−RW02	PIN18−RW0501
PIN18–0502	PIN18–0525	PIN18−RW03	

The highest concentration of arsenic detected was 147 µg/L in PIN18−RW0501 (note that the units for arsenic have changed from mg/L to µg/L so that TCOPCs for this area could be calculated using consistent units).

3.3 Quality Assurance/Quality Control

The analytical results from the analytical laboratory, Accutest, were checked for quality assurance/quality control (QA/QC) through duplicate samples and trip blanks. Detected analytes (VOCs and arsenic) for each duplicate sample are listed in Table 10. The duplicate sample results were compared and the relative percent differences (RPDs) between the results were calculated. There were eight duplicates analyzed for VOCs during annual sampling, and two duplicates analyzed for arsenic.

A total of 305 duplicate analyses for individual analytes were performed. Sample duplicate pair PIN12−0513/0610 failed to meet the guidance criteria for chloroethane. Duplicate pair PIN12−S67D failed for cis-1,2-DCE. This is a failure rate of less than 1 percent. All data passed QA/QC criteria at a Class A level, indicating that all data may be used for quantitative and qualitative purposes.

Duplicate samples should be collected at a frequency of one duplicate for every 20 or fewer samples. There were 157 ground water samples analyzed for VOCs, with eight duplicate VOC

samples collected. There were 29 ground water samples analyzed for arsenic, with two duplicate sample. The duplicate requirements for this sampling event were met.

During the quarterly sampling event ten trip blanks were submitted for analysis. All blanks were nondetect.

The previous laboratory had a persistent problem with estimated quantities of methylene chloride in the blanks. This was not seen this quarter with the new laboratory.

Field data validation showed that stabilization criteria were not met at 25 of the 189 wells measured for field parameters. No significant deficiencies were found during validation of the field data collected during quarterly sampling.

A data validation software module for identifying and tracking anomalous ground water data points within the SEEPro database was implemented this quarter. The software prints a report of analytical results that fall outside of historical minimum or maximum values. No anomalies requiring follow-up action were found during the April data validation. Location PIN12−S73B is being tracked from the January event because it showed toluene detection in a well where it had not previously been present. Toluene was also seen in this well during the April event. It will be followed for one more quarter to confirm that toluene is present in the well.

4.0 Data Interpretation

This data interpretation section is included in each April to June quarterly report to aid in evaluation of remediation progress and plume movement. Time versus concentration plots and plume maps were generated to aid the interpretation.

4.1 Contaminant Concentration Trends

Monitoring wells PIN15–0537 and –0569 were chosen to evaluate plume movement and plume control at the Northeast Site. The concentration with time plots for cis-1,2-DCE and vinyl chloride in well 0537 are depicted in Figure 10. Both cis-1,2-DCE and vinyl chloride showed increasing concentrations in 1999 and 2000, but have since shown slightly decreasing concentration trends. Well PIN15−0569 was installed at the end of January 2003 and was first sampled in April 2003. Vinyl chloride is the only COPC detected in this well (Figure 11). The vinyl chloride concentration in this well shows no distinct trend. The other four relatively new wells located hydraulically downgradient from the Northeast Site (PIN15−0568, −0570, −0571, and −0572) have not shown COPCs detections since their installation also in late January 2003. It is likely that the slight decreasing trends for DCE and vinyl chloride in well 0537 are due to recovery well RW16 removing ground water containing higher COPCs concentrations before it moves downgradient.

At the WWNA, three wells were chosen to depict remediation progress. Wells PIN18−0500, −0522, and −0525 were chosen because they are shallow wells containing high arsenic concentrations (Figure 12). The arsenic concentration in well 0500 stabilized at approximately 0.1 mg/L for approximately 2 years, but over the last year the arsenic concentration has started to decline again. The arsenic concentration in well 0522 shows an overall decreasing trend with the

April 2004 data point at 9.6 µg/L, just below the 10 µg/L MCL, while the arsenic concentration in well 0525 has shown an increasing trend over the last 2 years.

Monitoring wells PIN12–0512 and PIN12–S73C were chosen to depict plume migration at the Building 100 Area because they are the monitoring wells nearest the property boundaries. Well 0512 lies along the southern boundary and well S73C lies along the eastern boundary of the STAR Center. Well PIN12−0524, located near the southeast corner of Building 100, is an additional well that shows plume movement.

Figure 13 depicts the vinyl chloride concentration over time in well 0512, and Figure 14 shows the vinyl chloride concentration in well S73C. Well 0512 shows a decreasing vinyl chloride concentration trend to near the 1 µg/L MCL over the last 2 years, followed by a slight increase over the last two quarters. Well S73C was part of the enhanced bioremediation pilot test, and the vinyl chloride data collected during the pilot test are included with the regular quarterly sampling data shown in Figure 14. The pilot test began in March 2003, and the vinyl chloride concentrations reflect some increases that may be due to production of vinyl chloride from DCE degradation. Figure 15 shows the TCE, cis-, trans-, and 1,1-DCE, and vinyl chloride concentrations in well 0524. This well has shown significant concentration increases for most of these contaminants over the last 2 years. Of particular significance is the measurement of a relatively high TCE concentration of 1,220 µg/L in April 2004. TCE transportation by advective ground water movement is retarded relative to the other contaminants, both by just the physical nature of TCE and by the fact that TCE is more susceptible to natural biodegradation processes. The appearance of TCE in this well potentially indicates that a slug of contaminated ground water, possibly originating near a contaminant source such as one of the drain leaks, is emerging from under the building.

4.2 Plume Maps

For each SWMU, plume maps were generated for the TCOPCs as well as selected contaminants. The compound-specific MCL has been utilized to draw the inferred plume boundary for each contaminant (i.e., concentrations below the MCL were not included in the plume area). The TCOPCs plume area includes any detected concentration. The outline of the plume from April 2003 is also shown on the maps for comparison.

Plume maps for the Northeast Site have been generated for TCOPCs (Figure 7), vinyl chloride (Figure 16), cis-1,2-DCE (Figure 17), TCE (Figure 18), methylene chloride (Figure 19), toluene (Figure 20), and benzene (Figure 21).

A factor that must be considered when observing Northeast Site plume maps is the abandonment of many of the monitoring and recovery wells in and near NAPL Area B prior to the April 2004 sampling event. These wells were abandoned to ensure that they would not interfere with the operation of the NAPL remediation activities, but these wells also helped define the plume at the Northeast Site. Therefore, most of the plumes defined in 2003 were left as is for 2004, unless the plumes required modification based on April 2004 data. A good example of an unmodified plume is the toluene plume in Figure 20. Most of the 2004 COPC plumes were similar in size to the 2003 plumes, with some minor expansions or contractions. Also note that new wells PIN15−0573 through −0578 are shown on the figures but will not be sampled until the July 2004 event.

Figure 9 shows the 2004 TCOPCs plume at the WWNA, and Figure 22 depicts the 2004 arsenic plume at the WWNA. Both these plumes are the same size as the 2003 plumes. The only vinyl chloride detection at the WWNA was in well PIN18−0519 (4.9 μg/L), located in the southern part of the WWNA.

Plume maps for the Building 100 Area have been generated for TCOPCs (Figure 8), vinyl chloride (Figure 23), cis-1,2-DCE (Figure 24), and TCE (Figure 25). The TCE plume has gotten slightly larger due to the detection of TCE at well PIN12−0524. As discussed in Section 4.1, the appearance of TCE could signal plume movement from under the building. The cis-1,2-DCE plume is similar in size to the 2003 plume, but with some changes in shape due to the detection of DCE above the MCL in wells PIN12−S56B, C, and D, and the detection of DCE just below the MCL in wells PIN12−S68D and PIN12−S71C. The 2004 vinyl chloride plume is slightly larger than the 2003 plume due to the detection of vinyl chloride above the MCL in well PIN12−S69C.

4.3 Geochemical Parameters

Geochemical parameters measured in the field in all wells at the STAR Center during April 2004 are summarized in Table 6. Conditions across the STAR Center generally are reducing as evidenced by the low values of dissolved oxygen and oxygen reduction potential.

5.0 Treatment System and Recovery Well Performance

5.1 Northeast Site and Building 100

During this quarter many changes took place at the Northeast Site. The changes were all related to preparation for the upcoming NAPL Area B remediation project at the Northeast Site. In order to accommodate the NAPL Area B remediation, the existing treatment system, selected recovery and monitoring wells, utilities, and trailer had to be removed. At the same time, a new system would be needed to continue treatment of the Building 100 recovery well ground water and another trailer would be needed to support treatment system operations and Area B remediation oversight.

The first change to accomplish this involved the abandonment of selected monitoring and recovery wells, which took place in April. Next, utilities were installed or re-routed to the northwestern part of the site. A new trailer was installed in that part of the site in April. Additionally, a new treatment system was procured and installed by the new trailer. The new trailer and treatment system were connected to the new utilities and the treatment system was tested to verify proper operations in late-April. The new Northeast Site treatment system went into operation May 5. The old treatment system, trailer, and associated utilities were removed and/or demolished in May.

The old Northeast Site ground water treatment system and associated wellfields operated from April 1 through 5, 2004. At that time, the Northeast Site wellfield was shutdown for well abandonment. The treatment system and Building 100 recovery wells continued to operate until the week of April 26, when both were shutdown in preparation for start-up of the new Building 100 treatment system. As part of initial commissioning, the new treatment system

began treating ground water from the Building 100 recovery wells on May 5. The system and wells were operated for just a few hours to allow for sampling of the effluent and they were shut down after the sample was collected. This allowed time to review the analytical results to verify the air stripper was operating efficiently and within regulatory limits of the STAR Center's Wastewater Discharge Permit.

Based on the treatment system's effluent analytical results (Table 11), which were under the Discharge Permit limits, the new system and wells began continuous operations on Monday May 10. The system experienced some downtime during the following weeks as initial operational glitches were worked through, adjustments were made, and some shutdowns were experienced due to heavy rainfall. Additionally, in late May, the pump at Building 100 RW01 experienced a failure. A new pump was ordered, installed, and operational by mid-June.

The treatment system is a small skid-mounted assembly that contains a low-profile air stripper, a blower, and two transfer pumps. The air stripper contains four shallow trays to strip the VOCs from the ground water. The treatment system and a surge tank reside on a concrete containment pad. The following photograph shows the new Building 100 treatment system.

Table 12 provides a summary of analytical results for samples collected at the Northeast Site treatment system during this quarter. Treatment system effluent samples were analyzed for VOCs and the effluent discharge volume was recorded to comply with the Pinellas County wastewater permit. In the effluent samples, all volatile organic aromatic concentrations were under the Pinellas County regulatory limit of 50 µg/L.

In a similar application to the old Northeast Site treatment system, FeRemede® is being utilized at the new Building 100 treatment system to control the deposition of iron and hardness salts in the air striper. Additionally, sodium hypochlorite is also being utilized as a microbiocide to control biological growth in the air stripper.

From April 1 through 26, 2004, 274,912 gallons of ground water were processed by the Northeast Site treatment system. During April the Building 100 recovery wells were the only source of ground water to the system; however, the treatment system processed a large volume of water from the flushing of double-containment pipes and tanks during the preparation for demolition of utilities and the treatment system. The volume of recovered ground water treated by the Northeast Site treatment system since its startup in June 1997 through April 2004 is presented in Figure 26. Since the Northeast Site recovery wells were shut off on April 5 and Figure 11 in the previous quarterly report illustrated data through Monday April 5, an updated figure (Figure 27) for April only represents the ground water produced by the Building 100 wells.

From May 5 through June 30, 2004, 188,490 gallons of ground water were processed by the Building 100 treatment system from the Building 100 recovery wells. Figures 28 and 29 present the monthly volume of ground water recovered during May and June 2004 from the Building 100 recovery wells.

Historical summary of ground water recovery volume at the Northeast Site and Building 100 is shown in Table 13.

Table 14 presents the calculated mass of selected analytes recovered with the Northeast Site and Building 100 treatment systems for each month of this reporting period. These monthly results are based on the measured system influent concentration and influent ground water flow.

5.2 Wastewater Neutralization Area

Two WWNA recovery wells (PIN18−RW02 and −RW03) are targeted to each produce approximately 2.5 gallons per minute (gpm) continuously with an electrical submersible pump set in each well at approximately 12 ft below land surface (bls). During this quarter, production at RW02 has continued to lag behind RW03. Additional maintenance activities for the pump at RW02 are scheduled for July.

The third recovery well, PIN18−RW0501 is operating at approximately 0.8 gpm with a submersible electric pump installed at 15 ft below top of casing. Ground water recovery from PIN18−RW0501 was started on June 11, 2003. To date, there have been no exceedances of the WWNA discharge permit limits for arsenic.

The effluent ground water from each well is combined into a common header pipe and discharged into the industrial wastewater-receiving tank at the IWNF. During this quarter, 573,915 gallons of ground water were recovered from the subsurface.

6.0 Conclusions

The following conclusions are based on the quarterly sampling conducted in April 2004.

- The surficial ground water flow rate and flow direction throughout the site were similar to those observed in previous quarters.
- The highest concentration of COPCs was detected at the Building 100 Area in well PIN12−S35B.

7.0 Tasks to be Performed Next Quarter

The following tasks are expected to be conducted during the next quarterly period (July through September 2004):

- The next scheduled quarterly sampling event will occur in July 2004.
- Monthly sampling and analysis of ground water will continue in order to provide compliance and system operations data.
- Utilization of the dedicated bladder pumps for quarterly sampling using the micropurging technique will continue.
- Construction of the NAPL Area B treatment system will begin in July 2004.

8.0 References

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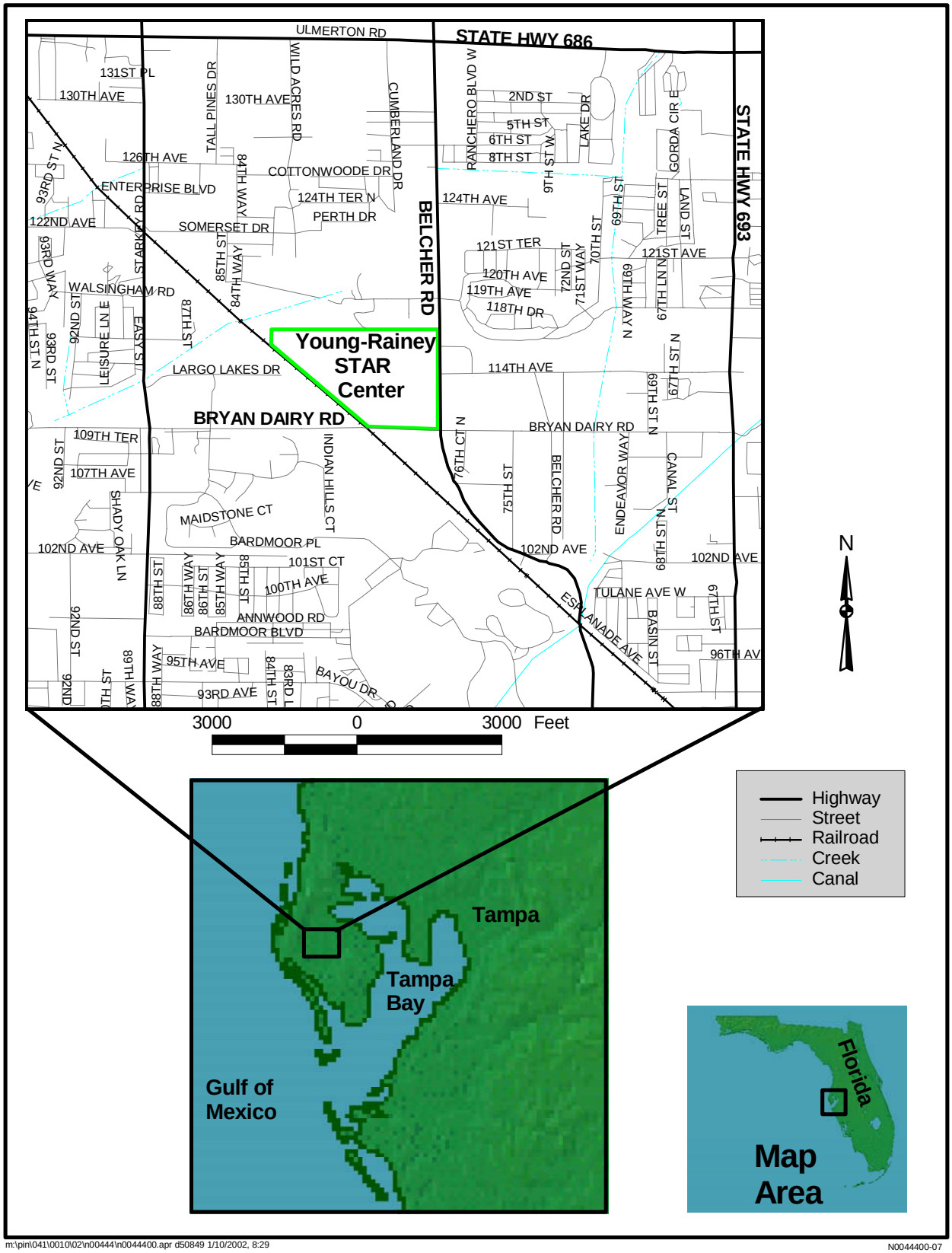


Figure 1. Young - Rainey STAR Center Location

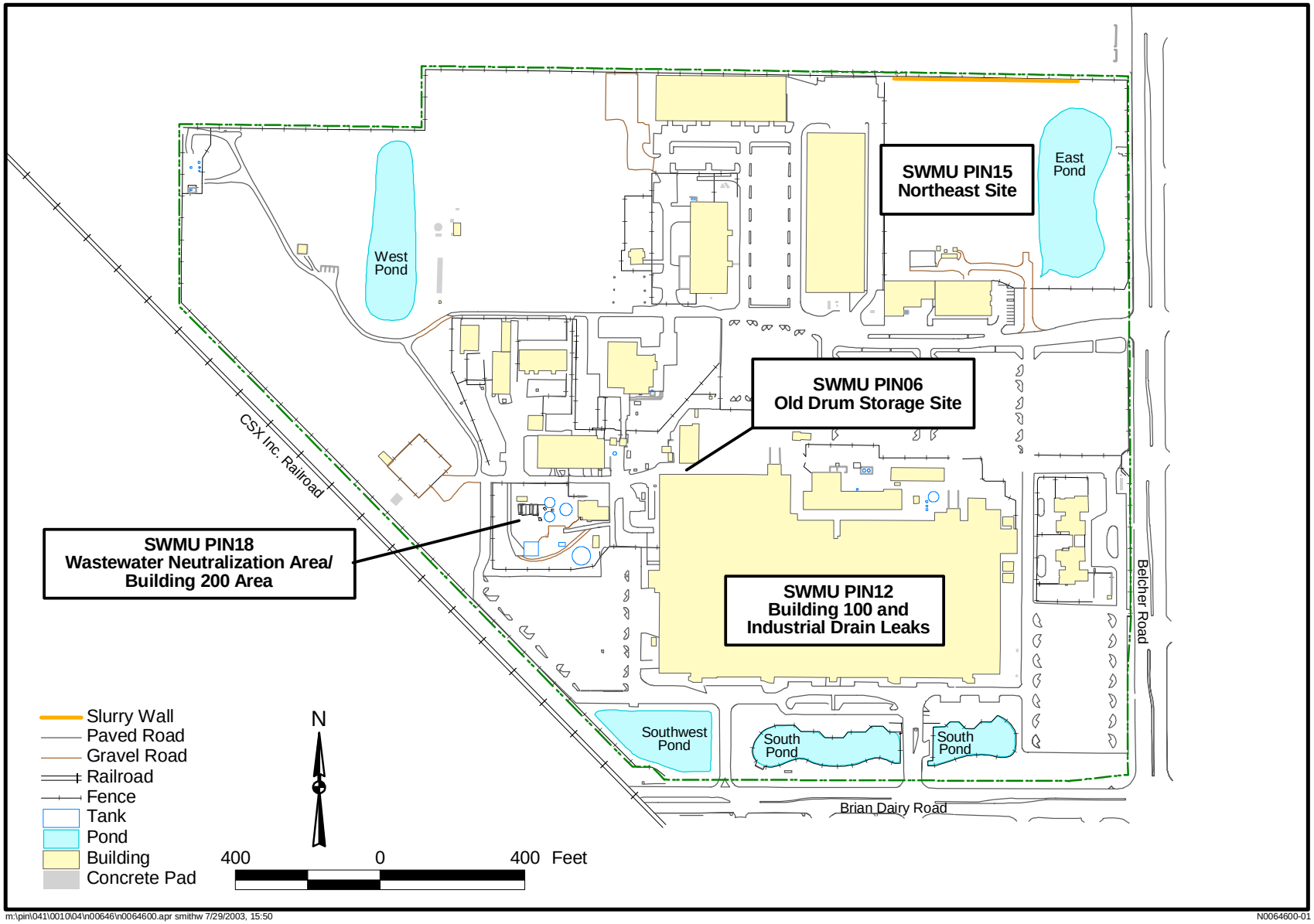


Figure 2. Location of STAR Center Solid Waste Management Units (SWMUs)

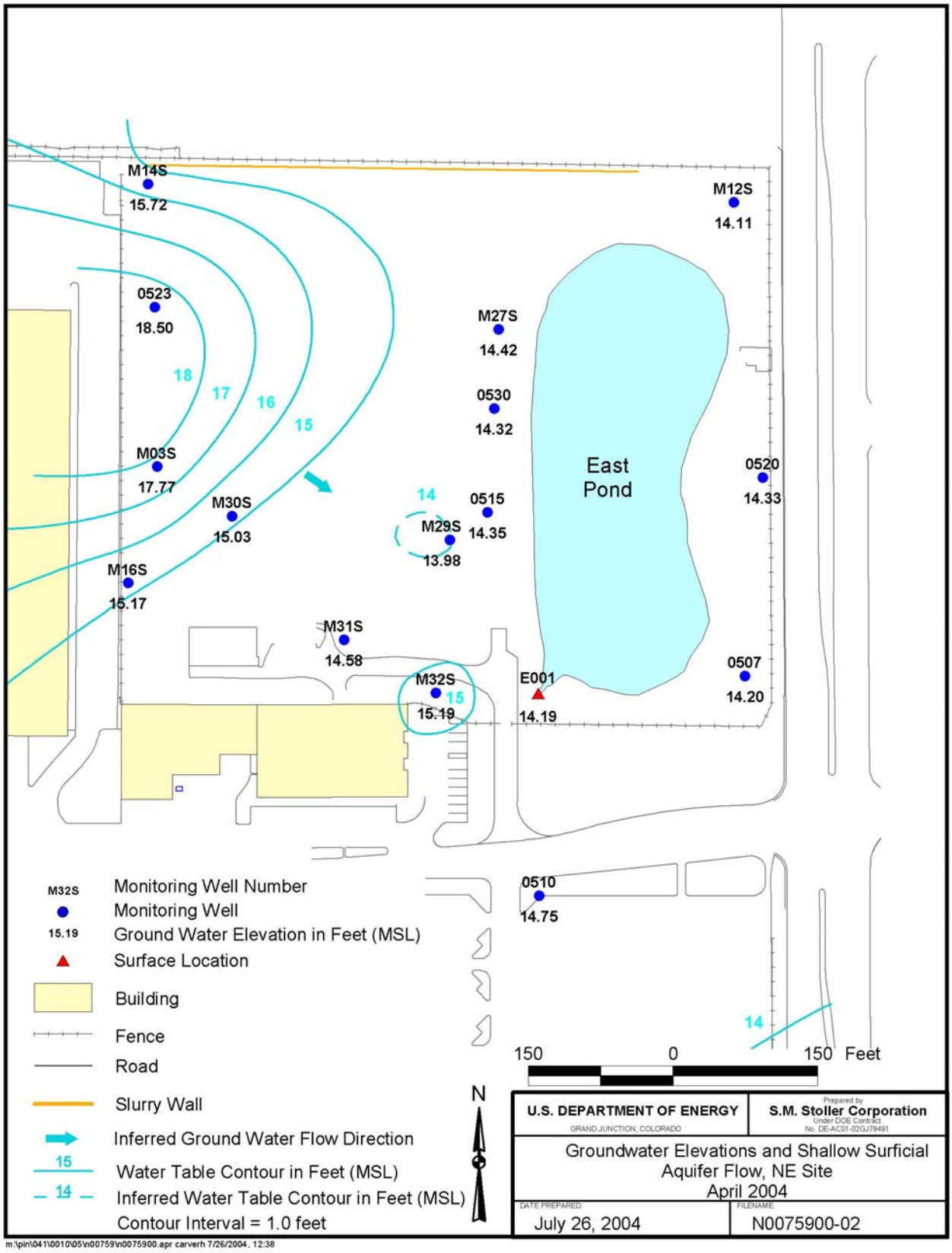


Figure 3. Ground Water Elevations and Shallow Surficial Aquifer Flow, Northeast Site, April 2004

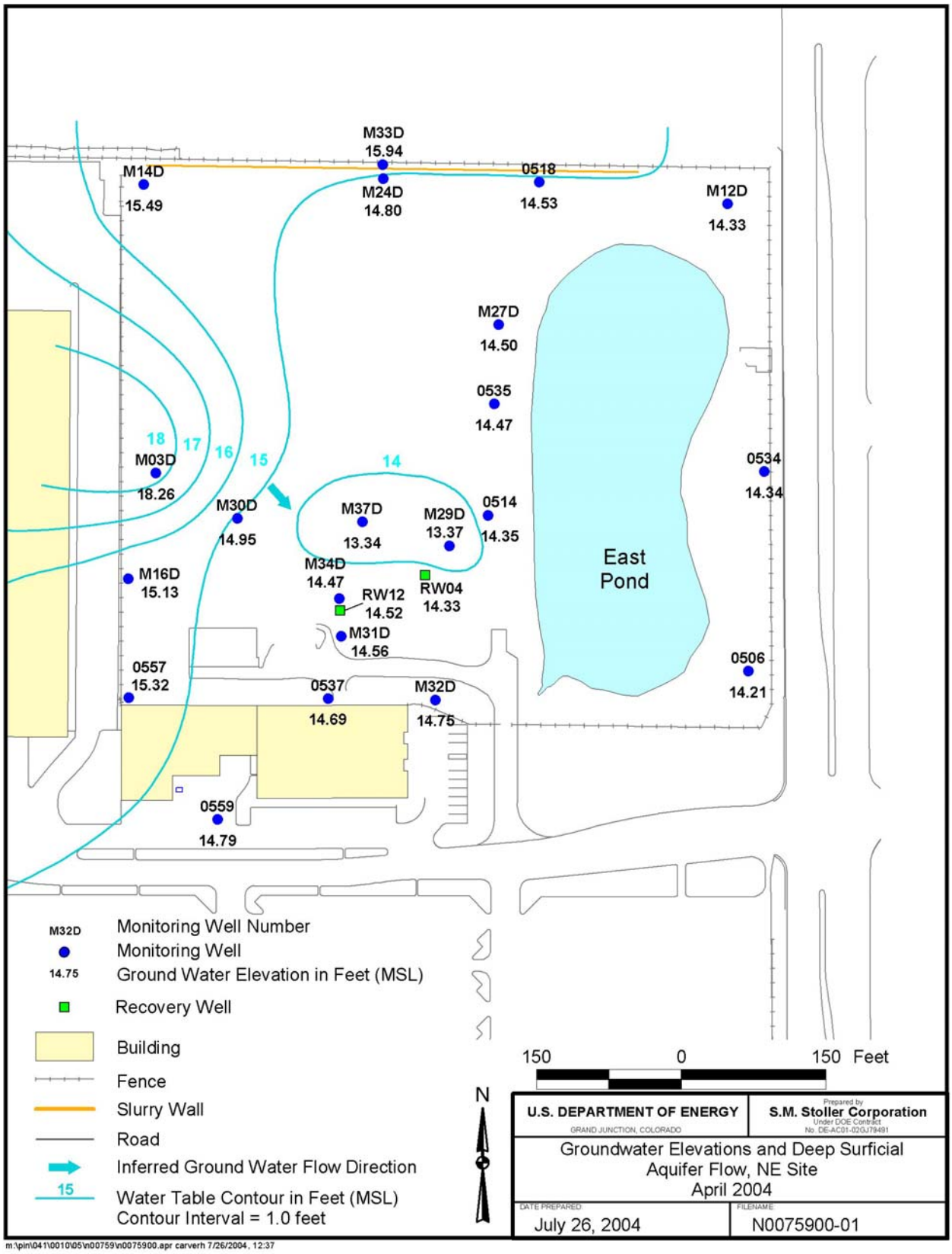


Figure 4. Ground Water Elevations and Deep Surficial Aquifer Flow, Northeast Site, April 2004

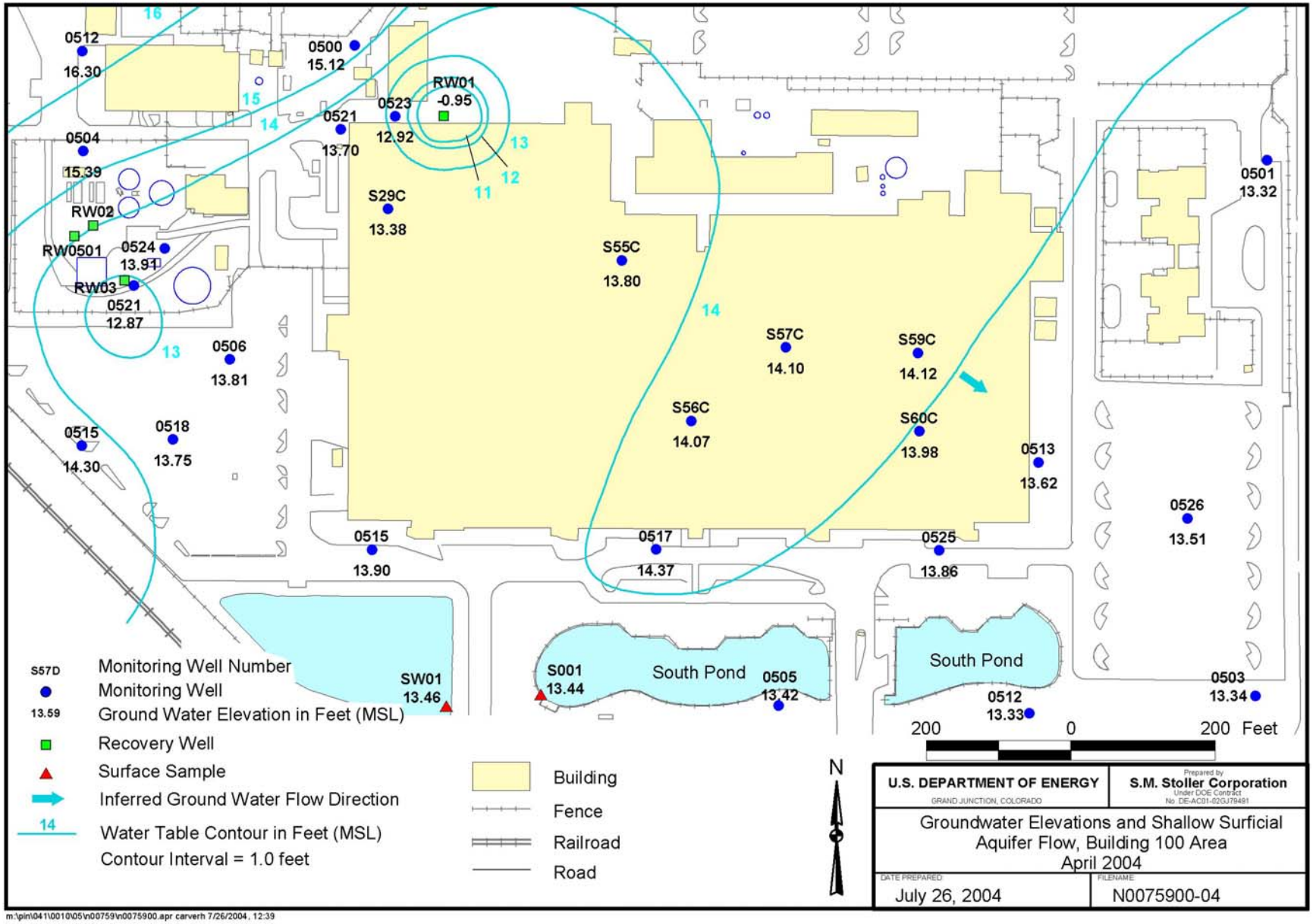


Figure 5. Ground Water Elevations and Shallow Surficial Aquifer Flow, Building 100 Area, April 2004

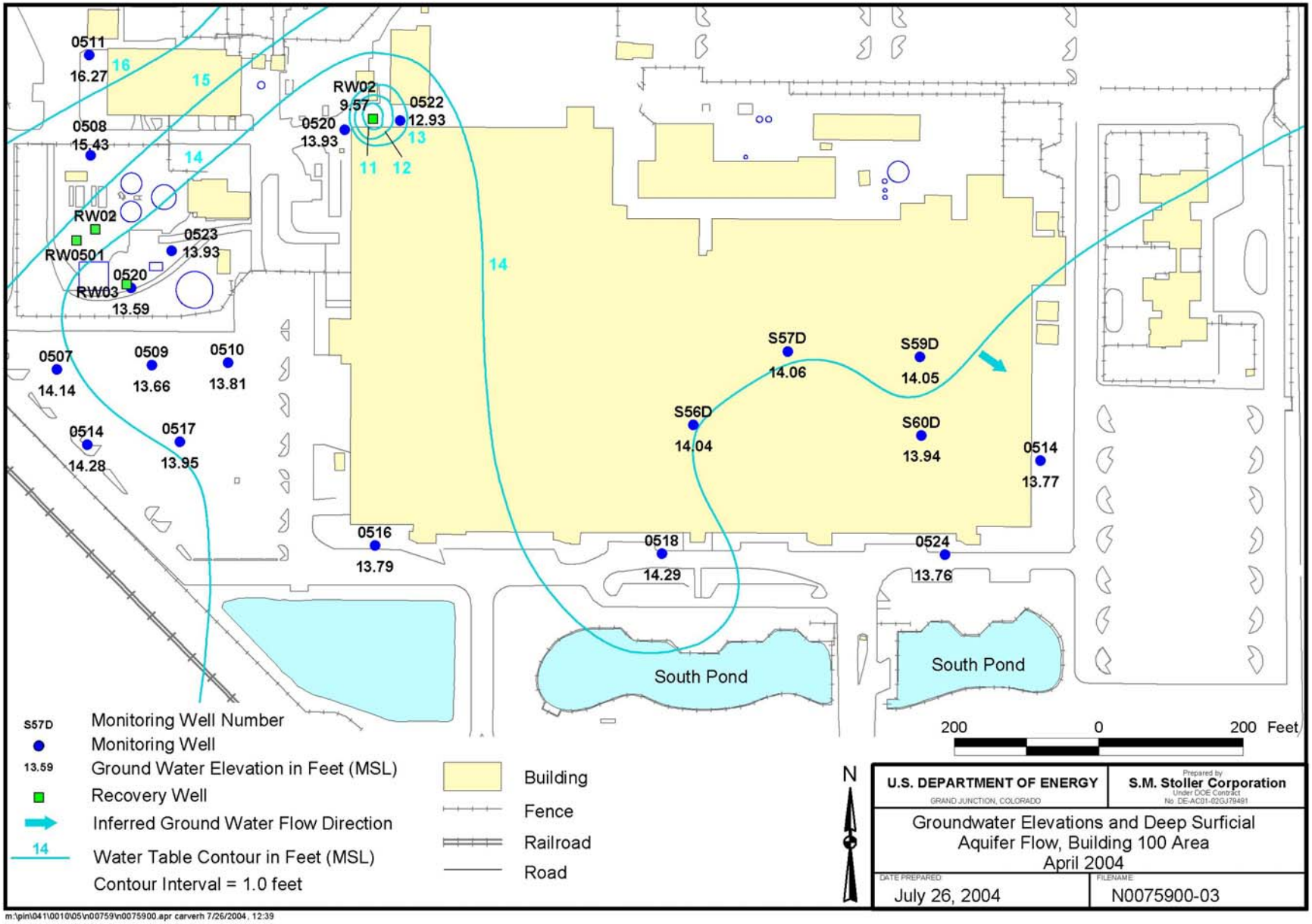


Figure 6. Ground Water Elevations and Deep Surficial Aquifer Flow, Building 100 Area, April 2004

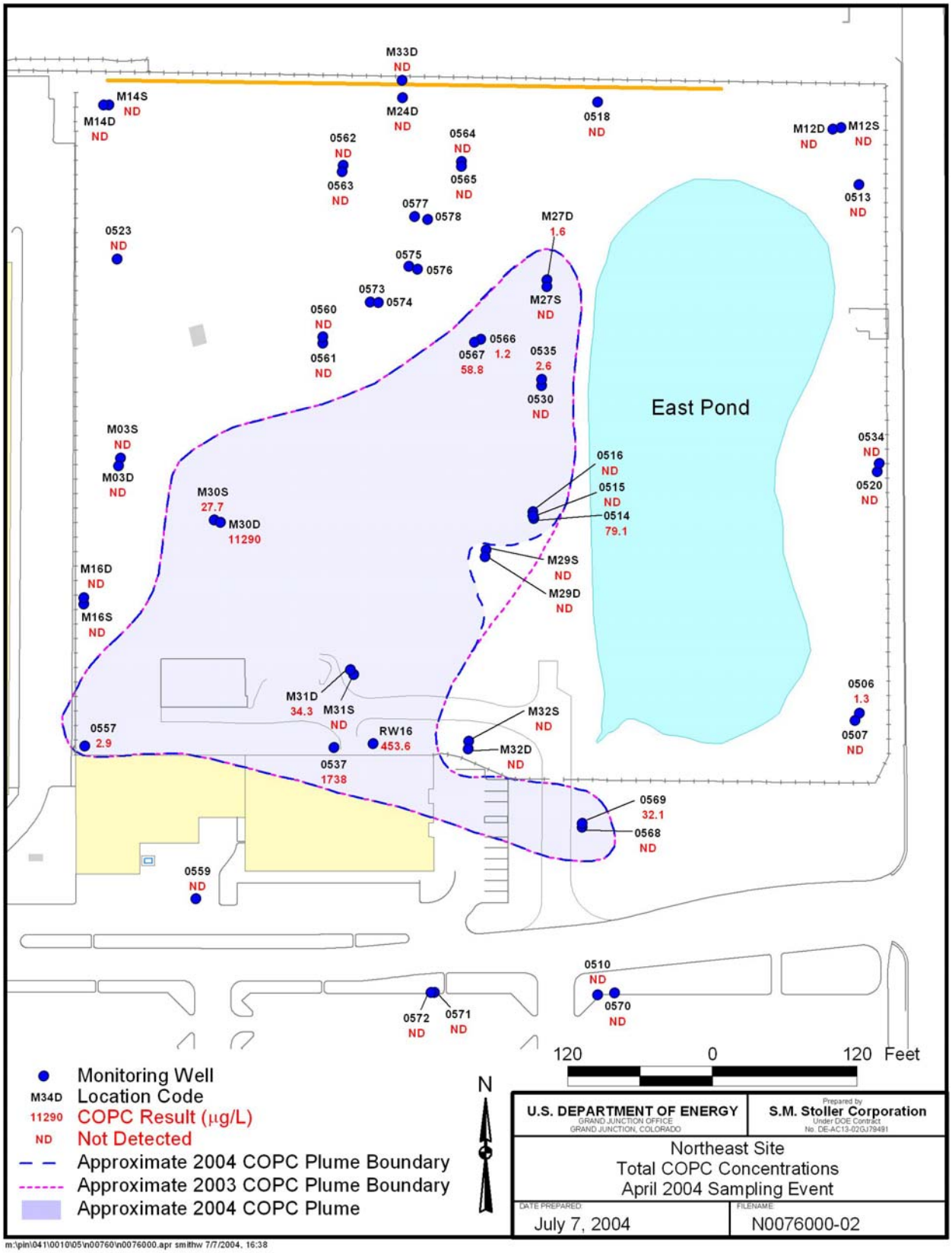


Figure 7. Northeast Site Total COPC Concentrations April 2004 Sampling Event

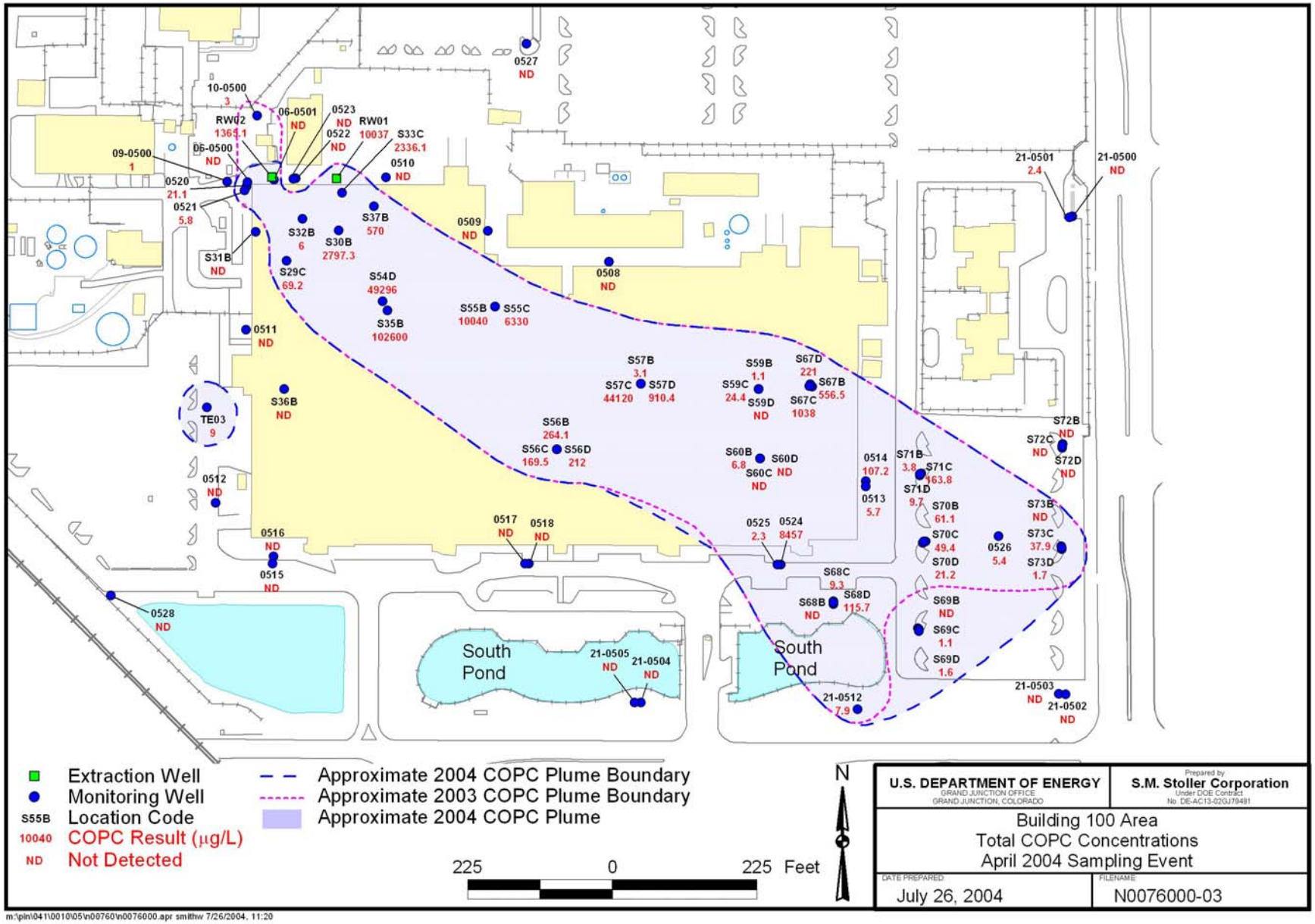


Figure 8. Building 100 Area Total COPC Concentrations April 2004 Sampling Event

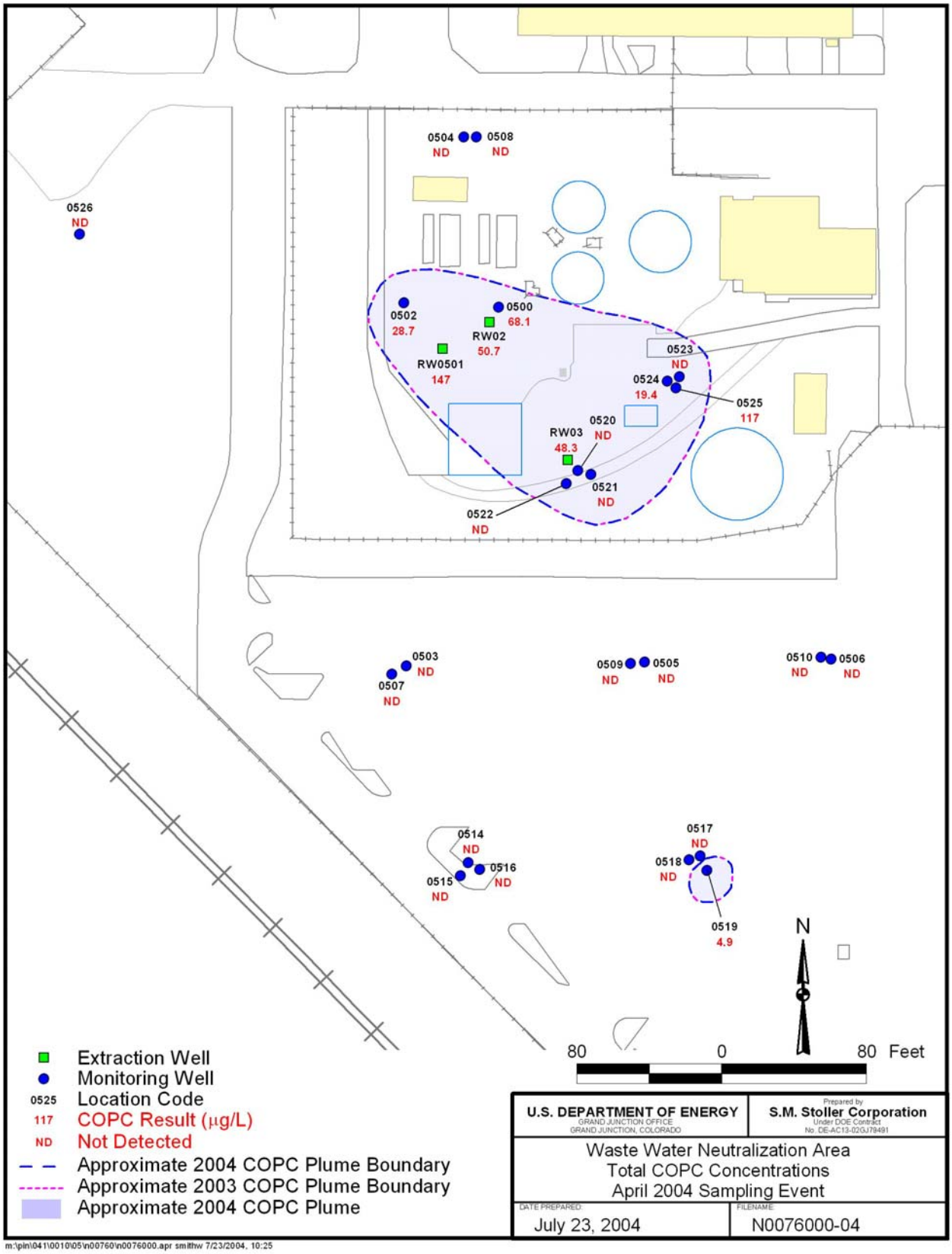


Figure 9. WWNA Total COPC Concentrations April 2004 Sampling Event

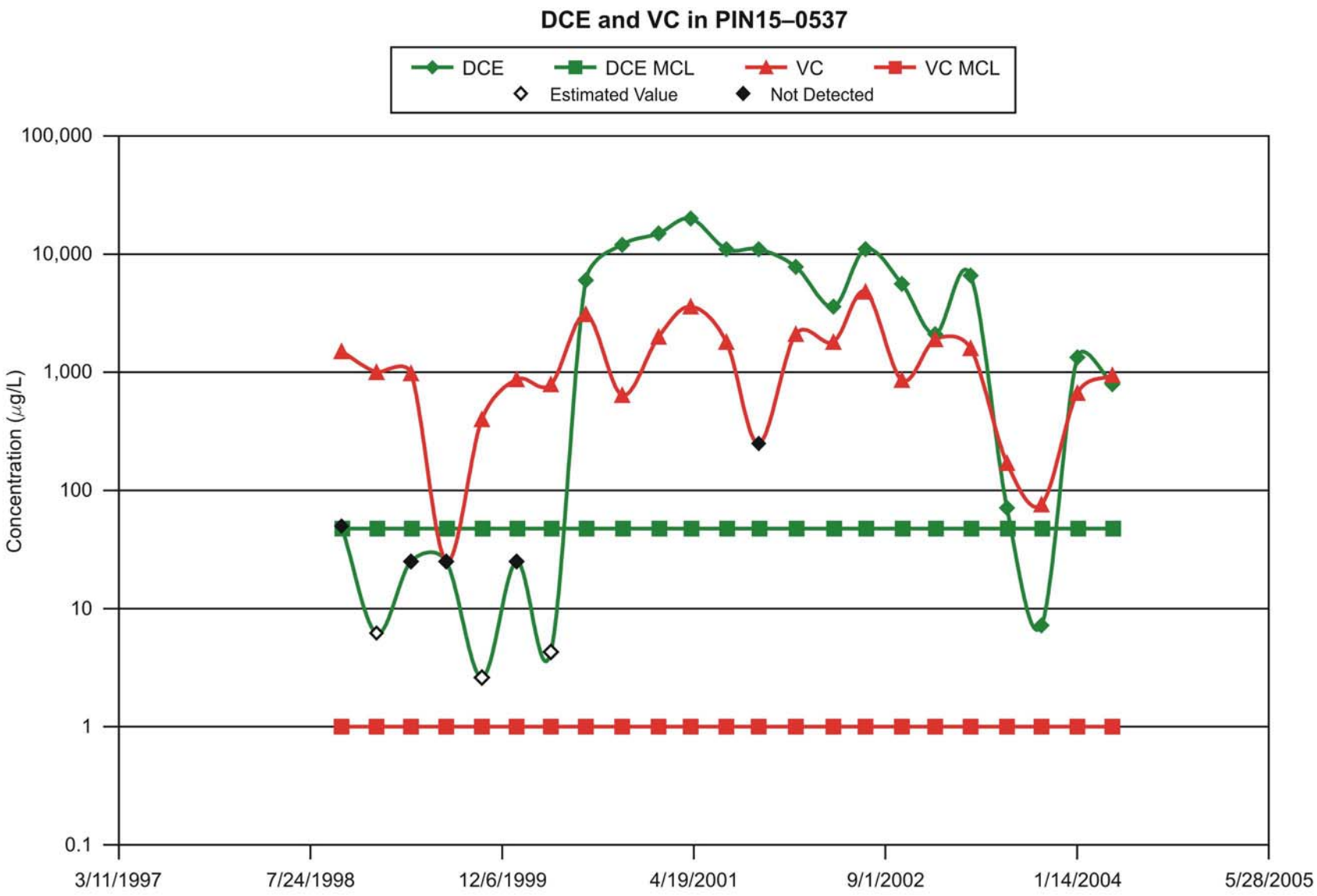


Figure 10. DCE and VC in PIN15−0537

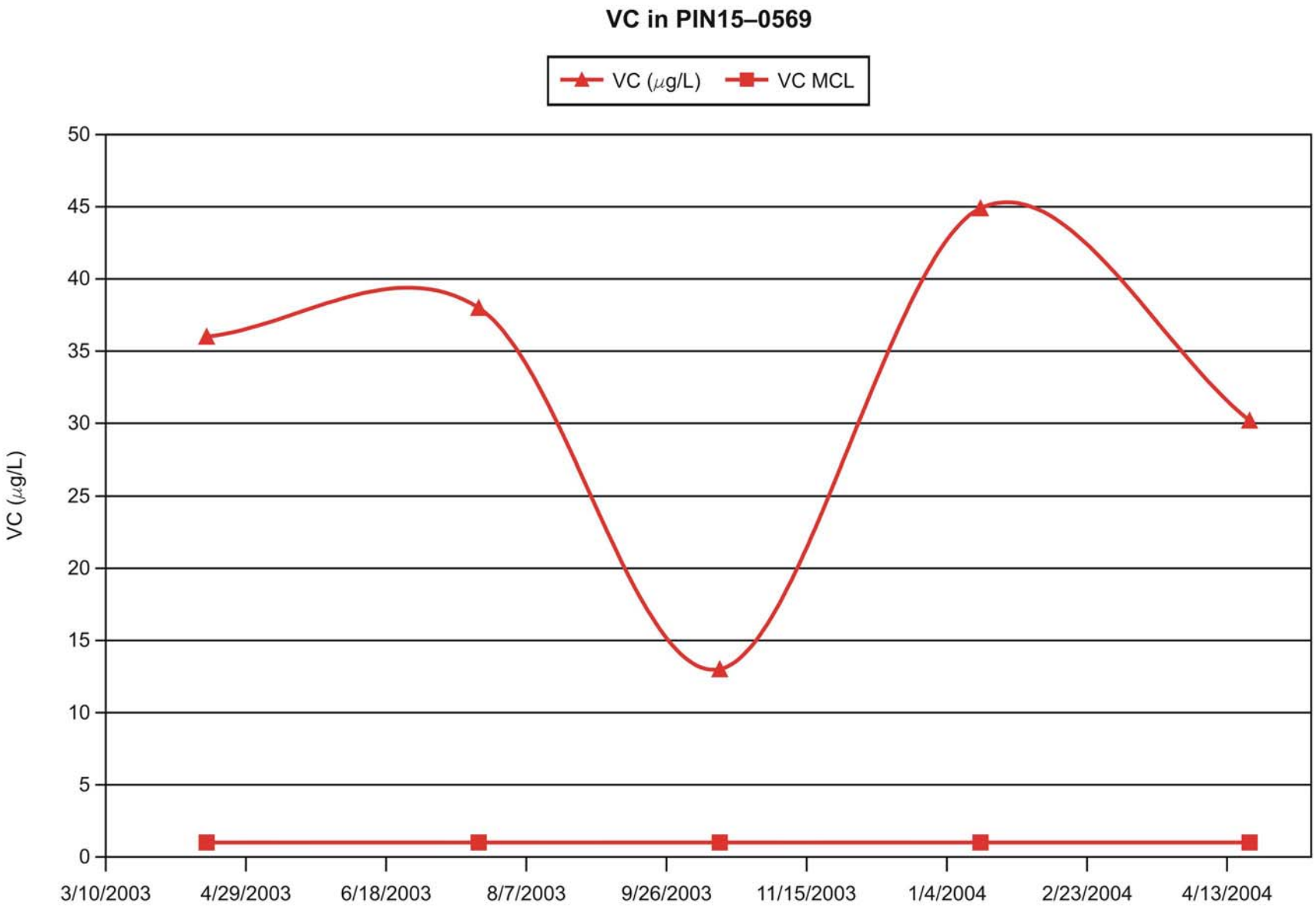


Figure 11. Vinyl Chloride in PIN15−0569

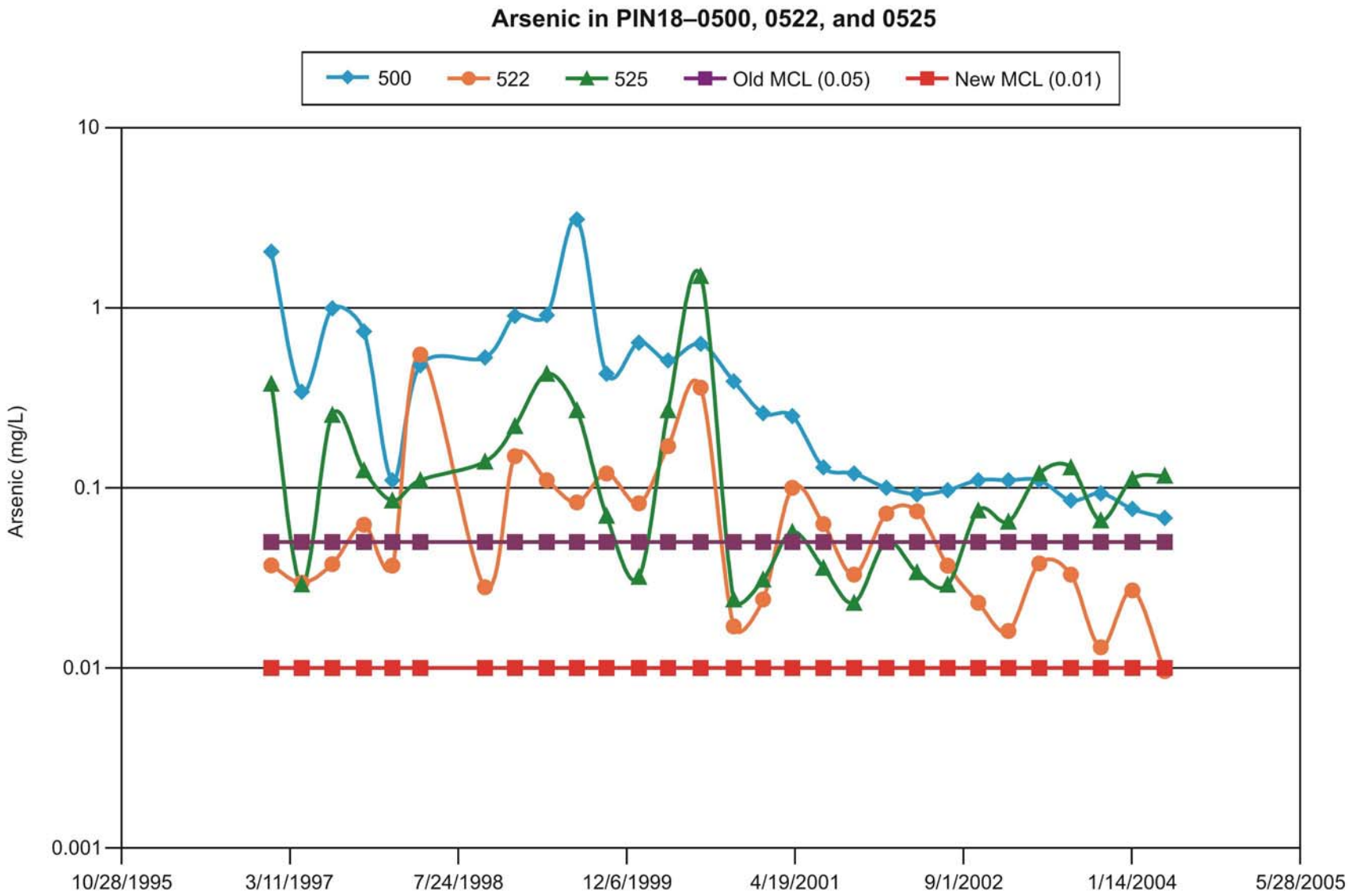


Figure 12. Arsenic in PIN18−0500, −0522, and −0525

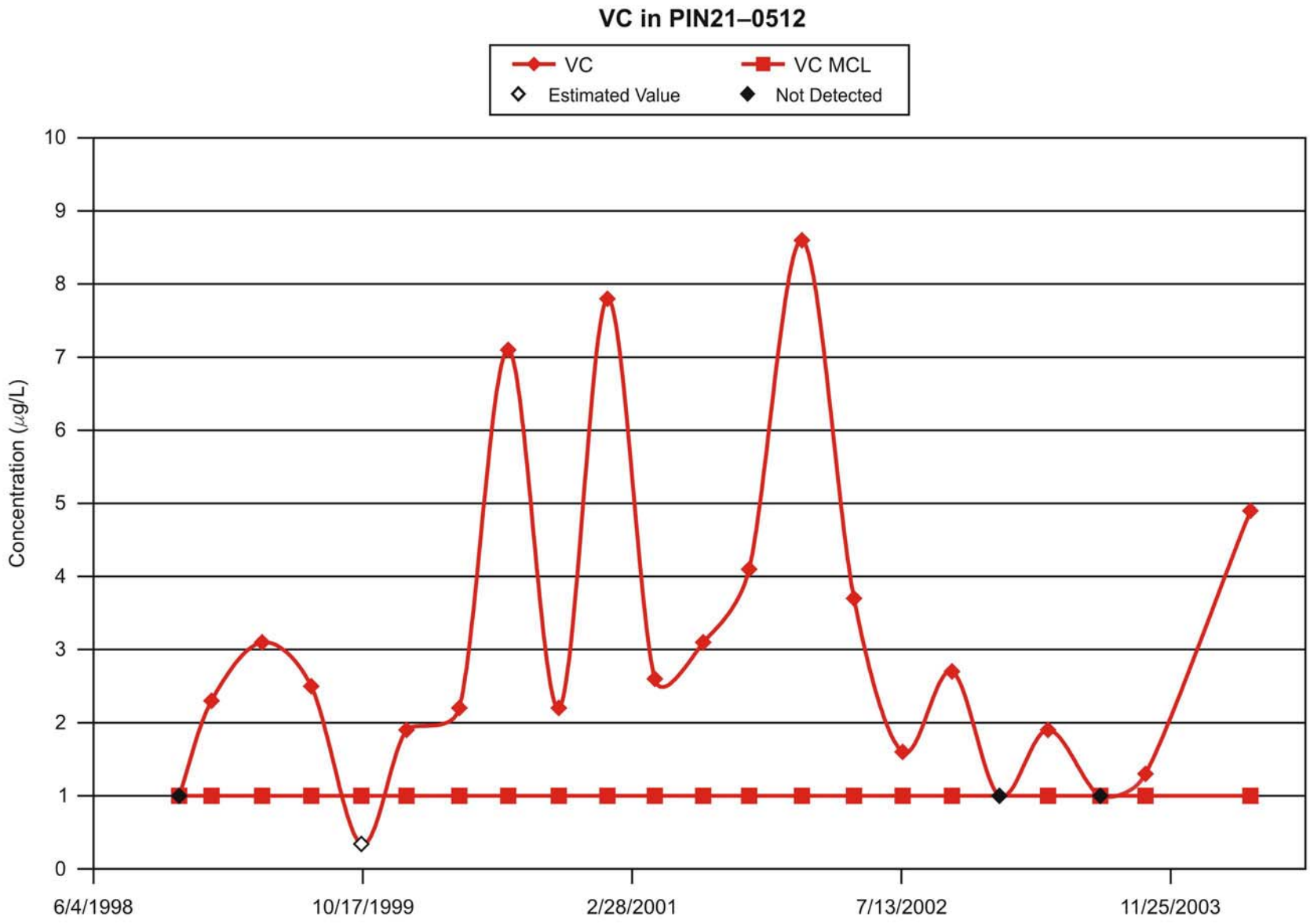


Figure 13. Vinyl Chloride in PIN21−0512

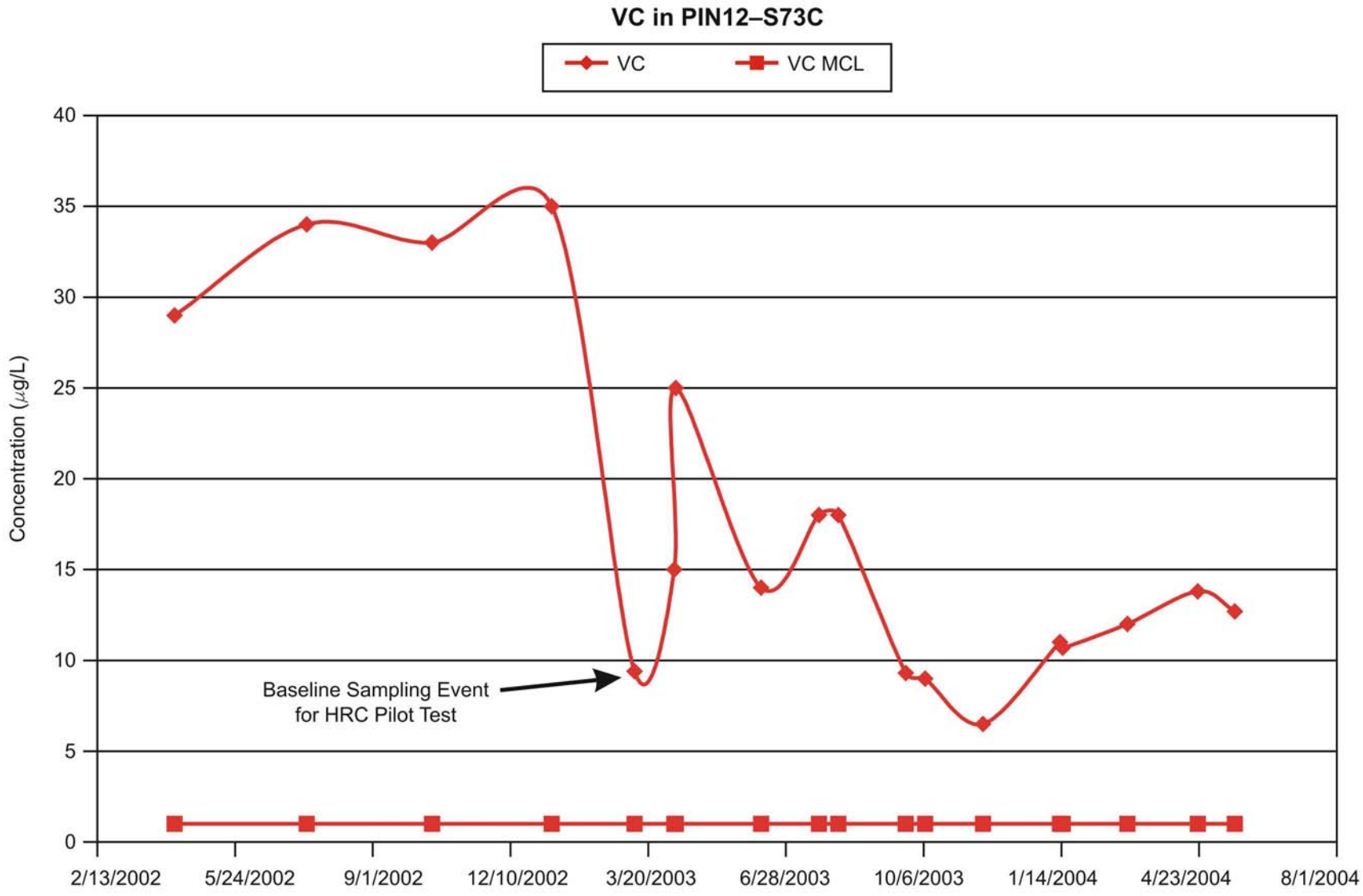


Figure 14. Vinyl Chloride in PIN12−S73C

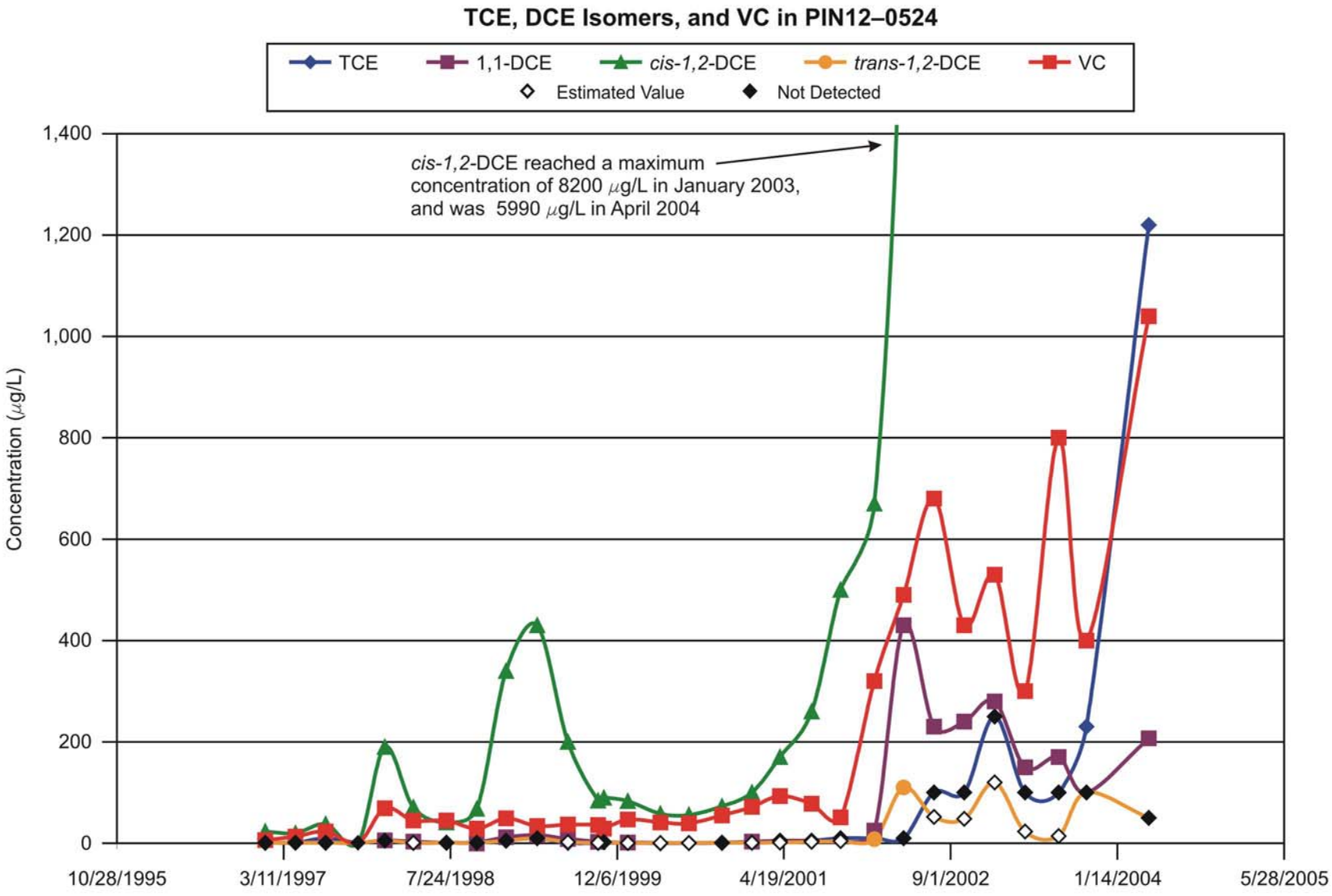


Figure 15. TCE, DCE Isomers, and Vinyl Chloride in PIN12−0524

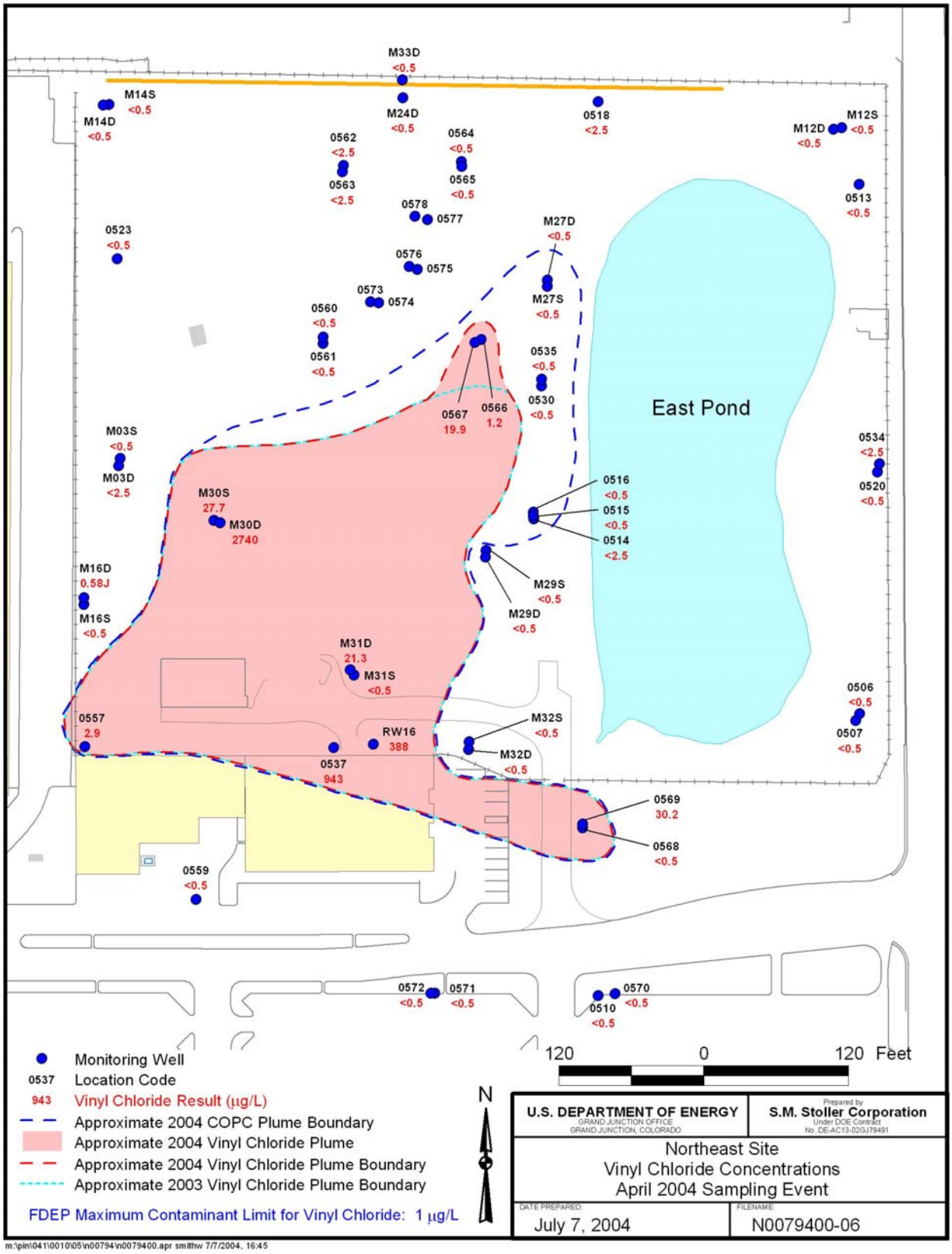


Figure 16. Vinyl Chloride Concentrations at the Northeast Site in April 2004

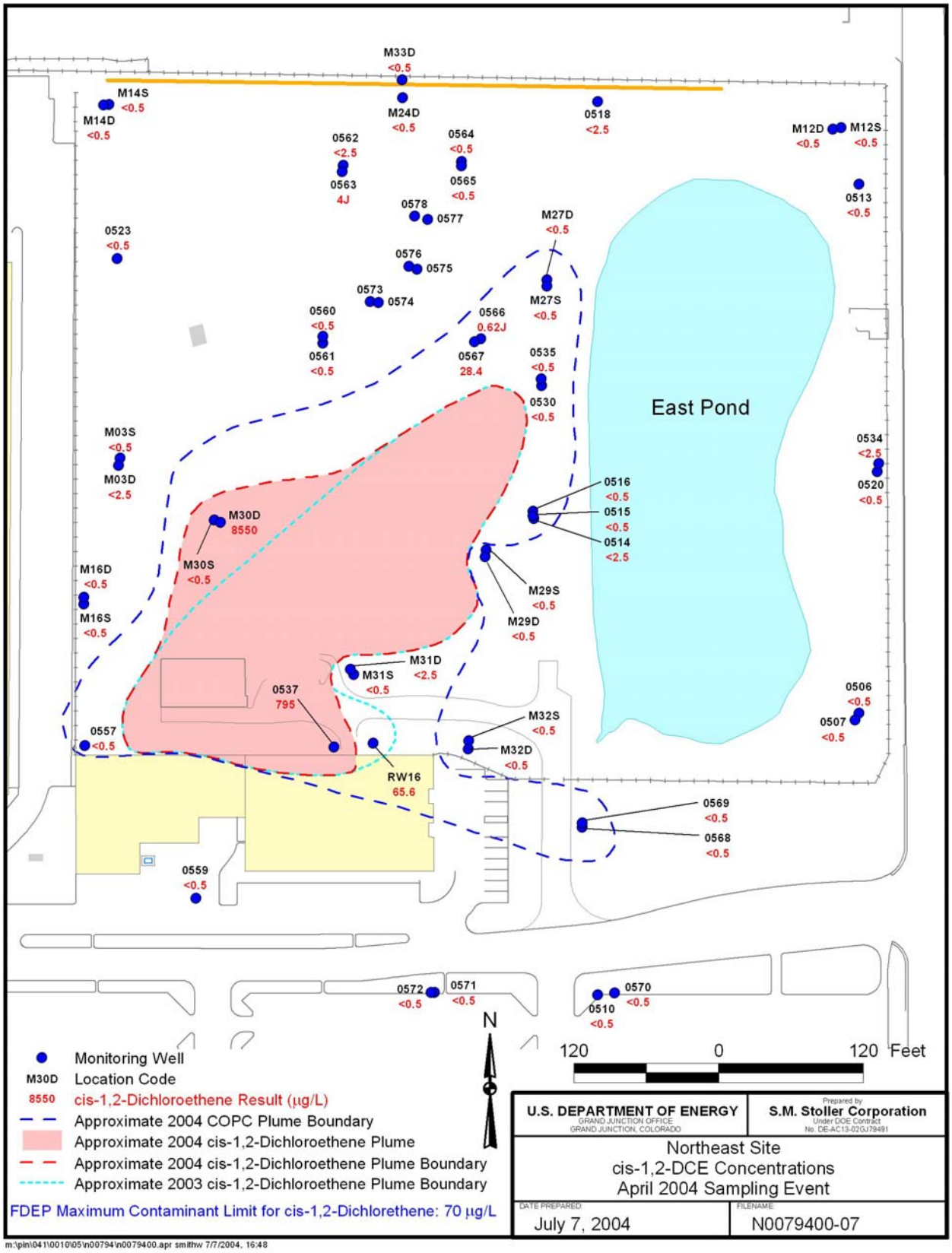


Figure 17. cis-1,2-DCE Concentrations at the Northeast Site in April 2004

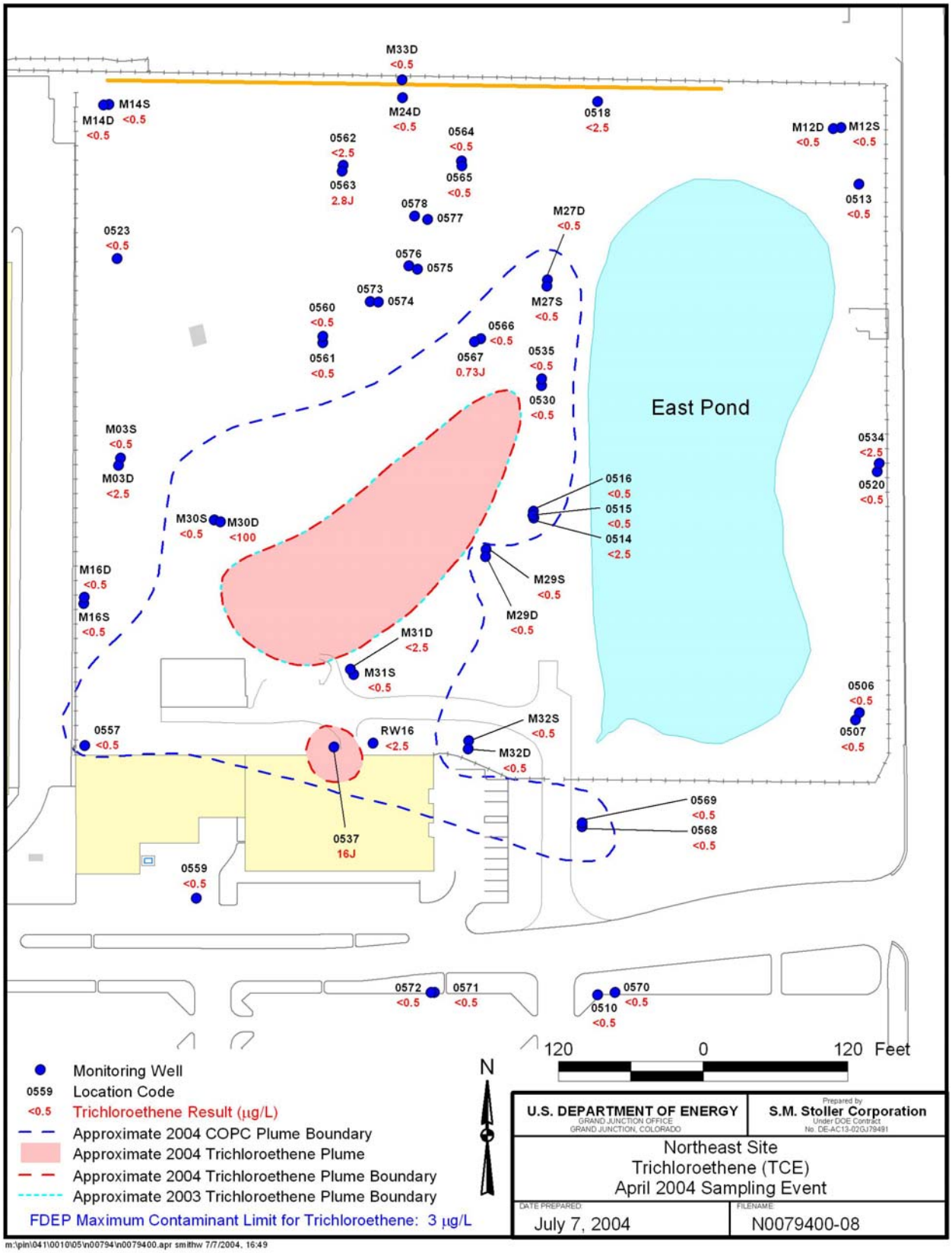


Figure 18. Trichloroethene Concentrations at the Northeast Site in April 2004

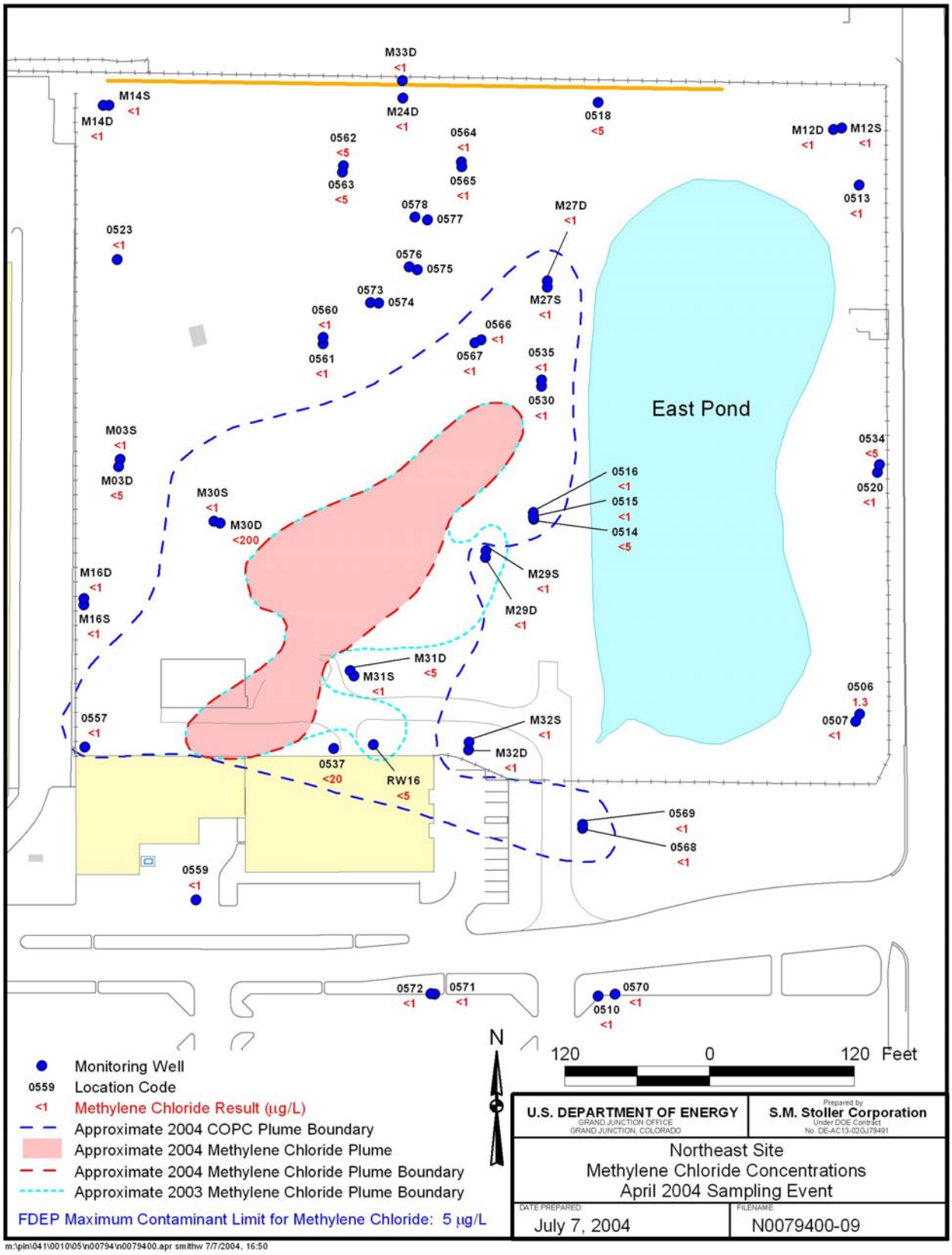


Figure 19. Methylene Chloride Concentrations at the Northeast Site in April 2004

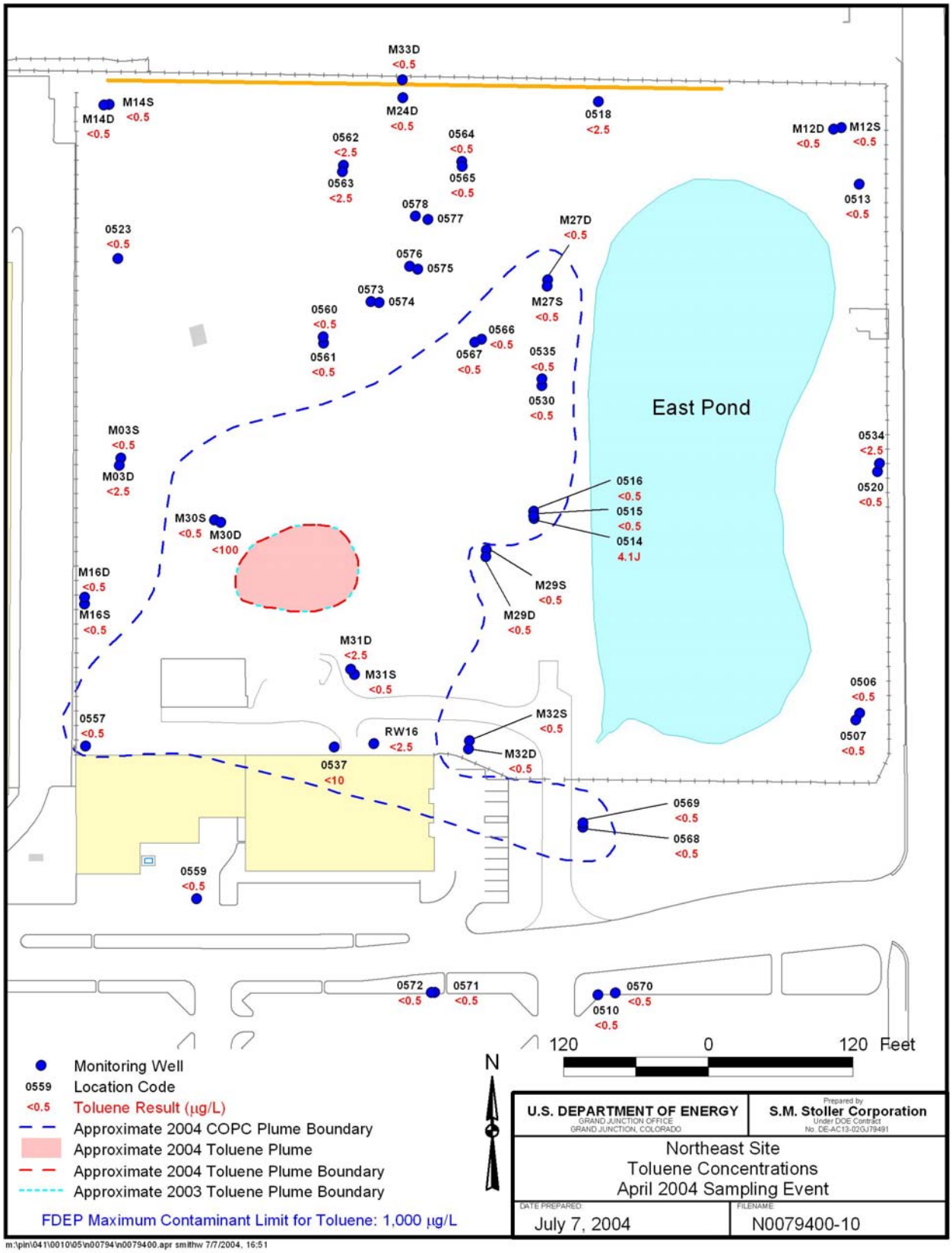


Figure 20. Toluene Concentrations at the Northeast Site in April 2004

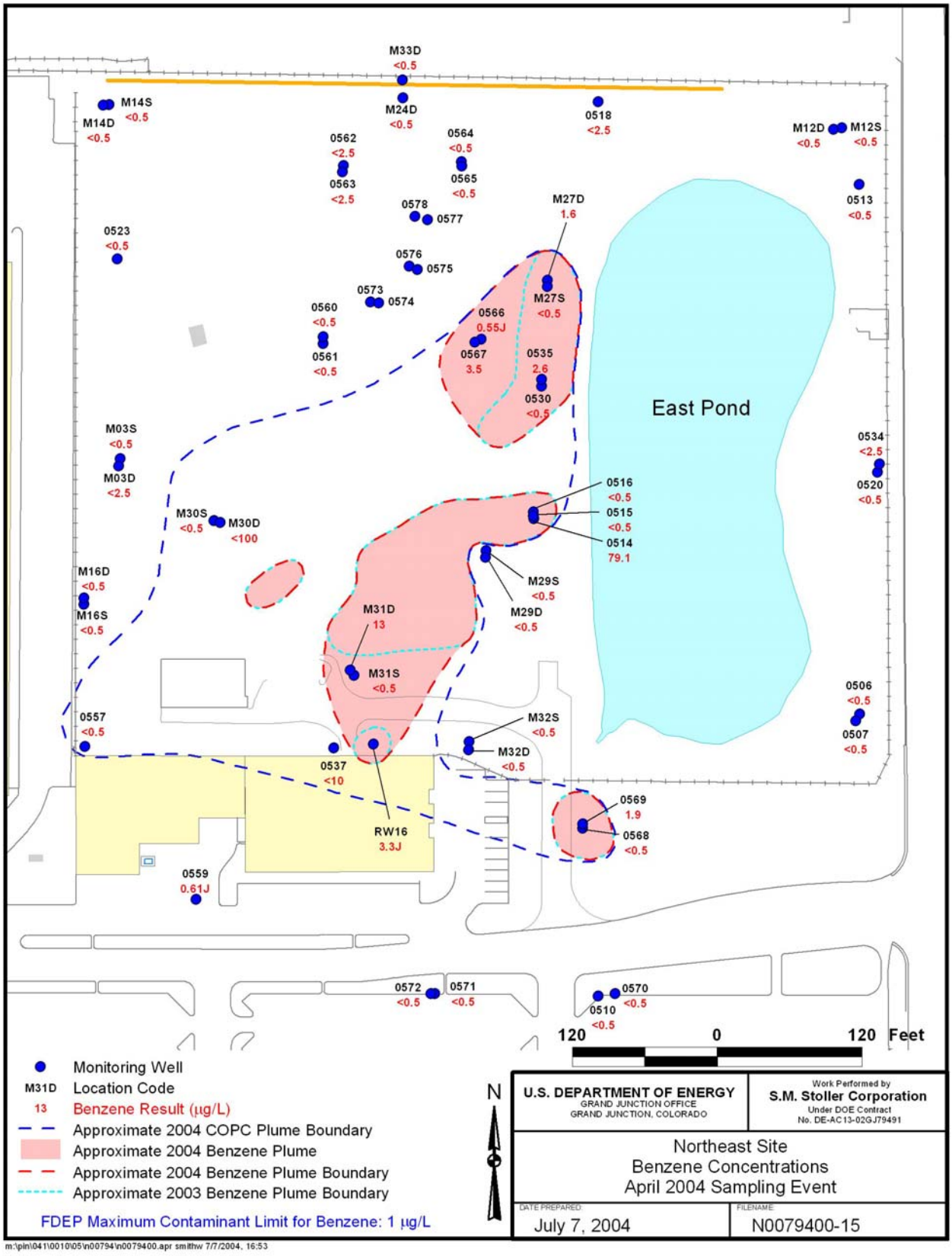


Figure 21. Benzene Concentrations at the Northeast Site in April 2004

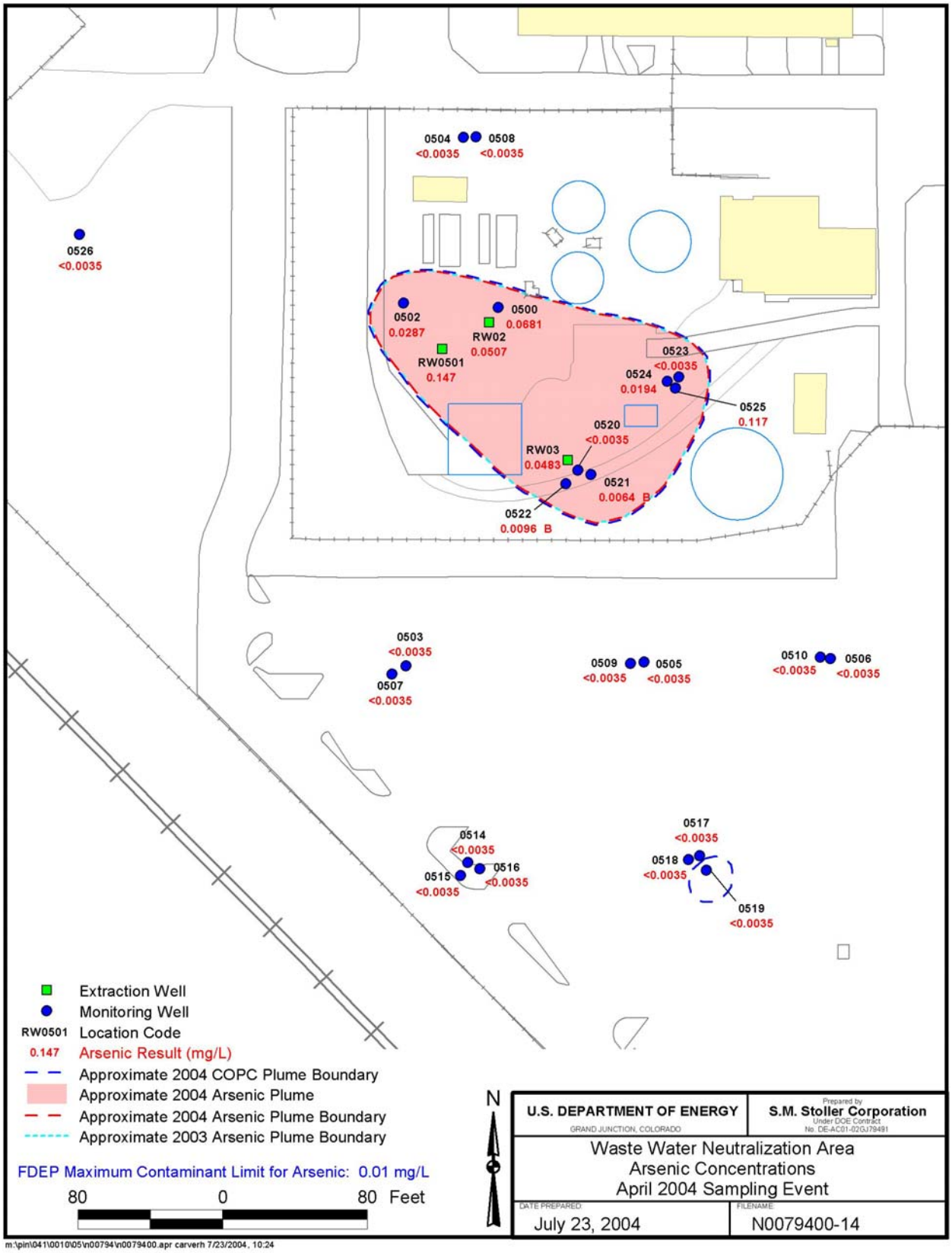


Figure 22. Arsenic Concentrations at the WWNA in April 2004

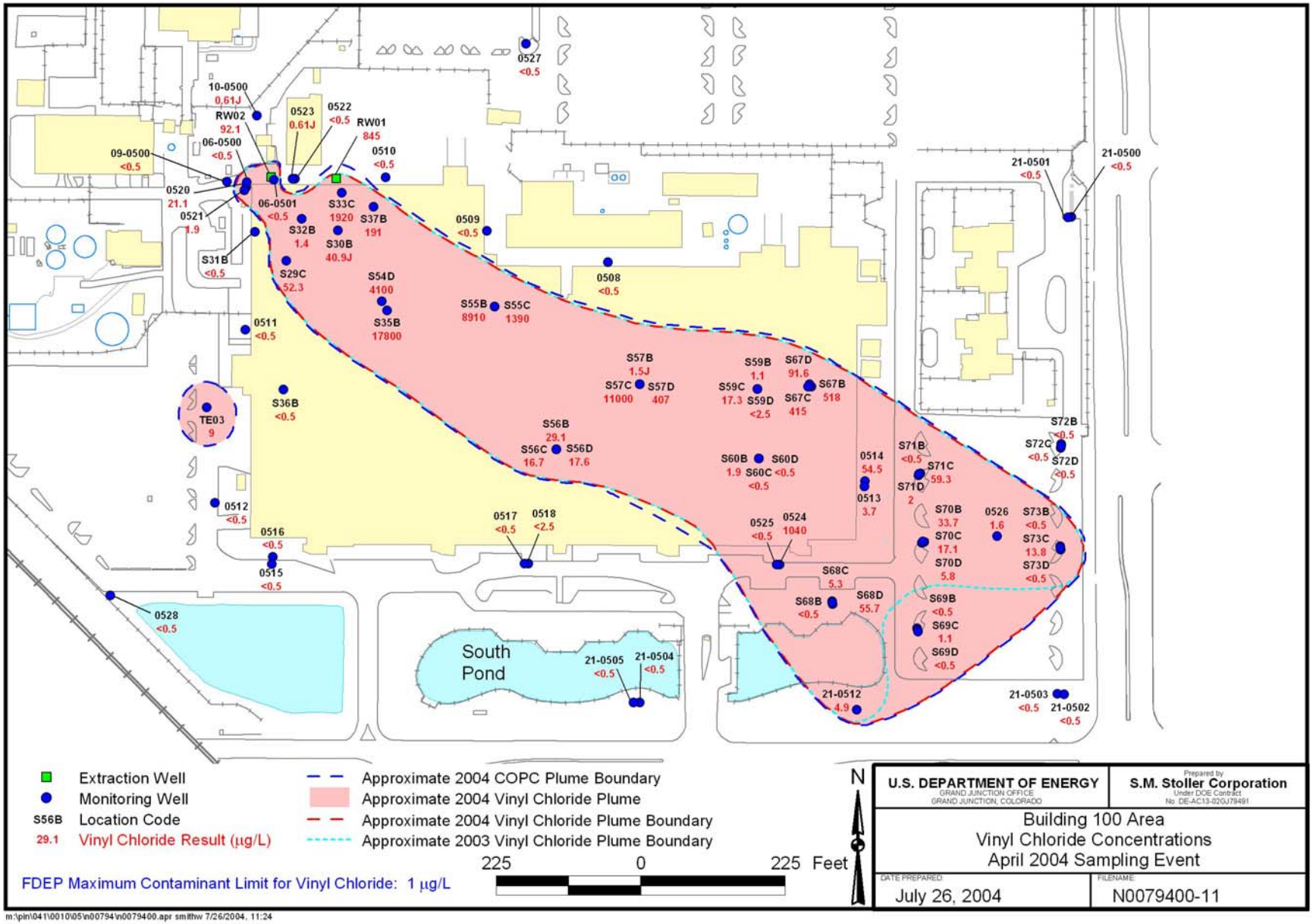


Figure 23. Vinyl Chloride Concentrations at the Building 100 Area in April 2004

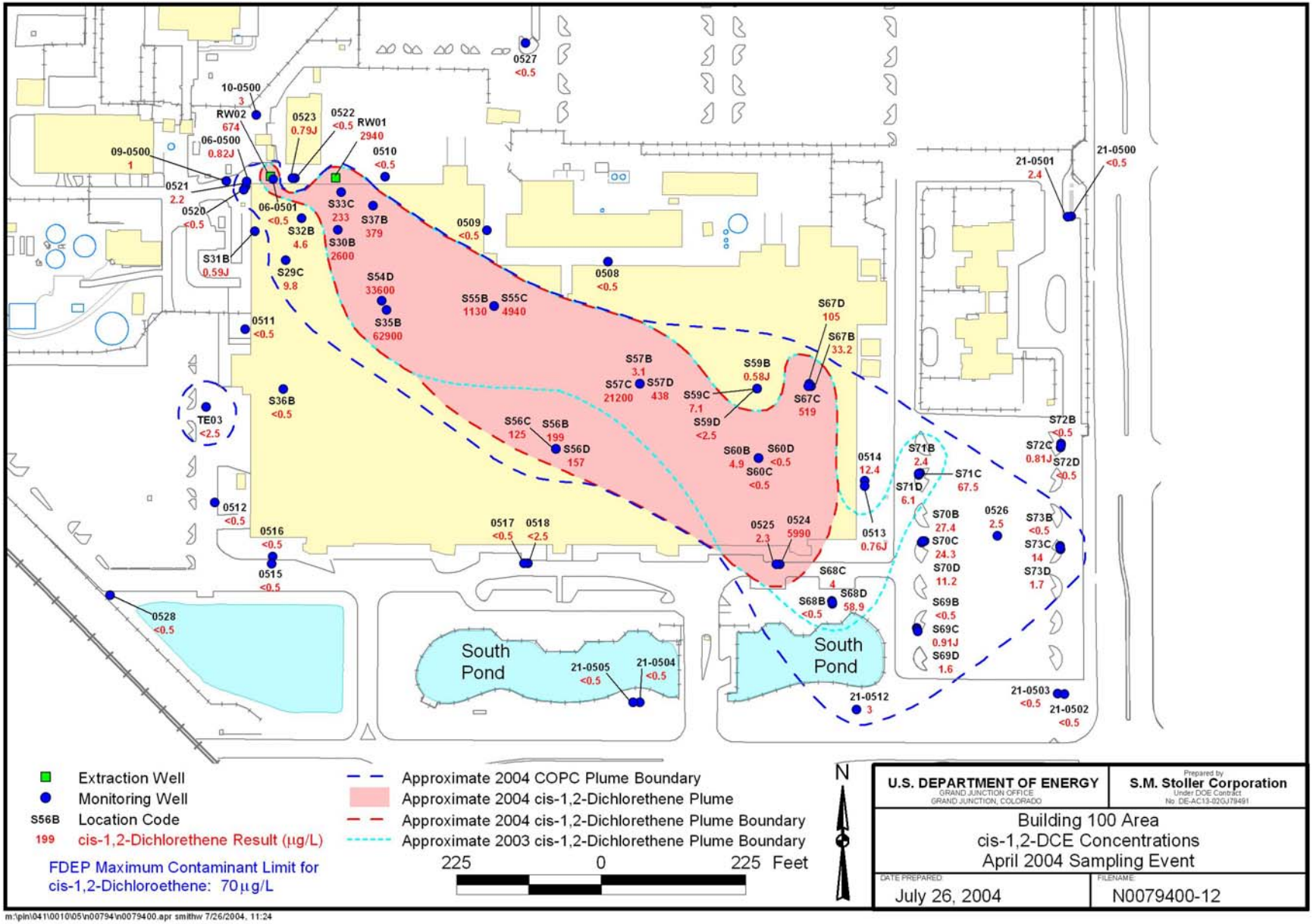


Figure 24. cis-1,2-DCE Concentrations at the Building 100 Area in April 2004

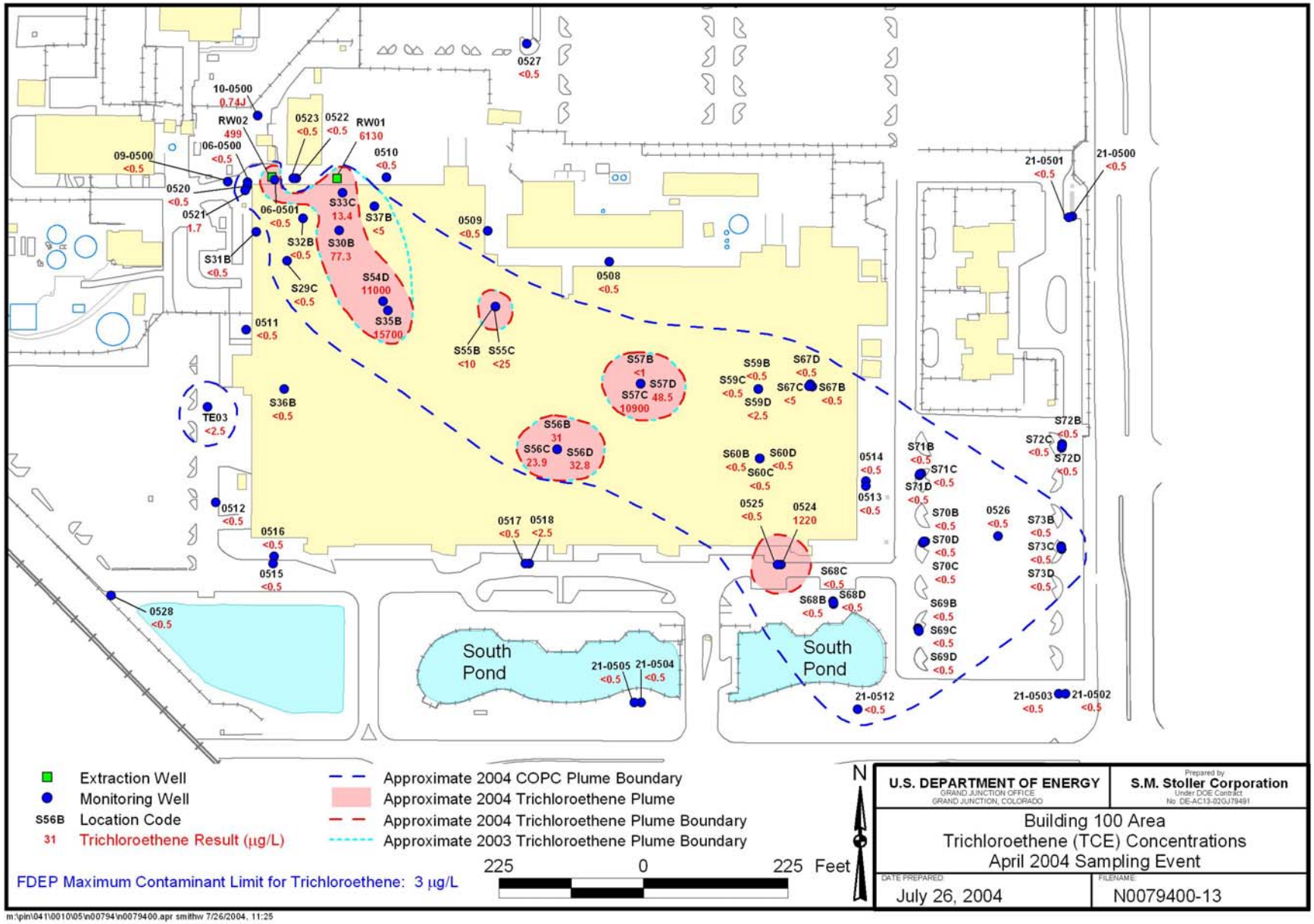


Figure 25. TCE Concentrations at the Building 100 Area in April 2004

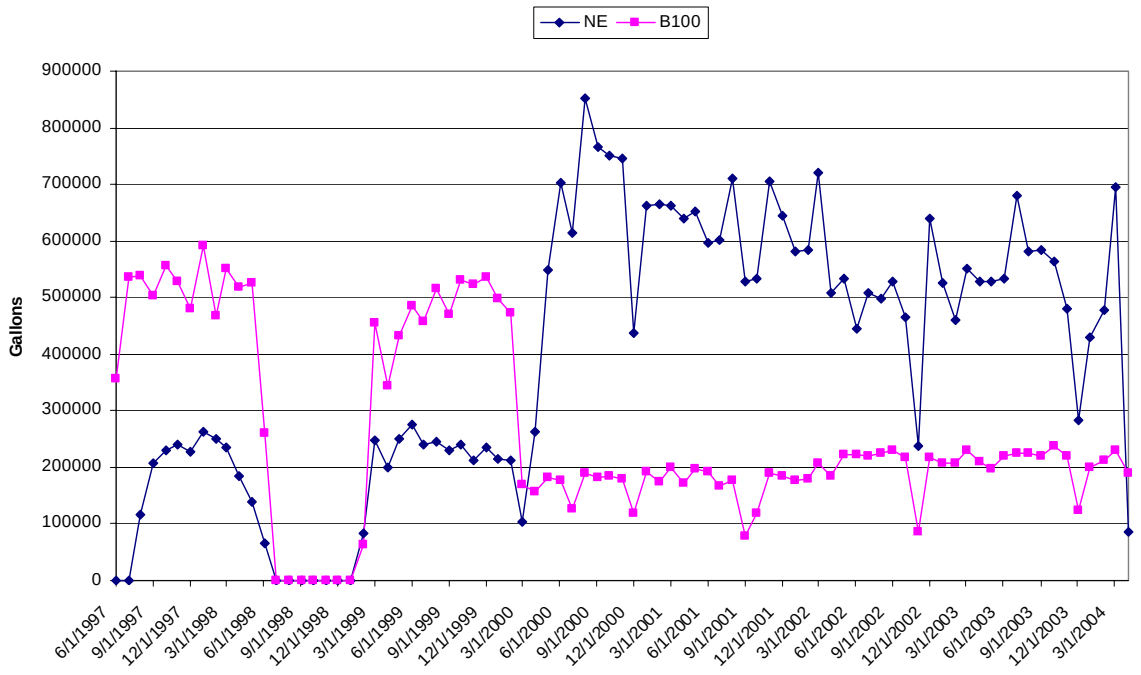


Figure 26. Historical Northeast Site and Building 100 Ground Water Recovery

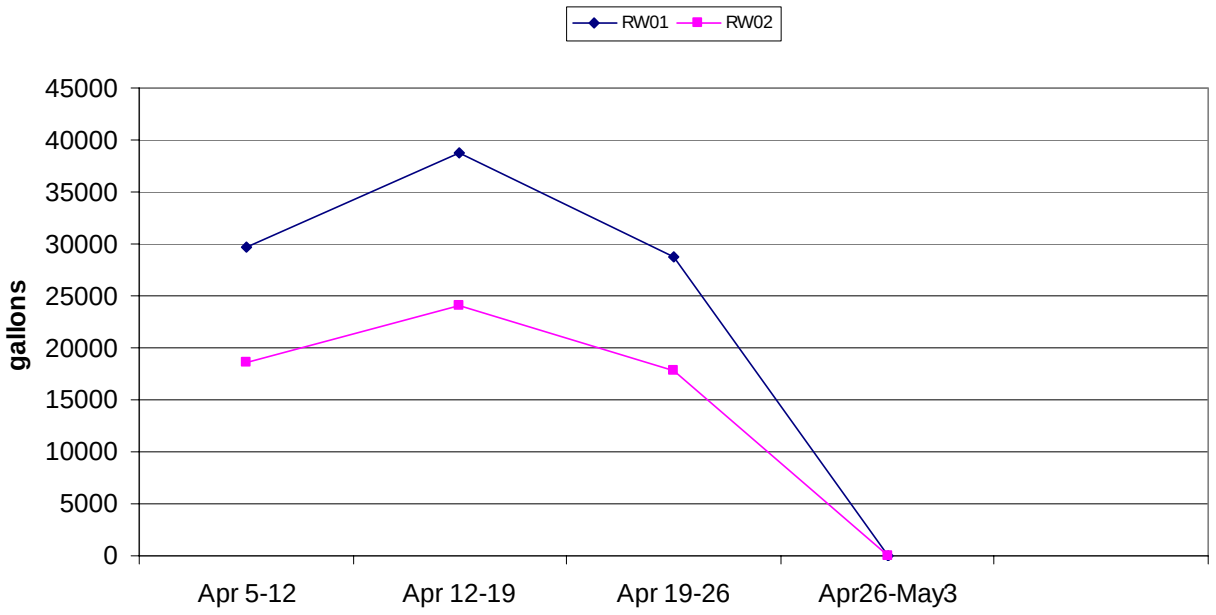


Figure 27. April 2004 Building 100 Ground Water Recovery

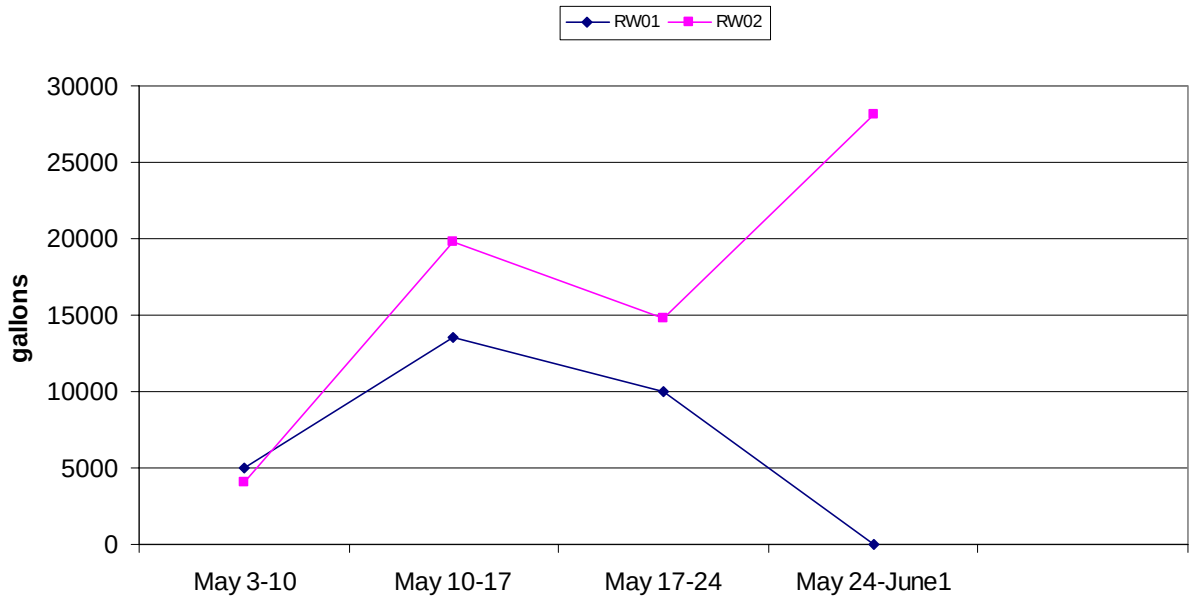


Figure 28. May 2004 Building 100 Ground Water Recovery

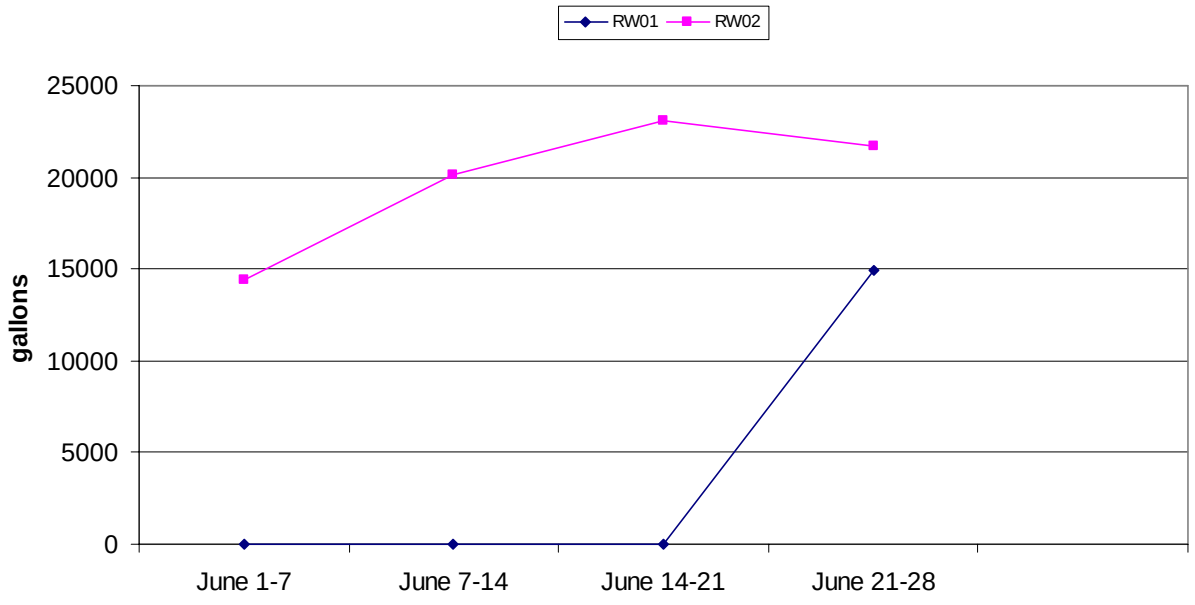


Figure 29. June 2004 Building 100 Ground Water Recovery

Table 1. WWNA Recovery Well Startup Monitoring Arsenic Concentrations (reported in milligrams per liter)

Sample Date	RW02	RW03	RW0501[a]	RW02/RW03/RW0501 combined effluent
2/26/2001	0.08	0.1		0.095
2/27/2001	0.074	0.1		0.091
2/28/2001	0.074	0.091		0.074
3/1/2001	0.084	0.096		0.088
3/2/2001	0.088	0.095		0.089
3/5/2001	0.13	0.22		0.1
3/12/2001	0.37	0.11		0.13
3/19/2001	0.42	0.12		0.12
3/26/2001	0.15	0.16		0.8
4/2/2001	0.18	0.12		0.13
4/16/2001	0.18	0.17		0.13
5/1/2001	0.16	0.071		0.1
5/15/2001	0.14	0.15		0.093
5/30/2001	0.13	0.07		0.16
6/11/2001	0.11	0.068		0.083
6/26/2001	0.13	0.067		0.096
7/9/2001	0.14	0.054		0.087
7/23/2001	0.14	0.25		0.074
8/6/2001	0.11	0.2		0.18
8/21/2001	0.13	0.074		0.084
9/5/2001	0.13	0.054		0.091
10/8/2001	0.11	0.14		0.07
11/6/2001	0.095	0.053		0.076
12/7/2001	0.13	0.081		0.084
1/10/2002	0.11	0.081		0.076
2/5/2002	0.11	0.055		0.075
3/6/2002	0.12	0.05		0.076
4/2/2002	0.084	0.055		0.069
4/15/2002	--	0.049		--
4/16/2002	0.078	--		--
5/8/2002	0.11	0.048		0.071
6/4/2002	0.095	0.078		0.058
7/3/2002	0.16	0.056		0.074
7/15/2002	0.098	0.057		--
8/8/2002	0.0036J	0.11		0.065
9/10/2002	0.12	0.097		0.07
10/3/2002	0.097	0.054		0.071
11/22/2002	0.11	0.067		0.057
12/11/2002	0.11	0.056		0.07
1/2/2003	0.097	0.049		0.064
1/13/2003	0.082	0.061		--
2/4/2003	0.12	0.047		0.063
3/4/2003	0.079	0.19		0.059

Table 1 (continued). WWNA Recovery Well Startup Monitoring Arsenic Concentrations

Sample Date	RW02	RW03	RW0501[a]	RW02/RW03/RW0501 combined effluent
4/7/2003	0.081	0.071		0.054
5/5/2003	0.074	0.038		0.052
6/3/2003	0.089	0.042		0.054
6/11/2003	0.07	0.044	0.42	0.073
6/12/2003	0.074	0.048	0.32	0.066
6/13/2003	0.072	0.075	0.21	0.066
6/16/2003	0.071	0.3	0.28	0.063
6/17/2003	0.068	0.11	0.26	0.066
6/24/2003	0.07	0.039	0.18	0.071
7/1/2003	0.059	0.038	0.18	0.064
7/10/2003	0.062	0.04	0.17	0.058
7/11/2003	0.056	0.034	0.24	0.054
7/14/2003	0.15	0.04	0.16	0.065
7/15/2003	0.071	0.038	0.19	0.055
7/16/2003	0.11	0.038	0.18	0.051
7/22/2003	0.15	0.041	0.16	0.054
7/31/2003	0.056	0.036	0.17	0.059
8/6/2003	0.069	0.041	0.16	0.062
9/3/2003	0.092	0.041	0.19	0.054
10/2/2003	0.13	0.032	0.14	0.054
11/5/2003	0.054	0.053	0.18	0.056
12/3/2003	0.076	0.044	0.18	0.062
1/7/2004	0.0363	0.0374	0.131	0.0467
2/3/2004	0.0433	0.0665	1.02	0.0481
3/3/2004	0.169	0.0435	0.142	0.0429
4/6/2004	0.0507	0.0483	0.147	0.0404
5/5/2004	0.0309	0.437	0.536	0.0706
6/1/2004	0.0541	0.23	3.13	0.0434

[a]Recovery well RW0501 was brought online on June 11, 2003.
-- = Not Measured.
J = Estimated value, result is between the reporting limit and the method detection limit.

Table 2. Water-Level Data at the STAR Center

Location	Measurement		Water Depth From Land Surface (ft)	Ground Water Elevation (ft NGVD)
	Date	Time		
PIN06			**Old Drum Storage Site**	
0500	4/14/2004	12:56	3.82	14.18
0501	4/14/2004	13:01	4.44	13.86
PIN09			**Incinerator Site**	
0500	4/14/2004	12:57	3.62	14.35
PIN10			**Incinerator Ditch**	
0500	4/14/2004	12:53	2.78	15.12
PIN12			**Industrial Drain Leaks Bldg 100**	
0508	4/14/2004	13:45	3.99	14.37
0509	4/14/2004	13:35	4.12	13.92
0510	4/14/2004	13:10	4.79	13.27
0511	4/14/2004	09:59	3.91	13.89
0512	4/14/2004	09:55	3.05	13.76
0513	4/14/2004	13:55	4.88	13.62
0514	4/14/2004	13:57	4.73	13.77
0515	4/14/2004	10:37	4.00	13.90
0516	4/14/2004	10:34	4.21	13.79
0517	4/14/2004	10:47	3.53	14.37
0518	4/14/2004	10:46	3.65	14.29
0520	4/14/2004	12:55	4.08	13.93
0521	4/14/2004	12:54	4.35	13.70
0522	4/14/2004	13:04	5.27	12.93
0523	4/14/2004	13:05	5.24	12.92
0524	4/14/2004	10:55	3.65	13.76
0525	4/14/2004	10:54	3.56	13.86
0526	4/14/2004	14:10	3.31	13.51
0527	4/14/2004	10:45	11.90	6.17
0528	4/14/2004	09:53	11.61	5.99
RW01	4/14/2004	13:08	19.20	-0.95
RW02	4/14/2004	12:58	8.76	9.57
S29C	4/14/2004	09:47	5.13	13.38
S30B	4/14/2004	09:41	5.33	13.18
S31B	4/14/2004	09:51	4.70	13.81
S32B	4/14/2004	09:44	5.23	13.28
S33C	4/14/2004	09:31	5.49	13.02
S35B	4/14/2004	09:24	5.18	13.33
S36B	4/14/2004	09:55	4.98	13.53
S37B	4/14/2004	09:36	5.25	13.26
S54D	4/14/2004	09:19	4.91	13.60
S55B	4/14/2004	09:13	4.74	13.77
S55C	4/14/2004	09:13	4.71	13.80
S56B	4/14/2004	09:03	4.49	14.02
S56C	4/14/2004	09:03	4.44	14.07
S56D	4/14/2004	09:04	4.47	14.04
S57B	4/14/2004	09:08	4.48	14.03

Table 2 (continued). Water-Level Data at the STAR Center

Location	Measurement		Water Depth From Land Surface (ft)	Ground Water Elevation (ft NGVD)
	Date	Time		
S57C	4/14/2004	09:09	4.41	14.10
S57D	4/14/2004	09:09	4.45	14.06
S59B	4/14/2004	08:28	4.45	14.06
S59C	4/14/2004	08:28	4.39	14.12
S59D	4/14/2004	08:29	4.46	14.05
S60B	4/14/2004	08:22	4.53	13.98
S60C	4/14/2004	08:23	4.53	13.98
S60D	4/14/2004	08:24	4.57	13.94
S67B	4/14/2004	11:29	4.46	14.01
S67C	4/14/2004	11:28	4.42	14.05
S67D	4/14/2004	11:30	4.53	13.95
S68B	4/14/2004	10:59	4.19	13.71
S68C	4/14/2004	11:03	3.91	13.99
S68D	4/14/2004	10:58	4.19	13.71
S69B	4/14/2004	13:38	2.41	13.59
S69C	4/14/2004	13:32	2.44	13.56
S69D	4/14/2004	13:35	2.68	13.32
S70B	4/14/2004	13:46	2.90	13.80
S70C	4/14/2004	13:47	3.94	12.76
S70D	4/14/2004	13:48	3.04	13.66
S71B	4/14/2004	13:59	4.83	13.57
S71C	4/14/2004	13:56	4.72	13.68
S71D	4/14/2004	13:55	4.71	13.69
S72B	4/14/2004	13:14	4.85	13.35
S72C	4/14/2004	13:13	4.91	13.29
S72D	4/14/2004	13:11	4.92	13.28
S73B	4/14/2004	13:26	3.31	13.69
S73C	4/14/2004	13:23	3.68	13.32
S73D	4/14/2004	13:20	3.78	13.22
TE03	4/14/2004	09:57	3.17	13.83
PIN15			**Northeast Site**	
0506	4/14/2004	07:50	2.79	14.21
0507	4/14/2004	07:49	2.80	14.20
0510	4/14/2004	10:37	2.77	14.75
0513	4/14/2004	08:05	11.52	6.08
0514	4/14/2004	08:40	3.15	14.35
0515	4/14/2004	08:41	3.15	14.35
0516	4/14/2004	08:42	3.15	14.25
0518	4/14/2004	08:11	3.27	14.53
0520	4/14/2004	07:44	2.87	14.33
0523	4/14/2004	08:56	-0.50	18.50
0530	4/14/2004	08:36	3.08	14.32
0534	4/14/2004	07:45	2.96	14.34
0535	4/14/2004	08:37	3.13	14.47
0537	4/14/2004	09:16	3.91	14.69

Table 2 (continued). Water-Level Data at the STAR Center

Location	Measurement		Water Depth From Land Surface (ft)	Ground Water Elevation (ft NGVD)
	Date	Time		
0557	4/14/2004	09:13	3.78	15.32
0559	4/14/2004	10:22	4.00	14.79
0560	4/14/2004	08:52	3.21	14.79
0561	4/14/2004	08:53	3.00	15.00
0562	4/14/2004	08:20	2.92	14.88
0563	4/14/2004	08:19	2.91	14.89
0564	4/14/2004	08:17	2.47	14.73
0565	4/14/2004	08:18	2.31	14.89
0566	4/14/2004	08:35	2.85	14.65
0567	4/14/2004	08:34	3.14	14.36
0568	4/14/2004	10:04	3.86	14.64
0569	4/14/2004	10:15	3.82	14.56
0570	4/14/2004	10:40	3.56	14.42
0571	4/14/2004	10:36	2.85	14.62
0572	4/14/2004	10:34	2.89	14.62
E001	4/14/2004	07:54	1.83	14.19
M03D	4/14/2004	09:34	-0.16	18.26
M03S	4/14/2004	09:33	0.33	17.77
M12D	4/14/2004	08:08	2.87	14.33
M12S	4/14/2004	08:07	3.39	14.11
M14D	4/14/2004	08:24	2.51	15.49
M14S	4/14/2004	08:25	2.28	15.72
M16D	4/14/2004	09:07	3.07	15.13
M16S	4/14/2004	09:08	3.03	15.17
M24D	4/14/2004	08:14	3.00	14.80
M27D	4/14/2004	08:29	3.10	14.50
M27S	4/14/2004	08:30	3.18	14.42
M29D	4/14/2004	08:44	4.23	13.37
M29S	4/14/2004	08:43	3.62	13.98
M30D	4/14/2004	09:10	2.95	14.95
M30S	4/14/2004	09:11	2.77	15.03
M31D	4/14/2004	09:12	3.44	14.56
M31S	4/14/2004	09:13	3.42	14.58
M32D	4/14/2004	07:58	3.05	14.75
M32S	4/14/2004	07:59	2.61	15.19
M33D	4/14/2004	08:15	1.66	15.94
M34D	4/14/2004	09:20	3.63	14.47
M37D	4/14/2004	09:22	4.66	13.34
RW03	4/14/2004	09:45	3.60	14.30
RW04	4/14/2004	08:47	3.27	14.33
RW06	4/14/2004	09:38	3.42	14.58
RW07	4/14/2004	08:49	3.30	14.30
RW10	4/14/2004	09:39	4.38	13.52
RW12	4/14/2004	09:19	3.78	14.52
RW14	4/14/2004	08:48	3.57	14.33

Table 2 (continued). Water-Level Data at the STAR Center

Location	Measurement		Water Depth From Land Surface (ft)	Ground Water Elevation (ft NGVD)
	Date	Time		
RW15	4/14/2004	08:56	2.73	14.47
RW16	4/14/2004	08:00	3.37	14.63
RW17	4/14/2004	09:15	3.76	15.04
PIN18			**Wastewater Neutralization Area**	
0500	4/14/2004	11:03	6.91	13.19
0502	4/14/2004	13:18	5.48	14.52
0503	4/14/2004	10:10	3.59	14.09
0504	4/14/2004	11:05	4.21	15.39
0505	4/14/2004	10:07	4.26	13.62
0506	4/14/2004	10:03	3.90	13.81
0507	4/14/2004	10:12	3.59	14.14
0508	4/14/2004	11:10	4.07	15.43
0509	4/14/2004	10:06	4.17	13.66
0510	4/14/2004	10:03	3.95	13.81
0511	4/14/2004	09:47	2.53	16.27
0512	4/14/2004	09:46	2.30	16.30
0513	4/14/2004	09:47	2.45	16.35
0514	4/14/2004	10:14	3.50	14.28
0515	4/14/2004	10:21	4.11	14.30
0516	4/14/2004	10:16	4.28	14.13
0517	4/14/2004	10:25	4.30	13.95
0518	4/14/2004	10:26	4.45	13.75
0519	4/14/2004	10:23	4.50	13.78
0520	4/14/2004	11:00	4.41	13.59
0521	4/14/2004	11:01	5.23	12.87
0522	4/14/2004	10:59	5.20	12.90
0523	4/14/2004	10:51	5.47	13.93
0524	4/14/2004	10:53	5.09	13.91
0525	4/14/2004	10:52	4.94	13.96
0526	4/14/2004	09:44	2.56	16.04
RW02	4/14/2004	11:02	10.54	9.56
RW03	4/14/2004	10:50	9.93	8.37
PIN21			**Perimeter Monitoring Wells**	
0500	4/14/2004	13:03	4.65	13.45
0501	4/14/2004	13:00	4.68	13.32
0502	4/14/2004	11:16	1.61	13.59
0503	4/14/2004	11:17	1.86	13.34
0504	4/14/2004	11:07	4.21	13.39
0505	4/14/2004	11:09	3.98	13.42
0512	4/14/2004	11:05	3.97	13.33
PIN23			**Southwest Pond**	
SW01	4/14/2004	10:40		13.46
PIN37			**South Pond**	
S001	4/14/2004	10:41		13.44

Table 3. Floridan Aquifer Monitoring Well Water Elevations

Well Identification	Previous Water Level Elevation (ft, MSL)	Current Water Level Elevation (ft, MSL)
PIN15−0513	5.87	6.08
PIN12−0527	6.10	6.17
PIN12−0528	5.49	5.99

Table 4. Vertical Hydraulic Differential

Water Level Measured From	Well Identification	Water Level Elevation (ft, MSL)
Deep Surficial Aquifer	PIN15−M12D	14.33
Floridan Aquifer	PIN15−0513	6.08

Table 5. Surface Water Elevations

Pond Location	Previous Water Level Elevation (ft, MSL)	Current Water Level Elevation (ft, MSL)
East Pond	13.64	14.19
South Pond	13.06	13.44
West Pond	< 17.18[a]	< 17.18[a]
Southwest Pond	13.09	13.46

[a]The West Pond elevation was below the lowest measuring point elevation of 17.18.

Table 6. Field Measurements of Samples Collected at the STAR Center

Location	Screen Depth (ft bls)	Temperature (°C)	Specific Conductance (µmhos/cm)[a]	Turbidity (NTU)	pH	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)
PIN06		**Old Drum Storage Site**					
0500	3–13	24.32	678	1.4	6.81	5.5	0.5
0501	3–13	23.7	904	1.4	6.78	122.5	0.73
PIN09		**Incinerator Site**					
0500	3–13	25.75	1,023	1.5	6.88	-84.2	0.53
PIN10		**Incinerator Ditch**					
0500	3–13	21.79	603	14.7	6.62	28	0.6
PIN12		**Industrial Drain Leaks Bldg 100**					
0508	3–13	22.32	411	5.8	6.25	94.2	0.67
0509	3–13	23.49	1,177	6.3	6.7	65	0.49
0510	3–13	23.6	1,220	16.1	6.18	96	1.03
0511	3–13	23.63	288	14.6	6.62	84	1.54
0512	3–13	24.6	548	0.8	6.58	-36	0.21
0513	15–25	23.16	1,481	4.74	6.61	-234	1.43
0514	30–40	23.61	1,602	178	6.56	-292	0.96
0515	15–25	24.6	656	2.6	6.88	-106.4	0.23
0516	30–40	24.4	1,224	6.8	6.66	-66.6	0.22
0517	15–25	26.2	566	98.3	6.96	-107.6	0.19
0518	30–40	26.2	681	15	6.74	-26.4	0.45
0520	36–46	25.22	1,492	45.7	6.73	-19.7	0.44
0521	19.5–29.5	25.09	808	6.2	6.84	-87.4	0.57
0522	32–42	24.2	1,513	17.1	6.75	-9	0.54
0523	18–28	23.88	764	19.5	6.86	-90	0.23
0524	27–37	26.2	1,377	9.7	6.53	-60.3	0.33
0525	12–22	26.1	817	10.9	6.73	-81.1	0.27
0526	19.5–29.5	29.14	2,238	7.96	6.5	-278	1.52
0527	118–137.9	27.1	1,603	8.78	6.89	-313.5	--
0528	127–146.9	24.44	1,222	6.75	7.01	-299	2.09
S29C	14–24	22.9	937	17	6.89	-63.4	0.44
S30B	5–15	22.3	1,243	5.6	6.87	46.6	1.08
S31B	5–15	23.3	596	7.5	6.9	-34.9	0.59
S32B	5.5–15.5	22.5	1,115	8.4	6.8	-39	0.59
S33C	11–21	22.2	1,365	161	6.79	-70.2	0.41
S35B	5–15	22.5	1,704	35.1	6.56	-21.8	0.53
S36B	5–15	23.4	690	10.7	6.45	-27.6	0.66
S37B	5–15	22	878	48.2	6.87	-72	0.36
S54D	36–41	22.9	1,480	17.9	6.86	-85.4	0.74
S55B	10–19.8	23.2	544	11.5	6.81	-91.2	0.5
S55C	20.5–30.3	23.3	692	6.1	7.12	-133.9	0.33
S56B	10–19.8	22.5	1,532	18.3	7.11	-115	0.74
S56C	20.5–30.3	22.6	1,552	17.1	7.12	-116.8	0.53
S56D	31–40.8	22.7	1,643	47.4	7.06	-67.2	0.49
S57B	10–19.8	23	1,221	71.8	6.95	-93.2	--
S57C	20.5–30.3	23	1,214	19.1	6.87	-113.1	0.64

Table 6 (continued). Field Measurements of Samples Collected at the STAR Center

Location	Screen Depth (ft bls)	Temperature (°C)	Specific Conductance (µmhos/cm)[a]	Turbidity (NTU)	pH	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)
S57D	31.5–41.3	23	1,476	10.3	6.8	-46.1	0.66
S59B	10–19.8	21.3	419	157	8.47	-42.6	2.97
S59C	20.5–30.3	27.4	1,166	19.2	6.67	-151.7	--
S59D	31–40.8	21.6	819	79	9.16	-44.6	2.55
S60B	10–19.8	20.6	766	1.08	8.16	-90.3	2.34
S60C	20.5–30.3	20.5	774	78.5	7.74	-60.4	3.54
S60D	31–40.8	20.4	842	75.6	8.19	-32	3.68
S67B	10–19.83	21.3	1,216	3.1	6.84	-53	0.79
S67C	20–29.83	21.5	1,029	37.1	6.82	-56.7	0.34
S67D	30–39.83	21.3	1,186	166	6.82	-34.6	0.97
S68B	10–20	23.4	1,036	10.5	6.74	-154.7	--
S68C	18–28	24.4	1,075	55.2	6.66	-167.9	--
S68D	30–40	24.3	1,364	3.1	6.67	-172.7	--
S69B	10–20	27.5	918	94.5	6.45	-128.7	--
S69C	20–30	21.5	1,854	88.5	8.52	-67.9	3.45
S69D	30–40	27.5	1,782	7.41	6.7	-146.1	--
S70B	10–20	26.1	1,758	19.8	6.65	-172	--
S70C	20–30	27.33	1,586	74	6.61	-159	1.58
S70D	30–40	28.1	1,587	71.3	6.63	-186	1.44
S71B	10–20	26.5	1,743	68.7	6.61	-187.6	--
S71C	20–30	27.6	1,686	158	6.63	-184.8	--
S71D	30–40	27.8	1,554	>1,000	6.63	-167.8	--
S72B	10–20	29.19	2,179	15.9	6.22	-43	0.36
S72C	20–30	28.72	903	15.3	6.69	-78	0.56
S72D	30–40	29.14	1,573	11.5	6.71	-21	0.6
S73B	10–20	27.57	1,264	35.1	6.58	-105	0.17
S73C	20–30	28.67	1,951	15	6.35	-59	0.25
S73D	30–40	29.27	1,966	26.3	6.42	-62	0.28
TE03	–	26	737	2.8	6.72	-63.7	0.21
PIN15		**Northeast Site**					
0506	12–21.5	22.96	1,338	14.3	6.74	-43	0.52
0507	5–14.5	22.64	483	16.6	6.8	-35	0.42
0510	4–13.5	26.1	337	54.9	7.02	-93	1.19
0513	135–149.6	24.13	1,398	1.7	6.91	-206	1.54
0514	15.5–25.5	23.42	2,212	5.4	6.21	-13	0.52
0515	7.6–17.6	22.64	492	7.22	6.74	-42	0.38
0516	0.3–10.3	22.54	690	2.03	6.75	58	1.85
0518	23–28	23.14	1,490	12.2	6.49	-85	0.53
0520	5–14.5	23.31	450	4.51	6.58	-21	0.36
0523	5–14.5	23.5	854	8.76	6.69	-60	--
0530	5–14.5	23.38	625	19.3	6.72	-61	0.36
0534	19.5–29	24.96	1,814	12.6	6.6	16	0.4
0535	20.5–30	24.21	1,865	193	6.43	-45	0.47
0537	17.5–30	22.95	1,049	2.4	6.58	9	0.48
0557	21–31	23.54	1,068	9.58	6.58	-5	0.34

Table 6 (continued). Field Measurements of Samples Collected at the STAR Center

Location	Screen Depth (ft bls)	Temperature (°C)	Specific Conductance (µmhos/cm)[a]	Turbidity (NTU)	pH	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)
0559	22–31.5	26.88	1,473	28.6	6.73	-262	1.19
0560	19–28.5	26.1	1,181	19.6	6.52	-169.5	1.14
0561	5–14.5	24.3	1,618	1.34	6.52	-98.6	1.57
0562	20–29.5	28.3	1,232	31.1	6.72	-201.5	1.59
0563	5–14.5	27.4	1,973	2.97	6.64	-123.4	1.9
0564	20–29.5	26.7	1,602	4.84	6.72	-213.6	2.83
0565	5–14.5	25	1,038	14.8	6.69	-110.8	1.35
0566	19–28.5	31.9	1,711	869	6.61	-262.2	1.14
0567	5–14.5	30.6	1,273	16.3	6.62	-93.5	1.26
0568	10–20	24.4	1,354	16.1	6.69	-224.2	--
0569	20–30	25.6	1,428	15.5	6.59	-138.8	--
0570	20–30	26.8	2,351	75.2	6.63	-181.4	0.47
0571	10–20	26.5	944	29.3	6.78	-169.2	--
0572	20–30	27.2	1,168	32	6.69	-231.4	--
M03D	15–25	22.13	1,389	8.73	6.48	-170	1.65
M03S	2.5–12	21.47	602	16.6	6.85	-112	1.64
M12D	22.5–32.5	23.69	625	130	6.68	-93	0.39
M12S	5–14.5	22.73	306	19	6.88	12	1.64
M14D	18.5–28.5	23.4	924	42.2	6.61	-224.7	2.03
M14S	4–14	22.6	753	14.4	6.87	-151.5	3.44
M16D	18.5–28.5	23.77	890	15.5	6.65	-190	1.51
M16S	5–14.5	23.26	553	175	6.77	-235	1.17
M24D	20–30	24.2	1,295	547	6.76	-298	2.27
M27D	21–31	24.01	1,732	10.6	6.36	-41	0.62
M27S	6–16	23.11	705	7.61	6.57	40	0.52
M29D	20–30	24.14	1,134	0.99	6.47	-19	0.37
M29S	5–15	23.7	632	30.4	6.47	46	0.37
M30D	20.5–30.5	23.7	1,368	4.72	6.38	-145.9	1.31
M30S	5.5–15.5	23.5	772	2.31	6.58	-138.7	1.2
M31D	19.5–29.5	23.8	1,277	18.9	6.53	-209.8	--
M31S	4.5–14.5	23.3	995	19.6	6.7	-212.5	1.76
M32D	14–24	24.33	675	32.5	6.78	-56	0.39
M32S	3–13	23.33	623	11.9	6.74	113	1.04
M33D	20–30	24.1	691	35.3	6.76	-233.9	1.92
RW16	20–30	23.39	1,314	10.3	6.59	-87	0.71
PIN18		**Wastewater Neutralization Area**					
0500	11–16	22.3	357	8.7	7.31	-122.2	0.5
0502	11–16	22.8	720	4.7	6.84	-55.6	0.57
0503	10–20	26.12	1,003	2.28	6.6	-144	1.56
0504	13–22	23.2	624	7.1	6.94	-40	0.6
0505	10.5–20.5	25.81	776	18.5	6.77	-98	1.16
0506	12–22	25.99	347	7.19	6.92	-141	1.51
0507	27–37	27.02	1,642	17.7	6.75	-210	1.53
0508	31–41	25.4	921	7.1	6.66	-86	0.6
0509	27.5–37.5	26.92	1,535	3.53	6.77	-236	1.32

Table 6 (continued). Field Measurements of Samples Collected at the STAR Center

Location	Screen Depth (ft bls)	Temperature (°C)	Specific Conductance (µmhos/cm)[a]	Turbidity (NTU)	pH	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)
0510	27.5–37.5	26.58	1,475	15.4	6.71	-203	1.35
0511	32–42	26.4	1,337	1.4	6.79	-86.1	0.43
0512	21–31	26	1,448	3.6	6.69	-89.1	0.64
0513	12–22	24.7	778	4.4	6.71	-28.2	0.47
0514	32.5–42.5	27.3	1,555	19.8	6.59	-18.4	0.23
0515	22.5–32.5	27.3	1,329	4	6.54	-90.1	0.25
0516	12.5–22	26.4	1,315	3	6.54	-82.7	0.31
0517	31.5–41.5	27.3	1,652	4.4	6.73	26	0.23
0518	22.5–32.5	27.3	1,540	2.1	6.61	-67.1	0.24
0519	12.5–22.5	26.8	1,018	41.7	6.73	-74.3	0.32
0520	32.5–42.5	25	1,775	14.8	6.9	-15.9	0.41
0521	20–30	24.4	912	5.5	6.62	-74.2	0.7
0522	5–15	23	703	19.2	6.74	-22.9	0.4
0523	32.5–42.5	24.79	1,270	57.7	6.85	-37.2	0.46
0524	20–30	24.5	746	19	6.84	-109.5	0.37
0525	5–15	23	285	18.6	6.73	62	0.98
0526	19.5–29	23.8	622	76.7	6.59	-57.2	0.53
PIN21		**Perimeter Monitoring Wells**					
0500	7–17	24.6	688	19.6	6.7	-156.6	1.45
0501	20–28	26.1	1,489	8.24	6.64	-140.3	1.65
0502	7–17	22.9	874	1.1	6.63	-194.3	--
0503	20–28	24.5	949	12.2	6.67	-155.1	--
0504	7–17	22.15	696	19.6	6.86	-68	0.3
0505	20–28	23.42	1,051	8.29	6.76	6	0.29
0512	20–29.5	23.7	1,078	26.1	6.79	-39.6	0.73

[a]Temperature corrected to 25°C.
-- Not measured

Table 7. COPC Concentrations at the Northeast Site (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	Total 1,2-DCE[b]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[c]
FDEP MCL			**3**	**70**	**63**	**1**	**5**	**1**	**1,000**	
PIN15			**Northeast Site**							
0506	12–21.5	4/10/2003	<1	<1	ND	<1	<5	<1	<1	ND
		10/13/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/16/2004	<0.5	<0.5	ND	<0.5	1.3	<0.5	<0.5	1.3
0507	5–14.5	4/10/2003	<1	<1	ND	<1	<5	<1	<1	ND
		10/13/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/16/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
0510	4–13.5	4/15/2003	<1	<1	ND	<1	0.3JB	<1	<1	ND
		4/21/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
0513	135–149.6	4/10/2003	<1	<1	ND	<1	0.66J	<1	<1	ND
		4/15/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
0514	15.5–25.5	4/14/2003	<1	<1	ND	<1	<5	4.3	0.36J	4.3
		10/14/2003	<1	<1	ND	<1	<5	7.9	<1	7.9
		4/15/2004	<2.5	<2.5	ND	<2.5	<5	79.1	4.1J	79.1
0515	7.6–17.6	4/14/2003	<1	<1	ND	<1	0.3JB	<1	<1	ND
		10/14/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/15/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
0516	0.3–10.3	4/14/2003	<1	<1	ND	<1	0.3JB	<1	<1	ND
		10/14/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/15/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
0518	23–28	4/10/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/15/2004	<2.5	<2.5	ND	<2.5	<5	<2.5	<2.5	ND
0520	5–14.5	4/10/2003	<1	<1	ND	<1	<5	<1	<1	ND
		10/13/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/16/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
0523	5–14.5	4/15/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/16/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
0530	5–14.5	4/14/2003	<1	<1	ND	<1	0.42JB	<1	0.13J	ND
		7/16/2003	<1	<1	ND	<1	<5	<1	<1	ND
		10/14/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/15/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
0534	19.5–29	4/10/2003	<1	<1	ND	<1	0.57J	<1	<1	ND
		10/13/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/16/2004	<2.5	<2.5	ND	<2.5	<5	<2.5	<2.5	ND
0535	20.5–30	4/14/2003	<1	<1	ND	<1	<5	2.1	0.2J	2.1
		7/16/2003	<1	<1	ND	<1	<5	2.1	<1	2.1
		10/14/2003	<1	<1	ND	<1	<5	3.5	<1	3.5
		4/15/2004	<0.5	<0.5	ND	<0.5	<1	2.6	<0.5	2.6
0537	17.5–30	4/11/2003	<250	6,600	6,600	1,600	<1,200	<250	<250	8,200
		7/15/2003	0.51J	71	71	170	<12	3.6	<2.5	244.6
		10/13/2003	<2.5	7.2	7.2	76	<12	8	<2.5	91.2
		1/15/2004	364	1,340	1,340	668	<5	6	<2.5	2,378
		4/15/2004	16J	795	795	943	<20	<10	<10	1,738

Table 7 (continued). COPC Concentrations at the Northeast Site (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	Total 1,2-DCE[b]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[c]
FDEP MCL			**3**	**70**	**63**	**1**	**5**	**1**	**1,000**	
0557	21–31	4/11/2003	<1	<1	ND	3.9	<5	<1	<1	3.9
		10/10/2003	<1	<1	ND	0.31J	<5	<1	<1	ND
		4/16/2004	<0.5	<0.5	ND	2.9	<1	<0.5	<0.5	2.9
0559	22–31.5	4/15/2003	<1	<1	ND	<1	2.6J	<1	<1	ND
		7/16/2003	<1	<1	ND	<1	<5	2	<1	2
		10/15/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/17/2004	<0.5	<0.5	ND	<0.5	<1	0.61J	<0.5	ND
0560	19–28.5	4/17/2003	<1	<1	ND	<1	<5	<1	<1	ND
		5/13/2003	<1	<1	ND	<1	0.84JB	<1	<1	ND
		7/23/2003	<1	<1	ND	<1	<5	<1	<1	ND
		10/14/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/16/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
0561	5–14.5	4/17/2003	<1	<1	ND	<1	<5	<1	<1	ND
		5/13/2003	<1	<1	ND	<1	0.55JB	<1	<1	ND
		7/24/2003	<1	<1	ND	<1	<5	<1	<1	ND
		10/14/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/16/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
0562	20–29.5	4/16/2003	<1	<1	ND	0.29J	<5	<1	<1	ND
		5/14/2003	<1	<1	ND	<1	0.37JB	<1	<1	ND
		7/23/2003	<1	<1	ND	<1	<5	<1	<1	ND
		10/14/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/15/2004	<2.5	<2.5	ND	<2.5	<5	<2.5	<2.5	ND
0563	5–14.5	4/16/2003	1.4	1.5	1.5	<1	<5	0.37J	0.3J	2.9
		5/14/2003	0.92J	1.6	1.6	<1	0.41JB	0.35J	0.54J	1.6
		7/23/2003	1.1	1.8	1.8	<1	0.32J	0.21J	<1	2.9
		10/14/2003	3.5	<1	ND	<1	<5	0.1J	<1	3.5
		4/15/2004	2.8J	4J	4J	<2.5	<5	<2.5	<2.5	ND
0564	20–29.5	4/16/2003	0.12J	2.4	2.4	0.16J	<5	0.14J	<1	2.4
		5/13/2003	0.2J	0.56J	0.56J	<1	0.59JB	<1	<1	ND
		7/23/2003	<1	<1	ND	<1	<5	<1	<1	ND
		10/15/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/15/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
0565	5–14.5	4/16/2003	<1	<1	ND	<1	<5	<1	<1	ND
		5/13/2003	<1	<1	ND	<1	0.85JB	<1	<1	ND
		7/23/2003	<1	<1	ND	<1	<5	<1	<1	ND
		10/14/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/15/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
0566	19–28.5	4/16/2003	<1	<1	ND	1.5	<5	17	1.1	19.6
		5/13/2003	<1	0.35J	0.35J	5.3	0.6JB	14	1.4	20.7
		7/23/2003	<1	1.4	1.4	6	<5	1.8	1.2	10.4
		10/15/2003	<1	<1	ND	<1	<5	1	<1	1
		4/16/2004	<0.5	0.62J	0.62J	1.2	<1	0.55J	<0.5	1.2

Table 7 (continued). COPC Concentrations at the Northeast Site (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	Total 1,2-DCE[b]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[c]
FDEP MCL			3	70	63	1	5	1	1,000	
0567	5–14.5	4/16/2003	<1	2.3	2.3	0.54J	<5	<1	<1	2.3
		5/13/2003	<1	1.4	1.4	0.31J	<5	<1	<1	1.4
		7/23/2003	<1	1.3	1.3	0.38J	<5	<1	<1	1.3
		10/15/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/16/2004	0.73J	28.4	35.4	19.9	<1	3.5	<0.5	58.8
0568	10–20	4/15/2003	<1	<1	ND	<1	2.2J	<1	<1	ND
		7/21/2003	<1	<1	ND	<1	<5	<1	<1	ND
		10/15/2003	<1	<1	ND	<1	<5	<1	<1	ND
		1/15/2004	<2.5	<2.5	ND	<2.5	<5	<2.5	<2.5	ND
		4/21/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
0569	20–30	4/15/2003	<1	0.28J	0.28J	36	0.5J	4.1	0.54J	40.1
		7/21/2003	<1	<1	ND	38	<5	2.8	0.18J	40.8
		10/15/2003	<1	<1	ND	13	<5	1.8	<1	14.8
		1/16/2004	<1	<1	ND	44.9	<2	3.4	<1	48.3
		4/21/2004	<0.5	<0.5	ND	30.2	<1	1.9	<0.5	32.1
0570	20–30	4/15/2003	<1	<1	ND	<1	3.1JB	<1	<1	ND
		7/18/2003	<1	<1	ND	<1	<5	<1	0.32J	ND
		10/15/2003	<1	<1	ND	<1	<5	<1	<1	ND
		1/15/2004	<5	<5	ND	<5	<10	<5	<5	ND
		4/21/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
0571	10–20	4/16/2003	<1	<1	ND	<1	<5	<1	<1	ND
		7/21/2003	<1	<1	ND	<1	<5	<1	<1	ND
		10/15/2003	<1	<1	ND	<1	<5	<1	<1	ND
		1/15/2004	<2.5	<2.5	ND	<2.5	<5	<2.5	<2.5	ND
		4/21/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
0572	20–30	4/16/2003	<1	<1	ND	<1	<5	<1	<1	ND
		7/21/2003	<1	<1	ND	<1	<5	<1	<1	ND
		10/15/2003	<1	<1	ND	<1	<5	<1	<1	ND
		1/15/2004	<5	<5	ND	<5	<10	<5	<5	ND
		4/21/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
M03D	15–25	4/15/2003	<1	<1	ND	0.4J	0.85JB	<1	<1	ND
		10/10/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/17/2004	<2.5	<2.5	ND	<2.5	<5	<2.5	<2.5	ND
M03S	2.5–12	4/15/2003	<1	<1	ND	<1	0.33JB	<1	<1	ND
		10/10/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/17/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
M12D	22.5–32.5	4/10/2003	<1	<1	ND	<1	0.39J	<1	<1	ND
		4/15/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
M12S	5–14.5	4/10/2003	<1	<1	ND	<1	0.58J	<1	<1	ND
		4/15/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
M14D	18.5–28.5	4/15/2003	<1	<1	ND	<1	0.55JB	<1	<1	ND
		4/15/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
M14S	4–14	4/15/2003	<1	<1	ND	<1	0.32JB	<1	<1	ND
		4/15/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND

Table 7 (continued). COPC Concentrations at the Northeast Site (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	Total 1,2-DCE[b]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[c]
FDEP MCL			**3**	**70**	**63**	**1**	**5**	**1**	**1,000**	
M16D	18.5–28.5	4/11/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/17/2004	<0.5	<0.5	ND	0.58J	<1	<0.5	<0.5	ND
M16S	5–14.5	4/11/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/17/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
M24D	20–30	4/15/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/15/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
M27D	21–31	4/10/2003	<1	<1	ND	<1	0.43J	6	<1	6
		7/15/2003	<1	<1	ND	<1	<5	2.5	<1	2.5
		10/13/2003	<1	<1	ND	<1	<5	4.8	<1	4.8
		4/15/2004	<0.5	<0.5	ND	<0.5	<1	1.6	<0.5	1.6
M27S	6–16	4/10/2003	<1	<1	ND	<1	<5	<1	<1	ND
		7/15/2003	<1	<1	ND	<1	<5	<1	<1	ND
		10/13/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/15/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
M29D	20–30	4/14/2003	<1	<1	ND	<1	4.2JB	0.15J	<1	ND
		10/15/2003	<25	<25	ND	<25	<120	<25	<25	ND
		4/16/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
M29S	5–15	4/14/2003	<1	<1	ND	<1	5.5B	<1	0.42J	5.5
		10/15/2003	<25	<25	ND	<25	<120	<25	<25	ND
		4/16/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
M30D	20.5–30.5	4/11/2003	<1	2.4	2.4	32	0.41J	0.53J	<1	34.4
		10/10/2003	<5	<5	ND	390	<25	<5	<5	390
		4/16/2004	<100	8,550	8,550	2,740	<200	<100	<100	11,290
M30S	5.5–15.5	4/11/2003	<1	<1	ND	<1	<5	<1	<1	ND
		10/10/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/16/2004	<0.5	<0.5	ND	27.7	<1	<0.5	<0.5	27.7
M31D	19.5–29.5	4/14/2003	<1	<1	ND	0.21J	0.62J	0.13J	<1	ND
		7/15/2003	<1	<1	ND	6.8	<5	4.2	<1	11
		10/15/2003	<1	<1	ND	12	<5	8.4	<1	20.4
		1/15/2004	<2.5	<2.5	ND	<2.5	<5	6	<2.5	6
		4/16/2004	<2.5	<2.5	ND	21.3	<5	13	<2.5	34.3
M31S	4.5–14.5	4/14/2003	<1	<1	ND	<1	0.34J	<1	<1	ND
		7/15/2003	<1	<1	ND	<1	<5	<1	<1	ND
		10/15/2003	<1	<1	ND	<1	<5	<1	<1	ND
		1/15/2004	<2.5	<2.5	ND	<2.5	<5	<2.5	<2.5	ND
		4/16/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
M32D	14–24	4/10/2003	<1	<1	ND	<1	<5	<1	<1	ND
		7/15/2003	<1	<1	ND	<1	<5	<1	<1	ND
		10/13/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/16/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
M32S	3–13	4/10/2003	<1	<1	ND	<1	<5	<1	<1	ND
		7/15/2003	<1	<1	ND	<1	<5	<1	<1	ND
		10/13/2003	<1	<1	ND	<1	<5	<1	<1	ND
		4/16/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND

Table 7 (continued). COPC Concentrations at the Northeast Site (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	Total 1,2-DCE[b]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[c]
FDEP MCL			**3**	**70**	**63**	**1**	**5**	**1**	**1,000**	
M33D	20–30	4/15/2003	<1	<1	ND	<1	0.85JB	<1	<1	ND
		4/15/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND
RW16	20–30	4/14/2003	<25	840	840	1,200	12J	2.8J	<25	2,040
		7/15/2003	<25	610	610	1,400	<120	<25	<25	2,010
		10/15/2003	<25	340	340	890	<120	<25	<25	1,230
		1/16/2004	<5	451	451	925	<10	6.4J	<5	1,376
		4/16/2004	<2.5	65.6	65.6	388	<5	3.3J	<2.5	453.6

[a]Before December 18, 2003 "<" values are reporting limits. On or after December 18, 2003 "<" values are method detection limits.
[b]Total 1,2-DCE is the sum of cis-1,2-DCE and trans-1,2-DCE.
[c]Total COPC is the sum of the individual COPC concentrations. The cis-1,2-DCE value is not part of the total COPC value because this value is included in the total 1,2-DCE value. "J" values are not included in the total COPC value.

ND = Not detected
J = Estimated value, result is between the reporting limit and the method detection limit.
B = Analyte also found in method blank.

Table 8. COPC Concentrations at the Building 100 Area (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[b]	1,1-DCE	Vinyl chloride	Total COPC[c]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
PIN06			**Old Drum Storage Site**						
0500	3–13	4/15/2003	<1	<1	<1	ND	<1	<1	ND
		10/14/2003	<1	<1	<1	ND	<1	<1	ND
		4/22/2004	<0.5	0.82J	<0.5	0.82J	<0.5	<0.5	ND
0501	3–13	4/15/2003	<1	<1	<1	ND	<1	<1	ND
		10/15/2003	<1	<1	<1	ND	<1	<1	ND
		4/23/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
PIN09			**Incinerator Site**						
0500	3–13	4/15/2003	<1	<1	<1	ND	<1	<1	ND
		4/22/2004	<0.5	1	<0.5	1	<0.5	<0.5	1
PIN10			**Incinerator Ditch**						
0500	3–13	4/15/2003	0.25J	1.9	<1	1.9	<1	<1	1.9
		4/22/2004	0.74J	3	<0.5	3	<0.5	0.61J	3
PIN12			**Industrial Drain Leaks Bldg 100**						
0508	3–13	4/15/2003	<2.5	<2.5	<2.5	ND	<2.5	<2.5	ND
		4/22/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
0509	3–13	4/15/2003	<1	0.099J	<1	0.099J	<1	<1	ND
		10/15/2003	<1	<1	<1	ND	<1	<1	ND
		4/22/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
0510	3–13	4/15/2003	<2.5	<2.5	<2.5	ND	<2.5	<2.5	ND
		10/15/2003	<1	<1	<1	ND	<1	<1	ND
		4/23/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
0511	3–13	4/11/2003	<1	<1	<1	ND	<1	<1	ND
		4/22/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
0512	3–13	4/12/2003	<1	<1	<1	ND	<1	<1	ND
		4/17/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
0513	15–25	4/9/2003	<1	16	1.5	17.5	0.22J	37	54.5
		7/22/2003	<1	8.5	1.4	9.9	<1	27	36.9
		10/13/2003	<1	<1	1.5	1.5	<1	1.4	2.9
		1/15/2004	<2.5	<2.5	<2.5	ND	<2.5	<2.5	ND
		4/18/2004	<0.5	0.76J	2	2	<0.5	3.7	5.7
0514	30–40	4/8/2003	<1	52	29	81	<1	44	125
		4/9/2003	<2.5	56	60	116	0.34J	98	214
		7/22/2003	<1	21	58	79	<1	120	199
		10/13/2003	<1	7.2	45	52.2	<1	32	84.2
		1/13/2004	<1	8.7	31	39.7	<1	22	61.7
		1/15/2004	<2.5	13.9	32.9	46.8	<2.5	37.7	84.5
		4/18/2004	<0.5	12.4	40.3	52.7	<0.5	54.5	107.2
0515	15–25	4/12/2003	<1	<1	<1	ND	<1	<1	ND
		4/17/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND

Table 8 (continued). COPC Concentrations at the Building 100 Area (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[b]	1,1-DCE	Vinyl chloride	Total COPC[c]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
0516	30–40	4/12/2003	<1	<1	<1	ND	<1	<1	ND
		4/17/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
0517	15–25	4/12/2003	<1	<1	<1	ND	<1	<1	ND
		10/13/2003	<1	<1	<1	ND	<1	<1	ND
		4/17/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
0518	30–40	4/12/2003	<1	<1	<1	ND	<1	0.84J	ND
		10/13/2003	<1	<1	<1	ND	<1	<1	ND
		4/17/2004	<2.5	<2.5	<2.5	ND	<2.5	<2.5	ND
0520	36–46	4/15/2003	<1	9.9	<1	9.9	<1	57	66.9
		10/14/2003	<1	<1	<1	ND	<1	32	32
		4/22/2004	<0.5	<0.5	<0.5	ND	<0.5	21.1	21.1
0521	19.5–29.5	4/15/2003	0.77J	1.5	<1	1.5	<1	0.68J	1.5
		10/15/2003	0.66J	0.98J	0.23J	1.21J	<1	0.5J	ND
		4/22/2004	1.7	2.2	<0.5	2.2	<0.5	1.9	5.8
0522	32–42	4/15/2003	<2.5	<2.5	<2.5	ND	<2.5	<2.5	ND
		10/15/2003	<1	<1	<1	ND	<1	<1	ND
		4/23/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
0523	18–28	4/15/2003	<1	0.6J	<1	0.6J	<1	<1	ND
		10/15/2003	<1	<1	<1	ND	<1	<1	ND
		4/23/2004	<0.5	0.79J	<0.5	0.79J	<0.5	0.61J	ND
0524	27–37	4/12/2003	<100	4,900	23J	4,900	150	300	5,350
		7/22/2003	<100	7,900	14J	7,900	170	800	8,870
		10/13/2003	230	6,900	<100	6,900	<100	400	7,530
		4/17/2004	1,220	5,990	<50	5,990	207	1,040	8,457
0525	12–22	4/12/2003	<1	3.4	<1	3.4	<1	<1	3.4
		7/22/2003	<1	2.7	<1	2.7	<1	0.22J	2.7
		10/13/2003	<1	0.48J	<1	0.48J	<1	<1	ND
		4/17/2004	<0.5	2.3	<0.5	2.3	<0.5	<0.5	2.3
0526	19.5–29.5	4/8/2003	<1	53	30	83	<1	53	136
		4/9/2003	<1	8	3.6	11.6	<1	3.2	14.8
		7/18/2003	<1	2.2	1	3.2	<1	<1	3.2
		10/10/2003	<1	4.4	2.1	6.5	<1	1.2	7.7
		1/13/2004	<1	9.4	3.4	12.8	<1	3	15.8
		1/15/2004	<2.5	12.9	3.7J	12.9	<2.5	<2.5	12.9
		4/17/2004	<0.5	2.5	1.3	3.8	<0.5	1.6	5.4
0527	118–137.9	4/9/2003	<1	<1	<1	ND	<1	<1	ND
		4/21/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
0528	127–146.9	4/11/2003	<1	<1	<1	ND	<1	<1	ND
		4/18/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND

Table 8 (continued). COPC Concentrations at the Building 100 Area (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[b]	1,1-DCE	Vinyl chloride	Total COPC[c]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
RW01	19–29	4/7/2003	7,200	3,500	45J	3,500	<250	900	11,600
		10/2/2003	6,800	4,200	<100	4,200	<100	650	11,650
		1/7/2004	5,840	3,360	50.4	3,410.4	36.2	727	10,013.6
		4/6/2004	6,130	2,940	70.2	3,010.2	51.8	845	10,037
RW02	25–35	4/7/2003	660	720	47	767	18J	76	1,503
		10/2/2003	530	840	76	916	<25	75	1,521
		1/7/2004	778	888	68.4	956.4	25.2	136	1,895.6
		4/6/2004	499	674	74.3	748.3	25.7	92.1	1,365.1
S29C	14–24	5/9/2003	<1	5.7	5.5	11.2	<1	34	45.2
		10/8/2003	<1	19	6.4	25.4	<1	48	73.4
		3/31/2004	<0.5	9.8	7.1	16.9	<0.5	52.3	69.2
S30B	5–15	5/9/2003	1,900	27,000	880	27,880	140J	2,000	31,780
		10/8/2003	160J	11,000	370	11,370	<250	1,600	12,970
		3/31/2004	77.3	2,600	120	2,720	<25	40.9J	2,797.3
S31B	5–15	5/8/2003	<1	0.36J	<1	0.36J	<1	<1	ND
		10/8/2003	<1	<1	<1	ND	<1	<1	ND
		3/31/2004	<0.5	0.59J	<0.5	0.59J	<0.5	<0.5	ND
S32B	5.5–15.5	5/9/2003	<1	22	0.74J	22	0.65J	4.9	26.9
		10/8/2003	<1	<1	<1	ND	<1	<1	ND
		3/31/2004	<0.5	4.6	<0.5	4.6	<0.5	1.4	6
S33C	11–21	5/9/2003	7.9J	980	68	1,048	6.4J	1,400	2,448
		10/8/2003	<25	1,300	90	1,390	<25	2,400	3,790
		3/31/2004	13.4	233	163	396	6.7	1,920	2,336.1
S35B	5–15	5/9/2003	49,000	110,000	11,000	121,000	<1,000	20,000	190,000
		10/8/2003	16,000	68,000	4,500	72,500	<1,000	13,000	101,500
		3/31/2004	15,700	62,900	6,200	69,100	<500	17,800	102,600
S36B	5–15	5/8/2003	<1	<1	<1	ND	<1	<1	ND
		3/31/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
S37B	5–15	5/9/2003	57	720	14	734	<10	310	1,101
		3/31/2004	<5	379	<5	379	<5	191	570
S54D	36–41	5/12/2003	11,000	59,000	<1,000	59,000	370J	4,600	74,600
		4/1/2004	11,000	33,600	280J	33,600	596	4,100	49,296
S55B	10–19.8	5/12/2003	<50	2,000	<50	2,000	<50	19,000	21,000
		4/1/2004	<10	1,130	16.1J	1,130	<10	8,910	10,040
S55C	20.5–30.3	5/12/2003	<100	8,300	18J	8,300	<100	1,900	10,200
		4/1/2004	<25	4,940	47.3J	4,940	<25	1,390	6,330
S56B	10–19.8	5/12/2003	28	40	0.12J	40	0.76J	6.5	74.5
		4/1/2004	31	199	2.3	201.3	2.7	29.1	264.1
S56C	20.5–30.3	5/12/2003	38	64	0.26J	64	0.81J	7.3	109.3
		4/1/2004	23.9	125	1.9	126.9	2	16.7	169.5
S56D	31–40.8	5/12/2003	30	56	0.22J	56	1	12	99
		4/1/2004	32.8	157	2.2	159.2	2.4	17.6	212

Table 8 (continued). COPC Concentrations at the Building 100 Area (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[b]	1,1-DCE	Vinyl chloride	Total COPC[c]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
S57B	10–19.8	5/12/2003	460	510	1.1J	510	20	100	1,090
		4/1/2004	<1	3.1	<1	3.1	<1	1.5J	3.1
S57C	20.5–30.3	5/12/2003	30,000	34,000	86J	34,000	2,400	13,000	79,400
		4/1/2004	10,900	21,200	<250	21,200	1,020	11,000	44,120
S57D	31.5–41.3	5/12/2003	17	440	1.7J	440	9.1J	720	1,177
		4/1/2004	48.5	438	6.9J	438	16.9	407	910.4
S59B	10–19.8	4/9/2003	0.99J	0.73J	<1	0.73J	<1	0.58J	ND
		4/15/2004	<0.5	0.58J	<0.5	0.58J	<0.5	1.1	1.1
S59C	20.5–30.3	4/9/2003	<1	10	<1	10	<1	8	18
		4/15/2004	<0.5	7.1	<0.5	7.1	<0.5	17.3	24.4
S59D	31–40.8	4/8/2003	<1	<1	<1	ND	<1	<1	ND
		4/15/2004	<2.5	<2.5	<2.5	ND	<2.5	<2.5	ND
S60B	10–19.8	4/9/2003	<1	4.8	<1	4.8	1	1.2	7
		4/15/2004	<0.5	4.9	<0.5	4.9	0.74J	1.9	6.8
S60C	20.5–30.3	4/9/2003	<1	<1	<1	ND	<1	<1	ND
		4/15/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
S60D	31–40.8	4/9/2003	<1	<1	<1	ND	<1	<1	ND
		4/15/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
S67B	10–19.83	4/9/2003	<10	47	4.5J	47	<10	450	497
		7/22/2003	<10	40	<10	40	<10	660	700
		4/15/2004	<0.5	33.2	5.3	38.5	<0.5	518	556.5
S67C	20–29.83	4/9/2003	<10	720	130	850	4.4J	260	1,110
		7/22/2003	<10	520	81	601	<10	200	801
		4/15/2004	<5	519	104	623	<5	415	1,038
S67D	30–39.83	4/9/2003	<2.5	160	35	195	1.4J	82	277
		7/22/2003	<2.5	210	27	237	1.7J	100	337
		4/15/2004	<0.5	105	23.1	128.1	1.3	91.6	221
S68B	10–20	4/11/2003	<1	<1	<1	ND	<1	<1	ND
		7/22/2003	<1	<1	<1	ND	<1	<1	ND
		10/13/2003	<1	<1	<1	ND	<1	<1	ND
		4/22/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
S68C	18–28	4/11/2003	<1	3	<1	3	<1	5.2	8.2
		7/22/2003	<1	2	<1	2	<1	1.7	3.7
		10/13/2003	<1	4.3	<1	4.3	<1	5.7	10
		4/22/2004	<0.5	4	<0.5	4	<0.5	5.3	9.3
S68D	30–40	4/11/2003	<1	93	0.38J	93	<1	91	184
		7/22/2003	<1	78	<1	78	<1	63	141
		10/13/2003	<1	84	3.4	87.4	<1	77	164.4
		4/22/2004	<0.5	58.9	1.1	60	<0.5	55.7	115.7
S69B	10–20	4/10/2003	<1	0.18J	<1	0.18J	<1	<1	ND
		7/18/2003	<1	<1	<1	ND	<1	<1	ND
		10/10/2003	<1	<1	<1	ND	<1	<1	ND
		4/22/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND

Table 8 (continued). COPC Concentrations at the Building 100 Area (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[b]	1,1-DCE	Vinyl chloride	Total COPC[c]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
S69C	20–30	4/10/2003	<1	0.11J	<1	0.11J	<1	0.26J	ND
		7/18/2003	<1	<1	<1	ND	<1	<1	ND
		10/10/2003	<1	<1	<1	ND	<1	<1	ND
		4/22/2004	<0.5	0.91J	<0.5	0.91J	<0.5	1.1	1.1
S69D	30–40	4/10/2003	<1	0.41J	<1	0.41J	<1	<1	ND
		7/18/2003	<1	<1	<1	ND	<1	<1	ND
		10/10/2003	<1	<1	<1	ND	<1	<1	ND
		4/22/2004	<0.5	1.6	<0.5	1.6	<0.5	<0.5	1.6
S70B	10–20	4/10/2003	<1	29	0.24J	29	<1	31	60
		7/21/2003	<1	28	0.52J	28	<1	30	58
		10/10/2003	<1	29	<1	29	<1	24	53
		4/18/2004	<0.5	27.4	0.6J	27.4	<0.5	33.7	61.1
S70C	20–30	4/10/2003	<1	29	8.8	37.8	0.52J	14	51.8
		7/21/2003	<1	28	8.5	36.5	0.52J	12	48.5
		10/10/2003	<1	29	8.1	37.1	<1	11	48.1
		4/18/2004	<0.5	24.3	8	32.3	0.79J	17.1	49.4
S70D	30–40	4/10/2003	<1	13	4	17	<1	3.2	20.2
		7/21/2003	<1	11	3.8	14.8	<1	1.8	16.6
		10/10/2003	<1	13	2.5	15.5	<1	0.26J	15.5
		4/18/2004	<0.5	11.2	4.2	15.4	<0.5	5.8	21.2
S71B	10–20	4/9/2003	<1	3.7	1.1	4.8	<1	0.53J	4.8
		7/21/2003	<1	8.5	3.8	12.3	<1	1.6	13.9
		10/10/2003	<1	10	3	13	<1	0.33J	13
		4/22/2004	<0.5	2.4	1.4	3.8	<0.5	<0.5	3.8
S71C	20–30	4/9/2003	<1	100	53	153	1.1	94	248.1
		7/21/2003	<2.5	120	64	184	0.83J	140	324
		10/10/2003	<2.5	120	52	172	<2.5	160	332
		4/22/2004	<0.5	67.5	35.3	102.8	1.7	59.3	163.8
S71D	30–40	4/9/2003	<1	4.1	0.64J	4.1	<1	0.74J	4.1
		7/21/2003	<1	3.2	0.44J	3.2	<1	<1	3.2
		10/10/2003	<1	3.4	<1	3.4	<1	<1	3.4
		4/22/2004	<0.5	6.1	1.6	7.7	<0.5	2	9.7
S72B	10–20	4/10/2003	<1	<1	<1	ND	<1	<1	ND
		7/22/2003	<1	<1	<1	ND	<1	<1	ND
		10/9/2003	<1	<1	<1	ND	<1	<1	ND
		4/22/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
S72C	20–30	4/10/2003	<1	0.2J	<1	0.2J	<1	<1	ND
		7/21/2003	<1	<1	<1	ND	<1	<1	ND
		10/9/2003	<1	<1	<1	ND	<1	<1	ND
		4/22/2004	<0.5	0.81J	<0.5	0.81J	<0.5	<0.5	ND

Table 8 (continued). COPC Concentrations at the Building 100 Area (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[b]	1,1-DCE	Vinyl chloride	Total COPC[c]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
S72D	30–40	4/10/2003	<1	<1	<1	ND	<1	<1	ND
		7/21/2003	<1	<1	<1	ND	<1	<1	ND
		10/9/2003	<1	<1	<1	ND	<1	<1	ND
		4/22/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
S73B	10–20	4/9/2003	<1	<1	<1	ND	<1	<1	ND
		7/22/2003	<1	<1	<1	ND	<1	<1	ND
		10/9/2003	<1	<1	<1	ND	<1	<1	ND
		1/15/2004	<2.5	<2.5	<2.5	ND	<2.5	<2.5	ND
		4/22/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
S73C	20–30	4/8/2003	<1	24	11	35	<1	15	50
		4/9/2003	<1	32	14	46	0.23J	25	71
		7/22/2003	<1	28	14	42	<1	18	60
		10/7/2003	<1	26	11	37	<1	9	46
		1/13/2004	<1	20	8.9	28.9	0.39J	11	39.9
		1/15/2004	<2.5	20.7	9.6	30.3	<2.5	10.7	41
		4/22/2004	<0.5	14	10.1	24.1	<0.5	13.8	37.9
S73D	30–40	4/9/2003	<1	1.1	0.18J	1.1	<1	0.33J	1.1
		7/22/2003	<1	0.94J	<1	0.94J	<1	<1	ND
		10/7/2003	<1	<1	<1	ND	<1	<1	ND
		1/15/2004	<2.5	<2.5	<2.5	ND	<2.5	<2.5	ND
		4/22/2004	<0.5	1.7	0.65J	1.7	<0.5	<0.5	1.7
TE03	–	4/12/2003	<1	<1	<1	ND	<1	5.2	5.2
		4/17/2004	<2.5	<2.5	<2.5	ND	<2.5	9	9
PIN21			**Perimeter Monitoring Wells**						
0500	7–17	4/9/2003	<1	<1	<1	ND	<1	<1	ND
		4/20/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
0501	20–28	4/9/2003	<1	1.3	<1	1.3	<1	<1	1.3
		4/20/2004	<0.5	2.4	<0.5	2.4	<0.5	<0.5	2.4
0502	7–17	4/11/2003	<1	<1	<1	ND	<1	<1	ND
		7/18/2003	<1	<1	<1	ND	<1	<1	ND
		10/9/2003	<1	<1	<1	ND	<1	<1	ND
		4/21/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
0503	20–28	4/11/2003	<1	<1	<1	ND	<1	<1	ND
		7/18/2003	<1	<1	<1	ND	<1	<1	ND
		10/9/2003	5.2	8.7	<1	8.7	<1	<1	13.9
		4/21/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
0504	7–17	4/11/2003	<1	<1	<1	ND	<1	<1	ND
		7/18/2003	<1	<1	<1	ND	<1	<1	ND
		10/13/2003	<1	<1	<1	ND	<1	<1	ND
		4/22/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND

Table 8 (continued). COPC Concentrations at the Building 100 Area (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[b]	1,1-DCE	Vinyl chloride	Total COPC[c]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
0505	20–28	4/11/2003	<1	<1	<1	ND	<1	<1	ND
		7/18/2003	<1	<1	<1	ND	<1	<1	ND
		10/13/2003	<1	<1	<1	ND	<1	<1	ND
		4/22/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND
0512	20–29.5	4/11/2003	<1	0.82J	<1	0.82J	<1	1.9	1.9
		7/17/2003	<1	0.43J	<1	0.43J	<1	<1	ND
		10/9/2003	<1	<1	<1	ND	<1	1.3	1.3
		4/21/2004	<0.5	3	<0.5	3	<0.5	4.9	7.9

[a]Before December 18, 2003 "<" values are reporting limits. On or after December 18, 2003 "<" values are method detection limits.
[b]Total 1,2-DCE is the sum of cis-1,2-DCE and trans-1,2-DCE.
[c]Total COPC is the sum of the individual COPC concentrations. The cis-1,2-DCE and trans-1,2-DCE values are not part of the total COPC value because these values are included in the total 1,2-DCE value. "J" values are not included in the total COPC value.

ND = Not detected
J = Estimated value, result is between the reporting limit and the method detection limit.
B = Analyte also found in method blank.

Table 9. COPC Concentrations at the Wastewater Neutralization Area (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	Vinyl chloride	Arsenic	Total COPC[b]
FDEP MCL			**1**	**50**	
PIN18			**Wastewater Neutralization Area**		
0500	11–16	4/14/2003	<1	110	110
		7/17/2003	--	85	85
		10/14/2003	--	93	93
		1/16/2004	--	76.4	76.4
		4/21/2004	<0.5	68.1	68.1
0502	11–16	4/14/2003	<1	53	53
		7/17/2003	--	58	58
		10/14/2003	--	84	84
		1/16/2004	--	30.4	30.4
		4/21/2004	<0.5	28.7	28.7
0503	10–20	4/12/2003	<1	4.2J	ND
		10/11/2003	--	<10	ND
		4/17/2004	<0.5	<3.5	ND
0504	13–22	4/14/2003	<1	5J	ND
		10/14/2003	--	<10	ND
		4/21/2004	<0.5	<3.5	ND
0505	10.5–20.5	4/12/2003	<1	6.8J	ND
		10/11/2003	--	<10	ND
		4/17/2004	<0.5	<3.5	ND
0506	12–22	4/12/2003	<1	3.9J	ND
		10/11/2003	--	<10	ND
		4/17/2004	<0.5	<3.5	ND
0507	27–37	4/12/2003	<1	5.5J	ND
		10/11/2003	--	<10	ND
		4/17/2004	<0.5	<3.5	ND
0508	31–41	4/14/2003	<1	5J	ND
		10/14/2003	--	<10	ND
		4/20/2004	<0.5	<3.5	ND
0509	27.5–37.5	4/12/2003	<1	5.5J	ND
		10/11/2003	--	<10	ND
		4/17/2004	<0.5	<3.5	ND
0510	27.5–37.5	4/12/2003	<1	5.1J	ND
		10/11/2003	--	<10	ND
		4/17/2004	0.52J	<3.5	ND
0511	32–42	4/12/2003	<1	5.7J	ND
		4/21/2004	<0.5	<3.5	ND
0512	21–31	4/12/2003	<1	3.6J	ND
		4/21/2004	<0.5	<3.5	ND
0513	12–22	4/12/2003	<1	4J	ND
		4/21/2004	<0.5	<3.5	ND
0514	32.5–42.5	4/12/2003	<1	4.6J	ND
		4/17/2004	<0.5	<3.5	ND

Table 9 (continued). COPC Concentrations at the Wastewater Neutralization Area (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	Vinyl chloride	Arsenic	Total COPC[b]
FDEP MCL			**1**	**50**	
0515	22.5–32.5	4/12/2003	<1	<10	ND
		4/17/2004	<0.5	<3.5	ND
0516	12.5–22	4/12/2003	<1	3.3J	ND
		4/17/2004	<0.5	<3.5	ND
0517	31.5–41.5	4/12/2003	<1	4.6J	ND
		4/17/2004	<0.5	<3.5	ND
0518	22.5–32.5	4/12/2003	<1	<10	ND
		4/17/2004	<0.5	<3.5	ND
0519	12.5–22.5	4/12/2003	1	3.4J	1
		4/17/2004	4.9	<3.5	4.9
0520	32.5–42.5	4/14/2003	<1	<10	ND
		4/19/2004	<0.5	<3.5	ND
0521	20–30	4/14/2003	<1	3.9J	ND
		7/17/2003	--	<10	ND
		10/14/2003	--	6.4J	ND
		1/16/2004	--	<3.5	ND
		4/19/2004	<0.5	6.4B	ND
0522	5–15	4/14/2003	<1	38	38
		7/17/2003	--	33	33
		10/14/2003	--	13	13
		1/16/2004	--	26.9	26.9
		4/19/2004	<0.5	9.6B	ND
0523	32.5–42.5	4/14/2003	5.6	<10	5.6
		7/16/2003	--	<10	ND
		10/14/2003	--	<10	ND
		1/16/2004	--	<3.5	ND
		4/19/2004	<0.5	<3.5	ND
0524	20–30	4/14/2003	<1	25	25
		7/16/2003	--	22	22
		10/14/2003	--	26	26
		1/16/2004	--	27.6	27.6
		4/19/2004	<0.5	19.4	19.4
0525	5–15	4/14/2003	<1	120	120
		7/16/2003	--	130	130
		10/14/2003	--	66	66
		1/16/2004	--	112	112
		4/19/2004	<0.5	117	117
0526	19.5–29	4/12/2003	<1	7.7J	ND
		4/21/2004	<0.5	<3.5	ND

Table 9 (continued). COPC Concentrations at the Wastewater Neutralization Area (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	Vinyl chloride	Arsenic	Total COPC[b]
FDEP MCL			**1**	**50**	
RW02	10–20	4/7/2003	<1	81	81
		7/22/2003	<1	150	150
		10/2/2003	<1	130	130
		1/7/2004	--	36.3	36.3
		1/16/2004	<0.5	--	ND
		4/6/2004	<0.5	50.7	50.7
RW03	9–24	4/7/2003	<1	71	71
		7/22/2003	<1	41	41
		10/2/2003	<1	32	32
		1/7/2004	--	37.4	37.4
		1/16/2004	<0.5	--	ND
		4/6/2004	<0.5	48.3	48.3
RW0501	11–16	7/22/2003	<1	160	160
		10/2/2003	<1	140	140
		1/7/2004	--	131	131
		1/16/2004	<0.5	--	ND
		4/6/2004	<0.5	147	147

[a]Before December 18, 2003 "<" values are reporting limits. On or after December 18, 2003 "<" values are method detection limits.
[b]Total COPC is the sum of the individual COPC concentrations. "J" values or "B"-qualified arsenic values are not included in the total COPC value.

ND = Not detected
-- = Not measured
J = Estimated value, result is between the reporting limit and the method detection limit.
B = For inorganics: result is between the instrument detection limit and the reporting limit.

Table 10. Relative Percent Difference (RPD) for Duplicate Samples

Sample ID	Duplicate ID	Case Number	Constituent	S[a]	D[b]	RPD Value	5 times RL[c]	Fail[d]
PIN12–0513	PIN12–0610	F23522	1,1-Dichloroethane	16.5	16.7	1.2	2.5	
			Chloroethane	9.9	0.5	180.8	5	Fail
			cis-1,2-Dichloroethene	0.76	0.72	5.4	2.5	
			trans-1,2-Dichloroethene	2	1.8	10.5	2.5	
			Vinyl chloride	3.7	3.4	8.5	2.5	
PIN12–S56B	PIN12–0611	F23227	1,1-Dichloroethene	2.7	3.1	13.8	5	
			cis-1,2-Dichloroethene	199	277	32.8	5	Fail
			trans-1,2-Dichloroethene	2.3	2.6	12.2	5	
			Trichloroethene	31	34.1	9.5	5	
			Vinyl chloride	29.1	31.1	6.6	5	
PIN12–S67D	PIN12–0612	F23505	1,1-Dichloroethane	4.6	4.6	0.0	2.5	
			1,1-Dichloroethene	1.3	1.9	-9.4	2.5	
			cis-1,2-Dichloroethene	105	104	0.2	5	
			trans-1,2-Dichloroethene	23.1	22.9	0.2	2.5	
			Vinyl chloride	91.6	89.9	0.5	5	
PIN12–S70D	PIN12–0613	F23522	1,1-Dichloroethane	2.7	2.6	3.8	2.5	
			cis-1,2-Dichloroethene	11.2	11.1	0.9	2.5	
			trans-1,2-Dichloroethene	4.2	4.4	4.7	2.5	
			Vinyl chloride	5.8	6.1	5.0	2.5	
PIN15–M12D	PIN15–0610	F23505	VOCs ND					
PIN18–0512	PIN18–0650	F23610	VOCs ND					
			Arsenic ND					
PIN18–0521	PIN18–0651	F23610	cis-1,2-Dichloroethene	2	1.9	5.1	2.5	
			Vinyl chloride	0.25	0.95	116.7	2.5	
			Arsenic ND					
PIN21–0501	PIN21–0550	F23610	cis-1,2-Dichloroethene	2.4	2.6	8.0	2.5	

[a]S = Original sample (N001), VOC concentrations in μg/L and metals in mg/L.
[b]D = Duplicate sample (N002), VOC concentrations in μg/L and metals in mg/L.
[c]RL = Reporting limit.
[d]Fail

Volatiles "Fail" when the RPD is greater than ± 30% and the concentration is more than 5 times the reporting limit. Metals "Fail" when the samples are more than 5 times the reporting limit and the RPD is greater than 20%. For metals samples that are less than 5 times the reporting limit the difference must be less than ± the reporting limit (this includes the case when only one of the duplicate/sample values is less than 5 times the reporting limit).

Table 11. Summary of Analytical Results for the Building 100 Area Treatment System (reported in micrograms per liter unless otherwise noted)[a]

Location[b]	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[c]	1,1-DCE	Vinyl chloride	Total COPC[d]	$CaCO_3$ mg/L	Fe mg/L
PIN12		**Industrial Drain Leaks Bldg 100**								
TRTI	5/5/2004	210	1,690	41.4	1,731.4	24	242	2,207.4	334	4.7
	5/10/2004	377	1,120	22	1,142	11.8	105	1,635.8	349	4.2
	5/11/2004	1,060	1,210	22	1,232	<10	123	2,415	373	5.7
	5/13/2004	1,520	1,320	30	1,350	11.2J	157	3,027	359	5.11
	5/14/2004	1,410	1,350	28.6	1,378.6	12J	104	2,892.6	373	5.3
	5/18/2004	1,530	1,810	41.6	1,851.6	18.2J	180	3,561.6	360	6.11
	5/25/2004	82.4	440	28.7	468.7	<10	59.7	610.8	348	6.18
	6/1/2004	84.7	463	32.7	495.7	<10	48.2	628.6	341	6.1
	6/9/2004	105	637	43.4	680.4	11.2	54.3	850.9	339	6.2
TRTE	5/5/2004	<0.5	2.8	<0.5	2.8	<0.5	<0.5	2.8	332	4.65
	5/10/2004	<0.5	1.4	<0.5	1.4	<0.5	<0.5	1.4	346	4.35
	5/11/2004	0.59J	1.6	<0.5	1.6	<0.5	<0.5	1.6	368	5.14
	5/13/2004	0.52J	0.59J	<0.5	0.59J	<0.5	<0.5	ND	351	4.87
	5/14/2004	<0.5	0.53J	<0.5	0.53J	<0.5	<0.5	ND	386	5.41
	5/18/2004	0.89J	3.6	<0.5	3.6	<0.5	<0.5	3.6	359	5.03
	5/25/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	363	6.27
	6/1/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	339	6.21
	6/9/2004	<0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	336	6.1

[a]"<" values are method detection limits.
[b]TRTI is the system influent and TRTE is the system effluent.
[c]Total 1,2-DCE is the sum of cis-1,2-DCE and trans-1,2-DCE
[d]Total COPC is the sum of the individual COPC concentrations. The cis-1,2-DCE value is not part of the total COPC value because this value is included in the total 1,2-DCE value. "J" values are not included in the total COPC value.

J = Estimated value, result is between the reporting limit and the method detection limit.
ND = Not detected.

Table 12. Summary of Analytical Results for Ground Water Samples Collected at the Northeast Site Treatment System
(reported in micrograms per liter unless otherwise noted)[a]

Location[b]	Date Sampled	TCE	cis-1,2-DCE	Total 1,2-DCE[c]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[d]	$CaCO_3$ mg/L	Fe mg/L
PIN15		**Northeast Site**									
INF1	4/6/2004	989	1,840	1,853.9	802	1,720	6.8J	194	5,558.9	435	3.63
	4/20/2004	1,320	1,020	1,042.9	202	<10	<5	<5	2,564.9	379	5.06
EFF1	4/6/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND	446	3.09
	4/20/2004	<0.5	<0.5	ND	<0.5	<1	<0.5	<0.5	ND	371	4.12

[a]"<" values are method detection limits.
[b]INF1 is the system influent and EFF1 is the system effluent.
[c]Total 1,2-DCE is the sum of cis-1,2-DCE and trans-1,2-DCE.
[d]Total COPC is the sum of the individual COPC concentrations. The cis-1,2-DCE value is not part of the total COPC value because this value is included in the total 1,2-DCE value. "J" values are not included in the total COPC value.

J = Estimated value, result is between the reporting limit and the method detection limit.
ND = Not detected.

Table 13. Historical Summary of Ground Water Recovery at the Northeast Site and Building 100

Report Date	Quarterly (gallons)	Cumulative Total To Date (gallons)
April–June 1997	356,886	356,886
July–September 1997	1,899,871	2,256,757
October–December 1997	2,265,460	4,522,217
January–March 1998	2,358,081	6,880,298
April–June 1998	1,693,697	8,573,995
July–September 1998	0	8,573,995
October–December 1998	0	8,573,995
January–March 1999	848,912	9,422,907
April–June 1999	1,985,705	11,408,612
July–September 1999	2,158,568	13,567,180
October–December 1999	2,285,471	15,852,651
January–March 2000	1,670,059	17,522,710
April–June 2000	2,031,821	19,554,531
July–September 2000	2,728,441	22,282,972
October–December 2000	2,416,705	24,699,677
January–March 2001	2,977,868	27,677,545
April–June 2001	2,452,063	30,129,608
July–September 2001	2,262,233	32,391,841
October–December 2001	2,374,065	34,765,906
January–March 2002	2,449,505	37,215,411
April–June 2002	2,119,164	39,334,575
July–September 2002	2,211,860	41,546,435
October−December 2002	1,830,987	43,377,422
January−March 2003	2,183,650	45,561,072
April−June 2003	2,216,297	47,777,369
July−September 2003	2,518,733	50,296,102
October−December 2003	1,908,278	52,204,380
January−March 2004	2,242,490	54,446,870
April−June 2004	274,912	54,721,782

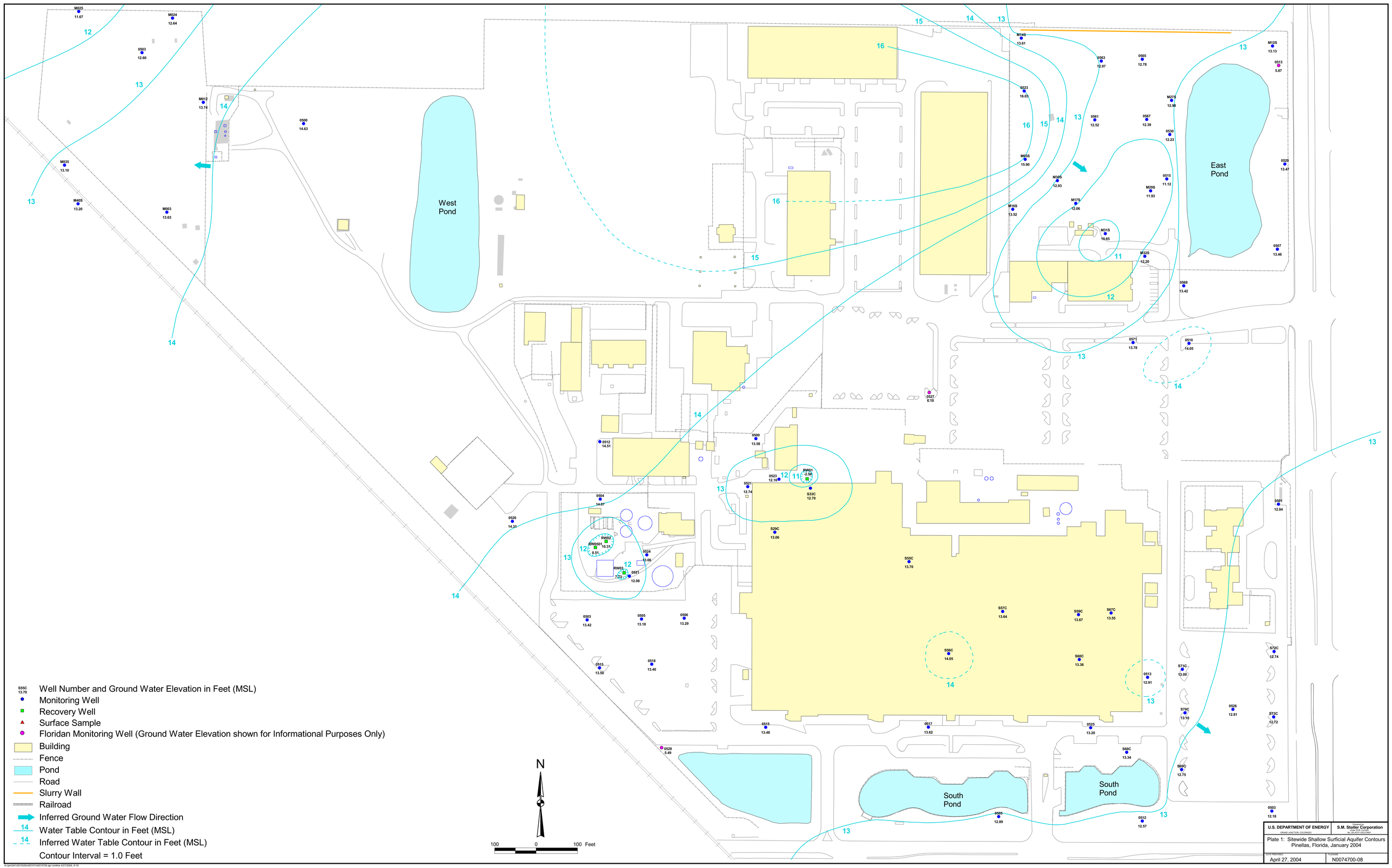
Note: This table represents historical volumes of ground water processed by the Northeast Site ground water treatment system. The system was shut off permanently on April 26, 2004. Based on this, a new table will be created for the next quarterly report that will summarize ground water recovery at the new Building 100 ground water treatment system. Accordingly, the above table will no longer be updated after this report.

Table 14. Estimated Mass of VOCs Recovered from the Northeast Site and Building 100 Recovery Wells During April, May, and June 2004

Month	Volume Treated (gallons)	Concentration[a]						
		cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Toluene (µg/L)	TCE (µg/L)	Methylene Chloride (µg/L)	Vinyl Chloride (µg/L)	Total VOCs (µg/L)
April 2004	274,912	1,430.0	18.4	98.3	1,154.5	862.5	502.0	4,065.7
May 2004	86,959	1,277.1	30.6	3.6	884.2	7.3	138.7	2,341.6
June 2004	101,531	550.0	38.1	3.8	94.9	7.5	51.3	745.4

Month	Volume Treated (gallons)	Recovery[b]						
		cis-1,2-DCE (lbs)	trans-1,2-DCE (lbs)	Toluene (lbs)	TCE (lbs)	Methylene Chloride (lbs)	Vinyl Chloride (lbs)	Total VOCs (lbs)
April 2004	274,912	3.3	0.0	0.2	2.7	2.0	1.2	9.3
May 2004	86,959	0.9	0.0	0.0	0.6	0.0	0.1	1.7
June 2004	101,531	0.5	0.0	0.0	0.1	0.0	0.0	0.6

[a]These concentrations represent the average of weekly sampling results.
[b]Includes "J" (estimated) values. For any detection of "<", which indicates the laboratory could not detect that analyte, 50 percent of the "<" value was used for the calculation of recovery.



U.S. DEPARTMENT OF ENERGY
GRAND JUNCTION, COLORADO

S.M. Stoller Corporation
GRAND JUNCTION, COLORADO
AN ITEC ACQUI COMPANY

Plate 1: Sitewide Shallow Surficial Aquifer Contours
Pinellas, Florida, January 2004

DATE PREPARED: April 27, 2004

FIGURE: N0074700-08

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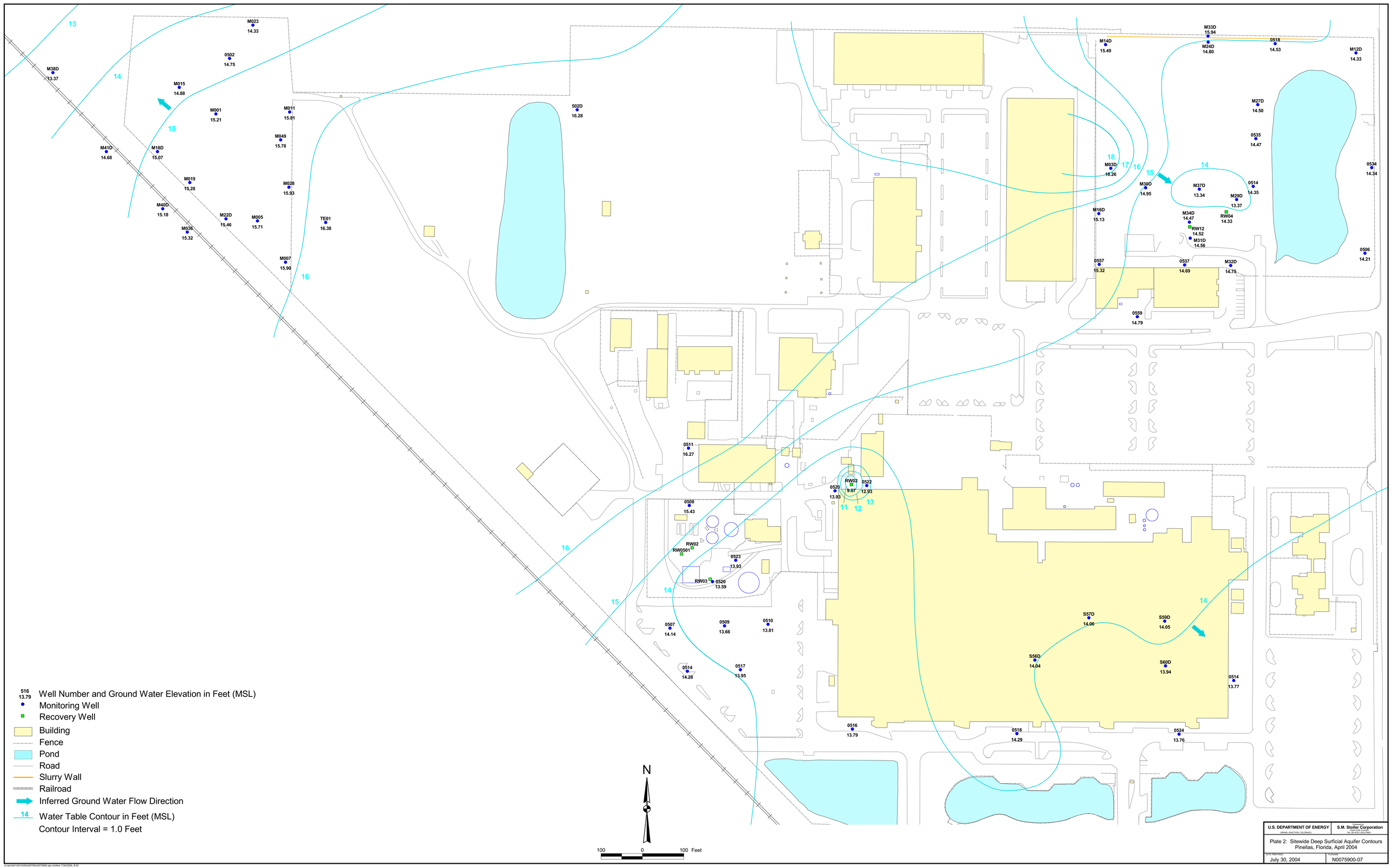

U.S. DEPARTMENT OF ENERGY	S.M. Stoller Corporation
GRAND JUNCTION, COLORADO	GRAND JUNCTION, COLORADO No. DE-ACO1-02GJ79491

Plate 2: Sitewide Deep Surficial Aquifer Contours
Pinellas, Florida, April 2004

DATE REVISED	FILENAME
July 30, 2004	N0075900-07

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Appendix A

Laboratory Reports—April 2004 Quarterly Results

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Click here to view technical report F23505
Click here to view technical report F23522
Click here to view technical report F23610
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Appendix B

Laboratory Reports for
Northeast Site Treatment System—April through June 2004

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Appendix C

Laboratory Reports for WWNA—April through June 2004

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Click here to view technical report F23902
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