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Pinellas County, Florida, Site Environmental Restoration Project

Long-Term Surveillance and Maintenance Plan for the Pinellas Site

September 2016

U.S. DEPARTMENT OF ENERGY | Legacy Management

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Abbreviations

bls	below land surface
CFR	*Code of Federal Regulations*
CMIP	Corrective Measures Implementation Plan
CMS	Corrective Measures Study
COPC	contaminant of potential concern
CTL	cleanup target level
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DRC	Declaration of Restrictive Covenant
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
FAC	*Florida Administrative Code*
FDEP	Florida Department of Environmental Protection
FOIA	Freedom of Information Act
FS	*Florida Statutes*
ft	feet
ft/day	feet per day
ft/ft	feet per foot
ft/yr	feet per year
HSWA	Hazardous and Solid Waste Amendments
IATA	International Air Transport Association
ICs	institutional controls
IWNF	Industrial Wastewater Neutralization Facility
LDA	large-diameter auger
LM	Office of Legacy Management
LMS	Legacy Management Support
LTS&M	Long-Term Surveillance and Maintenance
MCL	maximum contaminant level
mg/L	milligrams per liter
NAPL	nonaqueous-phase liquid
NARA	National Archives and Records Administration
NEPA	National Environmental Policy Act

PCIC	Pinellas County Industrial Council
POTW	Publicly Owned Treatment Works
RBCA	Risk-Based Corrective Action
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
SRCO	Site Rehabilitation Completion Order
STAR Center	Young - Rainey Science, Technology, and Research Center
SWMU	solid-waste management unit
USC	*United States Code*
VOCs	volatile organic compounds
WWNA	Wastewater Neutralization Area

Executive Summary

This Long-Term Surveillance and Maintenance Plan (LTS&M Plan) for the Pinellas Environmental Restoration Project was developed to document the process and requirements for the long-term care, or legacy management, of the U.S. Department of Energy (DOE) restoration sites at the Young - Rainey STAR Center (Science, Technology, and Research Center) and the adjacent 4.5 Acre Site at the Pinellas County, Florida, Site.

This LTS&M Plan includes a brief summary of the site history and the remedial actions that have been conducted. The plan discusses the regulatory basis for the site, including the applicable permits, agreements, and regulatory requirements. It describes the status of the site, including hydrogeology, contaminant distribution, and site controls. It explains how DOE will conduct long-term surveillance and maintenance at the site, including periodic inspections, environmental monitoring, and records and data management. Discussions also include the institutional controls (ICs) DOE has implemented at the site and how these controls will be monitored. The appendixes to this LTS&M Plan include the Site Monitoring Plan, ICs documentation, permits, agreements, the annual inspection checklist, contact lists, the Site Closure Strategy, and Site Rehabilitation Completion Orders.

1.0 Introduction

This Long-Term Surveillance and Maintenance (LTS&M) Plan for the Pinellas Environmental Restoration Project was developed to document the process and requirements for the long-term care, or legacy management, of the U.S. Department of Energy (DOE) restoration sites at the Young - Rainey STAR Center (Science, Technology, and Research Center) and the adjacent 4.5 Acre Site at the Pinellas County, Florida, Site. This plan describes site background information (Section 3), regulatory basis (Section 4), site conditions (Section 5), LTS&M activities (Section 6), and the site Institutional Controls (ICs) Plan (Section 7). Supporting information includes the Site Monitoring Plan (Appendix A), ICs documentation (Appendix B), the Hazardous and Solid Waste Amendments (HSWA) permit (Appendix C), the 4.5 Acre Site Remediation Agreement (Appendix D), an inspection checklist (Appendix E), a contact list (Appendix F), the Site Closure Strategy (Appendix G), a waste determination letter (Appendix H), and Site Rehabilitation Completion Orders for the Northeast Site and WWNA (Appendix I).

The former DOE Pinellas Plant consisted of the property currently known as the STAR Center and the property adjacent to the western boundary known as the 4.5 Acre Site. The Pinellas Plant was constructed in the mid-1950s as part of a nationwide nuclear weapons research, development, and production complex. The 99-acre STAR Center is in Pinellas County to the northwest of the intersection of Bryan Dairy Road and Belcher Road in Largo, Florida (Figure 1). The address is 7887 Bryan Dairy Road, Largo, Florida 33777. The facility lies in the northeast quarter of Section 13, Township 30 South, Range 15 East.

The facility, while owned by DOE, primarily manufactured weapons parts, including radioisotope-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) (EPA 1988) at the site to gather information on potential releases of hazardous materials. In February 1990, EPA issued a HSWA permit to DOE, enabling DOE to investigate and perform remediation activities in areas contaminated by hazardous materials resulting from DOE operations. The HSWA permitting and corrective action process is discussed in Section 4.1.1.

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 dissolved, and ownership of the STAR Center changed to the Pinellas County government.

Administration of DOE activities at the facility is the responsibility of the DOE Office of Legacy Management (LM). The DOE Legacy Management Support (LMS) contractor 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 1990 HSWA permit identified 15 sites at the former DOE facility that potentially had environmental contamination as a result of past activities. Upon completion of the RCRA Facility Investigation (RFI) (DOE 1991b), 11 of the 15 SWMUs were recommended by DOE and approved by EPA Region 4 and the Florida Department of

Environmental Protection (FDEP) for no further action (DOE 1994). A 12th site, the Former Pistol Range Site, was remediated in 1993, and subsequently EPA Region 4 and FDEP approved DOE's recommendation for no further action.

Two additional SWMUs, the West Fenceline Site and the Wastewater Neutralization Area/Building 200 (WWNA), 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, after which DOE recommended, and EPA Region 4 and FDEP approved, no further action. A Corrective Measures Study (CMS)/Corrective Measures Implementation Plan (CMIP) (DOE 1997a) was prepared and submitted in 1997 to EPA Region 4 and FDEP to address the contamination at the WWNA/Building 200 Area.

FDEP executed Conditional Site Rehabilitation Completion Orders (SCRO) for the Northeast Site and the WWNA on July 27, 2016, stating that no further action is required for those SWMUs. The Building 100 Area comprises the only two active SWMUs at the STAR Center.

The 4.5 Acre Site is a former part of the Pinellas Plant located to the west of the STAR Center (Figure 2). This parcel was owned by DOE from 1957 to 1972, when it was sold to a private landowner. During the period of DOE ownership, the property was used for disposal of drums of waste resins and solvents. The 4.5 Acre Site is being remediated as a voluntary cleanup under a remediation agreement between DOE and FDEP. This agreement was signed in 2001 and allows DOE to arrange access to the property until cleanup of contaminated groundwater in the surficial aquifer is complete. Administration of DOE activities at the 4.5 Acre Site is the responsibility of LM.

2.0 Purpose and Scope

Remedial actions have been completed at the STAR Center and the 4.5 Acre Site. These remedial actions are protective of future land use; however, they do not allow for unlimited use and unrestricted exposure in all areas. This LTS&M Plan explains how DOE will fulfill its obligation to manage residual hazards at the site over the long term. As defined by the DOE guidance document *Long-Term Stewardship Planning Guidance for Closure Sites* (DOE 2002), long-term stewardship refers to all activities necessary to ensure protection of human health and the environment. These activities include, but are not limited to, "all engineered and institutional controls designed to contain or to prevent exposure to residual contamination and waste, such as surveillance activities, record-keeping activities, inspections, groundwater monitoring, pump-and-treat activities, cap repair, maintenance of entombed buildings or facilities, maintenance of other barriers and contained structures, access control, and posting signs."

The term "stewardship" has been superseded by the term "surveillance and maintenance" in this document and by DOE policy. The term "surveillance and maintenance" now includes the same activities formerly defined by the term "stewardship" and encompasses the activities of an Operations and Maintenance Plan under RCRA and the Comprehensive Environmental Response, Compensation, and Liability Act. This LTS&M Plan also serves as the ICs Plan to meet state regulatory requirements.

LTS&M tasks at the site include the following.

Tasks currently ongoing:

- Conducting long-term monitoring of any media necessary to demonstrate the performance, effectiveness, or protectiveness of the remedies.
- Identifying and implementing actions to optimize remedies and LTS&M activities.
- Identifying and meeting all regulatory requirements for the post-remedial action site conditions.
- Ensuring that budgeting and personnel requirements are appropriate to sustain LTS&M needs.
- Ensuring that public involvement, including education, outreach, notice, and informational systems, is appropriate to sustain the long-term effectiveness of the remedies.
- Ensuring that information and records management requirements are appropriate and are designed to be sustained over the long term.
- Developing all plans, manuals, and reports, including revisions to these documents, that are either required or appropriate to conduct the LTS&M activities.
- Conducting maintenance, inspection, and enforcement of the land and groundwater use restrictions and other ICs necessary for the protectiveness of the remedies.

Tasks that will or might be conducted in the future:

- Conducting operation, inspection, and maintenance of the engineered controls, if engineering controls are implemented.

3.0 Background

This section discusses the background and remedial action history for each SWMU at the STAR Center and the 4.5 Acre Site.

3.1 Northeast Site

The Northeast Site is located in the northeast corner of the STAR Center (Figure 2). In the late 1960s, before construction of the East Pond in 1968, drums of waste and construction debris were disposed of in the swampy area in the northeast corner of the Pinellas Plant. In 1986, an expansion of the East Pond was initiated to create additional storm-water retention capacity, but excavation activities ceased when contamination was detected directly west of the pond. EPA identified the Northeast Site as an SWMU (PIN15) (EPA 1992). An Interim Corrective Measures Study (DOE 1991a) was developed and submitted to EPA, and approval of that document was received in October 1991.

An interim groundwater recovery system for the Northeast Site was installed, and operation commenced in January 1992. The groundwater treatment system, as initially installed, consisted of four recovery wells equipped with pneumatic recovery pumps, a holding tank, centrifugal transfer pumps, and approximately 2500 feet (ft) of transfer and secondary containment piping.

Recovered groundwater was transferred to the 4.5 Acre Site for treatment. During 1993, DOE proposed a reconfigured system for the site consisting of four shallow and three deep recovery wells. After EPA approved the upgrade, the system was reconfigured and became operational on March 1, 1994.

Between August and October 1995 a portion of the Northeast Site was excavated to remove debris, drums of waste, 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 1996e).

In 1996, DOE submitted the *Northeast Site Corrective Measures Implementation Plan* (DOE 1996d) to EPA Region 4 and FDEP, and 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) was identified as the best available technology. The pump-and-treat system included a pretreatment system for iron removal, an air-stripper unit, and a tank for holding treated groundwater before discharge to the STAR Center Industrial Wastewater Neutralization Facility (IWNF) before transfer to the Publicly Owned Treatment Works (POTW). The treatment system was constructed in early 1997 and became operational by July 1997, processing groundwater from seven Northeast Site recovery wells and two Building 100 Area recovery wells.

The recovery well network evolved over time as some of the older wells were abandoned and new wells installed. The pump-and-treat system operated until April 2004. At that time, the system was decommissioned in preparation for a nonaqueous-phase liquid (NAPL) remediation project. The above-ground portion of the pump-and-treat system was removed, and the recovery wells and the subsurface hydrogeologic barrier were abandoned in place.

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 the Innovative Treatment Remediation Demonstration group of regulatory and industry members to evaluate remedial options at the STAR Center.

NAPLs were identified in a few monitoring and recovery wells in 1998. An *Interim Measures Work Plan for Remediation of Non-Aqueous Phase Liquids at the Northeast Site* (DOE 2001) was submitted to FDEP in late November 2001. The purpose of this document was to present the plan to remediate NAPLs at two areas (NAPL Areas A and B) of the Northeast Site using a thermal remediation method. FDEP approved this document on January 10, 2002.

Construction of the NAPL Area A treatment system began in late May 2002; system startup occurred on September 26, 2002; and treatment was completed on February 28, 2003. The *Northeast Site Area A NAPL Remediation Final Report* (DOE 2003a) describes the thermal remediation of Area A.

Construction of the NAPL Area B treatment system began in July 2004 and was completed in early August 2005. Operations began on August 16, 2005. NAPL treatment was completed on August 29, 2006. The *Final Report Northeast Site Area B NAPL Remediation Project at the*

Young - Rainey STAR Center, Largo, Pinellas County, Florida (DOE 2007a) describes Area B remediation.

Monitoring wells were installed at the former NAPL areas to monitor the remaining dissolved-phase plumes. Groundwater samples from a few of the wells installed at the Northeast Site continued to show high concentrations of contaminants. Soil samples were collected from 12 soil borings in August 2007 to evaluate the potential for contaminant source remaining in the subsurface at these locations. Results indicated high contaminant concentrations in soil at most of these borings, so a second phase of sampling was conducted in March and April 2008, during which samples were collected from 45 soil borings. Ten additional borings were sampled in May, and 11 more were sampled in June. These 78 soil borings defined two areas containing a source of contamination.

DOE prepared an interim remedial action plan for the soil excavation using a large-diameter auger (LDA) and offsite disposal of soil in accordance with the Risk-Based Corrective Action (RBCA) regulations and submitted the document to FDEP in August 2008. This plan was approved on August 22, 2008. The objective of this interim remedial action was to remove the source of contamination at the site. An engineering design was developed, and a source removal subcontract was awarded in 2008. Source removal in the form of LDA excavation began on January 14, 2009, and was completed on May 22, 2009. Two hundred forty-three large-diameter and 352 small-diameter borings were completed. Approximately 8387 cubic yards of soil were excavated; of this total, 4667 cubic yards were removed as clean overburden, and 3720 cubic yards of contaminated soils were removed, characterized for waste disposal, and disposed of as nonhazardous waste at a RCRA Subtitle D landfill.

As a follow-up to the LDA work, emulsified soybean oil and the microorganism *Dehalococcoides mccartyi* were injected into the subsurface at 75 points at the site in January and February 2010. The *Injection of Emulsified Soybean Oil at the Northeast Site and 4.5 Acre Site* (DOE 2010) was prepared to describe the work involved in this task. This project resulted in a significant decrease in contaminant mass and concentration around the former contaminant source areas and in the downgradient contaminant plume.

With completion of the LDA project to remove the contaminant source material and the follow-up enhanced bioremediation around the previous source areas to treat any residual contaminants located outside the excavation areas, DOE proceeded to close the site under the FDEP's RBCA rules (*Florida Administrative Code* Chapter 62-780.680 [FAC 62-780.680]). The *Closure Monitoring Plan for the Northeast Site and 4.5 Acre Site* (DOE 2009a) describes the closure monitoring that is necessary under RBCA, according to the requirements for post active remediation monitoring (FAC 62-780.750). Closure monitoring was initiated with the September 2009 sampling event and completed with the September 2012 sampling event. Contaminants of potential concern (COPCs) concentrations decreased significantly over this period.

DOE submitted the *Site Rehabilitation Completion Report with No Further Action Proposal for the Northeast Site* (DOE 2013a) to FDEP in May 2013. That document proposed a risk-based closure for the Northeast Site under the State's RBCA regulations. FDEP tentatively approved that document pending finalization of ICs. An IC in the form of a Declaration of Restrictive Covenant (DRC) was finalized in September 2015 (Appendix B). FDEP executed a Conditional

SRCO for the Northeast Site on July 27, 2016, stating that no further action is required once all existing monitoring wells are plugged and abandoned. The specified wells were abandoned on June 22, 2016, as approved by FDEP in anticipation of the Conditional SRCO. The SRCO is included in Appendix I.

3.2 Building 100 Area

The Building 100 Area is made up of two SWMUs: the Industrial Drain Leaks/Building 100 (PIN12) and the Old Drum Storage Site (PIN06). The Industrial Drain Leaks/Building 100 Area lies beneath and adjacent to the northwest corner of the main building, which covers approximately 11 acres, located near the southeast corner of the STAR Center (Figure 2). Building 100 is the most notable feature of the STAR Center, having housed the majority of the laboratory and production facilities during DOE ownership of the facility. Building 100 contained individual drain systems used for health physics, chemical, sanitary, and storm-water wastes. Leaks from these drain systems caused some of the contamination at the Building 100 Area. The drain systems were flushed, grouted, and abandoned by 1997, and some of the chemical drain systems were replaced by an aboveground system that currently is in use (DOE 1997b).

The Old Drum Storage Site is located at the northwest corner of the Building 100 Area and is the former location of a concrete storage pad. This area was equipped with a drain and containment system and was used to store hazardous waste. The waste stored at this location included methylene chloride, ignitable liquids, arsenic, and calcium chromate solids. Empty drums containing residual waste solvents also were stored in this area.

An RFI was conducted in 1991 at the Pinellas Plant to fulfill the requirements of the HSWA permit, and an RFI report was produced in 1991. A subsequent RFI report addendum was completed in March 1992. Based on the findings in these two documents, in accordance with the HWSA permit, EPA notified DOE of the requirement for a CMS for the Old Drum Storage Site and the Industrial Drain Leaks/Building 100 SWMUs.

The CMS report for the Industrial Drain Leaks/Building 100 and Old Drum Storage Site proposed remediation of these two SWMUs together (collectively referred to as the Building 100 Area). The report was submitted to EPA and was subsequently approved on June 9, 1994. FDEP approved the CMS report on January 18, 1995.

The CMS report concluded that pump-and-treat with the recovered groundwater sent to the Northeast Site treatment system was the preferred corrective measure for the Building 100 Area. This conclusion was based on shallow monitoring well data that suggested contamination was confined to shallow groundwater at the northwest corner of the building. The *Building 100 Corrective Measures Implementation Plan* (DOE 1996a) describes the installation, operations, and monitoring of two recovery wells at the northwest corner of the building in 1995.

These recovery wells, PIN12-RW01 and -RW02, extracted groundwater and pumped the water through secondary containment piping to the Northeast Site treatment system for pretreatment, air stripping, and discharge to the STAR Center's IWNF before transfer to the POTW.

Subsequent to recovery well installation, additional investigations were conducted by installing monitoring wells at multiple depths both outside the building and through the floor of the building. In 1996, these investigations were summarized in the *Building 100 Subsurface Investigation, Phases I, II, and III* (DOE 1996c) and the *Building 100 Area Data Report* (DOE 1996b). Results of these investigations indicated that significant contaminant concentrations were present at shallow, intermediate, and deep depths in the surficial aquifer under the building and that low levels of contamination were present at the south and east sides of the building. The *Building 100 Area Data Report* made the following recommendations:

- Continue operating the two recovery wells installed under the CMS/CMIP
- Conduct additional characterization under the building and east of the building
- Perform additional contaminant transport modeling
- Evaluate the potential for occurrence of dense NAPLs

The recommendations were addressed in the Building 100 Area CMIP Addendum (DOE 1998). The Northeast Site treatment system was decommissioned in April 2004 before thermal NAPL remediation at NAPL Area B, so a smaller air-stripper treatment system was installed at the Northeast Site to treat the groundwater recovered via the two Building 100 Area recovery wells.

A pilot test study was conducted in 2003 to determine the effectiveness of biological enhancement for this site. Results of the pilot test, although positive, did not result in significant elimination of vinyl chloride in low-concentration areas.

The *Building 100 Area Corrective Measures Study Report Addendum* was finalized in July 2006 (DOE 2006). The document concluded that DOE's original remediation objective of meeting maximum contaminant levels (MCLs) throughout the contaminant plume does not appear to be reasonable given current knowledge of the site. At that time, it appeared that containment of the contaminant plume had been achieved, and it was determined that human health and the environment were protected.

The document proposed that ICs be placed on the site property to prevent inappropriate groundwater use and the MCLs for site-related COPCs be applied as groundwater cleanup goals outside the IC boundary. Because the two existing groundwater recovery wells did not contribute significantly to either contaminant plume containment or mass removal, DOE also proposed shutting down these wells and the associated treatment system. Operation of these recovery wells and treatment system was terminated on August 21, 2006, with the approval of FDEP.

An interim remedial action plan was submitted to FDEP in March 2009 and approved in July 2009. The plan detailed the use of groundwater pumping to collect hydraulic information for a feasibility study to identify the most appropriate groundwater plume management technology for the Building 100 Area. One recovery well was installed and operated from July 2009 through May 2011. The contaminated groundwater captured by this well was transported to an onsite air stripper for treatment and subsequently discharged to the STAR Center's IWNF.

Pinellas County Utilities and Pinellas County Public Works initiated major utility line and road construction efforts, respectively, along both Bryan Dairy and Belcher Roads that started in July 2011. When DOE was informed of this upcoming work in 2007, DOE installed new monitoring wells in this area in October 2007 and in January and February 2008 to further define

the plume. This investigation confirmed that the plume was offsite south of Bryan Dairy Road, on the county right-of-way. DOE performed the required notification to FDEP regarding the offsite plume.

Additional delineation since this time has confirmed that the contaminant plume extends south of Bryan Dairy Road onto the properties at 8040 Bryan Dairy Road, 10980 Belcher Road, and 10950 Belcher Road. The required offsite plume notifications for these properties were submitted to FDEP. Permanent monitoring wells were installed in the offsite areas in May 2011 to monitor the stability of the plume.

Additional delineation of the eastern plume at the Building 100 Area was conducted in 2011 and 2012. This work identified a contaminant plume extending from under the eastern edge of Building 100, past the eastern STAR Center property boundary under Belcher Road, and onto the property at 11111 Belcher Road. DOE performed the required notification to FDEP regarding the offsite plume. Elevated concentrations of 1,4-dioxane were measured during this work and, as a result, that compound was added as a COPC for the Building 100 Area.

DOE evaluated the effect that the Building 100 Area contaminant plume might have upon water line installation and road construction activities along the east and south sides of the STAR Center and chose to capture and treat groundwater produced by the County's dewatering contractor during waterline replacement and road construction activities. DOE began treating this water in July 2011, and treatment ended in January 2012. The extracted groundwater was transported to an onsite air stripper for treatment, and the treated water was discharged to the STAR Center's IWNF and subsequently discharged to the POTW. DOE also notified STAR Center personnel and Pinellas County Utilities regarding the discovery and potential discharge of 1,4-dioxane, which is not readily removed by air stripping. Routine monitoring of the treated effluent indicated that 1,4-dioxane concentrations were acceptable for discharge to Pinellas County Utilities.

The *Building 100 Area Site Assessment Report* (DOE 2012) summarizes the results of the plume delineation work conducted at the Building 100 Area and the adjacent private properties from 2007 to 2012. The action proposed in this document is to conduct plume stability monitoring of both the onsite and offsite plumes, and plume stability monitoring began with the March 2013 sampling event.

After the fourth plume stability monitoring event in September 2014, DOE determined that contaminant concentrations in the south plume were increasing and that remediation to treat both the south and east plumes should be implemented. The *Interim Corrective Measure Work Plan for Source and Plume Treatment at the Building 100 Area* (DOE 2014) was submitted to FDEP on October 2, 2014. The objective of this work is to inject emulsified soybean oil and the microorganism *Dehalococcoides mccartyi* (formerly known as *Dehalococcoides ethenogenes*) to enhance contaminant biodegradation in (1) the dissolved-phase contaminant plumes downgradient from the building on the STAR Center property, (2) the dissolved-phase contaminant plumes located on the offsite properties, and (3) the contaminant source areas and the high-concentration dissolved-phase contaminant plumes beneath the building.

The injection of emulsified soybean oil and *Dehalococcoides mccartyi* in the dissolved-phase plumes on the STAR Center property was conducted in October and November 2014, and

injection of these same amendments was conducted on three offsite properties in February 2015. Amendment injection beneath the building was conducted in November 2015.

With the implementation of enhanced bioremediation at the Building 100 Area, plume stability monitoring was suspended and replaced with performance monitoring of the remediation project. The March 2015 sampling event was the first performance monitoring sampling event. Performance monitoring is described in detail in the Site Monitoring Plan (Appendix A).

3.3 WWNA

The WWNA/Building 200 Area (PIN18) includes the STAR Center's IWNF, the area south of the facility (including the parking lot), and Building 200 (Figure 2). In April 1993, the WWNA and the Building 200 Area were identified as potential SWMUs, and an RFA was conducted (EPA 1994). The RFA recommended that the WWNA and Building 200 be considered one SWMU. RFI field activities began in September 1994 and included soil characterization, monitoring well installation, and groundwater sampling. Arsenic was identified as the major COPC. Trichloroethene and vinyl chloride were detected at low concentrations in groundwater and were subsequently dismissed as COPCs once their concentrations decreased below cleanup levels.

A CMS/CMIP report (DOE 1997a) was completed in 1997 for this SWMU. The recommended remediation alternative for the WWNA/Building 200 Area was groundwater recovery with the Building 100 Area wells and an additional recovery well located in the WWNA. The CMIP recommended that the recovery well in the WWNA/Building 200 Area withdraw surficial aquifer groundwater directly from the arsenic plume, thereby reducing contaminant mass and preventing contaminant migration. It also recommended that the recovered water be discharged directly to the STAR Center's IWNF.

DOE conducted extensive sampling and analysis of soil in an effort to locate the source of arsenic contamination. Elevated levels of arsenic were identified at several locations and at various depths within the SWMU. A treatability study was conducted to determine the leachability of arsenic from the soil into the groundwater. The study concluded that arsenic leachability from the soil was very limited, as demonstrated by a measured average soil/water distribution coefficient of 63 liters per kilogram. DOE then conducted a statistical evaluation of arsenic soil data that resulted in the proposal to excavate two areas where the highest concentrations of arsenic were identified.

This proposal was approved by FDEP in September 1999. An excavation plan was developed to address logistics, sampling and analytical concerns, and waste management issues regarding the generation of contaminated media. That document and the statistical evaluation are included in the WWNA/Building 200 CMIP Addendum (DOE 2000). Excavation of the two areas was completed in early October 1999. Subsequently, the existing recovery well was abandoned, and two recovery wells were installed to continue plume control in the area. In addition, a third recovery well was created in 2003 by converting the monitoring well with the highest arsenic concentration (PIN18-0501) to a recovery well.

On December 20, 2005, DOE received concurrence from FDEP to shut down the groundwater recovery system and begin monitoring to determine a closure approach through

FDEP's RBCA regulations, promulgated by the Florida Legislature in 2003. The 1-year RBCA closure monitoring program specified by FDEP began in October 2005 and was completed in October 2006.

A No Further Action with Controls proposal was submitted to FDEP on March 14, 2007, and FDEP approved the document on May 24, 2007. Site closure is awaiting finalization of ICs.

After the No Further Action with Controls proposal was submitted, FDEP expressed concern about arsenic exceeding the residential standard in shallow soils (less than 2 ft deep). The goal of the 1999 soil excavation was to remove the areas containing the highest arsenic concentrations so that the remaining soils met the industrial cleanup target level (CTL) of 12 milligrams per kilogram. Soils containing arsenic concentrations above the residential CTL of 2.1 milligrams per kilogram were left in place because site use was solely industrial. In response to FDEP's concerns, DOE determined that the best course of action was to identify the area where the residential arsenic standard is exceeded and apply ICs that prohibit future residential development in this area and also ensure that excavated soil is disposed of properly.

A DRC was completed in September 2015 (Appendix B). FDEP executed an SRCO for the Wastewater Neutralization Area on July 27, 2016, stating that no further action is required once all existing monitoring wells are plugged and abandoned. The specified wells were abandoned on June 23, 2016, as approved by FDEP in anticipation of the Conditional SRCO. The SRCO is included in Appendix I.

3.4 4.5 Acre Site

The 4.5 Acre Site (PIN20) is located adjacent to the northwest property boundary of the STAR Center (Figure 2). During a 1984 investigation of past waste disposal practices at the Pinellas Plant, DOE determined that drummed waste had been buried at the 4.5 Acre Site in about 1962 (DOE 1987). In 1985 the U.S. Geological Survey conducted an electromagnetometer survey to ascertain whether drums were present in the subsurface at the 4.5 Acre Site, and this survey identified two areas that could contain buried metallic objects. A more detailed survey conducted in 1985 by HAZTECH using a proton magnetometer confirmed the results of the U.S. Geological Survey study and also identified a few other small areas of potential buried metallic objects (HAZTECH 1985). A subsequent excavation by HAZTECH in June 1985 removed 83 drums from the subsurface; 34 drums were partially or completely full when removed, 16 drums were completely empty, and the remaining 33 drums were found crushed and empty (HAZTECH 1985).

Following drum removal, the first remedial action implemented at the 4.5 Acre Site was groundwater pumping, with extracted groundwater being discharged directly to the Pinellas Plant's IWNF. This system used seven recovery wells (R001 through R007) that were screened in the lower half of the surficial aquifer, starting at 15–18 ft below land surface (bls) and extending to near the bottom of the surficial aquifer at 25–28 ft bls. This system began operation in December 1988 but was shut down temporarily in January 1989 because contaminant concentrations in the discharged water exceeded permit limits. An air stripper was added to the system to treat the water prior to discharge, and this system operated from May 1990 to July 1997.

This groundwater recovery system effectively decreased the extent of the contaminant plume and significantly reduced contaminant concentrations in groundwater (by orders of magnitude at many locations). The air stripper treated approximately 11,125 pounds of volatile organic compounds (VOCs) during its operation, but this amount includes an unknown but likely significant amount of VOCs in groundwater recovered from another part of the Pinellas Plant, the Northeast Site. Operation of this system was discontinued because the rate of contaminant mass recovery had decreased, and it was believed that a more aggressive remediation system was necessary to remove the remaining contaminant mass.

The second remedial action, dual-phase extraction, operated from August 1997 to August 1999. This system consisted of 22 wells that extracted groundwater and vapor from the subsurface. These wells were screened over the entire saturated thickness of the surficial aquifer, starting at approximately 5 ft bls. Each well had a vacuum extraction tube installed to approximately 22 ft bls. The system removed approximately 185 pounds of VOCs from the subsurface during its 2 years of operation. Operation of this system was discontinued because contaminant removal rates were lower than expected.

The third remedial action, biosparging, operated from September 1999 to May 2003. The purpose of this action was to inject air into the subsurface to convert aquifer conditions from reducing and anaerobic to oxidizing and aerobic to facilitate contaminant biodegradation. The biosparge system consisted of three horizontal wells at 24 ft bls, one through the southwestern contaminated area and two through the eastern contaminated area, connected to blowers at the surface. Biosparge performance evaluations conducted in 2002 and 2003 indicated that the system had not been effective at reducing contaminant concentrations for two main reasons: (1) the small particle size of the aquifer matrix resulted in air channeling through preferential pathways, limiting air contact with most of the matrix, and (2) high oxygen demand in the subsurface prevented attainment of aerobic conditions within a realistic time frame. Biosparge operations were discontinued in May 2003. The three horizontal wells were abandoned in August 2005 by grouting the entire length of each well.

The fourth remedial action was a pump-and-treat system, started in April 2004, to control the contaminant plume located near the western site boundary until a final site remedy could be determined. The system consisted of three recovery wells, each with a 20 ft screened interval, located along the western side of the site. Recovered groundwater was sent to an onsite, shallow tray air stripper for treatment. In December 2005, FDEP approved the cessation of this action and the initiation of a 2-year monitoring period to evaluate the potential for closing the site under RBCA.

Upon treatment system shutdown in December 2005, DOE began a 2-year closure monitoring program as required by FDEP to confirm the stability of the groundwater contaminant plume, in accordance with RBCA rules. Groundwater concentrations for the previous few years had shown a stable or declining trend at most monitoring locations. However, during the first year of closure monitoring, an increasing trend in levels of trichloroethene, dichloroethene, and vinyl chloride concentrations was observed in several wells and in particular in two wells located approximately 60 ft from the southwest property boundary.

On the basis of these results, DOE decided to conduct a detailed characterization of soil in the area of high groundwater contaminant concentrations to determine if a contaminant source

remained in the subsurface. During the summer of 2007, 1172 soil samples were collected from 138 soil borings. Results from analysis of the soil samples indicated that a source of contamination remained at two areas of the site.

In April 2008, DOE completed a feasibility study that evaluated the available contaminant source removal technologies. The preferred option for source removal at the 4.5 Acre Site was determined to be soil excavation using an LDA and offsite disposal of soil (DOE 2008). In a letter dated May 17, 2008, FDEP stated "the report is acceptable for its intended purpose" and "the preferred option for source removal of soil excavation using large diameter auger and offsite disposal is acceptable to the Department." According to consultation with FDEP, the main regulatory program applicable to this remedial action (source removal) is Global RBCA promulgated under FAC 62-780. DOE prepared an interim remedial action plan for the soil excavation in accordance with the RBCA regulations and submitted the document to FDEP in July 2008. This plan was approved on August 19, 2008. The objective of the interim remedial action was to remove the source of contamination at the site.

LDA operations commenced at the 4.5 Acre Site on March 31, 2009, and were completed on May 27, 2009. Two hundred twenty-one large-diameter and 325 small-diameter borings were completed. Approximately 7035 cubic yards of soil were excavated; of this total 4464 cubic yards were removed as clean overburden, and 2571 cubic yards of contaminated soil were removed, characterized for waste disposal, and disposed of as nonhazardous waste at a RCRA Subtitle D landfill. Additional information regarding the 4.5 Acre Site LDA work can be found in the *Data Report for Overburden Soil at the Northeast Site and the 4.5 Acre Site* (DOE 2009b) and the *Interim Remedial Action for Source Removal at the 4.5 Acre Site Final Report* (DOE 2009c).

As a follow-up to the LDA work, emulsified soybean oil and the microorganism *Dehalococcoides mccartyi* were injected into the subsurface at 95 points at the site in February 2010. The *Injection of Emulsified Soybean Oil at the Northeast Site and 4.5 Acre Site* (DOE 2010) was prepared to describe the work involved in this task. This project resulted in a significant decrease in contaminant mass and concentrations around the former contaminant source areas and should significantly reduce contaminant concentrations in the downgradient contaminant plume.

With (1) the completion of the LDA project to remove the contaminant source material and (2) the follow-up enhanced bioremediation around the previous source areas to treat any residual contaminants located outside the excavation areas, DOE is proceeding to close the site under the FDEP's RBCA rules (FAC 62-780.680). The *Closure Monitoring Plan for the Northeast Site and 4.5 Acre Site* (DOE 2009a) describes the closure monitoring that is necessary under RBCA, according to the requirements for Post Active Remediation Monitoring (FAC 62-780.750). FDEP approved this document in December 2009. Closure monitoring began in September 2009.

Routine monitoring at the site in March 2009 identified the presence of vinyl chloride offsite in monitoring well PIN20-M035. DOE reported this discovery to FDEP and to the property owner in accordance with FDEP notification requirements. As of September 2013, this well no longer contained vinyl chloride in excess of the cleanup level.

In July 2013, DOE conducted an interim remedial action to enhance biodegradation of contaminants along the southwest property boundary, as described in the *Interim Remedial Action Plan for Emulsified Edible Oil Injection at the 4.5 Acre Site* (DOE 2013b). Currently, post-active remediation monitoring is being conducted and is described in detail in the Site Monitoring Plan (Appendix A).

4.0 Regulatory Basis

4.1 Permits and Agreements

4.1.1 RCRA Hazardous and Solid Waste Amendment Permit

In February 1990, EPA issued a HSWA permit to DOE enabling DOE to investigate and perform remediation activities in areas contaminated by hazardous materials resulting from DOE operations. In November 2000, the State of Florida received HSWA authorization from EPA. FDEP issued a new HSWA permit to DOE in January 2002. The HSWA permit was reissued on August 21, 2007, under the authority of FDEP after being modified under the provisions of (1) *Florida Statutes* Section 403.722 (FS 403.722) and (2) FAC 62-4, FAC 62-160, FAC 62-730, FAC 62-777, and FAC 62-780 to incorporate the Global RBCA regulations. The permit was due for renewal after 5 years, and FDEP issued a renewed RCRA HSWA permit on January 9, 2012. The permit is not due to expire again until January 10, 2022. FDEP executed SRCOs for the Northeast Site and the WWNA on July 27, 2016, so a revision to the permit to describe these site closures is ongoing.

The RCRA HSWA permit requires investigation and, if necessary, remediation of any releases of any hazardous waste or hazardous constituents from any SWMU at the facility. Specific conditions of the permit detail the duties of the permittee, including mitigating future releases to the environment; properly operating and maintaining facilities and treatment systems; providing information, records, and reports in a reasonable time and as specified in the permit; and allowing inspections by FDEP or an authorized representative of the agency.

Specific conditions also include (1) the 24-hour reporting requirements for an imminent or existing hazard to human health or the environment and (2) the identification of waste minimization certification requirements. The remaining portions of the permit describe various plans, implementation and reporting requirements, modifications, approvals, and dispute resolution processes. The permit also includes requirements for signage. DOE came to an agreement with FDEP for alternative language to be used for the required signs.

The current HSWA permit is included as Appendix C.

4.1.2 Remediation Agreement for the 4.5 Acre Site

A Remediation Agreement (Appendix D), approved by FDEP in January 2001, covers remedial actions conducted at the 4.5 Acre Site. The agreement describes the terms and conditions by which DOE will continue to conduct environmental restoration activities on private land.

According to consultation with FDEP, the main regulatory program applicable to the planned contaminated source removal action at the 4.5 Acre Site was Global RBCA promulgated under FAC 62-780. Therefore, DOE followed the RBCA requirements for this activity.

4.1.3 STAR Center Industrial Wastewater Discharge Permit

The Pinellas County Utilities Industrial Wastewater Discharge Permit for the STAR Center, Number IE-3002-09/12, allows the permittee to discharge treated wastewater through the STAR Center's IWNF into the Pinellas County POTW system. The permit establishes maximum constituent concentrations for discharges into the sewer system and lists the constituents that are sampled and reported on a regular basis. Monitoring frequencies, sampling methods, and analytical methods are specified in Section D of the permit. DOE submits effluent reports to the STAR Center for inclusion in their required reports to the Pinellas County Utilities.

One of the special conditions of the permit requires the permittee to submit an annual summary report documenting the generation and disposal of hazardous wastes. LM must provide to the STAR Center copies of any waste manifests associated with the disposal of any hazardous wastes by January 1 of each year. DOE's report is then included in the STAR Center's annual submittal to the Pinellas County Utilities Director.

4.1.4 Well Construction/Abandonment Permits and Water Use Permits

Rules of the Southwest Florida Water Management District, Chapter 40D-3 FAC, "Regulation of Wells," requires permits for the construction and abandonment of wells. Wells requiring permits include monitoring wells, extraction wells, and water wells. Any well with an inside diameter of 1 inch or greater must have a well construction permit prior to construction. These permits are issued to licensed drillers registered with the Southwest Florida Water Management District and authorized by the landowner to conduct well-development activities. Water use permits are issued to the owner for high-flow or continuous-use wells.

All wells must meet the construction requirements of FS 373, FAC 17-21, and FAC 40D-3. Notable requirements under these chapters include (1) a completion report must be filed within 30 days of drilling or repair, (2) casing must extend from land surface to the uppermost consolidated unit from which the well will obtain water and to a sufficient depth below the water table of that formation, (3) well construction must prevent the interchange of water between different water-bearing zones that may result in the deterioration of water quality or loss of artesian pressure, and (4) all wells that are not driven must be grouted with minimum thickness for the corresponding diameters.

All well abandonments require a minimum 24-hour notice to the Southwest Florida Water Management District before abandonment. The district may send a representative to the site to observe the abandonment.

FAC 40D-3 specifies several exemptions and criteria applicable to wells at the STAR Center. For example, wells 2 inches in diameter or less and less than 15 ft in depth that are used for no more than 10 days do not require permitting. Variances for alternate or substitute methods or conditions may be obtained by written request. These include, but are not limited to, grouting, treating and sampling, natural barriers, well location, and gradient. FAC rules governing

construction methods include those for drilling, coring, boring, washing, jetting, driving, and digging. Casing standards, grouting, and sealing are some other important areas of detail. Well numbering requirements, dimensions, use, and other information required in the well construction permit are maintained in the district database.

4.2 Other Regulatory Requirements

4.2.1 Resource Conservation and Recovery Act

RCRA, as amended by the HSWA of 1984, provides cradle-to-grave controls by imposing management requirements on generators and transporters of hazardous wastes and on operators and owners of treatment, storage, and disposal facilities. RCRA Subtitle C, Sections 3001 through 3020, establishes the national hazardous waste management program and encompasses federal regulations. Applicable regulatory requirements for purposes of the STAR Center Environmental Restoration Project include Title 40 *Code of Federal Regulations* Sections 124, 260–264, 266, 268, and 270 (40 CFR 124, 260–264, 266, 268, and 270). The State of Florida received authorization from EPA for implementing the HSWA Corrective Action Program in November 2000 under the provisions of FS 403.722 and FAC 62-4, FAC 62-160, FAC 62-522, FAC 62-532, FAC 62-550, and FAC 62-730.

LM at the STAR Center operates under EPA Generator ID Number FL6890090008. The site has not generated a RCRA hazardous waste since November 2006. Currently, the site generates only nonhazardous investigation-derived waste such as drill cuttings and is considered a conditionally exempt small quantity generator.

4.2.2 Risk-Based Corrective Action Regulations

RBCA regulations, also known as Global RBCA, were codified on April 17, 2005, under Chapter 62-780 FAC. The purpose of these regulations is to apply the default CTLs provided in Chapter 62-777 FAC statewide at all contaminated sites resulting from a discharge of pollutants or hazardous substances at which site rehabilitation is being conducted unless a grandfathering option is elected or site-specific alternative cleanup target levels are established. The RBCA regulations were revised in June 2013, and it is DOE's intent to follow the revised regulations as promulgated without modifying this document to reference the revised regulations.

RBCA regulations provide a phased RBCA process that is iterative and that tailors the site rehabilitation tasks to the site-specific conditions and risks. To facilitate such a phased RBCA process, FDEP and the person responsible for site rehabilitation are encouraged to have discussions to establish decision points at which risk management decisions will be made. These various decision points include the scope and methodology of the site assessment, applicable exposure factors, the remedial strategy for the site, and risk management options based on the current-and-reasonable ascertainable future land uses at the site. When applicable, this chapter shall be applied in conjunction with Chapter 62-777 FAC to determine the appropriate CTLs for a contaminated site.

DOE is working with FDEP to close the 4.5 Acre Site under the RBCA regulations, and an IC for the site is under development.

4.2.3 Clean Air Act

Clean Air Act regulations were developed to control new and existing sources of air pollution by implementing ambient air quality standards, source-specific emission limits, emission control technology and permitting requirements, and hazardous air pollution and visibility impairment requirements. Sections 107 and 110 of the Clean Air Act give each state primary responsibility for ensuring that air quality within its borders is consistent with the national ambient air quality standards. The State of Florida implements the requirements of the Clean Air Act, including permitting, under the provisions of Chapter 403 Florida Statutes, Chapters 62-204 through 62-297 FAC, and Chapter 62-4 FAC.

The Northeast Site Area B air stripper was a permitted non–Title V emission source and operated in compliance with those provisions. Additionally, because of an interim source removal action, the State approved a generic unit exemption for the Northeast Site Area B NAPL treatment system. A steam generator for the same activity fell under a categorical exemption, which is implied (requires no documentation) for generators using less than 32,000 gallons of fuel annually. The Northeast Site Area B air stripper was permanently shut down in November 2006, and a letter to FDEP notifying them of the permanent shutdown and requesting termination of the permit was submitted at that time. DOE received notice in June 2007 that the permit had been terminated.

Discussions with the State regarding remedial actions at the 4.5 Acre and Northeast Sites in fiscal year 2009 indicated that separate air permits would not be necessary. The planned actions, including excavating, stockpiling, sampling, and transporting the contaminated soil and operating an air stripper to treat runoff from stockpiles, would meet the generic unit exemption under 62-210.300 FAC. The State also confirmed that no ambient air monitoring was required for this project, and best management practices should be used to minimize fugitive dust emissions. The generic permit exemption also applies to the air strippers used to treat groundwater from the extraction well and future dewatering projects.

4.2.4 Clean Water Act

The Clean Water Act is a comprehensive program to protect waters of the United States. EPA and other agencies administer various regulations established under the Clean Water Act, including the POTW program provisions in 40 CFR 403. The Clean Water Act establishes a broad prohibition against the discharge of pollutants by any “person” except as in compliance with the Act’s permit requirements, effluent limitations, and other provisions. The State of Florida is authorized to administer permitting requirements for EPA and does so under 62-621.300 through 625.880 FAC. The Pinellas County Utilities of Pinellas County, Florida, administers the Industrial Wastewater Discharge Permit at the STAR Center under the terms and conditions of the Pinellas County Sewer Use Ordinance 91-26 and Pinellas County Code Sections 126-276 through 126-413. Construction activities requiring storm-water permits are regulated under 62-621.300(4)(a) FAC and require a storm-water management plan as well as periodic inspections.

DOE obtained storm-water permits for the remedial activities at the 4.5 Acre and Northeast Sites. This remediation required developing a storm-water pollution prevention plan, controlling surface water runoff, and conducting inspections throughout the duration of remediation. Upon

completion of the remedial actions, the areas were stabilized in accordance with the permit requirements, and the storm-water permits were terminated through approval by FDEP in July 2009.

4.2.5 National Environmental Policy Act (NEPA)

NEPA requires federal agencies to assess the impacts that major federal actions may have on the quality of human health and the environment. DOE procedures for implementing NEPA are contained in 10 CFR 1021, 40 CFR 1500−1508, and DOE Order 451.1B. The purpose of DOE Order 451.1B is to establish requirements and responsibilities and to foster teamwork within DOE for cost-effective implementation of NEPA. LM-specific procedures for implementing the DOE regulations and the DOE order are contained in Procedure 451.1B *National Environmental Policy Act Planning and Compliance Procedure*.

4.2.6 U.S. Department of Transportation (DOT) and International Air Transport Association (IATA)

DOT regulations regarding transporting, packaging, placarding, and manifesting hazardous materials and wastes are found in 49 CFR 171–178. These regulations pertain to the transportation in commerce (e.g., on U.S. highways) of process waste, contaminated media, and investigation-derived waste that are contaminated with RCRA-regulated levels of constituents upon disposal. These regulations also pertain to samples and off-specification products meeting the definition of hazardous materials. A trained shipper must evaluate all DOE shipments involving these materials from the STAR Center to ensure compliance with hazardous materials transportation regulations.

IATA regulations are based on International Civil Aviation Organization Technical Instructions (Doc 9284-AN/905) pertaining to the transportation of dangerous goods by air. These regulations must be used when shipping samples or other materials by Federal Express or other common carrier aircraft. All DOE air shipments from the STAR Center must be evaluated for compliance with IATA by a shipper trained in IATA regulations.

4.3 Other Miscellaneous Reports

The Emergency Planning and Community Right-to-Know Act (EPCRA), also known as Title III of the Superfund Amendments and Reauthorization Act, was signed into law in October 1986. It was established to inform the public of hazardous chemicals that may affect their communities and to help local emergency planners prepare for possible emergencies involving hazardous chemicals.

40 CFR 355 requires that notification be made to state and local emergency planning organizations if a listed hazardous substance that exceeds a reportable quantity is released to the environment. Additionally, emergency officials are to be notified for planning purposes if any listed chemicals will be used or stored at the facility that may exceed a Threshold Planning Quantity.

40 CFR 370 requires that Safety Data Sheets be maintained for chemicals present at a facility. A list of chemicals maintained at the facility must be made available to local and state emergency

response officials. This list would include chemicals that are used in maintenance, operation, or remediation activities at the site.

40 CFR 372 requires certain facilities to submit an annual Toxic Release Inventory or Form R report for chemicals routinely or accidentally released into the environment. Environmental restoration activities at the STAR Center do not involve use of chemicals in a large enough quantity to require Form R reporting under EPCRA.

Section 3016 of RCRA requires federal agencies to complete an inventory of all facilities that they currently own or operate, or have previously owned or operated, at which hazardous waste is stored, treated, or disposed of, or was disposed of at any time. The inventory was first conducted in 1986 with subsequent updates every 2 years. DOE headquarters coordinates the reporting of the inventory.

EPA, in partnership with the states, biennially collects information (40 CFR 262.41) regarding the generation, management, and final disposition of hazardous wastes regulated under RCRA. The biennial report is due by March 1 of every even-numbered year. The reporting requirement is intended to provide EPA with reliable national data on hazardous waste management. The report includes (1) EPA ID number, name, and address of the generator and every transporter, treatment facility, storage facility, disposal facility, and recycler used; (2) descriptions and quantities of waste; and (3) actions taken to reduce the volume and toxicity of the waste and the results of those actions. This report has not been required for several years.

Waste Minimization Reporting, which is required under the RCRA HSWA permit, is completed in each Sitewide Semiannual Report.

5.0 Site Conditions

5.1 Site Hydrology

The STAR Center is located on the western coastal plain of the Florida Peninsula. The Florida Peninsula is a broad, partially submerged shelf of the Gulf of Mexico and is composed of alternating layers of sands and gravels, as well as carbonate deposits such as limestone. The subsurface at the STAR Center comprises three distinct hydrogeologic units. These hydrogeologic units, in descending order, are the undifferentiated surficial deposits (the surficial aquifer), an intermediate confining unit (the Hawthorn Group), and a lower limestone unit (the Upper Floridan aquifer).

The uppermost (i.e., most recent) deposits are known as the surficial sediments and are composed predominately of fine sand with varying amounts of silt and clay. At the STAR Center, the surficial sediments range in thickness from about 25 to 40 ft. At the 4.5 Acre Site, the surficial sediments range in thickness from about 25 to 30 ft. At the Building 100 Area, the surficial sediments have been observed up to 40 ft thick. At the base of the surficial aquifer, there is a discontinuous layer of clayey sand that represents the transition zone between the surficial sediments and the underlying Hawthorn Group (Hawthorn). The saturated portion of the surficial sediments is known as the surficial aquifer. At the STAR Center, no groundwater is

obtained from the surficial aquifer for drinking or irrigation because of the poor yield of the aquifer and poor quality of the water.

The surficial aquifer at the STAR Center acts as a two-layer hydraulic system due to a fine, discontinuous, clayey sand lens, of variable thickness and shell content, that has been observed in the middle portion (vertically) of the surficial deposits. The tendency of water levels in wells screened in the shallow portion of the surficial aquifer to differ from those in wells screened in the underlying deep surficial aquifer (such as the differences observed when one zone is pumped and the other is not) indicates a horizontal-to-vertical anisotropy with regard to the aquifer's hydraulic conductivity. On the basis of such observations, a representative vertical hydraulic conductivity for the aquifer is expected to be about 0.1 to 0.01 of the horizontal value. Aquifer testing indicates that the horizontal hydraulic conductivity for the surficial aquifer ranges from 0.1 to 3 feet per day (ft/day) at the site and averages about 1 ft/day (DOE 1991b). Groundwater movement between the shallow and deep portions of the surficial aquifer is primarily controlled by the amount of recharge from rainfall.

The Hawthorn underlies the surficial sediments and is about 70 ft thick. It is an aquitard that separates the surficial aquifer from the underlying Upper Floridan aquifer. A weathered limestone and dense clay layer is often present at the top of the Hawthorn. This layer is less than 3 ft thick and is laterally discontinuous. Silty, sandy, phosphatic clay of variable thickness underlies the silty clay and limestone. Below that, dry clay with up to 50 percent carbonate inclusions and fissile layers is present. The hydraulic conductivity of the Hawthorn is several orders of magnitude lower than that of either the surficial or Floridan aquifers (DOE 1991b). Measurements in 2007 (DOE 2007b) indicated a hydraulic conductivity of about 0.0002 ft/day. Studies have concluded that surficial aquifer contamination was very unlikely to affect the underlying Floridan aquifer (DOE 1991b). Three monitoring wells at the STAR Center are screened in the Upper Floridan aquifer, and they have shown no contamination.

Depth-to-water measurements are taken semiannually at all accessible wells, piezometers, and ponds at the STAR Center. The locations of the wells, piezometers, and ponds are shown on Plate 1. The five site ponds are artificial and exist for the purpose of collecting storm-water runoff from parking lots and buildings.

The depth to groundwater typically ranges from about 3 to 6 ft bls but can be near land surface following significant rainfall events. Groundwater and surface water elevations are used to construct groundwater contour maps of the site. The contour maps of the shallow and deep portions of the surficial aquifer are provided as Plates 2 and 3.

Groundwater flow at the 4.5 Acre Site is generally to the northwest for the shallow and deep portions of the surficial aquifer (Plates 2 and 3). In the southeast portion of the 4.5 Acre Site, there is a component of flow toward the southeast. The hydraulic gradient at this site averages approximately 0.002 feet per foot (ft/ft), so calculations using Darcy's Law and approximations of 1 ft/day for hydraulic conductivity and 0.3 for effective porosity indicate that the groundwater flow velocity toward the northwest is about 2 to 3 ft per year (ft/yr).

At Building 100, shallow groundwater has been observed to flow to the southeast under a very slight gradient. This flow pattern has remained consistent for the past several years. The estimated hydraulic gradient is approximately 0.002 ft/ft. Calculations using the approximations

mentioned above indicate that groundwater flow beneath the building is estimated to be about 4 ft/yr. However, a pumping test conducted in 2009 near the southern property boundary at the Building 100 Area resulted in an estimated hydraulic conductivity value of about 7 ft/day; this higher value may indicate that significant preferential flow pathways exist in this area and that groundwater may flow faster than a few feet per year in this area.

5.2 Site Contaminant Distribution

5.2.1 Contaminants of Potential Concern

Table 1 lists the COPCs and their CTLs. The COPCs listed in Table 1 were determined from a review of site data and regulatory documents for the STAR Center and the 4.5 Acre Site as described in the *Historical Review and Evaluation of Contaminants of Potential Concern* (DOE 2003b). Arsenic was added as a COPC for the Building 100 Area and 4.5 Acre Site in 2005 (DOE 2005), but sampling for arsenic was discontinued in late 2008 because concentrations were all below the CTL. A limited amount of radiological material was used during operations at the Pinellas Plant. A comprehensive sitewide sampling for tritium during the RFI in 1990 and 1991 demonstrated that concentrations were below applicable standards, so tritium was eliminated as a contaminant of concern for all SWMUs.

Plume delineation conducted east of Building 100 in May and June 2011 showed that 1,4-dioxane is present both onsite and offsite at concentrations above its CTL. As a result, FDEP requested in August 2011 that 1,4-dioxane be added as a COPC for the Building 100 Area (Table 1).

While older site documents have compared groundwater contaminant concentrations to drinking water standards (i.e., MCLs), those standards are not the applicable default CTLs for evaluating site remediation under RBCA. On the basis of a comprehensive review of background data for the site (DOE 2003b), it was determined that the shallow groundwater in the site vicinity is naturally elevated in aluminum and iron at levels far exceeding State of Florida Secondary Drinking Water Standards (Chapter 62-550 FAC). Specifically, the average background concentration of 1.1 milligrams/liter (mg/L) for aluminum exceeds the 0.2 mg/L secondary standard, and the average background concentration for iron of 9.3 mg/L exceeds the 0.3 mg/L secondary standard. The ambient shallow groundwater in the area is therefore designated as "poor quality" as defined in 62-780.200(35) FAC. Thus, the applicable groundwater CTLs are those for groundwater of "low yield/poor quality" provided in Table 1 of Chapter 62-777 FAC (listed in Table 1 of this LTS&M Plan). FDEP has allowed use of the poor water quality CTLs onsite but maintains that the default CTL applies to the offsite plume areas.

Table 1. Contaminants of Potential Concern and Cleanup Target Levels

Contaminants of Potential Concern	FDEP Cleanup Target Levels in Groundwater (µg/L)[a, b]
Building 100 Area	
Trichloroethene	30
1,1-Dichloroethene	70
cis-1,2-Dichloroethene	700
trans-1,2-Dichloroethene	1000
Vinyl chloride	10
1,4-dioxane	32
Arsenic	100
4.5 Acre Site	
Trichloroethene	30
cis-1,2-Dichloroethene	700
trans-1,2-Dichloroethene	1000
Vinyl chloride	10
Benzene	10
Arsenic	100

Notes:
[a] µg/L = micrograms per liter.
[b] The listed CTLs are poor groundwater quality CTLs that apply only onsite. Offsite CTLs are a factor of 10 lower.

5.2.2 Location of Contaminant Plumes

Figures 3, 4, and 5 show the total COPCs contaminant plume maps for the Building 100 Area and the 4.5 Acre Site. The plume maps encompass the wells in which any individual COPC exceeded its CTL (Table 1).

5.3 Site Controls

The following are the site controls at the Building 100 Area and 4.5 Acre Site.

5.3.1 Building 100 Area (PIN12)

All of the Building 100 Area wells are located either inside the building, outside the building but within a security fence, or outside the building with no security fence. The wells inside the building are within the secured area of the tenant, and access to these wells is limited by the tenant's security personnel. All personnel entering the secured tenant area must be on the tenant's clearance list or be escorted by a tenant's employee. These wells are also secured with bolt-down covers. The wells outside the building but within the 7-ft tall chain-link security fence are secured with locks and can be accessed only with permission of the tenant and STAR Center guards. The remaining Building 100 Area wells are secured with locks or bolt-down covers.

5.3.2 4.5 Acre Site (PIN20)

Access to the 4.5 Acre Site was limited by a 7 ft tall chain-link fence with two locked gates, but most of the eastern fence was removed in 2008 during construction on the adjacent property. Subsequently, site access is not controlled along the eastern boundary, but warning signs are posted that read, "No Trespassing/Contaminated Area/Avoid Contact with Soil and Water," with a contact phone number. These signs will be removed as the site is developed and ICs are implemented. All of the wells at the 4.5 Acre Site are secured with locks or bolt-down covers.

6.0 Long-Term Surveillance and Maintenance

6.1 Surveillance and Maintenance Implementation

This LTS&M Plan implements long-term components of remedies selected for the STAR Center. The purpose of LTS&M is to meet the general objectives listed in Section 2.0, "Purpose and Scope."

DOE will maintain protection of human health and the environment at the STAR Center through a combination of activities, including conducting regular inspections; conducting environmental monitoring, sampling, and other site operation and maintenance activities; and maintaining ICs and regulatory compliance.

6.2 Routine Site Inspections

6.2.1 Frequency of Inspections

Currently, the site is informally inspected daily as a part of routine operations, and formal inspections are performed and documented weekly. Now that ICs have been implemented, DOE will inspect the Pinellas Site at least annually to confirm that remedial action components, including associated engineering controls, remain in place and are effective, and to determine if maintenance or additional monitoring is needed. DOE will notify FDEP and the STAR Center of the inspection before the scheduled inspection date. DOE may reassess the inspection process and frequency, based on experience, and propose modifications as appropriate. Proposed modifications will be submitted as a revision to the LTS&M Plan.

6.2.2 Inspection Procedure

Prior to the inspection, the inspectors will be familiar with the status of the site and each of the areas and ICs associated with the site. A safety briefing with the inspection participants will be held prior to each inspection.

The inspection will include a walkover of the areas of the site with restrictive covenants: Northeast Site, Building 100 Area, and WWNA. The inspectors will gain access to the areas and, during the walkover, observe the condition of the area and document any maintenance needs.

6.2.3 Inspection Checklist and Map

Site inspections will be guided by checklists that address the performance of each inspection. The inspection checklist is included as Appendix E to this plan. A facility map that shows the location of the SWMUs and the monitoring wells, such as Plate 1, will be used for the site inspection.

6.2.4 Institutional Controls Inspection

ICs for the Northeast Site, WWNA, and Building 100 Area were finalized in September 2015; final documents are included in Appendix B. DOE will conduct a formal annual inspection of the physical locations addressed by ICs. DOE will also evaluate whether the ICs remain effective in protecting human health and the environment and will take appropriate action if evidence indicates the controls are not effective.

6.2.5 Site-Specific Inspection Features

All monitoring wells, recovery wells, piezometers, and staff gauges at the STAR Center will be inspected annually for damage. Figure 6 provides an example of the Well Inspection Report used to document the inspections. In addition, site controls that control access to the wells (see Section 5.3) will be inspected as part of the well inspection process. The interior and exterior conditions of each well will be checked as detailed in the inspection form (Figure 6). The inspectors will check the well access, painted surface, identification tag, hinge, cover, lock, above-grade protector or concrete pad, location, and other conditions and will describe any well damage or changes to the well that require maintenance or repair. All site wells will be inspected within a 2-week period. A repair list will be compiled within 30 days of completion of the inspections, and all repairs will be completed within 90 days of the inspections. The well repairs will be documented in the semiannual reports that are submitted to FDEP.

6.2.6 Personnel

The inspector(s) will be experienced technicians or scientists who have the required knowledge, skills, and abilities to evaluate site conditions and recognize potential or actual problems. Access to sensitive or secure areas controlled by tenants may entail coordination with an escort from the STAR Center or tenant during the inspection.

6.2.7 Annual Inspection Reports

Results of annual inspections will be reported to FDEP. DOE will post the final report on the DOE Pinellas website (http://www.lm.doe.gov/pinellas/Sites.aspx), will maintain copies at the site, and will send it to interested stakeholders.

6.3 Routine Site Maintenance and Operations

Site maintenance will consist of activities such as DOE-owned infrastructure maintenance and repair.

6.4 Environmental Monitoring

The details of the environmental monitoring at the Building 100 Area and the 4.5 Acre Site are included as Appendix A.

6.5 Emergencies, Contingency Planning, and Corrective Action

Emergency measures are the actions DOE will take in response to "unusual damage or disruption" that threatens or compromises site safety or security. Figure 7 shows the route to the nearest emergency facility.

6.5.1 Severe Weather

Severe weather is often a threat to the Pinellas site. If severe weather threatens or is within the Tampa Bay area, one of the procedures listed below will be followed. If there is advance warning of severe weather (such as hurricanes or other tropical disturbances), perform preparations 24 to 48 hours before the weather moves into the Tampa Bay area. This is not always possible during some of the typical Florida summer thunderstorms. With either scenario, refer to the items listed next for the course of action:

- *Communications during severe weather*

  It is essential that site personnel stay in contact with STAR Center personnel in Building 100 during this time to stay abreast of changing weather conditions and STAR Center emergency notifications. Site personnel should first attempt to contact the site manager ([727] 224-9893). If the site manager cannot be reached, then contact the STAR Center Communication Center at (727) 541-8128.

- *Precautions for any immediate threatening weather conditions*

  If there is little to no advance warning of severe weather, take cover immediately. Some of the possible scenarios are:

  — If the threat is in the form of lightning or heavy rain, seek shelter in a vehicle or a STAR Center building.

  — If the threat is in the form of high winds or tornado, seek shelter in a STAR Center building if there is time to do so. At the discretion of the site safety supervisor and site manager, site activities should cease if sustained wind speeds reach 40 miles per hour. If there is no time to get to a STAR Center building, as in the case of a tornado in the immediate vicinity, seek shelter in vehicles, low areas, or ground depressions. Drainages are not suitable because of the potential for flooding.

- *Precautions for advance warning of high winds (i.e., hurricane)*

  — Notify the site safety supervisor of action to be taken.

  — Upon notification of a hurricane watch, inspect all equipment for items that are vulnerable to high winds and secure the items.

  — Upon notification of a hurricane warning, shut down all equipment. In general, the sites will be evacuated at least 24 hours before a predicted strike by a hurricane to allow for preparation of personal property and potential evacuations within the Tampa Bay area.

At all times, personnel safety shall take priority over any system or equipment preparation. If there is any doubt about personnel safety, cease the activity or preparation immediately and seek shelter or evacuate the site.

6.6 Budget and Funding

For surveillance and maintenance activities that will be performed in support of the Pinellas Environmental Restoration Project at the STAR Center and the 4.5 Acre Site, the authority to ensure long-term implementation of programs to protect human health and the environment originates with the U.S. Congress and is delegated to an appropriate federal agency, in this case DOE.

DOE recognizes the significance of maintaining adequate funding levels for LTS&M and also that funding is a main concern of the stakeholders. LM will request adequate funds to implement this LTS&M Plan through the annual appropriations process.

6.7 Records and Data Management

DOE maintains site surveillance and maintenance records in a central location. These records have been selected because they contain critical information needed to ensure the continued management and the follow-on actions and controls (including property management) required to protect public health and the environment and to demonstrate compliance with applicable legal requirements. This surveillance and maintenance record collection does not include information pertaining to employee or public safety and health issues with respect to former site operations. DOE plans to review and revise records and data management procedures on a regular basis to ensure that current procedures and technologies are employed.

Through September 30, 2008, the National Nuclear Security Administration was responsible for all records pertaining to former Pinellas site employees and records for any safety and health issues associated with former site operations and maintenance. On October 1, 2008, the custody of all Pinellas site records, including those discussed above, transferred to LM. Copies of these records can be obtained by contacting the LM Freedom of Information Act (FOIA) office at http://www.management.energy.gov/foia_pa.htm.

LM will maintain Pinellas Environmental Restoration Project records in full compliance with all federal records management requirements, including:

- 36 CFR 1220–1238, "National Archives and Records Administration"
- Title 44 *United States Code* Section 29 (44 USC 29), "Records Management by the Archivist of the United States and by the Administrator of General Services"; 44 USC 31, "Records Management by Federal Agencies"; and 44 USC 33, "Disposal of Records"

6.7.1 Access and Retrieval

In accordance with the provisions of FOIA, records retained by LM for the Pinellas Environmental Restoration Project activities will be available to stakeholders. A limited number of key documents are available electronically on the LM website at http://www.lm.doe.gov/Pinellas/Sites.aspx.

6.7.2 Pre-Surveillance and Maintenance Record Collection

The National Archives and Records Administration (NARA) Regional Records Center in Denver, Colorado, is currently the designated facility for archived LM closure site records. LM will retain custody of the records sent to the NARA facility and will be responsible for their destruction at the end of their approved retention periods. All records with permanent value will be transferred to and will be the responsibility of NARA, Rocky Mountain Region, Denver. All records inherited or created by LM during work at the Pinellas site will be managed in accordance with 36 CFR 1220−1238, "National Archives and Records Administration."

LM will maintain active records from this closure site in accordance with LM procedures. Active records contain information essential to the long-term care and custody of the site pursuant to applicable laws and regulations. In general, these records include site characterization reports, remedial action plans, NEPA documents, engineering design and construction documents, as-built drawings, results of groundwater monitoring, and annual inspection reports. Selected key documents are available on the LM website at http://www.lm.doe.gov/Pinellas/Sites.aspx; the public can obtain other records through FOIA requests.

6.7.3 Site Drawings and Photographs

Pinellas Environmental Restoration Project actions were documented with as-built drawings and maps. Aerial photographs of the Pinellas Environmental Restoration Project are taken periodically. These drawings and photographs will be maintained in the permanent site record in accordance with LM procedures.

6.7.4 Site Maps

Map data are maintained in a Geographic Information System database. The site map data will be used to generate maps for site inspections. After each inspection, new inspection maps will be prepared that show the locations of items of interest noted during previous inspections. Each site inspection map will indicate the year of the inspection and inspection purpose.

6.7.5 Site Record Drawings and Maps

Site record drawings and maps represent final site conditions and site features. These drawings and maps will be managed in the permanent Pinellas Environmental Restoration Project records file.

6.7.6 Site Baseline Photographs

Photographs taken during various phases of the Pinellas Environmental Restoration Project work will be posted on the LM website. These photographs provide a visual record to complement the as-built drawings and maps.

6.7.7 Site Inspection Photographs

Photographs will be taken during site inspections to document new or changed conditions at the site. Comparison of current photographs with the baseline set of photographs will be useful to document steady or changing conditions at the site over time.

6.8 Quality Assurance

The long-term custody of the Pinellas Environmental Restoration Project and all activities related to the surveillance and maintenance of the site will comply with the *Quality Assurance Manual* (LMS/POL/S04320), which is based on DOE Order 414.1D, *Quality Assurance*, and on *Quality Systems for Environmental Data and Technology Programs: Requirements with Guidance for Use* (ANSI/ASQ E4-2004).

6.9 Safety and Health

The Safety and Health Program that applies to LTS&M activities is based on 10 CFR 851, "Worker Safety and Health Program," and 10 CFR 835, "Occupational Radiation Protection," and other requirements as specified in the LMS contract. The Safety and Health Program is described in the *Safety and Health Manual* (LMS/POL/S04321), which identifies the policies and requirements that apply to all work performed within the scope of the LMS contract. In addition to the requirements specified in these high-tier programmatic documents, LTS&M activities at the STAR Center will be conducted in accordance with the Pinellas Safety and Health Plan. Personnel participating in LTS&M activities shall comply with all applicable safety and health requirements as specified by the LMS Safety and Health Program.

6.10 Environmental Compliance

Environmental compliance is a component of the LM's Environmental Management System and consists of several environmental compliance and monitoring programs that implement federal, state, tribal, and local regulatory requirements, agreements, and permitted activities. Regulatory requirements applicable to the Pinellas Site are described in Section 4.0.

All activities related to the surveillance and maintenance of the Pinellas Site will comply with the *Environmental Protection Manual* (LMS/POL/S04329) and the *Environmental Instructions Manual* (LMS/POL/S04338). These documents describe environmental compliance activities including chemical management, spill prevention and response, and waste management and transportation. The groundwater is managed as an environmental medium potentially contaminated with RCRA characteristic hazardous wastes as opposed to a listed waste, as documented in an FDEP letter dated May 19, 1995 (Appendix H).

7.0 Institutional Controls Plan for the Pinellas Site

FDEP requires ICs to be in place for all impacted properties associated with the groundwater contaminant source before granting a conditional closure. DRCs for the Northeast Site, WWNA, and Building 100 Area were finalized in September 2015; the documents are included in Appendix B. Three of the offsite property owners, Pinellas County Schools, Bank of Tampa, and BCH-1, have executed a DRC for their properties (Appendix B). DOE is coordinating with Pinellas County to develop a restriction for the two impacted road rights of way. DOE is also negotiating with the remaining offsite property owner to develop a DRC for that property. The proposed ICs will serve to minimize the possible human and environmental exposure to contaminated media.

8.0 References

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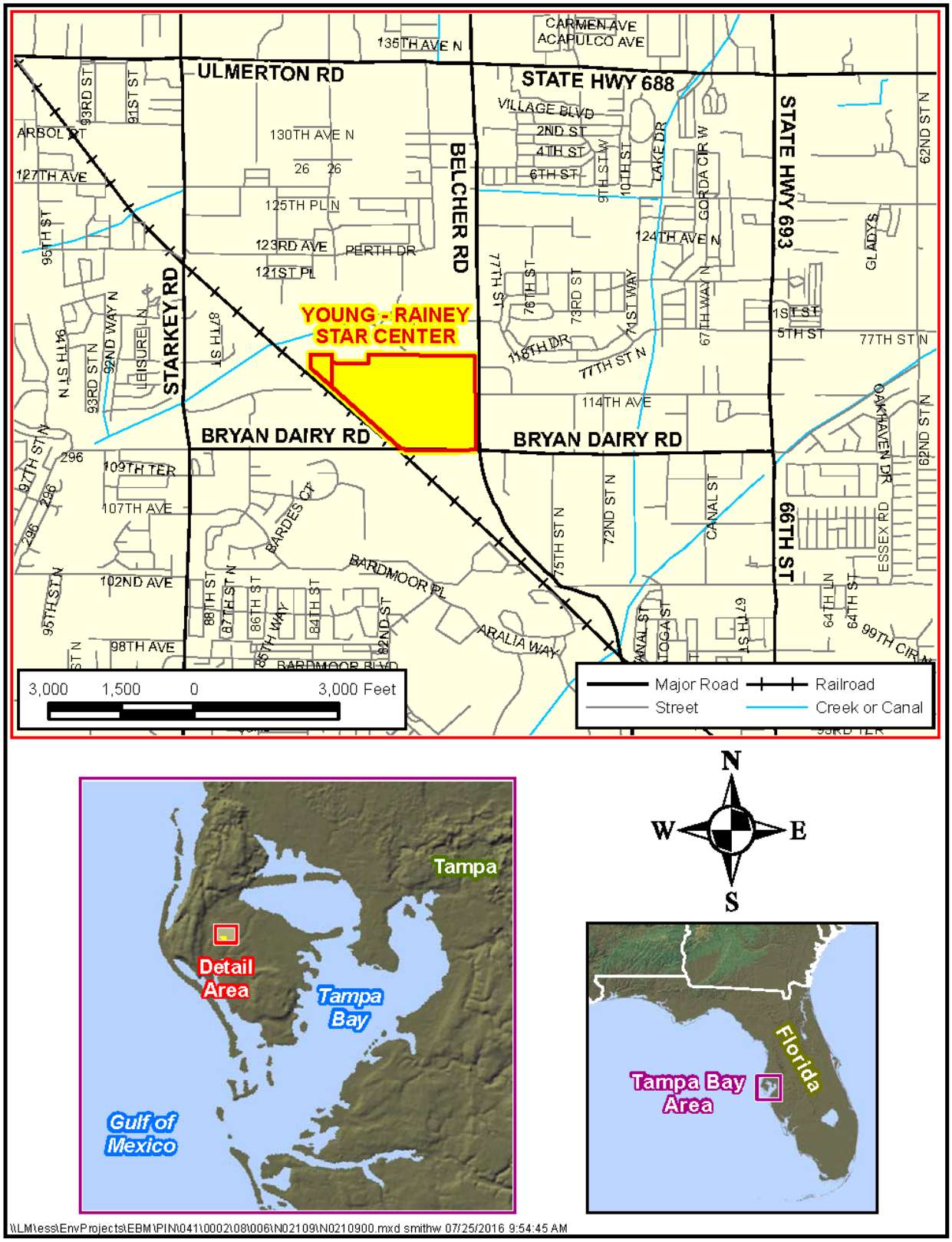

Figure 1. Young - Rainey STAR Center Location

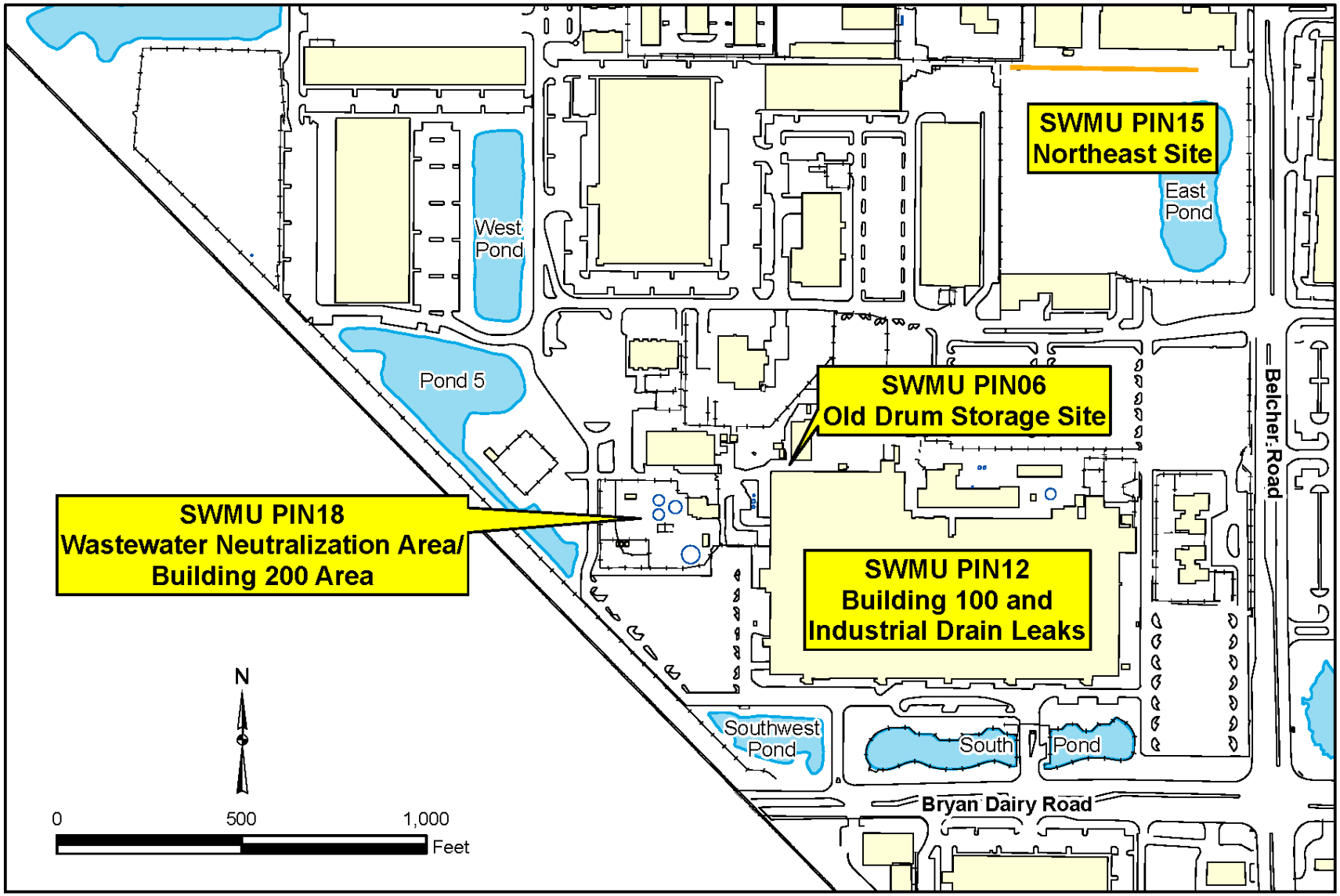

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Figure 2. Location of STAR Center Solid Waste Management Units (SWMUs)

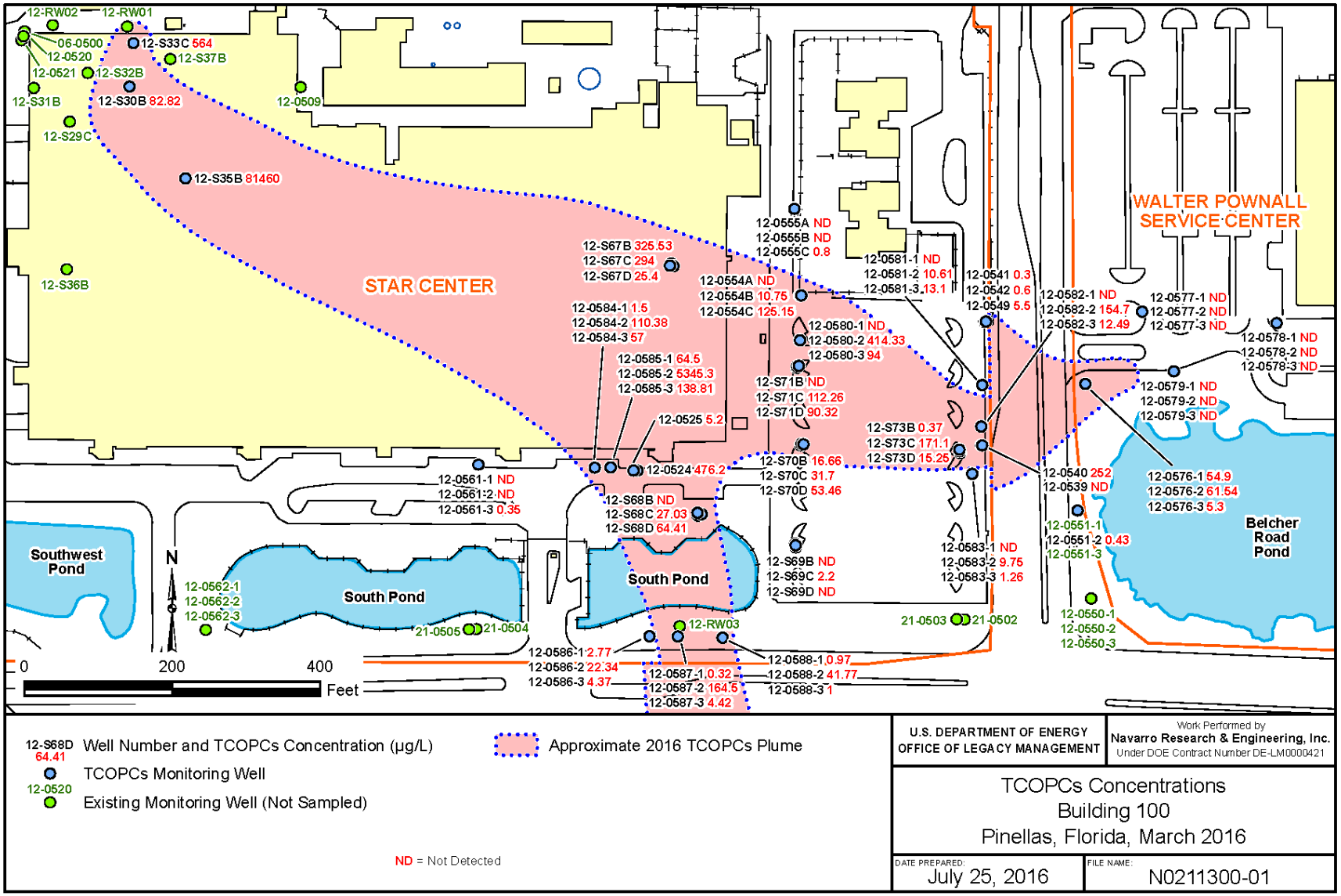


Figure 3. Building 100 Area Total COPC Concentrations

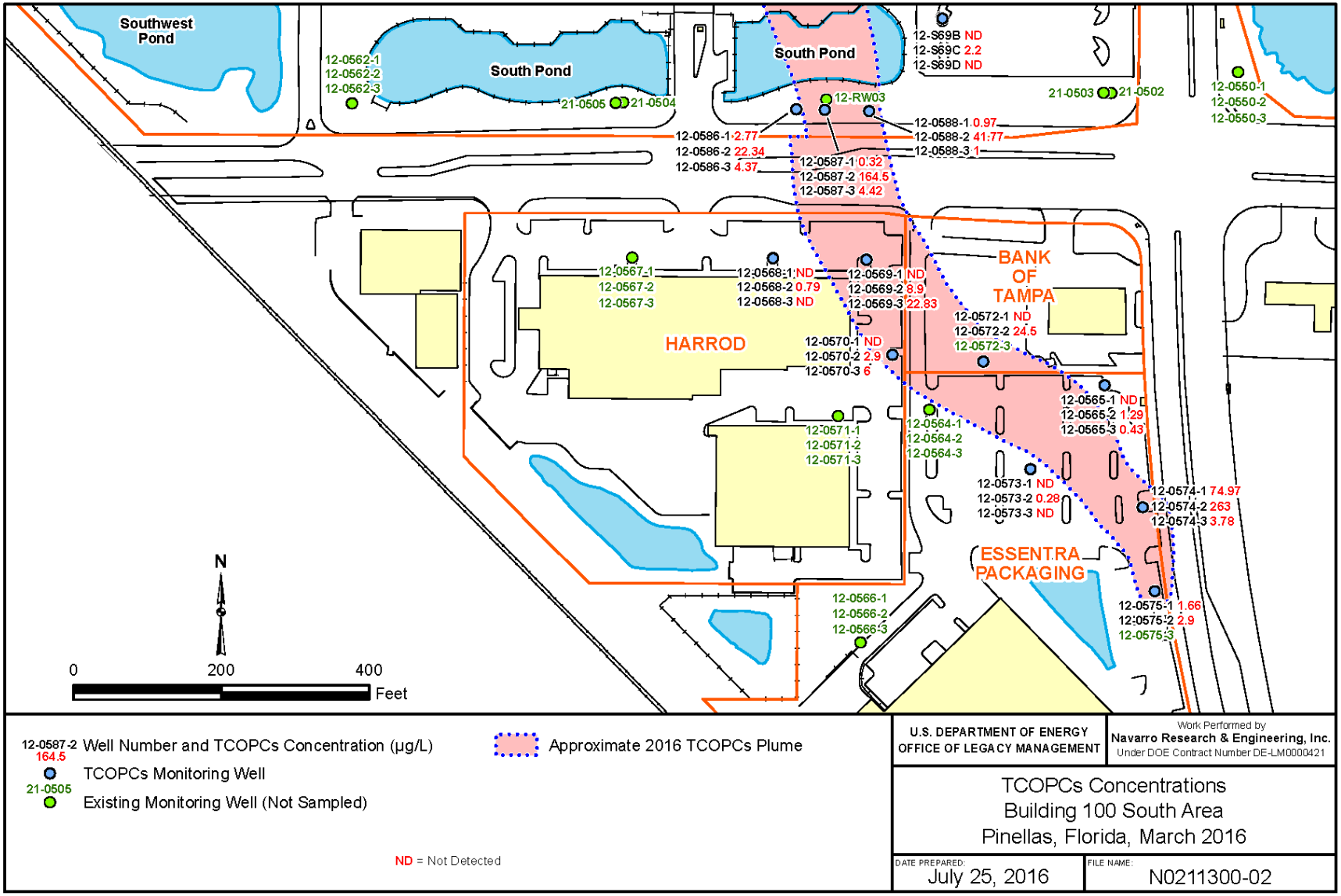


Figure 4. Building 100 Area South Total COPC Concentrations

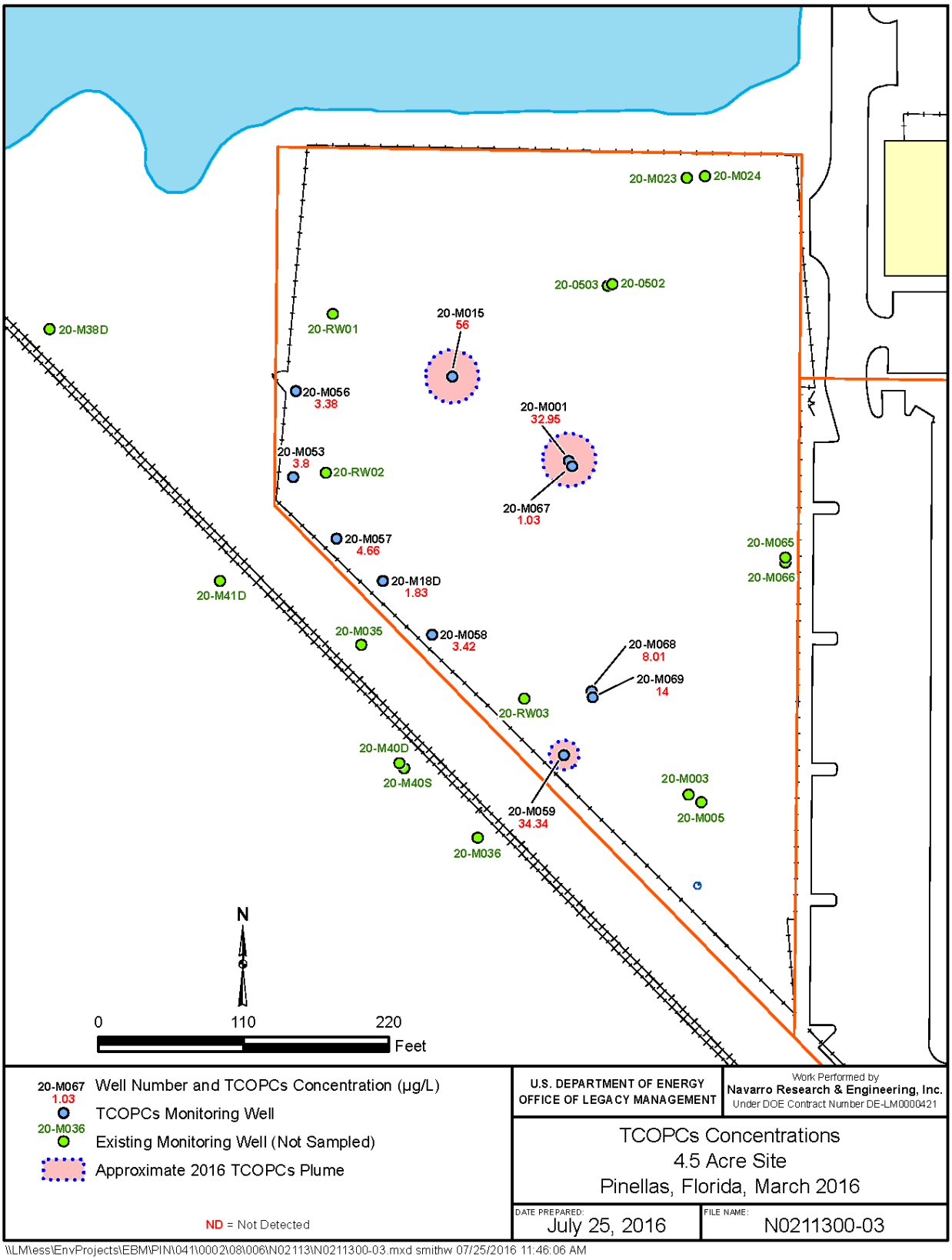


Figure 5. 4.5 Acre Site Total COPC Concentrations

WELL INSPECTION REPORT	**INSPECTED BY:_____**
YOUNG - RAINEY STAR CENTER, LARGO, FL	**DATE:_____**

Well Number:	**Type: Monitoring/Extraction**

WELL EXTERIOR CONDITIONS	Yes	No	N/A	Comment
Unimpeded Access / Entry / Exposure				
Surface Adequate for New Tag				
Painted Surface Adequate				
Hinge Condition Adequate				
Hasp / Cover Condition Adequate				
Lock Adequate				
Seal with Grade / Concrete Pad Adequate				
Free of Insects or Other Pests				
ID Tag Adequate				
Tag Number Clearly Visible				
Field Location = Map Location				

WELL INTERIOR CONDITIONS		
Casing Type (PVC, Stainless Steel, Carbon Steel, HDPE)	Inches	Feet
Inside Diameter		
TOC to Grade Height (Stickup, negative if recessed)		

	Yes	No	N/A	Comment
Plug/Cap Adequate				
Measuring Point Clearly Notched or Marked				
Casing Undamaged/Unmoved				
Clear of Obstruction for Water Levels[a]				
Bladder Pump Installed				

Note:
[a] Other than pump or tubing.

Figure 6. Well Inspection Report Form

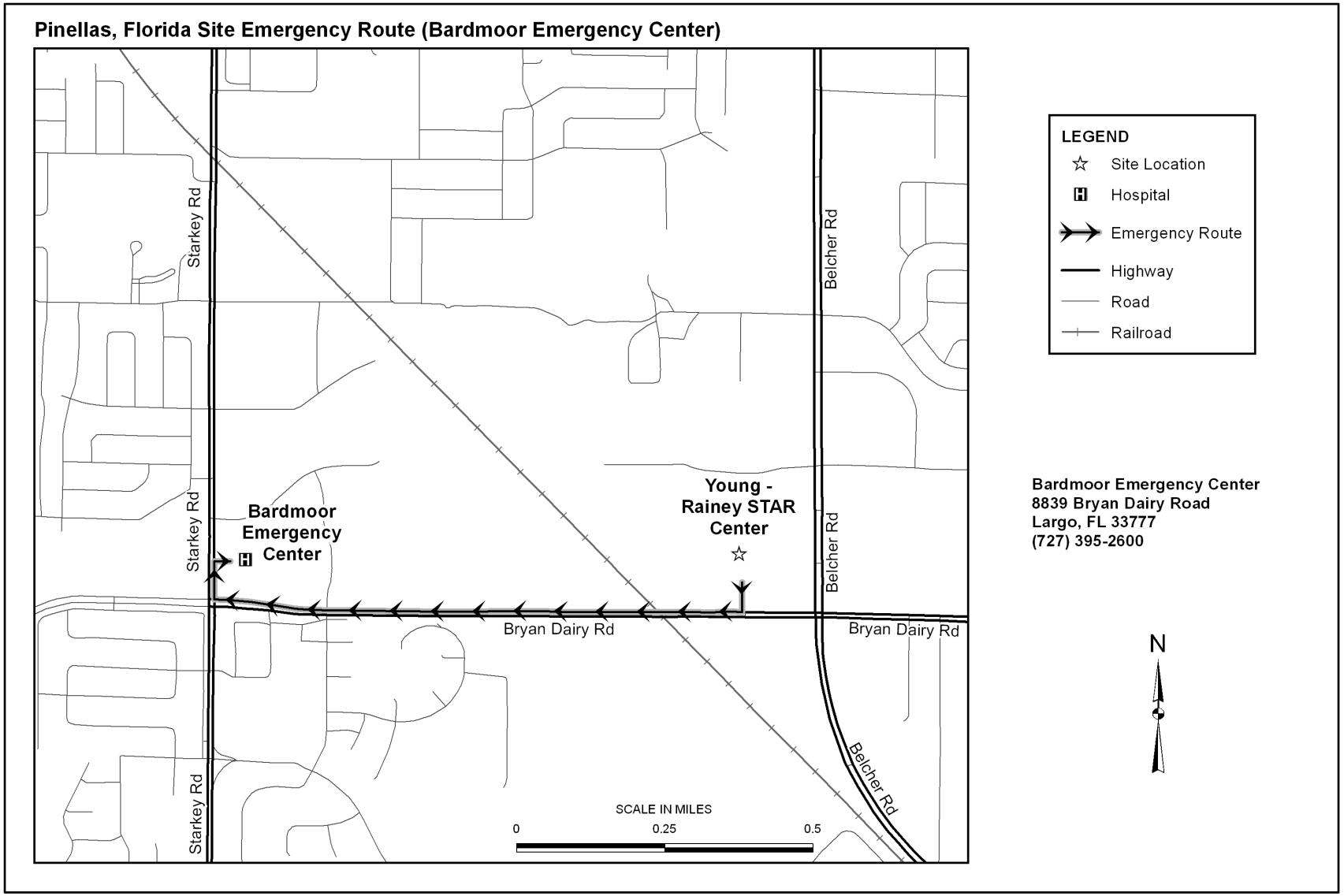
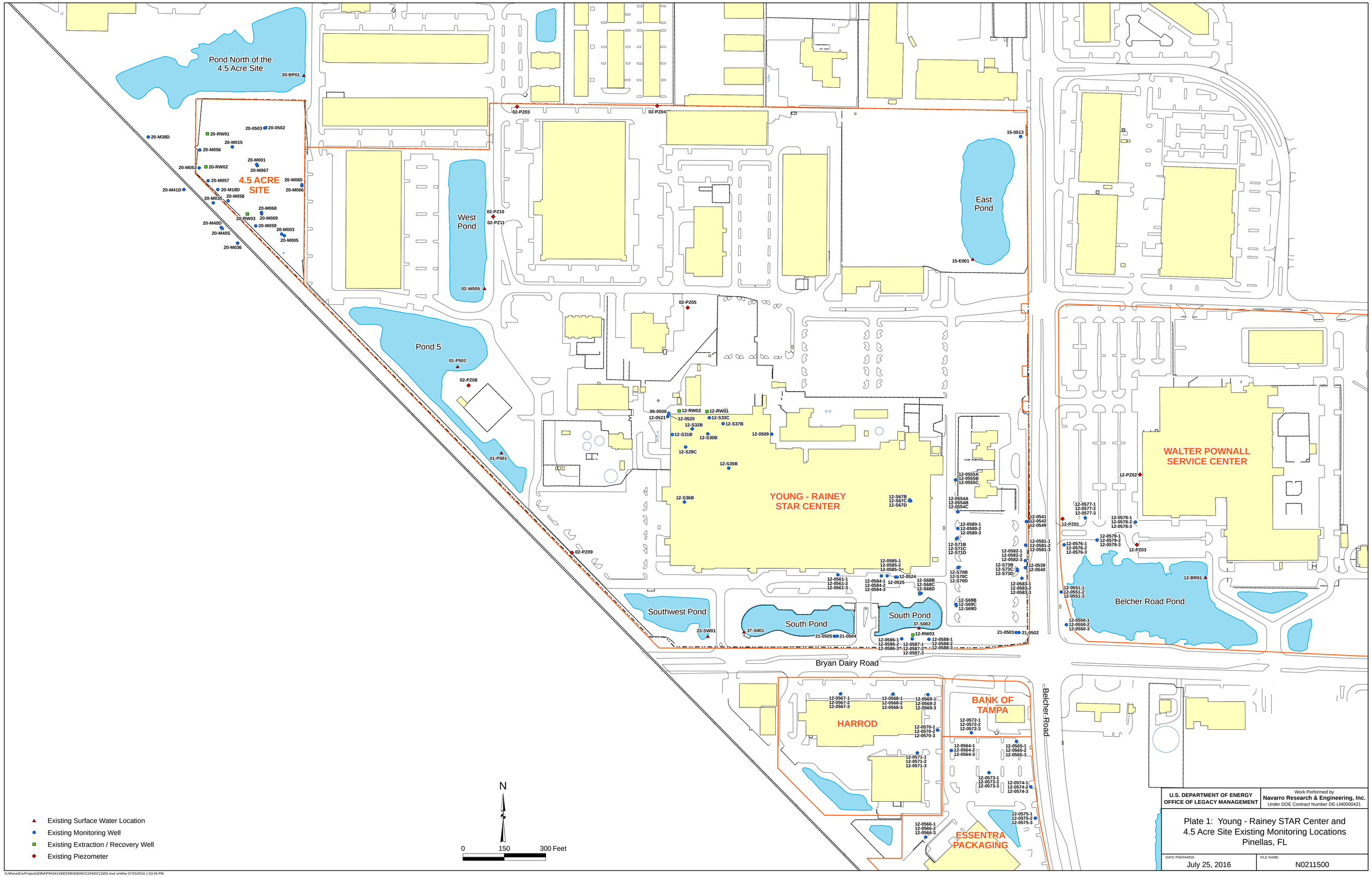


Figure 7. Emergency Route Map



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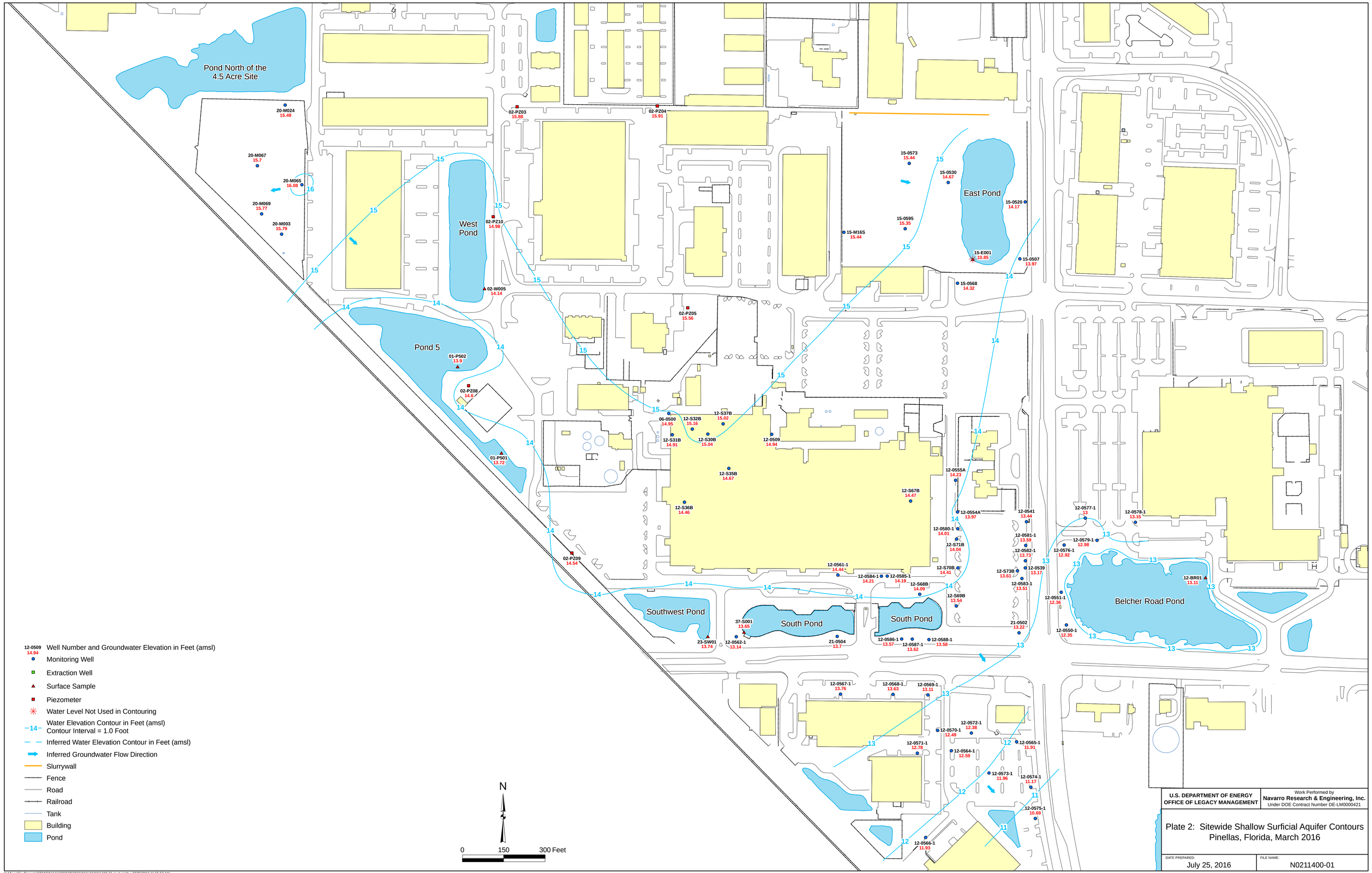

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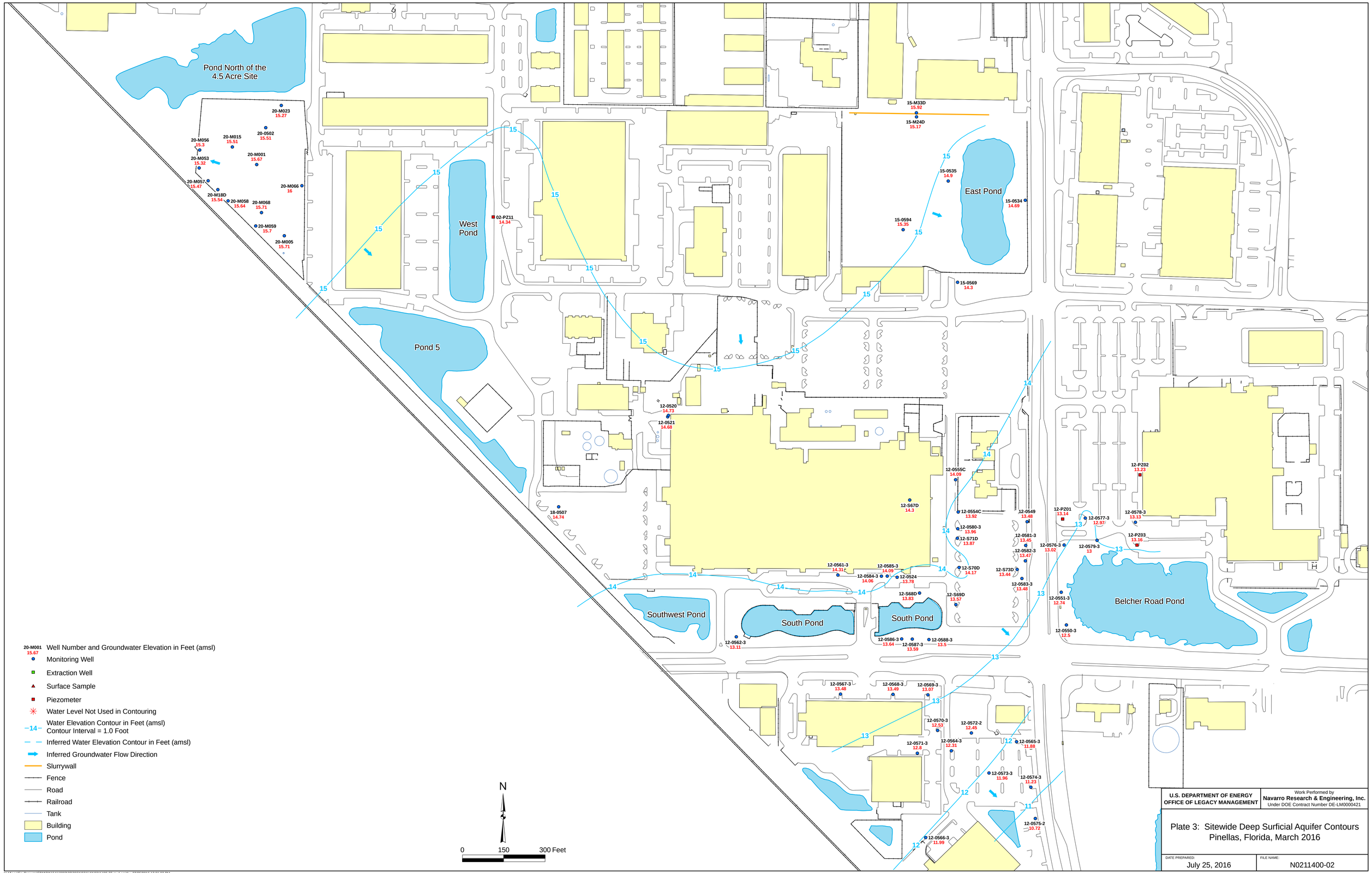

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Appendix A

Site Monitoring Plan
for the Pinellas County, Florida Site

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Plate

Plate A1 Planned Sampling Locations

Abbreviations

COPC	contaminant of potential concern
CTL	cleanup target level
EPA	U.S. Environmental Protection Agency
FAC	*Florida Administrative Code*
FDEP	Florida Department of Environmental Protection
mg/L	milligrams per liter
STAR Center	Young - Rainey Science, Technology, and Research Center
VOCs	volatile organic compounds

A1.0 Introduction

This document is the Site Monitoring Plan for all routine monitoring and sampling activities at the Pinellas County, Florida, Site, which includes the Building 100 Area at the Young - Rainey STAR Center (Science, Technology, and Research Center) and the adjacent 4.5 Acre Site.

This plan defines the analytical parameters for samples collected from groundwater monitoring wells. Samples are collected twice per year, in March (dry season) and September (wet season). Plate A1 shows the existing monitoring wells. Table A-1 lists the existing monitoring wells, recovery wells, and piezometers, including their installation dates, diameters, and screened intervals.

Sampling procedures used to implement the monitoring described in this plan are defined in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PRO/S04351). All sampling activities are conducted using Florida Department of Environmental Protection (FDEP) Standard Operating Procedures. Quality assurance requirements for sampling and analysis are defined in the *Quality Assurance Manual* (LMS/POL/S04320) and the Sampling and Analysis Plan.

A2.0 Contaminants of Potential Concern

The types of contaminants of potential concern (COPCs) determine the analytical methods that will be used to analyze samples. Table A-2 lists the current COPCs and their associated cleanup target levels (CTLs). Monitoring for arsenic ceased in 2008 when all concentrations were determined to be below the CTL.

The COPCs listed in Table A-2 were determined from a review of site data and regulatory documents for the STAR Center and the 4.5 Acre Site as described in the *Historical Review and Evaluation of Contaminants of Potential Concern* (DOE 2003). Plume delineation work in 2011 and 2012 along the eastern edge of Building 100 and at the eastern STAR Center property boundary has identified 1,4-dioxane concentrations that exceed CTLs both on site and off site (DOE 2012). As a result, FDEP requested in August 2011 that 1,4-dioxane be added as a COPC for the Building 100 Area.

Most of the older site documents, including the *Historical Review and Evaluation of Contaminants of Potential Concern* (DOE 2003), have compared groundwater contaminant concentrations to drinking water standards (i.e., maximum contaminant levels). However, those standards are not the applicable default CTLs for evaluating site remediation under FDEP's Global Risk-Based Corrective Action rules. Based on a comprehensive review of background data for the site (DOE 2003), it was determined that the shallow groundwater in the site vicinity is naturally elevated in aluminum and iron at levels far exceeding State of Florida Secondary Drinking Water Standards (*Florida Administrative Code* Chapter 62-550 [FAC 62-550]).

Specifically, the average background concentration of 1.1 milligrams per liter (mg/L) for aluminum exceeds the 0.2 mg/L secondary standard by a factor of 5.5, and the average background concentration for iron of 9.3 mg/L exceeds the 0.3 mg/L secondary standard by a factor of 31. The ambient shallow groundwater in the area is therefore designated as "poor

quality" as defined in FAC 62-780.200(35). Thus, the applicable groundwater CTLs are those for groundwater of "low yield/poor quality" provided in Table 1 of FAC 62-777.

Use of these poor-quality groundwater CTLs applies only at the STAR Center and the 4.5 Acre Site. Contaminant concentrations in samples from offsite wells still must be compared to the regular groundwater CTLs. The poor-quality groundwater CTLs are a factor of 10 higher than the regular groundwater CTLs for site COPCs.

A3.0 4.5 Acre Site Monitoring

The 13 original closure monitoring wells for the 4.5 Acre Site were determined in 2009 in the *Closure Monitoring Plan for the Northeast Site and 4.5 Acre Site* (DOE 2009). Closure monitoring began with the August/September 2009 sampling event. During a meeting with FDEP in August 2014, it was determined that the list of closure monitoring wells should be revised to exclude wells in the interior of the site and add wells along the southwest property boundary. This change was implemented starting with the September 2014 sampling event. Subsequently, DOE decided to continue monitoring the three wells with COPC detections in the site interior, starting with the March 2015 sampling event. Semiannual sampling of the 11 monitoring wells will continue (Table A-3; Plate A1).

All of the 4.5 Acre Site volatile organic COPCs (Table A-2) are on the analyte list for U.S. Environmental Protection Agency (EPA) Method 8260. Additionally, the EPA Method 8260 reporting limits are at or below the CTLs for these contaminants. Therefore, EPA Method 8260 will be used to analyze the volatile organic compounds (VOCs) in groundwater samples collected from the 4.5 Acre Site.

A4.0 Building 100 Area Monitoring

Monitoring the stability of the contaminant plumes was conducted in 2013 and 2014 and led to the determination that the south plume was not stable. As a result, enhanced bioremediation was implemented in the onsite downgradient plumes in fall 2014, in the offsite plumes in February 2015, and beneath Building 100 in November 2015. Thus, the monitoring objective for the Building 100 Area is to evaluate the performance of the remediation at the STAR Center and the offsite properties. The suite of wells sampled for performance monitoring is the same as the suite of wells that was sampled for plume stability monitoring. The wells that will be sampled are shown on Plate A1 and listed in Table A-3.

All of the Building 100 Area volatile organic COPCs (Table A-2) are on the analyte list for EPA Method 8260. Additionally, the EPA Method 8260 reporting limits are at or below the CTLs for these contaminants. Therefore, EPA Method 8260 will be used to analyze VOCs in groundwater samples collected from monitoring wells at the Building 100 Area. One exception is 1,4-dioxane, which will be analyzed using EPA Method 8260 SIM; the detection limit for this method is 0.64 microgram per liter, below the 3.2 micrograms per liter CTL.

A5.0 Sampling Frequency for Other Parameters

In addition to the laboratory analyses discussed above, all groundwater samples are measured at the time of collection for temperature, pH, oxidation/reduction potential, dissolved oxygen, turbidity, and specific conductance. These parameters help define geochemical conditions in the groundwater and are also used to determine when well purging is complete. Analysis of these field parameters will continue.

Groundwater level measurements will be taken semiannually in all accessible monitoring wells and piezometers. Even though a limited set of wells is proposed for closure monitoring at the 4.5 Acre Site, water levels will be measured in all existing wells to provide a more detailed evaluation of groundwater flow.

Surface water level measurements will be taken during both semiannual sampling events at PIN23-SW01 on the Southwest Pond, PIN37-S001 on the South Pond, PIN02-W005 on the West Pond, PIN01-P501 and -P502 on Pond 5, and PIN12-BR01 on the pond east of Belcher Road (Plate A1).

A6.0 Implementing Changes to the Plan

Changes to the plan will be justified, documented, and approved through the use of a Program Directive. Program Directives are discussed in detail in the *Document Production Manual* (LMS/POL/S09818). Program Directives will be archived and made available upon request.

A7.0 Summary

Table A-4 shows a summary of the number of samples that will be collected, based on the sampling frequencies recommended in this document. Table A-5 lists the number of existing wells at each site.

A8.0 References

DOE (U.S. Department of Energy), 2003. *Young - Rainey STAR Center Pinellas Environmental Restoration Project, Historical Review and Evaluation of Contaminants of Potential Concern*, GJO-2002-359-TAC, Grand Junction, Colorado, February.

DOE (U.S. Department of Energy), 2009. *Closure Monitoring Plan for the Northeast Site and 4.5 Acre Site*, LMS/PIN/N01401, Office of Legacy Management, Grand Junction, Colorado, August.

DOE (U.S. Department of Energy), 2012. *Building 100 Area Site Assessment Report*, LMS/PIN/N01747, Office of Legacy Management, Grand Junction, Colorado, August.

Document Production Manual, LMS/POL/S09818, continually updated, prepared by Navarro Research and Engineering, Inc., for the U.S. Department of Energy Office of Legacy Management.

Quality Assurance Manual, LMS/POL/S04320, continually updated, prepared by Navarro Research and Engineering, Inc., for the U.S. Department of Energy Office of Legacy Management.

Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites, LMS/PRO/S04351, continually updated, prepared by Navarro Research and Engineering, Inc., for the U.S. Department of Energy Office of Legacy Management.

Table A-1. Well Completion Data

Well ID	Well Type	Screen Interval (feet below surface)	Well Diameter (inches)	Installation Date
Building 100 Area				
PIN06-0500	Monitoring Well	3–13	2	4/23/1989
PIN12-0509	Monitoring Well	3–13	2	4/25/1990
PIN12-0520	Monitoring Well	36–46	2	5/2/1995
PIN12-0521	Monitoring Well	19.5–29.5	2	5/5/1995
PIN12-0524	Monitoring Well	27–37	2	5/12/1995
PIN12-0525	Monitoring Well	12–22	2	5/12/1995
PIN12-0539	Monitoring Well	9.5–19.5	1	10/10/2007
PIN12-0540	Monitoring Well	20–30	1	10/10/2007
PIN12-0541	Monitoring Well	10–20	1	10/10/2007
PIN12-0542	Monitoring Well	20–30	1	10/10/2007
PIN12-0549	Monitoring Well	30–40	1	12/11/2007
PIN12-0550-1	Monitoring Well	9–18	0.375	2/14/2008
PIN12-0550-2	Monitoring Well	20–29	0.375	2/14/2008
PIN12-0550-3	Monitoring Well	31–40	0.375	2/14/2008
PIN12-0551-1	Monitoring Well	9–18	0.375	2/14/2008
PIN12-0551-2	Monitoring Well	20–29	0.375	2/14/2008
PIN12-0551-3	Monitoring Well	31–40	0.375	2/14/2008
PIN12-0554A	Monitoring Well	3–13	1	5/31/2008
PIN12-0554B	Monitoring Well	13–23	1	5/31/2008
PIN12-0554C	Monitoring Well	23–33	1	5/31/2008
PIN12-0555A	Monitoring Well	2.5–12.5	1	6/7/2008
PIN12-0555B	Monitoring Well	13–23	1	6/7/2008
PIN12-0555C	Monitoring Well	23–33	1	6/7/2008
PIN12-0561-1	Monitoring Well	9–18	0.375	11/22/2008
PIN12-0561-2	Monitoring Well	20–29	0.375	11/22/2008
PIN12-0561-3	Monitoring Well	31–40	0.375	11/22/2008
PIN12-0564-1	Monitoring Well	9–18	0.375	5/5/2009
PIN12-0564-2	Monitoring Well	20–29	0.375	5/5/2009
PIN12-0564-3	Monitoring Well	31–40	0.375	5/5/2009
PIN12-0565-1	Monitoring Well	9–18	0.375	5/5/2009
PIN12-0565-2	Monitoring Well	20–29	0.375	5/5/2009
PIN12-0565-3	Monitoring Well	31–40	0.375	5/5/2009
PIN12-0566-1	Monitoring Well	10–19	0.375	5/6/2009
PIN12-0566-2	Monitoring Well	21–30	0.375	5/6/2009
PIN12-0566-3	Monitoring Well	32–41	0.375	5/6/2009
PIN12-0567-1	Monitoring Well	9–18	0.375	9/23/2009
PIN12-0567-2	Monitoring Well	20–29	0.375	9/23/2009
PIN12-0567-3	Monitoring Well	31–40	0.375	9/23/2009
PIN12-0568-1	Monitoring Well	9–18	0.375	9/23/2009

Table A-1 (continued). Well Completion Data

Well ID	Well Type	Screen Interval (feet below surface)	Well Diameter (inches)	Installation Date
PIN12-0568-2	Monitoring Well	20–29	0.375	9/23/2009
PIN12-0568-3	Monitoring Well	31–40	0.375	9/23/2009
PIN12-0569-1	Monitoring Well	9–18	0.375	9/22/2009
PIN12-0569-2	Monitoring Well	20–29	0.375	9/22/2009
PIN12-0569-3	Monitoring Well	31–40	0.375	9/22/2009
PIN12-0570-1	Monitoring Well	9–18	0.375	3/22/2010
PIN12-0570-2	Monitoring Well	20–29	0.375	3/22/2010
PIN12-0570-3	Monitoring Well	31–40	0.375	3/22/2010
PIN12-0571-1	Monitoring Well	9–18	0.375	3/23/2010
PIN12-0571-2	Monitoring Well	20–29	0.375	3/23/2010
PIN12-0571-3	Monitoring Well	31–40	0.375	3/23/2010
PIN12-0572-1	Monitoring Well	9–18	0.375	5/24/2011
PIN12-0572-2	Monitoring Well	20–29	0.375	5/24/2011
PIN12-0572-3	Monitoring Well	31–40	0.375	5/24/2011
PIN12-0573-1	Monitoring Well	9–18	0.375	5/25/2011
PIN12-0573-2	Monitoring Well	20–29	0.375	5/25/2011
PIN12-0573-3	Monitoring Well	31–40	0.375	5/25/2011
PIN12-0574-1	Monitoring Well	9–18	0.375	5/25/2011
PIN12-0574-2	Monitoring Well	20–29	0.375	5/25/2011
PIN12-0574-3	Monitoring Well	31–40	0.375	5/25/2011
PIN12-0575-1	Monitoring Well	9–18	0.375	5/26/2011
PIN12-0575-2	Monitoring Well	20–29	0.375	5/26/2011
PIN12-0575-3	Monitoring Well	31–40	0.375	5/26/2011
PIN12-0576-1	Monitoring Well	4–13	0.375	8/29/2012
PIN12-0576-2	Monitoring Well	15–24	0.375	8/29/2012
PIN12-0576-3	Monitoring Well	26–35	0.375	8/29/2012
PIN12-0577-1	Monitoring Well	4–13	0.375	8/29/2012
PIN12-0577-2	Monitoring Well	15–24	0.375	8/29/2012
PIN12-0577-3	Monitoring Well	26–35	0.375	8/29/2012
PIN12-0578-1	Monitoring Well	4–13	0.375	8/30/2012
PIN12-0578-2	Monitoring Well	15–24	0.375	8/30/2012
PIN12-0578-3	Monitoring Well	26–35	0.375	8/30/2012
PIN12-0579-1	Monitoring Well	4–13	0.375	8/28/2012
PIN12-0579-2	Monitoring Well	15–24	0.375	8/28/2012
PIN12-0579-3	Monitoring Well	26–35	0.375	8/28/2012
PIN12-0580-1	Monitoring Well	9–18	0.375	2/26/2013
PIN12-0580-2	Monitoring Well	20–29	0.375	2/26/2013
PIN12-0580-3	Monitoring Well	31–40	0.375	2/26/2013
PIN12-0581-1	Monitoring Well	9–18	0.375	2/25/2013
PIN12-0581-2	Monitoring Well	20–29	0.375	2/25/2013

Table A-1 (continued). Well Completion Data

Well ID	Well Type	Screen Interval (feet below surface)	Well Diameter (inches)	Installation Date
PIN12-0581-3	Monitoring Well	31–40	0.375	2/25/2013
PIN12-0582-1	Monitoring Well	9–18	0.375	2/26/2013
PIN12-0582-2	Monitoring Well	20–29	0.375	2/26/2013
PIN12-0582-3	Monitoring Well	31–40	0.375	2/26/2013
PIN12-0583-1	Monitoring Well	9–18	0.375	2/28/2013
PIN12-0583-2	Monitoring Well	20–29	0.375	2/28/2013
PIN12-0583-3	Monitoring Well	31–40	0.375	2/28/2013
PIN12-0584-1	Monitoring Well	9–18	0.375	2/28/2013
PIN12-0584-2	Monitoring Well	20–29	0.375	2/28/2013
PIN12-0584-3	Monitoring Well	31–40	0.375	2/28/2013
PIN12-0585-1	Monitoring Well	9–18	0.375	2/28/2013
PIN12-0585-2	Monitoring Well	20–29	0.375	2/28/2013
PIN12-0585-3	Monitoring Well	31–40	0.375	2/28/2013
PIN12-0586-1	Monitoring Well	8–17	0.375	2/27/2013
PIN12-0586-2	Monitoring Well	19–28	0.375	2/27/2013
PIN12-0586-3	Monitoring Well	30–39	0.375	2/27/2013
PIN12-0587-1	Monitoring Well	9–18	0.375	2/27/2013
PIN12-0587-2	Monitoring Well	20–29	0.375	2/27/2013
PIN12-0587-3	Monitoring Well	31–40	0.375	2/27/2013
PIN12-0588-1	Monitoring Well	9–18	0.375	2/27/2013
PIN12-0588-2	Monitoring Well	20–29	0.375	2/27/2013
PIN12-0588-3	Monitoring Well	31–40	0.375	2/27/2013
PIN12-RW01	Recovery Well	19–29	6	7/6/1995
PIN12-RW02	Recovery Well	25–35	6	7/7/1995
PIN12-RW03	Recovery Well	3–38	4	9/25/2008
PIN12-S29C	Monitoring Well	14–24	2	5/1/1995
PIN12-S30B	Monitoring Well	5–15	2	5/1/1995
PIN12-S31B	Monitoring Well	5–15	2	5/1/1995
PIN12-S32B	Monitoring Well	5.5–15.5	2	5/1/1995
PIN12-S33C	Monitoring Well	11–21	2	7/1/1995
PIN12-S35B	Monitoring Well	5–15	2	7/1/1995
PIN12-S36B	Monitoring Well	5–15	2	7/1/1995
PIN12-S37B	Monitoring Well	5–15	2	7/1/1995
PIN12-S67B	Monitoring Well	10–19.83	1	9/6/2001
PIN12-S67C	Monitoring Well	20–29.83	1	9/6/2001
PIN12-S67D	Monitoring Well	30–39.83	1	9/6/2001
PIN12-S68B	Monitoring Well	10–20	1	3/19/2002
PIN12-S68C	Monitoring Well	18–28	1	3/19/2002
PIN12-S68D	Monitoring Well	30–40	1	3/19/2002
PIN12-S69B	Monitoring Well	10–20	1	3/20/2002

Table A-1 (continued). Well Completion Data

Well ID	Well Type	Screen Interval (feet below surface)	Well Diameter (inches)	Installation Date
PIN12-S69C	Monitoring Well	20–30	1	3/20/2002
PIN12-S69D	Monitoring Well	30–40	1	3/20/2002
PIN12-S70B	Monitoring Well	10–20	1	3/19/2002
PIN12-S70C	Monitoring Well	20–30	1	3/19/2002
PIN12-S70D	Monitoring Well	30–40	1	3/19/2002
PIN12-S71B	Monitoring Well	10–20	1	3/19/2002
PIN12-S71C	Monitoring Well	20–30	1	3/19/2002
PIN12-S71D	Monitoring Well	30–40	1	3/19/2002
PIN12-S73B	Monitoring Well	10–20	1	3/20/2002
PIN12-S73C	Monitoring Well	20–30	1	3/20/2002
PIN12-S73D	Monitoring Well	30–40	1	3/20/2002
PIN21-0502	Monitoring Well	7–17	2	8/12/1991
PIN21-0503	Monitoring Well	20–28	2	8/13/1991
PIN21-0504	Monitoring Well	7–17	2	8/13/1991
PIN21-0505	Monitoring Well	20–28	2	8/13/1991
4.5 Acre Site				
PIN20-0502	Monitoring Well	21.2–31.2	2	3/22/1991
PIN20-0503	Monitoring Well	13.2–23.2	2	3/22/1991
PIN20-M001	Monitoring Well	20–25	2	5/17/1985
PIN20-M003	Monitoring Well	9–14	2	5/20/1985
PIN20-M005	Monitoring Well	25.8–30.7	2	5/19/1985
PIN20-M015	Monitoring Well	20.8–25.8	2	8/20/1985
PIN20-M035	Monitoring Well	9–14	2	2/17/1986
PIN20-M036	Monitoring Well	25–30	2	2/18/1986
PIN20-M053	Monitoring Well	20–30	2	6/22/2001
PIN20-M056	Monitoring Well	19–29	2	1/23/2004
PIN20-M057	Monitoring Well	20–30	2	1/23/2004
PIN20-M058	Monitoring Well	18–28	2	1/23/2004
PIN20-M059	Monitoring Well	19–29	2	1/22/2004
PIN20-M065	Monitoring Well	10–20	1	10/21/2009
PIN20-M066	Monitoring Well	20–30	1	10/21/2009
PIN20-M067	Monitoring Well	10–20	1	10/21/2009
PIN20-M068	Monitoring Well	20–30	1	10/21/2009
PIN20-M069	Monitoring Well	10–20	1	10/21/2009
PIN20-M18D	Monitoring Well	20–30	2	6/25/1999
PIN20-M38D	Monitoring Well	20–30	2	7/19/1989
PIN20-M40D	Monitoring Well	18–28	2	7/20/1989
PIN20-M40S	Monitoring Well	4–14	2	7/20/1989
PIN20-M41D	Monitoring Well	16–26	2	1/15/1993
PIN20-RW01	Recovery Well	10–30	4	1/21/2004

Table A-1 (continued). Well Completion Data

Well ID	Well Type	Screen Interval (feet below surface)	Well Diameter (inches)	Installation Date
PIN20-RW02	Recovery Well	8–28	4	1/21/2004
PIN20-RW03	Recovery Well	8–28	4	1/22/2004
Sitewide Piezometers				
PIN02-PZ03	Piezometer	2–12	1	2/22/2007
PIN02-PZ04	Piezometer	2–12	1	2/21/2007
PIN02-PZ05	Piezometer	2–12	1	2/21/2007
PIN02-PZ08	Piezometer	2–12	1	2/21/2007
PIN02-PZ09	Piezometer	2–12	1	2/21/2007
PIN02-PZ10	Piezometer	5–15	1	11/24/2008
PIN02-PZ11	Piezometer	20–30	1	11/24/2008
PIN12-PZ01	Piezometer	25–35	1	3/20/2012
PIN12-PZ02	Piezometer	25–35	1	3/26/2012
PIN12-PZ03	Piezometer	25–35	1	3/21/2012

Table A-2. Contaminants of Potential Concern and Cleanup Target Levels

Contaminants of Potential Concern	FDEP Cleanup Target Levels[a] (µg/L)[b]
Building 100 Area	
Trichloroethene	30
1,1-Dichloroethene	70
cis-1,2-Dichloroethene	700
trans-1,2-Dichloroethene	1000
Vinyl chloride	10
1,4-dioxane	32
Arsenic[c]	100
4.5 Acre Site	
Trichloroethene	30
cis-1,2-Dichloroethene	700
trans-1,2-Dichloroethene	1000
Vinyl chloride	10
Benzene	10
Arsenic[c]	100

Notes:

[a] The poor-quality groundwater CTLs (onsite CTLs) are listed in this table. The offsite CTLs are a factor of 10 lower than the onsite CTLs, as described in Section A2.0.

[b] µg/L = micrograms per liter.

[c] Sampling for arsenic ceased in 2008.

Table A-3. Sampling Frequency and Analytes

Well	VOCs	1,4-dioxane
Building 100 Area		
PIN12-0524	S	S
PIN12-0525	S	S
PIN12-0539	S	S
PIN12-0540	S	S
PIN12-0541	S	S
PIN12-0542	S	S
PIN12-0549	S	S
PIN12-0551-2	S	S
PIN12-0554A	S	S
PIN12-0554B	S	S
PIN12-0554C	S	S
PIN12-0555A	S	S
PIN12-0555B	S	S
PIN12-0555C	S	S
PIN12-0561-1	S	S
PIN12-0561-2	S	S
PIN12-0561-3	S	S
PIN12-0565-1	S	S
PIN12-0565-2	S	S
PIN12-0565-3	S	S
PIN12-0568-1	S	S
PIN12-0568-2	S	S
PIN12-0568-3	S	S
PIN12-0569-1	S	S
PIN12-0569-2	S	S
PIN12-0569-3	S	S
PIN12-0570-1	S	S
PIN12-0570-2	S	S
PIN12-0570-3	S	S
PIN12-0572-1	S	S
PIN12-0572-2	S	S
PIN12-0573-1	S	S
PIN12-0573-2	S	S
PIN12-0573-3	S	S
PIN12-0574-1	S	S
PIN12-0574-2	S	S
PIN12-0574-3	S	S
PIN12-0575-1	S	S
PIN12-0575-2	S	S
PIN12-0576-1	S	S

Table A-3 (continued). Sampling Frequency and Analytes

Well	VOCs	1,4-dioxane
PIN12-0576-2	S	S
PIN12-0576-3	S	S
PIN12-0577-1	S	S
PIN12-0577-2	S	S
PIN12-0577-3	S	S
PIN12-0578-1	S	S
PIN12-0578-2	S	S
PIN12-0578-3	S	S
PIN12-0579-1	S	S
PIN12-0579-2	S	S
PIN12-0579-3	S	S
PIN12-0580-1	S	S
PIN12-0580-2	S	S
PIN12-0580-3	S	S
PIN12-0581-1	S	S
PIN12-0581-2	S	S
PIN12-0581-3	S	S
PIN12-0582-1	S	S
PIN12-0582-2	S	S
PIN12-0582-3	S	S
PIN12-0583-1	S	S
PIN12-0583-2	S	S
PIN12-0583-3	S	S
PIN12-0584-1	S	S
PIN12-0584-2	S	S
PIN12-0584-3	S	S
PIN12-0585-1	S	S
PIN12-0585-2	S	S
PIN12-0585-3	S	S
PIN12-0586-1	S	S
PIN12-0586-2	S	S
PIN12-0586-3	S	S
PIN12-0587-1	S	S
PIN12-0587-2	S	S
PIN12-0587-3	S	S
PIN12-0588-1	S	S
PIN12-0588-2	S	S
PIN12-0588-3	S	S
PIN12–S30B	S	S
PIN12–S33C	S	S
PIN12–S35B	S	S

Table A-3 (continued). Sampling Frequency and Analytes

Well	VOCs	1,4-dioxane
PIN12–S67B	S	S
PIN12–S67C	S	S
PIN12–S67D	S	S
PIN12–S68B	S	S
PIN12–S68C	S	S
PIN12–S68D	S	S
PIN12–S69B	S	S
PIN12–S69C	S	S
PIN12–S69D	S	S
PIN12–S70B	S	S
PIN12–S70C	S	S
PIN12–S70D	S	S
PIN12–S71B	S	S
PIN12–S71C	S	S
PIN12–S71D	S	S
PIN12–S73B	S	S
PIN12–S73C	S	S
PIN12–S73D	S	S
4.5 Acre Site		
PIN20–M001	S	-
PIN20–M015	S	-
PIN20–M053	S	-
PIN20–M056	S	-
PIN20–M057	S	-
PIN20–M058	S	-
PIN20–M059	S	-
PIN20–M067	S	-
PIN20–M068	S	-
PIN20–M069	S	-
PIN20–M18D	S	-

Notes:
S = semiannual
- = no sampling for this analyte

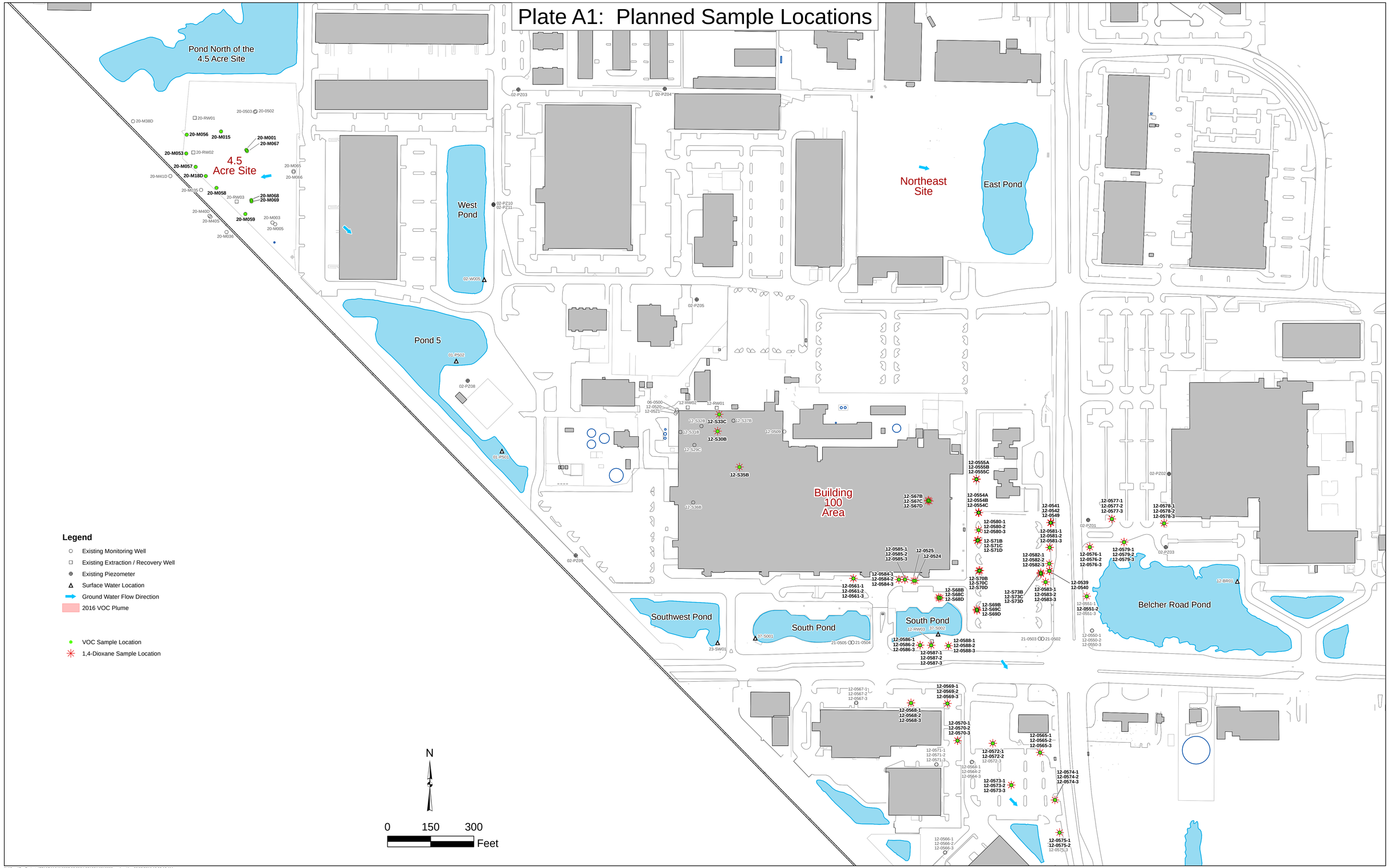
Table A-4. Summary of Annual Monitoring Well Samples

Analyte	March	September	Fiscal Year Total
VOCs	110	110	220
1,4-Dioxane	99	99	198
Event Total	209	209	418

Table A-5. Number of Existing Wells at Each Site

Site	Number of Existing Wells
Building 100 Area	134
4.5 Acre Site	26

Plate A1: Planned Sample Locations



\\LMess\EnvProjects\EBM\PIN\041\0002\08\006\N02108\N02108N02108D00.mxd smithw 08/02/2016 10:52:19 AM

Appendix B

Institutional Controls Documentation

KEN BURKE, CLERK OF COURT
AND COMPTROLLER PINELLAS COUNTY, FL
INST# 2015270107 09/18/2015 at 02:45 PM
OFF REC BK: 18926 PG: 880-888
DocType:RST

THIS INSTRUMENT PREPARED BY:

F. JOSEPH ULLO, JR., ESQUIRE
LEWIS, LONGMAN & WALKER, P.A.
315 SOUTH CALHOUN STREET,
SUITE 830
TALLAHASSEE, FL 32202
(850) 222-5702

DECLARATION OF RESTRICTIVE COVENANT
NORTHEAST SITE SOLID WASTE MANAGEMENT UNIT

THIS DECLARATION OF RESTRICTIVE COVENANT (hereinafter "Declaration") is made this 16 day of September, 2015, by the Pinellas County Industrial Development Authority, a Special District created pursuant to Part III, Chapter 159, Florida Statutes, d/b/a PINELLAS COUNTY ECONOMIC DEVELOPMENT AUTHORITY, (hereinafter "GRANTOR") and the Florida Department of Environmental Protection (hereinafter "FDEP").

RECITALS

A. GRANTOR is the fee simple owner of that certain real property situated in the County of Pinellas, State of Florida, more particularly described in Exhibit A attached hereto and made a part hereof (hereinafter the "Restricted Property").

B. The FDEP Facility Identification Number for the Restricted Property is FL6 890 090 008 (PIN15). The facility name at the time of this Declaration is U.S. Department of Energy ("DOE") Northeast Site Solid Waste Management Unit ("SWMU") which is in the northeastern portion of the Young – Rainey STAR Center. This Declaration addresses discharges that were reported to the USEPA on December 14, 1987.

C. The discharge of chlorinated solvents on the Restricted Property/Northeast Site SWMU is documented in the following reports that are incorporated by reference.

1. Long-Term Surveillance and Maintenance Plan for the Pinellas Site November 2012, submitted by the U.S. DOE.

2. Sitewide Environmental Monitoring, Semiannual Progress Reports for the Young – Rainey STAR Center, submitted by the U.S. DOE and dated December 2012 through May 2013

3. Closure Monitoring Plan for the Northeast Site and 4.5 Acre Site, dated September 2009, submitted by the U.S. Department of Energy.

4. Interim Remedial Action for Source Removal at the Northeast Site Final Report, dated August 2009, submitted by the U.S. Department of Energy.

5. Final Report Northeast Site Area B NAPL Remediation Project at the Young – Rainey STAR Center, Largo, Pinellas County, Florida, dated April 2007, submitted by the U.S. Department of Energy.

D. The reports noted in Recital C set forth the nature and extent of the contamination that is located on the Restricted Property. These reports confirm that contaminated groundwater, as defined by Chapter 62-780 Florida Administrative Code (F.A.C.), exists on the Restricted Property. Also, these reports document that the groundwater contamination does not extend beyond the Restricted Property boundaries and that the groundwater contamination does not exceed ¼-acre, and that the groundwater contamination is not migrating.

E. The intent of the restrictions in this Declaration is to reduce or eliminate the risk of exposure to users or occupants of the Restricted Property and to the environment of the contaminants and to reduce or eliminate the threat of migration of the contaminants.

F. The FDEP has agreed to issue a Site Rehabilitation Completion Order with Conditions (hereinafter "Order") upon recordation of this Declaration and achievement of site rehabilitation in accordance with Chapter 62-780 F.A.C. The FDEP can unilaterally revoke the Order if the conditions of this Declaration or of the Order are not met. Additionally, if concentrations of chemicals of concern increase above the levels approved in the Order, or if a subsequent discharge occurs at the Restricted Property, the FDEP may require site rehabilitation to reduce concentrations of contamination to the levels allowed by the applicable FDEP rules. The Order relating to FDEP Facility No. FL6 890 090 008 (PIN15) can be found by contacting the appropriate FDEP district office or bureau.

G. GRANTOR deems it desirable and in the best interest of all present and future owners of the Restricted Property that the Order be obtained for the Northeast Site SWMU and that the Restricted Property be held subject to certain restrictions, all of which are more particularly hereinafter set forth.

NOW, THEREFORE, to induce the FDEP to issue the Order and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by each of the undersigned parties, GRANTOR agrees as follows:

1. The foregoing recitals are true and correct and are incorporated herein by reference.

2. GRANTOR hereby imposes on the Restricted Property the following restrictions:

a.i. There shall be no use of or access to the groundwater under the Restricted Property unless pre-approved in writing by FDEP's Division of Waste Management ("DWM") in addition to any authorizations required by the Division of Water Resource Management ("DWRM") and the Water Management District ("WMD").

a.ii. For any dewatering activities on the Restricted Property a plan approved by FDEP's DWM must be in place to address and ensure the appropriate handling, treatment and disposal of any extracted groundwater that may be contaminated.

a.iii. There shall be no construction of new stormwater swales, stormwater detention or retention facilities, or ditches on the Restricted Property without prior written approval from FDEP's DWM in addition to any authorizations required by DWRM and the WMD.

3. In the remaining paragraphs, all references to "GRANTOR" and "FDEP" shall also mean and refer to their respective successors and assigns.

4. For the purpose of monitoring the restrictions contained herein, FDEP is hereby granted a right of entry upon and access to the Restricted Property at reasonable times and with reasonable notice to the GRANTOR. Access to the Property is granted by an adjacent public right of way via 114th Avenue or Bryan Dairy Road.

5. It is the intention of GRANTOR that this Declaration shall touch and concern the Restricted Property, run with the land and with the title to the Restricted Property, and shall apply to and be binding upon and inure to the benefit of GRANTOR and FDEP, and to any and all parties hereafter having any right, title or interest in the Restricted Property or any part thereof. The FDEP may enforce the terms and conditions of this Declaration by injunctive relief and other appropriate available legal remedies. Any forbearance on behalf of the FDEP to exercise its right in the event of the failure of the GRANTOR to comply with the provisions of this Declaration shall not be deemed or construed to be a waiver of the FDEP's rights hereunder. This Declaration shall continue in perpetuity, unless otherwise modified in writing by GRANTOR and the FDEP as provided in paragraph 7 hereof. These restrictions may also be enforced in a court of competent jurisdiction by U.S. DOE and/or any party that establishes proper standing. If the GRANTOR does not or will not be able to comply with any or all of the provisions of this Declaration, the GRANTOR shall notify FDEP in writing within three (3) calendar days. Additionally,

GRANTOR shall notify FDEP thirty (30) days prior to any conveyance or sale, granting or transferring the Restricted Property or portion thereof, to any heirs, successors, assigns or grantees, including, without limitation, the conveyance of any security interest in said Restricted Property.

6. In order to ensure the perpetual nature of these restrictions, GRANTOR shall reference these restrictions in any subsequent lease or deed of conveyance within the Restricted Property, including the recording book and page of record of this Declaration. Furthermore, prior to the entry into a landlord-tenant relationship with respect to the Restricted Property, the GRANTOR agrees to notify in writing all proposed tenants of the Restricted Property of the existence and contents of this Declaration of Restrictive Covenant.

7. This Declaration is binding until a release of covenant is executed by the FDEP Secretary (or designee) and is recorded in the public records of the county in which the land is located. To receive prior approval from the FDEP to remove any requirement herein, cleanup target levels established pursuant to Florida Statutes and FDEP rules must have been achieved. This Declaration may be modified in writing only. Any subsequent amendments must be executed by both GRANTOR and the FDEP and be recorded by the real property owner as an amendment hereto.

8. If any provision of this Declaration is held to be invalid by any court of competent jurisdiction, the invalidity of that provision shall not affect the validity of any other provisions of the Declaration. All such other provisions shall continue unimpaired in full force and effect.

9. GRANTOR covenants and represents that on the date of execution of this Declaration that GRANTOR is seized of the Restricted Property in fee simple and has good right to create, establish, and impose this restrictive covenant on the use of the Property. GRANTOR also covenants and warrants that the Restricted Property is free and clear of any and all liens, mortgages, or encumbrances that could impair GRANTOR'S rights to impose the restrictive covenant described in this Declaration or that is superior to the restrictive covenant described in this Declaration.

[DECLARATION EXECUTED ON FOLLOWING PAGES]

IN WITNESS WHEREOF, *{{GRANTOR}}* has executed this instrument, this 10th day of September, 2015

ATTEST: KEN BURKE
Clerk of the Circuit Court
Deputy Clerk Norman D. Jay
Print Name: Norman D. Jay

(OFFICIAL SEAL)

THE TERMS SPECIFIED HEREIN ARE SUBJECT TO APPROVAL IN OPEN SESSION BY THE BOARD OF COUNTY COMMISSIONERS, PINELLAS COUNTY, FLORIDA

GRANTOR
PINELLAS COUNTY INDUSTRIAL DEVELOPMENT AUTHORITY d/b/a PINELLAS COUNTY ECONOMIC DEVELOPMENT AUTHORITY,

by and through its Board of County Commissioners

By: John Morroni
Name: *John Morroni, Chairman*

Address:
Young – Rainey STAR Center
7887 Bryan Dairy Road, Suite 120
Largo, Florida 33777

APPROVED AS TO FORM:
OFFICE OF THE COUNTY ATTORNEY

By: Olen Hunt
~~Managing~~ Assistant County Attorney

Signed, sealed and delivered in the presence of:

Bernie C. Young Date: 9-10-15
Witness
Print Name: Bernie C. Young

Brian J. Date: 9/10/15
Witness
Print Name: BRIAN LOWACK

STATE OF Florida

COUNTY OF Pinellas

The foregoing instrument was acknowledged before me this 10th day of September 2015, by John Morroni.
Personally Known ✓ OR Produced Identification _____.
Type of Identification Produced _____.

Bernie C. Young
Signature of Notary Public

BERNIE C. YOUNG
MY COMMISSION # FF 124388
EXPIRES: May 19, 2018
Bonded Thru Budget Notary Services

Approved as to form by:

Toni Sturtevant, Asst. General Counsel
Office of General Counsel

FLORIDA DEPARTMENT OF
ENVIRONTMENTAL
PROTECTION

By:

JOHN COATES,
Assistant Division Director

Dept. of Environmental Protection
Division of Waste Management
2600 Blairstone Road
Tallahassee, FL 32399-2400

Signed, sealed, and delivered in
in the presence of:

Witness Signature

WAYNE S. KIGER
Printed Name

9/16/15
Date

Witness Signature

Daniel S. Shores
Printed Name

9/16/2015
Date

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 16TH day of SEPTEMBER, 2015, by JOHN COATES, who is personally known to me.

JUDITH PENNINGTON
MY COMMISSION # FF 215917
EXPIRES: March 31, 2019
Bonded Thru Budget Notary Services

Notary Public, State of Florida at Large

EXHIBIT A
LEGAL DESCRIPTION AND ILLUSTRATION OF RESTRICTED PROPERTY

SCHEDULE A

DESCRIPTION:

A portion of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida being more particularly described as follows :

Commence at the East 1/4 corner of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida; thence N 00°17'23" W a distance of 2004.71 feet along the East line of Northeast 1/4 of said Section 13 to a point on the North line of the South 1/2 of the SW 1/4 of the NE 1/4 of the NE 1/4 of said Section 13; thence N 89°10'14" W a distance of 342.03 feet along the North line of said South 1/2 of the SW 1/4 of the NE 1/4 of the NE 1/4 to the Point of Beginning; thence leaving said North line S 00°18'06" E a distance of 571.35 feet; thence N 89°52'00" W a distance of 388.14 feet; thence N 00°00'00" E a distance of 576.02 feet to a point on aforesaid North line; thence S 89°10'14" E a distance of 385.18 feet along said North line to the Point of Beginning.

Containing: 5.09 acres, more of less.

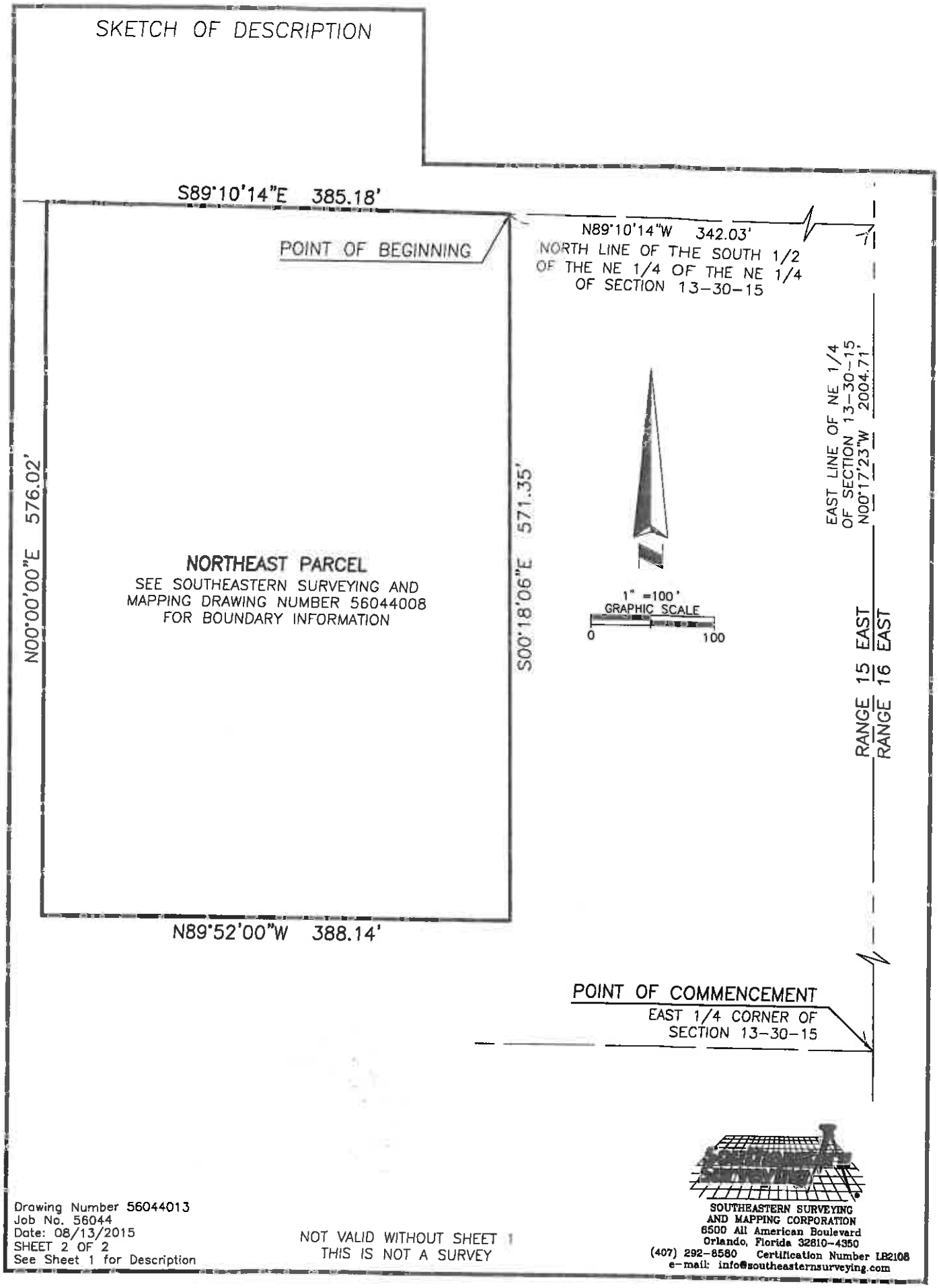
SURVEYOR'S REPORT:

1. Bearings shown hereon are based on the East line of Northeast 1/4 of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida, being North 00°17'23" West.

2. I hereby certify that the "Sketch of Description" of the above described property is true and correct to the best of my knowledge and belief as recently drawn under my direction and that it meets the Standards of Practice for Land Surveying Chapter 5J-17.050-.052 requirements.

DESCRIPTION	Date: August 13, 2015	56044013
FOR	Job Number: 56044 / Scale: 1" = 100'	SOUTHEASTERN SURVEYING AND MAPPING CORPORATION 10770 North 46th Street, Suite C-300 Tampa, Florida 33617 (813) 898-2711 Certification Number LB2108 E-mail: www.southeasternsurveying.com
Stoller Newport News Nuclear (SN3)	Chapter 5J-17.050-.052, Florida Administrative Code requires that a legal description drawing bear the notation that **THIS IS NOT A SURVEY.**	CHARLES M. ARNETT Registered Land Surveyor Number 6884
	SHEET 1 OF 2 SEE SHEET 2 FOR SKETCH	

SKETCH OF DESCRIPTION



Drawing Number 56044013
Job No. 56044
Date: 08/13/2015
SHEET 2 OF 2
See Sheet 1 for Description

NOT VALID WITHOUT SHEET 1
THIS IS NOT A SURVEY

SOUTHEASTERN SURVEYING
AND MAPPING CORPORATION
6500 All American Boulevard
Orlando, Florida 32810-4350
(407) 292-8580 Certification Number LB2108
e-mail: info@southeasternsurveying.com

I, KENNETH P. BURKE, Clerk of the Circuit Court and Clerk Ex-Officio, Board of County Commissioners, do hereby certify that the above and foregoing is a true and correct copy of the original as it appears in the official files of the Board of County Commissioners of Pinellas County, Florida. Witness my hand and seal of said County FL this 15th day of September A.D. 20[illegible]

KENNETH P. BURKE, Clerk of the Circuit Court Ex-Officio Clerk of the Board of County Commissioners Pinellas County, Florida.

By _____
Deputy Clerk

SEAL

KEN BURKE, CLERK OF COURT
AND COMPTROLLER PINELLAS COUNTY, FL
INST# 2015270106 09/18/2015 at 02:45 PM
OFF REC BK: 18926 PG: 870-879
DocType:RST

THIS INSTRUMENT PREPARED BY:

F. JOSEPH ULLO, JR., ESQUIRE
LEWIS, LONGMAN & WALKER, P.A.
315 SOUTH CALHOUN STREET,
SUITE 830
TALLAHASSEE, FL 32301
(850) 222-5702

DECLARATION OF RESTRICTIVE COVENANT
WASTEWATER NEUTRALIZATION AREA SOLID WASTE MANAGEMENT UNIT

THIS DECLARATION OF RESTRICTIVE COVENANT (hereinafter "Declaration") is made this 16 day of September, 2015, by the Pinellas County Industrial Development Authority, a Special District created pursuant to Part III, Chapter 159, Florida Statutes, d/b/a PINELLAS COUNTY ECONOMIC DEVELOPMENT AUTHORITY, (hereinafter "GRANTOR") and the Florida Department of Environmental Protection (hereinafter "FDEP").

RECITALS

A. GRANTOR is the fee simple owner of that certain real property situated in the County of Pinellas, State of Florida, more particularly described in Exhibit A attached hereto and made a part hereof (hereinafter the "Restricted Property").

B. The FDEP Facility Identification Number for the Restricted Property is FL6 890 090 008 (PIN18). The facility name at the time of this Declaration is U.S. Department of Energy ("DOE") Wastewater Neutralization Area ("WWNA") Solid Waste Management Unit ("SWMU") and it currently operates as the Young – Rainey STAR Center Industrial Wastewater Neutralization Facility ("IWNF") which is a Pinellas County permitted discharge facility (Permit Number IE-3002-09/12). This Declaration addresses a discharge that was reported to the USEPA on April 7, 1993.

C. The discharge of chlorinated solvents and metals on the Restricted Property/WWNA SWMU is documented in the following reports that are incorporated by reference.

1. Long-Term Surveillance and Maintenance Plan for the Pinellas Site, November 2012, submitted by the U.S. DOE.

2. Sitewide Environmental Monitoring, Semiannual Progress Reports for the Young – Rainey STAR Center, submitted by the U.S. DOE and dated December 2012 through May 2013.

3. Young – Rainey STAR Center Wastewater Neutralization Area No Further Action With Controls Proposal, dated January 2007, submitted by the U.S. DOE.

4. Wastewater Neutralization Area/Building 200 Area Corrective Measures Implementation Plan Addendum, submitted by the U.S. DOE.

D. The reports noted in Recital C set forth the nature and extent of the contamination that is located on the Restricted Property. These reports confirm that contaminated soil and groundwater as defined by Chapter 62-780 Florida Administrative Code (F.A.C.), exist on the Restricted Property. Also these reports document that the groundwater contamination does not extend beyond the Restricted Property boundaries and that the groundwater contamination does not exceed ¼-acre, and that that the groundwater contamination is not migrating.

E. The intent of the restrictions in this Declaration is to reduce or eliminate the risk of exposure to users or occupants of the Restricted Property and to the environment of the contaminants, and to reduce or eliminate the threat of migration of the contaminants.

F. The FDEP has agreed to issue a Site Rehabilitation Completion Order with Conditions (hereinafter "Order") upon recordation of this Declaration and achievement of site rehabilitation in accordance with Chapter 62-780. The FDEP can unilaterally revoke the Order if the conditions of this Declaration or of the Order are not met. Additionally, if concentrations of chemicals of concern increase above the levels approved in the Order, or if a subsequent discharge occurs at the Restricted Property, the FDEP may require site rehabilitation to reduce concentrations of contamination to the levels allowed by the applicable FDEP rules. The Order relating to FDEP Facility No. FL6 890 090 008 (PIN18) can be found by contacting the appropriate FDEP district office or bureau.

G. GRANTOR deems it desirable and in the best interest of all present and future owners of the Restricted Property that an Order be obtained for the WWNA SWMU and that the Restricted Property be held subject to certain restrictions, all of which are more particularly hereinafter set forth.

NOW, THEREFORE, to induce the FDEP to issue the Order and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by each of the undersigned parties, GRANTOR agrees as follows:

1. The foregoing recitals are true and correct and are incorporated herein by reference.

2. GRANTOR hereby imposes on the Restricted Property the following restrictions:

a. i. There shall be no use of or access to the groundwater under the Restricted Property unless pre-approved in writing by FDEP's Division of Waste Management ("DWM") in addition to any authorizations required by the Division of Water Resource Management ("DWRM") and the Water Management District ("WMD").

a.ii. For any dewatering activities on the Restricted Property a plan approved by FDEP's DWM must be in place to address and ensure the appropriate handling, treatment and disposal of any extracted groundwater that may be contaminated.

a.iii. There shall be no construction of new stormwater swales, stormwater detention or retention facilities or ditches on the Restricted Property without prior written approval from FDEP's DWM in addition to any authorizations required by DWRM and the WMD.

b. Excavation and construction is not prohibited on the Restricted Property provided any contaminated soils that are excavated are removed and properly disposed of pursuant to Chapter 62-780, F.A.C. and any other applicable local, state, and federal requirements. Nothing herein shall limit any other legal requirements regarding construction methods and precautions that must be taken to minimize risk of exposure while conducting work in contaminated areas. Nothing in this Declaration shall prevent, limit or restrict any excavation or construction at or below the surface outside the boundary of the Restricted Property.

c. The following uses are prohibited in the WWNA SWMU as shown in Exhibit A: agricultural use of the land including forestry, fishing and mining; hotels or lodging; recreational uses including amusement parks, parks, camps, museums, zoos, or gardens; residential uses, and educational uses such as elementary or secondary schools, or day care services. These prohibited uses are specifically defined by using the North American Industry Classification System, United States, 2007 (NAICS), Executive Office of the President, Office of Management and Budget. The prohibited uses by code are: Sector 11 Agriculture, Forestry, Fishing and Hunting; Subsector 212 Mining (except Oil and Gas); Code 512132 Drive-In Motion Picture Theaters; Code 51912 Libraries and Archives; Code 53111 Lessors of Residential Buildings and Dwellings; Subsector 6111 Elementary and Secondary Schools; Subsector 623 Nursing and Residential Care Facilities; Subsector 624 Social Assistance; Subsector 711 Performing Arts, Spectator Sports and Related

Industries; Subsector 712 Museums, Historical Sites, and Similar Institutions; Subsector 713 Amusement, Gambling, and Recreation Industries; Subsector 721 Accommodation (hotels, motels, RV parks, etc.); Subsector 813 Religious, Grantmaking, Civic, Professional, and Similar Organizations; and Subsector 814 Private Households.

3. In the remaining paragraphs, all references to "GRANTOR" and "FDEP" shall also mean and refer to their respective successors and assigns.

4. For the purpose of monitoring the restrictions contained herein, FDEP is hereby granted a right of entry upon and access to the Restricted Property at reasonable times and with reasonable notice to the GRANTOR. Access to the Property is granted by an adjacent public right of way via Bryan Dairy Road.

5. It is the intention of GRANTOR that this Declaration shall touch and concern the Restricted Property, run with the land and with the title to the Restricted Property, and shall apply to and be binding upon and inure to the benefit of GRANTOR and FDEP, and to any and all parties hereafter having any right, title or interest in the Restricted Property or any part thereof. The FDEP may enforce the terms and conditions of this Declaration by injunctive relief and other appropriate available legal remedies. Any forbearance on behalf of the FDEP to exercise its right in the event of the failure of the GRANTOR to comply with the provisions of this Declaration shall not be deemed or construed to be a waiver of the FDEP's rights hereunder. This Declaration shall continue in perpetuity, unless otherwise modified in writing by GRANTOR and the FDEP as provided in paragraph 7 hereof. These restrictions may also be enforced in a court of competent jurisdiction by U.S. DOE and/or any other party that establishes proper standing. If the GRANTOR does not or will not be able to comply with any or all of the provisions of this Declaration, the GRANTOR shall notify FDEP in writing within three (3) calendar days. Additionally, GRANTOR shall notify FDEP thirty (30) days prior to any conveyance or sale, granting or transferring the Restricted Property or portion thereof, to any heirs, successors, assigns or grantees, including, without limitation, the conveyance of any security interest in said Restricted Property.

6. In order to ensure the perpetual nature of these restrictions, GRANTOR shall reference these restrictions in any subsequent lease or deed of conveyance within the Restricted Property, including the recording book and page of record of this Declaration. Furthermore, prior to the entry into a landlord-tenant relationship with respect to the Restricted Property, the GRANTOR agrees to notify in writing all proposed tenants of the Restricted Property of the existence and contents of this Declaration of Restrictive Covenant.

7. This Declaration is binding until a release of covenant is executed by the FDEP Secretary (or designee) and is recorded in the public records of the county in which the land is located. To receive prior approval from the FDEP to remove any requirement herein, cleanup target levels established pursuant to Florida Statutes

and FDEP rules must have been achieved. This Declaration may be modified in writing only. Any subsequent amendments must be executed by both GRANTOR and the FDEP and be recorded by the real property owner as an amendment hereto.

8. If any provision of this Declaration is held to be invalid by any court of competent jurisdiction, the invalidity of that provision shall not affect the validity of any other provisions of the Declaration. All such other provisions shall continue unimpaired in full force and effect.

9. GRANTOR covenants and represents that on the date of execution of this Declaration that GRANTOR is seized of the Restricted Property in fee simple and has good right to create, establish, and impose this restrictive covenant on the use of the Property. GRANTOR also covenants and warrants that the Restricted Property is free and clear of any and all liens, mortgages, or encumbrances that could impair GRANTOR'S rights to impose the restrictive covenant described in this Declaration or that is superior to the restrictive covenant described in this Declaration.

[DECLARATION EXECUTED ON FOLLOWING PAGES]

IN WITNESS WHEREOF, *{{GRANTOR}}* has executed this instrument, this 10th day of September, 2015

ATTEST: KEN BURKE
Clerk of the Circuit Court
Deputy Clerk Norman D. Fog
Print Name: Norman D. Fog

(OFFICIAL SEAL)

THE TERMS SPECIFIED HEREIN ARE SUBJECT TO APPROVAL IN OPEN SESSION BY THE BOARD OF COUNTY COMMISSIONERS,
PINELLAS COUNTY, FLORIDA

GRANTOR
PINELLAS COUNTY INDUSTRIAL DEVELOPMENT AUTHORITY d/b/a PINELLAS COUNTY ECONOMIC DEVELOPMENT AUTHORITY,

by and through its Board of County Commissioners

By: John Morroni
Name: *John Morroni, Chairman*

Address:
Young – Rainey STAR Center
7887 Bryan Dairy Road, Suite 120
Largo, Florida 33777

APPROVED AS TO FORM:
OFFICE OF THE COUNTY ATTORNEY

By: Cherylbray
~~Managing~~ Assistant County Attorney

Signed, sealed and delivered in the presence of:

Bernie C. Young Date: 9-10-15
Witness
Print Name: Bernie C. Young

Brian J. Date: 9/10/15
Witness
Print Name: BRIAN LOWACK

STATE OF Florida

COUNTY OF Pinellas

The foregoing instrument was acknowledged before me this 10th day of September 2015 by John Morroni.
Personally Known ✓ OR Produced Identification _____.
Type of Identification Produced _____.

Bernie C. Young
Signature of Notary Public

BERNIE C. YOUNG
MY COMMISSION # FF 124388
EXPIRES: May 19, 2018
Bonded Thru Budget Notary Services

Approved as to form by:

Toni Sturtevant, Asst. General Counsel
Office of General Counsel

FLORIDA DEPARTMENT OF
ENVIRONTMENTAL
PROTECTION

By:

JOHN COATES,
Assistant Division Director

Dept. of Environmental Protection
Division of Waste Management
2600 Blairstone Road
Tallahassee, FL 32399-2400

Signed, sealed, and delivered in
in the presence of:

Witness Signature

WAYNE S. KIGER
Printed Name

9/16/15
Date

Witness Signature

Daniel S. Shores
Printed Name

9/16/2015
Date

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 16TH day of SEPTEMBER, 2015, by JOHN COATES, who is personally known to me.

NOTARY PUBLIC STATE OF FLORIDA
JUDITH PENNINGTON
MY COMMISSION # FF 215917
EXPIRES: March 31, 2019
Bonded Thru Budget Notary Services

Notary Public, State of Florida at Large

EXHIBIT A
LEGAL DESCRIPTION AND ILLUSTRATION OF RESTRICTED PROPERTY

SCHEDULE A

DESCRIPTION:

A portion of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida being more particularly described as follows:

Commence at the East 1/4 corner of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida; thence N 89°46'54" W a distance of 1351.84 feet along the East – West Mid Section line of said Section 13 to a point on the East line of the SW 1/4 of the NE 1/4 of said Section 13; thence N 00°08'10" E a distance of 588.83 feet along the East line of said SW 1/4 of the NE 1/4 to a point; thence leaving said East line N 89°50'08" W a distance of 77.09 feet to the Point of Beginning; thence continue N 89°50'08" W a distance of 394.00 feet; thence N 00°09'51" E a distance of 286.01 feet, thence S 89°50'08" E a distance of 394.00 feet; thence S 00°09'51" W a distance of 286.01 feet to the Point of Beginning.

Containing: 2.59 acres, more or less.

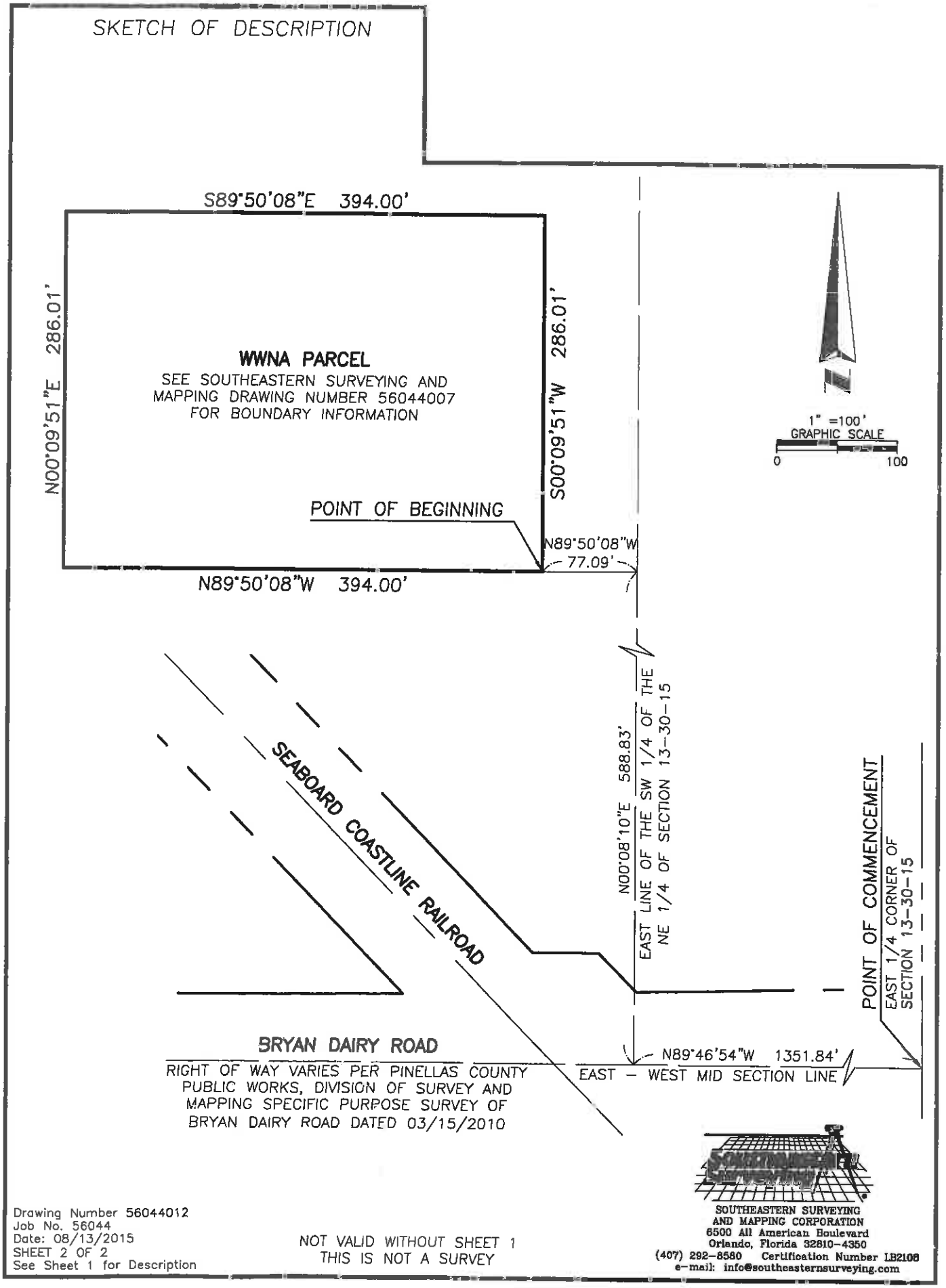
SURVEYOR'S REPORT:

1. Bearings shown hereon are based on the East – West Mid Section line of Section 13, Township 30 South, RANGE 15 EAST, Pinellas County, being North 89°46'54" West.

2. I hereby certify that the "Sketch of Description" of the above described property is true and correct to the best of my knowledge and belief as recently drawn under my direction and that it meets the Standards of Practice for Land Surveying Chapter 5J–17.050–.052 requirements.

DESCRIPTION	Date: August 13, 2015	56044012
FOR	Job Number: 56044 / Scale: 1" = 100'	
Stoller Newport News Nuclear (SN3)	Chapter 5J–17.050–.052, Florida Administrative Code requires that a legal description drawing bear the notation that **THIS IS NOT A SURVEY.**	SOUTHEASTERN SURVEYING AND MAPPING CORPORATION 10770 North 46th Street, Suite C-300 Tampa, Florida 33617 (813) 898-2711 Certification Number LB2108 Email: www.southeasternsurveying.com
	SHEET 1 OF 2 SEE SHEET 2 FOR SKETCH	CHARLES M. ARNETT Registered Land Surveyor Number 6884

SKETCH OF DESCRIPTION



Drawing Number 56044012
Job No. 56044
Date: 08/13/2015
SHEET 2 OF 2
See Sheet 1 for Description

NOT VALID WITHOUT SHEET 1
THIS IS NOT A SURVEY

SOUTHEASTERN SURVEYING AND MAPPING CORPORATION
6500 All American Boulevard
Orlando, Florida 32810-4350
(407) 292-8580 Certification Number LB2108
e-mail: info@southeasternsurveying.com

I, KENNETH P. BURKE, Clerk of the Circuit Court and Clerk Ex-Officio, Board of County Commissioners, do hereby certify that the above and foregoing is a true and correct copy of the original as it appears in the official files of the Board of County Commissioners of Pinellas County, Florida. Witness my hand and seal of said County FL this 6 day of September A.D. 20 [illegible]

KENNETH P. BURKE, Clerk of the Circuit Court Ex-Officio Clerk of the Board of County Commissioners, Pinellas County, Florida.

By: _____
Deputy Clerk

SEAL

KEN BURKE, CLERK OF COURT
AND COMPTROLLER PINELLAS COUNTY, FL
INST# 2015270105 09/18/2015 at 02:45 PM
OFF REC BK: 18926 PG: 850-869
DocType:RST

THIS INSTRUMENT PREPARED BY:

F. JOSEPH ULLO, JR., ESQUIRE
LEWIS, LONGMAN & WALKER, P.A.
315 SOUTH CALHOUN STREET,
SUITE 830
TALLAHASSEE, FL 32301
(850) 222-5702

DECLARATION OF RESTRICTIVE COVENANT
BUILDING 100 SOLID WASTE MANAGEMENT UNITS

THIS DECLARATION OF RESTRICTIVE COVENANT (hereinafter "Declaration") is made this 16 day of September, 2015 by the Pinellas County Industrial Development Authority, a Special District created pursuant to Part III, Chapter 159, Florida Statutes, d/b/a PINELLAS COUNTY ECONOMIC DEVELOPMENT AUTHORITY, (hereinafter "GRANTOR") and the Florida Department of Environmental Protection (hereinafter "FDEP").

RECITALS

A. GRANTOR is the fee simple owner of that certain real property situated in the County of Pinellas, State of Florida, more particularly described in Exhibit A attached hereto and made a part hereof (hereinafter the "Restricted Property").

B. The FDEP Facility Identification Number for the Restricted Property is FL6 890 090 008 (PIN nos. 6 and12). The facility name at the time of this Declaration is U.S. Department of Energy ("DOE") and it operates as Building 100 of the Young – Rainey STAR Center which houses multiple commercial and industrial tenants. This Declaration addresses discharges that were reported to the USEPA on December 14, 1987.

C. The discharge of chlorinated solvents on the Restricted Property at the Building 100 Area Solid Waste Management Units ("SWMUs") is documented in the following reports that are incorporated by reference.

1. Long-Term Surveillance and Maintenance Plan for the Pinellas Site, November 2012, submitted by the U.S. DOE.

2. Sitewide Environmental Monitoring, Semiannual Progress Reports for the Young – Rainey STAR Center, submitted by the U.S. DOE and dated December 2012 through May 2013.

3. Building 100 Area Corrective Measures Study Report Addendum for the Young – Rainey STAR Center, submitted by the U.S. DOE, July 2006.

D. The reports noted in Recital C set forth the nature and extent of the contamination that is located on the Restricted Property. These reports confirm that contaminated soil and groundwater, as defined by Chapter 62-780 Florida Administrative Code (F.A.C.), exist on the Restricted Property. DOE continues monitoring groundwater in accordance with the Long-Term Surveillance and Maintenance Plan.

E. The intent of the restrictions in this Declaration is to reduce or eliminate the risk of exposure to users or occupants of the Restricted Property and to the environment of the contaminants and to reduce or eliminate the threat of migration of the contaminants.

F. The FDEP has agreed to issue a Site Rehabilitation Completion Order with Conditions (hereinafter "Order") upon recordation of this Declaration, and any necessary amendments thereto, and the achievement of site rehabilitation in accordance with Chapter 62-780. The FDEP can unilaterally revoke the Order if the conditions of this Declaration or of the Order are not met. Additionally, if concentrations of chemicals of concern increase above the levels approved in the Order, or if a subsequent discharge occurs at the Restricted Property, the FDEP may require site rehabilitation to reduce concentrations of contamination to the levels allowed by the applicable FDEP rules. The Order relating to FDEP Facility No. FL6 890 090 008 (PIN12) can be found by contacting the appropriate FDEP district office or bureau.

G. GRANTOR deems it desirable and in the best interest of all present and future owners of the Restricted Property that an Order be obtained for the Building 100 Area SWMUs and that the Restricted Property be held subject to certain restrictions and engineering controls, all of which are more particularly hereinafter set forth.

NOW, THEREFORE, to induce the FDEP to issue the Order and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by each of the undersigned parties, GRANTOR agrees as follows:

1. The foregoing recitals are true and correct and are incorporated herein by reference.

2. GRANTOR hereby imposes on the Restricted Property the following restrictions:

a.i. There shall be no use of or access to the groundwater under the Restricted Property unless pre-approved in writing by FDEP's Division of Waste Management ("DWM") in addition to any authorizations required by the Division of Water Resource Management ("DWRM") and the Water Management District ("WMD").

a.ii. For any dewatering activities on the Restricted Property a plan approved by FDEP's DWM must be in place to address and ensure the appropriate handling, treatment and disposal of any extracted groundwater that may be contaminated.

a.iii. Attached as Exhibit B, and incorporated by reference herein, is a Survey identifying the size and location of existing stormwater swales, stormwater detention or retention facilities, and ditches on the Restricted Property. Such existing stormwater features shall not be altered, modified or expanded, and there shall be no construction of new stormwater swales, stormwater detention or retention facilities or ditches on the Restricted Property without prior written approval from FDEP's DWM in addition to any authorizations required by the DWRM and the WMD. A revised exhibit must be recorded when any stormwater feature is altered, modified, expanded, or constructed.

b.i. The area of soil contamination associated with free product on the Restricted Property is shown in Exhibit A and is beneath Building 100. This area shall be permanently covered and maintained with an impermeable material that prevents human exposure and prevents water infiltration (hereinafter referred to as "the Engineering Control"). An Engineering Control Maintenance Plan ("ECMP") approved by the Department shall be maintained that includes the frequency of inspections and monitoring and the criteria for determining when the Engineering Control has failed. A revised or amended ECMP should be developed as needed. The approved ECMP is included as Exhibit C.

b.ii. Excavation and construction is not prohibited on the Restricted Property provided any contaminated soils that are excavated are removed and properly disposed of pursuant to Chapter 62-780, F.A.C. and any other applicable local, state, and federal requirements. Nothing herein shall limit any other legal requirements regarding construction methods and precautions that must be taken to minimize risk of exposure while conducting work in contaminated areas. For any dewatering activities, a plan approved by FDEP's DWM must be in place to address and ensure the appropriate handling, treatment, and disposal of any extracted groundwater that may be contaminated. Nothing in this Declaration shall prevent, limit or restrict any excavation or construction at or below the surface outside the boundary of the Restricted Property.

3. In the remaining paragraphs, all references to "GRANTOR" and "FDEP" shall also mean and refer to their respective successors and assigns.

4. For the purpose of monitoring the restrictions contained herein, FDEP is hereby granted a right of entry upon and access to the Restricted Property at reasonable times and with at least 24-hours notice to the GRANTOR. Access to the Property is granted by an adjacent public right of way via Bryan Dairy Road.

5. It is the intention of GRANTOR that this Declaration shall touch and concern the Restricted Property, run with the land and with the title to the Restricted Property, and shall apply to and be binding upon and inure to the benefit of GRANTOR and FDEP, and to any and all parties hereafter having any right, title or interest in the Restricted Property or any part thereof. The FDEP may enforce the terms and conditions of this Declaration by injunctive relief and other appropriate available legal remedies. Any forbearance on behalf of the FDEP to exercise its right in the event of the failure of the GRANTOR to comply with the provisions of this Declaration shall not be deemed or construed to be a waiver of the FDEP's rights hereunder. This Declaration shall continue in perpetuity, unless otherwise modified in writing by GRANTOR and the FDEP as provided in paragraph 7 hereof. These restrictions may also be enforced in a court of competent jurisdiction by DOE and/or any party that establishes proper standing. If the GRANTOR does not or will not be able to comply with any or all of the provisions of this Declaration, the GRANTOR shall notify FDEP in writing within three (3) calendar days. Additionally, GRANTOR shall notify FDEP thirty (30) days prior to any conveyance or sale, granting or transferring the Restricted Property or portion thereof, to any heirs, successors, assigns or grantees, including, without limitation, the conveyance of any security interest in said Restricted Property.

6. In order to ensure the perpetual nature of these restrictions, GRANTOR shall reference these restrictions in any subsequent lease or deed of conveyance within the Restricted Property, including the recording book and page of record of this Declaration. Furthermore, prior to the entry into a landlord-tenant relationship with respect to the Restricted Property, the GRANTOR agrees to notify in writing all proposed tenants of the Restricted Property of the existence and contents of this Declaration of Restrictive Covenant.

7. This Declaration is binding until a release of covenant is executed by the FDEP Secretary (or designee) and is recorded in the public records of the county in which the land is located. To receive prior approval from the FDEP to remove any requirement herein, cleanup target levels established pursuant to Florida Statutes and FDEP rules must have been achieved. This Declaration may be modified in writing only. Any subsequent amendments must be executed by both GRANTOR and the FDEP and be recorded by the real property owner as an amendment hereto.

8. If any provision of this Declaration is held to be invalid by any court of competent jurisdiction, the invalidity of that provision shall not affect the validity of any other

provisions of the Declaration. All such other provisions shall continue unimpaired in full force and effect.

9. GRANTOR covenants and represents that on the date of execution of this Declaration that GRANTOR is seized of the Restricted Property in fee simple and has good right to create, establish, and impose this restrictive covenant on the use of the Property. GRANTOR also covenants and warrants that the Restricted Property is free and clear of any and all liens, mortgages, or encumbrances that could impair GRANTOR'S rights to impose the restrictive covenant described in this Declaration or that is superior to the restrictive covenant described in this Declaration.

[DECLARATION EXECUTED ON FOLLOWING PAGES]

IN WITNESS WHEREOF, Pinellas County Industrial Development Authority has executed this instrument, this 10th day of September, 2015

ATTEST: KEN BURKE
Clerk of the Circuit Court
Deputy Clerk Norman D. Loy
Print Name: Norman D. Loy

(OFFICIAL SEAL)

THE TERMS SPECIFIED HEREIN ARE SUBJECT TO APPROVAL IN OPEN SESSION BY THE BOARD OF COUNTY COMMISSIONERS, PINELLAS COUNTY, FLORIDA

GRANTOR
PINELLAS COUNTY INDUSTRIAL DEVELOPMENT AUTHORITY d/b/a PINELLAS COUNTY ECONOMIC DEVELOPMENT AUTHORITY,

by and through its Board of County Commissioners

By: John Morroni
Name: *John Morroni, Chairman*

Address:
Young – Rainey STAR Center
7887 Bryan Dairy Road, Suite 120
Largo, Florida 33777

APPROVED AS TO FORM:
OFFICE OF THE COUNTY ATTORNEY

By: _____
~~Managing~~ Assistant County Attorney

Signed, sealed and delivered in the presence of:

_____ Date: 9-10-15
Witness
Print Name: Bernie C. Young

_____ Date: 9/10/15
Witness
Print Name: BRIAN LOWACK

STATE OF Florida

COUNTY OF Pinellas

The foregoing instrument was acknowledged before me this 10th day of September 2015, by John Morroni.
Personally Known ✓ OR Produced Identification _____.
Type of Identification Produced _____.

_____
Signature of Notary Public

BERNIE C. YOUNG
MY COMMISSION # FF 124388
EXPIRES: May 19, 2018
Bonded Thru Budget Notary Services

Approved as to form by:

Toni Sturtevant, Asst. General Counsel
Office of General Counsel

FLORIDA DEPARTMENT OF
ENVIRONTMENTAL
PROTECTION

By:

JOHN COATES,
Assistant Division Director

Dept. of Environmental Protection
Division of Waste Management
2600 Blairstone Road
Tallahassee, FL 32399-2400

Signed, sealed, and delivered in
in the presence of:

Witness Signature

WAYNE S KIGER
Printed Name

9/16/15
Date

Witness Signature

Daniel S. Shores
Printed Name

9/16/2015
Date

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 16th day of SEPTEMBER, 2015, by JOHN COATES, who is personally known to me.

NOTARY PUBLIC STATE OF FLORIDA
JUDITH PENNINGTON
MY COMMISSION # FF 215917
EXPIRES: March 31, 2019
Bonded Thru Budget Notary Services

Notary Public, State of Florida at Large

EXHIBIT A
LEGAL DESCRIPTION AND ILLUSTRATION OF RESTRICTED PROPERTY

DESCRIPTION:

A portion of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida being more particularly described as follows:

Commence at the East 1/4 corner of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida; thence N 89°46'54" W a distance of 105.99 feet along the East – West Mid Section line of said Section 13 to a point; thence N 00°13'06" E a distance of 75.41 feet to the Point of Beginning; said point being on the North right of way line of Bryan Dairy Road per Pinellas County Public Works, Division of Survey and Mapping, Specific Purpose Survey of Bryan Dairy Road, dated March 15, 2010; thence along said North right of way line the following seven (7) courses and distances : N 88°48'13" W a distance of 273.00 feet; thence N 89°47'03" W a distance of 141.79 feet; thence S 88°27'16" W a distance of 104.59 feet; thence N 00°12'58" E a distance of 25.70 feet; thence N 89°47'05" W a distance of 62.84 feet; thence S 00°12'36" W a distance of 3.00 feet; thence N 89°47'04" W a distance of 5.19 feet; thence leaving said right of way line N 00°14'39" E a distance of 250.65 feet; thence N 89°47'59" W a distance of 669.38 feet; thence N 00°13'50" E a distance of 549.16 feet; thence S 89°48'02" E a distance of 997.64 feet; thence S 00°22'10" W a distance of 324.62 feet; thence N 89°52'37" E a distance of 297.32 feet to a point on the West right of way line of Belcher Road as shown on said Specific Purpose Survey of Bryan Dairy Road; thence along said West right of way line that following four (4) courses and distances : S 00°17'41" E a distance of 181.05 feet; thence S 08°48'30" W a distance of 50.57 feet; thence S 00°17'40" E a distance of 235.77 feet; thence S 44°41'49" W a distance of 48.24 feet to the Point of Beginning.

Containing: 17.93 acres, more or less.

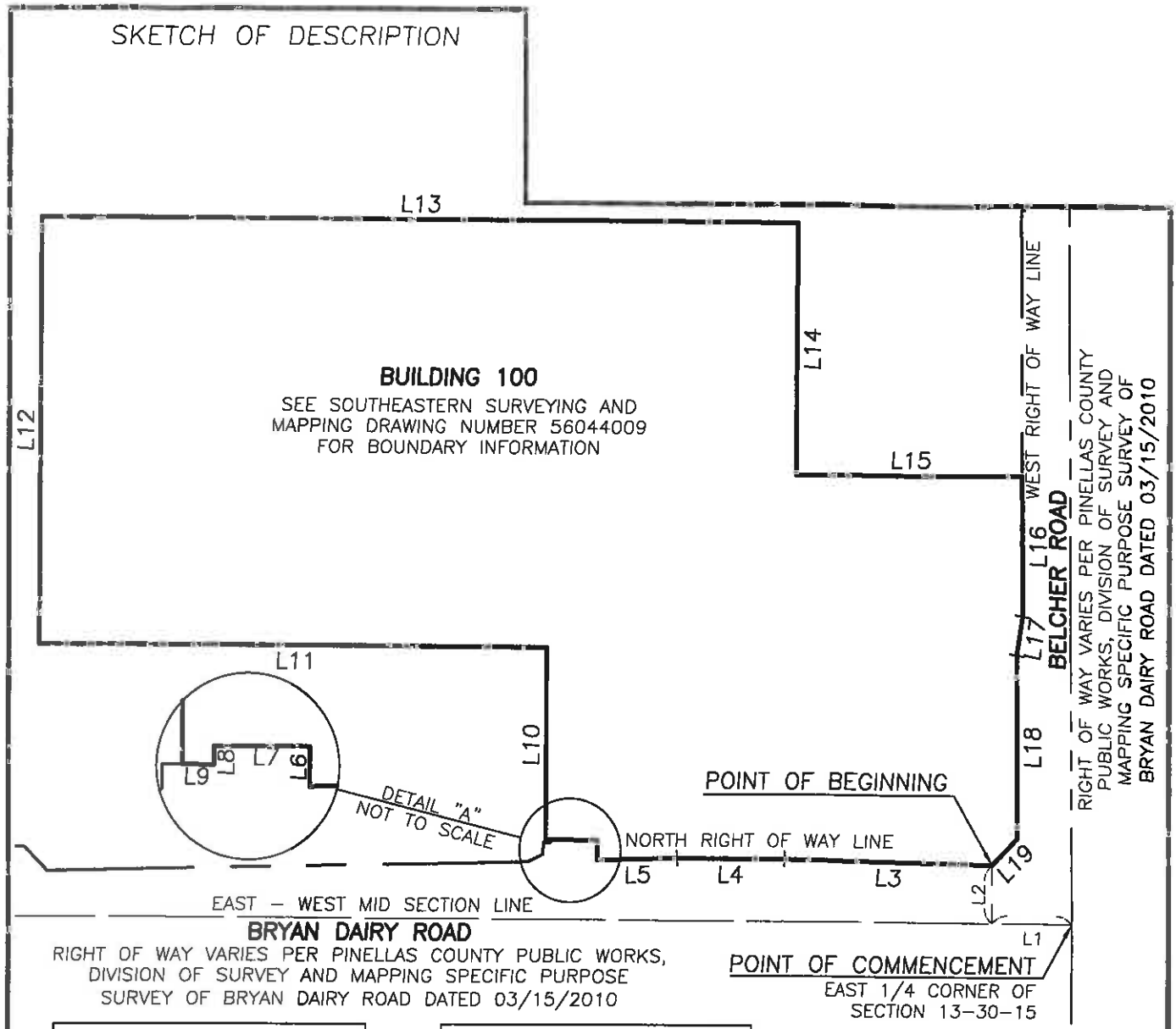
SURVEYOR'S REPORT:

1. Bearings shown hereon are based on the East – West Mid Section line of Section 13, Township 30 South, Range 15 East, Pinellas County, being North 89°46'54" West.

2. I hereby certify that the "Sketch of Description" of the above described property is true and correct to the best of my knowledge and belief as recently drawn under my direction and that it meets the Standards of Practice for Land Surveying Chapter 5J–17.050–.052 requirements.

DESCRIPTION	Date: August 13, 2015	56044014
FOR	Job Number: 56044 / Scale: 1" = 200'	SOUTHEASTERN SURVEYING AND MAPPING CORPORATION 10770 North 46th Street, Suite C-300 Tampa, Florida 33617 (813) 898-2711 Certification Number LB2108 Email: www.southeasternsurveying.com
Stoller Newport News Nuclear (SN3)	Chapter 5J–17.050–.052, Florida Administrative Code requires that a legal description drawing bear the notation that **THIS IS NOT A SURVEY.**	CHARLES M. ARNETT Registered Land Surveyor Number 6884
	SHEET 1 OF 2 SEE SHEET 2 FOR SKETCH	

SKETCH OF DESCRIPTION



LINE TABLE		
LINE #	BEARING	LENGTH
L1	N89°46'54"W	105.99'
L2	N00°13'06"E	75.41'
L3	N88°48'13"W	273.00'
L4	N89°47'03"W	141.79'
L5	S88°27'16"W	104.59'
L6	N00°12'58"E	25.70'
L7	N89°47'05"W	62.84'
L8	S00°12'36"W	3.00'
L9	N89°47'05"W	5.19'
L10	N00°14'39"E	250.65'

LINE TABLE		
LINE #	BEARING	LENGTH
L11	N89°47'59"W	669.38'
L12	N00°13'50"E	549.16'
L13	S89°48'02"E	997.64'
L14	S00°22'10"W	324.62'
L15	N89°52'37"E	297.32'
L16	S00°17'41"E	181.05'
L17	S08°48'30"W	50.57'
L18	S00°17'40"E	235.77'
L19	S44°41'49"W	48.24'

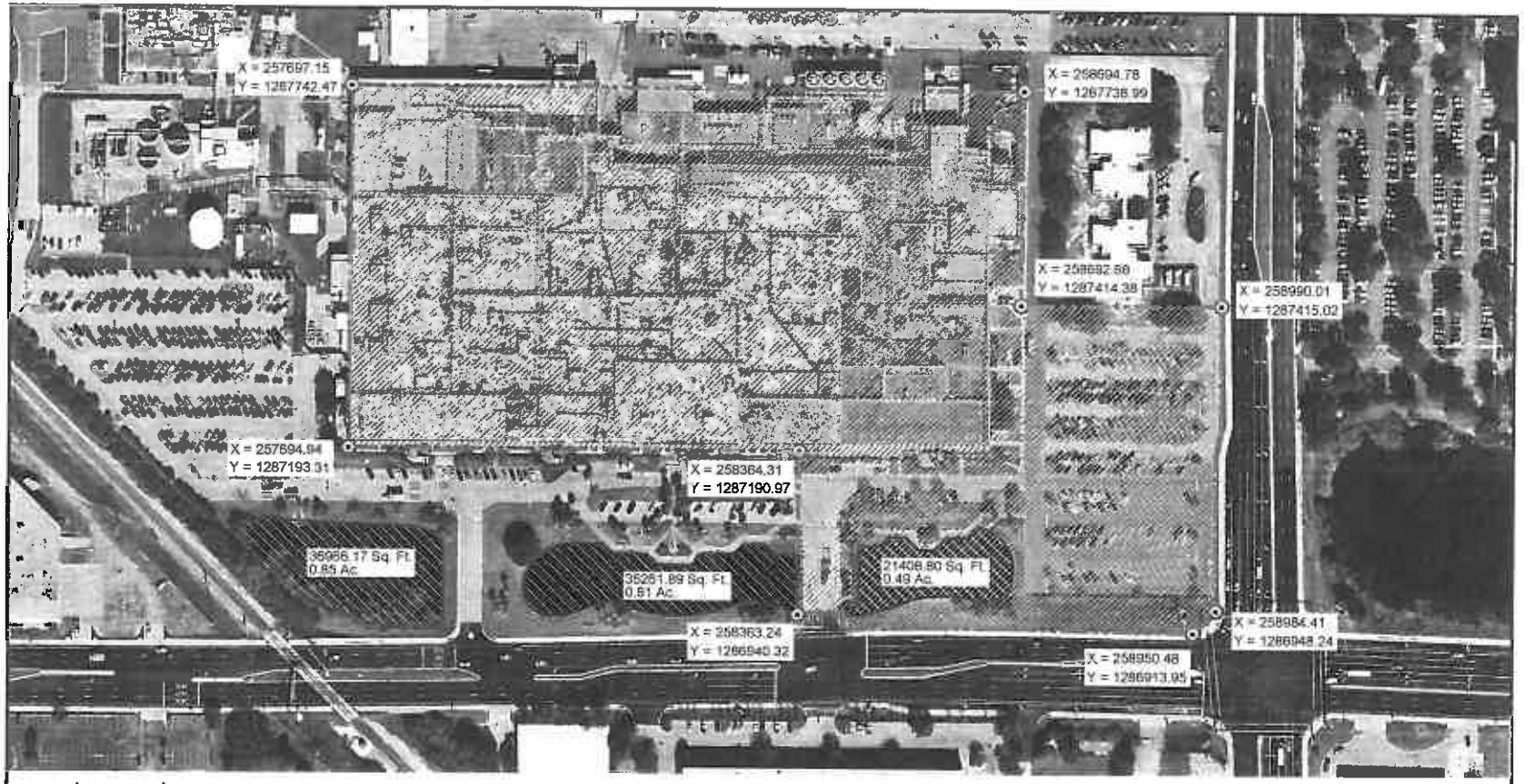
1" =200'
GRAPHIC SCALE
0 200

Drawing Number 56044014
Job No. 56044
Date: 08/13/2015
SHEET 2 OF 2
See Sheet 1 for Description

NOT VALID WITHOUT SHEET 1
THIS IS NOT A SURVEY

SOUTHEASTERN SURVEYING AND MAPPING CORPORATION
6500 All American Boulevard
Orlando, Florida 32810-4350
(407) 292-8580 Certification Number LB2108
e-mail: info@southeasternsurveying.com

EXHIBIT B
STORMWATER FEATURES



Legend

- CORNER (COORDINATES IN STATE PLANE FLORIDA WEST (FEET))
- RESTRICTED PROPERTY BOUNDARY
- RESTRICTED PROPERTY
- PONDS

N

SCALE IN FEET

0 250 500

M:\PIN\041\0007\23\000\N01821\N01821AA.DWG 08/19/15 2:31pm whitneyj

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AM01-07LM00060
Exhibit B	Stormwater Features Building 100 Area SWMU Pinellas, FL, Site
DATE PREPARED: August 19, 2015	FILENAME: N01821AA

EXHIBIT C
ENGINEERING CONTROLS AND MAINTENANCE PLAN

YOUNG – RAINEY STAR CENTER
ENGINEERING CONTROL MAINTENANCE PLAN
FOR THE BUILDING 100 AREA SWMUs

Introduction

This document is the Engineering Control Maintenance Plan (ECMP) for the Building 100 Area Solid Waste Management Units (SWMUs) at the Young-Rainey STAR Center (STAR Center). The STAR Center is a former U.S. Department of Energy facility that is now owned by the Pinellas County Industrial Development Authority. The Building 100 Area SWMUs are located at the southeast corner of the STAR Center.

The plan has been prepared in accordance with the requirements of the Florida Department of Protection (FDEP) Chapter 62-780.680, Florida Administrative Code (F.A.C.) and the FDEP Department of Waste Management Institutional Controls Procedures Guidance, dated November 2013 (DWM IC Guidance). The activities related to the integrity and maintenance of the engineering control (concrete foundation) that occupies the area where source materials exist above the Chapter 62-777, F.A.C. Table II Soil Cleanup Target Levels (SCTLs) and Table I Groundwater Cleanup Target Levels (GCTLs) on site.

Description of Area of Concern

The Building 100 Area is made up of two SWMUs: the Industrial Drain Leaks/Building 100 (PIN12) and the Old Drum Storage Site (PIN06). The Industrial Drain Leaks/Building 100 Area lies beneath and adjacent to the northwest corner of the main building concrete foundation, which covers approximately 11 acres, located near the southeast corner of the STAR Center. Building 100 is the most notable feature of the STAR Center, having housed the majority of the laboratory and production facilities during DOE operation of the facility. Building 100 contained individual drain systems used for health physics, chemical, sanitary, and storm water wastes. Leaks from these drain systems caused some of the contamination at the Building 100 Area. The drain systems were flushed, grouted, and abandoned by 1997, and some of the chemical drain systems were replaced by an aboveground system that currently is in use (DOE 1997b).

The Old Drum Storage Site is located at the northwest corner of the Building 100 Area and is the former location of a concrete storage pad. This area was equipped with a drain and containment system and was used to store hazardous waste. The waste stored at this location included methylene chloride, ignitable liquids, arsenic, and calcium chromate solids. Empty drums containing residual waste solvents also were stored in this area.

Description of Engineering Control

The institutional controls implemented for this facility will include the SWMUs underneath the concrete foundation of Building 100. The engineering control area is shown on Attachment 1. The impervious concrete surface over the SWMUs serves as a barrier to prevent direct human contact with impacted soil and groundwater that might otherwise pose a threat to human health. Based on the current and future use of the property, the barriers should function as intended unless disturbed. Global Positioning System (GPS) coordinates based on the review of the Google Earth aerial for the property describes the boundary of the engineering controlled area as follows: *27° 52' 29.04" North and -82° 44' 59.42" West; 27° 52' 29.02" North and -82° 44'*

55.31" West; 27° 52' 27.77" North and -82° 44' 55.33" West; 27° 52' 27.90" North and -82° 44' 48.86" West; 27° 52' 23.65" North and -82° 44' 48.87" West; and 27° 52' 23.61" North and -82° 44' 59.37" West.

Certification of Engineering Control

This Engineering Control Maintenance Plan was reviewed and approved by a professional engineer licensed in the State of Florida. This certification is included as Attachment 2.

Inspections

Inspection and maintenance of the engineering control will be conducted by the property owner or the owner's designee in accordance with DWM IC Guidance. The site owner will maintain all building maintenance records that affect the integrity of the building for a period of five years from the date of maintenance activity. The property owner or their representative will review pertinent maintenance records and inspect the engineering control at least once per year, and a record of this inspection will be maintained by the site owner for a period of five years following the date of inspection. The inspection record must include the date of the inspection, the name of the inspector, the inspection results, and a description of any deficiencies and associated remedies. A copy of the inspection record will be kept at the address of the property owner and available for submittal or inspection by FDEP representatives upon their request. Failure criteria for the engineering control will consist of uncontrolled breaches in the building.

Maintenance

If problems are noted during the inspections, repairs will be scheduled as soon as practical. Repairs can include patching and filling, and/or construction operations. In the event that necessary maintenance activities expose the underlying soil and/or groundwater, the owner must inform maintenance workers of the direct contact exposure hazard and provide them with appropriate personal protection equipment ("PPE"). The owner must also sample (laboratory analysis) any soil excavated or groundwater extracted from the site prior to disposal to ascertain if impacted soil and/or groundwater remains on-site. The soil and/or groundwater must be treated, stored, and disposed of by the owner in accordance with applicable local, state, and federal laws.

In the event the impervious surface overlying the impacted SWMUs is removed and replaced, the replacement barrier must be equally impervious. Any replacement barrier will be subject to the same maintenance and inspection guidelines as outlined in this ECMP, unless indicated otherwise by the FDEP, or its successor. The property owner, in order to maintain the integrity of the impervious surface, will maintain a copy of this ECMP on-site and make it available to all interested parties (i.e., on-site employees, contractors, future property owners, and county and/or state regulators etc.) for viewing. The following activities are prohibited on any portion of the property where pavement, a building foundation, soil cover, and/or engineered cap is required unless prior written approval has been obtained from the FDEP: 1) removal of the existing barrier; 2) replacement with another barrier; 3) excavating or grading of the land surface; 4) filling on capped or paved areas; or 5) construction or placement of a building or other structure. This ECMP can be amended or withdrawn by the property owner and its successors with the written approval from the FDEP.

Contingency Plan

If future actions at the site will result in a significant reduction of the effectiveness of the engineering control, a contingency plan will be implemented by the property owner. Such future detrimental actions include modifications to the footprint of Building 100, site redevelopment, and any other actions that would substantially alter or damage the engineering control.

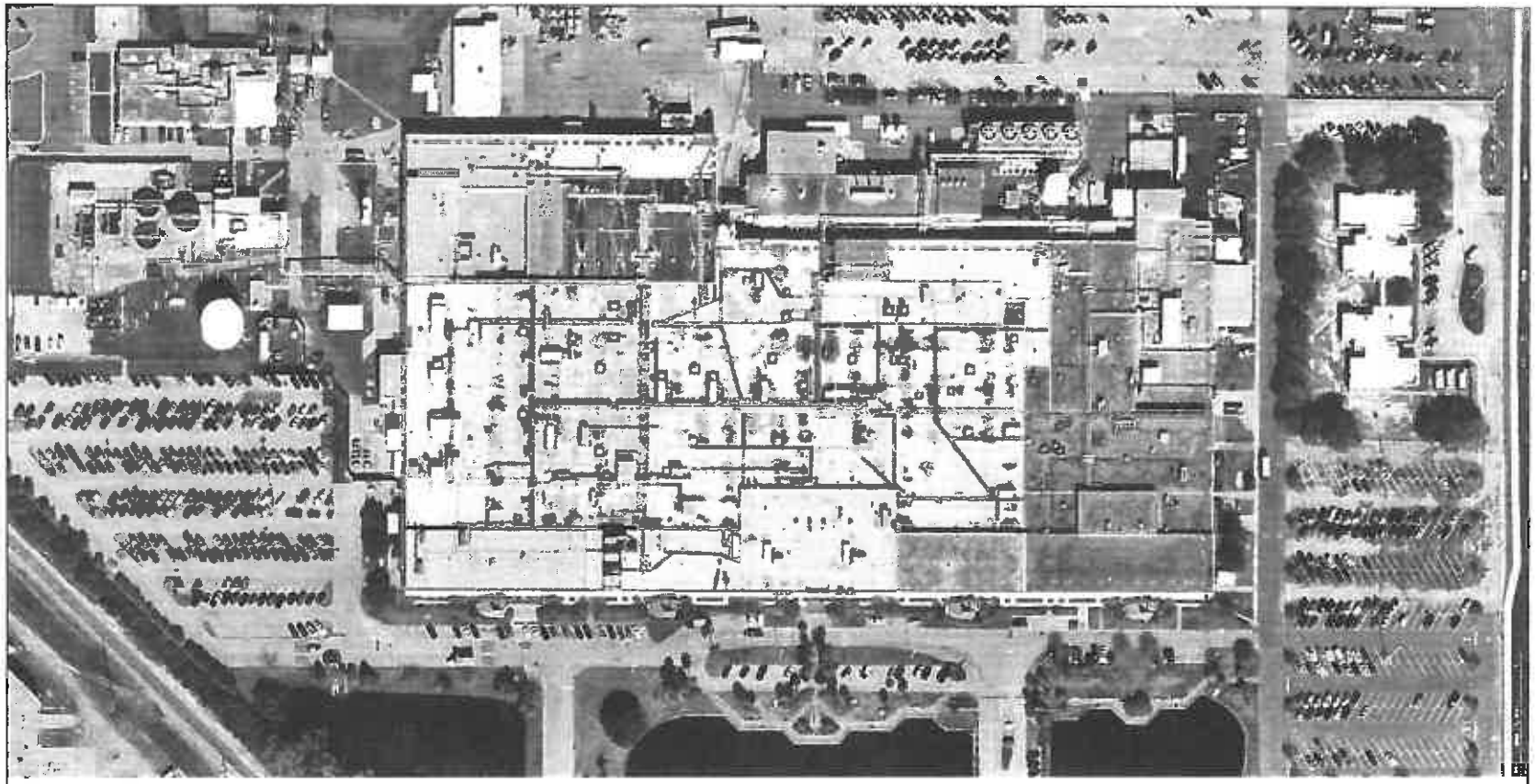
This contingency plan includes the following items.

- A plan describing the proposed action will be submitted to the FDEP for approval.
- If the change to the engineering control is temporary, the plan will describe how the engineering control will be repaired to its original state.
- If the change is permanent, the plan will describe how the altered engineering control will remain effective.
- The plan will describe how any contaminated soil or groundwater, if encountered, will be disposed of.

At some time in the future, it may be possible to remove or remediate the source of contamination under Building 100. After the source is gone, an engineering control may no longer be needed.

Attachment 1

Location of Engineering Control, Building 100 Area SWMU
Pinellas, Florida, Site.



Legend

ENGINEERING CONTROL BOUNDARY

N

SCALE IN FEET

0 200 400

M:\PIN\041\0007\23\000\N01822\N01822AA-MOA.DWG 03/10/14 09:52am whitneyj

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AM01-07LM00060
Attachment 1 Location of Engineering Control Building 100 Area SWMU Pinellas, FL, Site	
DATE PREPARED: March 10, 2014	FILENAME: N01822AA-MOA

Attachment 2

Engineering Control Certification

CERTIFICATION
FLORIDA REGISTERED PROFESSIONAL ENGINEER

ENGINEERING CONTROL MAINTENANCE PLAN
YOUNG – RAINEY STAR CENTER
BUILDING 100 AREA SWMUs
LARGO, PINELLAS COUNTY, FLORIDA

I, Wyatt G. Grant, P.E. #70973, certify that I currently hold an active license in the State of Florida and am competent through education or experience to provide the engineering service contained in this report. I further certify that, in my professional judgment, this report meets the requirements of the applicable sections of Chapter 62-780 Florida Administrative Code, and was prepared by me or under my responsible charge. Moreover, I certify that TankTek, Inc. (dba EnviroTek, Inc.) holds an active certificate of authorization to provide the engineering service.

WYATT GRANT
LICENSE
No. 70973
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Wyatt G. Grant, P.E.
PE License No: 70973
EnviroTek
3007 North 50th Street
Tampa, Florida 33619
Date: 4/30/2015

I, KENNETH P. BURKE, Clerk of the Circuit Court and Clerk Ex-Officio, Board of County Commissioners, do hereby certify that the above and foregoing is a true and correct copy of the original as it appears in the official files of the Board of County Commissioners of Pinellas County, Florida. Witness my hand and seal of said County FL this 18 day of September A.D. 20 18

KENNETH P. BURKE, Clerk of the Circuit Court Ex-Officio Clerk of the Board of County Commissioners, Pinellas County, Florida.

By _____
Deputy Clerk

SEAL

KEN BURKE, CLERK OF COURT
AND COMPTROLLER PINELLAS COUNTY, FL
INST# 2014206212 07/22/2014 at 03:06 PM
OFF REC BK: 18470 PG: 1180-1187
DocType:RST RECORDING: $69.50

THIS INSTRUMENT PREPARED BY:

F. JOSEPH ULLO, JR., ESQUIRE
LEWIS, LONGMAN & WALKER, P.A.
315 SOUTH CALHOUN STREET,
SUITE 830
TALLAHASSEE, FL 32202
(850) 222-5702

DECLARATION OF RESTRICTIVE COVENANT

THIS DECLARATION OF RESTRICTIVE COVENANT (hereinafter "Declaration") is made this 20 day of May, 2014 by the School Board of Pinellas County, Florida (hereinafter "GRANTOR") and the Florida Department of Environmental Protection (hereinafter "FDEP").

RECITALS

A. GRANTOR is the fee simple owner of that certain real property situated in the County of Pinellas, State of Florida, more particularly described in Exhibit A attached hereto and made a part hereof (hereinafter the "Restricted Property").

B. The Restricted Property is located across the street and east of Building 100 of the Young - Rainey STAR Center on the northeast corner of Bryan Dairy Road and Belcher Road.

C. The FDEP Facility Identification Number for the Building 100 of the Young - Rainey STAR Center is FL6 890 090 008 (PIN12). This Declaration addresses discharges that were discovered on or about May 2011 and associated with the Building 100 Area Solid Waste Management Unit ("SWMU") discharges of chlorinated solvents that were originally reported by the U.S. Department of Energy ("DOE") to the USEPA on December 14, 1987.

D. The presence of chlorinated solvents in groundwater beneath the Building 100 Area SWMU and the Restricted Property as well as other properties is documented in the following reports that are incorporated by reference.

1. Long-Term Surveillance and Maintenance Plan for the Pinellas Site, November 2012, submitted by the U.S. DOE.

2. Sitewide Environmental Monitoring, Semiannual Progress Reports for the Young – Rainey STAR Center, submitted by the U.S. DOE and dated December 2012 through May 2013.

3. Building 100 Area Corrective Measures Study Report Addendum for the Young – Rainey STAR Center, submitted by the U.S. DOE, July 2006.

E. The reports noted in Recital D set forth the nature and extent of the contamination that is located on the Restricted Property. These reports confirm that contaminated groundwater, as defined by Chapter 62-780 Florida Administrative Code ("F.A.C."), exists on the Restricted Property. Also, these reports document that the groundwater is undergoing monitoring. This Declaration further restricts the use of groundwater on the Restricted Property.

F. The intent of the restrictions in this Declaration is to reduce or eliminate the risk of exposure to users or occupants of the Restricted Property and to the environment of the groundwater contaminants and to reduce or eliminate the threat of migration of the groundwater contaminants.

G. The FDEP has agreed to issue a Site Rehabilitation Completion Order with Conditions (hereinafter "Order") upon recordation of this Declaration and achievement of site rehabilitation in accordance with Rule 62-780.680(3), F.A.C. The FDEP can unilaterally revoke the Order if the conditions of this Declaration or of the Order are not met. Additionally, if concentrations of chemicals of concern increase above the levels approved in the Order, or if a subsequent discharge occurs at the Restricted Property, the FDEP may require site rehabilitation to reduce concentrations of contamination to the levels allowed by the applicable FDEP rules. The Order relating to FDEP Facility No. FL6 890 090 008 (PIN12) can be found by contacting the appropriate FDEP district office or bureau.

I. GRANTOR deems it desirable and in the best interest of all present and future owners of the Restricted Property that an Order be obtained for the Building 100 SWMU and that the Restricted Property be held subject to certain restrictions and engineering controls, all of which are more particularly hereinafter set forth.

NOW, THEREFORE, to induce the FDEP to issue the Order and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by each of the undersigned parties, GRANTOR agrees as follows:

1. The foregoing recitals are true and correct and are incorporated herein by reference.

2. GRANTOR hereby imposes on the Restricted Property the following restrictions:

a.i. There shall be no use of the groundwater under the Restricted Property. There shall be no drilling for water conducted on the Restricted Property, nor shall any wells be installed on the Restricted Property other than monitoring wells, remediation wells, or other remedial systems pre-approved in writing by FDEP's Division of Waste Management ("DWM") in addition to any authorizations required by the Division of Water Resource Management ("DWRM") and the Water Management District ("WMD").

a.ii. For any dewatering activities on the Restricted Property a plan approved by FDEP's DWRM and WMD must be in place to address and ensure the appropriate handling, treatment and disposal of any extracted groundwater that may be contaminated.

3. In the remaining paragraphs, all references to "GRANTOR" and "FDEP" shall also mean and refer to their respective successors and assigns.

4. For the purpose of monitoring the restrictions contained herein, FDEP is hereby granted a right of entry upon and access to the Restricted Property at reasonable times and with reasonable notice to the GRANTOR. Access to the Property is granted by adjacent public right of way via Belcher Road.

5. It is the intention of GRANTOR that this Declaration shall touch and concern the Restricted Property, run with the land and with the title to the Restricted Property, and shall apply to and be binding upon and inure to the benefit of GRANTOR and FDEP, and to any and all parties hereafter having any right, title or interest in the Restricted Property or any part thereof. The FDEP may enforce the terms and conditions of this Declaration by injunctive relief and other appropriate available legal remedies. Any forbearance on behalf of the FDEP to exercise its right in the event of the failure of the GRANTOR to comply with the provisions of this Declaration shall not be deemed or construed to be a waiver of the FDEP's rights hereunder. This Declaration shall continue in perpetuity, unless otherwise modified in writing by GRANTOR and the FDEP as provided in paragraph 7 hereof. These restrictions may also be enforced in a court of competent jurisdiction by DOE and/or any party that establishes proper standing. If the GRANTOR does not or will not be able to comply with any or all of the provisions of this Declaration, the GRANTOR shall notify FDEP in writing within three (3) business days. Additionally, GRANTOR shall notify FDEP thirty (30) calendar days prior to any conveyance or sale, granting or transferring the Restricted Property or portion thereof, to any heirs, successors, assigns or grantees, including, without limitation, the conveyance of any security interest in said Restricted Property.

6. In order to ensure the perpetual nature of these restrictions, GRANTOR shall reference these restrictions in any subsequent lease or deed of conveyance, including the recording book and page of record of this Declaration. Furthermore, prior to the entry into a landlord-tenant relationship with respect to the Restricted

Property, the GRANTOR agrees to notify in writing all proposed tenants of the Restricted Property of the existence and contents of this Declaration of Restrictive Covenant.

7. This Declaration is binding until a release of covenant is executed by the FDEP Secretary (or designee) and is recorded in the public records of the county in which the Restricted Property is located. To receive prior approval from the FDEP to remove any requirement herein, cleanup target levels established pursuant to Florida Statutes and FDEP rules must have been achieved on the Restricted Property. This Declaration may be modified in writing only. Any subsequent amendments must be executed by both GRANTOR and the FDEP and be recorded by the real property owner as an amendment hereto.

8. If any provision of this Declaration is held to be invalid by any court of competent jurisdiction, the invalidity of that provision shall not affect the validity of any other provisions of the Declaration. All such other provisions shall continue unimpaired in full force and effect.

9. GRANTOR covenants and represents that on the date of execution of this Declaration that GRANTOR is seized of the Restricted Property in fee simple and has good right to create, establish, and impose this restrictive covenant on the use of the Property. GRANTOR also covenants and warrants that the Restricted Property is free and clear of any and all liens, mortgages, or encumbrances that could impair GRANTOR'S rights to impose the restrictive covenant described in this Declaration or that is superior to the restrictive covenant described in this Declaration, unless a joinder and consent, and subordination of such interests, as applicable, is attached hereto.

[DECLARATION EXECUTED ON FOLLOWING PAGES]

IN WITNESS WHEREOF, the School Board of Pinellas County has executed this instrument, this 20th day of May, 2014.

GRANTOR

By: Carol Cook
Name: Carol J. Cook
Title: Chair of the School Board
Mailing Address: 301 4th Street SW
Largo, FL 33770

Signed, sealed and delivered in the presence of:

Deborah E. Beaty Date: 5-20-14
Witness
Print Name: Deborah E. Beaty

Kerry L. Michelotti Date: 5-20-14
Witness
Print Name: Kerry L. Michelotti

STATE OF Florida

COUNTY OF Pinellas

The foregoing instrument was acknowledged before me this 20th day of May 2014 by Carol J. Cook.

Personally Known ✓ OR Produced Identification _____.

Type of Identification Produced _____.

Deborah E. Beaty
Signature of Notary Public

DEBORAH E. BEATY
Commission # EE 148108
Expires February 23, 2016
Bonded Thru Troy Fain Insurance 800-385-7019

Approved As To Form:

Heather J. Wallace
School Board Attorneys Office

00244306-6

FLORIDA DEPARTMENT OF
EVIRONTMENTAL PROTECTION

Approved as to form by:

Toni Sturtevant, Asst. General Counsel
Office of General Counsel

By:

JORGE CASPARY,
Director

Dept. of Environmental Protection
Division of Waste Management
2600 Blairstone Road
Tallahassee, FL 32399-2400

Signed, sealed, and delivered in
in the presence of:

Melody Johnson
Witness Signature

Melody Johnson
Printed Name

6/10/2014
Date

Wayne S Kiger
Witness Signature

WAYNE S. KIGER
Printed Name

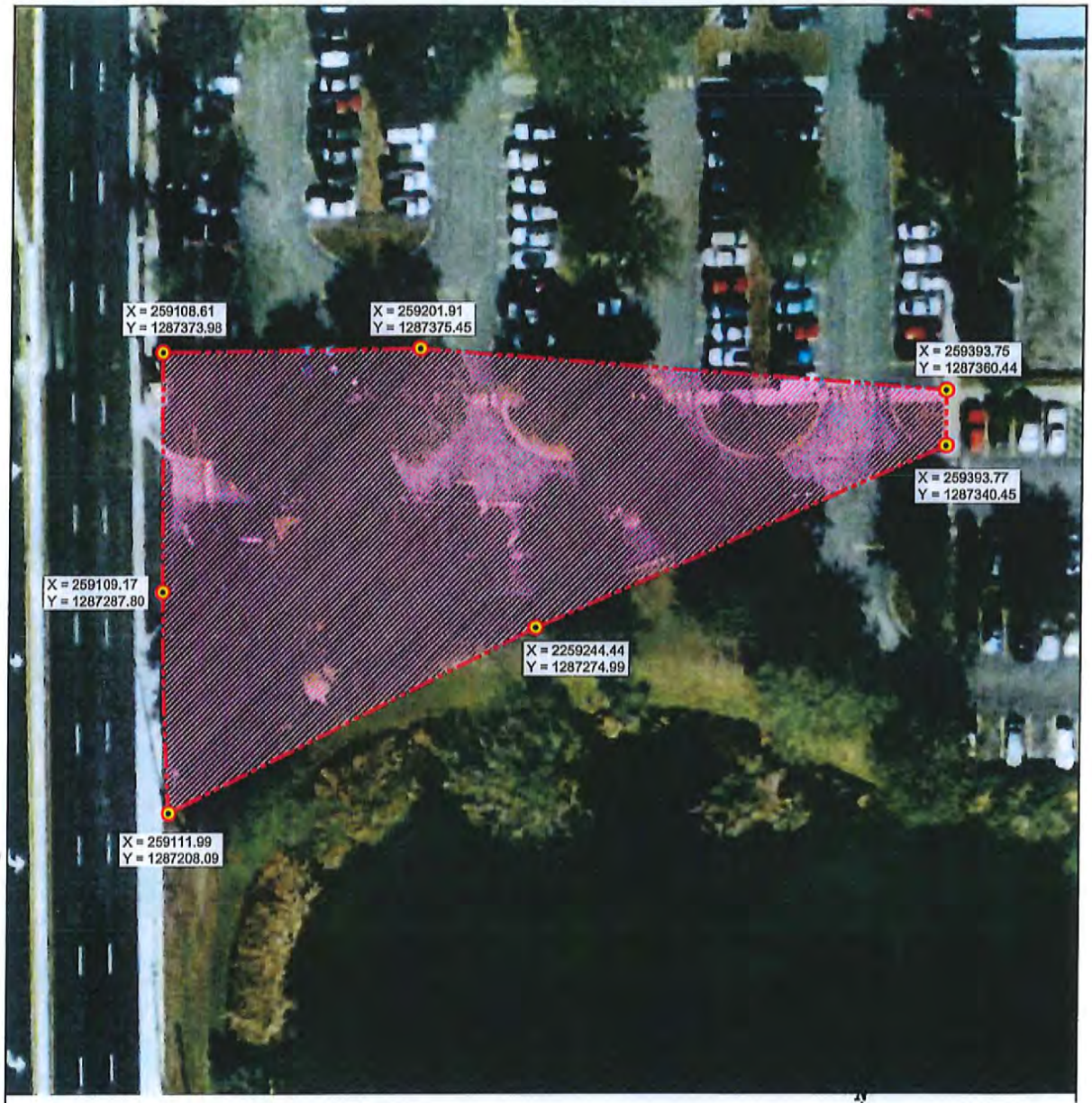
6/10/2014
Date

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 10th day of JUNE, 2014, by JORGE CASPARY, who is personally known to me.

Notary Public, State of Florida at Large

JUDITH PENNINGTON
MY COMMISSION # EE 022582
EXPIRES: September 16, 2014
Bonded Thru Budget Notary Services



Legend

- CORNER (COORDINATES IN STATE PLANE FLORIDA WEST (FEET))
- RESTRICTED PROPERTY BOUNDARY
- RESTRICTED PROPERTY

SCALE IN FEET

0 60 120

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by The S.M. Stoller Corporation Under DOE Contract No. DE-AM01-07LM00060
Restricted Property Exhibit A-1 Pinellas Board of Public Instruction Pinellas, FL, Site	
DATE PREPARED: March 12, 2014	FILENAME: N01873AA

M:\PIN\041\0007\23\000\N01873\N01873AA.DWG 03/13/14 4:40pm

EXHIBIT A-2

DESCRIPTION of Restricted Property

A portion of Section 18, Township 30 South, Range 16 East, Pinellas County, Florida, being more particularly described as follows;

Commence at the West quarter corner of Section 18, Township 30 South, Range 16 East, Pinellas County, Florida; thence North 00°17'23" West a distance of 369.67 feet along the West line of said Section 18; thence departing said West line, North 89°42'37" East, a distance of 57.68 feet to a point on the East right of way line of Belcher Road per Pinellas County Public Works, Division of Survey and Mapping Specific Purpose Survey of Bryan Dairy Road dated 03/15/2010,for a POINT OF BEGINNING; said point being on a non-tangent curve, concave Easterly, having a radius of 1377.40 feet, and a central angle of 03°19'07"; thence from a tangent bearing of North 03°41'23" East, Northerly along the arc of said curve and said East right of way line, a distance of 79.78 feet; thence continuing along said East right of way line, North 00°22'16" West, a distance of 86.18 feet; thence departing said East right of way line, North 89°05'50" East, a distance of 93.31 feet; thence South 85°31'34" East, a distance of 192.43 feet; thence South 00°03'26" East, a distance of 19.99 feet; thence South 66°19'46" West, a distance of 163.05 feet; thence South 63°12'01" West, a distance of 148.38 feet to the POINT OF BEGINNING.

Containing 26,757 square feet or 0.61 acres, more or less.

THIS INSTRUMENT PREPARED BY:

F. JOSEPH ULLO, JR., ESQUIRE
LEWIS, LONGMAN & WALKER, P.A.
315 SOUTH CALHOUN STREET,
SUITE 830
TALLAHASSEE, FL 32202
(850) 222-5702

DECLARATION OF RESTRICTIVE COVENANT

THIS DECLARATION OF RESTRICTIVE COVENANT (hereinafter "Declaration") is made this 22nd day of April, 2014, by Bank of Tampa, a Florida Banking Corporation, (hereinafter "GRANTOR") and the Florida Department of Environmental Protection (hereinafter "FDEP").

RECITALS

A. GRANTOR is the fee simple owner of that certain real property situated in the County of Pinellas, State of Florida, more particularly described in Exhibit A attached hereto and made a part hereof (hereinafter the "Restricted Property").

B. The Restricted Property is located across the street and south of Building 100 of the Young - Rainey STAR Center at southwest corner of Bryan Dairy Road and Belcher Road (hereinafter the "Building 100 Property").

C. The FDEP Facility Identification Number for the Building 100 Property is FL6 890 090 008 (PIN12). This Declaration addresses the presence of offsite contamination that was discovered on the Restricted Property on or about May 2011 and associated with the Building 100 Property Solid Waste Management Unit ("SWMU") discharges of chlorinated solvents that were originally reported by the U.S. Department of Energy ("DOE") to the USEPA on December 14, 1987.

D. Unless otherwise modified, removed or released, the Restricted Property is also subject to a Deed Restriction and Covenant Against Residential Use, required Engineering Controls, and a Reservation of Access as recorded in the Official Records of Pinellas County at Book 16419, Pages 419 and other permitted encumbrances listed therein.

E. The presence of chlorinated solvents in groundwater beneath the Restricted Property is documented in the following reports that are incorporated by reference.

1. Long-Term Surveillance and Maintenance Plan for the Pinellas Site, November 2012, submitted by the U.S. DOE.

2. Sitewide Environmental Monitoring, Semiannual Progress Report for the Young – Rainey STAR Center, submitted by the U.S. DOE and dated December 2012 through May 2013.

3. Building 100 Area Corrective Measures Study Report Addendum for the Young – Rainey STAR Center, submitted by the U.S. DOE, July 2006.

F. The reports noted in Recital E set forth the nature and extent of the contamination that is located on the Restricted Property. These reports confirm that contaminated groundwater, as defined by Chapter 62-780 Florida Administrative Code ("F.A.C."), exists on the Restricted Property. Also, these reports document that the groundwater is undergoing monitoring. This Declaration further restricts the use of groundwater on the Restricted Property.

G. The intent of the restrictions in this Declaration is to reduce or eliminate the risk of exposing users or occupants of the Restricted Property to the groundwater contaminants and to reduce or eliminate the threat of migration of the groundwater contaminants.

H. The FDEP has agreed to issue a Site Rehabilitation Completion Order with Conditions (hereinafter "Order") upon recordation of this Declaration and achievement of site rehabilitation in accordance with Rule 62-780.680(3), F.A.C. The FDEP can unilaterally revoke the Order if the conditions of this Declaration or of the Order are not met. Additionally, if concentrations of chlorinated solvents increase above the levels approved in the Order, or if a subsequent discharge occurs at the Restricted Property, the FDEP may require site rehabilitation to reduce concentrations of contamination to the levels allowed by the applicable FDEP rules. The Order relating to FDEP Facility No. FL6 890 090 008 (PIN12) can be found by contacting the appropriate FDEP district office or bureau.

J. GRANTOR deems it desirable and in the best interest of all present and future owners of the Restricted Property that an Order be obtained for the Building 100 SWMU and that the Restricted Property be held subject to certain restrictions and engineering controls, all of which are more particularly hereinafter set forth.

NOW, THEREFORE, to induce the FDEP to issue the Order and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by each of the undersigned parties, GRANTOR agrees as follows:

1. The foregoing recitals are true and correct and are incorporated herein by reference.

2. GRANTOR hereby imposes on the Restricted Property the following restrictions:

a.i. There shall be no use of the groundwater under the Restricted Property. There shall be no drilling for water conducted on the Restricted Property, nor shall any wells be installed on the Restricted Property other than monitoring wells, remediation wells, or other remedial systems unless pre-approved in writing by FDEP's Division of Waste Management ("DWM") in addition to any authorizations required by the Division of Water Resource Management ("DWRM") and the Water Management District ("WMD").

a.ii. For any dewatering activities on the Restricted Property a plan approved by FDEP's DWRM and WMD must be in place to address and ensure the appropriate handling, treatment and disposal of any extracted groundwater that may be contaminated.

3. In the remaining paragraphs, all references to "GRANTOR" and "FDEP" shall also mean and refer to their respective successors and assigns.

4. For the purpose of monitoring the restrictions contained herein, FDEP is hereby granted a right of entry upon and access to the Restricted Property at reasonable times and with five (5) calendar days notice to the GRANTOR. Access to the Property is granted by an adjacent public right of way via Bryan Dairy Road.

5. It is the intention of GRANTOR that this Declaration shall touch and concern the Restricted Property, run with the land and with the title to the Restricted Property, and shall apply to and be binding upon and inure to the benefit of GRANTOR and FDEP, and to any and all parties hereafter having any right, title or interest in the Restricted Property or any part thereof. The FDEP may enforce the terms and conditions of this Declaration by injunctive relief and other appropriate available legal remedies. Any forbearance on behalf of the FDEP to exercise its right in the event of the failure of the GRANTOR to comply with the provisions of this Declaration shall not be deemed or construed to be a waiver of the FDEP's rights hereunder. This Declaration shall continue in perpetuity, unless otherwise modified in writing by GRANTOR and the FDEP as provided in paragraph 7 hereof. These restrictions may also be enforced in a court of competent jurisdiction by DOE. If the GRANTOR is unable to comply with any or all of the provisions of this Declaration, the GRANTOR shall notify FDEP in writing within three (3) calendar days. Additionally, GRANTOR shall notify FDEP thirty (30) days prior to any conveyance or sale, granting or transferring the Restricted Property or portion thereof, to any heirs, successors, assigns or grantees, including, without limitation, the conveyance of any security interest in said Restricted Property.

6. In order to ensure the perpetual nature of these restrictions, GRANTOR shall reference these restrictions in any subsequent lease or deed of conveyance, including the recording book and page of record of this Declaration. Furthermore, prior to the entry into a landlord-tenant relationship with respect to the Restricted Property, the GRANTOR agrees to notify in writing all proposed tenants of the Restricted Property of the existence and contents of this Declaration of Restrictive Covenant.

7. This Declaration is binding until a release of covenant is executed by the FDEP Secretary (or designee) and is recorded in the public records of the county in which the land is located. To receive prior approval from the FDEP to remove any requirement herein, cleanup target levels established pursuant to Florida Statutes and FDEP rules must have been achieved on the Restricted Property. This Declaration may be modified in writing only. Any subsequent amendments must be executed by both GRANTOR and the FDEP and be recorded by the real property owner as an amendment hereto.

8. If any provision of this Declaration is held to be invalid by any court of competent jurisdiction, the invalidity of that provision shall not affect the validity of any other provisions of the Declaration. All such other provisions shall continue unimpaired in full force and effect.

9. GRANTOR covenants and represents that on the date of execution of this Declaration that GRANTOR is seized of the Restricted Property in fee simple and has good right to create, establish, and impose this restrictive covenant on the use of the Property. GRANTOR also covenants and warrants that the Restricted Property is free and clear of any and all liens, mortgages, or encumbrances that could impair GRANTOR'S rights to impose the restrictive covenant described in this Declaration or that is superior to the restrictive covenant described in this Declaration, unless a joinder and consent, and subordination of such interests, as applicable, is attached hereto.

[DECLARATION EXECUTED ON FOLLOWING PAGES]

IN WITNESS WHEREOF, Bank of Tampa has executed this instrument, this 22nd day of April, 2014.

BANK OF TAMPA

By: _____
Kenneth P. Cherven, President
Pinellas Division
200 Central Avenue
St. Petersburg, FL 33701

Signed, sealed and delivered in the presence of:

_____ Date: 4-22-14
Witness
Print Name: Kay M. McALEER

_____ Date: 4/22/14
Witness
Print Name: Marcia G. Dumont

STATE OF FLORIDA

COUNTY OF PINELLAS

The foregoing instrument was acknowledged before me this 22nd day of April, 2014, by KENNETH P. CHERVEN.

Personally Known ✓ OR Produced Identification _____.
Type of Identification Produced _____.

_____
Signature of Notary Public

KAY M. MCALEER
Notary Public - State of Florida
My Comm. Expires Feb 3, 2017
Commission # EE 845447
Bonded Through National Notary Assn.

Approved as to form by:

Toni Sturtevant, Asst. General Counsel
Office of General Counsel

FLORIDA DEPARTMENT OF
ENVIRONTMENTAL PROTECTION
By:

JORGE CASPARY,
Director

Dept. of Environmental Protection
Division of Waste Management
2600 Blairstone Road
Tallahassee, FL 32399-2400

Signed, sealed, and delivered in
in the presence of:

Witness Signature

Melody Johnson
Printed Name

4/29/14
Date

Wayne S Kiger
Witness Signature

WAYNE S. KIGER
Printed Name

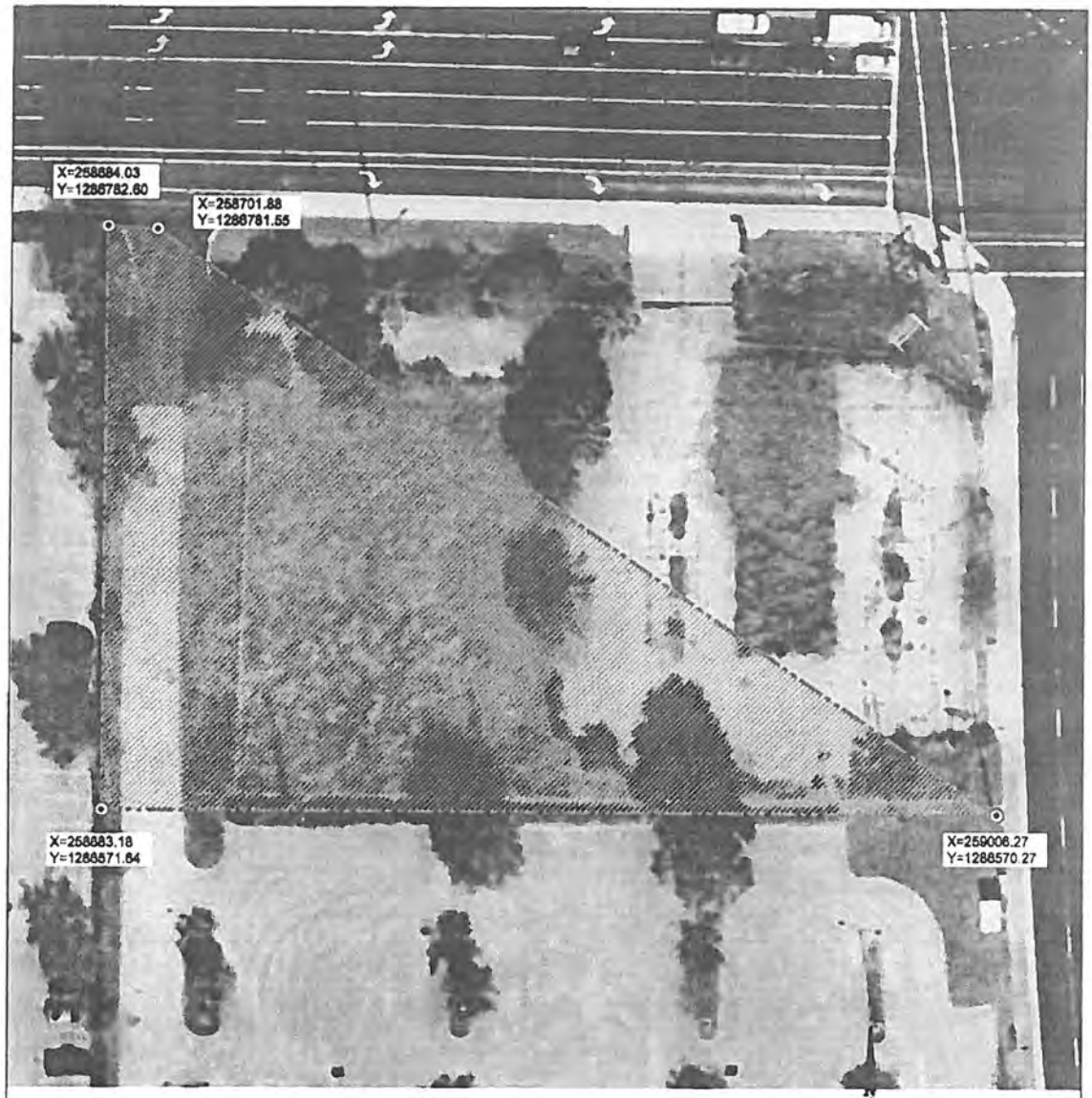
4/29/14
Date

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 29TH day of APRIL, 2014, by JORGE CASPARY, who is personally known to me.

NOTARY PUBLIC STATE OF FLORIDA
JUDITH PENNINGTON
MY COMMISSION # EE 822582
EXPIRES: September 10, 2014
Bonded Thru Budget Notary Services

Notary Public, State of Florida at Large



Legend

- CORNER (COORDINATES IN STATE PLANE FLORIDA WEST (FEET))
- RESTRICTED PROPERTY BOUNDARY
- RESTRICTED PROPERTY

SCALE IN FEET

0 60 120

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by The S.M. Stoller Corporation Under DOE Contract No. DE-AM01-07LM00060
Exhibit A-1	Restricted Property Bank of Tampa Pinellas, FL, Site
DATE PREPARED: March 12, 2014	FILENAME: N0187500

M:\PIN\041\0007\23\000\N01874\N01874AA.DWG 03/13/14 4:46pm

EXHIBIT A-2

DESCRIPTION of Restricted Property

A portion of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida, being more particularly described as follows;

Commence at the East 1/4 corner of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida; thence North 89°46'54" West, a distance of 354.08 feet along the East-West mid-section line of said Section 13; thence leaving the East-West mid-section line of said Section 13, South 00°13'06" West, a distance of 57.93 feet to a point on the South right of way line of Bryan Dairy Road per Pinellas County Public Works, Division of Survey and Mapping Specific Purpose Survey of Bryan Dairy Road dated 03/15/2010, and the POINT OF BEGINNING; thence departing said South right of way line, South 55°14'05" East, a distance of 370.52 feet to a point on the West right of way line of Belcher Road per Pinellas County Public Works, Division of Survey and Mapping Specific Purpose Survey of Bryan Dairy Road dated 03/15/2010; thence North 89°45'28" West, a distance of 323.09 feet along the South line of the lands described in Official Records Book 18262, Page 918 of the Public Records of Pinellas County, Florida, to the West line of said lands; thence North 00°13'48" East, a distance of 210.96 feet along said West line to the aforesaid South right of way line of Bryan Dairy Road; thence South 86°38'10" East, a distance of 17.88 feet along said South right of way line, to the POINT OF BEGINNING.

Containing 35,807 square feet or 0.82 acres, more or less.

KEN BURKE, CLERK OF COURT
AND COMPTROLLER PINELLAS COUNTY, FL
INST# 2015141050 05/19/2015 at 08:53 AM
OFF REC BK: 18785 PG: 1080-1087
DocType:RST RECORDING: $69.50

THIS INSTRUMENT PREPARED BY:

F. JOSEPH ULLO, JR., ESQUIRE
LEWIS, LONGMAN & WALKER, P.A.
315 SOUTH CALHOUN STREET,
SUITE 830
TALLAHASSEE, FL 32301
(850) 222-5702

DECLARATION OF RESTRICTIVE COVENANT

THIS DECLARATION OF RESTRICTIVE COVENANT (hereinafter "Declaration") is made this 24th day of April, 2015, by BCH-1, LTD., a Florida Limited Partnership, (hereinafter "GRANTOR") and the Florida Department of Environmental Protection (hereinafter "FDEP").

RECITALS

A. GRANTOR is the fee simple owner of that certain real property situated in the County of Pinellas, State of Florida, more particularly described in Exhibit A attached hereto and made a part hereof (hereinafter the "Restricted Property").

B. The Restricted Property is located at 8040 Bryan Dairy Rd., Pinellas Park, and across the street and south of Building 100 of the Young - Rainey STAR Center (hereinafter "Building 100 Property") near the southwest corner of Bryan Dairy Road and Belcher Road.

C. The FDEP Facility Identification Number for the Building 100 Property is FL6 890 090 008 (PIN12). This Declaration addresses the presence of offsite contamination that was discovered on the Restricted Property on or about May 2011 and associated with the Building 100 Property Solid Waste Management Unit ("SWMU") discharges of chlorinated solvents that were originally reported by the U.S. Department of Energy ("DOE") to the USEPA on December 14, 1987.

D. The presence of chlorinated solvents in groundwater beneath the Restricted Property is documented in the following reports that are incorporated by reference.

1. Long-Term Surveillance and Maintenance Plan for the Pinellas Site, November 2012, submitted by the U.S. DOE.

2. Sitewide Environmental Monitoring, Semiannual Progress Report for the Young – Rainey STAR Center, submitted by the U.S. DOE and dated December 2012 through May 2013.

3. Building 100 Area Corrective Measures Study Report Addendum for the Young – Rainey STAR Center, submitted by the U.S. DOE, July 2006.

E. The reports noted in Recital D set forth the nature and extent of the contamination that is located on the Restricted Property. These reports confirm that contaminated groundwater, as defined by Chapter 62-780 Florida Administrative Code ("F.A.C."), exists on the Restricted Property. Also, these reports document that the groundwater is undergoing monitoring. This Declaration further restricts the use of groundwater on the Restricted Property.

F. The intent of the restrictions in this Declaration is to reduce or eliminate the risk of exposing users or occupants of the Restricted Property to the groundwater contaminants and to reduce or eliminate the threat of migration of the groundwater contaminants.

G. The FDEP has agreed to issue a Site Rehabilitation Completion Order with Conditions (hereinafter "Order") upon recordation of this Declaration and achievement of site rehabilitation in accordance with Rule 62-780.680(3), F.A.C. The FDEP can unilaterally revoke the Order if the conditions of this Declaration or of the Order are not met. Additionally, if concentrations of chlorinated solvents increase above the levels approved in the Order, or if a subsequent discharge occurs at the Restricted Property, the FDEP may require site rehabilitation to reduce concentrations of contamination to the levels allowed by the applicable FDEP rules. The Order relating to FDEP Facility No. FL6 890 090 008 (PIN12) can be found by contacting the appropriate FDEP district office or bureau.

I. GRANTOR deems it desirable and in the best interest of all present and future owners of the Restricted Property that an Order be obtained for the Restricted Property and that the Restricted Property be held subject to certain restrictions and engineering controls, all of which are more particularly hereinafter set forth.

NOW, THEREFORE, to induce the FDEP to issue the Order and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by each of the undersigned parties, GRANTOR agrees as follows:

1. The foregoing recitals are true and correct and are incorporated herein by reference.

2. GRANTOR hereby imposes on the Restricted Property the following restrictions:

a.i. There shall be no use of the groundwater under the Restricted Property. There shall be no drilling for water conducted on the Restricted Property, nor shall any wells be installed on the Restricted Property other than monitoring wells, remediation wells, or other remedial systems unless pre-approved in writing by FDEP's Division of Waste Management ("DWM") in addition to any authorizations required by the Division of Water Resource Management ("DWRM") and the Water Management District ("WMD"). This restriction does not apply to the usage of the existing irrigation well located outside the Restricted Property that is used to irrigate the Restricted Property.

a.ii. For any dewatering activities on the Restricted Property a plan approved by FDEP's DWRM and WMD must be in place to address and ensure the appropriate handling, treatment and disposal of any extracted groundwater that may be contaminated.

3. In the remaining paragraphs, all references to "GRANTOR" and "FDEP" shall also mean and refer to their respective successors and assigns.

4. For the purpose of monitoring the restrictions contained herein, FDEP is hereby granted a right of entry upon and access to the Restricted Property at reasonable times and with five (5) calendar days notice to the GRANTOR. Access to the Property is granted by adjacent public right of way via Bryan Dairy Road.

5. It is the intention of GRANTOR that this Declaration shall touch and concern the Restricted Property, run with the land and with the title to the Restricted Property, and shall apply to and be binding upon and inure to the benefit of GRANTOR and FDEP, and to any and all parties hereafter having any right, title or interest in the Restricted Property or any part thereof. The FDEP may enforce the terms and conditions of this Declaration by injunctive relief and other appropriate available legal remedies. Any forbearance on behalf of the FDEP to exercise its right in the event of the failure of the GRANTOR to comply with the provisions of this Declaration shall not be deemed or construed to be a waiver of the FDEP's rights hereunder. This Declaration shall continue in perpetuity, unless otherwise modified in writing by GRANTOR and the FDEP as provided in paragraph 7 hereof. These restrictions may also be enforced in a court of competent jurisdiction by DOE and/or any party that establishes proper standing. If the GRANTOR does not or will not be able to comply with any or all of the provisions of this Declaration, the GRANTOR shall notify FDEP in writing within three (3) business days. Additionally, GRANTOR shall notify FDEP thirty (30) calendar days prior to any conveyance or sale, granting or transferring the Restricted Property or portion thereof, to any heirs, successors, assigns or grantees, including, without limitation, the conveyance of any security interest in said Restricted Property.

6. In order to ensure the perpetual nature of these restrictions, GRANTOR shall reference these restrictions in any subsequent lease or deed of conveyance,

including the recording book and page of record of this Declaration. Furthermore, prior to the entry into a landlord-tenant relationship with respect to the Restricted Property, the GRANTOR agrees to notify in writing all proposed tenants of the Restricted Property of the existence and contents of this Declaration of Restrictive Covenant.

7. This Declaration is binding until a release of covenant is executed by the FDEP Secretary (or designee) and is recorded in the public records of the county in which the land is located. To receive prior approval from the FDEP to remove any requirement herein, cleanup target levels established pursuant to Florida Statutes and FDEP rules must have been achieved on the Restricted Property. This Declaration may be modified in writing only. Any subsequent amendments must be executed by both GRANTOR and the FDEP and be recorded by the real property owner as an amendment hereto.

8. If any provision of this Declaration is held to be invalid by any court of competent jurisdiction, the invalidity of that provision shall not affect the validity of any other provisions of the Declaration. All such other provisions shall continue unimpaired in full force and effect.

9. GRANTOR covenants and represents that on the date of execution of this Declaration that GRANTOR is seized of the Restricted Property in fee simple and has good right to create, establish, and impose this restrictive covenant on the use of the Property save and except those rights reserved by Regions Bank, who is on notice of this Declaration, pursuant to the existing mortgage originally dated September 28, 2007 recorded at Official Records Book 16017, Page 2110 of the Public Records of Pinellas County, Florida and modified on October 4, 2012 in Book 17738, Page 2511 of same. GRANTOR also covenants and warrants that the Restricted Property is free and clear of any and all liens, mortgages, or encumbrances that could impair GRANTOR'S rights to impose the restrictive covenant described in this Declaration or that is superior to the restrictive covenant described in this Declaration, unless a joinder and consent, and subordination of such interests, as applicable, is attached hereto.

[DECLARATION EXECUTED ON FOLLOWING PAGES]

IN WITNESS WHEREOF, BCH-1, LTD. has executed this instrument, this 13th day of April, 2015

GRANTOR

By: _____
Name: Gary W. Harrod
Title: Partner
Mailing Address: 5550 W. Executive Dr.
Suite 550
Tampa, FL 33609

Signed, sealed and delivered in the presence of:

Debbie Boyer Date: 4-13-15
Witness
Print Name: Debbie Boyer

JoAnn Larison Date: 4-13-15
Witness
Print Name: JoAnn Larison

STATE OF Florida

COUNTY OF Hillsborough

The foregoing instrument was acknowledged before me this 13th day of April 2015, by Gary W. Harrod.
Personally Known ✓ OR Produced Identification _____.
Type of Identification Produced _____.

Ellen Fletcher
Signature of Notary Public

ELLEN FLETCHER
NOTARY PUBLIC
STATE OF FLORIDA
Comm# FF076007
Expires 12/11/2017

Approved as to form by:

Toni Sturtevant, Asst. General Counsel
Office of General Counsel

FLORIDA DEPARTMENT OF
ENVIRONTMENTAL PROTECTION
By:

JORGE CASPARY, Director

Dept. of Environmental Protection
Division of Waste Management
2600 Blairstone Road
Tallahassee, FL 32399-2400

Signed, sealed, and delivered in
in the presence of:

Melody Johnson
Witness Signature

Melody Johnson
Printed Name

4/24/15
Date

Wayne S Kiger
Witness Signature

WAYNE S. KIGER
Printed Name

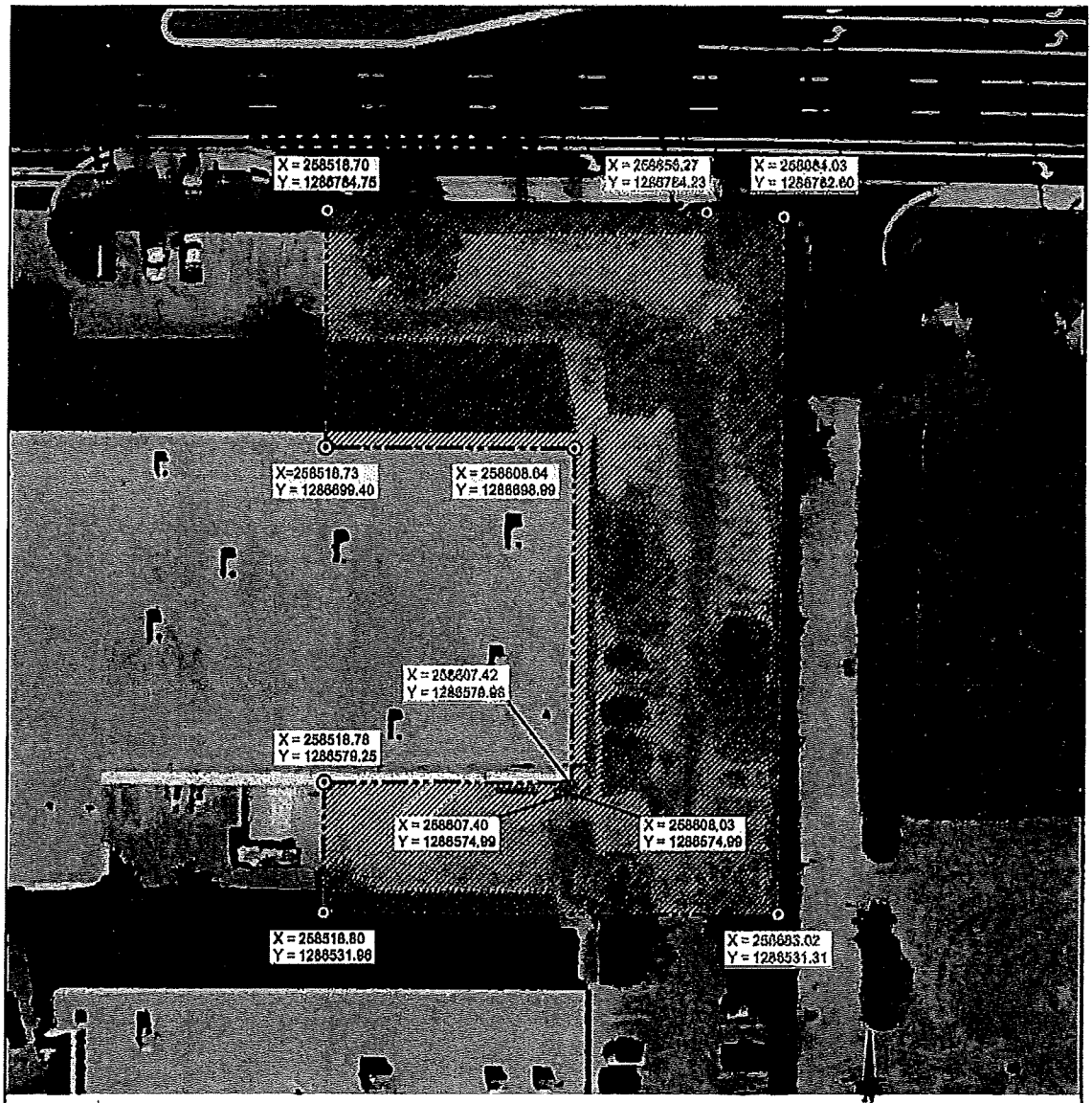
4/24/15
Date

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 24th day of APRIL, 2014, by JORGE CASPARY, who is personally known to me.

JUDITH PENNINGTON
MY COMMISSION # FF 215917
EXPIRES: March 31, 2019
Bonded Thru Budget Notary Services

Notary Public, State of Florida at Large



Legend

- ⊙ CORNER (COORDINATES IN STATE PLANE FLORIDA WEST (FEET))
- RESTRICTED PROPERTY BOUNDARY
- RESTRICTED PROPERTY

SCALE IN FEET

0 60 120

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by The S.M. Stoller Corporation Under DOE Contract No. DE-AM01-07LM00060
Exhibit A-1	Restricted Property BCH-1 LTD Pinellas, FL, Site
DATE PREPARED: March 12, 2014	FILENAME: N0187700

M:\PIN\041\0007\23\000\N01877\N01877AA.DWG 03/13/14 4:52pm

EXHIBIT A-2

DESCRIPTION of Restricted Property

A portion of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida, being more particularly described as follows;

Commence at the East 1/4 corner of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida; thence North 89°46'54" West, a distance of 371.94 feet along the East-West mid-section line of said Section 13; thence departing said East-West mid-section line of said Section 13, South 00°13'06" West, a distance of 56.95 feet to a point on the South right of way line of Bryan Dairy Road per Pinellas County Public Works, Division of Survey and Mapping Specific Purpose Survey of Bryan Dairy Road dated 03/15/2010, and the POINT OF BEGINNING; thence departing said South right of way line, South 00°13'48" West, a distance of 251.30 feet along the East line of the lands described in Official Record Book 9506, page 108 of the public records of Pinellas County, Florida; thence departing said East line, North 89°46'21" West, a distance of 164.23 feet; thence North 00°01'17" West, a distance of 47.29 feet to the exterior building wall of a masonry block building; thence along said exterior wall, the following five (5) courses, (1) South 89°49'29" East, a distance of 88.64 feet; (2) South 00°16'50" West, a distance of 3.99 feet; (3) South 89°43'10" East, a distance of 0.63 feet; (4) North 00°16'50" East, a distance of 124.01 feet; (5) North 89°44'24" West, a distance of 89.90 feet; thence departing said exterior building wall, North 00°01'17" West, a distance of 85.35 feet to the aforesaid South right of way line of said Bryan Dairy Road; thence along said South right of way line the following two (2) courses; (1) South 89°47'03" East, a distance of 137.56 feet; (2) South 86°38'10" East, a distance of 27.81 feet to the POINT OF BEGINNING.

Containing 30,876.67 square feet or 0.71 acres, more or less.

Appendix C

HSWA Permit

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

January 9, 2012

SENT VIA EMAIL
Scott.Surovchak@lm.doe.gov
psacco@co.pinellas.fl.us

7887 Bryan Dairy Road, Suite 120
Largo, Florida 33777

SUBJECT: US Department of Energy
FL6 890 090 008
Corrective Action Permit No. 0034170/HH/004
Pinellas County

Dear Mr. Surovchak and Mr. Sacco:

Enclosed is Permit Number 0034170/HO/04 to perform facility-wide Corrective Action. This permit is being issued pursuant to Section 403.722, Florida Statutes (F.S.), and Chapters 62-4, 62-160, 62-730, and 62-780, Florida Administrative Code (F.A.C.).

This permit is final and effective ("issued") on the date filed with the Clerk of the Department. When the permit is final, any party to the permit has the right to seek judicial review of the permit pursuant to Section 120.68, F.S., by the filing of a Notice to Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, Department of Environmental Protection, 3900 Commonwealth Boulevard, MS #35, Tallahassee, Florida 32399-3000; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal.

The Notice of Appeal must be filed within thirty (30) days from the date the final permit is issued. If you should have any questions, please contact Merlin D. Russell Jr at 850-245-8796 or Merlin.Russell@dep.state.fl.us.

Sincerely,

Tim J. Bahr, Administrator
Hazardous Waste Regulation

TJB/mdr

cc via e-mail w/enclosure:

John Armstrong, FDEP/Tallahassee, John.Armstrong@dep.state.fl.us
James Dregne, DEP Tampa, James.Dregne@dep.state.fl.us
Florida Fish & Wildlife Conservation Commission Planning Services
FWCConservationPlanningServices@myfwc.com
Patricia Gerard, Mayor, Largo, pgerard@largo.com
Heath Rauschenberger, U.S. Fish & Wildlife Service,
heath_rauschenberger@fws.gov
Karen Williams Seel, County Commissioner, District 5, kseel@pinellascounty.org

Florida Department of Environmental Protection

BBob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-240

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

PERMITTEE:
U.S. DEPARTMENT OF ENERGY
7887 BRYAN DAIRY RD., SUITE 120
LARGO, FLORIDA 33777

ATTENTION: SCOTT SUROVCHAK,
SITE MANAGER.
PAUL SACCO,
LAND OWNER REPRESENTATIVE.

I.D. NUMBER: FL6 890 090 008
PERMIT/CERTIFICATION NUMBER: 034170/HH/004
DATE OF ISSUE: JANUARY 9, 2012
EXPIRATION DATE: JANUARY 10, 2022
COUNTY: PINELLAS
LATITUDE /LONGITUDE: 27 °52′30″N/82°45′00″W
SECTION/TOWNSHIP/RANGE: 13/30 S/15 E
PROJECT: HSWA CORRECTIVE ACTION

Pursuant to authorization obtained by the Florida Department of Environmental Protection (FDEP) under the Resource Conservation and Recovery Act [42 United States Code (U.S.C.) 6901, *et seq*., commonly known as RCRA] and the Hazardous and Solid Waste Amendments of 1984 (HSWA), this permit is issued under the provisions of Section 403.722, Florida Statutes (F.S.) and Chapters 62-4, 62-160, 62-730, 62-777 and 62-780, Florida Administrative Code (F.A.C.). This permit replaces expired permit 0034170/HH/003. The above-named Permittee is hereby authorized to perform the work or operate the facility shown on the application dated June 30, 2011 which are incorporated herein and collectively referred to as the "permit application." The permit application also includes any approved drawing(s), plans, and other documents that are specifically identified and incorporated by reference.

The Permittee is required to investigate any releases of contaminants to the environment at the facility regardless of the time at which waste was placed in a unit and to take appropriate corrective action for any such releases. Solid waste management units (SWMUs) and areas of concern (AOCs) identified to date are listed in Appendix A. Pursuant to 40 Code of Federal Regulations (C.F.R.) 260.10 [as adopted by reference in subsection 62-730.020(1), F.A.C.], the corrective action requirements of this RCRA permit extend to all contiguous property under the control of the Permittee (see Attachment A, a map which demarks the property boundaries of land under the Permittee's control) and to all contamination that originated from discharges at the contiguous property under control of the Permittee.

This permit is based on the premise that information and reports submitted by the Permittee prior to issuance of this permit are accurate. Any inaccuracies found in this information or information submitted as required by this permit may be grounds for termination or modification of this permit in accordance with Rule 62-730.290, F.A.C., and potential enforcement action.

The facility is located at 7887 Bryan Dairy Rd., Largo, Florida and is owned by Pinellas County Board of Commissioners "d.b.a." Pinellas County Industrial Development Authority.

The following documents were used in the preparation of this permit:

1. January 2000, Wastewater Neutralization Area/Building 200 Area Corrective Measures Implementation Plan Addendum.
2. September 2003, Northeast Site Area A NAPL Remediation Final Report.
3. January 2005, Building 100 Area Enhanced Bioremediation Pilot Test Final Report.
4. July 2006, Building 100 Area Corrective Measures Study Report Addendum.
5. March 2007, Young Rainey STAR Center Wastewater Neutralization Area No Further Action With Controls Proposal,
6. April 2007, Final Report - Northeast Site Area B NAPL Remediation Project at the Young - Rainey STAR Center Largo, Pinellas County, Florida.
7. August 21, 2007, HSWA Corrective Action Permit 0034170/HH/003.
8. June 2008, Dewatering Evaluation Report for Road Construction and Water Line Replacement along Bryan Dairy and Belcher Roads.
9. August 17, 2009, Closure Monitoring Plan for the Northeast Site and 4.5 Acre Site
10. September 2009, Interim Remedial Action for Source Removal at the Northeast Site-Final Report.
11. June 2010, Sitewide Environmental Monitoring Semiannual Progress Report for the Young - Rainey STAR Center December 2009 through May 2010.
12. December 2010, Sitewide Environmental Monitoring Semiannual Progress Report for the Young - Rainey STAR Center June through November 2010.
13. June 2011, Sitewide Environmental Monitoring Semiannual Progress Report for the Young-Rainey STAR Center December 2010 Through May 2011.
14. June 30, 2011 Pinellas HSWA Permit Renewal.
15. September 2011, Long-Term Surveillance and Maintenance Plan for the Pinellas Site.

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PART I - GENERAL AND STANDARD CONDITIONS

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to Sections 403.141 and 403.727, F.S. The Permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Sections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in this permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the Permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the Permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The Permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the Permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The Permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:

    a. Have access to and copy any records that must be kept under conditions of the permit;

    b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

    c. Sample or monitor any substances or parameters at any time or location reasonably necessary to assure compliance with this permit or Department rules.

    d. Reasonable time may depend on the nature of the concern being investigated.

8. The Permittee shall comply with the following notification and reporting requirements:

    a. If, for any reason, the Permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the Permittee shall immediately provide the Department with the following information:

        (1) A description of and cause of noncompliance; and

        (2) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The Permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

    b. Notification of any noncompliance or emergency response including interim source removal, which may endanger health or the environment, including the release of any hazardous waste that may endanger public drinking water supplies or the occurrence of a fire or explosion from the facility which could threaten the environment or human health outside the facility, shall be reported verbally to the Department within 24 hours, and a written report shall be provided within five days. The verbal report shall include the name, address, I.D. number, and telephone number of the facility and its owner or

operator; the date, time, and type of incident; the name and quantity of materials involved; the extent of any injuries if any; an assessment of actual or potential hazards; and the estimated quantity and disposition of recovered material. The written submission shall contain all the elements of the verbal report and:

(1) A description and cause of the noncompliance.

(2) If not corrected, the expected time of correction, and the steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

c. The Permittee shall comply with the "Notices" provisions of Rule 62-780.220, F.A.C. :

(1) prior to performing field activities;

(2) when contamination beyond the facility boundary is confirmed by laboratory analysis;

(3) when a temporary point of compliance (TPOC) is established beyond the boundary of the source property in conjunction with monitored natural attenuation or active remediation;

(4) five year annual update to the status of a TPOC; and

(5) warning signs at facilities where there may be a risk of exposure to the public of environmental media contaminated with hazardous waste.

d. The Permittee shall give written notice to the Department within 15 days of any planned physical alterations or additions that could affect activities covered by this permit. The notice shall include at a minimum, a summary of the planned change, the reason for the planned change, a discussion of the effect(s) the planned change will have on the ability to investigate contamination at or from the contaminated site, and a discussion of the effect(s) the planned change will have on the known or suspected contamination.

e. The Permittee shall revise "Part I - General" of the Application for a Hazardous Waste Facility Permit [DEP Form 62-730.900(2)(a)] and submit the revised form to the Department within 30 days of any changes in the Part I information.

f. Manifests

(1) Unmanifested waste report: The Permittee shall submit an unmanifested waste report to the Department within 15 days of receipt of unmanifested waste.

(2) Manifest discrepancy report: If a significant discrepancy in a manifest is discovered, the Permittee shall attempt to rectify the discrepancy. If not resolved within 15 days after the waste is received, the Permittee shall immediately submit a letter report, including a copy of the manifest, to the Department.

9. In accepting this permit, the Permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Section 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The Permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the Permittee does not waive any other rights granted by Florida Statutes or Department rules. A reasonable time for compliance with a new or amended surface water quality standard, other than those standards addressed in Rule 62-302.500, F.A.C., shall include a reasonable time to obtain or be denied a mixing zone for the new or amended standard.

11. This permit is transferable only upon written Department approval in accordance with Rules 62-4.120 and 62-730.290(6) F.A.C., as applicable. The Permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department. Before transferring ownership or operation of this facility during the term of this permit, the Permittee must notify the new owner or operator in writing of the requirements of 40 C.F.R. Part 264 and Chapter 62-730, F.A.C.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity. In the event that there is no building or reasonable repository for such a copy at the work site, then the permit or a copy thereof shall be kept at an alternate location agreed to by the department.

13. Reserved.

14. The Permittee shall comply with the following recordkeeping requirements:

    a. Upon request, the Permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

    b. The Permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit; copies of all reports required by this permit; records of all data used to complete the application for this permit; and all monitoring data required by 40 C.F.R. Part 264 Subparts F and G, and 40 C.F.R. 264.228. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

    c. Records of monitoring information shall include all required items in Chapter 62-160, F.A.C. These include at a minimum:

        (1) The date, exact place, and time of sampling or measurements;

        (2) The person responsible for performing the sampling or measurements;

        (3) The dates analyses were performed;

        (4) The person responsible for performing the analyses;

        (5) The analytical techniques or methods used; and

        (6) The results of such analyses.

    d. As a generator of hazardous waste, the Permittee shall retain a copy of all notices, certifications, demonstrations, waste analysis data, and other documentation produced to comply with land disposal restrictions (40 C.F.R. Part 268) for at least three years from the date that the waste which is the subject of such documentation was last sent to an on property or off-property facility for treatment, storage, or disposal, or until remedial activity is completed, whichever date is later. These periods may be extended by request

of the Department at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility.

15. Within the timeframe requested by the Department, the Permittee shall furnish any information required by law which is needed to determine compliance with the permit. If the Department's request does not include a timeframe, the time of response is 30 days. If the Permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

16. Except as otherwise specifically provided in this permit, all submittals in response to permit conditions shall be provided as described below.

    a. One electronic copy in optical media format of all documents (corrective action and permitting) and one hard copy of permitting documents (e.g., permit renewal, permit modifications, etc.) shall be sent to:

       Environmental Administrator
       Hazardous Waste Regulation Section M.**S**. 4560
       Department of Environmental Protection
       2600 Blair Stone Road
       Tallahassee, Florida 32399-2400

    b. In addition to copies sent to the Hazardous Waste Regulation Section in Tallahassee, one hard copy of all submittals shall be sent to:

       Environmental Manager
       M.S. 4535
       Department of Environmental Protection
       2600 Blair Stone Road
       Tallahassee, Florida 32399-2400

    c. In addition to copies sent to the Hazardous Waste Regulation Section in Tallahassee, one hard copy of all submittals shall be sent to:

       Hazardous Waste Supervisor
       Department of Environmental Protection
       13051 North Telecom Parkway,
       Temple Terrace, Florida 33637-0926

17. All documents submitted pursuant to the conditions of this permit shall be accompanied by a cover letter stating the name and date of the document submitted, the number(s) of the Part(s) and Condition(s) affected, and the permit number and project name of the permit involved.

18. All documents proposing modifications to the approved permit and involving the practice of engineering must be submitted to the Department for review and be signed, sealed, and certified by a Professional Engineer registered in the State of Florida, in accordance with Chapter 471, F.S., and subsection 62-730.220(9), F.A.C. All submittals incorporating interpretation of geological data shall be signed and sealed by a Professional Geologist registered in the State of Florida in accordance with Chapter 492, F.S., and subsection 62-730.220(10), F.A.C.

19. The Department of Environmental Protection's 24-hour emergency telephone number is (850) 413-9911 or (800) 320-0519. During normal business hours, the DEP District Office may be contacted at (813) 632-7600 (Tampa).

20. The following conditions apply to permit modification and revocation of this permit:

    a. The Department may modify, revoke, reissue or terminate for cause this permit in accordance with Chapters 62-4 and 62-730, F.A.C. The filing of a request for a permit modification, revocation, reissuance, or termination or the notification of planned changes or anticipated noncompliance on the part of the Permittee does not stay the applicability or enforceability of any permit condition. The Permittee may submit any subsequent modifications to the Department for approval. The application shall meet the fee requirements of Rule 62-730.293, F.A.C. The Permittee shall submit the application for revisions to the address in Condition 16 of this Part. The Permittee shall submit a copy of the cover letter accompanying the revisions and the fee to:

        Florida Department of Environmental Protection
        Hazardous Waste Regulation Section
        Post Office Box 3070
        Tallahassee, Florida 32315-3070

    b. The modification fee may also be submitted electronically. However, if the Permittee intends to submit the modification fee electronically, the Permittee shall obtain instructions from the Department on how to submit the renewal fee electronically prior to attempting such submittal and shall follow such instructions in making the electronic fee submittal.

c. Siting criteria are not applicable to this permit.

21. Prior to 180 calendar days before the expiration of this permit, the Permittee shall submit a complete application for the renewal of the permit on forms and in a manner prescribed by the Department unless postclosure care and all corrective action have been completed and accepted by the Department. If the Permittee allows this permit to expire prior to Department acceptance of the certification of postclosure and termination of all corrective action, the Permittee must reapply for a permit in accordance with DEP Form 62-730.900(2), F.A.C. The Permittee shall submit the renewal to the address in Condition 16 of this Part. The Permittee shall submit one copy of the cover letter accompanying the renewal and the fee to:

    Florida Department of Environmental Protection
    Hazardous Waste Regulation Section
    Post Office Box 3070
    Tallahassee, Florida 32315-3070

    The renewal fee may also be submitted electronically. However, if the Permittee intends to submit the renewal fee electronically, the Permittee shall obtain instructions from the Department on how to submit the renewal fee electronically prior to attempting such submittal and shall follow such instructions in making the electronic fee submittal.

22. Reserved.

23. Reserved.

24. If this facility is a suspected or confirmed contaminated facility where there may be a risk of exposure to the public, then upon direction from the Department the Permittee must comply with the warning sign requirements of Section 403.7255, F.S., and subsection 62-730.225(4), F.A.C. The Permittee is responsible for supplying, installing and maintaining the warning signs.

25. Reserved.

26. Reserved.

27. The conditions in this permit shall take precedence over the permit application documents where there are differences between those documents and the permit conditions.

28. The Permittee may claim that any information required to be submitted by this permit is confidential in accordance with subsection 62-730.100(3), F.A.C.

29. All work plans, reports and schedules and other documents ("submittals") required by this permit are subject to approval by the Department prior to implementation. The Department will review the submittals and respond in writing. Upon written approval by the Department, the Permittee shall implement all work plans, reports and schedules as provided in the approved submittal. If the Department disapproves a submittal, the Department will:

    a. Notify the Permittee in writing of the reason(s) why the submittal does not contain information adequate to support the conclusion, alternative, plan, proposal or recommendation, or why the conclusion, alternative, plan, proposal or recommendation is not supported by the applicable criteria. In this case the Permittee shall submit a revised submittal within 60 days of receipt of the Department's disapproval; or

    b. Revise the submittal, or approve the submittal with conditions, and notify the Permittee of the revisions or conditions. In the case of work plans, the Department may notify the Permittee of the start date of the schedule within the revised or conditionally approved work plan.

30. Any dispute resolution will be conducted in accordance with Chapter 120, F.S. (Administrative Procedure Act), Chapter 28-106, F.A.C., and the Department's existing rules and procedures.

31. The following conditions apply to land disposal (placement) of hazardous wastes:

    a. 40 C.F.R. Part 268 identifies hazardous wastes that are restricted from land disposal and defines those limited circumstances under which an otherwise prohibited waste may continue to be placed on or in a land treatment, storage, or disposal unit. The Permittee shall maintain compliance with the requirements of 40 C.F.R. Part 268. Where the Permittee has applied for an extension, waiver, or variance under 40 C.F.R. Part 268, the Permittee shall comply with all restrictions on land disposal under this Part once the effective date for the waste has been reached pending final written approval of such application.

b. A restricted waste identified in 40 C.F.R. Part 268 Subpart C may not be placed in a land disposal unit without further treatment unless the requirements of 40 C.F.R. Part 268 Subparts C and/or D are met.

c. The storage of hazardous wastes restricted from land disposal under 40 C.F.R. Part 268 is prohibited unless the requirements of 40 C.F.R. Part 268 Subpart E are met.

32. The Permittee shall implement remedial activities beyond the facility boundary, if there is suspected or confirmed off-property contamination, to protect human health and the environment, unless the Permittee demonstrates to the satisfaction of the Department that, despite the Permittee's best efforts, as determined by the Department, the Permittee was unable to obtain the necessary permission to undertake such actions. The Permittee shall use all reasonable efforts, including but not limited to correspondence, telephone calls, personal contacts, drafting and redrafting agreements, and payment of a fee, to obtain any access to real property necessary for work to be performed in the implementation of this permit. If necessary access cannot be obtained by the Permittee, or if obtained, is revoked by owners or entities controlling access to the properties to which access is necessary, the Permittee shall notify the Department within five business days of such refusal or revocation. The Department may at any time thereafter seek to obtain such access as is necessary to implement the terms of this permit. The Permittee shall reimburse the Department for any expenses that the Department is ordered to pay, or that the Department incurs in connection with its efforts to obtain necessary access to said property. The Permittee shall pay these sums to the Department, or arrange a payment schedule with the Department, within 30 days of demand by the Department. The Permittee is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where off-property access is denied. On-site measures to address such releases will be determined on a case-by-case basis.

33. The Permittee owns the real property that comprises the Facility. If and when the Permittee intends to transfer parcels to third parties, the Permittee may drop a parcel from the Facility covered by this permit, and the Department will approve the dropping of the parcel so long as the parcel never contained a contaminated site, or so long as any contamination associated with the contaminated site has been addressed to the satisfaction of the Department. The satisfaction of the Department maybe conditioned on a sale with certain legal restrictions on the future use and/or remedial activity requirements on the parcel being dropped. Even though a parcel is no longer defined as part of the facility as a result of the permit modification (using the minor modification requirements of subsection 62-730.290(4), F.A.C.), in

the unanticipated and improbable event that a previously unknown contaminated site is found on the parcel, and such contamination resulted from activities which occurred prior to the sale, the Permittee will be responsible for any corrective action along with any other persons who may have legal responsibility for the contamination.

PART II - OPERATING CONDITIONS

Not applicable at this time.

PART III - POSTCLOSURE CONDITIONS

Not applicable at this time.

PART IV - ENVIRONMENTAL MONITORING CONDITIONS

Environmental Monitoring Reports shall be submitted and comply with the schedule set forth in the latest Corrective Action Deliverable Schedule identified in the Long-Term Surveillance and Maintenance Plan (LTS&M) approved by the Department pursuant to Specific Condition Part VI Subpart A.7 below.

PART V - CORRECTIVE (REMEDIAL) ACTION CONDITIONS

1. The Conditions of this Part apply to:

   a. The SWMUs and AOCs identified in Appendix A;

   b. Any additional SWMUs or AOCs discovered during the course of groundwater monitoring, field investigations, environmental audits, or other means; as used in this Part of the permit, the terms "discover", "discovery", or "discovered" refer to the date on which the Permittee either:

      (1) visually observes evidence of a new SWMU or AOC;

      (2) visually observes evidence of a previously unidentified release of contaminant(s) to the environment; or

      (3) receives information from a credible source of the presence of a new release of contaminant(s) to the environment; and

   c. Contamination that has migrated beyond the facility boundary, if applicable.

2. Within 15 calendar days of discovery, the Permittee shall notify the Department in writing of any newly discovered release(s) of contaminant(s) to the environment; any suspected new AOC(s); and any additional SWMU(s) discovered during the course of groundwater monitoring, field investigations, environmental audits, or other means. The notification shall include, at a minimum, the location of the release, AOC or SWMU (hereinafter referred to collectively as "site"), and all relevant information (*e.g.*, location of site(s) on a topographic map of appropriate scale; general dimensions of affected area; media affected; hazardous constituents released; and magnitude of release). The Department may conduct, or require that the Permittee conduct, confirmatory sampling in order to determine whether contamination is present. The Department will notify the Permittee in writing of the final determination as to the status of the newly discovered or suspected site.

3. Upon notification by the Department, the Permittee shall prepare and submit a Confirmatory Sampling (CS) Work Plan for known, suspected, or newly discovered sites. Unless the notification letter specifically establishes a different time frame for work plan submittal, the Work Plan shall be submitted within 120 calendar days of notification by the Department that a CS Work Plan is required. The CS Work Plan shall include schedules for implementation and completion of specific actions necessary to determine whether or not contamination has occurred in any potentially affected media. In order to partly or wholly satisfy the CS requirement, previously existing data may be submitted with the work plan for the Department's consideration.

   In accordance with the schedule in the approved CS Work Plan, or no later than 180 calendar days after Department written approval of a CS Work Plan if no schedule is included in the Work Plan, the Permittee shall submit a Confirmatory Sampling (CS) Report identifying those sites that are contaminated and those sites that are not contaminated. The CS Report shall include an analysis of the analytical data to support all determinations. Based on the results of the CS Report, the Department will determine the need for further investigation at sites covered in the CS Report and notify the Permittee in writing.

4. De Minimis discharge is a release of contaminant(s) that is removed from the soil, sediment, surface water, and groundwater to cleanup target levels or background concentrations within 30 days of discovery of the release. If the Permittee intends to treat a discharge under the De Minimis discharge provision of Rule 62-780.550, F.A.C., the Permittee must meet the notification requirements of Condition 2 of this Part, notifying the Department that a De Minimis action is underway. A De Minimis Remediation Report must be submitted to the Department within 90 days

of discovery of the release. The report must include a description of all actions taken in response to the discharge and the information required by the Interim Source Removal Report pursuant to paragraph 62-780.500(7)(a), F.A.C.

5. Upon notification by the Department, the Permittee shall commence site rehabilitation in accordance with Rule 62-730.225 and Chapter 62-780, F.A.C., for all SWMUs and/or AOCs ("contaminated sites") identified in the notification. Unless the notification letter specifically establishes a different time frame to commence or complete site assessment, the Permittee shall commence and complete site assessment in the manner and within the time limits set forth in Rule 62-780.600, F.A.C.

6. Upon notification by the Department, the Permittee shall submit to the Department an Interim Measures (IM) Work Plan for any release, SWMUs or AOCs that the Department determines necessary to minimize or prevent further migration of contaminants or to limit human or environmental exposure to contaminants. The IM Work Plan shall be designed to mitigate any current or potential threat(s) to human health or the environment and to be consistent with long-term corrective actions at the facility. The IM Work Plan shall include the IM objectives, procedures for implementation, a schedule of activities, and associated designs, plans, and specifications.

7. If the Department or the Permittee at any time determines that any approved work plan no longer satisfies the requirements of 40 C.F.R. 264.101 or this permit for prior or continuing releases of contaminant(s) to the environment, the Permittee shall submit an amended work plan to the Department within 60 calendar days of such determination.

PART VI – REMEDY SELECTION AND IMPLEMENTATION

Part VI Subpart A - General Conditions

1. Within 180 calendar days of Department approval of a Site Assessment Report or Site Assessment Report Addendum the Permittee shall submit a Remedial Action Plan developed in accordance with Chapters 62-780 and 62-730, F.A.C. Remedial Action Plans may be performance based, including remediation options to be implemented based on changing conditions at the site.

2. Within 30 days of Department written approval of the remedial alternative(s) selected, the Permittee shall publish notice of a proposed permit modification in accordance with subsection 62-730.292(3)(c), F.A.C. This modification will serve to

incorporate a final remedy into this permit. Final approval of remedial action which is achieved through interim measures shall be in accordance with this condition.

3. The Remedial Action Plan shall include a provision for the Permittee to submit periodic Remedial Action Status Reports in accordance with subsection 62-780.700(13), F.A.C. The intent to implement a different approved remedy in a performance based Remedial Action Plan can be provided in the Remedial Action Status Report. Proposals to modify a previously approved remedy in a performance based Remedial Action Plan can be provided in the Remedial Action Status Report and implemented with written Department approval.

4. When site rehabilitation (remedial action) is complete, the Permittee shall submit to the Department a Site Rehabilitation Completion Report in accordance with Chapter 62-780, F.A.C. Site Rehabilitation Completion Reports can be part of a combined document with the Remedial Action Status Report.

5. For site rehabilitation involving the cleanup of groundwater contaminated by a release from a designated regulated unit, the Permittee must demonstrate that the concentration of constituents of concern remain below cleanup goals for three consecutive years after active remediation has ceased as per 40 C.F.R. 264.100.(f).

6. When appropriate, the Department will approve completion of site rehabilitation by inclusion in a permit renewal, permit modification, or separate Site Rehabilitation Completion Order.

7. The Permittee shall comply with the schedule set forth in the latest Corrective Action Deliverable Schedule identified in the Long-Term Surveillance and Maintenance Plan (LTS&M) approved by the Department.

Part VI Subpart B - Selected Remedies

1. The selected interim remedy for SWMU PIN15, the Northeast Site, is Post Active Remediation Monitoring (PARM) as described in the following documents:

   a. The Sitewide Environmental Monitoring Semiannual Progress Report for the Young-Rainey STAR Center December 2010 Through May 2011, June 2011; and

   b. Long-Term Surveillance and Maintenance Plan for the Pinellas Site, December 2010; and

c. Interim Remedial Action for Source Removal at the Northeast Site-Final Report, September 2009.

2. The selected proposed remedy for SWMU PIN18, the Wastewater Neutralization Area/Building 200 Area is No Further Action with Controls as described in the following documents:

   a. Young Rainey STAR Center Wastewater Neutralization Area No Further Action With Controls Proposal, March 2007; and

   b. Long-Term Surveillance and Maintenance Plan for the Pinellas Site, September 2011.

3. Within sixty (60) days of permit issuance, the Permittee shall submit a final Remedial Action Plan (RAP) permit modification application for all of the SWMUs/AOCs in Appendix A.3 below.

4. The final Remedial Action Plan (RAP) shall contain the following:

   a. Natural Attenuation with Monitoring (NAM) for the Northeast Site (SWMU PIN15) in accordance with Rule 62-780.690, F.A.C.

   b. An updated No Further Action with Controls Proposal for the Wastewater Neutralization Area & Building 200 Area (SWMU PIN18) in accordance with Rule 62-780.680, F.A.C.

5. Within 180 days of permit issuance, the Permittee shall submit a Declaration of Restrictive Covenant (DRC) for each SWMU/AOC.

Appendix A
Summary of Facility Sites (Solid Waste Management Units and Areas of Concern)

A.1. List of SWMUs/AOCs requiring Confirmatory Sampling:

SWMU/AOC Number/Letter	SWMU/ AOC Name	SWMU/AOC Comment and Basis for Determination	Dates of Operation	Potentially Affected Media
There are no units identified as requiring Confirmatory Sampling at this time pursuant to this permit.				

A.2. List of SWMUs/AOCs requiring a Site Assessment (a/k/a RCRA Facility Investigation [RFI]) or a Risk Assessment:

SWMU/AOC Number/Letter	SWMU/ AOC Name	SWMU/AOC Comment	Dates of Operation	Potentially Affected Media
12 and 6	Industrial Drain Leaks, Building 100 and Old Drum Storage Site		1970-	Groundwater

A.3. List of SWMUs/AOCs requiring a Remedial Action Plan or Natural Attenuation with Monitoring Plan (a/k/a Corrective Measures Study [CMS]):

SWMU/AOC Number/Letter	SWMU/AOC Name	SWMU/AOC Comment	Dates of Operation	Affected Media
15	Northeast Site		1968-1982	Groundwater
18	Wastewater Neutralization Area/Building 200			Groundwater

A.4. List of SWMUs/AOCs implementing a Remedial Action Plan or Natural Attenuation with Monitoring Plan (a/k/a Corrective Measures Implementation Report [CMI]):

SWMU/AOC Number/Letter	SWMU/AOC Name	SWMU/AOC Comment	Dates of Operation	Affected Media

There are no units identified at this time requiring a Remedial Action Plan or a Natural Attenuation with Monitoring Plan.

A.5. List of SWMUs/AOCs at which Site Rehabilitation Completion Determinations without controls have been made:

SWMU/AOC Number/Letter	SWMU/AOC Name	Unit Comment and Basis for NFA	Dates of Operation

There are no units identified at this time at which Site Rehabilitation Completion Determinations without controls have been made.

A.6. List of SWMUs/AOCs at which Site Rehabilitation Completion Determinations with controls have been made:

SWMU/AOC Number/Letter	SWMU/AOC Name	Unit Comment and Basis for NFA	Dates of Operation

There are no units identified at this time at which Site Rehabilitation Completion Determinations with controls have been made.

A.7. List of SWMUs/AOCs Where No Further Action Determinations have been made based on no suspected or confirmed contamination:

SWMU/AOC Number/Letter	SWMU/AOC Name	Unit Comment and Basis for NFA	Dates of Operation

Issued January 9, 2012

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

JOHN A. COATES, P.E., CHIEF
BUREAU OF SOLID AND HAZARDOUS WASTE

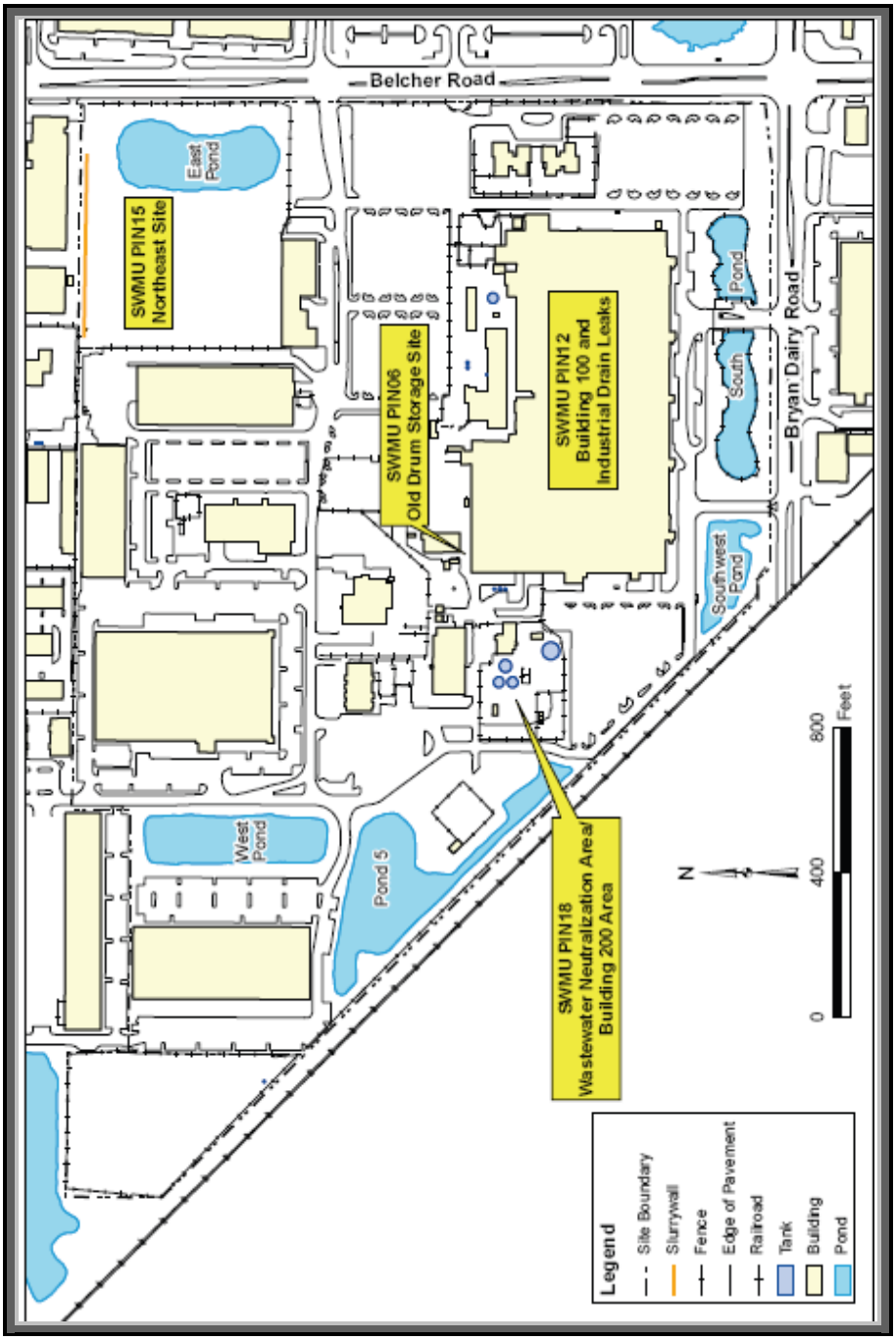
Filing and Acknowledgment

Filed on this date, pursuant to Section 120.52, Florida Statutes, with the designated Clerk, receipt of which is acknowledged.

CLERK

January 9, 2012
DATE

ATTACHMENT A-FACILITY MAP



Appendix D

4.5 Acre Site Remediation Agreement

Remediation Agreement

for the Four and One-Half Acre Site in Largo,

Pinellas County, Florida

Between:

State of Florida Department of Environmental Protection

and

U.S. Department of Energy Grand Junction Office

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State of Florida

Department of Environmental Protection

In the Matter of:

The U.S. Department of Energy Albuquerque Operations Office, Grand Junction Office	**) Remediation Agreement) for the Four and One-Half Acre) Site in Largo, Pinellas County,) Florida**

and

The State of Florida, Florida Department of Environmental Protection

Based upon the information available to the Parties, as of the effective date of this Agreement, and without trial or adjudication of any issues of fact or law, the Parties agree as follows:

I. Parties

A. The U.S. Department of Energy (DOE) and the Florida Department of Environmental Protection (FDEP) are the Parties to this Agreement.

B. The Parties shall notify their authorized representatives of the existence of this Agreement and shall take all appropriate measures to ensure that their authorized representatives perform work in accordance with this Agreement.

C. Each signatory for a Party certifies that he or she is fully authorized to enter into the terms and conditions of this Agreement and to legally bind such Party to this Agreement.

D. The provisions of this Agreement are binding on each Party's heirs, executors, administrators, successors in interest, assignees, lessees, and purchasers with the same force and effect as if they were a Party to this Agreement.

E. The DOE shall provide a copy of this Agreement to the landowner and each contractor and subcontractor hired to perform the work required by this Agreement. All contracts to perform the work required by this Agreement shall contain provisions requiring compliance with the provisions of this Agreement. The DOE shall nonetheless be responsible for ensuring that its contractors or subcontractors perform the work required by this Agreement in accordance with the provisions of this Agreement.

II. Jurisdiction

The Parties enter into this Agreement pursuant to Section 120(a)(4) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, 42 U.S.C. § 9620, and the Atomic Energy Act of 1954, as amended, 42 U.S.C. § 2011 et seq., and the Florida Air and Water Pollution Control Act, FLL 403, Florida Statutes.

III. Purpose

A. This Agreement is entered into by the Parties for the limited purpose of remediating the groundwater under a parcel of property adjacent to the DOE's former Pinellas Plant, known as the Four and One-Half Acre Site. The Site is more fully described in the legal description in Attachment A, attached to this Agreement.

B. The DOE intends to remediate groundwater on the Site to levels that are consistent with its use as an industrial area. The FDEP agrees this would be appropriate so long as state statutes and rules are met and appropriate deed restrictions are in place. The remediation will be in accordance with a Remedial Action Plan (RAP) to be prepared by the DOE and approved by the FDEP, and in accordance with the provisions of this Agreement.

C. All previous contaminant assessments, including the contamination assessment plan/contaminant assessment report/feasibility study, soil study and all interim remedial actions performed at the Site by the DOE prior to the effective date of this Agreement, are recognized by the FDEP as fully approved actions, and they shall be retained and utilized as elements of the final remedial action for the Site.

D. Nothing in this Agreement shall constitute any additional express or implied waiver of sovereign immunity than is provided for by Federal Statute as otherwise applicable to any Party or its authorized representatives.

IV. Definitions

A. Except as otherwise specifically defined herein, the terms used in this Agreement shall have the same meaning as those used in the CERCLA 42 U.S.C. Section 9601, et. seq.

B. Agreement means this document (Remediation Agreement for the Four and One-Half Acre Site in Largo, Pinellas County, Florida) and all its attachments.

C. Authorized Representatives are a Party's employees, agents, successors, and contractors.

D. Constituents of Potential Concern (COPC) are those contaminants that have existed at the Site, based on their frequency of detection, and that have a potential to adversely impact human health and the environment due to their concentration and/or toxicity.

E. Days mean calendar days, unless business days are specified. Any schedules, submittals, or written statements of dispute required by the provisions of this Agreement that would be due on a Saturday, Sunday, or holiday will be due on the following day. In computing any period of time prescribed or allowed by this Agreement, the first day shall be excluded and the final day counted.

F. DOE means the United States Department of Energy and its authorized representatives.

G. FAC means Florida Administrative Code.

H. FDEP means the Florida Department of Environmental Protection and its authorized representatives.

I. F.S. means Florida Statutes.

J. Maximum Contaminant Level (MCL) are those levels and criteria set forth in the applicable provisions of Chapters 62-550 and 62-520 of the FAC.

K. Pinellas Plant means the industrial Site located at 7887 Bryan Dairy Road, Largo, Florida, now known as the Pinellas Star Center.

L. Project Site Managers means the DOE employee or designated and duly authorized contractor and the FDEP employee responsible for direction, execution, and oversight of remediation operations at the Four and One-Half Acre Site.

M. Remedial Action means those actions required to remediate the surficial aquifer at the Four and One-Half Acre Site under the provisions of this Agreement.

N. Remedial Action Plan (RAP) is a plan that will be prepared by the DOE and approved by the FDEP, which will delineate the remedial actions at the Site.

O. Site means the Four and One-Half Acre parcel of undeveloped land, owned by Allen F. and Gretchen H. Gates, adjacent to the western portion of the former DOE Pinellas Plant, 7887 Bryan Dairy Road, Largo, Pinellas County, Florida, which is the subject of this Agreement and which is more specifically described in Attachment A, (legal description) to this Agreement.

P. Site Rehabilitation Completion Report (SRCR) means a report prepared by the DOE after conducting the remedial actions at the Site set forth in the RAP.

Q. Surficial Aquifer is the saturated water bearing strata at the Site located between the land surface and the underlying confining unit (Hawthorn Group).

V. Statement of Facts

The Parties stipulate to the facts stated herein solely for the purpose of this Agreement. Nothing in this Agreement shall be considered as admissions by any

Party, and these facts shall not be used by any person related or unrelated to the Agreement for purposes other than determining the basis of this Agreement.

A. From 1957 through 1972, the Site was owned by the DOE and was part of the DOE's Pinellas Plant. In 1972, James D. and Georgia Carabelas purchased the Site from the Federal Government and remained the owners until 1981. In 1981, Allen F. and Gretchen H. Gates bought the Site and have continued to own the Site until the present time.

B. The DOE and the Gates have had an access and land use agreement for the purpose of conducting remedial actions at the Site since 1985. The current agreement is effective until April 10, 2002. The DOE has negotiated an access agreement from April 11, 2000, until April 10, 2020. The DOE will continue to pursue a lease beyond April 10, 2020, and until the Site is completely remediated.

C. When DOE owned the Site, drums containing resinous materials and Volatile Organic Compounds (VOCs) were disposed of at the Site, which contaminated the soil and the surficial aquifer.

D. In June 1985, in coordination with the Florida Department of Environmental Regulation, now known as the FDEP, the DOE removed eighty-three (83) drums and approximately three-hundred-three (303) tons of contaminated soil from the Site. The soil was disposed of at an off-site U.S. Environmental Protection Agency (USEPA) authorized hazardous waste disposal facility.

E. In August 1986, the DOE submitted a Contamination Assessment Report (CAR) of the Site to the FDEP. The FDEP approved this CAR in March 1987.

F. In October 1987, the DOE submitted a Feasibility Study Report (FSR) on the Site to the FDEP. The FDEP approved the FSR in November 1987.

G. In November 1987, the DOE submitted to the FDEP an Interim Remedial Action Plan (IRAP) to conduct interim remedial actions at the Site. This IRAP was approved by the FDEP in September 1988.

H. In May 1990, the DOE initiated remedial actions at the Site in accordance with the provisions of the IRAP, as amended. The DOE's interim remedial actions at the Site have continued since May 1990, to the present time.

I. The DOE continues to submit quarterly reports to the FDEP on the progress of its interim remedial actions at the Site.

J. Although the groundwater in the shallow surficial aquifer under the Site has been classified as a Class G-II, DOE's position is that, because of the naturally occurring high levels of iron, calcium, magnesium, sulfides, and chlorides in the shallow surficial aquifer under the Site, it is unlikely that the aquifer could be used as a source for drinking water without extensive treatment at an exorbitant cost. It would be considerably cheaper and more practicable to obtain drinking water from the deeper aquifer under the Site, should it be necessary, than to attempt to treat the water from the surficial aquifer under the Site. Additionally, the source of most of the drinking water to facilities in and around the Site is from the local Municipal Water System.

Should the Site ever be developed for industrial use in the future, the source of drinking water would most likely be the Municipal Water System. The FDEP agrees that these statements may be true, but they will not necessarily affect the choice of remedial action.

VI. Scope of Agreement

A. This Agreement formalizes the DOE's remediation of the Site. The remedial actions at the Site will be done in accordance with a Remedial Action Plan (RAP) prepared by the DOE and approved by the FDEP. The RAP, and the remedial action goals contained therein, will be designed to meet the MCLs for Class G-II aquifer, potable water use. The DOE may, at any time during the implementation of the RAP, submit a RAP modification in accordance with Section XI. The RAP modification may include the adoption of alternative technology or seek modification of the groundwater Site Rehabilitation Levels (SRLs) in accordance with existing state regulations and regulatory guidance.

B. The DOE will continue to submit to the FDEP and the landowner quarterly reports of its interim remedial actions at the Site until the FDEP approves the RAP.

VII. Remedial Action Plan

A. The DOE will submit the RAP for the FDEP's approval within one hundred and eighty (180) days from the execution of the Agreement. The RAP will evaluate remedial action alternatives for the remediation of the groundwater in the surficial aquifer under the Site and shall include:

1. An analysis of remedial alternatives for the Site based on the following criteria:

   (a) The long- and short-term environmental impacts, if any.

   (b) The present feasibility of remediation technology to remediate the Site to MCLs for Class G-II aquifers, consistent with state-of-the-art technology.

   (c) The implementability of remedial alternative(s).

   (d) The operation and maintenance required to implement remedial alternatives.

   (e) The reliability of alternative(s)

   (f) The feasibility of the alternative(s).

   (g) The economic costs of the alternatives weighed against the benefits to be derived.

   (h) The protection of human health by the alternatives.

   (i) The long-term effectiveness of the alternatives.

   (j) The use of the Site as an industrial area.

2. The rationale for the remedial action(s) preferred and selected.

3. The design, specifications, and construction details for the remedial actions(s) selected.

4. The operational details of the remedial action(s), including the disposition of any effluent, expected contaminant concentrations in the effluent, an effluent sampling schedule, and the expected concentrations and quantities of any contaminants discharged into the air as a result of

remedial action(s).

5. The remedial action and post-remedial action groundwater (surficial aquifer) monitoring plan for the Site.

6. The milestones and deliverables associated with implementing the remedial action(s) selected.

7. The sampling and monitoring activities required to implement the remedial action(s) selected.

8. The identification of COPCs for the Site, based on the available Site specific analytical data.

9. The projected period of time in which remedial action(s) at the Site will be conducted. The remedial action selected will take into consideration the feasibility of available groundwater remediation technology to remediate the Site to MCL's for Class G-II aquifers.

10. A schedule for the remedial action(s) selected, the deliverables, if any, and the sampling and monitoring activities.

11. Prevention of, or mitigation of, off-site migration of the plume(s).

12. Manner in which access to the Site will be limited to protect public safety.

B. All sampling and analysis conducted for implementation of this RAP shall conform to approved quality control, quality assurance, and chain of custody requirements, as specified in the applicable FDEP regulations.

C. The FDEP shall approve the RAP within sixty (60) days of receipt and will advise the DOE in writing of its approval, unless it needs more time or

additional information to evaluate the RAP. If the FDEP needs more time or additional information, it will make that request in writing to the DOE within sixty (60) days from receipt of the RAP. The DOE will thereafter provide the requested information in writing to the FDEP within sixty (60) days from receipt of the FDEP's request, unless the DOE requires additional time to provide the requested information. If the DOE requires additional time to provide the requested information, the DOE shall within at least seven (7) days prior to the expiration of the sixty (60) day period, provide to the FDEP for its approval a written schedule for providing the requested information. If the FDEP does not agree to this schedule, either party may invoke the provisions in Section XVII (Resolution of Disputes) of this Agreement.

D. If, after receiving and incorporating the additional information requested, the FDEP still does not approve the RAP, the FDEP may modify the RAP. The FDEP shall provide the modified RAP to the DOE for its review and concurrence within ninety (90) days from the day it receives and incorporates the additional information provided by the DOE. The DOE shall then review and accept the modified RAP or invoke the provisions in Section XVII (Resolution of Disputes) of this Agreement. Any additional costs and requirements associated with the FDEP's modifications to the RAP are also subject to the provisions of Section XVII (Resolution of Disputes).

E. Upon conditional approval of the RAP, the DOE will announce the availability of the proposed RAP to the public for review and comment. The FDEP will address public comments and will modify the RAP, if appropriate.

Thereafter, the FDEP will provide the modified RAP to the DOE in accordance with the provisions of Paragraphs D. and E. of this Section.

F. Once the RAP is approved in final form by the FDEP, it shall become effective, and the DOE shall implement it in accordance with the schedule(s) set forth therein, subject to the provisions of Section XIV, (Funding) of this Agreement. The approved RAP shall incorporate all modifications to the RAP agreed to by the Parties or changes required by dispute resolution.

VIII. Reports

A. In addition to any other submittals required by this Agreement, the DOE shall submit to the FDEP written quarterly progress reports that, as appropriate:

1. Describe the progress on remedial actions that have been conducted pursuant to this Agreement and to the RAP.
2. Include a summary of all results of sampling and tests and all other data received or generated by the DOE or its contractor(s) during the previous quarter.
3. Identify any deliverables required by this Agreement that were completed and submitted during the previous quarter.
4. Describe all actions, including, but not limited to, data collection and implementation of the remedial actions scheduled for the next quarter. Provide other information relating to the progress of the remedial actions, such as critical path diagrams, Gantt charts, and Pert charts.

5. Include information regarding delays encountered or anticipated delays.

6. Describe any modifications to RAP schedules.

B. After conducting the remedial actions as set forth in the RAP, the DOE will submit to the FDEP an SRCR for the FDEP's approval. The SRCR will specify any needed institutional controls or uses. Within sixty (60) days of receipt of the SRCR, the FDEP shall approve the SRCR, or make a determination that the SRCR does not adequately reflect that the remedial actions required by the RAP have been conducted. If the FDEP determines that the SRCR is not adequate, the FDEP shall so notify the DOE in writing. This notice from the FDEP shall include the rationale as to why the SRCR is not adequate. Within thirty (30) days of receipt of the FDEP's notice, the DOE shall either respond or invoke the provisions of Section XVII (Resolution of Disputes) of this Agreement.

C. The remediation of the Site shall be deemed to be complete at such time as the FDEP provides the DOE with written notice that the SRCR has been approved. The DOE will provide the FDEP with a schedule for the restoration of the Site to include proper closure of wells, removal of treatment systems and associated piping and utilities, and necessary repairs to the Site.

IX. Notification

Whenever, under the terms of this Agreement, written notice is required to be given or a report is required to be sent by one Party to the other Party, it shall be directed

to the individuals at the addresses specified below via U.S. Mail or similar means of delivery, unless those individuals or their successors give notice of a change to the other Party in writing. All notices and submissions shall be considered effective upon receipt, unless otherwise provided. Written notice, as specified herein, shall constitute complete satisfaction of any written notice required by this Agreement.

For DOE:

Mr. David Ingle, Program Manager
c/o MACTEC-ERS
7887 Bryan Dairy Rd.
Suite 260
Largo, Florida 33777

For FDEP:

Mr. John Armstrong
Project Site Manager
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

X. Extensions

A. All matters subject to Section IX (Notification) of this Agreement shall be extended by the FDEP upon receipt of a timely request for extension and when good cause exists for the required extension. Any DOE request for an extension shall be submitted in writing and shall specify the following:

1. The schedule that is sought to be extended.
2. The length of the extension sought.
3. The good cause(s) for the extension.
4. Any related schedule(s) that would be affected if the extension was or was not granted.

B. Good cause for an extension shall be deemed to exist when sought in regard to:

1. An event of Force Majeure.
2. A delay caused by the other Party's failure to meet any requirement of this Agreement.
3. A delay caused by the good faith invocation of Section XVII (Resolution of Disputes) or the initiation of judicial action.
4. A delay caused, or which is likely to be caused, by the grant of an extension in regard to another timetable, deadline, or a schedule.
5. A delay caused by additional work mutually agreed to in writing by the Parties.
6. Any other event or series of events mutually agreed to by the Parties as constituting good cause.
7. Insufficient availability of appropriated funds.
8. Any other reasons beyond the control of the Parties.

C. If the Parties cannot agree as to whether good cause exists for an extension, either Party may seek and obtain a determination through the provisions of Section XVII (Resolution of Disputes) of this Agreement.

D. Within fourteen (14) days of receipt of a request for an extension of a timetable, deadline, or a schedule, the FDEP shall notify the DOE in writing as to whether it will grant or deny the extension. If the FDEP denies the extension, it shall provide to the DOE a written explanation for its denial. If the FDEP fails to respond within the fourteen- (14-) day period to a request for an extension, the FDEP shall be deemed to have denied the request, and DOE may then invoke the provisions of Section XVII (Resolution of Disputes)

of this Agreement within fourteen (14) days from this date.

E. The DOE may invoke the provisions of Section XVII (Resolution of Disputes) of this Agreement within fourteen (14) days from receipt of the FDEP's notice of denial. If the DOE fails to invoke the Resolution of Disputes provision of this Agreement within the fourteen-day (14-day) period, it will be presumed that the DOE has accepted the FDEP's denial of the request for an extension.

F. If the FDEP determines that a DOE request for an extension is warranted, the affected schedule shall be extended accordingly, and the new schedule shall automatically become part of the RAP. If the FDEP determines that all or part of the requested extension is not warranted, the schedule shall not be extended except as set forth in Paragraph B of this section, or in accordance with a determination resulting under the procedures in Section XVII (Resolution of Disputes) of this Agreement.

G. When a timely request for an extension is made, the FDEP shall not initiate an administrative, judicial, or any other enforcement action against the DOE or its authorized representatives to comply with the affected schedule until a decision is reached on whether the requested extension is granted, consistent with the provisions of this Agreement.

H. For requests for extension by the FDEP, if the DOE does not object in writing within fourteen (14) days of receipt of a written request for an extension from the FDEP, it will be presumed that the DOE has accepted the request for the extension. If the DOE provides the FDEP with written notice that its request

for extension is not acceptable, within fourteen (14) days of receipt of the request, the FDEP may invoke the provisions of Section XVII (Resolution of Disputes) of this Agreement.

XI. Additional Work or Modification to Work Performed

A. In the event that the FDEP determines that additional work, or a modification of work performed, is necessary to accomplish the objectives of this Agreement, it shall notify the DOE, in writing, of what additional work or modifications the FDEP is requesting. The DOE shall have thirty (30) days from the day of receipt of such notice in which to respond to such requests from the FDEP. Any additional work or a modification to work performed, determined to be necessary by the FDEP, shall be subject to the dispute resolution provisions set forth in Section XVII (Resolution of Disputes) of this Agreement.

B. In the event that the DOE determines that additional work or a modification to work performed, or to be performed, is necessary to accomplish the objectives of this Agreement, the DOE shall notify the FDEP, in writing, of its determination. The FDEP shall have thirty (30) days in which to respond to the DOE's determination. Any additional work, or a modification to work performed, determined to be necessary by the DOE, may be subject to approval by the FDEP prior to the DOE initiating any additional work, or modification to work performed, and shall be subject to Section XVII (Resolution of Disputes) of this Agreement.

C. Any additional work, or a modification to work performed, approved pursuant to this section, shall be completed in accordance with the standards, specifications, and schedule determined and approved by the FDEP. If any additional work, or modification to work performed, will adversely affect work scheduled, or will require significant revisions to the approved RAP, the DOE shall notify the FDEP, in writing, within seven (7) days from the time that it becomes aware of such an adverse effect. Extensions shall be subject to the provisions of Section X, (Extensions) of this Agreement. The provisions of this paragraph shall also be subject to Section XVII (Resolution of Disputes) of this Agreement.

D. Any additional work, or a modification to work performed, which would require additional funding, shall be subject to the availability of appropriated funds. The provisions of this paragraph shall also be subject to Section XVII (Resolution of Disputes) of this Agreement.

XII. Site Access

A. The United States Department of Energy has executed a lease with Allen F. Gates, Trustee of Allen F. Gates Trust, and Gretchen H. Gates, Trustee of Gretchen H. Gates Trust, for the express purpose of site access. This lease is structured with an initial ten-year (10-year) term with provision for extension to two (2) five-year (5-year) terms. This lease provides for long-term access to enable the Department of Energy and the Florida Department of Environmental Protection to inspect, monitor, and complete, as appropriate, necessary site remediation. If additional time is required to complete the RAP, terms will be

negotiated.

B. The FDEP, pursuant to this Agreement and its inherent State authority over the remedial actions being conducted on the Site, may, at reasonable times, observe the work being performed by the DOE or its contractors.

C. Individuals who enter the Site must comply with the DOE's site access, safety and health requirements.

XIII. Force Majeure

A Force Majeure shall mean any event arising from causes beyond the control of DOE that causes a delay in or prevents the performance of any provision of this Agreement, including, but not limited to, access to the Site; acts of God; fire; war; insurrection; civil disturbance or disobedience; strike or labor dispute that affects compliance with the provisions of this Agreement; explosion; unanticipated breakage or accident to machinery, equipment, or lines of pipe despite reasonably diligent maintenance; adverse weather conditions that could not be reasonably anticipated or overcome; unusual delay in transportation; restraint by court order or order by a public authority; inability to obtain, at reasonable cost and after exercise of reasonable diligence, any necessary authorizations, approvals, permits, or licenses due to action or inaction of any governmental agency or authority other than the DOE; delays caused by compliance with applicable statutes or regulations governing contracting, procurement, or acquisition procedures despite the exercise of reasonable diligence by the DOE; and insufficient availability of appropriated funds; and any other reasons outside the control of DOE. If a Force Majeure

situation or condition occurs, the DOE will be excused from any delay in performance that may result therefrom.

XIV. Funding

A. The Parties to this Agreement expect that all obligations of the DOE arising under this Agreement will be fully funded. The DOE will request through its budgetary process the funds necessary to comply with the provisions of this Agreement. However, it is expressly understood by the Parties that the ability and authority of DOE to perform any of its obligations under this Agreement is subject to annual Federal authorization and appropriation, including requisite lease payments tied to site access.

B. No provision in this Agreement shall be interpreted to require the obligation or payment of funds by the DOE in violation of the Anti-Deficiency Act, as amended, 31 U.S.C. § 1341 *et seq*. In cases where funding is insufficient to meet the requirements of this Agreement or the payment or obligation of funds would constitute a violation of the above Anti-Deficiency Act, the dates established requiring the payment or obligation of such funds shall be appropriately adjusted to avoid any such violation. The Parties agree to meet, as needed, to review milestones and deliverables required by this Agreement, to ascertain whether any adjustments are warranted because of the provisions of this Section to the Agreement.

C. If appropriated funds are not available to fulfill DOE's obligation under this Agreement, FDEP reserves the right to initiate an action against DOE or any other person which would be appropriate absent this Agreement.

XV. Sampling and Data Sharing

A. The DOE will give the FDEP at least ten (10) days notice, prior to installing any monitoring or recovery well(s) and will allow the FDEP to observe the location and installation of the wells. The DOE will obtain all approvals and permits necessary under applicable law before it installs any well.

B. Upon request, the DOE will allow the FDEP to observe the DOE or its contractors taking samples from a well and will also allow the FDEP to take split samples from said well, if desired.

XVI. Limitation of Liability

Nothing in this Agreement shall make any Party liable for any injuries or damages to persons or property resulting from any acts or omissions of the other Party, or the authorized representatives of the other Party, while carrying out remedial actions required by this Agreement.

The FDEP will not be considered to be a Party to any contract entered into by the DOE to carry out the remedial actions required by this Agreement.

XVII. Resolution of Disputes

A. Except as specifically set forth in this Agreement, if a dispute arises between the Parties with regard to matters covered by and subject to this Agreement, the procedures of this section shall apply.

B. The DOE and the FDEP agree to make a diligent effort to informally resolve any dispute without exercising the formal dispute provisions of this section. In the event of a dispute, the Parties shall engage in informal dialogue between the project managers to resolve the dispute. Efforts to resolve a

dispute will begin with the project managers for the DOE and the FDEP. The period for informally resolving the dispute shall run for thirty (30) days from initial notification of a dispute. During this informal dispute period, the DOE and the FDEP project site managers shall meet or confer by telephone, as many times as necessary, but not less than weekly, to discuss and attempt to resolve the dispute. If the dispute is resolved through the informal dispute process, a written summary of the dispute and its resolution will be prepared by the DOE and signed by the FDEP.

C. If the dispute cannot be resolved through informal discussions and negotiations, not to exceed thirty (30) days, then the parties agree to elevate the dispute to a higher level to attempt resolution. The FDEP's Division Director for Waste Management will attempt to resolve the dispute with DOE's Grand Junction Office Manager. If a resolution is not reached within twenty-one (21) days from elevation of the dispute, the FDEP Secretary and the Manager of DOE's Albuquerque Operations Office shall consult with each other and arrive at a compromised resolution. Upon resolution, the Secretary shall provide DOE with a written final decision setting forth the resolution of the dispute.

D. Any work not affected by the dispute shall continue forward. Any work affected by the dispute shall be stopped if FDEP believes such work is inadequate or defective and such inadequacy or defect is likely to adversely affect human health, welfare or the environment. The FDEP's decision to stop work is subject to immediate dispute resolution.

E. Resolution of a dispute pursuant to this section of the Agreement constitutes a final resolution of the dispute and final agency action arising under this Agreement. All parties shall abide by all terms and conditions of any final resolution except to the extent that any final resolution may be submitted by DOE to a court of competent jurisdiction for judicial review.

XVIII. Termination and Release

The DOE's compliance with the provisions of this Agreement shall be deemed to have been satisfied and terminated upon written concurrence by the FDEP with the DOE's written notice that it has complied with the provisions of this Agreement. The FDEP's written concurrence with the DOE's notice shall state that the FDEP releases the DOE from any and all obligations required by the provisions of this Agreement. Any disagreement between the Parties concerning the DOE's compliance with the provisions of this Agreement and the DOE's release from this Agreement shall be subject to Section XVII (Resolution of Disputes) of this Agreement.

XIX. Covenant Not to Sue and Reservation of Rights

In consideration of the DOE entering into this Agreement and based on the information known to the Parties on the effective date of this Agreement, the FDEP agrees that compliance with this Agreement shall stand in lieu of any administrative, legal, and equitable remedies available to the FDEP against the DOE regarding the remediation of the Site.

The FDEP and DOE expressly agree to exhaust any remedies for resolving disputes as provided in this Agreement before pursuing any remedies it may have under statutes which provide the jurisdictional basis for this Agreement. The Parties reserve all rights

to judicial review that they may have including the right to seek review of issues which were addressed in a final resolution or a dispute under Section XVII of this Agreement. The Parties agree to exhaust their rights under Section XVII prior to exercising any rights to judicial review they may have. The Parties agree that all Parties shall have the right to enforce the terms of this Agreement subject to the limitations stated in this Section.

XX. Amendment of Agreement

This Agreement may be modified only by written agreement of the Parties. Any modification to this Agreement shall be effective on the date of execution by the Parties. Based upon ample opportunity of the Parties to negotiate changes, modifications, or amendments to this Agreement, the Parties will simultaneously become signatories upon execution and signing of this Agreement.

XXI. Public Comment

Within twenty-one (21) days after the Parties sign this Agreement, the DOE will announce the availability of this Agreement to the public for review and comment. The FDEP will accept comments from the public for a period of twenty-one (21) days after such announcement. Copies of all comments received by the FDEP shall be forwarded to the DOE. At the end of the comment period, the FDEP will review all such comments and will either:

1. Determine that the Agreement should be executed in its present form, in which case the FDEP will file the Agreement with the Clerk of the FDEP, and it shall become effective on that date. Thereafter, the FDEP will sign the Agreement without any change, and it shall become effective on that date, or

2. Determine that modification of the Agreement is necessary, in which case the FDEP, after consultation with the DOE, will send to the DOE a redline/strike-out version of the Agreement, which includes all proposed changes to the Agreement, for its review and comment. The modified Agreement will become effective twenty-one (21) days after receipt by the DOE, unless the DOE notifies the FDEP, in writing, within fourteen (14) days of receipt of the modified Agreement, that the proposed Agreement is not acceptable to the DOE. The DOE's notice shall specify the areas of disagreement with the proposed modification and shall suggest alternatives for the consideration of the FDEP. If the Parties still can not agree on the proposed modification, the DOE may, within fourteen (14) days, invoke the provisions of Section XVII (Resolution of Disputes) of this Agreement with regard to the modifications proposed by the FDEP. If the DOE fails to invoke Dispute Resolution procedures within the required fourteen (14) days, it will be presumed that the DOE accepts the Agreement as modified by the FDEP. The FDEP will file the revised Agreement with the Clerk of the FDEP, and the Agreement will become final as of that date.

XXII. Effective Date

This agreement is a final order of the FDEP pursuant to Section 120.52(7), Florida Statutes, and it is final and effective on the date filed with the Clerk of the FDEP unless a Petition for Administrative Hearing is filed in accordance with Chapter 120, Florida Statutes. Upon the timely filing of a petition, this Agreement will not be effective until further order of the FDEP or such other judicial order.

XXIII. Signatories

Each undersigned representative of a Party to this Agreement certifies that he or she is fully authorized to enter into the terms and conditions of this Agreement and to execute and legally bind such Party to this Agreement:

By: Donna Bergman-Tabbert
Donna Bergman-Tabbert, Manager
U.S. Department of Energy
Grand Junction Office

Date: December 14, 2000

By: John M. Ruddell
John M. Ruddell
Director, Division of Waste Management
Florida Department of Environmental Protection

Date: 18 January 2001

Attachment A

Legal Description of the Site

Surveyor's report, including legal description, follows.

LEGAL DESCRIPTION:
(SEE DATA SOURCE 3)

(A portion of that certain property described in Deed Book 1602, page 391, Public Records of Pinellas County, Florida)

That part of Lot 1 in the NW 1/4 of Section 13, Township 30 South, Range 15 East, lying South of the South line of Lot 6 in NE 1/4 of said Section 13, extended Westerly to the West boundary line of said Lot 1 in NW 1/4; all according to Plat of Pinellas Groves, Inc., recorded in Plat Book 1, page 55, Public Records of Pinellas County, Florida:

Together with:

That certain 15.00 feet of street allowance, lying East of and adjacent to that part of Lot 1 in the NW 1/4 of Section 13, Township 30 South, Range 15 East, lying South of the South line of Lot 6 in NE 1/4 of said Section 13, extended Westerly to the West boundary of said Lot 1 in NW 1/4; all according to Plat of Pinellas Groves, Inc., recorded in Plat Book 1, Page 55, Public Records of Pinellas County, Florida, vacated by Deed Book 1611, page 573 of the Public Records of Pinellas County, Florida:

ALL BEING MORE PARTICULARLY DESCRIBED IN THIS SURVEY PREPARED BY FLORIDA DESIGN CONSULTANTS, INC., AS FOLLOWS:

A parcel of land lying within Section 13, Township 30 South, Range 15 East, Pinellas County, Florida, more particularly described as follows:

Commence at the Northeast boundary corner of the Northeast 1/4 of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida; Thence S 00°31'35" W, along the North/South center line of said Section 13 (being the basis of bearings for this description), for 677.84 feet to the Northeast boundary corner of the Southeast 1/4 of the Northeast 1/4 of the Northeast 1/4 of said Section 13, same also being the point of intersection with Westerly extension of the South boundary line of Lot 6, lying in the Northeast 1/4 of said Section 13, Pinellas Groves, Inc., as recorded in Plat Book 1, page 55 of the Public Records of Pinellas County, Florida, same also being the Point of Beginning; Thence leaving said North/South center line of Section 13, N 89°10'44" W, along said Westerly extension of the South boundary line of Lot 6, and along the North boundary line of that certain property described in Deed Book 1602, page 391 of the Public Records of Pinellas County, Florida, same also being the South boundary line of that certain property described in Official Records Book 8516, page 1708 of the Public Records of Pinellas County, Florida, respectively, for 398.25 feet to a Northwest boundary corner of said certain property described in Deed Book 1602, page 391, same also being the Southwest boundary corner of said certain property described in Official Records Book 8516, page 1708, same also being the point of intersection with the East boundary line of that certain property described in Official Records Book 4137, page 924 of the Public Records of Pinellas County, Florida, same also being the point of intersection with the East boundary line of Lot 2, lying in the Northwest 1/4 of aforesaid Section 13, aforesaid Pinellas Groves, Inc.; Thence S 00°33'47" W, along a West boundary line of said certain property described in Deed Book 1602, page 391, same also being said East boundary line of that certain property described in Official Records Book 4137, page 924, same also being said East boundary line of Lot 2, for 270.32 feet to a Southwest boundary corner of said certain property described in Deed Book 1602, page 391, same also being the Southeast boundary corner of said certain property described in Official Records Book 4137, page 924, same also being the point of intersection with the Northerly line of a C.S.X. Transportation Inc. Railroad Right-of-Way; Thence S 44°26'42" E, along a Southerly boundary line of said certain property described in Deed Book 1602, page 391, and its Southeasterly extension, respectively, same also being said Northerly line of a C.S.X. Transportation Inc. Railroad Right-of-Way, for 563.72 feet to the point of intersection with aforesaid North/South center line of Section 13; Thence leaving said Northerly line of a C.S.X. Transportation Inc., Railroad Right-of-Way, N 00°31'35" E, along said North/South center line of Section 13, for 667.09 feet to the Point of Beginning and containing 186,712 square feet or 4.286 acres, more or less

Closure 0.01' sho

(The Title to said certain property described in Deed Book 1602, page 391, was transferred through several owners with the first transfer being described in Official Records Book 123, page 483 of the Public Records of Pinellas County, Florida, wherein "An accurate legal description based upon a physical survey prepared by Deuel and Day, Engineers" caused boundary discrepancies. These discrepancies were then transmitted through subsequent Deeds to the most recent Deed described in Official Records Book 5421, page 524 of the Public Records of Pinellas County, Florida.)

Official Records Book 5421
Page 524 of
Public Records of Pinellas
County, FL

The following text is a transcription of the difficult-to-read legal description in Attachment A, which is a direct copy of the original page in the Consent Agreement. PLEASE BE AWARE THAT THIS TRANSCRIPTION IS NOT THE ORIGINAL DOCUMENT.

Legal Description:
(See data source 3)

(A portion of that certain property described in Deed Book 1602, page 391, Public Records of Pinellas County, Florida.)

That part of Lot 1 in the NW ¼ of Section 13, Township 30 South, Range 15 East, lying South of the South line of Lot 6 in NE ¼ of said Section 13, extended Westerly to the West boundary line of said Lot 1 in NW ¼: all according to Plot at Pinellas Groves, Inc., recorded in Plot Book 1, page 55, Public Records of Pinellas County, Florida:

Together with:

That certain 15 00 feet of street allowance, lying East of and adjacent to that part of Lot 1 in the NW ¼ of Section 13, Township 30 South, Range 15 East, lying South of the South line of Lot 6 in NE ¼ of said Section 13, extended Westerly to the West boundary of said Lot 1 in NW ¼: all according to Plot of Pinellas Groves, Inc. recorded in Plot Book 1, Page 55, Public Records of Pinellas County, Florida, vacated by Deed Book 1611, page 573 of the Public Records of Pinellas County, Florida:

ALL BEING MORE PARTICULARLY DESCRIBED IN THIS SURVEY PREPARED BY FLORIDA DESIGN CONSULTANTS, INC. AS FOLLOWS:

A parcel of land lying within Section 13, Township 30 South, Range 15 East, Pinellas County, Florida, more particularly described as follows:

Commence at the Northeast boundary corner of the Northeast ¼ of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida: Thence S 00° 51’ 55” w. along the North/South center line of said Section 13 (being the basis of bearings for this description). Lot 677.84 feet is the Northeast boundary corner of the Southeast ¼ of the Northeast ¼ of the Northwest ¼ of said Section 13, Pinellas Groves, Inc, same also being the point of intersection with Westerly extension of the South boundary line of Lot 6, lying in the Northeast ¼ of said Section 13, Pinellas Groves, Inc, as recorded in Plat Book 1, page 55 of the Public Records of Pinellas County, Florida same also being the Point of Beginning: Thence leaving said North/South center line of Section 13, N 89º10’ 44” w, along said Westerly extension of the South boundary line of Lot 6, and along the North boundary line of that certain property described in Deed Book 1602, page 391 of the Public Records of Pinellas County, Florida, same also being the South boundary line of that certain property described in Official Records Book 8516, page 1708 of the Public Records of Pinellas County, Florida, respectively. Lot 398.25 feet is a Northwest boundary corner of said certain property described in Deed Book 1602, page 391, same

also being the Southwest boundary corner of said certain property described in Official Records Book 8516, page 1708, same also being the point of intersection with the East boundary line of that certain property described in Official Records Book 4137, page 924 of the Public Records of Pinellas County, Florida, same also being the point of intersection with the East boundary line of Lot 2, lying in the Northwest ¼ of aforesaid Section 13, aforesaid Pinellas Groves, Inc.: Thence S 00º 33’ 47” w. along a West boundary line of said certain property described in Deed Book 1602, page 391, same also being said East boundary line of that certain property described in Official Records Book 4137, page 924, same also being said East boundary line of Lot 2, for 270.32 feet is a Southwest boundary corner of said certain property described in Deed Book 1602, page 391, same also being the Southwest boundary corner of said certain property described in Official Records Book 4137, page 924, same also being the point of intersection with the Northerly line of a C.S.X. Transportation Inc. Railroad Right-of-way: Thence S 44º 26’ 42” E along a Southerly boundary line of said certain property described in Deed Book1602, page 391, and its Southwesterly extension, respectively, same also being said Northerly line of a C.S.X. Transportation Inc. Railroad Right-of-way, for 563.72 feet to the point of intersection with aforesaid North/South center line of Section 13: Thence leaving said Northerly line of a C.S.X. Transportation Inc. Railroad Right-of-way, N 00 º 31’ 35” E. along said North/South center line of Section 13, for 667.09 feet to the Point of Beginning and containing 186.712 Square feet or 4.286 acres, more or less.

Closure 0 01’ aka

[The Title to said certain property described in Deed Book 1602, page 391, was transferred through several owners with the first transfer being described in Official Records Book 123, page 483 of the Public Records of Pinellas County, Florida, wherein “An accurate legal description based upon a physical survey prepared by Duval and Day Engineers” caused boundary discrepancies. These discrepancies were then transmitted through subsequent Deeds in the most recent Deed described in Official Records Book 5421, page 524 of the Public Records of Pinellas County, Florida.

Attachment B

Authorized Representatives

For the United States Department of Energy:

Mr. David S. Ingle
Project Manager
c/o MACTEC-ERS
7887 Bryan Dairy Road, Suite 260
Largo, Florida 33777
(727) 541-8943

For the Florida Department of Environmental Protection:

Mr. John Armstrong
Remedial Projects Manager
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399

Attachment C

State of Florida Department of Environmental Protection
Notice of Agreement

The Department of Environmental Protection gives notice of agency action of entering into an Agreement with the Department of Energy pursuant to Section 120.57(4), Florida Statutes. The Agreement addresses the limited purpose of remediating the groundwater under a parcel of property adjacent to the United States Department of Energy's former Pinellas Plant, known as the 4.5-Acre Site. The Agreement is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at the Department of Environmental Protection, Southwest District Office, 3804 Coconut Palm Drive, Tampa, Florida 32399.

Persons whose substantial interests are affected by this Agreement have a right to petition for an administrative hearing on the Agreement. The Petition must contain the information set forth below and must be filed (received) in the Department's Office of General Counsel, 3900 Commonwealth Boulevard, MS-35, Tallahassee, Florida 32399-3000, within twenty-one (21) days of receipt of this notice. A copy of the Petition must also be mailed at the time of filing to the District Office named above at the address indicated. Failure to file a petition within the twenty-one (21) days constitutes a waiver of any right such person has to an administrative hearing pursuant to Sections 120.569 and 120.57, Florida Statutes.

The petition shall contain the following information: (a) the name, address, and telephone number of each petitioner; the Department's identification number for the Agreement and the county in which the subject matter or activity is located; (b) a statement of how and when each petitioner received notice of the Agreement; (c) a statement of how each petitioner's substantial interests are affected by the Agreement; (d) a statement of the material facts disputed by petitioner, if any; (e) a statement of facts which petitioner contends warrant reversal or modification of the Agreement; (f) a statement of which rules or statutes petitioner contends require reversal or modification of the Agreement; (g) a statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Agreement.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the subject Agreement have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within twenty-one (21) days of receipt of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed timeframe constitutes a waiver of any

right such person has to request a hearing under Sections 120.569 and 120.57, Florida Statutes, and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-106.205, Florida Administrative Code.

Appendix E

Inspection Checklist

Annual Site Inspection Checklist

Purpose of the Checklist

This checklist has been developed from the EPA guidance document *Comprehensive Five-Year Review Guidance* dated June 2001 (Office of Solid Waste and Emergency Response [OSWER] No. 9355.7-03B-P) and from Section 6.2 of the *Long-Term Surveillance and Maintenance Plan for the Pinellas Site* (LMS/PIN/N01058). The checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually during Pinellas site annual surveillance and maintenance inspection. The checklist will also be used to assist in compiling information for the five-year review.

I. SITE INFORMATION	
Site name: DOE Pinellas Environmental Restoration Project	**Date(s) of inspection:**
Location: Largo, FL	**EPA ID:**
Agencies accompanying DOE for portions of the annual inspection: ☐ FDEP ☐ Other (list)_____	**Weather:**
Remedy Includes: Institutional controls Long-Term Monitoring Other_____	
Inspectors _____ **Participants** _____	
Attachments: ☐ Inspection team roster attached ☐ Site map attached	
II. INTERVIEWS (Check all that apply)	
1. Local Site Manager _____ _____ _____ Name Title Date Interviewed ☐at site ☐at office ☐by phone Phone no. _____ Problems, suggestions; ☐ Report attached _____ _____	
2. Environmental Data Manager _____ _____ _____ Name Title Date Interviewed ☐at site ☐at office ☐ by phone Phone no. _____ Check to ensure that environmental data is reviewed and trended. Problems, suggestions; ☐ Report attached _____ _____	
3. Other Staff (as applicable) _____ _____ _____ Name Title Date Interviewed ☐at site ☐at office ☐ by phone Phone no. _____ Problems, suggestions; ☐ Report attached _____ _____	

4. Stakeholders and Institutional Control Contacts: Contact to notify of annual inspection and to determine if there are any concerns or issues. For Institutional Control Contacts include discussion of easement, restricted covenant or agreement that is in place with associated restrictions on the property.

Landowner: Pinellas County Schools **Contact Name:** Bill Robinson
Address: School Board of Pinellas County, 301 4th Street SW, Largo, FL 33770
Phone Number: 727-547-7119 **Cell Phone Number:** 727-638-3428
Email: robinsonB@pcsb.org
Contact Name Current? Yes No **Phone No. Current?** Yes No
If No, Include New Name and/or Phone Number:_____
Problems; suggestions; ☐ Report attached

Landowner: BCH-1 Ltd. **Contact Name:** Gary Harrod
Address:
Phone Number _____
Email: gwharrod@harrodproperties.com
Contact Name Current? Yes No **Phone No. Current?** Yes No
If No, Include New Name and/or Phone Number:_____
Problems; suggestions; ☐ Report attached

Landowner: Bank of Tampa **Contact Name:** Judi Fasulo
Address: Bank of Tampa, Pinellas Division, 200 Central Avenue, St. Petersburg, FL 33701
Phone Number **(W)** 813-872-1364 **(C)** 813-240-1808
Email: jfasulo@bankoftampa.com
Contact Name Current? Yes No **Phone No. Current?** Yes No
If No, Include New Name and/or Phone Number:_____
Problems; suggestions; ☐ Report attached

Landowner: Pinellas County Industrial Development Authority **Contact Name:** Kim Circello
Address: Administrator, Pinellas County STAR Center, 7887 Bryan Dairy Road, Largo, FL 33777
Phone Number 727-541-8170
Email: kcircello@pinellascounty.org
Contact Name Current? Yes No **Phone No. Current?** Yes No
If No, Include New Name and/or Phone Number:_____
Problems; suggestions; ☐ Report attached

5. Other interviews: ☐ Report attached.

III. ONSITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**Documents**			
	☐ Surveillance and Maintenance Plan	☐ Readily available	☐ Up to date	☐ N/A
	☐ Maintenance logs	☐ Readily available	☐ Up to date	☐ N/A
	☐ Engineering Control Maintenance Plan	☐ Readily available	☐ Up to date	☐ N/A
	Remarks_____			
2.	**Site-Specific Safety and Health Plan**	☐ Readily available	☐ Up to date	☐ N/A
	☐ Contingency plan/emergency response plan	☐ Readily available	☐ Up to date	☐ N/A
	Remarks_____			
3.	**Permits and Service Agreements**			
	☐ STAR Center WWTS Permit	☐ Readily available	☐ Up to date	☐ N/A
	☐ HSWA Permit and Records	☐ Readily available	☐ Up to date	☐ N/A
	☐ Other permits_____	☐ Readily available	☐ Up to date	☐ N/A
	Remarks_____			
4.	**Groundwater Monitoring Records**	☐ Readily available	☐ Up to date	☐ N/A
	Remarks_____			
5.	**Waste Shipment Records and Manifests**	☐ Readily available	☐ Up to date	☐ N/A
	Remarks_____			
6.	**Training Records**	☐ Readily available	☐ Up to date	☐ N/A
	Remarks_____			

IV. INSTITUTIONAL CONTROLS

Institutional Control (IC) Inspections

1. Northeast Site: Inspect to ensure the land use continues to be in compliance with the terms of the Memorandum of Agreement and the Restrictive Covenant.

Note any observations: _____

2. WWNA: Inspect to ensure the land use continues to be in compliance with the terms of the Memorandum of Agreement and the Restrictive Covenant.

Note any observations: _____

3. Bldg 100: Inspect to ensure the land use continues to be in compliance with the terms of the Memorandum of Agreement and the Restrictive Covenant.

Note any observations: _____

_____

_____

_____

_____

4. Pinellas County Schools: Inspect to ensure the land use continues to be in compliance with the terms of the DOE Easement and the Restrictive Covenant.

Note any observations:_____

_____

_____

_____

_____

5. BCH – 1: Inspect to ensure the land use continues to be in compliance with the terms of the DOE Easement and the Restrictive Covenant.

Note any observations**:** _____

_____

_____

_____

_____

6. Bank of Tampa (Rally Stores): Inspect to ensure the land use continues to be in compliance with the terms of the Restrictive Covenant and DOE Easement and the Restrictive Covenant.

Note any observations: _____

_____

_____

_____

_____

7. Pending: Road Rights of Way: DOE is working with Pinellas County government and a local attorney to develop institutional controls for the Belcher Road and Bryan Dairy Road rights of way.

Note any observations: _____

_____

_____

_____

_____

8. Pending: Essentra: DOE is working with Pinellas County government and a local attorney to develop institutional controls for the Belcher Road and Bryan Dairy Road rights of way.

Note any observations: _____

_____

_____

_____

_____

9. Pending: 4.5 Acre Site: DOE is working with Pinellas County government and a local attorney to develop institutional controls for the Belcher Road and Bryan Dairy Road rights of way.

Note any observations:_____

_____

_____

_____

_____

General

1. Land Use Changes Onsite ☐ Yes ☐No

Remarks_____

_____

_____

_____

_____

2. Land Use Changes Offsite ☐ Yes ☐No

Remarks_____

_____

_____

_____

_____

V. GENERAL SITE CONDITIONS

1. Roads ☐ Location shown on site map ☐Roads adequate

Remarks_____

_____

_____

_____

_____

2. Vandalism ☐ Location shown on site map ☐No vandalism noted

Remarks_____

_____

_____

_____

_____

3. Personal Injury Risks ☐ Housekeeping maintained

Remarks_____

_____

_____

_____

_____

4. Signs ☐ Location shown on site map ☐ Legible and Secure

Remarks_____

_____

_____

_____

5. Fences ☐ Location shown on site map ☐ Secure

Remarks_____

_____

_____

_____

Other Site Features

1. Transmission Line ☐ Location shown on site map

Remarks_____

_____

_____

_____

2. Vault ☐ Location shown on site map

Remarks_____

_____

_____

_____

3. Vapor Intrusion Mitigation System (Future) ☐ Location shown on site map

Remarks_____

_____

_____

_____

4. Other Site Features ☐ Location shown on site map

Remarks_____

_____

_____

_____

VI. GROUNDWATER MONITORING

1. Northeast Site Monitoring Well Network

☐ Properly secured/locked

☐ Good condition ☐ Properly Maintained

☐ Proper ID on each well

List wells checked by number_____

_____

_____

Remarks_____

_____

2. Building 100 Groundwater Monitoring Well Network

☐ Properly secured/locked

☐ Good condition ☐ Properly Maintained

☐Proper ID on each well

List wells checked by number _____

_____

_____

Remarks_____

_____

3. 4.5 Acre Site Monitoring Well Network

☐ Properly secured/locked

☐ Good condition ☐ Properly Maintained

☐ Proper ID on each well

List wells checked by number _____

_____

_____

Remarks_____

_____

Appendix F

Contact List

Table F-1. Emergency Phone Numbers and Contacts

Agency or Contractor Position/Contact	Phone Number
EMT/Ambulance (Pinellas County Emergency Response System)	911, and then (727) 541-8128 or (727) 541-8129
Fire Department	911, and then (727) 541-8128 or (727) 541-8129
STAR Center Utility Operator	(727) 541-8176
STAR Center Communications Center	(727) 541-8128 (727) 541-8129
Bardmoor Emergency Center	(727) 395-2600
Site Manager / Joe Daniel	(727) 549-1563, ext. 202; cell: (727) 224-9893
Site Personnel / Julian Caballero	(727) 549-1563, ext. 204; cell: (727) 224-5195

Appendix G

Site Closure Strategy

Pinellas Environmental Restoration Project
Site Closure Strategy
for the
Young - Rainey STAR Center
and 4.5 Acre Site

September 2016

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Abbreviations

cDCE	cis-1,2-dichloroethene
COPC	contaminant of potential concern
CTL	cleanup target level
DOE	U.S. Department of Energy
DRC	declarations of restrictive covenant
FAC	*Florida Administrative Code*
FDEP	Florida Department of Environmental Protection
ft	feet
ft/yr	feet per year
FY	fiscal year
MCLs	maximum contaminant levels
mg/L	milligrams per liter
µg/L	micrograms per liter
NAPL	nonaqueous-phase liquid
RBCA	Risk-Based Corrective Action
SRCO	Site Rehabilitation Completion Order
STAR Center	Young - Rainey Science, Technology, and Research Center
TCE	trichloroethene
tDCE	*trans*-1,2-dichloroethene
VC	vinyl chloride
WWNA	Wastewater Neutralization Area

G1.0 Introduction

Navarro Research and Engineering, Inc. (Navarro) has prepared this document for the U.S. Department of Energy (DOE) Office of Legacy Management (LM) to briefly summarize the remedial and regulatory status of the environmental cleanup sites at the Young - Rainey STAR Center (Science, Technology, and Research Center) and adjacent 4.5 Acre Site. This document also describes the planned path to closure for each site with associated basis, rationale, and schedule.

While older documents for the Pinellas site have compared groundwater contaminant concentrations to drinking water standards (i.e., maximum contaminant levels [MCLs]), those standards are not the applicable default cleanup target levels (CTLs) for evaluating site remediation under the Risk-Based Corrective Action (RBCA) regulations. A comprehensive review of background data for the site indicated that aluminum and iron levels in the shallow groundwater in the site vicinity are naturally elevated and far exceed State of Florida Secondary Drinking Water Standards (*Florida Administrative Code* Chapter 62-550 [FAC 62-550]). Specifically, the average background concentration of 1.1 milligrams per liter (mg/L) for aluminum exceeds the 0.2 mg/L secondary standard, and the average background concentration for iron (9.3 mg/L) exceeds the 0.3 mg/L secondary standard. The ambient shallow groundwater in the area is therefore designated as "poor quality" as defined in FAC 62-780.200(35). Thus, the applicable groundwater CTLs are those for groundwater of "low yield/poor quality" provided in Table 1 of FAC 62-777. These CTL values are a factor of 10 higher than the MCL values for site contaminants of potential concern (COPCs). The Florida Department of Environmental Protection (FDEP) has allowed use of the poor-water-quality CTLs onsite but maintains that the default CTLs apply to the offsite plume areas.

G2.0 Northeast Site

FDEP executed a Conditional Site Rehabilitation Completion Order (SRCO) for the Northeast Site on July 27, 2016, stating that no further action is required once all existing monitoring wells are plugged and abandoned. The specified wells were abandoned on June 22, 2016, in anticipation of the SRCO.

G3.0 Wastewater Neutralization Area (WWNA)

FDEP executed an SRCO for the Wastewater Neutralization Area on July 27, 2016, stating that no further action is required once all existing monitoring wells are plugged and abandoned. The specified wells were abandoned on June 23, 2016, in anticipation of the SRCO.

G4.0 Building 100 Area

G4.1 Remedial Action

- **Business:** Prevent the contamination from interfering with owner/tenant operations.
- **Regulatory:** Only monitoring for the onsite contamination will be required as long as the main building remains in place. If the building is ever demolished or vacated, the contaminant source areas should be delineated and treated or properly managed. For the offsite contamination, either cleanup to default CTLs or implementation of a restrictive covenant will be required for each property impacted by the groundwater contaminant plume. Declarations of restrictive covenant (DRCs) have been executed for the STAR Center, Harrod Properties, Bank of Tampa, and Pinellas County Schools. Negotiations are in progress with Essentra for a DRC on that property, and Pinellas County has prepared an amended ordinance with input from FDEP to serve as an institutional control for the road rights-of-way in the Building 100 Area.
- **Technical:** Conduct performance monitoring followed by plume stability monitoring to reach conditional closure with long-term monitoring. Perform remedial activities to address the contaminant source areas and dissolved-phase groundwater contamination to minimize human health risk for tenants and to minimize liability for the STAR Center and DOE.

G4.2 Conceptual Site Model

The source of contamination at the Building 100 Area is leaks at unknown locations from drain lines that ran beneath Building 100 and spills at the drum storage pad formerly located at the northwest corner of Building 100. The extent of characterization beneath the building is limited, but historical information and groundwater monitoring results indicate that multiple source areas might remain beneath the building. No source removal has been conducted because of the technical impracticability of accessing the subsurface for characterization or treatment beneath the occupied 11-acre building. Groundwater extraction and ex situ treatment activities were conducted from 1997 to 2006 using two recovery wells located near the northwest corner of Building 100. This action removed significant amounts of contaminants locally, but contaminant concentrations in monitoring wells located in the northwest and central parts of the building suggest that non-aqueous phase trichloroethene (TCE) may be present in the subsurface.

The COPCs for the Building 100 Area are TCE, *cis*-1,2-dichloroethene (cDCE), *trans*-1,2-dichloroethene (tDCE), 1,1-dichloroethene, VC, and arsenic. Arsenic is no longer monitored because concentrations do not exceed the 100 micrograms per liter (µg/L) poor-water-quality CTL. The highest contaminant concentrations detected in groundwater are at the northwest area of the building. The contaminant plumes, as defined by concentrations greater than the poor-water-quality CTLs, originate under the building at multiple locations and extend beyond the eastern STAR Center property boundary onto private property east of Belcher Road for approximately 200 feet (ft) and also past the southern property boundary onto private property south of Bryan Dairy Road for approximately 700 ft.

Groundwater flows to the southeast at a velocity ranging from 2 to 10 feet per year (ft/yr) at most of the Building 100 Area, but a preferential flow pathway with a higher groundwater velocity appears to extend from the eastern and southern parts of the area to the east across Belcher Road

and southeast across Bryan Dairy Road and onto private property. Evidence for these preferential flow pathways includes (1) hydraulic conductivity values estimated from an aquifer test using well RW03 that are about twice the average value for other areas at the STAR Center and (2) estimation of a groundwater velocity of 20 to 30 ft/yr (possibly more) based on the distance that contaminants have traveled from potential source areas to the offsite locations.

The contaminant plume onsite is not stable, as indicated by contaminant concentration trends based on data from several years of plume stability monitoring in selected monitoring wells located along the two groundwater plumes. In general, the highest concentration areas under the building have decreasing trends, an indication that contaminant source depletion is occurring.

G4.3 Remedies

Because active monitoring indicated that the contaminant plumes are not stable, DOE elected to actively treat the dissolved-phase plumes via vertical injection of emulsified soybean oil and *Dehalococcoides mccartyi.* This technology was applied both onsite (October and November 2014) and offsite (February 2015) in the downgradient portions of the plumes, as well as along the northwest corner of Building 100, considered to be upgradient from a likely contaminant source area. In addition, DOE installed four stacked pairs of horizontal injection wells beneath Building 100 and injected the same solution into likely source areas under the building in November 2015.

Although FDEP has no policy or guidance regarding vapor intrusion from contaminated groundwater into overlying buildings, DOE has proactively performed a vapor intrusion mitigation pilot study to determine the potential for site-related vapors to enter the building. The study results show no evidence of current or previous vapor intrusion, but DOE is implementing preemptive vapor intrusion mitigation to minimize the potential for human exposure to contaminant vapors. The system design was completed in July 2016, and installation is scheduled for late fiscal year (FY) 2016.

G4.4 Metrics

- **Business:** Maintain data showing no risk of human exposure.
- **Regulatory:** Implement post-treatment performance monitoring. Coordinate restrictive covenants with all interested parties. The final site remedy is still being negotiated with FDEP.
- **Technical:** Conduct post-treatment performance monitoring. Complete remedial actions addressing the contaminant source areas and dissolved-phase groundwater contamination to minimize human health risk for tenants and to minimize liability for the STAR Center and DOE.

G4.5 Decision Logic

DOE is satisfied that there is very little potential for human exposure to contaminants in groundwater beneath the building, and contaminant vapor flux calculations in 2003 suggested that vapor emissions in the subsurface are not likely to intrude into the building. Based on TCE concentrations in groundwater, DOE believes that a significant contaminant source remains

under the building. The contaminant plumes that extend hydraulically downgradient from the source areas are decades old but are still not completely stable, based on recent monitoring data.

Revised guidance from the U.S. Environmental Protection Agency in 2014 recommends more robust data collection to better define the potential for vapor intrusion into buildings in close proximity to contaminated groundwater. In lieu of this guidance, DOE has chosen to take a more proactive approach to determine the potential for vapor intrusion by performing a vapor intrusion mitigation pilot test and implementing a full-scale vapor intrusion mitigation system for Building 100. The vapor intrusion mitigation system will effectively eliminate the human exposure pathway for vapors. DOE has injected a solution of vegetable oil and microbial culture through temporary vertical injection points outside the building footprint and also through horizontal wells beneath Building 100 to enhance naturally occurring contaminant biodegradation processes. These actions are intended to address the dissolved-phase downgradient plume and the inferred contaminant source areas under the building, respectively.

G4.6 Gap Analysis

- **Business:** There are no business data gaps for the Building 100 Area because the site is already in use by the STAR Center.
- **Regulatory:** The contaminant source areas need to be confirmed and characterized. The final site remedy is still being developed with FDEP.
- **Technical:** Collect data to monitor treatment performance.

G4.7 Site Closure Strategy Schedule

Site closure for Building 100 is being conducted pursuant to FDEP's RBCA rules (FAC 62-780.680) because of the offsite impact, the extent of the groundwater plume being larger than ¼ acre, and the potential presence of free product where its removal is not technologically feasible. In the near term, monitoring will continue to evaluate corrective action performance. If it is determined that the latest corrective actions are not adequate, some action to contain the plume might be required. Conduct performance monitoring followed by plume stability monitoring to reach conditional closure with long-term monitoring.

Implement a vapor intrusion mitigation system during FY 2016. Perform a second injection of vegetable oil and microbial culture through the horizontal wells to enhance naturally occurring contaminant biodegradation processes during FY 2017.

G5.0 4.5 Acre Site

G5.1 Remedial Action Objectives

- **Business:** Return the property to the owner for beneficial reuse.
- **Regulatory:** Complete a Risk Management Option II RBCA closure. Negotiate and implement a restrictive covenant.
- **Technical:** Collect data for post-active remediation monitoring and to demonstrate the stability of the groundwater contaminant plume.

G5.2 Conceptual Site Model

Drums of waste that were buried in pits in about 1962 are the source of contamination at the 4.5 Acre Site. During a drum removal event in 1985 in which 83 drums were removed from the subsurface, 16 drums were found empty, indicating that their contents may have leaked into the subsurface; other partially full drums may have leaked part of their contents as well. The COPCs are TCE, cDCE, tDCE, VC, benzene, and arsenic. Arsenic is no longer monitored because concentrations do not exceed the 100 µg/L poor-water-quality CTL.

The highest contaminant concentrations in soil or groundwater have been detected in two general areas, one on the east central side of the site and one along the southwest side of the site. Both areas correlate with the areas where drums were removed from the subsurface. Soil excavation in 2009 removed any areas containing significant amounts of NAPL or sorbed contaminants. Based on the remaining contaminant concentrations, the source of contamination has been removed. Groundwater flows to the northwest at a velocity of a few ft/yr, and plumes of dissolved phase contamination extend hydraulically downgradient from the former source areas. Emulsified soybean oil and *Dehalococcoides mccartyi* were injected around the source areas and in selected areas of the remaining plume in February 2009 to enhance naturally occurring contaminant biodegradation processes.

Since the 2009 injection, the VC concentration has remained slightly above the offsite CTL at one small offsite area along the southwest property boundary. Emulsified soybean oil and *Dehalococcoides mccartyi* were injected at 46 locations along the southwest property boundary in July 2013 to address this issue.

G5.3 Remedies

Corrective action remedies have been completed; the site is currently in post-treatment closure monitoring. DOE has completed one additional activity to inject emulsified soybean oil and microbial culture to expedite contaminant degradation, and DOE plans to repeat the activity in early FY2017.

G5.4 Metrics

- **Business:** The site is currently available for development.
- **Regulatory:** Collect data and submit a report to support an SRCO; implement a restrictive covenant.
- **Technical:** Perform additional bioinjection. Complete post-active remediation monitoring.

G5.5 Decision Logic

FDEP is satisfied that the contaminant source has been removed. Because groundwater contaminant concentrations persist onsite, DOE has chosen to proactively address the remaining dissolved-phase contamination in an effort to reach cleanup goals sooner. If the current trend of declining contaminant concentrations continues, DOE can proceed with a conditional RBCA closure of the site.

G5.6 Gap Analysis

- **Business:** There are no business data gaps because the site is currently available for development, although an SRCO from FDEP might facilitate new development.
- **Regulatory:** Closure is contingent upon implementation of a restrictive covenant on the source property and, potentially, the adjacent railroad easement owned by CSX Corporation.
- **Technical:** Several monitoring wells are present onsite along the southwest and west property boundaries, and VC concentrations in most of these wells slightly exceed the offsite CTL. Six wells are located offsite to the west, and VC concentrations in samples from one offsite well have met the offsite CTL for two consecutive events. Groundwater flows to the northwest with an occasional westward tendency. Therefore, it appears possible that the VC concentrations above the offsite CTL could be present along a good portion of the offsite property adjacent to the west and southwest property boundaries. Additional treatment in this area was completed in July 2013 to address the remaining dissolved-phase contamination. Additional monitoring is ongoing to evaluate the effectiveness of this treatment.

G5.7 Site Closure Strategy Schedule

- Injection of emulsified soybean oil and microbial culture was conducted in July 2013.
- Develop and implement a restrictive covenant for the property.
- Continue performance monitoring until December 2017.
- Evaluate additional corrective actions as needed.
- Submit a Site Rehabilitation Completion Report to FDEP in June 2017.
- Receive an SRCO from FDEP in September 2017.
- Conduct a public meeting for the final remedy.
- Revise the Remediation Agreement to reflect updated site status.

Appendix H

FDEP Letter Concerning Waste Determination

UNCONTROLLED IF PRINTED

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

May 19, 1995

Mr. David S. Ingle
Environmental Restoration Program Manager
Department of Energy
Albuquerque Operations Office
Pinellas Area Office
P.O. Box 2900
Largo, Florida 34649

RE: Hazardous Waste Determination for Remediation Wastes

Dear Mr. Ingle:

The review of your response dated January 27, 1995 to Department comments regarding regulatory interpretation of the status of remediation wastes at the Department of Energy, Pinellas Plant, has been completed. Based on the information submitted by your office, the Department concurs with your conclusion that the groundwater remediation streams at the Northeast Site and the 4.5 Acre Site are not considered to contain listed wastes.

As you state in the enclosure to your letter, "groundwater extracted from these two sites contains hazardous constituents and may exhibit the characteristic of toxicity. Therefore, the contaminated groundwater must be treated and/or managed in accordance with RCRA Subtitle C requirements as if it were hazardous waste".

The Department also agrees that waste components (solids from a filter press) generated during the treatment process must be managed as hazardous waste if constituent concentrations exceed toxicity characteristic levels. However, if the waste components contain hazardous constituents, the waste components must be managed as if they were a hazardous waste. Management as a hazardous waste is not required for waste components if:

a. Waste component hazardous constituent concentrations do not exceed the Land Disposal Universal Treatment Standard (UTS).

b. Department approved Best Management Practices are followed if the concentrations of the constituent concentrations are less than the UTS but still exceed health-based levels.

"Protect, Conserve and Manage Florida's Environment and Natural Resources"

Printed on recycled paper.

Mr. David S. Ingle
May 19, 1995
Page Two

If you have any questions regarding the status of the remediation waste streams and the waste components, please call Doug Outlaw or me at 904/488-0300.

Sincerely,

Satish Kastury
Environmental Administrator
Hazardous Waste Regulation

SK/dos

cc: Bill Crawford, FDEP/Tampa
Beth Knauss, FDEP/Tampa

Appendix I

Site Rehabilitation Completion Orders for the Northeast Site and WWNA

SRCO NE Site

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Jonathan P. Steverson
Secretary

July 26, 2016

Scott R. Surovchak
Office of Legacy Management
11025 Dover Street, Suite 1000
Westminster, CO 80021

Subject: **Conditional Site Rehabilitation Completion Order (SRCO) for the Northeast Site**
Young - Rainey STAR Center
Former Pinellas Department of Energy Site
Bryan Dairy Road
Largo, Florida 33777, Pinellas County
FL6 890 090 008
Corrective Action Permit No. 0034170/HH/004

Dear Mr. Surovchak:

The DoD & Brownfields Partnerships Section has reviewed the No Further Action with Controls Proposal for the Young-Rainey STAR Center (formerly the U.S. Department of Energy Pinellas Plant facility) for the Northeast Site, dated May 2013, located at 7887 Bryan Dairy Road, Largo, Florida. This report was prepared by the U.S Department of Energy under the terms of the Hazardous and Solid Waste Amendment (HSWA) permit. Documentation showing the location of the Young-Rainey Star Center and the location of the "contaminated site" (i.e., contaminant plume) for which this Order is being issued are attached as Exhibits 1 and 2 and are incorporated by reference herein.

This conditional Order is being issued for a portion of the STAR Center referred to as the Northeast Site also referred to as Solid Waste Management Unit (SWMU) PIN15. Discharges at his facility were reported to the USEPA on April 7, 1993.

In the late 1960s drums of waste and construction debris were disposed of in the swampy area of the Northeast Site. The U.S. Environmental Protection Agency identified this site as a SWMU in the early 1990s. Operation of an interim groundwater recovery system commenced in January 1992.

A portion of the Northeast Site was excavated to remove debris, drums of waste, and other materials that could inhibit future corrective measures, in 1995. A corrective measure with an enhanced pump and treat system was approve in 1997. Non-aqueous-phase liquids (NAPLs) were identified in a few monitoring and recovery wells in 1998. An *Interim Measures Work Plan for Remediation of Non-Aqueous Phase Liquids at the Northeast Site* (DOE 2001) was submitted to FDEP in late November 2001. The purpose of this document was to present the plan to remediate NAPLs at two areas (NAPL Areas A and B) of the Northeast Site using a thermal remediation method. FDEP approved this document on January 10, 2002.

Thermal treatment of Area A was completed in 2003. Treatment of Area B was completed in 2006. Groundwater monitoring identified an area of persistent contamination. In order to address this area of residual contamination large-diameter auger excavation was completed in May 2009. As a follow-up to the LDA work, emulsified soybean oil and the *Dehalococcoides ethenogenes* microorganism were injected into the subsurface at 75 temporary points at the site in January and February 2010.

Remedial activities conducted by DOE have resulted in the removal of the source of groundwater contamination and post-treatment groundwater monitoring documents declining concentration trends in all wells. The plume is shrinking and will not migrate beyond the boundaries covered by the institutional control (Exhibit 1).

The Conditional NFA Proposal for the WWNA is supported by earlier submittals, prepared pursuant to the HSWA permit, which can be found in the Department's document repository at: http://depedms.dep.state.fl.us/Oculus/servlet/login.

Based on the documentation submitted with the Conditional NFA Proposal and other submitted documents, the Department has reasonable assurance that U.S Department of Energy has met the criteria in Chapter 62-780, F.A.C., including the commitments set forth in the technical submittals with respect to the recordation of institutional controls. The technical submittals indicate that acceptable Alternative Cleanup Target Levels (ACTL's) have been established for groundwater contaminants remaining at the above-referenced contaminated site, in conjunction with appropriate institutional controls. Therefore, you have satisfied the site rehabilitation requirements for the above-referenced contaminated site and are released from any further obligation to conduct site rehabilitation at the contaminated site, except as set forth below. See attached tables (Exhibit 1), incorporated by reference herein, which includes information regarding the contaminants, affected media, applicable cleanup target levels, and the ACTL's established for the contaminated site that is the subject of this Order.

A Declaration of Restrictive Covenant was recorded by the Pinellas County Industrial Development Authority on September 18, 2015, in Official Record Book 18926, Pages 880-888, Public Records of Pinellas County, Florida, and is attached and incorporated by reference as Exhibit 2.

Failure to meet the following requirements will result in the revocation of this Order:

(a) You are required to properly plug and abandon all monitoring wells, injection wells, extraction wells, and sparge wells unless these wells are otherwise required for compliance with a local ordinance or another cleanup within 60 days of receipt of this Order. The monitoring wells must be plugged and abandoned in accordance with the requirements of Rule 62-532.500(5), F.A.C. A Well Plugging Report shall be submitted within 30 days of well plugging;

(b) Any current or future real property owner of the above-referenced contaminated site must comply with the provisions contained within the Declaration of Restrictive Covenant (attached) recorded prior to the execution of this Order;

(c) If the current or future real property owner of the above-referenced contaminated site proposes to remove the institutional controls, the real property owner shall obtain prior written approval from the Department. The removal of the controls shall be accompanied by the immediate resumption of site rehabilitation or implementation of other approved controls, unless it is demonstrated to the Department that the criteria of subsection 62-780.680(1), F.A.C., are met.

Further, in accordance with Chapter 376.30701(4), Florida Statutes (F.S.), upon completion of site rehabilitation, additional site rehabilitation is not required unless it is demonstrated that:

(a) Fraud was committed in demonstrating site conditions or completion of site rehabilitation;

(b) New information confirms the existence of an area of previously unknown contamination which exceeds the site-specific rehabilitation levels established in accordance with Section 376.30701(2),F.S., or which otherwise poses the threat of real and substantial harm to public health, safety, or the environment;

(c) The level of risk is increased beyond the acceptable risk established under Section 376.30701(2), F.S., due to substantial changes in exposure conditions, such as a change in land use from nonresidential to residential use. Any person who changes the land use of the site, thereby causing the level of risk to increase beyond the acceptable risk level, may be required by the department to undertake additional remediation measures to ensure that human health, public safety, and the environment are protected consistent with Section 376.30701, F.S.; or

(d) A new discharge of pollutants or hazardous substances occurs at the site subsequent to the issuance of this Order.

Legal Issues

The Department's Order shall become final unless a timely petition for an administrative hearing is filed under sections 120.569 and 120.57, F.S., within **21** days of receipt of this Order. The procedures for petitioning for a hearing are set forth below.

Persons affected by this Order have the following options:

A. If you choose to accept the Department's decision regarding this Conditional SRCO, you do not have to do anything. This Order is final and effective on the date filed with the Clerk of the Department, which is indicated on the last page of this Order.

B. If you choose to challenge the decision, you may do the following:

1. File a request for an extension of time to file a petition for hearing with the Department's Agency Clerk in the Office of General Counsel within **21** days of receipt of this Order. Such a request should be made if you wish to meet with the Department in an attempt to informally resolve any disputes without first filing a petition for hearing; or

2. File a petition for administrative hearing with the Department's Agency Clerk in the Office of General Counsel within **21** days of receipt of this Order.

Please be advised that mediation of this decision pursuant to section 120.573, F.S., is not available.

How to Request an Extension of Time to File a Petition for Hearing

For good cause shown, pursuant to Rule 62-110.106(4), F.A.C., the Department may grant a request for an extension of time to file a petition for hearing. Such a request must be filed (received) by the Agency Clerk in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida, 32399-3000, within **21** days of receipt of this Order. Petitioner, if different from Scott R. Surovchak Office of Legacy Management, shall mail a copy of the request to the Scott R. Surovchak Office of Legacy Management at the time of filing. Timely filing a request for an extension of time tolls the time period within which a petition for administrative hearing must be made.

How to File a Petition for Administrative Hearing

A person whose substantial interests are affected by this Order may petition for an administrative hearing under sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) by the Agency Clerk in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, MS 35, Tallahassee, Florida, 32399-3000, within **21** days of receipt of this Order. Petitioner, if different from the Scott R. Surovchak Office of Legacy Management, shall mail a copy of the petition to the Scott R. Surovchak Office of Legacy Management, at the time of filing. Failure to file a petition

within this time period shall waive the right of anyone who may request an administrative hearing under sections 120.569 and 120.57, F.S.

Pursuant to subsection 120.569(2), F.S., and Rule 28-106.201, F.A.C., a petition for administrative hearing shall contain the following information:

a) The name, address, and telephone number of each petitioner; the name, address, and telephone number of the petitioner's representative, if any; the site owner's name and address, if different from the petitioner; the DEP facility number; and the name and address of the facility;
b) A statement of when and how each petitioner received notice of the Department's action or proposed action;
c) An explanation of how each petitioner's substantial interests are or will be affected by the Department's action or proposed action;
d) A statement of the disputed issues of material fact, or a statement that there are no disputed facts;
e) A statement of the ultimate facts alleged, including a statement of the specific facts the petitioner contends warrant reversal or modification of the Department's action or proposed action;
f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the Department's action or proposed action; and
g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the Department to take with respect to the Department's action or proposed action.

This Order is final and effective on the date filed with the Clerk of the Department, which is indicated on the last page of this Order. Timely filing a petition for administrative hearing postpones the date this Order takes effect until the Department issues either a final order pursuant to an administrative hearing or an Order Responding to Supplemental Information provided to the Department pursuant to meetings with the Department.

Judicial Review

Any party to this Order has the right to seek judicial review of it under section 120.68, F.S., by filing a notice of appeal under rule 9.110 of the Florida Rules of Appellate Procedure with the Agency Clerk of the Department in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within thirty days after this order is filed with the clerk of the Department (see below).

Questions

Any questions regarding the Department's review of your NFA Proposal should be directed to John R. Armstrong at 2600 Blair Stone Road, Mail Station 4535, Tallahassee, Florida

32399-2400, telephone number (850) 245-8981, or e-mail at John.Armstrong@dep.state.fl.us. Questions regarding legal issues should be referred to the Department's Office of General Counsel at (850)245-2242. Contact with any of the above does not constitute a petition for administrative hearing or request for an extension of time to file a petition for administrative hearing.

Sincerely,

Peter Cornais, Program Administrator
Waste Cleanup Program
Division of Waste Management

PC/jra

Enclosures (Exhibits 1 and 2)

cc: FILE
Bryan Baker, FDEP, Tallahassee

FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to §120.52
Florida Statutes, with the designated
Department Clerk, receipt of which is
hereby acknowledged.

Jessica A. Orr 07/27/2016

Clerk (or Deputy Clerk) Date

LMS/PIN/N01778

Pinellas Environmental Restoration Project

Site Rehabilitation Completion Report with No Further Action Proposal for the Northeast Site

May 2013

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Pinellas Environmental Restoration Project

Site Rehabilitation Completion Report with No Further Action Proposal for the Northeast Site

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Appendix A Iron and Aluminum Data
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Abbreviations

amsl	above mean sea level
cDCE	*cis*-1,2-dichloroethene
COPC	contaminant of potential concern
CTL	Cleanup Target Level
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
F.A.C.	*Florida Administrative Code*
FDEP	Florida Department of Environmental Protection
ft	feet
LDA	large-diameter auger
µg/L	micrograms per liter
NAPLs	nonaqueous-phase liquids
RMO	Risk Management Option
STAR Center	Young - Rainey Science, Technology, and Research Center
TCE	trichloroethene
VC	vinyl chloride

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1.0 Purpose

The purpose of this Site Rehabilitation Completion Report is to present the post-active-remediation monitoring results for the Northeast Site and to propose No Further Action with Controls. This document includes information required by Chapter 62-780.750(4)(d), 62-780.750(6), and 62-780.600(8)(a)27 *Florida Administrative Code* (F.A.C.). The *Closure Monitoring Plan for the Northeast Site and 4.5 Acre Site* (DOE 2009a) describes the approach for post-active-remediation monitoring.

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. The 99-acre STAR Center is located in Largo, Florida (Figure 1). The Northeast Site is located in the northeast corner of the STAR Center (Figure 2).

2.0 Site Remediation History

A remediation timeline for the Northeast Site is shown in Figure 3. In the late 1960s drums of waste and construction debris were disposed of in the swampy area of the Northeast Site. The U.S. Environmental Protection Agency (EPA) identified the Northeast Site as a solid waste management unit (DOE 1991a), and DOE subsequently submitted to EPA an Interim Corrective Measures Study (DOE 1991b). An interim groundwater recovery system for the Northeast Site was installed, and operation commenced in January 1992.

In 1995, a portion of the Northeast Site was excavated to remove debris, drums of waste, and other materials that could inhibit future corrective measures. Detailed descriptions of the debris-removal activities were submitted to EPA and the Florida Department of Environmental Protection (FDEP) as part of the *Northeast Site Interim Measures Quarterly Progress Report* (DOE 1996a).

In 1996, DOE submitted the *Northeast Site Corrective Measures Implementation Plan* (DOE 1996b) to EPA and FDEP, and this plan was approved by both regulatory agencies in 1997. This plan continued the pump-and-treat strategy, and additional recovery wells were installed.

Nonaqueous-phase liquids (NAPLs) were identified in a few monitoring and recovery wells in 1998. An *Interim Measures Work Plan for Remediation of Non-Aqueous Phase Liquids at the Northeast Site* (DOE 2001) was submitted to FDEP in late November 2001. The purpose of this document was to present the plan to remediate NAPLs at two areas (NAPL Areas A and B) of the Northeast Site using a thermal remediation method. FDEP approved this document on January 10, 2002.

Construction of the NAPL Area A treatment system began in late May 2002, and system startup occurred on September 26, 2002. NAPL treatment was completed on February 28, 2003. The *Northeast Site Area A NAPL Remediation Final Report* (DOE 2003b) describes the thermal remediation of NAPL Area A.

Construction of the NAPL Area B treatment system began in July 2004 and was completed in early August 2005, and operations began on August 16, 2005. NAPL treatment was completed on August 29, 2006. The *Final Report Northeast Site Area B NAPL Remediation Project at the Young - Rainey STAR Center, Largo, Pinellas County, Florida* (DOE 2007) describes NAPL Area B remediation.

Monitoring wells were installed at the former NAPL areas to monitor the remaining dissolved-phase plumes. Groundwater samples from a few of the wells continued to show high concentrations of contaminants. Soil samples were collected from 78 soil borings from August 2007 to June 2008 to evaluate the potential for a contaminant source remaining in the subsurface at these locations. Areas of soil containing contaminant concentrations that exceeded the leachability based on groundwater of poor quality Cleanup Target Levels (CTLs) listed in Table II in Chapter 62-777 F.A.C. were designated for excavation.

Soil excavation using the large-diameter auger (LDA) method began on January 14, 2009, and was completed on May 22, 2009. A total of 243 large-diameter and 352 small-diameter borings were completed. Approximately 8,387 cubic yards of soil were excavated, including 4,667 cubic yards removed as clean overburden and 3,720 cubic yards of contaminated soils that were removed, characterized for waste disposal, and disposed of as nonhazardous waste at a Resource Conservation and Recovery Act Subtitle D non-hazardous waste landfill. Additional information regarding the Northeast Site LDA work is available in the *Interim Remedial Action for Source Removal at the Northeast Site Final Report* (DOE 2009b). No contaminant source material remained after this excavation event.

As a follow-up to the LDA work, emulsified soybean oil and the *Dehalococcoides ethenogenes* microorganism were injected into the subsurface at 75 temporary points at the site in January and February 2010. The *Injection of Emulsified Soybean Oil at the Northeast Site and 4.5 Acre Site* (DOE 2010) was prepared to describe the work required for this task. This project has resulted in a significant decrease in contaminant mass and concentration in groundwater around the former contaminant source areas and in the downgradient contaminant plume.

With the completion of the LDA project to remove the remaining contaminant source material, DOE initiated monitoring for site closure. The *Closure Monitoring Plan for the Northeast Site and 4.5 Acre Site* (DOE 2009a) describes the approach for post-active-remediation monitoring (Chapter 62-780.750, F.A.C.). Post-active-remediation monitoring began in August 2009 and was completed in September 2012.

3.0 Contaminants of Potential Concern

The contaminants of potential concern (COPCs) for the Northeast Site were determined in the *Historical Review and Evaluation of Contaminants of Potential Concern* (DOE 2003a). The COPCs are trichloroethene (TCE), *cis*-1,2-dichloroethene (cDCE), vinyl chloride (VC), benzene, toluene, and methylene chloride (Table 1).

The applicable CTLs for these COPCs are those for groundwater of "low yield/poor quality" listed in Table 1 of Chapter 62-777, F.A.C. According to FDEP, use of these poor water quality

CTLs applies only on the STAR Center (onsite CTLs). The regular groundwater CTLs (Table 1) apply to offsite areas (offsite CTLs).

The use of poor water quality CTLs is based on a comprehensive review of background data for both the STAR Center (DOE 2003a) and the Northeast Site that determined that iron and aluminum concentrations in groundwater are naturally elevated and far exceed State of Florida secondary drinking water standards listed in Chapter 62-550, F.A.C. The iron and aluminum data are discussed in Appendix A.

4.0 Hydrogeology

The uppermost deposits at the Northeast Site are known as the surficial sediments and consist of unconsolidated silty to shelly sands that are about 30 feet (ft) thick. Depth to groundwater ranges from about 1 to 5 ft below land surface, depending on the season. No municipal water supplies are obtained from the surficial aquifer due to the poor yield and poor quality of the groundwater. Underlying the surficial sediments is the Hawthorn Group. The Hawthorn Group is a 70-ft-thick clay aquitard that separates the surficial aquifer from the underlying upper Floridan aquifer.

One man-made pond, the East Pond, was constructed on the Northeast Site in 1968 to collect storm-water runoff from parking lots and buildings. The East Pond is hydraulically connected to the shallow portion of the surficial aquifer. Typically, the shallow surficial aquifer recharges the East Pond, but occasionally, during periods of high rainfall, the East Pond recharges the shallow surficial aquifer.

The surficial aquifer at the STAR Center, including the Northeast Site, acts as a two-layer hydraulic system due mainly to horizontal-to-vertical anisotropy. In the shallow surficial aquifer, groundwater flow is generally toward the east with an occasional southeastward component. The hydraulic gradient in the shallow surficial aquifer averages about 0.002 ft/ft, and groundwater is estimated to move about 3−5 ft/year. Similar flow patterns and velocity are observed in the deep surficial aquifer. Figures 4–7 are groundwater flow maps for the shallow and deep surficial aquifer for March (dry season) and September (wet season) 2012. Groundwater elevation data are listed in Table 2. Well completion data are listed in Table 3.

5.0 Post-Active-Remediation Monitoring Results

Northeast Site post-active-remediation monitoring began in August 2009 and was completed in September 2012. Nine wells were chosen for post-active-remediation monitoring in the *Closure Monitoring Plan for the Northeast Site and 4.5 Acre Site* (DOE 2009a). Post-active-remediation monitoring results are listed in Table 4. All post-active-remediation monitoring laboratory reports (August 2009–September 2012), including chain of custody forms, are included as Appendix B.

Wells PIN15-0593 and -0594 were installed in October 2009, so post-active-remediation monitoring in these wells started in December 2009 instead of August 2009. Well PIN15-0593

became unusable and was abandoned in May 2011. Well PIN15-0595 was installed nearby to replace well 0593 and is screened at the same interval (Table 3).

5.1 COPCs Results

As of the September 2012 sampling event, the concentrations of all COPCs (TCE, cDCE, VC, methylene chloride, benzene, and toluene) had decreased to levels below the poor water quality CTLs in all post-active-remediation monitoring wells (Table 4). Only VC in well 0537 and benzene in wells 0594 and 0595 exceeded the regular CTLs. Figures 8–11 are maps showing cDCE, VC, benzene, and toluene concentration in September 2012. Maps for TCE and methylene chloride were not made because these COPCs were not detected in any wells in September 2012.

As can be seen on the maps, no COPCs were detected in September 2012 in the wells located hydraulically downgradient (0520, 0534, 0568, and 0569). No COPCs were detected in three of these wells (0520, 0534, and 0568) during post-active-remediation monitoring. This demonstrates that the remaining contamination is not near the property boundary. The wells in which COPCs were detected in September 2012 are located in the interior of the site, about 300 ft or more from the property boundary.

COPC concentration trends during post-active-remediation monitoring are shown in Figures 12–18. TCE and methylene chloride are not included in the plots because they were only detected rarely and at very low concentrations (Table 4). Trends for wells PIN15-0520, -0534, and -0568 were not plotted because COPCs were not detected in samples from these wells.

VC and cDCE are susceptible to enhanced biodegradation by the emulsified soybean oil that was injected at the site in January 2010, and both these COPCs show significant declining concentration trends. Benzene and toluene are not directly susceptible to remediation by emulsified soybean oil, but nonetheless both COPCs show stable or declining concentration trends (Figures 12–18), with the exception of wells PIN15-0593 and -0595. The toluene concentrations in these two wells show some variability over time, but the maximum detected concentration since post-active-remediation monitoring started is 28 micrograms per liter (µg/L), considerably below the 1,000 µg/L regular CTL.

Although technically not part of the post-active-remediation monitoring, samples of water from the East Pond were collected and analyzed for the COPCs starting in 2008 (Table 5). cDCE was the only COPC detected, and it was detected only once, in September 2012, at 0.21 µg/L, a value very near the 0.15 µg/L detection limit. These results demonstrate that the East Pond is not negatively impacted by COPCs in groundwater.

5.2 Sampling Procedure

All post-active-remediation monitoring samples were collected in accordance with the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PLN/S04351), using FDEP procedures. All monitoring wells were micropurged using a dedicated bladder pump or a peristaltic pump. Sampling was performed when the field measurements stabilized, in accordance with FDEP procedures. All samples were submitted to TestAmerica, Denver, Colorado, for analysis. TestAmerica Denver is accredited by the Florida

Department of Health in accordance with the National Environmental Laboratory Accreditation Conference (certification number E87667). The COPCs were analyzed using EPA SW-846 Method 8260.

Field measurements of pH, dissolved oxygen, and other parameters are reported in semiannual progress reports (http://www.lm.doe.gov/Pinellas/Documents.aspx). The results from the analytical laboratory were checked for quality assurance/quality control through duplicate samples and trip blanks as described in the semiannual progress reports.

6.0 Plume Stability Evaluation

The COPCs for the Northeast Site are TCE, cDCE, VC, benzene, toluene, and methylene chloride. Three separate source removal events (two electrical heating events and one soil excavation event) have removed all contaminant source material from the subsurface, leaving only contaminants dissolved in groundwater. As described in Section 2, the soil excavation action removed any soil that contained contaminant concentrations in excess of soil CTLs, so groundwater is the sole medium of concern. Source removal, combined with the injection of emulsified soybean oil to enhance contaminant biodegradation as a polishing step, has resulted in a significant decrease in contaminant concentrations.

Contaminant concentration trends indicate that the plume is shrinking. “Plume” is defined in Chapter 62-780.200(34) as “the portion of an aquifer or aquifers in which groundwater contamination above applicable CTLs, and background concentrations as defined in subsection 62-780.200(5), F.A.C., has been detected.” The concentrations of all COPCs were below the poor water quality CTLs (which are the applicable CTLs) as of September 2012, so there is no contaminant plume remaining at the Northeast Site.

One of the requirements for a risk-based site closure, as defined in Chapter 62-780.680 and discussed in Section 8 of this document, is that contaminant concentrations at the property boundaries do not, and will not, exceed the regular CTLs. Groundwater flow is to the east with a velocity of a few feet per year, so based on contaminant concentrations and location, it is very unlikely that concentrations in excess of the regular CTLs will migrate offsite.

7.0 Risk Evaluation

Because of the current and projected land and water use at the Northeast Site and the limited extent and magnitude of groundwater contamination, a quantitative risk assessment was not performed for the site. Currently there are no uses of surficial aquifer groundwater at the STAR Center or the adjacent properties. Contamination is limited to the surficial aquifer. Downward movement into the Floridan aquifer is prevented by the presence of the thick, low-permeability Hawthorn Group sediments.

Water from the East Pond may be used for irrigation at the STAR Center. The shallow groundwater is in hydraulic connection to surface water in the East Pond. Based on the very low remaining concentrations of COPCs in the groundwater and the results of analysis of samples of

the pond water, discharge of groundwater to the pond will not negatively impact pond water quality.

The only potential exposure route to site-related contamination would be through installation of wells and extraction of groundwater from the shallow surficial aquifer within the site boundary. Access to the shallow groundwater will be prevented by a restrictive covenant, as described in Section 8.

8.0 No Further Action Proposal

Reductions in COPC concentrations in groundwater at the Northeast Site have been achieved through source removal and active groundwater remediation. The remaining contamination consists of very low concentrations of COPCs, is very limited in extent, and remains confined to the interior of the site. COPC concentration trends strongly support the interpretation of a shrinking plume. At this time, DOE proposes that a "No Further Action With Controls" determination be made for the Northeast Site and that the site can proceed to closure. This requires the selection of the appropriate Risk Management Option (RMO) for the site under the State of Florida's Contaminated Site Cleanup Criteria (Chapter 62-780 F.A.C.). The three RMOs are defined in Chapter 62-780.680 F.A.C.

From a practical standpoint, the two main outcomes of those RMOs are either "No Further Action Without Controls" or "No Further Action With Controls." Controls are considered to be either engineered features or administrative (institutional) controls that reduce or eliminate the migration of and/or exposure to contamination. A slurry wall is an example of an engineered control; a deed restriction is a type of institutional control.

The State of Florida's current risk-based approach to cleanup allows levels of cleanup that are less stringent than regular CTLs, provided these "alternative CTLs" are protective. Under current conditions at the Northeast Site, there are no complete exposure pathways to site-related contamination. Contaminant concentrations in the subsurface pose no threat to current onsite or offsite receptors and will pose no threat when the site is developed. The applicability of each RMO with respect to the Northeast Site is provided in this section.

8.1 No Further Action Without Controls (RMO I)

RMO I requires that the regular CTLs be met in site groundwater. Although FDEP has agreed that the poor water quality CTLs specified in Table 1 in Chapter 62-777 F.A.C. apply to the Northeast Site, Chapter 62-780.680(1)(c)1. F.A.C. states that the regular CTLs listed in Table 1 in Chapter 62-777 F.A.C. must be met for site closure under RMO I. As described in Section 5.1, concentrations of VC and benzene exceeded the regular CTLs in the last post-remediation monitoring event in September 2012. Therefore, RMO I is not applicable to the Northeast Site.

8.2 Risk Management Option II

In order for groundwater to qualify for a closure under RMO II, several criteria must be met. Generally, there cannot be a source of contamination remaining in the soil, the contamination must be contained within the site boundary, the plume must be stable and confined to the

immediate source area, the plume must be small in size, and it must be demonstrated that groundwater contamination has not adversely affected any surface water body in the area. An RMO II closure also requires the establishment of institutional controls to prevent use of the contaminated groundwater.

There is no source of contamination remaining at the Northeast Site. As described in Section 2.0, thermal NAPL remediation was conducted at two areas of the site from 2002 to 2006. A subsequent soil excavation action removed any contaminant concentrations in soil that exceeded the leachability based on poor quality groundwater CTLs listed in Table II, Chapter 62-777 F.A.C. The absence of contaminant source is also evident in the significant declining contaminant concentration trends observed in all monitoring wells.

The remaining low concentrations of COPCs are confined to the interior of the site (Figures 8–11). COPCs were not detected in well pair 0520/0534, located near the east property boundary, during post-active-remediation monitoring (Table 4). Downgradient well pair 0568/0569 had a single exceedance of the 1 µg/L VC regular CTL, 1.4 µg/L in December 2009 (Table 4).

The contaminant plume is shrinking, as can be seen in the concentration trends in Figures 12–18. As described in Section 5, the concentrations of all COPCs were below the poor water quality CTLs during the last post-active-remediation monitoring event in September 2012. Therefore, the first option in the groundwater section of RMO II (Chapter 62-780.680(2)(c)1) applies; this option allows application of the poor water quality CTLs onsite.

The contaminants that remain at the Northeast Site have not adversely affected the surface water of the East Pond, as demonstrated by analysis of pond water samples collected annually from 2008 to 2012 (Table 5). cDCE was the only COPC detected, and it was detected only once, at 0.21 µg/L. cDCE does not have a CTL for surface water. Based on the decreasing concentration trends, the area containing contaminants is shrinking and will not adversely affect the East Pond in the future.

DOE is working with the landowner to establish a restrictive covenant at the site that will (1) require written approval from FDEP before site groundwater can be used; (2) require an FDEP-approved plan for any dewatering activities on the site (such as for dewatering of a trench for construction); and (3) prevent alteration of site storm-water features without written approval by FDEP. Once the restrictive covenant is in place, there will be no potential for inappropriate use of, or exposure to, contaminated groundwater. The restrictive covenant will need to be approved by FDEP before a formal No Further Action determination can be made.

Based on the above, DOE proposes to proceed with closure of the Northeast Site under RMO II.

8.3 Risk Management Option III

Because closure is proposed under RMO II, RMO III is discussed only briefly. The Northeast Site could be closed under RMO III, but the justification would be the same as that provided for an RMO II closure. No alternative CTLs would be developed for alternative groundwater uses because no groundwater use is anticipated. No temporary point of compliance is required

because contamination is confined to site boundaries. Therefore, the exceptions and greater flexibility offered under an RMO III closure are not needed at the Northeast Site.

9.0 Summary

- The Northeast Site meets all the requirements for an RMO II closure—No Further Action with Controls.
- DOE is nearing completion of a restrictive covenant for the Northeast Site.
- DOE has completed post-active-remediation monitoring at the Northeast Site as of September 2012. No additional monitoring will be conducted.

10.0 References

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DOE (U.S. Department of Energy), 2007. *Final Report Northeast Site Area B NAPL Remediation Project at the Young - Rainey STAR Center, Largo, Pinellas County, Florida*, DOE-LM/1457-2007, Office of Legacy Management, Grand Junction, Colorado, April.

DOE (U.S. Department of Energy), 2009a. *Closure Monitoring Plan for the Northeast Site and 4.5 Acre Site*, LMS/PIN/N01401, Office of Legacy Management, Grand Junction, Colorado, August.

DOE (U.S. Department of Energy), 2009b. *Interim Remedial Action for Source Removal at the Northeast Site Final Report,* LMS/PIN/N01357, Office of Legacy Management, Grand Junction, Colorado, September.

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DOE (U.S. Department of Energy), 2010. *Injection of Emulsified Soybean Oil at the Northeast Site and 4.5 Acre Site,* LMS/PIN/N01494, Office of Legacy Management, Grand Junction, Colorado, April.

Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites, LMS/PLN/S04351, continually updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy Office of Legacy Management, Grand Junction, Colorado.

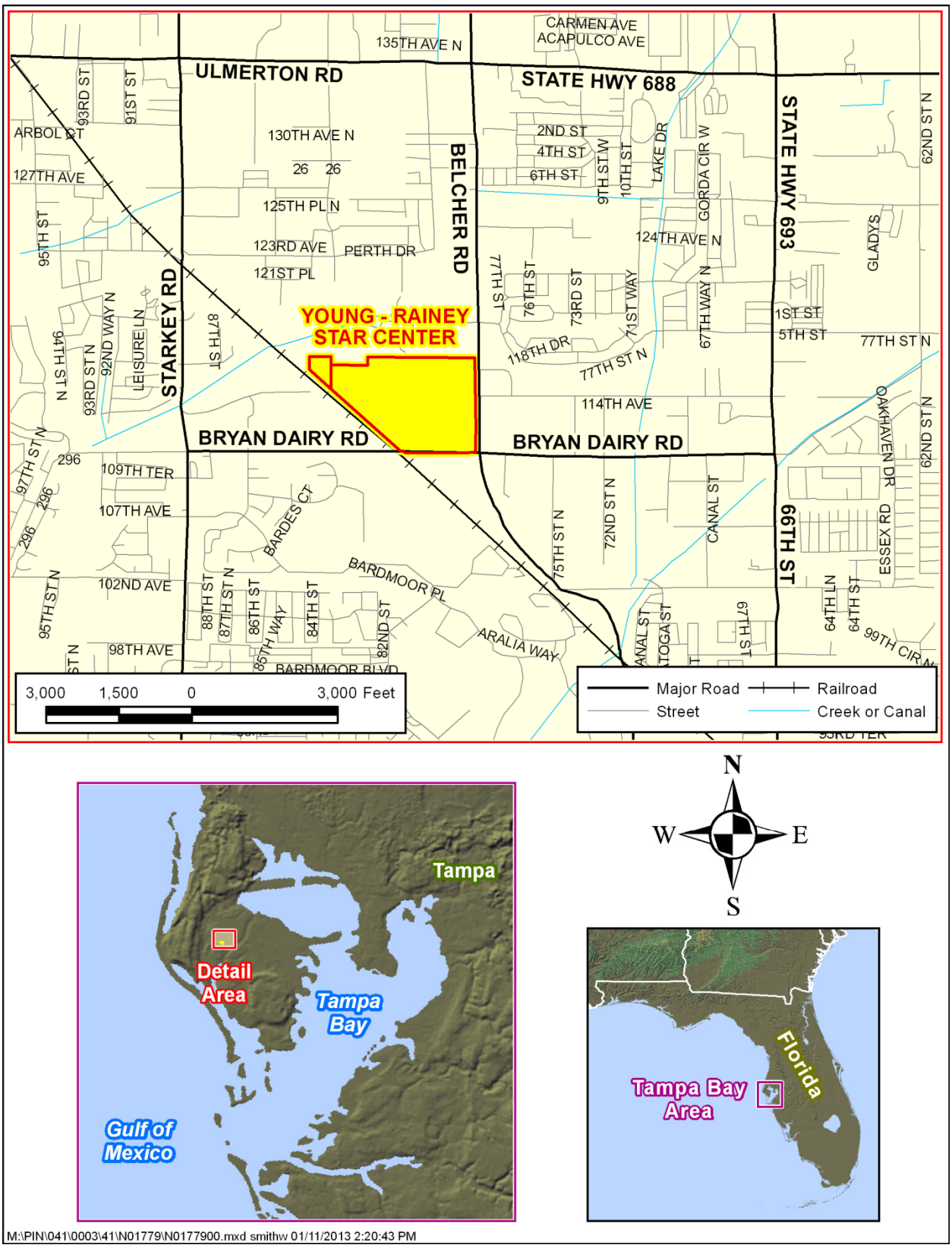

Figure 1. Young-Rainey STAR Center Location

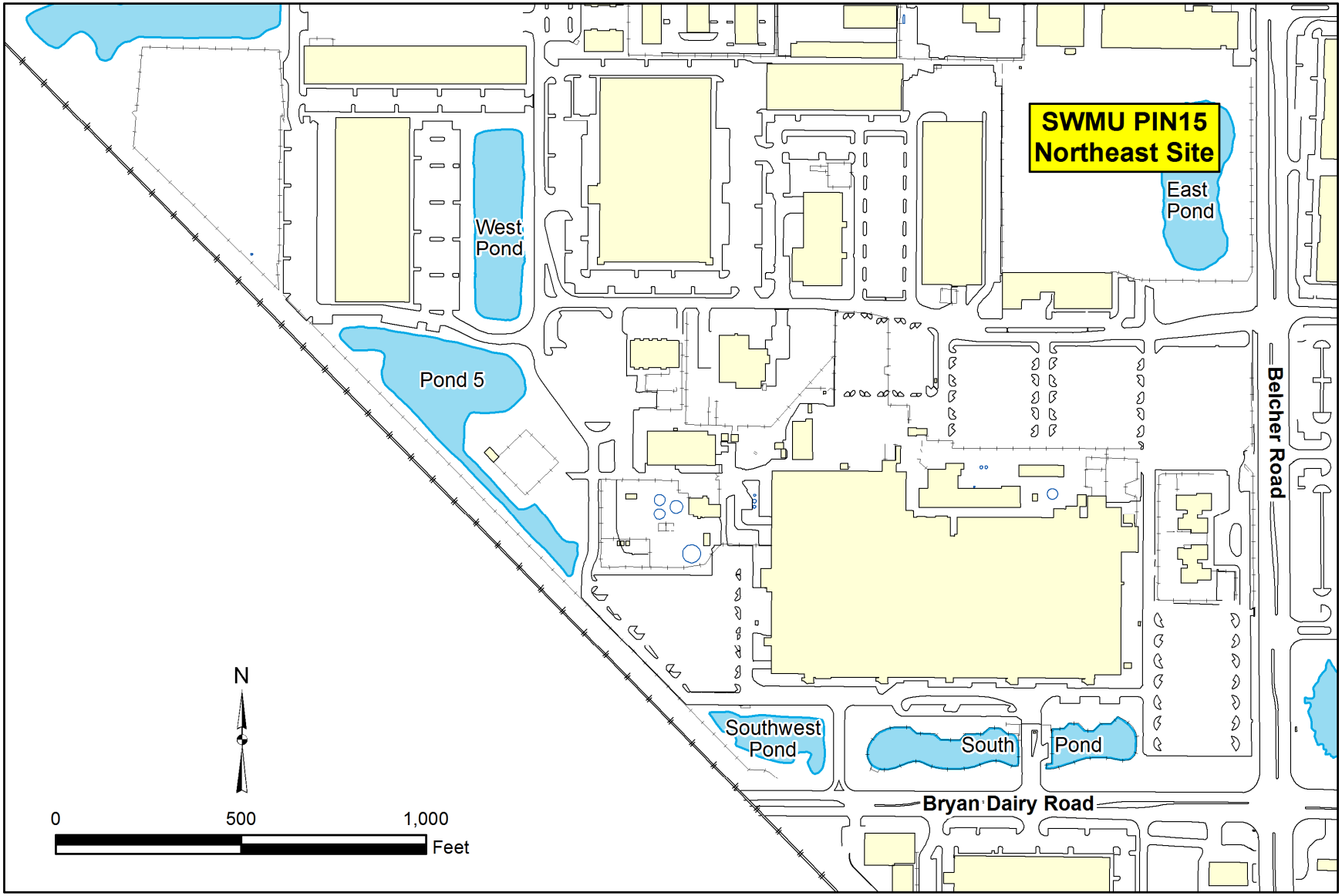

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Figure 2. Location of the Northeast Site on the STAR Center

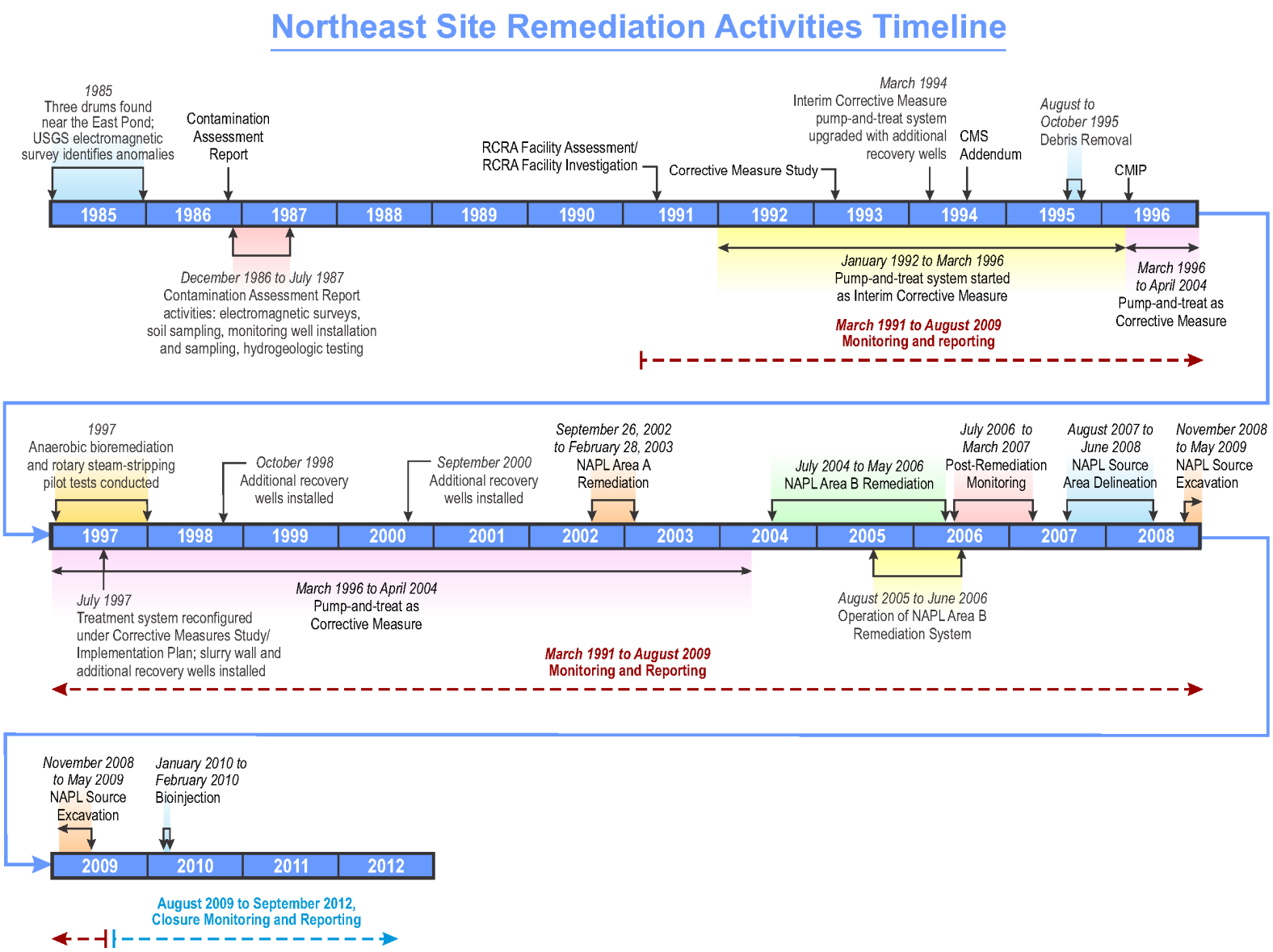


Figure 3. Northeast Site Remediation Timeline

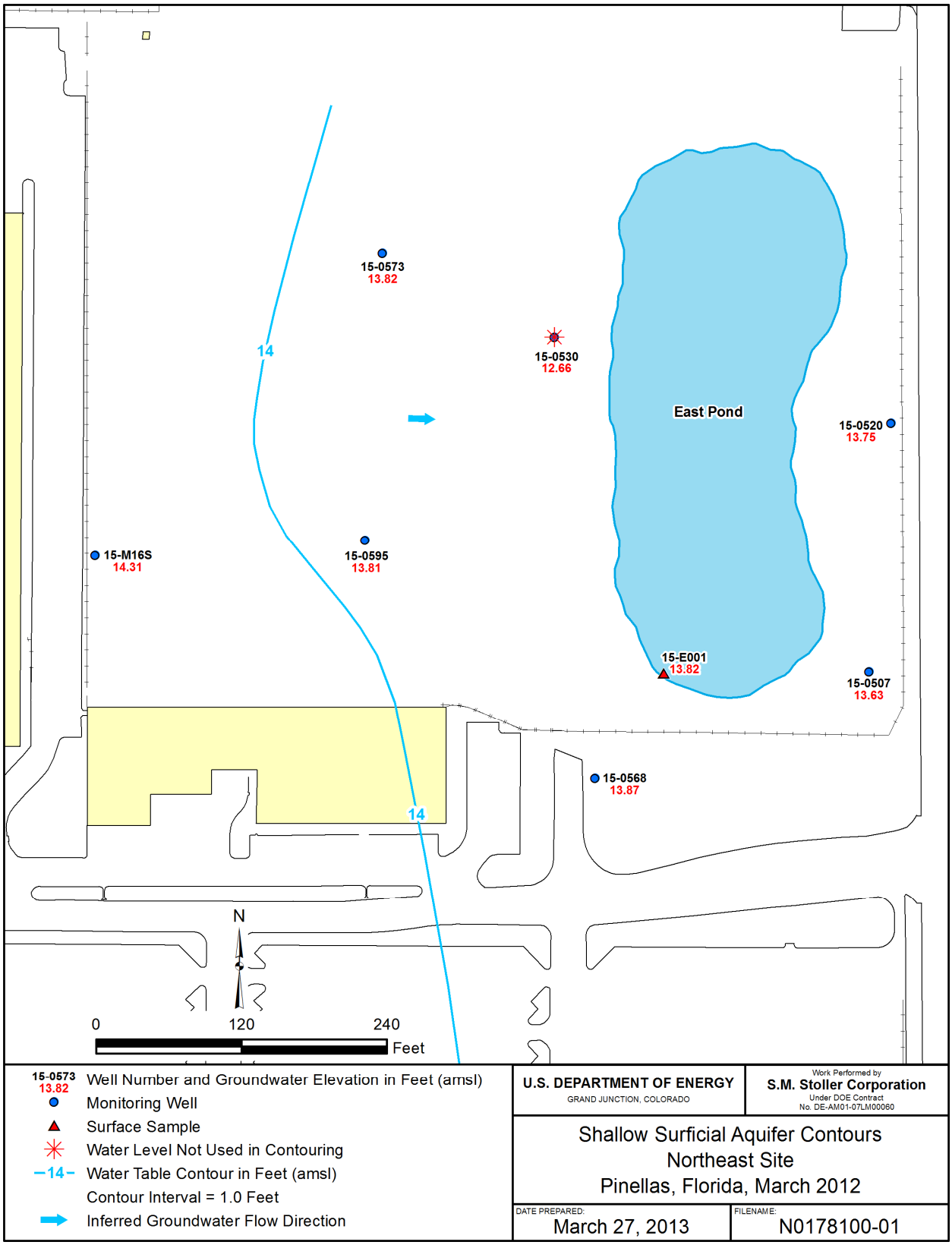


Figure 4. Shallow Surficial Aquifer Flow, March 2012

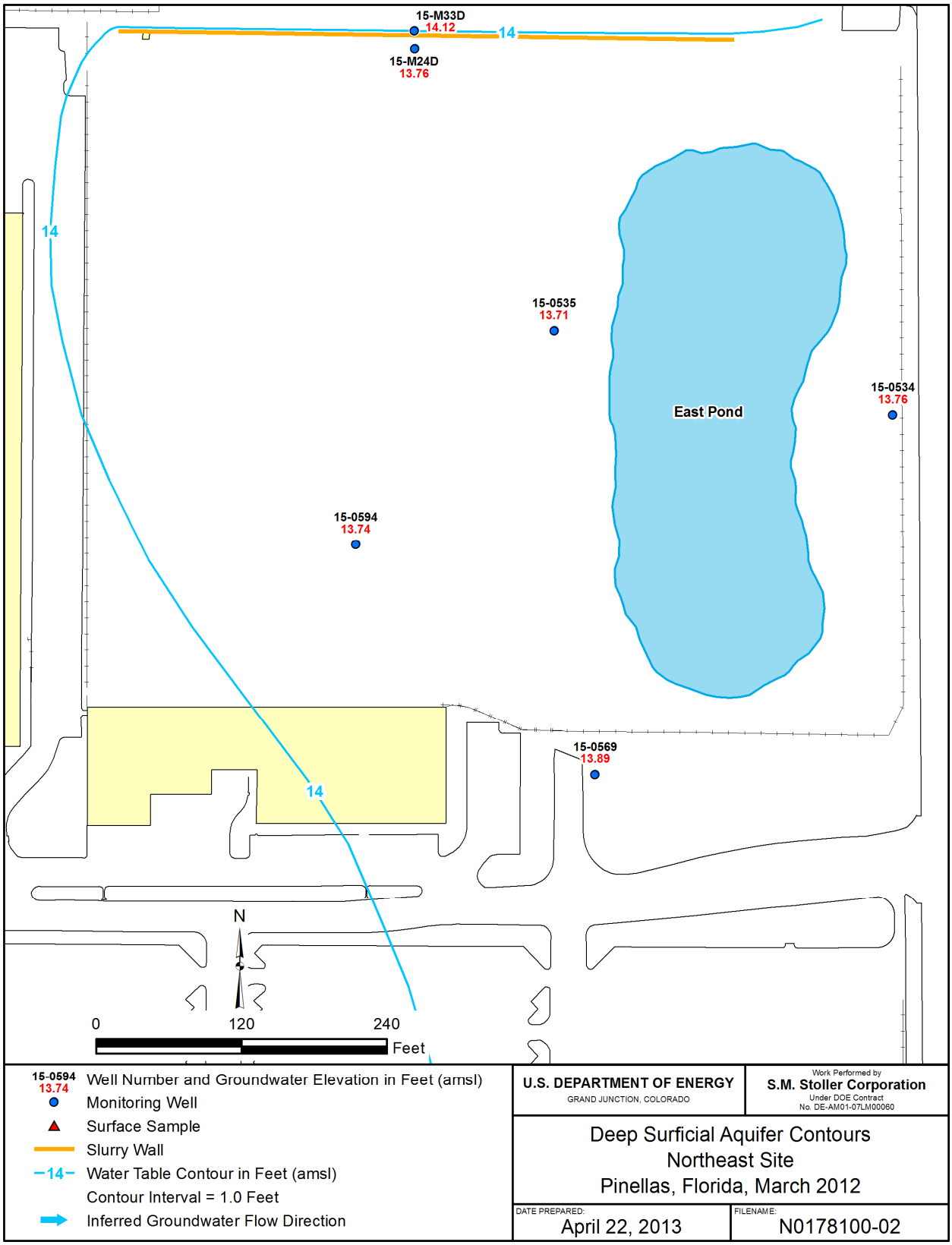


Figure 5. Deep Surficial Aquifer Flow, March 2012

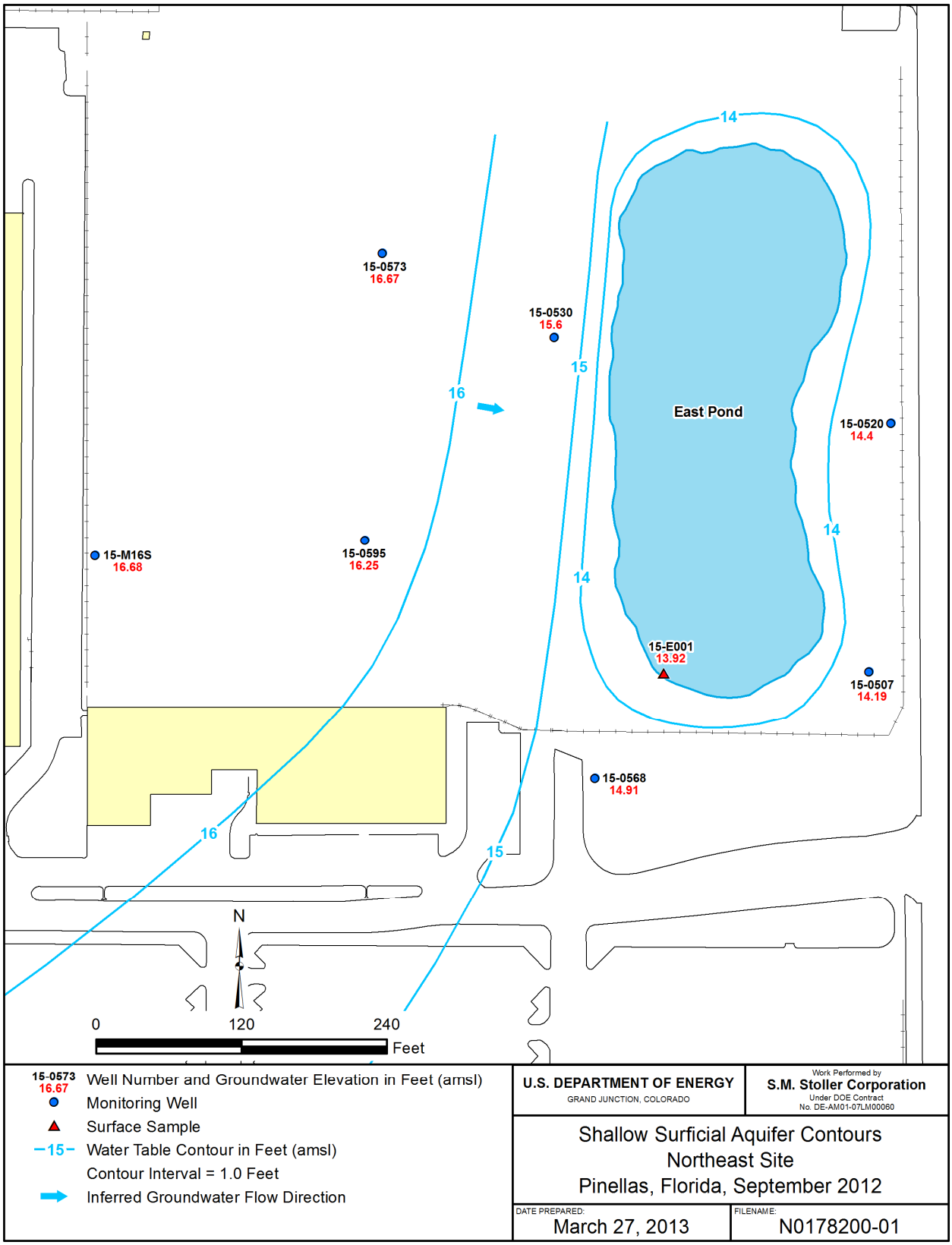


Figure 6. Shallow Surficial Aquifer Flow, September 2012

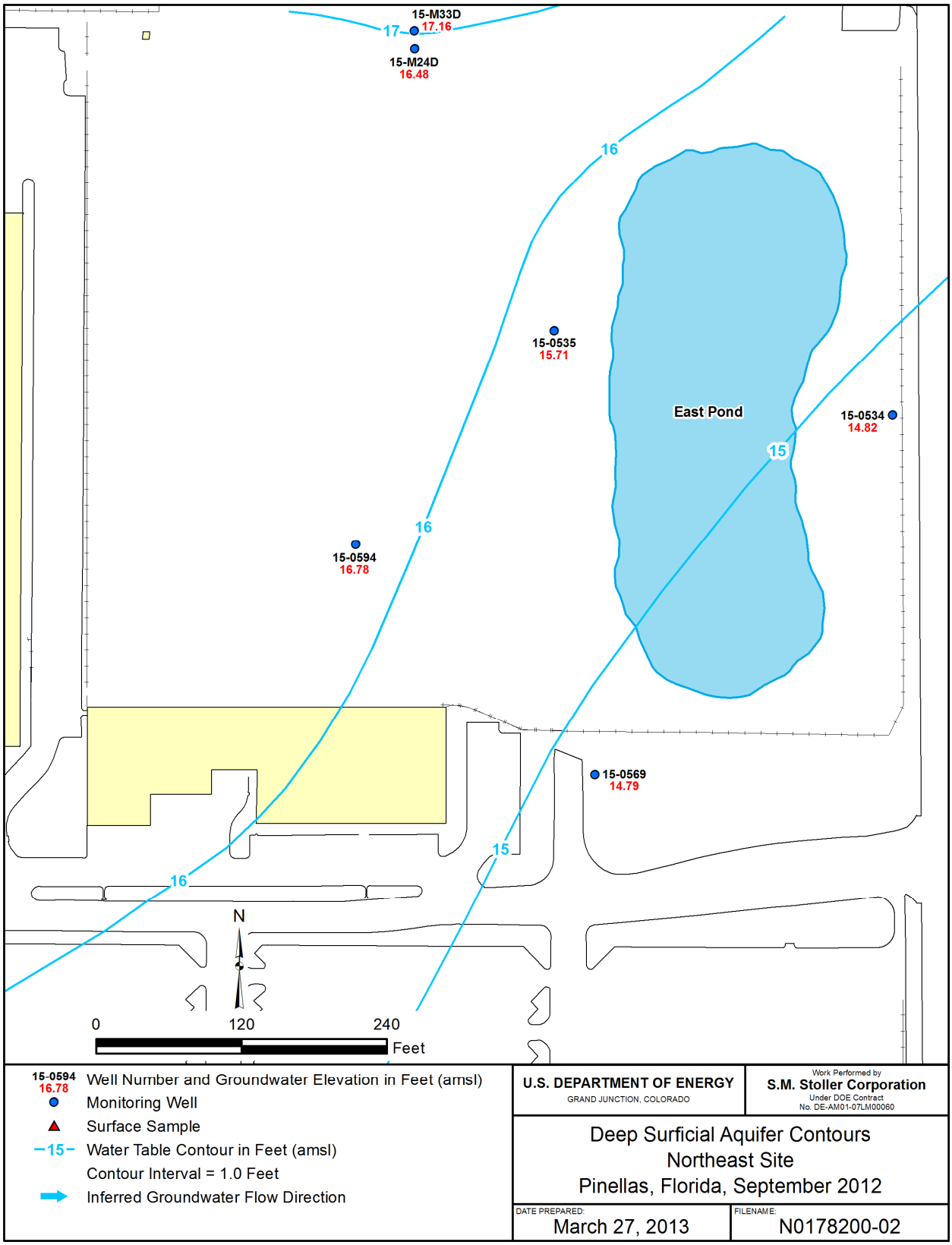


Figure 7. Deep Surficial Aquifer Flow, September 2012

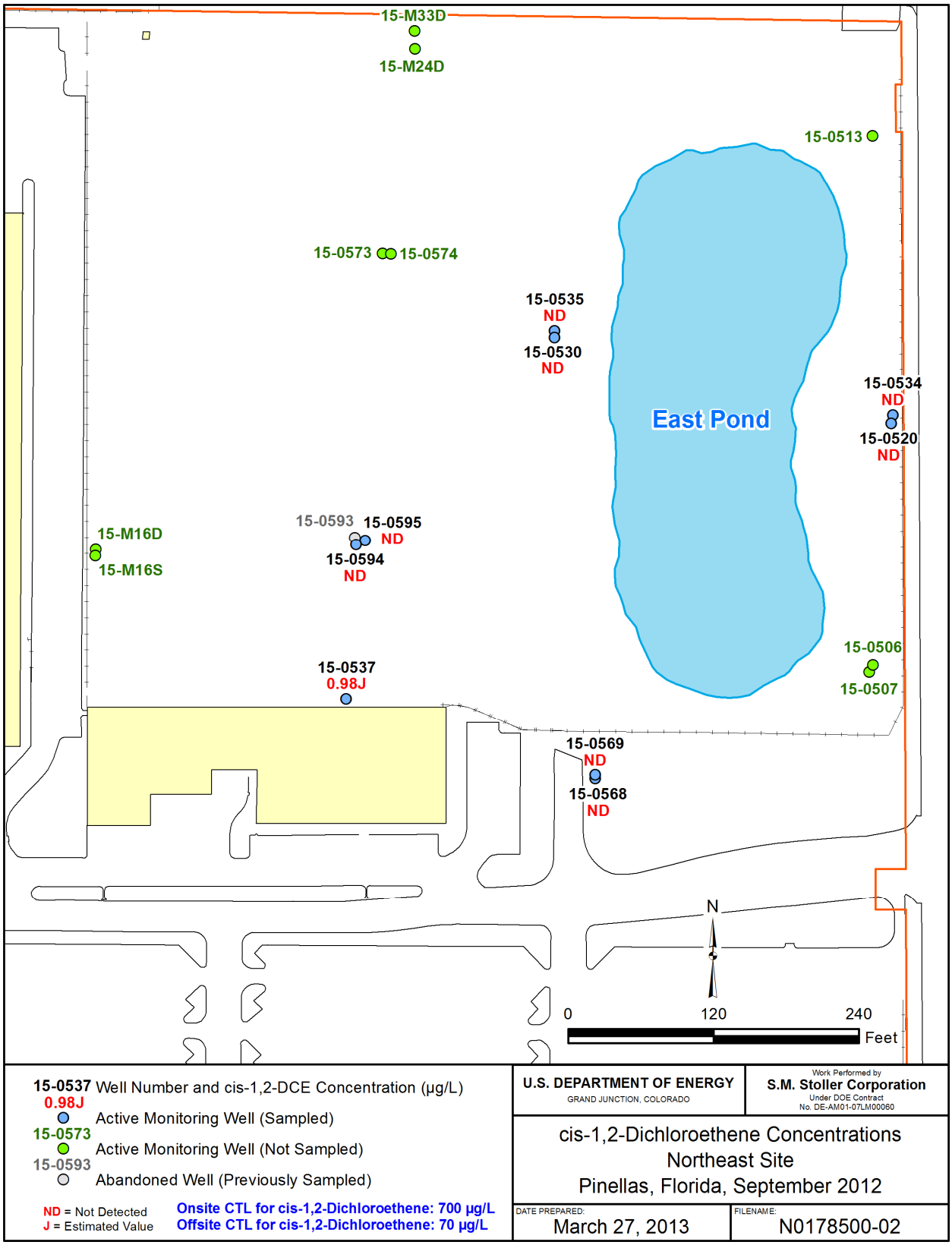


Figure 8. cDCE Map, September 2012

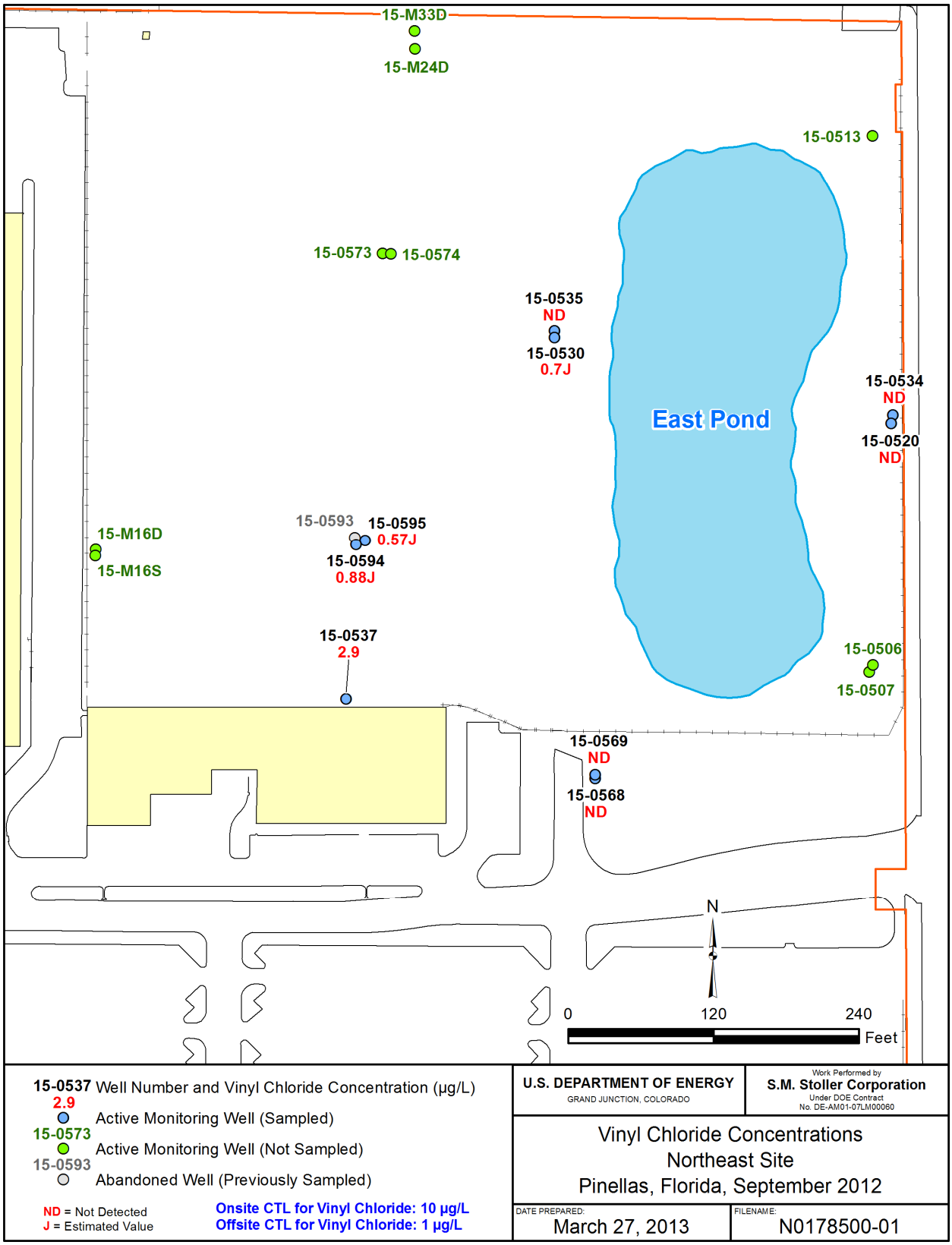


Figure 9. VC Map, September 2012

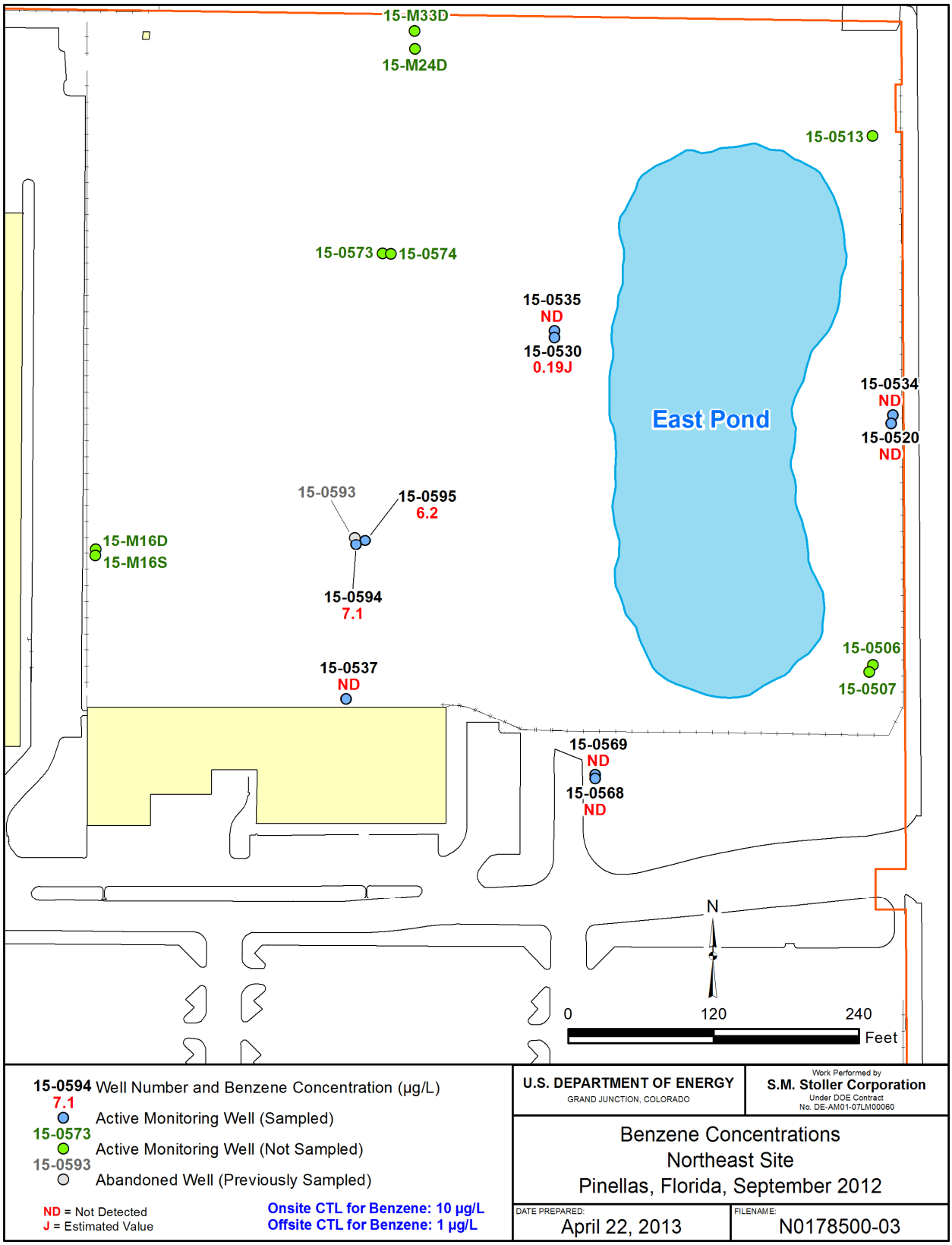


Figure 10. Benzene Map, September 2012

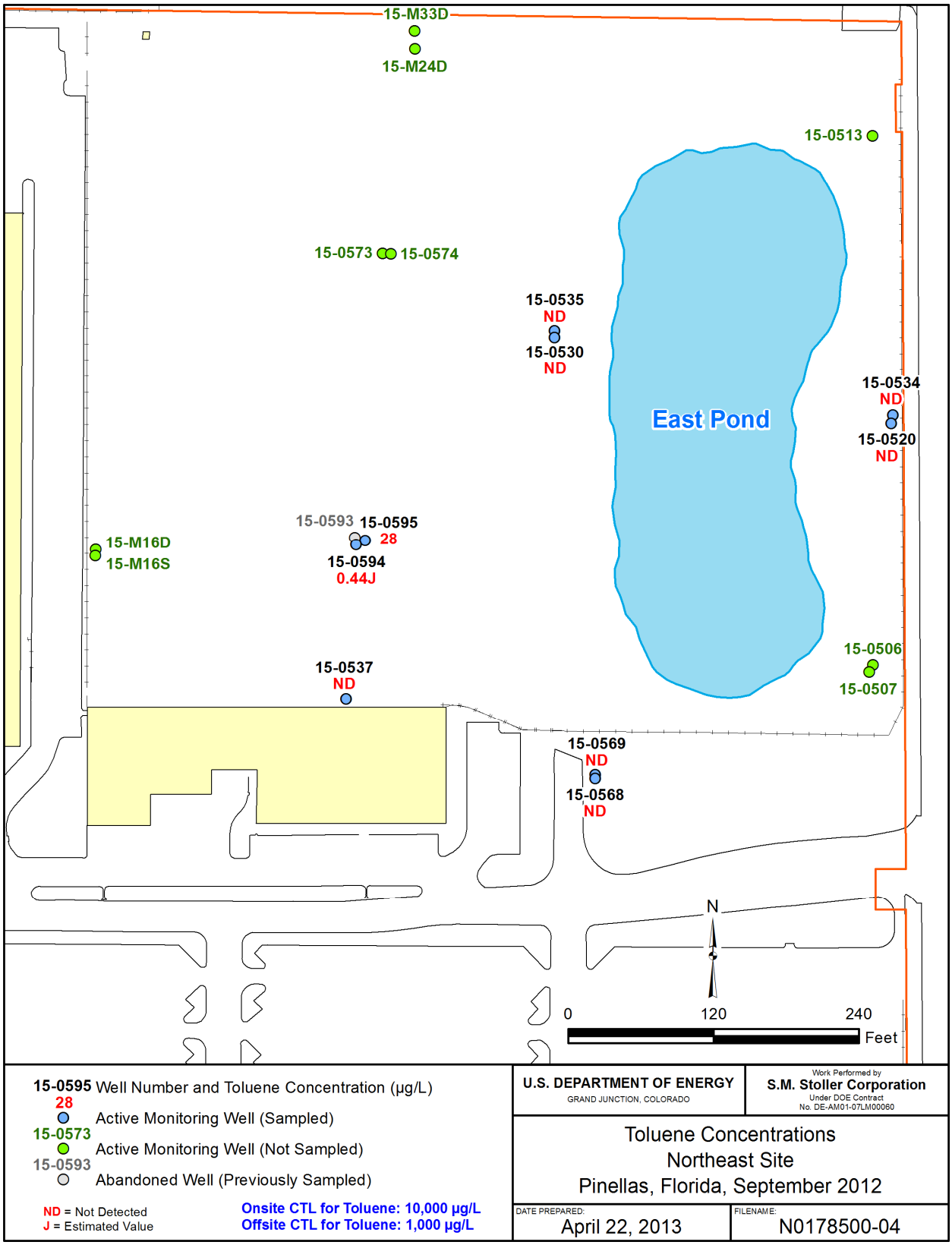


Figure 11. Toluene Map, September 2012

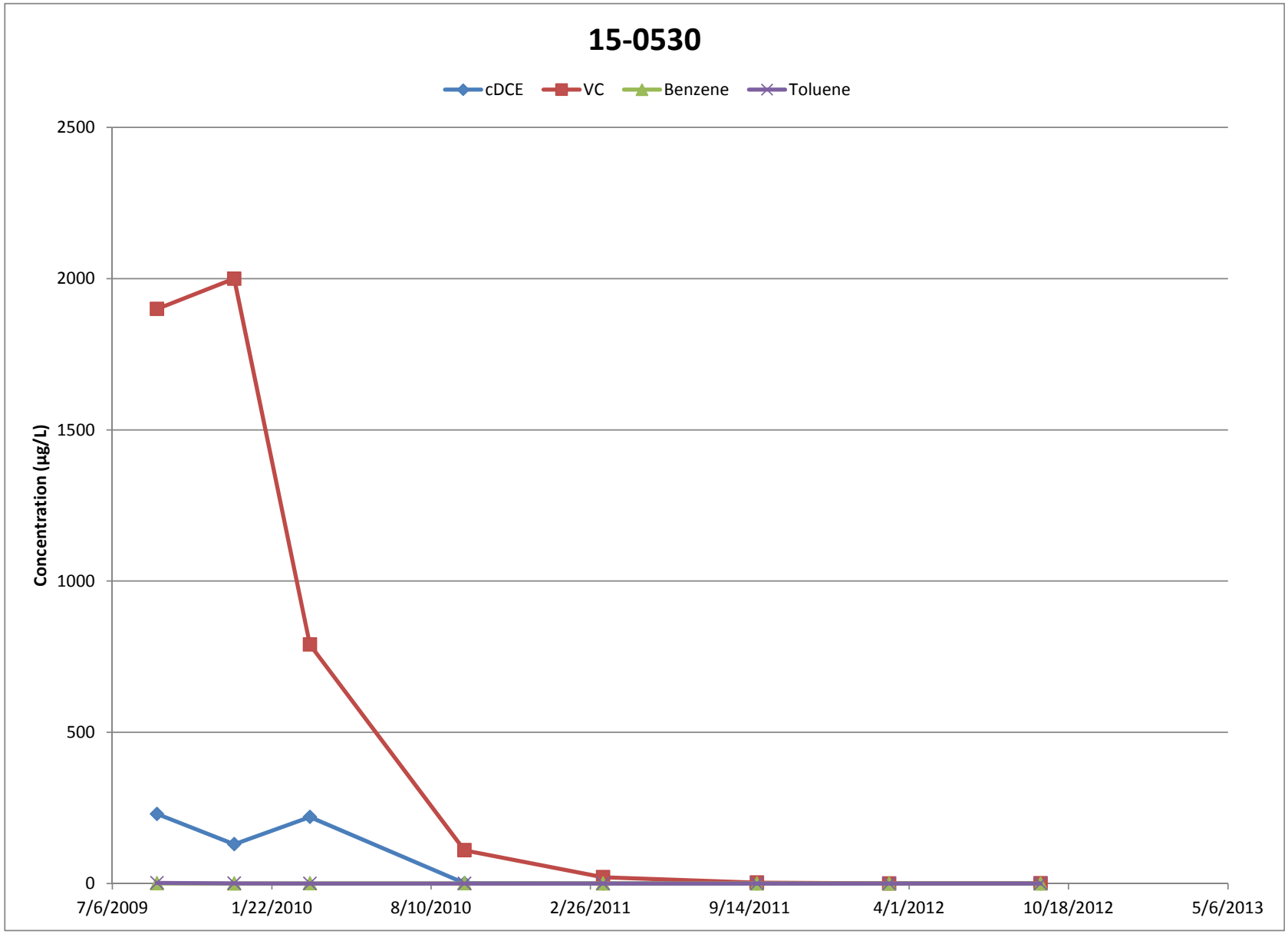


Figure 12. cDCE, VC, Benzene, and Toluene in Well PIN15-0530

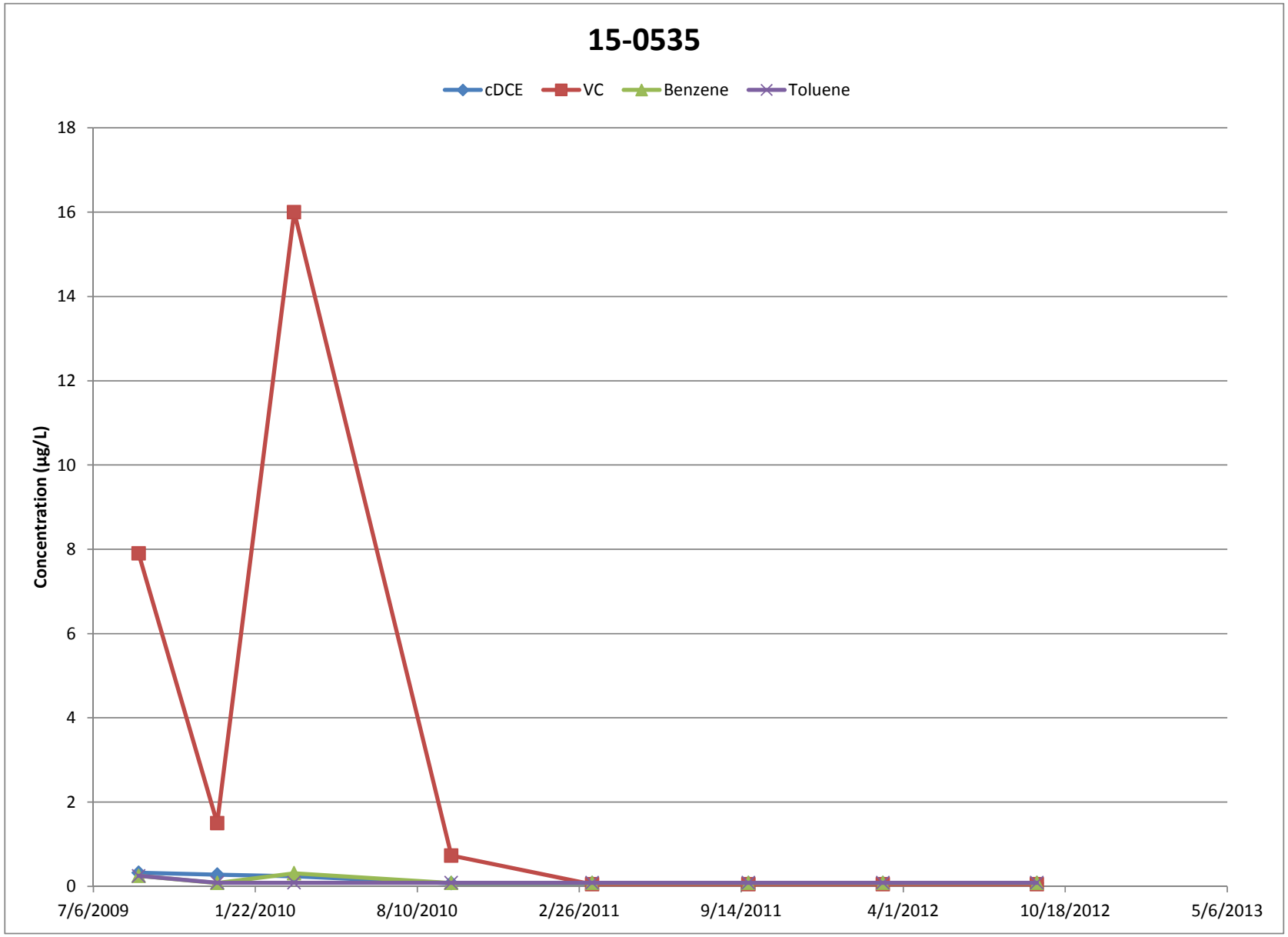


Figure 13. cDCE, VC, Benzene, and Toluene in Well PIN15-0535

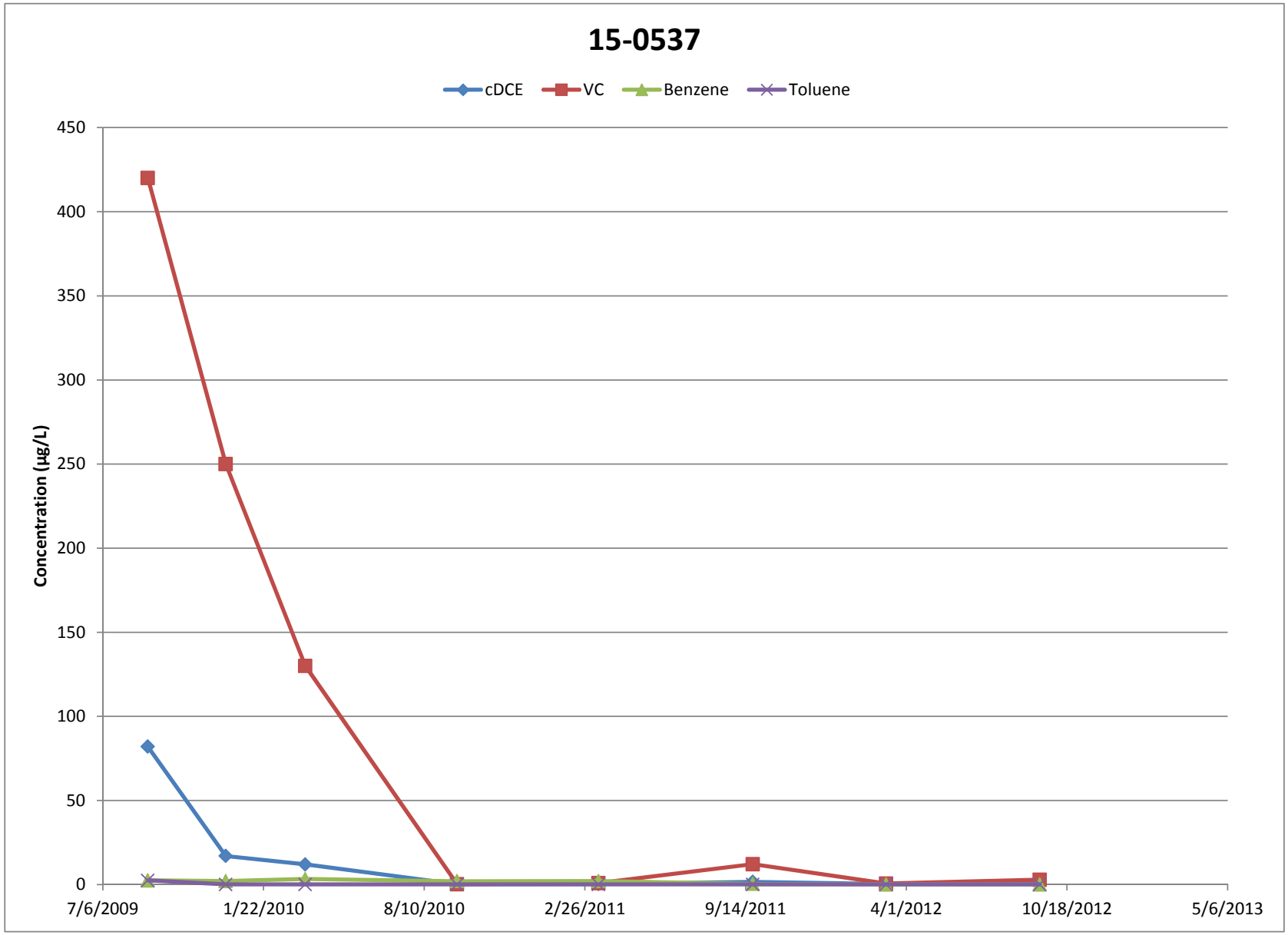


Figure 14. cDCE, VC, Benzene, and Toluene in Well PIN15-0537

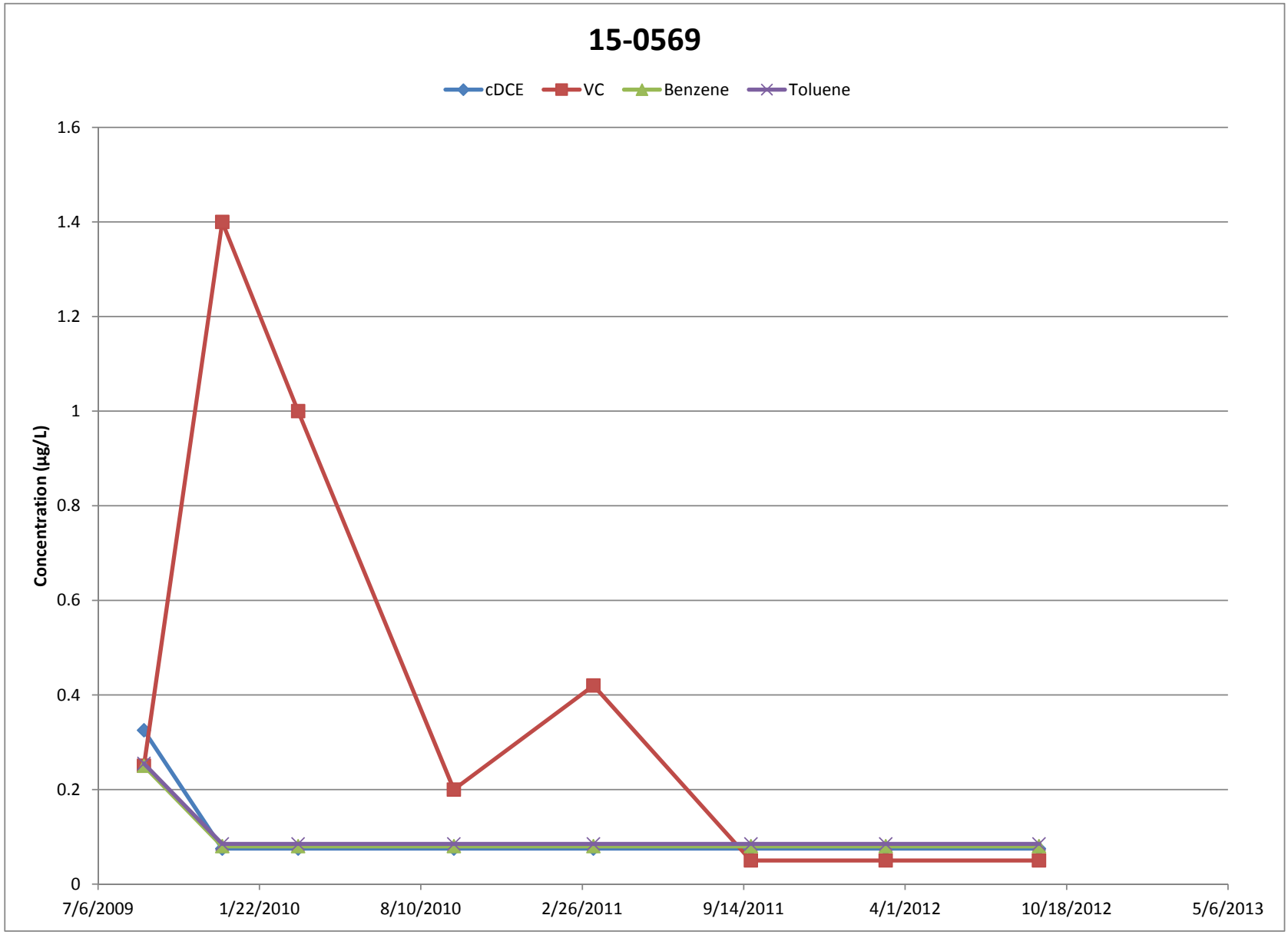


Figure 15. cDCE, VC, Benzene, and Toluene in Well PIN15-0569

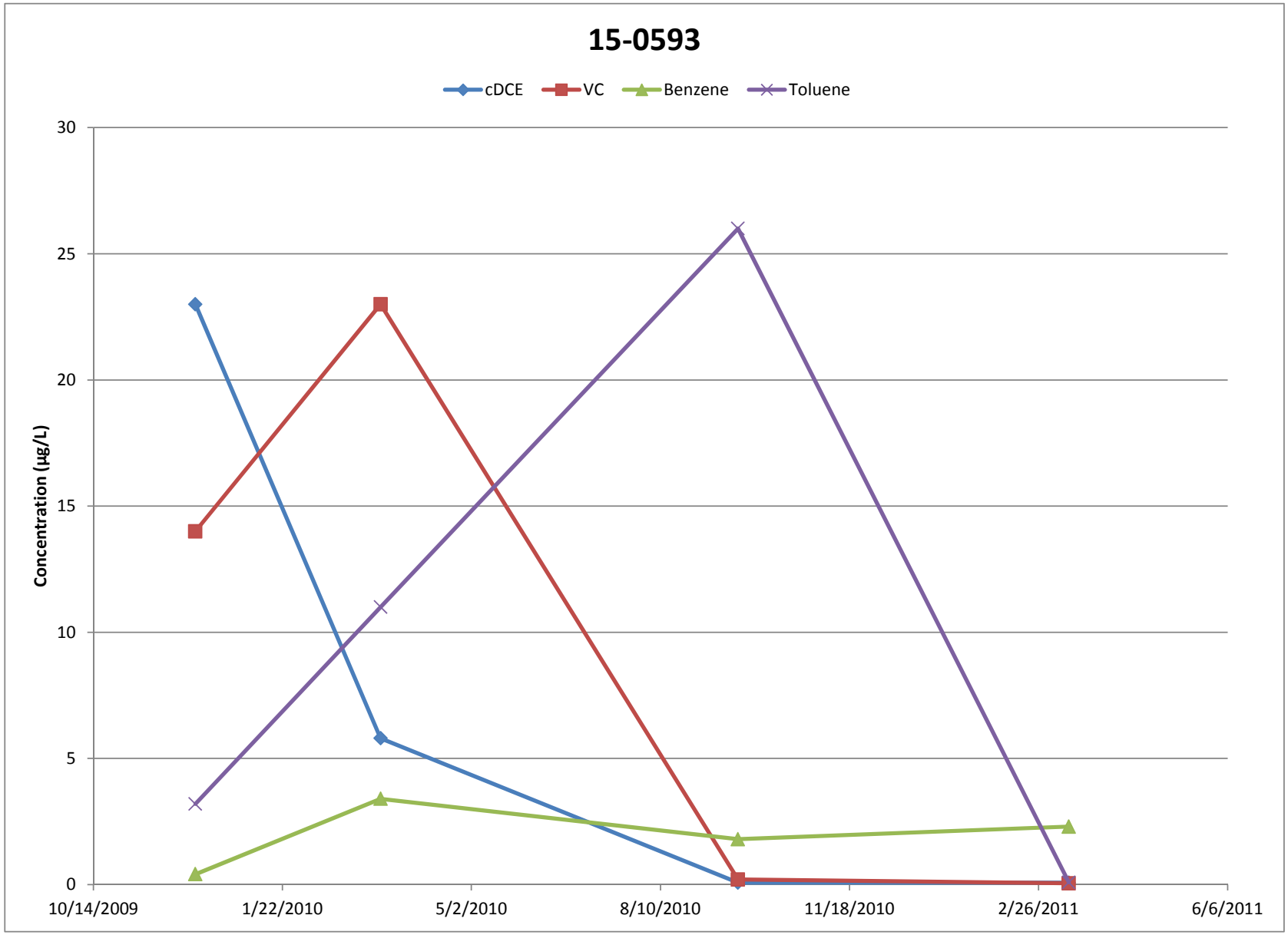


Figure 16. cDCE, VC, Benzene, and Toluene in Well PIN15-0593

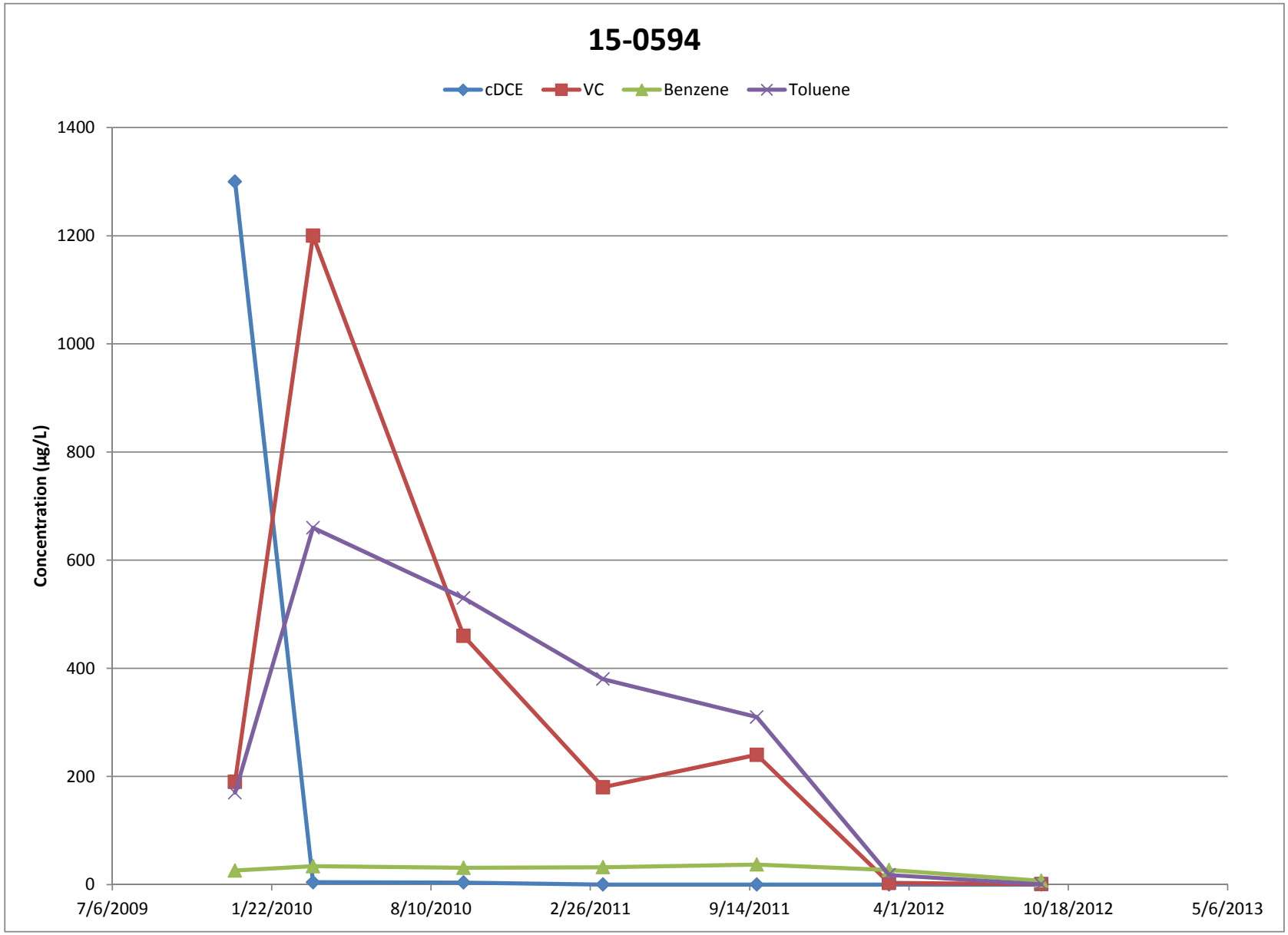


Figure 17. cDCE, VC, Benzene, and Toluene in Well PIN15-0594

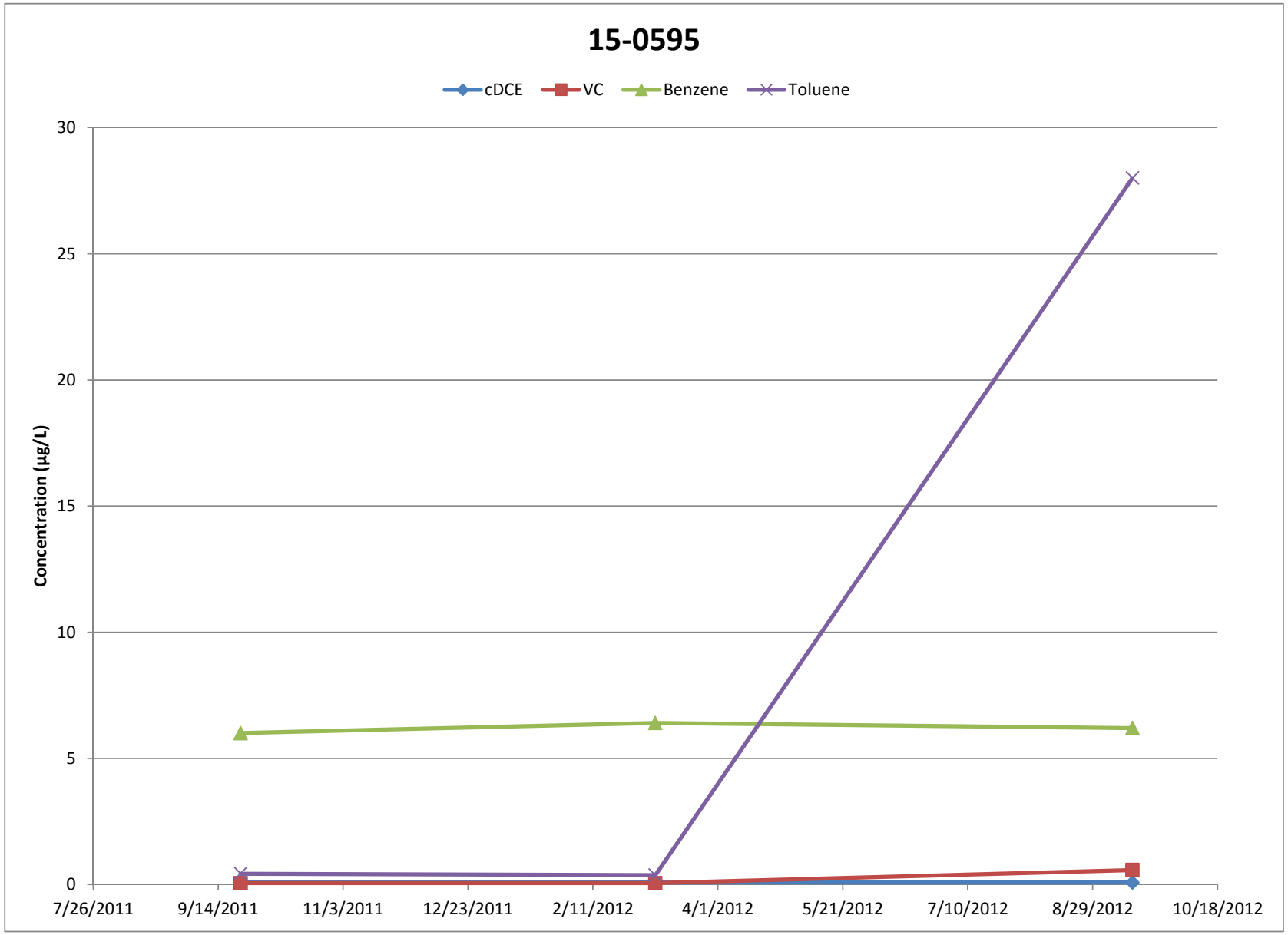


Figure 18. cDCE, VC, Benzene, and Toluene in Well PIN15-0595

Table 1. Northeast Site COPCs and CTLs

COPC	Poor Water Quality CTL (onsite) (µg/L)	Regular Groundwater CTL (offsite) (µg/L)
TCE	30	3
cDCE	700	70
VC	10	1
Methylene Chloride	50	5
Benzene	10	1
Toluene	10,000	1,000

Table 2. Northeast Site Groundwater Level Data for March and September 2012

Location	Measurement		Water Depth (ft bls)[a]	Groundwater Elevation (ft amsl)[b]
	Date	Time		
March 2012				
0506	3/6/2012	08:23	3.34	13.66
0507	3/6/2012	08:18	3.37	13.63
0513	3/6/2012	08:31	12.38	5.22
0520	3/6/2012	08:28	3.45	13.75
0530	3/6/2012	08:39	4.74	12.66
0534	3/6/2012	08:24	3.54	13.76
0535	3/6/2012	08:34	3.89	13.71
0537	3/6/2012	08:48	4.52	14.08
0568	3/6/2012	07:10	4.63	13.87
0569	3/6/2012	08:16	4.49	13.89
0573	3/6/2012	10:30	4.56	13.82
0574	3/6/2012	10:35	4.60	13.82
0594	3/6/2012	08:40	4.76	13.74
0595	3/6/2012	08:55	4.79	13.81
M16D	3/6/2012	10:22	3.86	14.34
M16S	3/6/2012	10:18	3.89	14.31
M24D	3/6/2012	10:28	4.04	13.76
M33D	3/6/2012	10:23	3.48	14.12
E001[c]	3/6/2012	10:10	-	13.82
September 2012				
0506	9/11/2012	13:03	2.86	14.14
0507	9/11/2012	12:58	2.81	14.19
0513	9/11/2012	13:40	9.97	7.63
0520	9/11/2012	13:09	2.80	14.40
0530	9/11/2012	13:50	1.80	15.60
0534	9/11/2012	13:05	2.48	14.82
0535	9/11/2012	13:46	1.89	15.71
0537	9/11/2012	13:10	5.01	13.59
0568	9/11/2012	12:40	3.59	14.91
0569	9/11/2012	12:51	3.59	14.79
0573	9/11/2012	13:28	1.71	16.67
0574	9/11/2012	13:35	1.95	16.47
0594	9/11/2012	13:15	1.72	16.78
0595	9/11/2012	13:19	2.35	16.25
M16D	9/11/2012	13:27	4.46	13.74
M16S	9/11/2012	13:26	1.52	16.68
M24D	9/11/2012	13:36	1.32	16.48
M33D	9/11/2012	13:39	0.44	17.16
E001[c]	9/11/2012	12:52	-	13.92

[a] bls = below land surface
[b] amsl = above mean sea level
[c] East Pond water level

Table 3. Northeast Site Well Completion Data

Well ID	Screen Interval (ft below surface)	Well Diameter (inches)	Installation Date
Post Active Remediation Monitoring Wells			
PIN15-0520	5–14.5	2	4/13/1987
PIN15-0530	5–14.5	2	4/13/1987
PIN15-0534	19.5–29	2	9/29/1998
PIN15-0535	20.5–30	2	9/29/1998
PIN15-0537	17.5-30	2	9/30/1998
PIN15-0568	10–20	1	1/30/2003
PIN15-0569	20–30	1	1/30/2003
PIN15-0593[a]	10–20	1	10/20/2009
PIN15-0594	20–30	1	10/20/2009
PIN15-0595	10–20	1	5/27/2011
Other Existing Monitoring Wells			
PIN15-0506	12–21.5	2	1/8/1987
PIN15-0507	5–14.5	2	1/8/1987
PIN15-0513	135–149.6	4	6/9/1988
PIN15-0573	5–15	1	5/17/2004
PIN15-0574	18–28	2	6/7/2004
PIN15-M24D	20–30	2	1/10/1996
PIN15-M33D	20–30	2	1/10/1996
Background Wells			
PIN15-M03D[b]	15–25	2	8/16/1993
PIN15-M03S[b]	2.5–12	2	1/12/1987
PIN15-M14D[b]	18.5–28.5	2	1/9/1996
PIN15-M14S[b]	4–14	2	1/9/1996
PIN15-M16D	18.5–28.5	2	9/27/1995
PIN15-M16S	5–14.5	2	4/10/1987

[a] Well PIN15-0593 was abandoned in May 2011 and replaced with well PIN15-0595.
[b] These wells were abandoned in October 2011.

Table 4. Northeast Site COPCs, August 2009 Through September 2012 (µg/L)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cDCE	VC	Methylene Chloride	Benzene	Toluene
Onsite Cleanup Target Level[b]			**30**	**700**	**10**	**50**	**10**	**10,000**
PIN15								
0520	5–14.5	9/1/2009	<0.5	<0.65	<0.5	<4	<0.5	<0.51
		12/6/2009	<0.16	<0.15	<0.4	<0.32	<0.16	<0.17
		3/11/2010	<0.16	<0.15	<0.4	<0.32	<0.16	<0.17
		9/20/2010	<0.16	<0.15	<0.4	<0.32	<0.16	<0.17
		3/12/2011	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
		9/23/2011	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
		3/7/2012	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
		9/13/2012	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
0530	5–14.5	8/31/2009	<1.6	230J	1,900J	<3.2	<1.6	<5.1
		12/6/2009	<1.6	130	2,000	<3.2	<1.6	<1.7
		3/11/2010	<0.16	220	790	<0.32	0.8J	<0.17
		9/21/2010	<0.16	1.1	110	<0.32	0.75J	<0.17
		3/14/2011	<0.16	<0.15	21	<0.32	0.61J	<0.17
		9/23/2011	<0.16	<0.15	3	<0.32	0.31J	<0.17
		3/7/2012	<0.16	<0.15	0.39J	<0.32	<0.16	<0.17
		9/13/2012	<0.16	<0.15	0.7J	<0.32	0.19J	<0.17
0534	19.5–29	9/1/2009	<0.5	<0.65	<0.5	<4	<0.5	<0.51
		12/6/2009	<0.16	<0.15	<0.4	<0.32	<0.16	<0.17
		3/11/2010	<0.16	<0.15	<0.4	<0.32	<0.16	<0.17
		9/20/2010	<0.16	<0.15	<0.4	<0.32	<0.16	<0.17
		3/12/2011	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
		9/23/2011	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
		3/7/2012	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
		9/13/2012	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
0535	20.5–30	8/31/2009	<0.5	<0.65	7.9	<4	<0.5	<0.51
		12/6/2009	<0.16	0.28J	1.5	<0.32	<0.16	<0.17
		3/11/2010	<0.16	0.24J	16	<0.32	0.31J	<0.17
		9/21/2010	<0.16	<0.15	0.73J	<0.32	<0.16	<0.17
		3/14/2011	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
		9/23/2011	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
		3/7/2012	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
		9/13/2012	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17

Table 4 (continued). Northeast Site COPCs, August 2009 Through September 2012 (µg/L)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cDCE	VC	Methylene Chloride	Benzene	Toluene
Onsite Cleanup Target Level[b]			**30**	**700**	**10**	**50**	**10**	**10,000**
0537	17.5–30	8/31/2009	<0.5	82	420	<4	<0.5	<0.51
		12/6/2009	<0.16	17	250	<0.32	2.1	<0.17
		3/15/2010	<0.16	12	130	<0.32	3.3	<0.17
		9/20/2010	<0.16	0.28J	<0.4	<0.32	2	<0.17
		3/15/2011	<0.16	0.38J	0.91J	<0.32	2.1J	<0.17
		9/23/2011	<0.16	1.6J	2.1J	<0.34	0.44J	<0.17
		3/7/2012	<0.16	0.35J	0.62J	<0.41	<0.16	<0.17
		9/14/2012	<0.16	0.98J	2.9	<0.32	<0.16	<0.17
0568	10–20	9/1/2009	<0.5	<0.65	<0.5	<4	<0.5	<0.51
		12/7/2009	<0.16	<0.15	<0.4	<0.32	<0.16	<0.17
		3/11/2010	<0.16	<0.15	<0.4	<0.32	<0.16	<0.17
		9/20/2010	<0.16	<0.15	<0.4	<0.32	<0.16	<0.17
		3/12/2011	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
		9/23/2011	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
		3/8/2012	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
		9/14/2012	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
0569	20–30	9/1/2009	<0.5	<0.65	<0.5	<4	<0.5	<0.51
		12/7/2009	<0.16	<0.15	1.4	<0.32	<0.16	<0.17
		3/11/2010	<0.16	<0.15	1	<0.32	<0.16	<0.17
		9/20/2010	<0.16	<0.15	<0.4	<0.32	<0.16	<0.17
		3/12/2011	<0.16	<0.15	0.42J	<0.32	<0.16	<0.17
		9/23/2011	<0.16	<0.15	<0.1	<0.43	<0.16	<0.17
		3/8/2012	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
		9/14/2012	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
0593	10–20	12/7/2009	0.63J	23	14	<0.32	0.41J	3.2
		3/15/2010	<0.16	5.8	23	<0.32	3.4	11
		9/20/2010	<0.16	<0.15	<0.4	<0.32	1.8	26
		3/14/2011	<0.16	<0.15	<0.1	<0.32	2.3	<0.17
0594	20–30	12/7/2009	1J	1,300	190J	<1.3	26	170J
		3/15/2010	<1.6	4.5J	1,200	<0.32	34	660
		9/20/2010	<0.32	3.7	460	<0.64	31	530
		3/14/2011	<0.32	<0.3	180J	<0.64	32	380
		9/23/2011	<0.16	<0.15	240	<0.32	37	310
		3/7/2012	<0.16	<0.15	3.2	<0.37	27	18J
		9/14/2012	<0.16	<0.15	0.88J	<0.32	7.1	0.44J
0595	10–20	9/23/2011	<0.16	<0.15	<0.1	<0.56	6	0.43J
		3/7/2012	<0.16	<0.15	<0.1	<0.32	6.4	0.37J
		9/14/2012	<0.16	<0.15	0.57J	<0.32	6.2	28

Notes:
[a] "<" values are method detection limits.
[b] The offsite CTL is a factor of 10 lower than the listed onsite (poor water quality) CTL.

Abbreviations:
J = estimated value; result is between the reporting limit and the method detection limit

Table 5. East Pond Sampling Results (µg/L)

Date	TCE	cDCE	VC	Methylene Chloride	Benzene	Toluene
12/9/2008	<0.5	<0.65	<0.5	<4	<0.5	<0.51
3/26/2009	<0.5	<0.65	<0.5	<4	<0.5	<0.51
3/11/2010	<0.16	<0.15	<0.4	<0.32	<0.16	<0.17
3/11/2011	<0.16	<0.15	<0.1	<0.32	<0.16	<0.17
3/7/2012	<0.16	0.21J	<0.1	<0.38	<0.16	<0.17

J = estimated value

KEN BURKE, CLERK OF COURT
AND COMPTROLLER PINELLAS COUNTY, FL
INST# 2015270107 09/18/2015 at 02:45 PM
OFF REC BK: 18926 PG: 880-888
DocType:RST

THIS INSTRUMENT PREPARED BY:

F. JOSEPH ULLO, JR., ESQUIRE
LEWIS, LONGMAN & WALKER, P.A.
315 SOUTH CALHOUN STREET,
SUITE 830
TALLAHASSEE, FL 32202
(850) 222-5702

DECLARATION OF RESTRICTIVE COVENANT
NORTHEAST SITE SOLID WASTE MANAGEMENT UNIT

THIS DECLARATION OF RESTRICTIVE COVENANT (hereinafter "Declaration") is made this 16 day of September, 2015, by the Pinellas County Industrial Development Authority, a Special District created pursuant to Part III, Chapter 159, Florida Statutes, d/b/a PINELLAS COUNTY ECONOMIC DEVELOPMENT AUTHORITY, (hereinafter "GRANTOR") and the Florida Department of Environmental Protection (hereinafter "FDEP").

RECITALS

A. GRANTOR is the fee simple owner of that certain real property situated in the County of Pinellas, State of Florida, more particularly described in Exhibit A attached hereto and made a part hereof (hereinafter the "Restricted Property").

B. The FDEP Facility Identification Number for the Restricted Property is FL6 890 090 008 (PIN15). The facility name at the time of this Declaration is U.S. Department of Energy ("DOE") Northeast Site Solid Waste Management Unit ("SWMU") which is in the northeastern portion of the Young – Rainey STAR Center. This Declaration addresses discharges that were reported to the USEPA on December 14, 1987.

C. The discharge of chlorinated solvents on the Restricted Property/Northeast Site SWMU is documented in the following reports that are incorporated by reference.

1. Long-Term Surveillance and Maintenance Plan for the Pinellas Site November 2012, submitted by the U.S. DOE.

2. Sitewide Environmental Monitoring, Semiannual Progress Reports for the Young – Rainey STAR Center, submitted by the U.S. DOE and dated December 2012 through May 2013

3. Closure Monitoring Plan for the Northeast Site and 4.5 Acre Site, dated September 2009, submitted by the U.S. Department of Energy.

4. Interim Remedial Action for Source Removal at the Northeast Site Final Report, dated August 2009, submitted by the U.S. Department of Energy.

5. Final Report Northeast Site Area B NAPL Remediation Project at the Young – Rainey STAR Center, Largo, Pinellas County, Florida, dated April 2007, submitted by the U.S. Department of Energy.

D. The reports noted in Recital C set forth the nature and extent of the contamination that is located on the Restricted Property. These reports confirm that contaminated groundwater, as defined by Chapter 62-780 Florida Administrative Code (F.A.C.), exists on the Restricted Property. Also, these reports document that the groundwater contamination does not extend beyond the Restricted Property boundaries and that the groundwater contamination does not exceed ¼-acre, and that the groundwater contamination is not migrating.

E. The intent of the restrictions in this Declaration is to reduce or eliminate the risk of exposure to users or occupants of the Restricted Property and to the environment of the contaminants and to reduce or eliminate the threat of migration of the contaminants.

F. The FDEP has agreed to issue a Site Rehabilitation Completion Order with Conditions (hereinafter "Order") upon recordation of this Declaration and achievement of site rehabilitation in accordance with Chapter 62-780 F.A.C. The FDEP can unilaterally revoke the Order if the conditions of this Declaration or of the Order are not met. Additionally, if concentrations of chemicals of concern increase above the levels approved in the Order, or if a subsequent discharge occurs at the Restricted Property, the FDEP may require site rehabilitation to reduce concentrations of contamination to the levels allowed by the applicable FDEP rules. The Order relating to FDEP Facility No. FL6 890 090 008 (PIN15) can be found by contacting the appropriate FDEP district office or bureau.

G. GRANTOR deems it desirable and in the best interest of all present and future owners of the Restricted Property that the Order be obtained for the Northeast Site SWMU and that the Restricted Property be held subject to certain restrictions, all of which are more particularly hereinafter set forth.

NOW, THEREFORE, to induce the FDEP to issue the Order and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by each of the undersigned parties, GRANTOR agrees as follows:

1. The foregoing recitals are true and correct and are incorporated herein by reference.

2. GRANTOR hereby imposes on the Restricted Property the following restrictions:

a.i. There shall be no use of or access to the groundwater under the Restricted Property unless pre-approved in writing by FDEP's Division of Waste Management ("DWM") in addition to any authorizations required by the Division of Water Resource Management ("DWRM") and the Water Management District ("WMD").

a.ii. For any dewatering activities on the Restricted Property a plan approved by FDEP's DWM must be in place to address and ensure the appropriate handling, treatment and disposal of any extracted groundwater that may be contaminated.

a.iii. There shall be no construction of new stormwater swales, stormwater detention or retention facilities, or ditches on the Restricted Property without prior written approval from FDEP's DWM in addition to any authorizations required by DWRM and the WMD.

3. In the remaining paragraphs, all references to "GRANTOR" and "FDEP" shall also mean and refer to their respective successors and assigns.

4. For the purpose of monitoring the restrictions contained herein, FDEP is hereby granted a right of entry upon and access to the Restricted Property at reasonable times and with reasonable notice to the GRANTOR. Access to the Property is granted by an adjacent public right of way via 114th Avenue or Bryan Dairy Road.

5. It is the intention of GRANTOR that this Declaration shall touch and concern the Restricted Property, run with the land and with the title to the Restricted Property, and shall apply to and be binding upon and inure to the benefit of GRANTOR and FDEP, and to any and all parties hereafter having any right, title or interest in the Restricted Property or any part thereof. The FDEP may enforce the terms and conditions of this Declaration by injunctive relief and other appropriate available legal remedies. Any forbearance on behalf of the FDEP to exercise its right in the event of the failure of the GRANTOR to comply with the provisions of this Declaration shall not be deemed or construed to be a waiver of the FDEP's rights hereunder. This Declaration shall continue in perpetuity, unless otherwise modified in writing by GRANTOR and the FDEP as provided in paragraph 7 hereof. These restrictions may also be enforced in a court of competent jurisdiction by U.S. DOE and/or any party that establishes proper standing. If the GRANTOR does not or will not be able to comply with any or all of the provisions of this Declaration, the GRANTOR shall notify FDEP in writing within three (3) calendar days. Additionally,

GRANTOR shall notify FDEP thirty (30) days prior to any conveyance or sale, granting or transferring the Restricted Property or portion thereof, to any heirs, successors, assigns or grantees, including, without limitation, the conveyance of any security interest in said Restricted Property.

6. In order to ensure the perpetual nature of these restrictions, GRANTOR shall reference these restrictions in any subsequent lease or deed of conveyance within the Restricted Property, including the recording book and page of record of this Declaration. Furthermore, prior to the entry into a landlord-tenant relationship with respect to the Restricted Property, the GRANTOR agrees to notify in writing all proposed tenants of the Restricted Property of the existence and contents of this Declaration of Restrictive Covenant.

7. This Declaration is binding until a release of covenant is executed by the FDEP Secretary (or designee) and is recorded in the public records of the county in which the land is located. To receive prior approval from the FDEP to remove any requirement herein, cleanup target levels established pursuant to Florida Statutes and FDEP rules must have been achieved. This Declaration may be modified in writing only. Any subsequent amendments must be executed by both GRANTOR and the FDEP and be recorded by the real property owner as an amendment hereto.

8. If any provision of this Declaration is held to be invalid by any court of competent jurisdiction, the invalidity of that provision shall not affect the validity of any other provisions of the Declaration. All such other provisions shall continue unimpaired in full force and effect.

9. GRANTOR covenants and represents that on the date of execution of this Declaration that GRANTOR is seized of the Restricted Property in fee simple and has good right to create, establish, and impose this restrictive covenant on the use of the Property. GRANTOR also covenants and warrants that the Restricted Property is free and clear of any and all liens, mortgages, or encumbrances that could impair GRANTOR'S rights to impose the restrictive covenant described in this Declaration or that is superior to the restrictive covenant described in this Declaration.

[DECLARATION EXECUTED ON FOLLOWING PAGES]

IN WITNESS WHEREOF, *{{GRANTOR}}* has executed this instrument, this 10th day of September, 2015

ATTEST: KEN BURKE
Clerk of the Circuit Court
Deputy Clerk Norman D. Jay
Print Name: Norman D. Jay

(OFFICIAL SEAL)

THE TERMS SPECIFIED HEREIN ARE SUBJECT TO APPROVAL IN OPEN SESSION BY THE BOARD OF COUNTY COMMISSIONERS, PINELLAS COUNTY, FLORIDA

GRANTOR
PINELLAS COUNTY INDUSTRIAL DEVELOPMENT AUTHORITY d/b/a PINELLAS COUNTY ECONOMIC DEVELOPMENT AUTHORITY,

by and through its Board of County Commissioners

By: John Morroni
Name: *John Morroni, Chairman*

Address:
Young – Rainey STAR Center
7887 Bryan Dairy Road, Suite 120
Largo, Florida 33777

APPROVED AS TO FORM:
OFFICE OF THE COUNTY ATTORNEY

By: Olen Hunt
~~Managing~~ Assistant County Attorney

Signed, sealed and delivered in the presence of:

Bernie C. Young Date: 9-10-15
Witness
Print Name: Bernie C. Young

Brian J. Date: 9/10/15
Witness
Print Name: BRIAN LOWACK

STATE OF Florida

COUNTY OF Pinellas

The foregoing instrument was acknowledged before me this 10th day of September 2015, by John Morroni.
Personally Known ✓ OR Produced Identification _____.
Type of Identification Produced _____.

Bernie C. Young
Signature of Notary Public

BERNIE C. YOUNG
MY COMMISSION # FF 124388
EXPIRES: May 19, 2018
Bonded Thru Budget Notary Services

Approved as to form by:

Toni Sturtevant, Asst. General Counsel
Office of General Counsel

FLORIDA DEPARTMENT OF
ENVIRONTMENTAL
PROTECTION

By:

JOHN COATES,
Assistant Division Director

Dept. of Environmental Protection
Division of Waste Management
2600 Blairstone Road
Tallahassee, FL 32399-2400

Signed, sealed, and delivered in
in the presence of:

Witness Signature

WAYNE S. KIGER
Printed Name

9/16/15
Date

Witness Signature

Daniel S. Shores
Printed Name

9/16/2015
Date

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 16TH day of SEPTEMBER, 2015, by JOHN COATES, who is personally known to me.

JUDITH PENNINGTON
MY COMMISSION # FF 215917
EXPIRES: March 31, 2019
Bonded Thru Budget Notary Services

Notary Public, State of Florida at Large

EXHIBIT A
LEGAL DESCRIPTION AND ILLUSTRATION OF RESTRICTED PROPERTY

SCHEDULE A

DESCRIPTION:

A portion of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida being more particularly described as follows :

Commence at the East 1/4 corner of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida; thence N 00°17'23" W a distance of 2004.71 feet along the East line of Northeast 1/4 of said Section 13 to a point on the North line of the South 1/2 of the SW 1/4 of the NE 1/4 of the NE 1/4 of said Section 13; thence N 89°10'14" W a distance of 342.03 feet along the North line of said South 1/2 of the SW 1/4 of the NE 1/4 of the NE 1/4 to the Point of Beginning; thence leaving said North line S 00°18'06" E a distance of 571.35 feet; thence N 89°52'00" W a distance of 388.14 feet; thence N 00°00'00" E a distance of 576.02 feet to a point on aforesaid North line; thence S 89°10'14" E a distance of 385.18 feet along said North line to the Point of Beginning.

Containing: 5.09 acres, more of less.

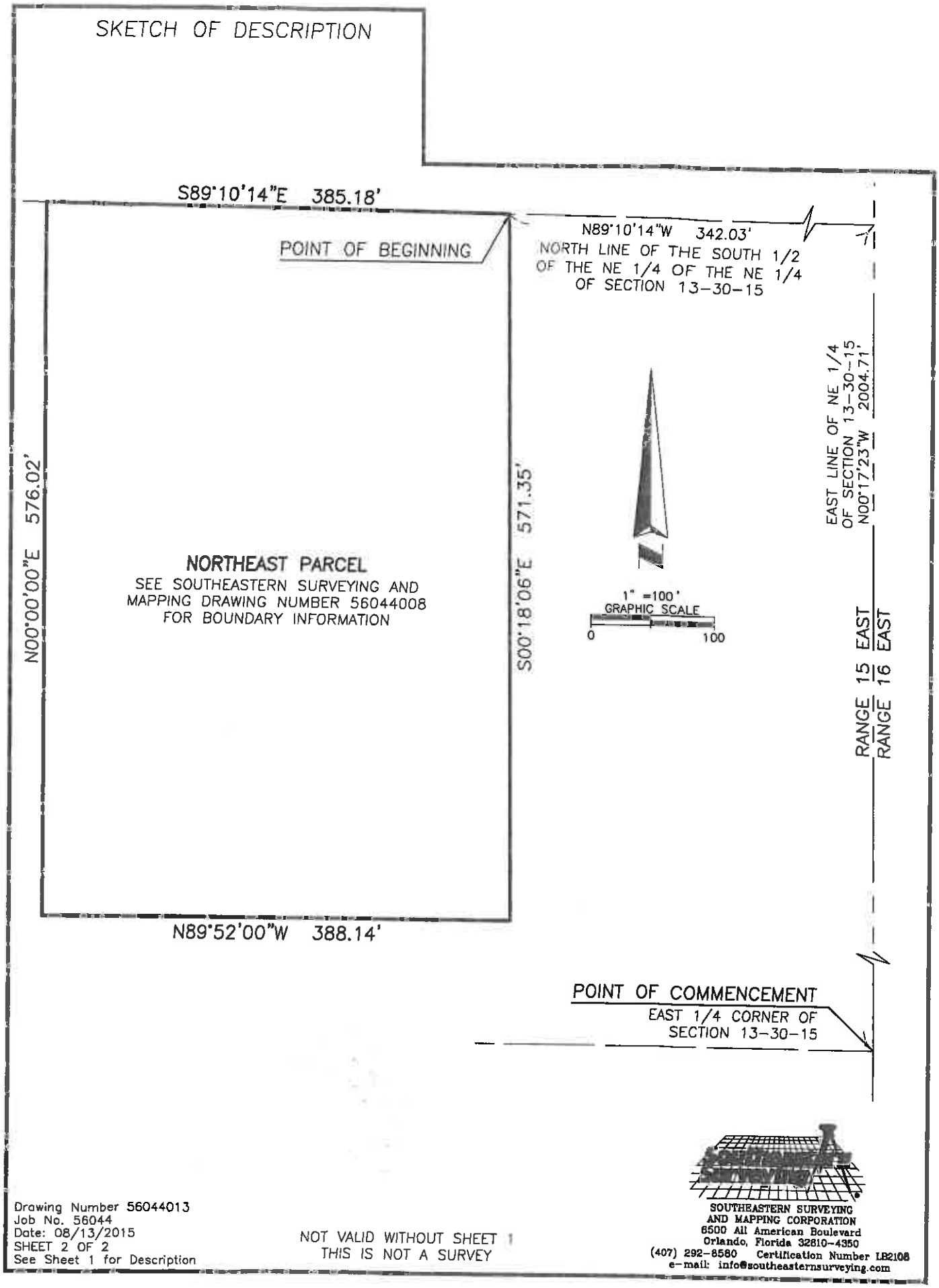
SURVEYOR'S REPORT:

1. Bearings shown hereon are based on the East line of Northeast 1/4 of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida, being North 00°17'23" West.

2. I hereby certify that the "Sketch of Description" of the above described property is true and correct to the best of my knowledge and belief as recently drawn under my direction and that it meets the Standards of Practice for Land Surveying Chapter 5J-17.050-.052 requirements.

DESCRIPTION	Date: August 13, 2015	56044013
FOR	Job Number: 56044 / Scale: 1" = 100'	SOUTHEASTERN SURVEYING AND MAPPING CORPORATION 10770 North 46th Street, Suite C-300 Tampa, Florida 33617 (813) 898-2711 Certification Number LB2108 E-mail: www.southeasternsurveying.com
Stoller Newport News Nuclear (SN3)	Chapter 5J-17.050-.052, Florida Administrative Code requires that a legal description drawing bear the notation that **THIS IS NOT A SURVEY.**	CHARLES M. ARNETT Registered Land Surveyor Number 6884
	SHEET 1 OF 2 SEE SHEET 2 FOR SKETCH	

SKETCH OF DESCRIPTION



Drawing Number 56044013
Job No. 56044
Date: 08/13/2015
SHEET 2 OF 2
See Sheet 1 for Description

NOT VALID WITHOUT SHEET 1
THIS IS NOT A SURVEY

SOUTHEASTERN SURVEYING
AND MAPPING CORPORATION
6500 All American Boulevard
Orlando, Florida 32810-4350
(407) 292-8580 Certification Number LB2108
e-mail: info@southeasternsurveying.com

I, KENNETH P. BURKE, Clerk of the Circuit Court and Clerk Ex-Officio, Board of County Commissioners, do hereby certify that the above and foregoing is a true and correct copy of the original as it appears in the official files of the Board of County Commissioners of Pinellas County, Florida. Witness my hand and seal of said County FL this 15th day of September A.D. 20[illegible]

KENNETH P. BURKE, Clerk of the Circuit Court Ex-Officio Clerk of the Board of County Commissioners Pinellas County, Florida.

By _____
Deputy Clerk

SEAL

SRCO WWNA

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Jonathan P. Steverson
Secretary

July 26, 2016

Scott R. Surovchak
Office of Legacy Management
11025 Dover Street, Suite 1000
Westminster, CO 80021

Subject: **Conditional Site Rehabilitation Completion Order (SRCO) for the Wastewater Neutralization Area**
Young - Rainey STAR Center
Former Pinellas Department of Energy Site
Bryan Dairy Road
Largo, Florida 33777, Pinellas County
FL6 890 090 008
Corrective Action Permit No. 0034170/HH/004

Dear Mr. Surovchak:

The DoD & Brownfields Partnerships Section has reviewed the No Further Action with Controls Proposal for the Young-Rainey STAR Center (formerly the U.S. Department of Energy Pinellas Plant facility) for the Wastewater Neutralization Area (WWNA), dated March 2007, located at 7887 Bryan Dairy Road, Largo, Florida. This report was prepared by the U.S Department of Energy under the terms of the Hazardous and Solid Waste Amendment (HSWA) permit. Maps showing the location of the Young-Rainey Star Center and the location of the "contaminated site" (i.e., contaminant plume) for which this Order is being issued are attached as Exhibits 1 and 2 and are incorporated by reference herein.

This conditional Order is being issued for a portion of the STAR center referred to as the U.S. Department of Energy WWNA Solid Waste Management Unit (SWMU) PIN 18 and currently operates as the Young-Rainey STAR Center Industrial Wastewater Neutralization Facility (IWNF). Discharges at his facility were reported to the USEPA on April 7, 1993.

Arsenic is the primary contaminant of concern. The source of the arsenic contamination at the WWNA is unknown. The distribution of arsenic in soil and groundwater was extensively investigated resulting in a 1999 Corrective Measure to remove areas of high arsenic soil contamination and treatment of dissolved arsenic using groundwater extraction wells. Reduction in the extent and concentrations of the arsenic plume, likely as a result of groundwater extraction, was documented and the groundwater recovery well operations were terminated in December 20, 2005 with Department approval. A plume stability evaluation, included in Exhibit 1, demonstrates the boundary of the arsenic plume will remain stable or shrink over the next 500 years and that exceedances of the arsenic MCL will not occur beyond the area covered by the institutional control (Exhibit 2).

The Conditional NFA Proposal for the WWNA is supported by earlier submittals, prepared pursuant to the HSWA permit, which can be found in the Department's document repository at: http://depedms.dep.state.fl.us/Oculus/servlet/login.

Based on the documentation submitted with the Conditional NFA Proposal and other submitted documents, the Department has reasonable assurance that U.S Department of Energy has met the criteria in Chapter 62-780, F.A.C., including the commitments set forth in the technical submittals with respect to the recordation of institutional controls. The technical submittals indicate that acceptable Alternative Cleanup Target Levels (ACTL's) have been established for groundwater contaminants remaining at the above-referenced contaminated site, in conjunction with appropriate institutional controls. Therefore, you have satisfied the site rehabilitation requirements for the above-referenced contaminated site and are released from any further obligation to conduct site rehabilitation at the contaminated site, except as set forth below. See attached tables (Exhibit 1), incorporated by reference herein, which includes information regarding the contaminants, affected media, applicable cleanup target levels, and the ACTL's established for the contaminated site that is the subject of this Order.

A Declaration of Restrictive Covenant was recorded by the Pinellas County Industrial Development Authority on September 16, 2015, in Official Record Book 18926, Pages 870-879, Public Records of Pinellas County, Florida, and is attached and incorporated by reference as Exhibit 2.

Failure to meet the following requirements will result in the revocation of this Order:

(a) You are required to properly plug and abandon all monitoring wells, injection wells, extraction wells, and sparge wells unless these wells are otherwise required for compliance with a local ordinance or another cleanup within 60 days of receipt of this Order. The monitoring wells must be plugged and abandoned in accordance with the requirements of Rule 62-532.500(5), F.A.C. A Well Plugging Report shall be submitted within 30 days of well plugging;

(b) (b) Any current or future real property owner of the above-referenced contaminated site must comply with the provisions contained within the Declaration of Restrictive Covenant (attached) recorded prior to the execution of this Order;

(c) If the current or future real property owner of the above-referenced contaminated site proposes to remove the institutional controls, the real property owner shall obtain prior written approval from the Department. The removal of the controls shall be accompanied by the immediate resumption of site rehabilitation or implementation of other approved controls, unless it is demonstrated to the Department that the criteria of subsection 62-780.680(1), F.A.C., are met.

Further, in accordance with Chapter 376.30701(4), Florida Statutes (F.S.), upon completion of site rehabilitation, additional site rehabilitation is not required unless it is demonstrated that:

(a) Fraud was committed in demonstrating site conditions or completion of site rehabilitation;

(b) New information confirms the existence of an area of previously unknown contamination which exceeds the site-specific rehabilitation levels established in accordance with Section 376.30701(2),F.S., or which otherwise poses the threat of real and substantial harm to public health, safety, or the environment;

(c) The level of risk is increased beyond the acceptable risk established under Section 376.30701(2), F.S., due to substantial changes in exposure conditions, such as a change in land use from nonresidential to residential use. Any person who changes the land use of the site, thereby causing the level of risk to increase beyond the acceptable risk level, may be required by the department to undertake additional remediation measures to ensure that human health, public safety, and the environment are protected consistent with Section 376.30701, F.S.; or

(d) A new discharge of pollutants or hazardous substances occurs at the site subsequent to the issuance of this Order.

Legal Issues

The Department's Order shall become final unless a timely petition for an administrative hearing is filed under sections 120.569 and 120.57, F.S., within **21** days of receipt of this Order. The procedures for petitioning for a hearing are set forth below.

Persons affected by this Order have the following options:

A. If you choose to accept the Department's decision regarding this Conditional SRCO, you do not have to do anything. This Order is final and effective on the date filed with the Clerk of the Department, which is indicated on the last page of this Order.

B. If you choose to challenge the decision, you may do the following:

1. File a request for an extension of time to file a petition for hearing with the Department's Agency Clerk in the Office of General Counsel within **21** days of receipt of this Order. Such a request should be made if you wish to meet with the Department in an attempt to informally resolve any disputes without first filing a petition for hearing; or

2. File a petition for administrative hearing with the Department's Agency Clerk in the Office of General Counsel within **21** days of receipt of this Order.

Please be advised that mediation of this decision pursuant to section 120.573, F.S., is not available.

How to Request an Extension of Time to File a Petition for Hearing

For good cause shown, pursuant to Rule 62-110.106(4), F.A.C., the Department may grant a request for an extension of time to file a petition for hearing. Such a request must be filed (received) by the Agency Clerk in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida, 32399-3000, within **21** days of receipt of this Order. Petitioner, if different from Scott R. Surovchak Office of Legacy Management, shall mail a copy of the request to the Scott R. Surovchak Office of Legacy Management at the time of filing. Timely filing a request for an extension of time tolls the time period within which a petition for administrative hearing must be made.

How to File a Petition for Administrative Hearing

A person whose substantial interests are affected by this Order may petition for an administrative hearing under sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) by the Agency Clerk in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, MS 35, Tallahassee, Florida, 32399-3000, within **21** days of receipt of this Order. Petitioner, if different from the Scott R. Surovchak Office of Legacy Management, shall mail a copy of the petition to the Scott R. Surovchak Office of Legacy Management, at the time of filing. Failure to file a petition within this time period shall waive the right of anyone who may request an administrative hearing under sections 120.569 and 120.57, F.S.

Pursuant to subsection 120.569(2), F.S., and Rule 28-106.201, F.A.C., a petition for administrative hearing shall contain the following information:

a) The name, address, and telephone number of each petitioner; the name, address, and telephone number of the petitioner's representative, if any; the site owner's name and address, if different from the petitioner; the DEP facility number; and the name and address of the facility;
b) A statement of when and how each petitioner received notice of the Department's action or proposed action;
c) An explanation of how each petitioner's substantial interests are or will be affected by the Department's action or proposed action;
d) A statement of the disputed issues of material fact, or a statement that there are no disputed facts;
e) A statement of the ultimate facts alleged, including a statement of the specific facts the petitioner contends warrant reversal or modification of the Department's action or proposed action;
f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the Department's action or proposed action; and
g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the Department to take with respect to the Department's action or proposed action.

This Order is final and effective on the date filed with the Clerk of the Department, which is indicated on the last page of this Order. Timely filing a petition for administrative hearing postpones the date this Order takes effect until the Department issues either a final order pursuant to an administrative hearing or an Order Responding to Supplemental Information provided to the Department pursuant to meetings with the Department.

Judicial Review

Any party to this Order has the right to seek judicial review of it under section 120.68, F.S., by filing a notice of appeal under rule 9.110 of the Florida Rules of Appellate Procedure with the Agency Clerk of the Department in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within thirty days after this order is filed with the clerk of the Department (see below).

Questions

Any questions regarding the Department's review of your NFA Proposal should be directed to John R. Armstrong at 2600 Blair Stone Road, Mail Station 4535, Tallahassee, Florida 32399-2400, telephone number (850) 245-8981, or e-mail at John.Armstrong@dep.state.fl.us. Questions regarding legal issues should be referred to the Department's Office of General

Counsel at (850)245-2242. Contact with any of the above does not constitute a petition for administrative hearing or request for an extension of time to file a petition for administrative hearing.

Sincerely,

Peter Cornais, Program Administrator
Waste Cleanup Program
Division of Waste Management

PC/jra

Enclosures (Exhibits 1, and 2)

cc: FILE
Bryan Baker, FDEP, Tallahassee

FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to §120.52
Florida Statutes, with the designated
Department Clerk, receipt of which is
hereby acknowledged.

07/27/2016

Clerk (or Deputy Clerk) — Date

DOE–LM/1419–2007

Pinellas Environmental Restoration Project

Young Rainey STAR Center Wastewater Neutralization Area No Further Action With Controls Proposal

March 2007

U.S. Department of Energy

Office of Legacy Management

Work Performed Under DOE Contract No. DE–AC01–02GJ79491
for the U.S. Department of Energy Office of Legacy Management.
Approved for public release; distribution is unlimited.

DOE−LM/1419−2007

Pinellas Environmental Restoration Project

Young – Rainey STAR Center

Wastewater Neutralization Area
No Further Action With Controls Proposal

March 2007

Work Performed by S.M. Stoller Corporation under DOE Contract No. DE–AC01–02GJ79491
for the U.S. Department of Energy Office of Legacy Management, Grand Junction, Colorado

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Acronyms and Abbreviations

bls	below land surface
CMIP	Corrective Measures Implementation Plan
COPCs	contaminants of potential concern
CTLs	cleanup target levels
DOE	U.S. Department of Energy
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
ft	feet
Hawthorn	Hawthorn Formation
ICs	institutional controls
IWNF	industrial wastewater neutralization facility
K_d	soil/water distribution coefficient
MCLs	maximum contaminant levels
µg/L	micrograms per liter
RFI	RCRA Facility Investigation
RBCA	Risk-Based Corrective Action
RMO	Risk Management Option
STAR	Science, Technology, and Research
VC	vinyl chloride
WWNA	Wastewater Neutralization Area

End of current text

1.0 Introduction

The Young - Rainey Science, Technology, and Research (STAR) Center is a former U.S. Department of Energy (DOE) facility located in Largo, Florida. DOE has been conducting corrective action at the Wastewater Neutralization Area (WWNA) in accordance with terms of the Hazardous and Solid Waste Amendment permit issued for the site, in which the WWNA is identified as a solid waste management unit (FDEP 2002). The Florida Department of Environmental Protection (FDEP) is the agency responsible for overseeing site cleanup. The WWNA is located to the west of Building 100 (Figure 1). A timeline of activities conducted for the WWNA is illustrated in Figure 2.

1.1 Purpose

The purpose of this document is to briefly summarize remediation activities conducted at the WWNA, to describe current site conditions, to evaluate the stability of the contaminant plume, and to recommend a final closure option for the site of "No Further Action with Controls." This document therefore serves the purpose of a Site Rehabilitation Completion Report and, if approved by FDEP, will lead to a Site Rehabilitation Completion Order.

Corrective action at the site has been conducted in accordance with the Corrective Measures Implementation Plan (CMIP; DOE 1997a), the CMIP Addendum (DOE 2000a), and the Statement of Basis (DOE 2000b) previously prepared by DOE and approved by FDEP. In the time since these documents were prepared, several important activities have occurred that have bearing on remediation and closure of the WWNA. These activities include the following:

- Site-specific information, such as water quality data, has been collected and assessed over time (e.g., DOE 2003 and annual monitoring reports).
- A rule establishing default cleanup target levels (CTLs) was promulgated by FDEP (62-677, Florida Administrative Code [F.A.C.]) and allows CTLs less stringent than maximum contaminant levels (MCLs) in certain circumstances.
- The regulatory setting also has changed with the recent promulgation by FDEP of Global Risk-Based Corrective Action (RBCA) rules. These rules allow the application of engineered or institutional controls (ICs) as an alternative to site cleanup for unrestricted use.
- ICs guidance has been developed by FDEP (FDEP 2004) and an IC registry established.
- FDEP approved shutdown of the active ground water recovery system at the WWNA and the beginning of closure monitoring (DOE 2006).

Because of these changes, some of the assumptions previously guiding site cleanup (e.g., those in DOE 2000a and 2000b) are no longer valid. Therefore, this closure document has been prepared to reflect the current regulatory framework.

1.2 Site Background

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 (Figure 3). The IWNF refers to the physical treatment facility that currently receives the STAR Center's sanitary and industrial wastewater and has been in operation since 1957.

A Corrective Measures Study Report and CMIP were completed in 1997 for this solid waste management unit because arsenic, trichloroethene, and vinyl chloride (VC) 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 recovery well in the WWNA would withdraw surficial aquifer ground water directly from the arsenic plume and thereby reduce the contaminant mass and prevent contaminant migration. The CMIP recommended that recovered water from the additional well be discharged directly to the IWNF.

FDEP response to the Corrective Measures Study Report/CMIP suggested that a treatment technology, air sparging, was eliminated too early. DOE then proposed a multiphase 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. In addition, the U.S. Environmental Protection Agency Region IV also approved the interim remedial action and requested an addendum or modification to the CMIP that addressed DOE's final selection of the remediation technology and a timeline for the completion of these activities.

The WWNA/Building 200 Area CMIP Addendum was completed in January 2000 (DOE 2000a). Based on data collected through November 1999 that showed arsenic present only in the shallow portion of the surficial aquifer, proposed modifications to ground water recovery consisted of the installation of two new recovery wells screened at shallow intervals and the abandonment of the original recovery well that was screened over the entire surficial aquifer. In the CMIP Addendum, the air sparging technology was re-evaluated as requested by FDEP. Concerns regarding longevity of an air sparging remedy and the large number of underground obstructions that would interfere with installation and operation of an air sparging system led to the recommendation that ground water extraction continue instead. Two new recovery wells were installed in September 2000. Recovery well operation is described in Section 2.3.

As documented in the CMIP Addendum for the site (DOE 2000a), soil cleanup conducted in 1999 was based on the presence of elevated levels of arsenic. A statistical analysis of the soil data indicated that soil excavation and removal activities resulted in compliance with FDEP's 3.7 milligrams per kilogram Industrial Cleanup Target Level for arsenic in soils. FDEP approved the soil interim action cleanup, and the subsequent CMIP Addendum (DOE 2000a) focused strictly on ground water remediation.

DOE issued a Statement of Basis (DOE 2000b) in late September 2000. That document provides a summary of environmental investigations and proposed cleanup alternatives for the WWNA/Building 200 Area.

2.0 Current Conditions

This section describes site hydrogeology and geochemistry (2.1), contaminants of potential concern (COPCs) (2.2), the nature and extent of contamination (2.3), plume stability evaluation (2.4), the site conceptual model (2.5), and provides a qualitative risk assessment (2.6).

2.1 Site Hydrogeology and Geochemistry

2.1.1 Hydrogeology

The STAR Center is located on the western coastal plain of the Florida Peninsula. The Florida Peninsula is a broad, partially submerged shelf of the Gulf of Mexico and is composed of alternating layers of sands and gravels, and carbonate deposits such as limestone. The uppermost (i.e., most recent) deposits are known as the surficial aquifer and consist of silty to shelly sands (Figure 4). At the WWNA, the surficial aquifer has an average thickness of about 35 feet (ft). Depth to water ranges from about 1 to 5 ft below land surface (bls), depending on the season. No municipal water supplies are obtained from the surficial aquifer due to the poor yield and poor quality of the ground water.

Underlying the surficial aquifer is the Hawthorn Formation (Hawthorn). The Hawthorn is an aquitard that separates the surficial aquifer from the underlying upper Floridan aquifer, which is the primary source of drinking water for Pinellas County. The Hawthorn is composed of sandy clay with some carbonate lenses and forms a widespread confining layer between the surficial aquifer and the Floridan aquifer. The Hawthorn is about 70 ft thick in the area of the STAR Center. Tests to measure the aquifer properties were performed as part of the sitewide RCRA Facility Investigation (RFI) (DOE 1991). The hydraulic conductivity of the Hawthorn is several orders of magnitude lower than that of either the surficial or Floridan aquifers. Therefore, in the vicinity of the STAR Center, the Hawthorn is thick and impermeable enough that it severely restricts vertical ground water flow, making it highly unlikely that contamination will ever reach the Floridan aquifer. The RFI concluded that surficial aquifer contamination is unlikely to affect the underlying Floridan aquifer (DOE 1991), and the three monitoring wells at the STAR Center that are screened in the upper Floridan aquifer have shown no contamination.

Five man-made ponds exist on the property for the purpose of collecting storm water runoff from parking lots and buildings (Figure 1). The two most recently excavated ponds (Southwest Pond and Pond 5; Figure 3) are immediately south and west of the WWNA and are hydraulically connected to the shallow portion of the surficial aquifer.

The surficial aquifer at the STAR Center, including the WWNA, acts as a 2-layer hydraulic system in which the shallow and deep portions of the surficial aquifer are separated by a discontinuous, often organic-rich, silty sand layer. This layer, where present at the WWNA and Building 100, is generally encountered at about 20 ft bls and is about 1−2 ft thick. Now that ground water extraction has ended at the WWNA and the Building 100 Area, any ground water movement between the shallow and deep portions of the surficial aquifer is almost certainly controlled by the amount of recharge from rainfall.

Ground water flow at the WWNA is shown for the shallow and deeper portions of the surficial aquifer for March 2006 (dry season) on Figure 5 and Figure 6, and for September 2006 (wet

season) on Figure 7 and Figure 8. In the shallow surficial aquifer, ground water flow is toward the west, south, and east from a high that was observed around and north of former recovery wells RW02, RW03, and RW0501. Calculations using Darcy's Law and approximations of 1 ft/day for hydraulic conductivity and 0.3 for effective porosity indicate that the ground water flow velocity from the WWNA toward the southeast was about 2 ft/year in March 2006 and about 5 ft/year in September 2006. The increased hydraulic gradient in September was due to increased recharge from rainfall.

The general flow patterns observed throughout 2006 changed somewhat from previously observed patterns due to the completion of Pond 5 in early 2006. Pond 5 acts as a discharge point for the surficial aquifer, and therefore a more westerly component of flow is now observed from the WWNA. It appears that Pond 5 would not recharge the surficial aquifer ground water because an overflow structure limits the maximum water level in the pond. In the deeper surficial aquifer, the flow patterns remained more consistent with previously observed patterns, with flow primarily toward the southeast. In March 2006, the flow pattern was affected by ground water withdrawals from Building 100 Area recovery well PIN12−RW02 (Figure 6). With concurrence from FDEP, this recovery well and an adjacent Building 100 Area recovery well (PIN12−RW01) were turned off in August 2006.

2.1.2 Geochemistry

Geochemical parameters measured in the surficial aquifer at the WWNA during the year of closure monitoring are summarized in Table 1. Dissolved oxygen and oxidation-reduction potential values were low, indicating that reducing conditions are present throughout the surficial aquifer. Measurements of pH indicate neutral conditions. Specific conductance values are moderate, indicating a moderate concentration of dissolved ions. Turbidity is relatively low, indicating a low concentration of particles suspended in the ground water. The site-specific soil/water distribution coefficient (K_d) for arsenic is discussed in Appendix B.

Table 1. Summary of Geochemical Data From the October 2005, March 2006, and September 2006 Sampling Events for All Wells at the WWNA

Parameter	Minimum Value	Maximum Value	Average Value
Dissolved Oxygen (milligrams/liter)	0.32	1.3	0.67
Oxidation Reduction Potential (millivolts)	–167	90	–65
pH (standard units)	6.48	7.34	6.84
Specific Conductance (micromhos/centimeter)	178	1,530	616
Temperature (degrees Celsius)	22.5	29.6	26.3
Turbidity (nephelometric turbidity units)	0.8	92	16

2.2 Contaminants of Potential Concern

As discussed in Section 1.2, FDEP approved the interim action cleanup of soils at the WWNA. This approval removed soil as a medium of concern, and therefore ground water is the only medium discussed here.

During the RFI, ground water contamination was detected in the surficial aquifer (DOE 1996). At the time, concentrations of contaminants in ground water were compared to federal and state drinking water standards. Arsenic, trichloroethene, and VC were detected at concentrations exceeding standards. Since that time, trichloroethene concentrations dropped below the FDEP MCL of 3 micrograms per liter (μg/L), so trichloroethene was eliminated as a COPC during a comprehensive review and evaluation of monitoring data for the STAR Center (DOE 2003). Because VC levels have exceeded the 1 μg/L FDEP MCL, VC was retained as a COPC after the comprehensive screening process (DOE 2003). VC data since 2003 for all monitoring wells at the WWNA are shown in Table A−1 in Appendix A.

The primary COPC in WWNA ground water is arsenic, which has been persistently elevated in several wells above the FDEP MCL of 10 μg/L. Elevated arsenic concentrations prompted the soil removal interim action to address source control. The subsequent ground water extraction system was installed to optimize recovery of arsenic in the ground water.

While most of the previous documents for the WWNA and other solid waste management units at the Pinellas site have compared ground water contaminant concentrations to drinking water standards (i.e., MCLs), those standards are not the applicable default CTLs for the purposes of evaluating site remediation under RBCA. Based on a comprehensive review of background data for the site (DOE 2003), it was determined that the shallow ground water in the site vicinity is naturally elevated in aluminum and iron at levels far exceeding State of Florida Secondary Drinking Water Standards (Chapter 62-550, F.A.C.). Specifically, the average background concentration of 1.1 milligrams/liter for aluminum exceeds the 0.2 milligrams/liter secondary standard, and the average background concentration for iron of 9.3 milligrams/liter exceeds the 0.3 milligrams/liter secondary standard. The ambient shallow ground water in the area is therefore designated as “poor quality” as defined in 62-780.200 (35), F.A.C.

Thus, the applicable ground water CTLs for the WWNA are those for ground water of “low yield/poor quality” provided in Table 1 of Chapter 62-777, F.A.C. For VC, this is 10 times the drinking water standard, or 10 μg/L. Therefore, VC can be eliminated from further consideration as a COPC because it does not exceed 10 μg/L. For arsenic, the applicable CTL is also 10 times the drinking water standard, or 100 μg/L. Monitoring results indicate exceedances of this CTL at two wells at the WWNA during recent sampling events (Figure 9; Table A−2). Therefore, arsenic is retained as the sole COPC.

2.3 Nature and Extent of Contamination

The source of the arsenic measured at the WWNA is unknown (DOE 1993). Arsenic use has been documented at the Pinellas Plant (now the STAR Center), and therefore it is possible that the arsenic originated from past waste disposal practices (DOE 1997b).

Remediation at the WWNA began in August 1997 with the startup of the ground water recovery system. This system consisted of recovery well PIN18−RW01 and associated piping; extracted ground water was pumped directly to the IWNF without treatment. Recovery well RW01 was screened over the entire surficial aquifer and operated until December 1, 1999 (DOE 2001). Subsequently, it was determined that arsenic contamination existed mainly in the shallow surficial aquifer, so two new shallow recovery wells (PIN18−RW02 and −RW03) were installed in September 2000, and ground water recovery began in February 2001, also with discharge

directly to the IWNF. Excavation of arsenic-contaminated soils was conducted in September 1999, as discussed in Section 2.2. Monitoring well PIN18−0501 was converted to a recovery well (renamed PIN18−RW0501) that started operation in June 2003, also discharging directly to the IWNF. Operation of the three recovery wells was terminated on December 20, 2005, when FDEP allowed DOE to discontinue ground water recovery at the WWNA.

Concurrently with cessation of remediation, FDEP allowed DOE to begin a 1-year period of closure monitoring, retroactive to the October 2005 sampling event (DOE 2006). The second closure monitoring event occurred in March 2006, and the year of closure monitoring concluded with the September 2006 monitoring event. Only the March and September 2006 events were conducted under nonpumping conditions. The data from wells in the plume area for these three sampling events (Table 2), in combination with historical data for all WWNA monitoring wells (Table A−2), are used here to evaluate the stability of the arsenic plume. In addition, ground water modeling was conducted to evaluate future plume stability (Section 2.3.3). Arsenic concentrations measured in recovery wells while the wells were in operation are not used in the evaluation because those data are not representative of actual conditions in the aquifer; results from the wells under nonpumping conditions are included in the evaluation and are shown in the tables.

Table 2. Arsenic Concentrations During Closure Monitoring (µg/L)

Well	October 2005	March 2006	September 2006
0500	52.3	61.3	76.5
0501 / RW0501	RW	145	150
0502	33.7	40.3	116
0520	NS	<2.9	<2.9
0521	<2.9	3.5	3.7
0522	13.7	6.8	7.9
0523	<2.9	<2.9	<2.9
0524	8.9	38.4	35.9
0525	118	32.3	72.8
RW02	RW	41.5	76.4
RW03	RW	11.4	36.1

NS = not sampled
RW = operating as recovery well; data not shown.

2.3.1 Time-Concentration Trends

Time-concentration plots showing all historical arsenic data for monitoring wells in the plume area at the WWNA are included as Figure A−1 through Figure A−4 in Appendix A. This appendix also includes a table listing all historical arsenic data for all monitoring wells (Table A−2), as well as a table of well completion information, such as screened interval (Table A−3).

The three recovery wells that were operating when recovery well operation was discontinued in December 2005 have since been functioning as monitoring wells. Recovery well RW0501 originally was a monitoring well (0501), but was converted to a recovery well in 2003, as

mentioned previously. COPC concentrations measured in the recovery wells during active ground water pumping are not representative of actual concentrations in the aquifer due to potential dilution and other effects, so those data are not presented on the time-concentration plots and are not discussed.

Monitoring wells 0500 and 0502 (both screened at 11−16 ft bls) have shown the highest historical arsenic concentrations measured at the WWNA (Figure A−1; Table A−2). However, several years of ground water recovery have resulted in significant concentration decreases, and arsenic concentrations in these wells remained consistent within the range of about 10 to 100 μg/L since early 2002. During the year of closure monitoring, well 0500 showed a slight increase from 52 to 76 μg/L, while well 0502 showed consistent concentrations of 34 and 40 μg/L during the first two events but increased to 116 μg/L for the last event in September 2006.

Monitoring well 0501 (screened at 11−16 ft bls) showed a relatively stable arsenic concentration trend at about 100 μg/L from 1991 to 1999, but an increasing trend was evident from late 1999 to mid-2002. Subsequently, the well showed a decreasing trend for the next year into mid-2003, when it was converted to a recovery well (Figure A−2; Table A−2). The increase in 1999 to 2002 may have been related to the soil removal event in 1999. After operation as a recovery well was terminated in December 2005, the two subsequent sampling events have shown a consistent concentration of about 150 μg/L.

Adjacent monitoring wells 0521 (screened at 20−30 ft bls) and 0522 (screened at 5−15 ft bls) showed relatively stable arsenic concentration trends until recovery well RW01 started operation in August 1997 (Figure A−3; Table A−2). These wells showed more variability in arsenic concentrations while RW01 was operating. However, once RW02 and RW03 started operation in February 2001, well 0521 showed consistent low concentrations (<20 μg/L, with many values below the detection limit) and well 0522 showed a consistent decrease with concentrations leveling off at about 10 μg/L by April 2004. During the year of closure monitoring, arsenic concentrations in these two wells remained very consistent, with 0521 at <4 μg/L and 0522 at <14 μg/L. Monitoring well 0520, screened at 32−42 ft bls, is co-located with wells 0521 and 0522 and has never contained arsenic >10 μg/L.

Monitoring wells 0524 and 0525 are co-located at the eastern edge of the arsenic plume; well 0524 is screened at 20−30 ft bls and well 0525 is screened at 5−15 ft bls. Well 0524 has shown a relatively consistent arsenic concentration of <50 μg/L over its history, with a few intermittent, anomalous spikes in concentration (Figure A−4). Well 0525 has shown considerable variability in arsenic concentration prior to and during operation of RW01. However, once shallow recovery wells RW02 and RW03 started operation, the arsenic concentration in this shallow well became more consistent, although slight increasing and decreasing trends are evident. During the year of closure monitoring, well 0524 showed a slight increase from 9 to 36 μg/L, while well 0525 showed a slight decrease from 118 to 73 μg/L. Monitoring well 0523 is co-located with wells 0524 and 0525, is screened at 32−42 ft bls, and has never contained arsenic >10 μg/L.

Former recovery wells RW02 and RW03 have been sampled twice since ground water recovery was terminated. The arsenic concentration in each well remained well below 100 μg/L, although

both wells show slight increasing arsenic concentration trends from March to September 2006 (Table 2).

Time-concentration plots are not shown for the remaining monitoring wells at the WWNA because these wells have shown very few arsenic detections. However, arsenic data from these wells are listed in Table A−2. This table also lists arsenic data from eight wells that were abandoned in August 2006 (well locations shown on Figure 3). These wells have been sampled since 1993, and most show no arsenic detections, clearly demonstrating that:

- The historical dissolved arsenic plume has been confined to the small area in the immediate vicinity of the former arsenic-contaminated soils,
- The arsenic plume remains confined to a small area (<1/4 acre), and
- Arsenic transport in ground water has been minimal.

In summary, the monitoring wells located within the arsenic plume all have shown overall decreasing concentration trends, most likely due to ground water pumping operations. The arsenic concentration in all these wells has remained fairly stable over the last few years. In the year since ground water recovery was terminated, arsenic concentrations have remained relatively stable, with only two wells (0502 and RW0501) showing arsenic concentrations exceeding the 100 μg/L CTL in the most recent sampling event in September 2006. The area of the arsenic plume that exceeds the 100 μg/L CTL is <1/4 acre (Figure 9).

2.3.2 Depth of Contamination

Figure 10 is a cross-section of the WWNA showing September 2006 arsenic concentrations with depth. The highest arsenic concentrations occurred in wells with the shallowest screened intervals (11−16 ft bls and 5−15 ft bls). Wells screened at 20−30 ft bls (0521 and 0524) showed arsenic concentrations at levels about half of those in the adjacent shallow wells. Wells screened at the bottom of the surficial aquifer (0520 and 0523) did not contain arsenic at detectable levels.

In summary, the highest arsenic concentrations are in the upper 16 ft of the surficial aquifer, above the division between the deep and shallow surficial aquifer layers. Arsenic concentrations decrease with depth to nondetect levels in the lower portion of the surficial aquifer.

2.3.3 Ground Water Modeling

A numerical model accounting for ground water flow and arsenic transport at the WWNA was developed for the purpose of assessing the future disposition of the arsenic plume. The model contained two layers, with the upper layer representing the shallow portion of the surficial aquifer and the lower layer representing the deep portion of the surficial aquifer. Ground water flow was assumed to be steady-state and was simulated using the code MODFLOW, as developed by the U.S. Geological Survey (McDonald and Harbaugh 1988). Arsenic transport was simulated using the code MT3DMS (Zheng 1990).

A map of the area encompassed by the model is presented in Figure 11. Because water elevation data collected at monitoring wells screened in the surficial aquifer's shallow zone at the WWNA since construction of Pond 5 (Figure 5 and Figure 7) indicate that the pond tends to act as site of ground water discharge, the model's west boundary was placed only about 80 ft west of the

pond's east edge. Selection of this west boundary was also appropriate for the aquifer's deep zone as water levels in this zone (Figure 6 and Figure 8) show deeper ground water migrating mostly to the southeast. To account for arsenic migration toward the south and southeast in both zones of the surficial aquifer, the southernmost boundary of the model was placed along the southern extent of the Southwest Pond and the eastern model boundary was placed about 350 ft east of the west end of Building 100. Though limited arsenic mobility due to sorption on aquifer sediments is expected to keep arsenic far from either of these boundaries, the large model area lying between the boundaries and the existing area of arsenic contamination made it possible to simulate southward and eastward arsenic transport in the unlikely event that arsenic transport became less retarded than is currently the case. Due to a lack of information regarding ground water flow southwest of the railroad tracks, the railroad track alignment was adopted as the southwest model boundary.

A uniform value for hydraulic conductivity (1 ft/day) was used in the flow model for both the shallow and deep zones of the surficial aquifer. Ground water recharge was assumed possible in unpaved areas of the model domain, and was assumed negligible in paved areas. The ponds within the model domain (Pond 5, Southwest Pond, and South Pond) were handled as drain boundaries in Layer 1. Using this type of boundary condition to simulate discharge to the ponds, in lieu of assigning prescribed hydraulic heads to them, makes it possible for some shallow-zone ground water to migrate below pond bottoms, which appear to lie above the base of the shallow portion of the aquifer. Accordingly, it was not necessary to invoke boundary conditions in the aquifer's deep zone (Layer 2) to represent the ponds. Cells along the perimeter of the model were handled using prescribed head and general head boundaries (McDonald and Harbaugh 1988).

Calibration of the flow model was achieved through a trial-and-error process, in which flow conditions were manipulated mostly by adjusting boundary conditions along the model's perimeter. It was not possible to develop a similar calibration for the arsenic transport model because of a lack of changing arsenic concentrations reflective of arsenic plume mobility. Consequently, transport simulations were limited to long-term predictions of arsenic fate on the basis of ground water levels measured in the area, the associated flow model, and laboratory analyses of arsenic retardation due to sorption on aquifer materials (Duke Engineering and Services 1999).

All predictive simulations with the WWNA model indicated that future migration of arsenic from areas of elevated concentration will be minimal, and that any dissolved arsenic that manages to persist at concentrations exceeding 100 μg/L in the future will be limited to the relatively small area that is currently affected by the contamination. Figure 11 shows the current arsenic plume (>100 μg/L) and the plume at 500 years in the future. These modeling results reflect the combined effects of very slow migration of arsenic, expected because of its proclivity for sorbing to aquifer sediments, and mechanical dispersion that limits downgradient transport from a relatively narrow zone of existing contamination. This finding holds true even under conditions in which the retardation factor is reduced to 10 percent of the factor calculated in Appendix B. Detailed information regarding the logic that went into the WWNA model and the results of simulations with it are presented in Appendix B of this report.

2.4 Plume Stability Evaluation

As discussed in Section 2.3.1, arsenic concentrations at the WWNA have decreased significantly since monitoring started in the early 1990s, likely as a result of ground water pumping operations. Figure 12 compares the arsenic plume in 1998 to the plume in 2006, with the boundary of both plumes defined based on the poor water quality CTL of 100 μg/L. In 1998, arsenic in six wells exceeded 100 μg/L (with a maximum concentration of 550 μg/L), while arsenic concentrations in September 2006 exceed the 100 μg/L CTL in only two monitoring wells (with a maximum concentration of 150 μg/L). As discussed in Section 2.3.1, the arsenic plume was stable over the year of closure monitoring, as evidenced by arsenic concentrations that generally remained at about the same level. The modeling of arsenic transport for 500 years into the future, summarized in Section 2.3.3 and detailed in Appendix B, predicts that the area of the arsenic plume will remain the same size or will decrease over time, that arsenic concentrations above the 50 μg/L surface water standard will not approach Pond 5, and that arsenic above the 10 μg/L MCL will not approach the STAR Center property boundary. Therefore, based on modeling over a 500-year period, the plume is expected to remain stable and will only dissipate over time.

2.5 Conceptual Site Model

Arsenic is the sole COPC for the WWNA, and ground water is the medium of concern. The original source of arsenic at the WWNA is unknown. The dissolved arsenic plume (concentrations >100 μg/L CTL) is confined to an area <1/4 acre in size, encompassing two monitoring wells. In fact, the current extent of the plume as estimated by the modeling work in Appendix B (Figure B−6) is approximately 0.05 acre. The vertical extent of the arsenic plume is limited to the upper half of the surficial aquifer, above 16 ft bls, and arsenic concentrations decrease to levels below detection limits at the bottom of the surficial aquifer. Modeling indicates that vertical migration of arsenic will have no significant impact on the deep surficial aquifer. The high site-specific arsenic K_d results in extremely slow transport of arsenic. Ground water modeling has shown that arsenic will not affect the surface water in Pond 5 and the Southwest Pond and that arsenic >10 μg/L MCL will not be transported past the STAR Center property boundary. Concentration trends and ground water modeling demonstrate that the arsenic plume currently is stable, and will remain stable for the foreseeable future.

2.6 Risk Assessment

Because of the current and projected land and water use at the WWNA and the limited extent of ground water contamination, a quantitative risk assessment was not performed for the site. Currently there are no uses of surficial aquifer ground water at the site other than use of water from the South Pond for irrigation. Contamination is limited to shallow portions of the surficial aquifer. Downward movement into the Floridan aquifer is prevented by the presence of the thick, low-permeability Hawthorn.

The shallow ground water is in hydraulic connection to surface water in ponds at the site. However, based on the very limited mobility of arsenic as determined in the modeling conducted in Appendix B, discharge of ground water to the ponds will not negatively impact pond water quality.

Based on the current conceptual model of the site, the only potential exposure route to site-related contamination would be through installation of wells and extraction of ground water from the shallow surficial aquifer within the site boundary.

3.0 Risk Management Options

The analysis presented in Section 2 demonstrates that reductions in arsenic concentrations at the WWNA have been achieved through source removal (the soil excavation interim action) and active ground water remediation. The ground water arsenic plume is limited in extent and remains confined to the original source area. Concentrations of arsenic in ground water have declined significantly through these combined activities (see discussion in Section 2.3), though recently concentrations appeared to have leveled off. The recovery wells at the site were shut down in December 2005 with FDEP approval, and closure monitoring has been conducted since that time (DOE 2006).

At this time, DOE proposes that a "No Further Action With Controls" determination be made for the WWNA and that the site can proceed to closure. This requires the selection of the appropriate Risk Management Option (RMO) for the site under the State of Florida's Contaminated Site Cleanup Criteria (Chapter 62-780 F.A.C.).

Three RMOs are identified in F.A.C. Chapter 62-780. From a practical standpoint, the two main outcomes of those RMOs are either "No Further Action Without Controls" or "No Further Action With Controls." Controls are considered to be either engineered features or administrative mechanisms that reduce or eliminate the migration of and/or exposure to contamination. A slurry wall is an example of an engineered control; a deed restriction is a type of IC. The need for controls is largely dictated by the CTLs that have been established for a site.

The original cleanup goal for arsenic in ground water at the WWNA was the FDEP MCL (DOE 2000a). This MCL was originally set at 50 µg/L, but was later lowered to 10 µg/L. As discussed in Section 2.2, however, the more appropriate default CTL for arsenic is 100 µg/L based on poor ambient water quality in the site vicinity. In addition, the State of Florida's current risk-based approach to cleanup allows levels of cleanup that are less stringent than default CTLs, provided these "alternative CTLs" are protective. Based on current site conditions at the WWNA, there are no complete exposure pathways to site-related contamination. Current contaminant concentrations in the subsurface pose no present or future threat to on-site or off-site receptors if current land and water uses are maintained. The only potentially unacceptable risks would be through use of shallow on-site ground water as a potable water source. The applicability of each RMO with respect to the WWNA is provided in this section.

3.1 No Further Action Without Controls (RMO I)

RMO I requires that default CTLs be met in site ground water. As noted above, two wells have recently contained arsenic concentrations that are elevated above the default CTL of 100 µg/L; therefore, this RMO does not apply. Unrestricted use of ground water could result in unacceptable risks.

3.2 No Further Action With Controls (RMO II and RMO III)

ICs are required as part of a closure under either RMO II or RMO III. Both options allow on-site COPCs to exceed default CTLs, provided that default CTLs are met outside of the IC boundary. The main differences between the two RMOs with controls appear to be in plume size and potential for ground water use. These RMOs and their applicability to the WWNA are discussed in this section.

3.2.1 Risk Management Option II

In order for ground water to qualify for a closure under RMO II, one or more of several criteria must be met. Generally, the contamination must be contained within the site boundary, the plume must be stable and confined to the immediate source area, and the plume must be small in size. An RMO II closure requires the establishment of ICs to prevent ground water use and a demonstration that ground water has not adversely affected any surface water body in the area.

The ambient ground water in the vicinity of the WWNA meets the definition of poor quality, as discussed in Section 2.2, and the default CTL of 100 μg/L for arsenic applies. A number of wells on site have consistently contained arsenic concentrations below this CTL over time. However, concentrations in a few wells have exceeded this CTL during recent sampling events (see Table A−2). It should be noted that only two sampling events have occurred since the ground water recovery system was shut down. Because ground water movement in the vicinity of the site is so slow, contaminants in the subsurface may still be equilibrating, and it is possible that arsenic will attenuate to levels below the applicable CTL over time. However, based on recent data, arsenic in WWNA ground water does not currently meet the default CTL.

According to 62-780.200 (11), F.A.C., the contaminated ground water at the site would be defined as the water that exceeds applicable CTLs from Chapter 62-777, F.A.C. (i.e., water at the WWNA exceeding the 100 μg/L CTL for arsenic). Closure can be conducted under RMO II and alternative CTLs applied if contaminated ground water is confined to the immediate vicinity of the source area, is <1/4 acre in size, is not migrating away from the localized source area, and has not affected, and will not affect, a freshwater or marine surface water body (Option IID). The contaminated ground water at the WWNA is confined to an area of <1/4 acre and is located in the vicinity where the soil excavation interim action (e.g., source removal) was conducted. Monitoring data demonstrate that the plume is stable and is not migrating off site. Modeling indicates that concentrations beyond the site boundary will not exceed either the drinking water standard or the low yield/poor quality CTL. Likewise, because contamination will not move beyond the property boundary, it will not have an impact on any surface water bodies in the vicinity of the site.

Based on the above, DOE proposes to proceed with closure of the WWNA under RMO II Option IID and to apply the default poor quality arsenic CTL of 100 μg/L to on-site ground water. Soil cleanup was completed in 1999 and approved by FDEP. Therefore, acceptance of this closure proposal by FDEP indicates that both soil and ground water cleanup are complete.

DOE is working with the landowner (Pinellas County) to establish ICs at the site that will: (1) restrict future land use to industrial purposes; (2) prohibit the installation of shallow wells for ground water use; and (3) limit the depth of excavations. Once ICs are in place, there will be no

potential current or future exposure pathways to contaminated ground water. ICs will need to be established and approved by FDEP before a formal No Further Action determination can be made.

3.2.2 Risk Management Option III

Because closure is proposed under RMO II, RMO III is discussed only briefly. The WWNA could be closed out under RMO III, but the justification would be the same as that provided for an RMO II closure. No alternative CTLs would be developed for alternative ground water uses because no ground water use is anticipated. No temporary point of compliance is required because contamination is confined to site boundaries. Therefore, the exceptions and greater flexibility offered under an RMO III closure are not needed at the WWNA.

4.0 Summary

- Arsenic in ground water is the sole COPC at the WWNA.
- The arsenic plume is limited to an area <1/4 acre in size, currently is stable, and is predicted to remain stable into the foreseeable future.
- DOE proposes an RMO II closure—No Further Action with Controls—under Option IID.
- It is DOE's intention to move forward with the establishment of ICs for the entire Pinellas site. This will involve the property owners, local governments and public, and FDEP. The template restrictive covenant from FDEPs IC guidance (FDEP 2004) will be used as a starting point in preparing the IC.
- DOE has completed the closure monitoring prescribed by the RBCA rules. No further monitoring is planned.

5.0 References

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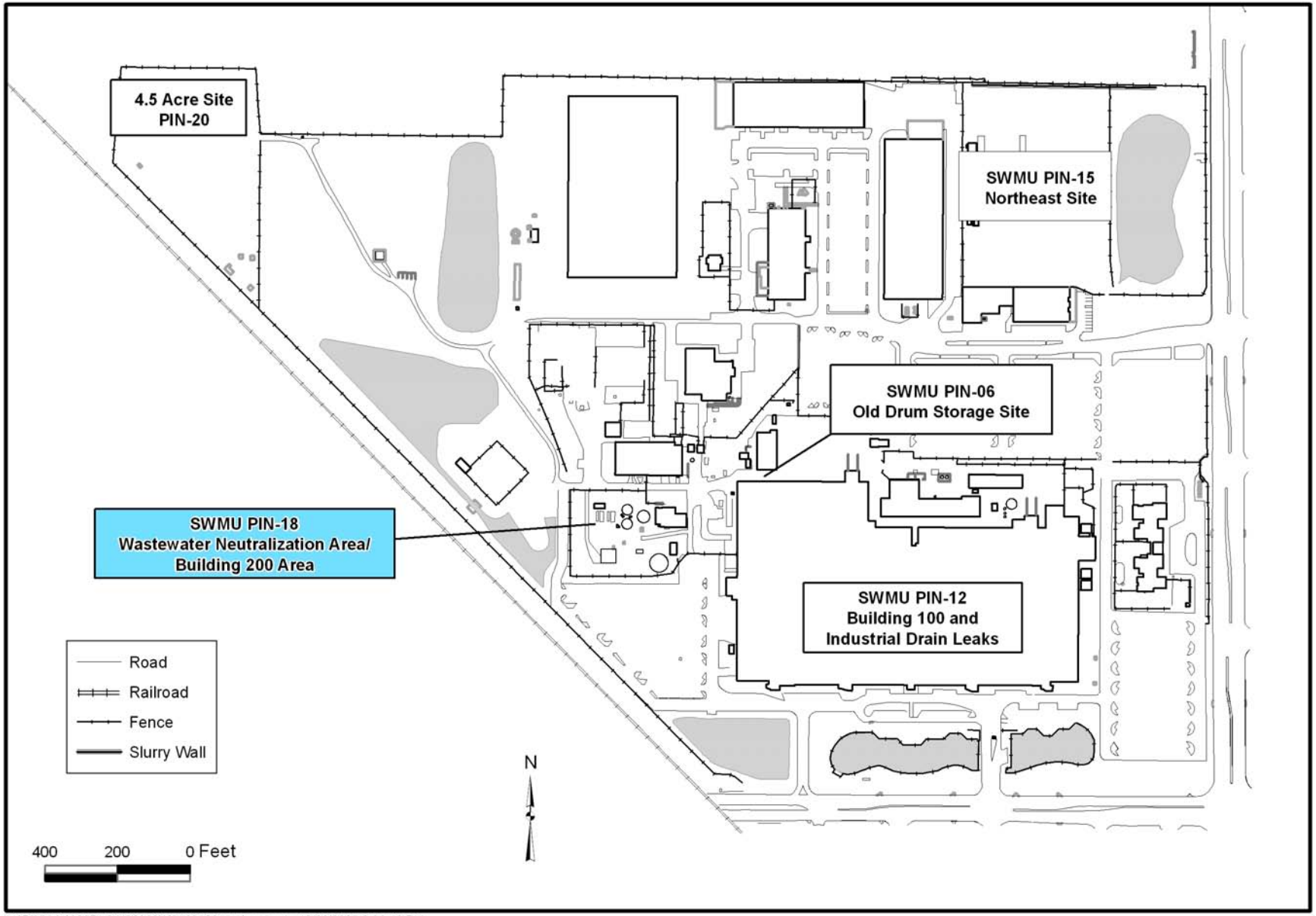

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Figure 1. Location of the WWNA at the STAR Center

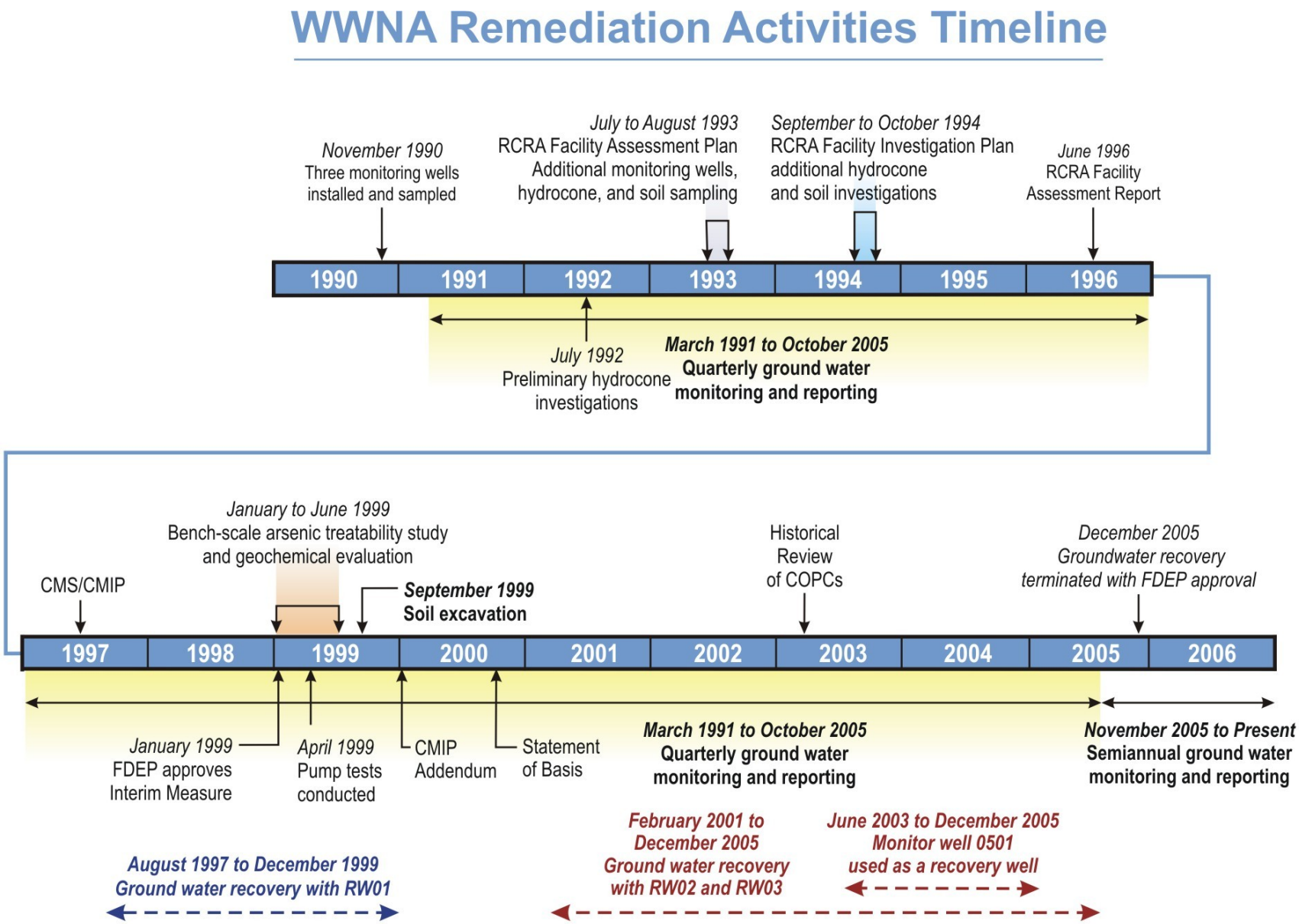

Figure 2. WWNA Remediation Activities Timeline

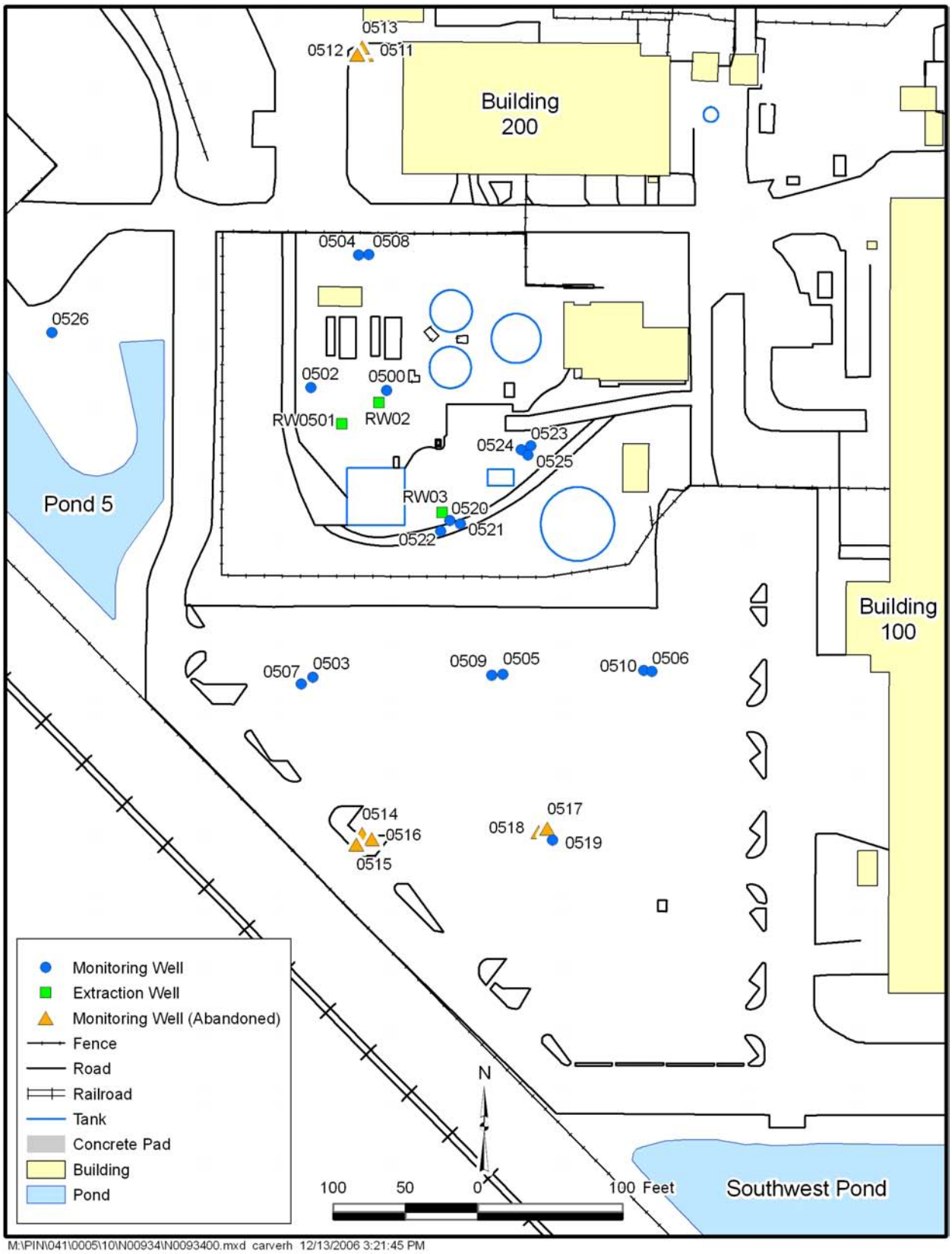

Figure 3. WWNA Site Features.

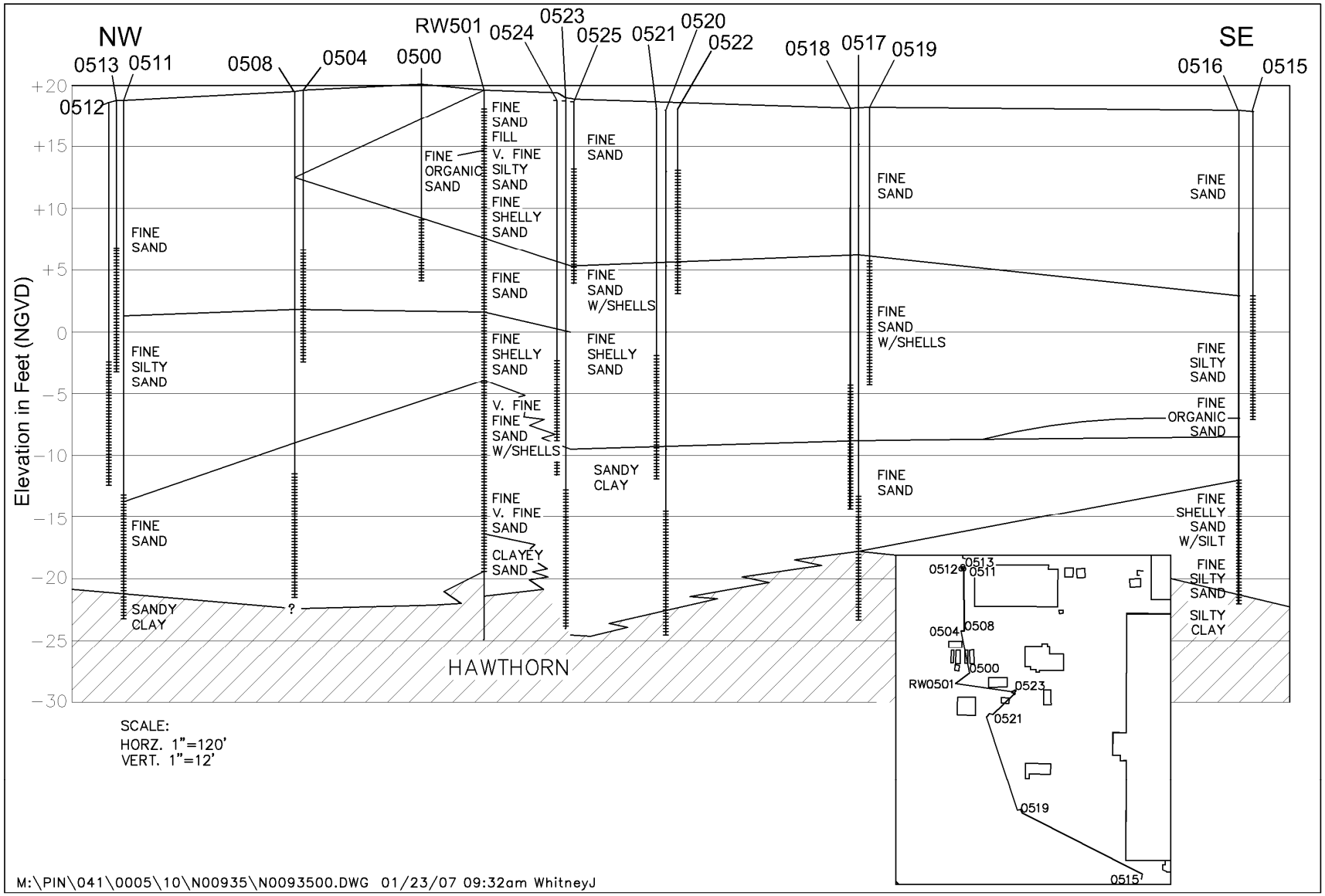

Figure 4. Geologic Cross-Section of the WWNA

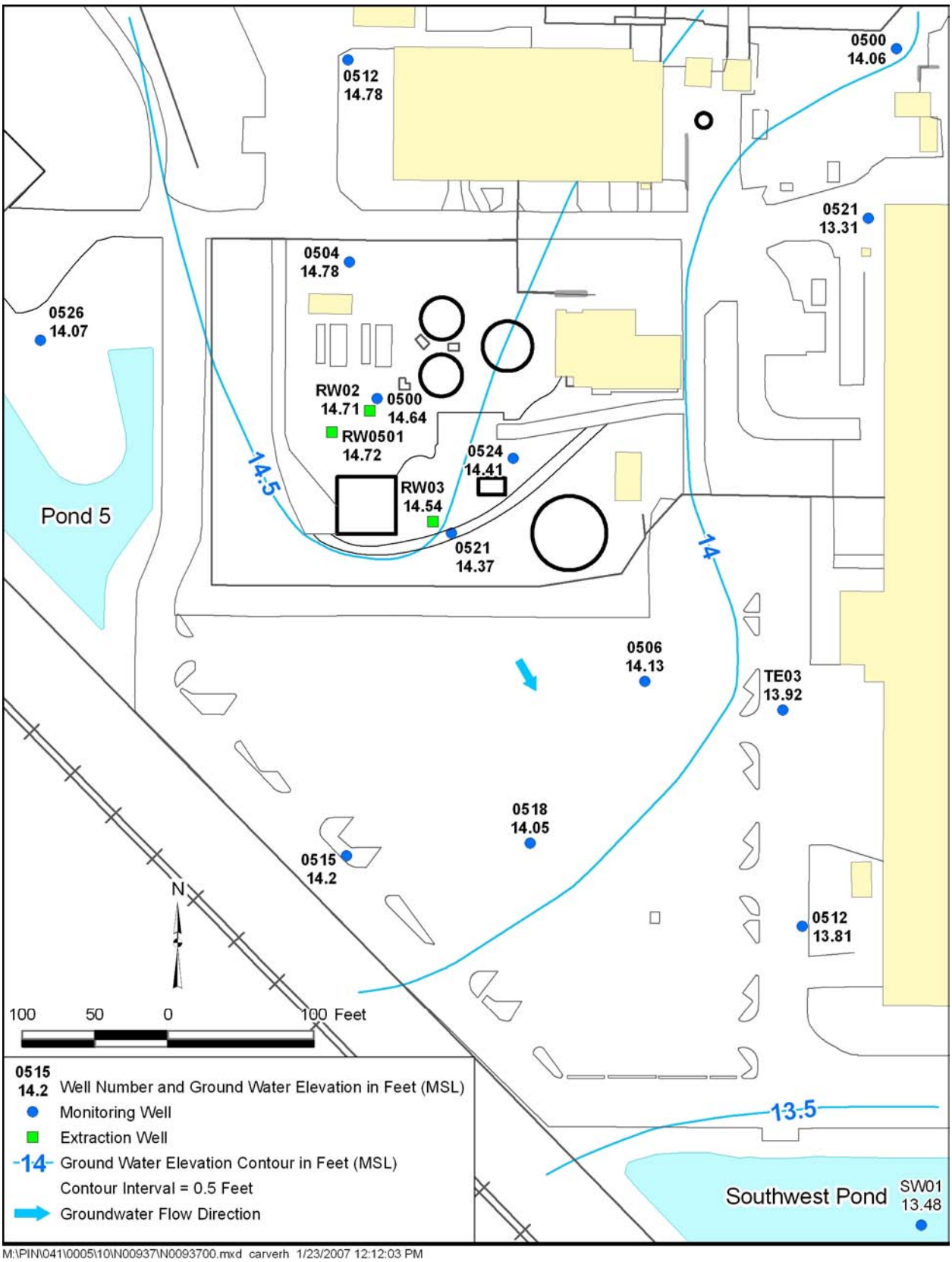

Figure 5. Ground Water Contours, Shallow Surficial Aquifer, March 2006

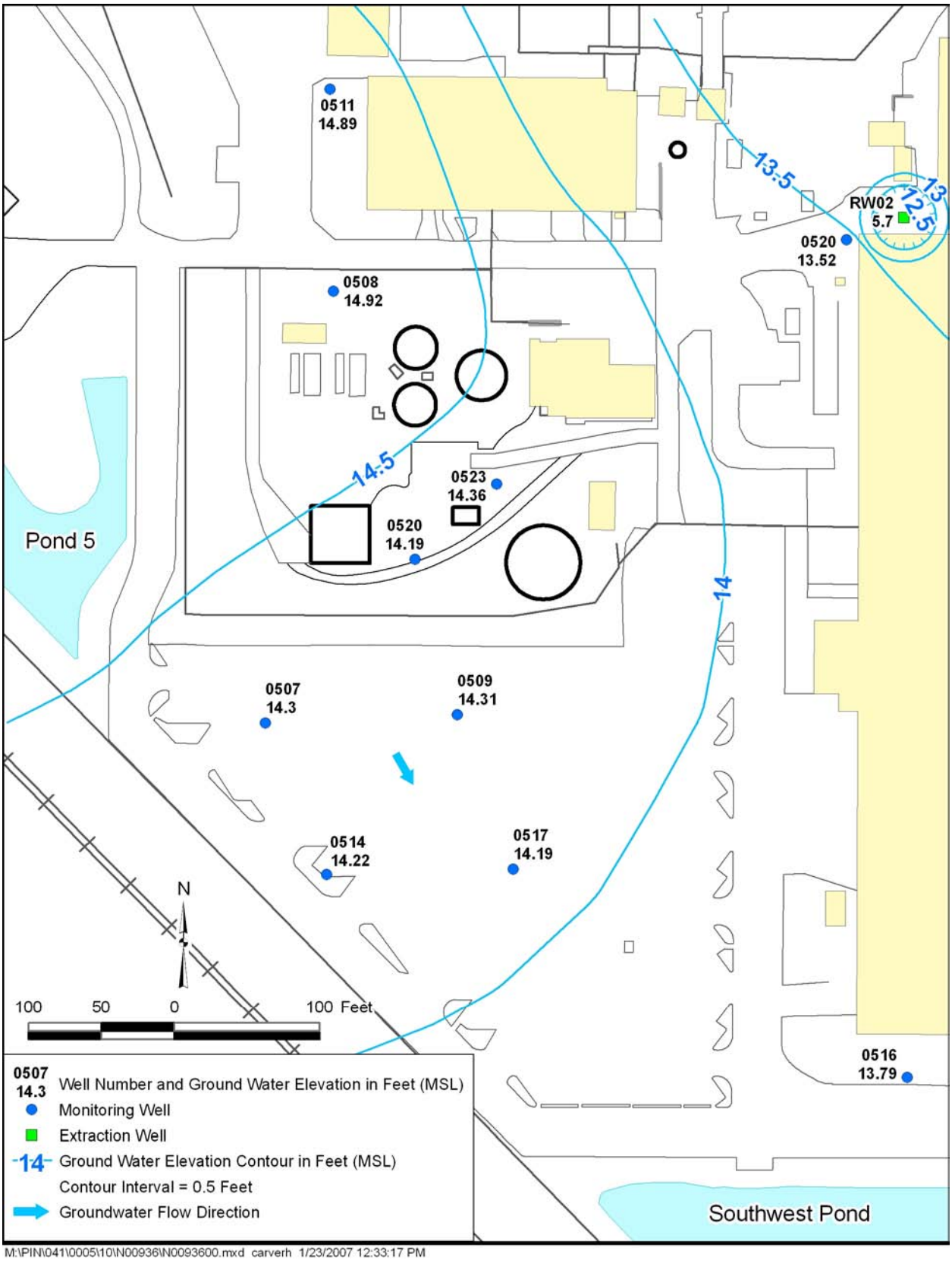

Figure 6. Ground Water Contours, Deep Surficial Aquifer, March 2006

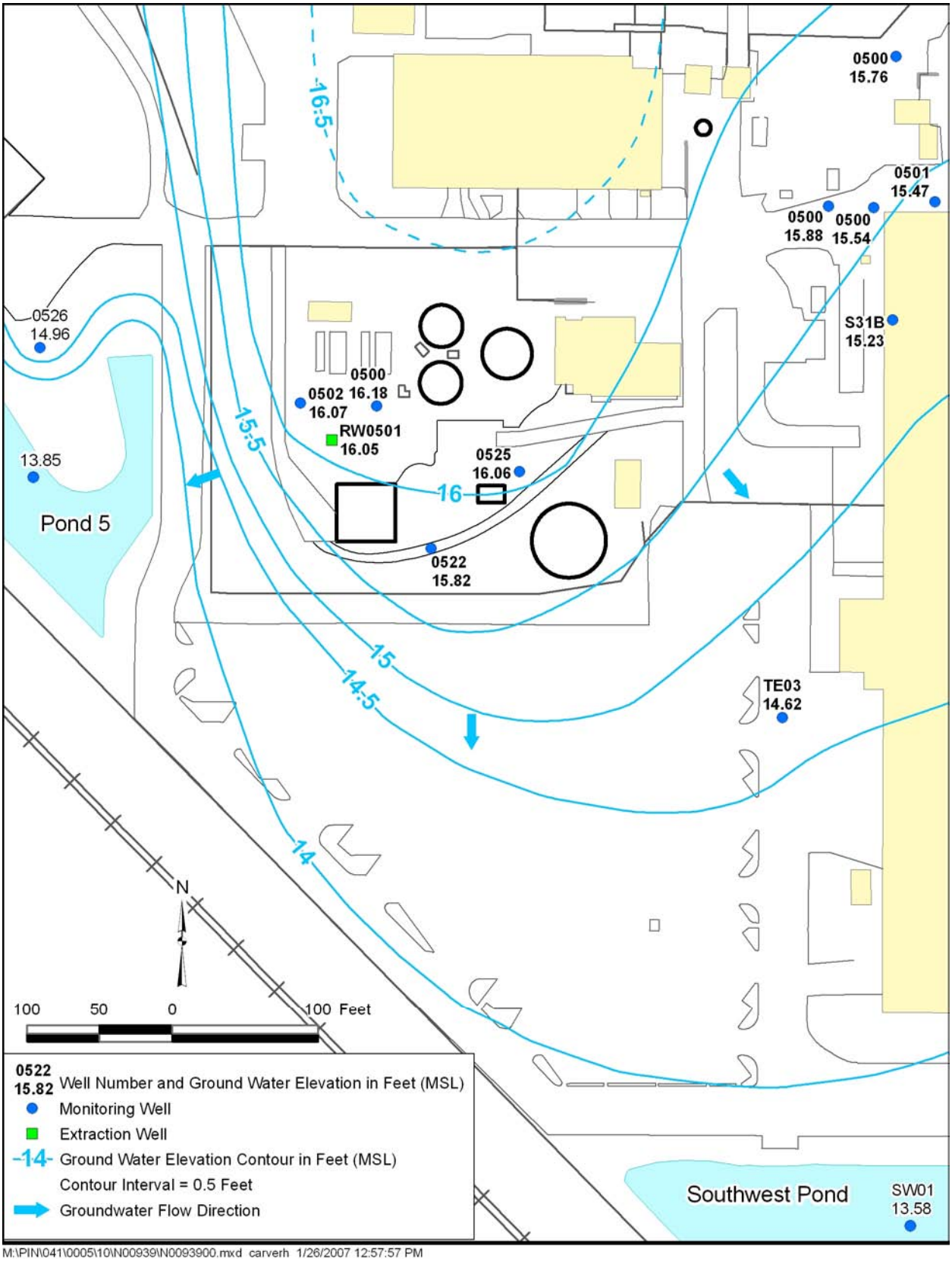

Figure 7. Ground Water Contours, Shallow Surficial Aquifer, September 2006

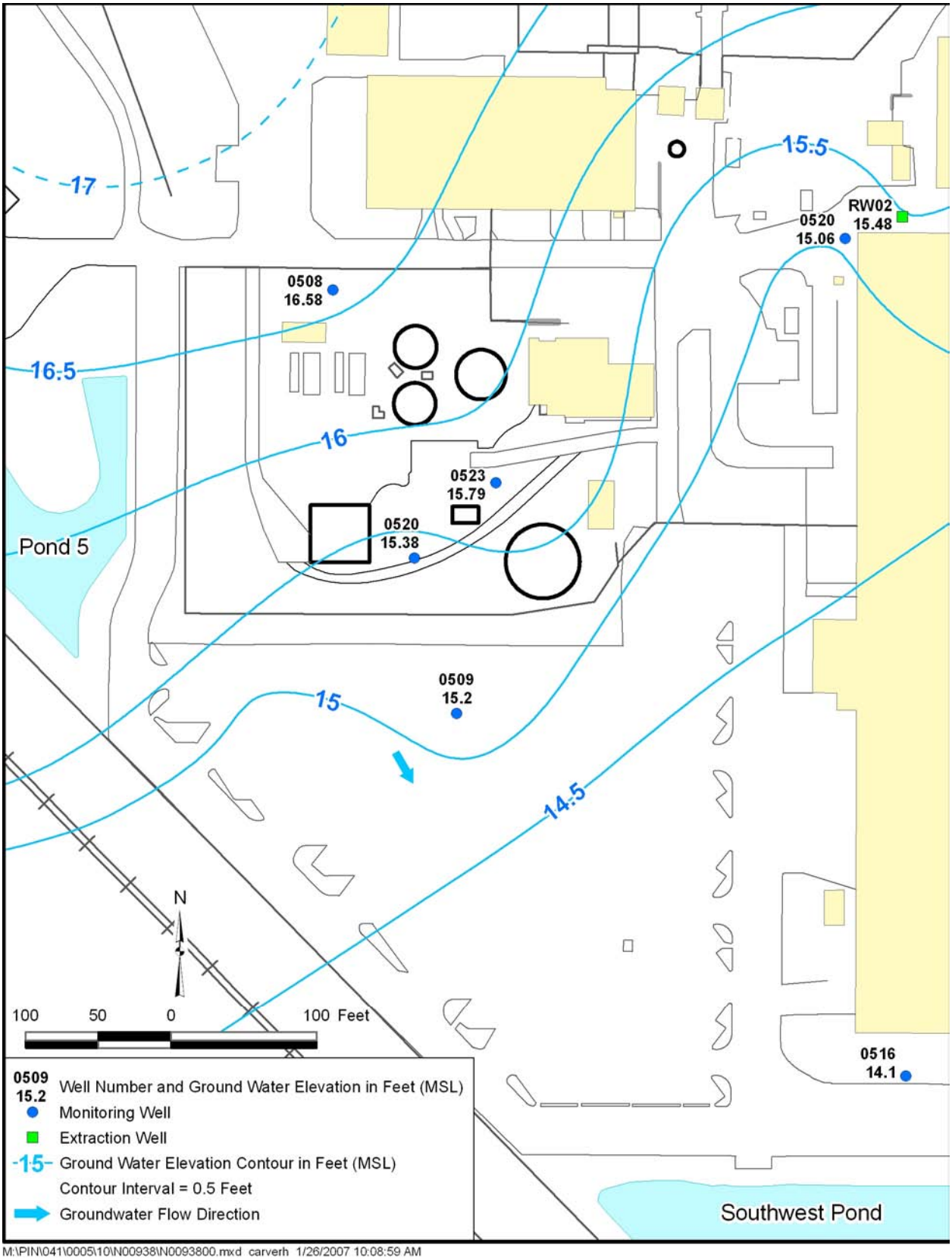

Figure 8. Ground Water Contours, Deep Surficial Aquifer, September 2006

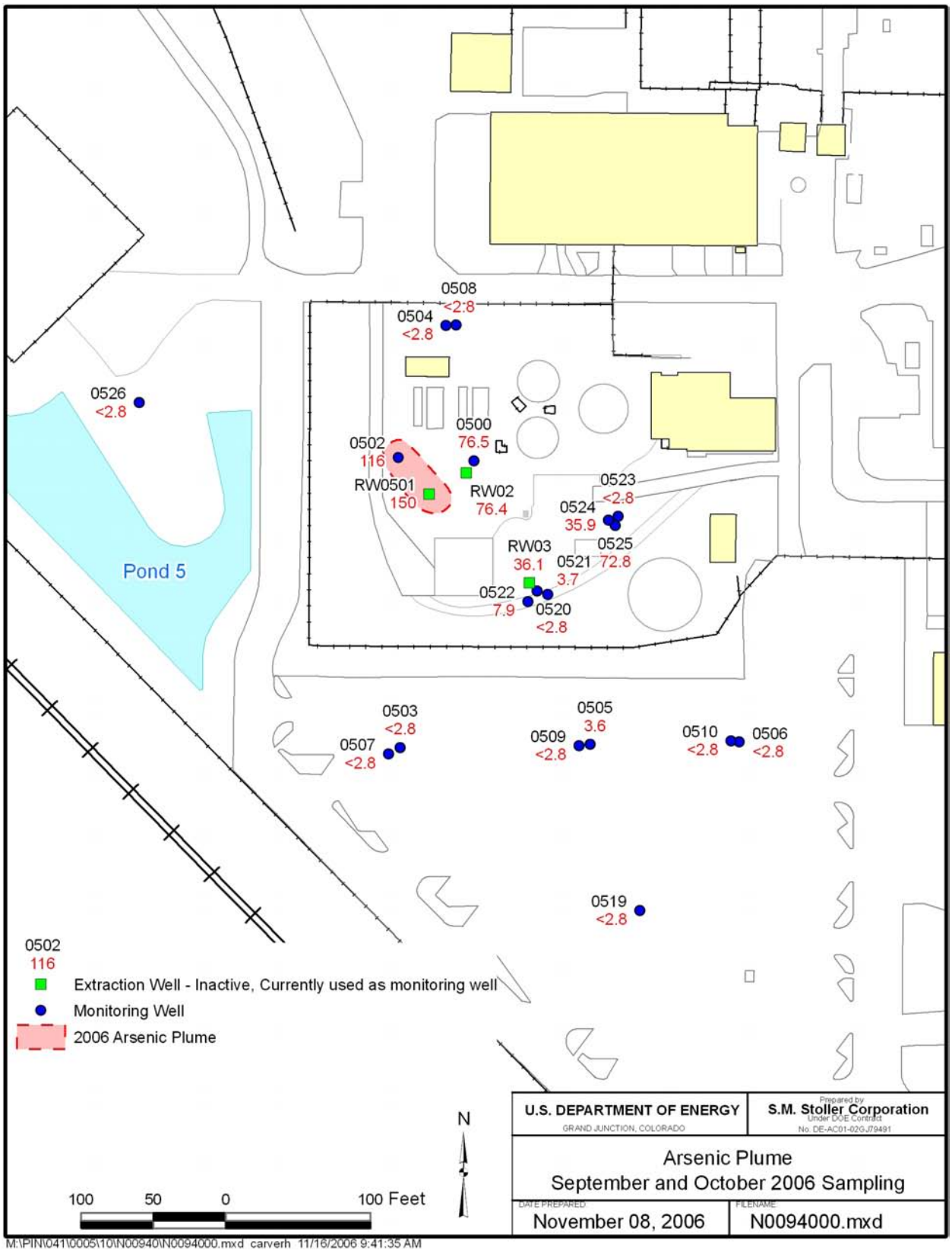

Figure 9. WWNA Arsenic Plume Map, September 2006 Data.
Arsenic concentrations in µg/L.

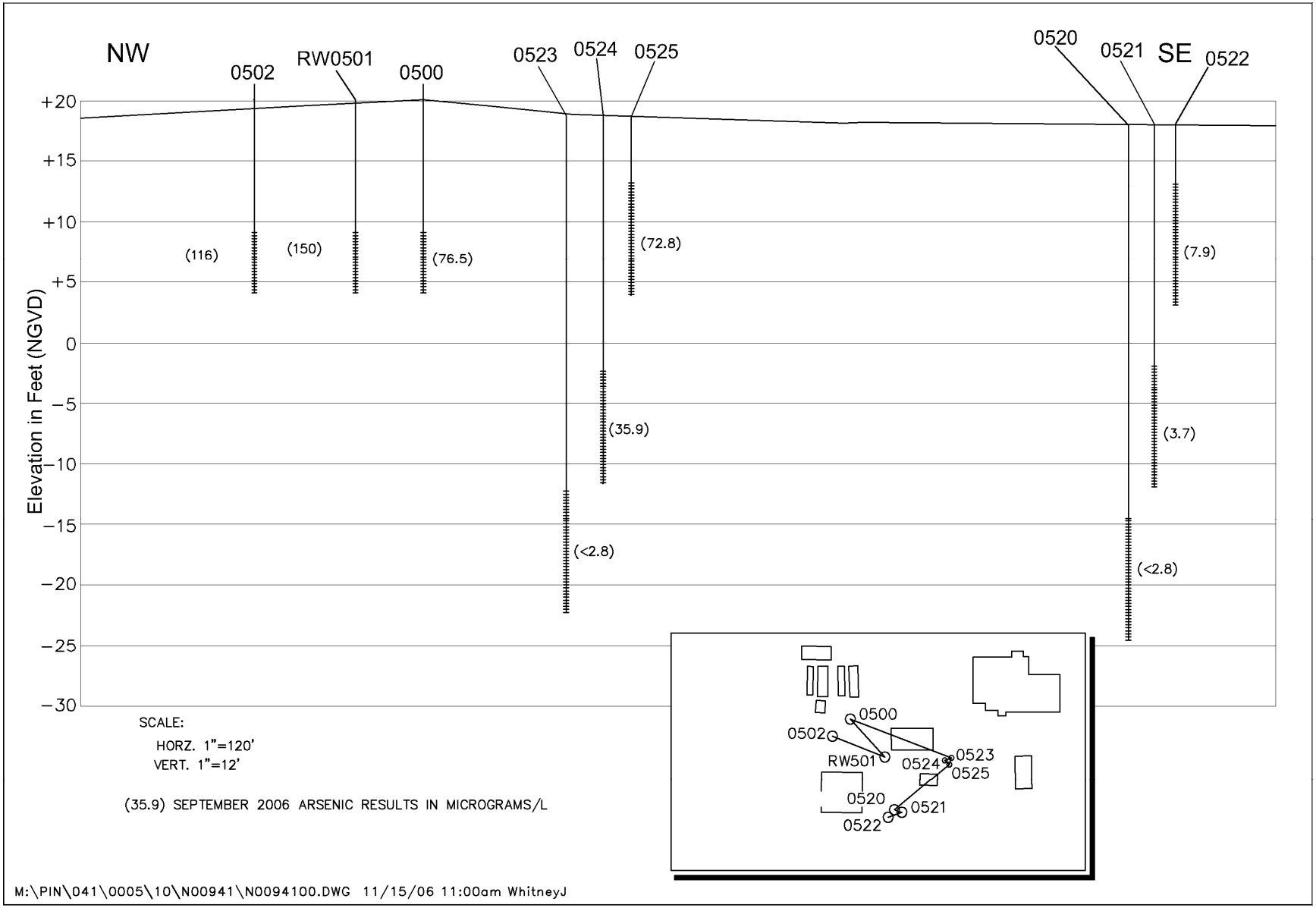

Figure 10. Cross-Section Showing Depth of Contamination.
Arsenic concentrations in µg/L.

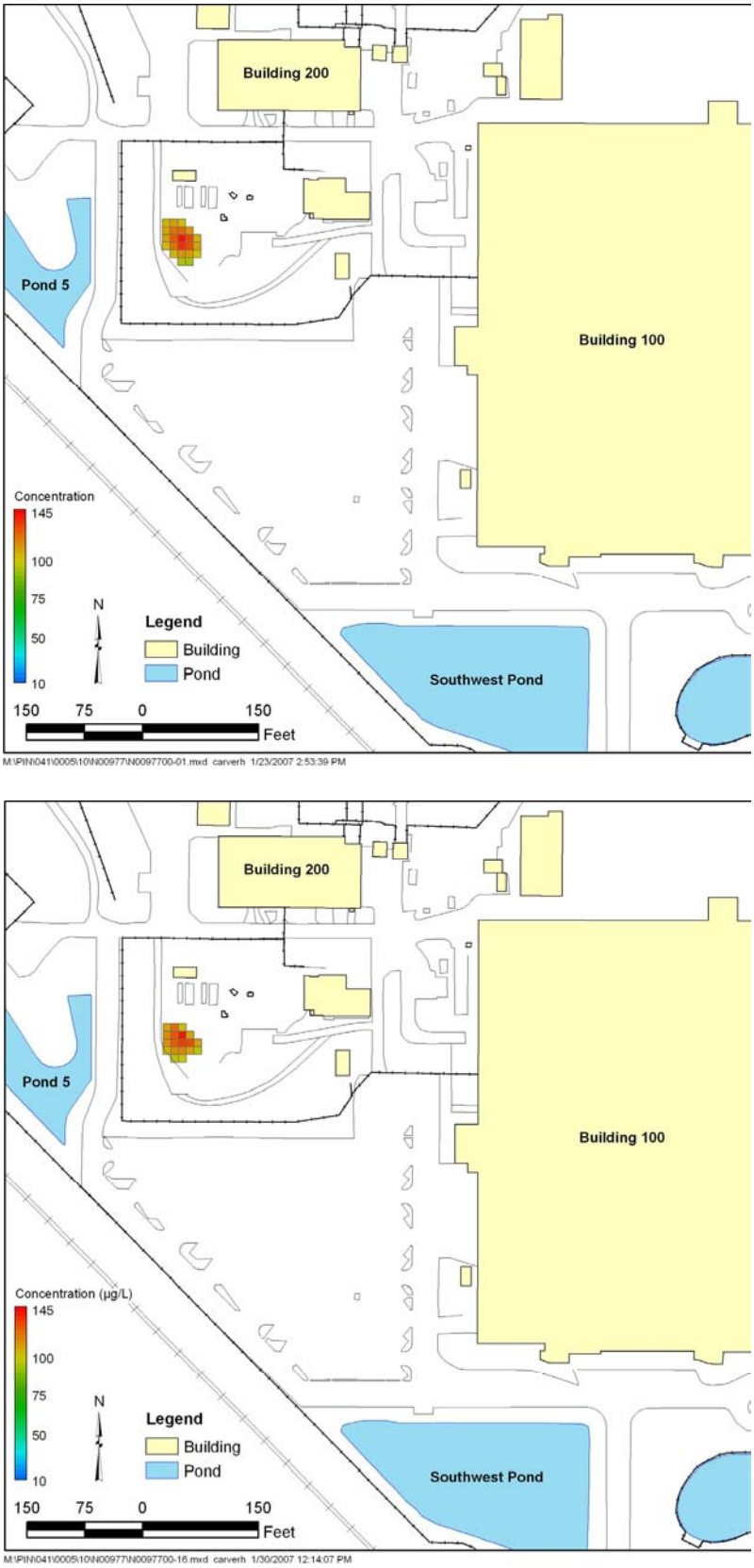

Figure 11. Comparison of Current Arsenic Plume (top) and Arsenic Plume in 500 Years (bottom). Constant Concentration Source, K_d = 63 L/kg. Arsenic concentrations in µg/L.

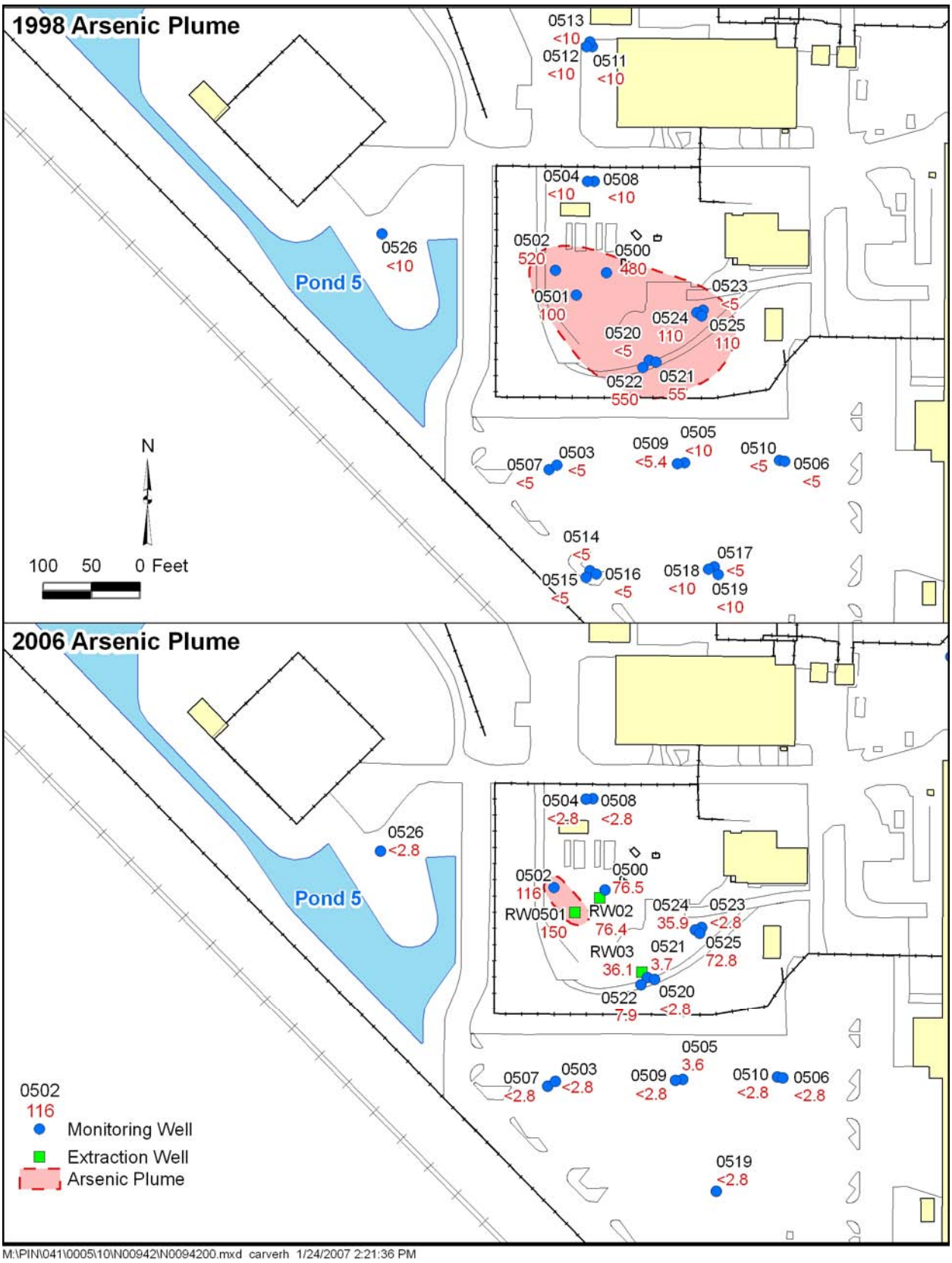

Figure 12. Comparison of the 1998 Arsenic Plume to the 2006 Arsenic Plume. Arsenic concentrations in µg/L.

Appendix A

Supporting Information

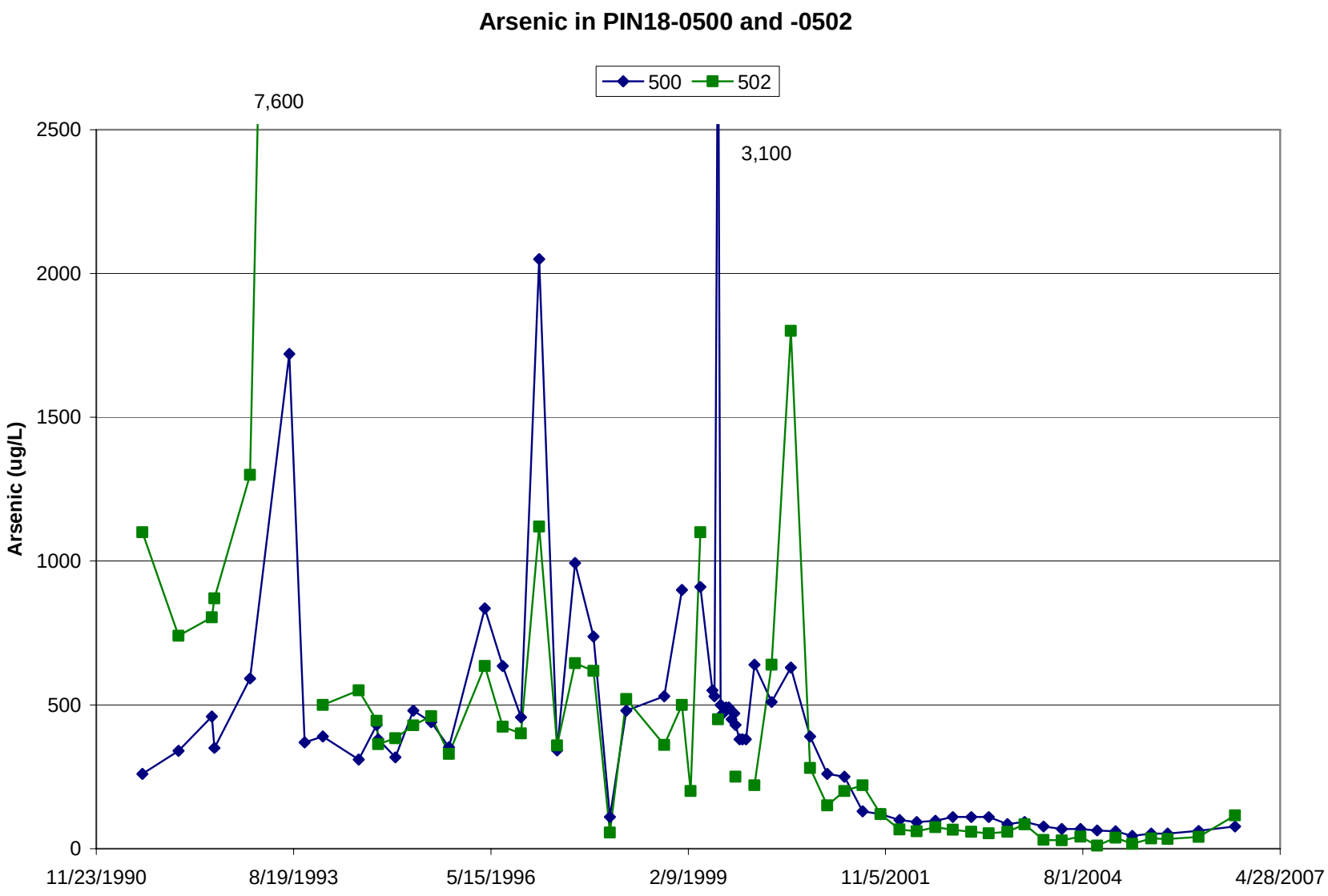

Figure A−1. Arsenic in Wells PIN18−0500 and −0502

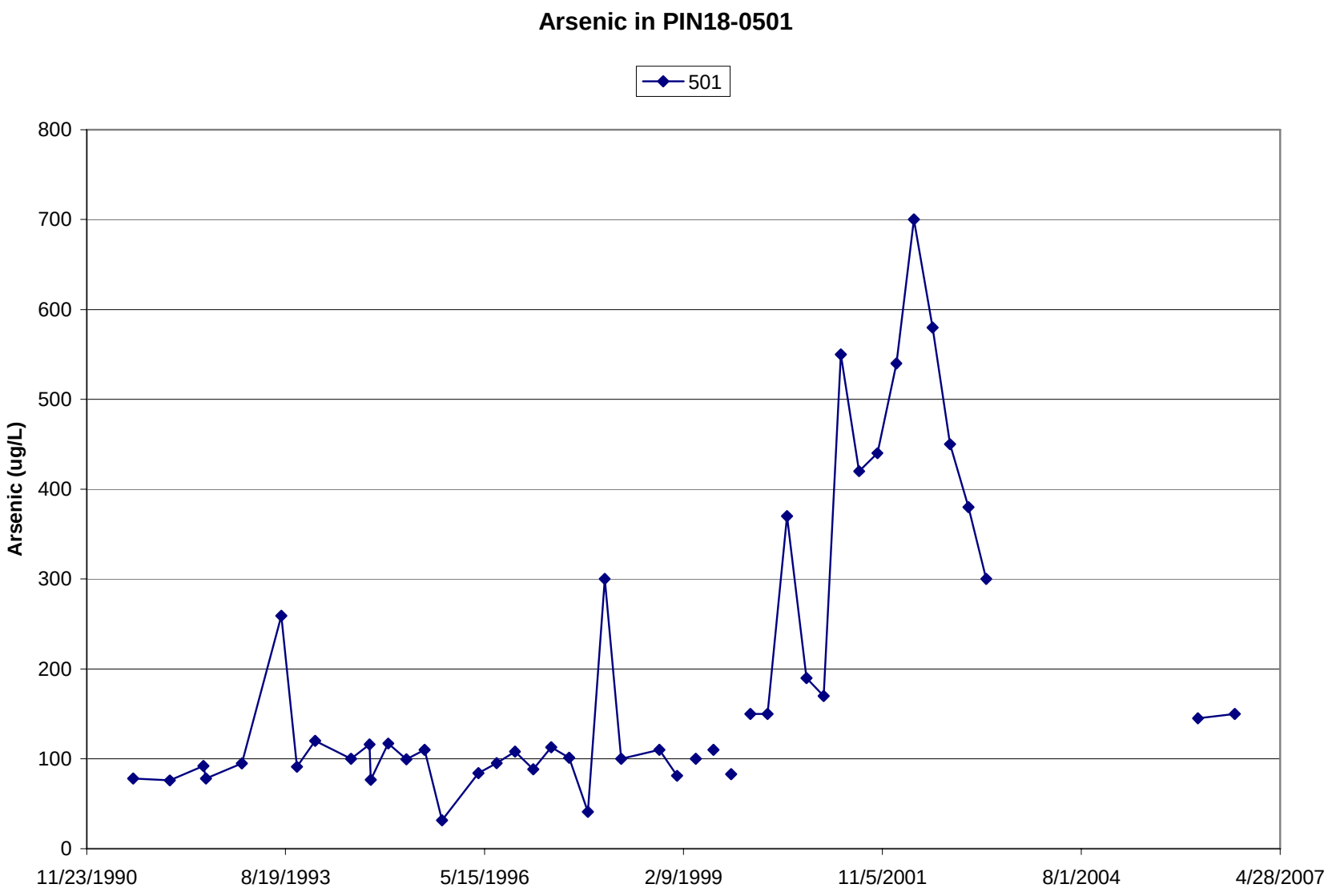

Figure A−2. Arsenic in Well PIN18−0501

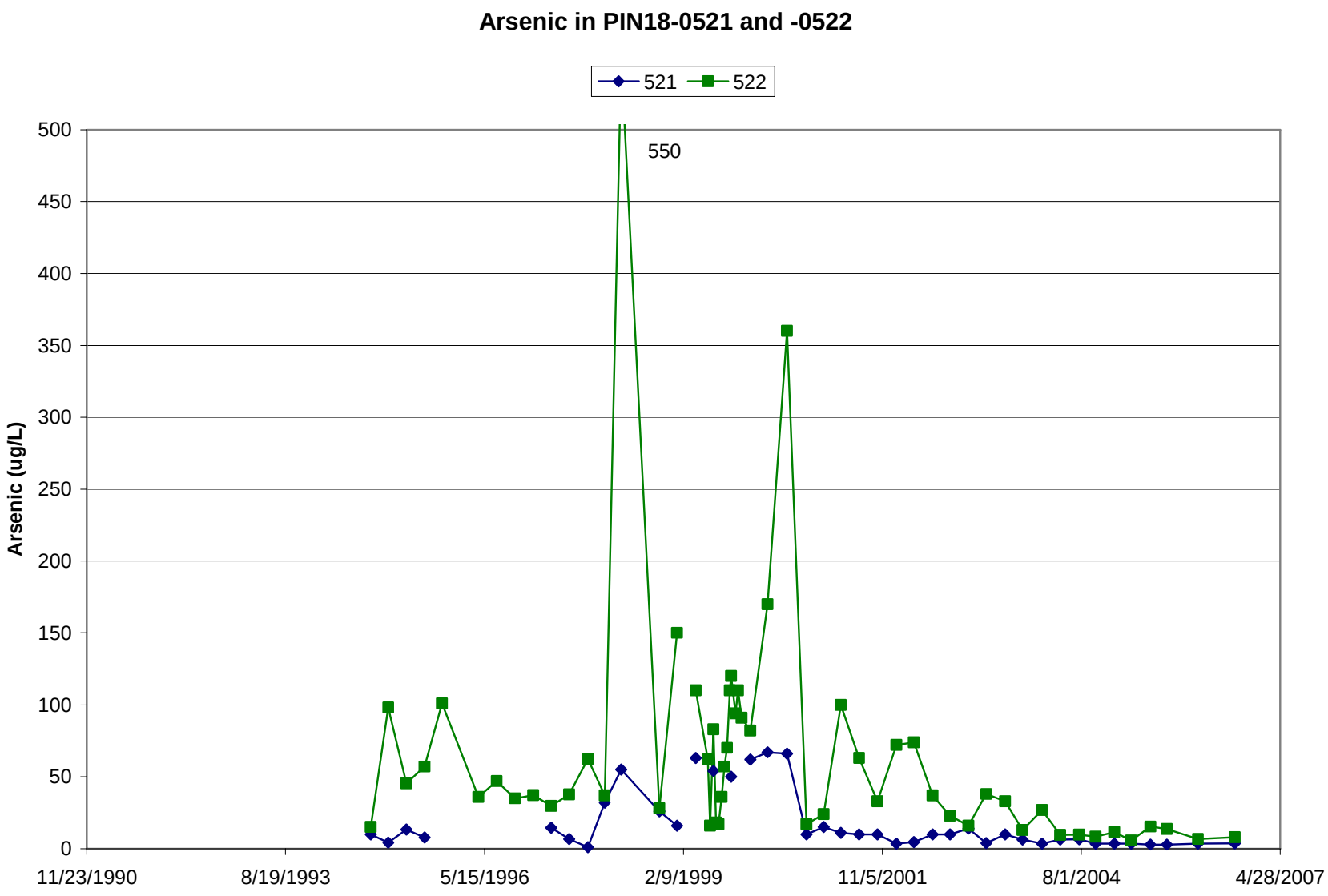

Figure A−3. Arsenic in Wells PIN18−0521 and −0522

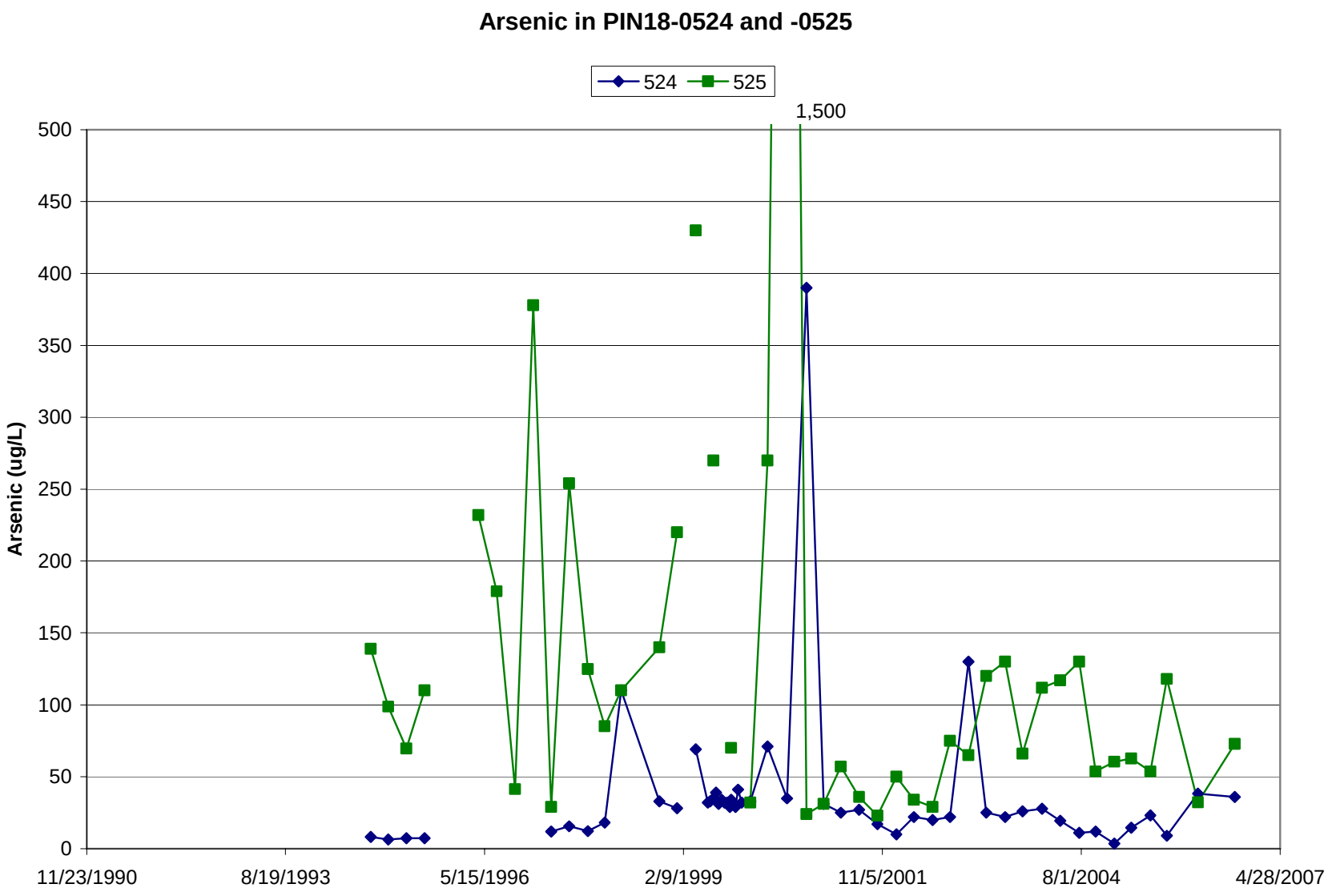

Figure A−4. Arsenic in Wells PIN18−0524 and −0525

Table A−1. WWNA VC Data Since 2003

Well	Date	VC (µg/L)	Data qualifier[a]
0500	4/14/2003	1	U
	4/21/2004	0.5	U
	4/11/2005	0.5	U
0501	4/14/2003	1	U
0502	4/14/2003	1	U
	4/21/2004	0.5	U
	4/11/2005	0.5	U
0503	4/12/2003	1	U
	4/17/2004	0.5	U
	4/9/2005	0.5	U
0504	4/14/2003	1	U
	4/21/2004	0.5	U
	4/11/2005	0.5	U
0505	4/12/2003	1	U
	4/17/2004	0.5	U
	4/9/2005	0.5	U
0506	4/12/2003	1	U
	4/17/2004	0.5	U
	4/9/2005	0.5	U
0507	4/12/2003	1	U
	4/17/2004	0.5	U
	4/9/2005	0.5	U
0508	4/14/2003	1	U
	4/20/2004	0.5	U
	4/11/2005	0.5	U
0509	4/12/2003	1	U
	4/17/2004	0.5	U
	4/9/2005	0.5	U
0510	4/12/2003	1	U
	4/17/2004	0.52	J
	4/9/2005	0.5	U
0511	4/12/2003	1	U
	4/21/2004	0.5	U
	4/9/2005	0.5	U
0512	4/12/2003	1	U
	4/21/2004	0.5	U
	4/9/2005	0.5	U
0513	4/12/2003	1	U
	4/21/2004	0.5	U
	4/9/2005	0.5	U
0514	4/12/2003	1	U
	4/17/2004	0.5	U
	4/9/2005	0.5	U

Table A−1 (continued). WWNA VC Data Since 2003

Well	Date	VC (µg/L)	Data qualifier[a]
0515	4/12/2003	1	U
	4/17/2004	0.5	U
	4/9/2005	0.5	U
0516	4/12/2003	1	U
	4/17/2004	0.5	U
	4/9/2005	0.5	U
0517	4/12/2003	1	U
	4/17/2004	0.5	U
	4/9/2005	0.5	U
0518	4/12/2003	1	U
	4/17/2004	0.5	U
	4/9/2005	0.5	U
0519	4/12/2003	1	
	4/17/2004	4.9	
	4/9/2005	0.5	U
	3/11/2006	5.2	
0520	4/14/2003	1	U
	4/19/2004	0.5	U
	4/11/2005	0.5	U
0521	4/14/2003	1	U
	4/19/2004	0.5	U
	4/11/2005	0.5	U
0522	4/14/2003	1	U
	4/19/2004	0.5	U
	4/11/2005	0.5	U
0523	4/14/2003	5.6	
	4/19/2004	0.5	U
	4/11/2005	0.5	U
	3/13/2006	0.5	U
0524	4/14/2003	1	U
	4/19/2004	0.5	U
	4/11/2005	0.5	U
0525	4/14/2003	1	U
	4/19/2004	0.5	U
	4/11/2005	0.5	U
0526	4/12/2003	1	U
	4/21/2004	0.5	U
	4/9/2005	0.5	U

Table A−1 (continued). WWNA VC Data Since 2003

Well	Date	VC (µg/L)	Data qualifier[a]
RW02	1/13/2003	1	U
	4/7/2003	1	U
	7/22/2003	1	U
	10/2/2003	1	U
	1/16/2004	0.5	U
	4/6/2004	0.5	U
	7/6/2004	0.5	U
	4/5/2005	0.5	U
	3/14/2006	0.5	U
RW03	1/13/2003	1	U
	4/7/2003	1	U
	7/22/2003	1	U
	10/2/2003	1	U
	1/16/2004	0.5	U
	4/6/2004	0.5	U
	7/6/2004	0.5	U
	4/5/2005	0.5	U
	3/14/2006	0.5	U
RW0501	7/22/2003	1	U
	10/2/2003	1	U
	1/16/2004	0.5	U
	4/6/2004	0.5	U
	7/6/2004	0.5	U
	4/5/2005	0.5	U
	3/14/2006	0.5	U

[a]U = non-detect, J = estimated value between the detection limit and the reporting limit.

End of current text

Table A−2. WWNA Historical Arsenic Data
Well 0501 was converted to recovery well RW0501 in June 2003. All concentrations are in µg/L. Blank cells indicate that the well was not sampled on that date.

Date	0500	0501	0502	0503	0504	0505	0506	0507	0508	0509	0510	0511	0512	0513	0514	0515	0516	0517	0518	0519	0520	0521	0522	0523	0524	0525	0526	RW02	RW03
7/15/1991	260	78	1100																										
1/15/1992	340	76	740																										
7/1/1992	459	92	804																										
7/15/1992	350	78	870																										
1/11/1993	592	94.8	1300																										
7/29/1993	1720	259	7600	14.8	10.5	10U	12	16.7	10U	10U	10U																		
10/15/1993	370	91																											
1/15/1994	390	120	500																										
7/15/1994	310	100	550	5U	5U	5U	5U	5U	5U	5U	5U																		
10/15/1994	430	116	445	6	6	5U	5U	5U	5U	5U	5U																		
10/22/1994	380	76.8	363	3.5	2U	3.1	2U	2U	2U	2U	2U	6.9	4	8.8	2U	2U	7.9	2U	2U	6.4	2.9	10	15	5.1	8.1	139			
1/17/1995	317	117	384	2.3	2U	2.8	2U	2U	2U	2U	2U	2	2U	2U	2U	2U	2U	2U	2U	2U	2U	4.3	98	3.3	6.4	98.8			
4/18/1995	480	99.5	429	3.4	2U	3	2U	2U	2U	2U	2U	2.3	2U	2U	2U	2U	2U	2U	2U	2U	2U	13.4	45.4	2.9	7.2	69.6			
7/19/1995	440	110	460	3.6	2U	2	2U	2U	2U	2U	2U	5.5	2.6	2U	2U	2U	2U	2U	2U	2.2	2U	7.7	57	2.5	7.2	110			
10/15/1995	353	31.7	329												5U	5U	5U						101	6.9					
4/15/1996	836	84	635																				36			232			
7/15/1996	635	95	424																				47			179			
10/15/1996	457	108	401																				34.9			41.4			
1/15/1997	2050	88.3	1120																				37.1			378			
4/15/1997	342	113	359	5U	5U	7.4	5U	5U	5U	5.4	5U	5.1	5U	5U	5U	5U	5U	5U	5.3	5U	5U	14.6	29.7	5U	11.8	29.1			
7/15/1997	993	101	645		5U				5U											7.2		6.8	37.7		15.6	254			
10/17/1997	738	41	618		1U				1U			5.7	1U	1U					1U	8.2		1U	62.3		12.1	125			
1/9/1998	110	300	56		10U				10U			10U	10U	10U					10U	10U		32	37		18	85			
4/2/1998	480	100	520		10U				10U			10U	10U	10U					10U	10U		55	550		110	110			
10/11/1998	530	110	360			10U						10U										26	28	10U	33	140	10U		
1/8/1999	900	81	500			10U						10U										16	150	10U	28	220	10U		
2/22/1999			200		10U																								
4/12/1999	910	100	1100	10U	10U	10U				10U		10U										63	110	10U	69	430	10U		
6/11/1999	550																						62		32				
6/23/1999	530																						16		33				
7/11/1999	3100	110	450			10U						10U										54	83	10U	35	270	10U		
7/23/1999	500																						18		39				
8/5/1999	470																						17		31				
8/20/1999	490																						36		34				
9/3/1999	490																						57		32				
9/17/1999	450																						70		32				
10/1/1999	470																						110		29				
10/7/1999	430	83	250			10U						10U										50	120	10U	34	70	10U		
10/28/1999	380																						94		29				
11/11/1999	380																						110		41				
11/29/1999	380																						91		32				

Table A−2 (continued). WWNA Historical Arsenic Data
Well 0501 was converted to recovery well RW0501 in June 2003. All concentrations are in µg/L. Blank cells indicate that the well was not sampled on that date.

Date	0500	0501	0502	0503	0504	0505	0506	0507	0508	0509	0510	0511	0512	0513	0514	0515	0516	0517	0518	0519	0520	0521	0522	0523	0524	0525	0526	RW02	RW03
1/11/2000	640	150	220									10U										62	82	10U	33	32	10U		
4/7/2000	510	150	640	11		10U						10U										67	170	10U	71	270	10U		
7/13/2000	630	370	1800			10U						10U										66	360	10U	35	1500	10U		
10/19/2000	390	190	280			10U			10U													10U	17	10U	390	24			
1/14/2001	260	170	150			10U			10U													15	24	10U	31	31			
4/11/2001	250	550	200	10U	10U	10U	10U	10U	10U	10U	10U					10U						11	100	10U	25	57	10U		
7/12/2001	130	420	220			10U			10U													10U	63	10U	27	36			
10/11/2001	120	440	120			10U			10U													10U	33	10U	17	23			
1/15/2002	100	540	67																			3.5J	72	10U	9.9J	50			
4/13/2002	92	700	60	6.8J	10U	5.6J	4.1J	10U	10U	10U	3.7J	10U	10U	10U	4.7J	10U	4.2J	10U	3.8J	4.2J	10U	4.6J	74	10U	22	34	10U		
7/16/2002	97	580	74																			10U	37	10U	20	29			
10/12/2002	110	450	66	10U	4.6J	10U	10U	10U	10U	10U	3.8J											10U	23	10U	22	75			
1/13/2003	110	380	58																			14	16	10U	130	65			
4/12/2003	110	300	53	4.2J	5J	6.8J	3.9J	5.5J	5J	5.5J	5.1J	5.7J	3.6J	4J	4.6J	10U	3.3J	4.6J	10U	3.4J	10U	3.9J	38	10U	25	120	7.7J		
7/16/2003	85		58																			10U	33	10U	22	130			
10/11/2003	93		84	10U	10U	10U	10U	10U	10U	10U	10U											6.4J	13	10U	26	66			
1/16/2004	76.4		30.4																			3.5U	26.9	3.5U	27.6	112			
4/17/2004	68.1		28.7	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	6.4B	9.6B	3.5U	19.4	117	3.5U		
7/21/2004	68.1		41																			6.5B	9.8B	3.5U	10.9	130			
10/12/2004	63.4		10																			3.5U	8.2B	3.5U	11.8	53.7			
1/14/2005	60.1		38																			3.5U	11.5	3.5U	3.5U	60.5			
4/9/2005	44.1		16.9	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	3.5U	5.5B	3.5U	14.6	62.7	3.5U		
7/14/2005	52.4		35.6																			2.9U	15.4	2.9U	23.1	53.6			
10/5/2005	52.3		33.7																			2.9U	13.7	2.9U	8.9B	118			
3/11/2006	61.3	145	40.3	2.9U	2.9U	2.9U	2.9U	2.9U	2.9U	2.9U	3.2B										2.9U	3.5B	6.8B	2.9U	38.4	32.3	2.9U	41.5	11.4
9/11/2006	76.5	150	116	2.8U	2.8U	3.6B	2.8U	2.8U	2.8U	2.8U	2.8U									2.8U	2.8U	3.7B	7.9B	2.8U	35.9	72.8	2.8U	76.4	36.1

Data qualifiers: U = non-detect, J = estimated value between the detection limit and the reporting limit (STL Lab), B = estimated value between the detection limit and the reporting limit (Accutest Lab).

Table A−3. WWNA Well Completion Information

Well	Well Type	Completion Zone	Depth (ft bls)	Screen Interval (ft bls)	Installation Date
PIN18–0500	Monitoring Well	Upper Surficial Aquifer	16	11–16	11/19/1990
PIN18–0501[a]	Monitoring Well	Upper Surficial Aquifer	16	11–16	11/19/1990
PIN18–0502	Monitoring Well	Upper Surficial Aquifer	16	11–16	11/19/1990
PIN18–0503	Monitoring Well	Surficial	23	10–20	7/23/1993
PIN18–0504	Monitoring Well	Surficial	22	13–22	7/24/1993
PIN18–0505	Monitoring Well	Surficial	20.5	10.5–20.5	7/25/1993
PIN18–0506	Monitoring Well	Surficial	22	12–22	7/25/1993
PIN18–0507	Monitoring Well	Deep Surficial Aquifer	37	27–37	7/26/1993
PIN18–0508	Monitoring Well	Deep Surficial Aquifer	41	31–41	7/20/1993
PIN18–0509	Monitoring Well	Deep Surficial Aquifer	37.5	27.5–37.5	7/20/1993
PIN18–0510	Monitoring Well	Deep Surficial Aquifer	37.5	27.5–37.5	7/31/1993
PIN18–0511[b]	Monitoring Well	Deep Surficial Aquifer	42	32–42	9/26/1994
PIN18–0512[b]	Monitoring Well	Surficial	31	21–31	9/27/1994
PIN18–0513[b]	Monitoring Well	Surficial	23	12–22	9/28/1994
PIN18–0514[b]	Monitoring Well	Deep Surficial Aquifer	42.5	32.5–42.5	9/28/1994
PIN18–0515[b]	Monitoring Well	Surficial	30.5	22.5–32.5	9/29/1994
PIN18–0516[b]	Monitoring Well	Surficial	22	12.5–22	9/29/1994
PIN18–0517[b]	Monitoring Well	Deep Surficial Aquifer	41.5	31.5–41.5	9/29/1994
PIN18–0518[b]	Monitoring Well	Surficial	32.5	22.5–32.5	9/30/1994
PIN18–0519	Monitoring Well	Surficial	22.5	12.5–22.5	10/1/1994
PIN18–0520	Monitoring Well	Deep Surficial Aquifer	42.5	32.5–42.5	10/3/1994
PIN18–0521	Monitoring Well	Surficial	30	20–30	10/4/1994
PIN18–0522	Monitoring Well	Upper Surficial Aquifer	15	5–15	10/4/1994
PIN18–0523	Monitoring Well	Deep Surficial Aquifer	42.5	32.5–42.5	10/5/1994
PIN18–0524	Monitoring Well	Surficial	30	20–30	10/5/1994
PIN18–0525	Monitoring Well	Upper Surficial Aquifer	15	5–15	10/5/1994
PIN18–0526	Monitoring Well	Surficial	30	19.5–29	10/4/1994
PIN18–RW02	Recovery Well	Surficial	23	10–20	9/7/2000
PIN18–RW03	Recovery Well	Surficial	27	9–24	9/7/2000
PIN18–RW0501[a]	Recovery Well	Upper Surficial Aquifer	16	11–16	6/5/2003

[a]Monitoring well PIN18−0501 was converted to recovery well PIN18−RW0501 in June 2003.
[b]Monitoring wells PIN18−0511 through −0518 were abandoned in August 2006.

End of current text

Appendix B

Modeling of Ground Water Flow and Arsenic Transport at the Wastewater Neutralization Area, Young - Rainey STAR Center, Pinellas County, Florida

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Acronyms and Abbreviations

bls	below land surface
ft	feet
ft/day	feet per day
ft/yr	feet per year
in/yr	inches per year
IWNF	industrial wastewater neutralization facility
K_d	soil/water distribution coefficient
kg/L	kilograms per liter
L/kg	liters per kilogram
msl	mean sea level
µg/L	micrograms per liter
STAR	Science, Technology, and Research
WWNA	Wastewater Neutralization Area

End of current text

B1.0 Introduction

This appendix describes the development of a numerical model that is used to project the future disposition of arsenic in ground water at the Young - Rainey Science, Technology, and Research (STAR) Center in Pinellas County, Florida. The model specifically simulates ground water flow and concomitant transport of arsenic in the surficial aquifer underlying the Wastewater Neutralization Area (WWNA). From August 1997 to December 2005, ground water was extracted from shallow wells in the area and subsequently discharged to the industrial wastewater neutralization facility (IWNF), located on the north end of the WWNA. As discussed in the main text of this report, this extraction system appeared to be successful in reducing local arsenic concentrations significantly below the concentrations that were observed for this constituent in 1998. The model discussed herein is used to estimate how the arsenic remaining in the surficial aquifer will migrate in future years now that ground water in the area is no longer affected by pumping via the extraction system.

Though monitored arsenic concentrations at the WWNA have dropped in recent years in response to remediation by ground water removal, the concentration data collected prior to and during the pumping are insufficient for developing a calibrated model of arsenic transport. As a consequence, only the flow portion of the model is calibrated, and potential arsenic migration and fate is examined by conducting multiple transport simulations with each one differing with respect to the transport parameters used. The flow calibration is based on aquifer water levels observed recently during the wet season at the STAR Center, which are assumed to occur in a steady state throughout each year. This approach leads to conservative predictions of arsenic transport in the sense that the average linear ground water velocities resulting from the wet season flow system are noticeably higher than those that appear to occur during the dry season. As discussed in following sections of this appendix, retardation of arsenic transport is expected to limit its migration in coming years, even under the relatively fast flow velocities produced by the flow model.

B2.0 Modeling Objectives

Because of the lack of adequate arsenic concentration data for transport model calibration, the objective of this investigation was not to provide an exhaustive evaluation of arsenic fate that accounts for all possible physicochemical phenomena that could feasibly affect arsenic transport in the future. Rather, the model produced for this evaluation of the WWNA was intended to provide conservative estimates of arsenic transport away from the existing area of elevated arsenic concentration (i.e., greater than 10 micrograms per liter [μg/L]) now that ground water pumping is no longer used to remove arsenic from the subsurface. To meet this latter purpose, one of the simulations presented herein is based on the conservative assumptions that the mass of dissolved arsenic in the area of elevated concentration remains constant and that its retardation will be considerably less than the study of local arsenic chemistry (Duke Engineering and Services 1999) indicates.

B3.0 Conceptual Model

B3.1 Ground Water Flow System

As discussed in the main text of this report, the surficial aquifer at the STAR Center consists of silty to shelly sands, and the average thickness of the aquifer at the WWNA is about 35 feet (ft). Depth to water varies from about 1 to 5 ft below land surface (bls), and no ground water is used from the aquifer because of its poor yield and poor quality. Because the surficial aquifer is underlain by the low-permeability Hawthorn Group, it is effectively isolated from the upper Floridan aquifer, the top of which occurs at least 100 ft bls at the site. Ground water flow in the shallow zone of the surficial aquifer appears to vary from that in the deep zone, as discussed in Section 2.1.1 of the main report. Consequently, the numerical model developed for this study takes into account the distinct flow occurring in each zone.

Ground water flow through the area of arsenic contamination in the shallow portion of the surficial aquifer tends to diverge after leaving the elevated concentration area, flowing to the south, southwest, and southeast (Figure 5 and Figure 7, main report). In contrast, flow in the deep surficial aquifer is predominantly toward the southeast, with some of the water in the eastern part of the area of elevated concentration flowing more directly eastward (Figure 6 and Figure 8, main report).

To a large extent, the observed ground water flow directions at WWNA are controlled by the presence of three ponds west and south of the WWNA. Section 2.1.1 of the main report discusses how shallow-zone water levels measured since the excavation of Pond 5 (west of the WWNA) in early 2006 show ground water in the western half of the arsenic-contaminated area moving toward and eventually discharging to the pond. Also, much of the shallow zone ground water migrating to the southeast appears to discharge to the Southwest Pond (Figure 7 in the main report) and the South Pond, which lies directly east of the Southwest Pond. Though water levels measured in the deep surficial aquifer do not necessarily indicate that ground water in this zone discharges upward toward the ponds, discharge of at least a portion of the deep ground water to the ponds appears possible.

Other than the three ponds near the WWNA, there is a lack of distinct hydrologic boundaries, such as no-flow zones or lines of prescribed head, in the area being investigated. Indeed, this relative lack of clear hydrologic boundaries for ground water flow in the surficial aquifer is pervasive throughout much of the STAR Center and in neighboring areas. Accordingly, it is virtually necessary to adopt boundary conditions for flow models of the aquifer that take into account observed ground water levels either at the boundaries themselves or at short distances hydraulically downgradient of them.

B3.2 Hydraulic Properties

Estimates of horizontal hydraulic conductivity for the fine-grained sands comprising the surficial aquifer on the basis of aquifer testing tend to range between 0.1 and 9 feet per day (ft/day), and a value of 1 ft/day is considered a representative average for this parameter (DOE 2002). The tendency of shallow surficial aquifer water levels to differ from underlying deep surficial aquifer water levels, such as those observed when one zone is pumped and the other is not, indicates that a horizontal-to-vertical anisotropy exists with regard to the aquifer's hydraulic conductivity. On

the basis of such observations, a representative vertical hydraulic conductivity for the aquifer is expected to be about 0.1 to 0.01 of the horizontal value. As alluded to in Section 2.1.1 of the main report, a porosity of 0.3, or 30 percent, appears to be a reasonable estimate of this parameter for the surficial aquifer.

Horizontal hydraulic gradients in the two zones of the surficial aquifer vary depending on whether dry season (ending in May or June) or wet season (ending in October or November) conditions prevail at the site at any given time. Figure 5 and Figure 7 of the main report suggest that, with the exception of the area lying directly between the area of elevated arsenic concentration and Pond 5, horizontal hydraulic gradients in the shallow surficial aquifer generally range between 0.0008 and 0.002 (dimensionless). The comparable range for horizontal hydraulic gradients in the deep surficial aquifer, based on Figure 6 and Figure 8 of the main report, is 0.004 to 0.0015. Following Darcy's Law calculations mentioned in Section 2.1.1 of the main report, a hydraulic conductivity of 1 ft/day, and an effective porosity of 0.3, these hydraulic gradients result in estimated average linear ground water velocities for the surficial aquifer that range between 2 and 10 ft per year (ft/yr).

B3.3 Sources and Sinks

Most of the ground water in the portion of the STAR Center that comprises the WWNA is derived from horizontal flow from hydraulically upgradient areas, particularly to the north and northwest. Another source of the local ground water is recharge of the saturated zone in unpaved areas as a result of rainfall on those areas or the diversion of sheet flow runoff to them. A previous modeling investigation (DOE 2002) indicated that 5.5 inches per year (in/yr), or 0.00126 ft/day, is a reasonable estimate of the recharge rate in unpaved portions of the STAR Center.

Ground water leaves the WWNA and surrounding locales primarily via discharge to the ponds and horizontal flow away from the area. Some discharge of ground water also occurs as evapotranspiration (ET) from unpaved areas. Because it is difficult to quantify the magnitude of ET at the STAR Center, the previously discussed modeling study of the site did not directly assess this component and instead used the estimated recharge rate mentioned above (5.5 in/yr) to represent the net recharge that occurs after ET is taken into account (i.e., infiltration minus ET). The same approach is used in this modeling assessment.

In addition to the cessation of pumping from wells historically used to withdraw arsenic-contaminated water from the WWNA, two other extraction wells located near the northwest corner of Building 100 have been taken out of operation. As a consequence, no point sinks are located at the WWNA or surrounding areas.

B3.4 Arsenic Transport

The transport of dissolved arsenic from the existing area of arsenic contamination is affected by hydrodynamic dispersion and sorption to aquifer sediments. Longitudinal dispersivity, which affects mechanical dispersion in the direction of ground water flow, is expected to vary with the transport distance of the arsenic plume. As a general rule, a longitudinal dispersivity of about 10 percent of a contaminant's transport distance is considered a reasonable estimate of this parameter (Gelhar et al. 1985). Field studies suggest that the horizontal dispersivity that is

transverse to the longitudinal dispersivity can be estimated at 10 percent of the longitudinal value, and transverse vertical dispersivity can be estimated at 1 percent of the longitudinal value.

A previous study of site sediments and ground water (Duke Engineering and Services 1999) indicated that arsenic's mobility in the surficial aquifer is extremely limited because of its tendency to sorb to aquifer sediments. The site-specific arsenic soil/water distribution coefficient (K_d) determined by 24 measurements during this study ranged from 20 to 129 liters per kilogram (L/kg), with an average value of 63 L/kg. The following equation and values of 1.6 kilograms per liter (kg/L) for dry bulk soil density, 63 L/kg for K_d, and 0.3 for porosity produce a site-specific arsenic retardation factor of 337.

$$\text{Retardation factor} = 1 + (\text{bulk density} \times K_d)/\text{porosity}$$

An additional factor that should be taken into account when assessing transport of arsenic at the WWNA is the potential fate of this constituent if and when it discharges to the ponds in the area, which can occur, for instance, if arsenic is eventually transported westward as far as Pond 5. The resulting arsenic concentrations in surface water are not expected to be threatening to aquatic biota for two reasons. First, arsenic concentrations in ground water reaching the ponds likely will be less than applicable surface water standards. Second, it is likely that the dilution potential of Pond 5 and the other ponds, if affected, would produce arsenic concentrations in the surface water that would be far less than those in the ground water discharging to them.

B4.0 Computer Model

Ground water flow was assumed to be in a steady state and was simulated with the finite-difference code MODFLOW, as developed by the U.S. Geological Survey (McDonald and Harbaugh 1988, Harbaugh and McDonald 1996). Arsenic transport was simulated using the finite-difference code MT3DMS (Zheng 1990, Zheng and Wang 1999). Both of these codes have been applied for many years to evaluate contaminant migration in ground water systems. The graphical user interface known as Groundwater Vistas, Version 4 (ESI 2005) was used to enter data into each of the models and graphically analyze modeling results.

MODFLOW only simulates flow in the saturated zone of an aquifer and is, therefore, incapable of explicitly representing flow through the unsaturated sediments that overly the saturated zone. This limitation is not expected to be a problem, however, for the WWNA flow model. Because this modeling effort views ground water flow at the site to occur as a steady-state process, recharge of the saturated zone resulting from precipitation and subsequent seepage through the unsaturated zone is simply treated as a constant flux of water. Moreover, even if simulation of transient ground water flow was subsequently needed for evaluating arsenic transport at the facility, prescribed recharge fluxes coincident with rainfall events could be invoked in the model because the travel time from land surface to the water table is quite short given the small thickness of the unsaturated zone (approximately 1 to 5 ft).

MT3DMS accounts for advective-dispersive transport in ground water as affected by equilibrium sorption of dissolved constituents on aquifer sediments. The velocities used in MT3DMS to both account for contaminant advection and calculate hydrodynamic dispersion coefficients are derived from MODFLOW output. Though the representation of sorption in MT3DMS can be

either linear or nonlinear, it is assumed in this study to be linear. This approach involves the selection of a value for K_d, from which a transport retardation factor can be calculated (Section B3.4). Though simulation of linear, equilibrium sorption represents somewhat of a simplification of dynamic geochemical processes in the aquifer that can temporally affect arsenic mobility (and retardation), it is not expected to limit the relevance of this investigation, particularly given the objective of this modeling effort to focus on conservative estimation of future arsenic fate.

B5.0 Model Construction

B5.1 Model Domain

As mentioned in Section B3.1 of this appendix, distinct hydrologic boundaries for the surficial aquifer within and near the STAR Center occur only at ponds, making it very difficult to develop a flow and transport model whose perimeter is everywhere aligned with such boundaries. Consequently, the approach taken in selecting the WWNA model domain was to establish model borders that were unlikely to be affected by arsenic transport over a period of several hundred years, and then let adopted boundary conditions at those borders be the determinants of flow across them. More specifically, all boundaries of the model were selected such that they were either located hydraulically upgradient of the existing area of arsenic contamination or sufficiently far downgradient of this area that it would likely take hundreds of years or more for arsenic to reach them. A map of the area selected for modeling is presented in Figure B−1.

Because ground water flow at the WWNA is predominantly toward the west, south and southeast, the north boundary of the model (Figure B−1) represents an area that will probably never be affected by arsenic contamination. As shown in Figure B−1, the model's west boundary, which could potentially be affected by arsenic transport, extends only about 200 ft west of the existing area of arsenic contamination (defined by arsenic concentrations > 10 μg/L). This boundary was selected because water elevation data collected at monitoring wells screened in the shallow surficial aquifer at the WWNA since construction of Pond 5 (Figure 5 and Figure 7, main report) indicate that the pond tends to act as an area of ground water discharge. Thus, shallow-zone ground water moving westward toward Pond 5 is unlikely to migrate much farther west than the easternmost edge of the pond. In addition, water levels at wells screened in the deep portion of the aquifer (Figure 6 and Figure 8, main report) indicate that ground water in this zone migrates mostly to the southeast and east-southeast, and is not strongly affected by discharge to the ponds occurring in the overlying shallow portion of the aquifer.

To account for the tendency of a large amount of shallow-zone ground water and virtually all deep-zone ground water to flow to the southeast, the model's east and south boundaries have been established about 600 to 700 ft away from the area of elevated arsenic concentration (Figure B−1). A conservative (i.e., non-retarded) constituent migrating at a relatively low velocity of 2 ft/yr (as suggested in Section B3.2) from the area of high arsenic concentration would take about 300 to 350 years to reach these boundaries, and the comparable travel time under an average velocity of 10 ft/yr would be about 60 to 70 years. Travel times of tens to hundreds of years would also be required for a conservative constituent to migrate from the existing area of arsenic contamination to the southwest model boundary, which is aligned with the railroad tracks that skirt the site in a northwest-southeast direction. The railroad alignment

was chosen as the model boundary to the southwest of the WWNA because of a lack of hydrogeologic information beyond the tracks.

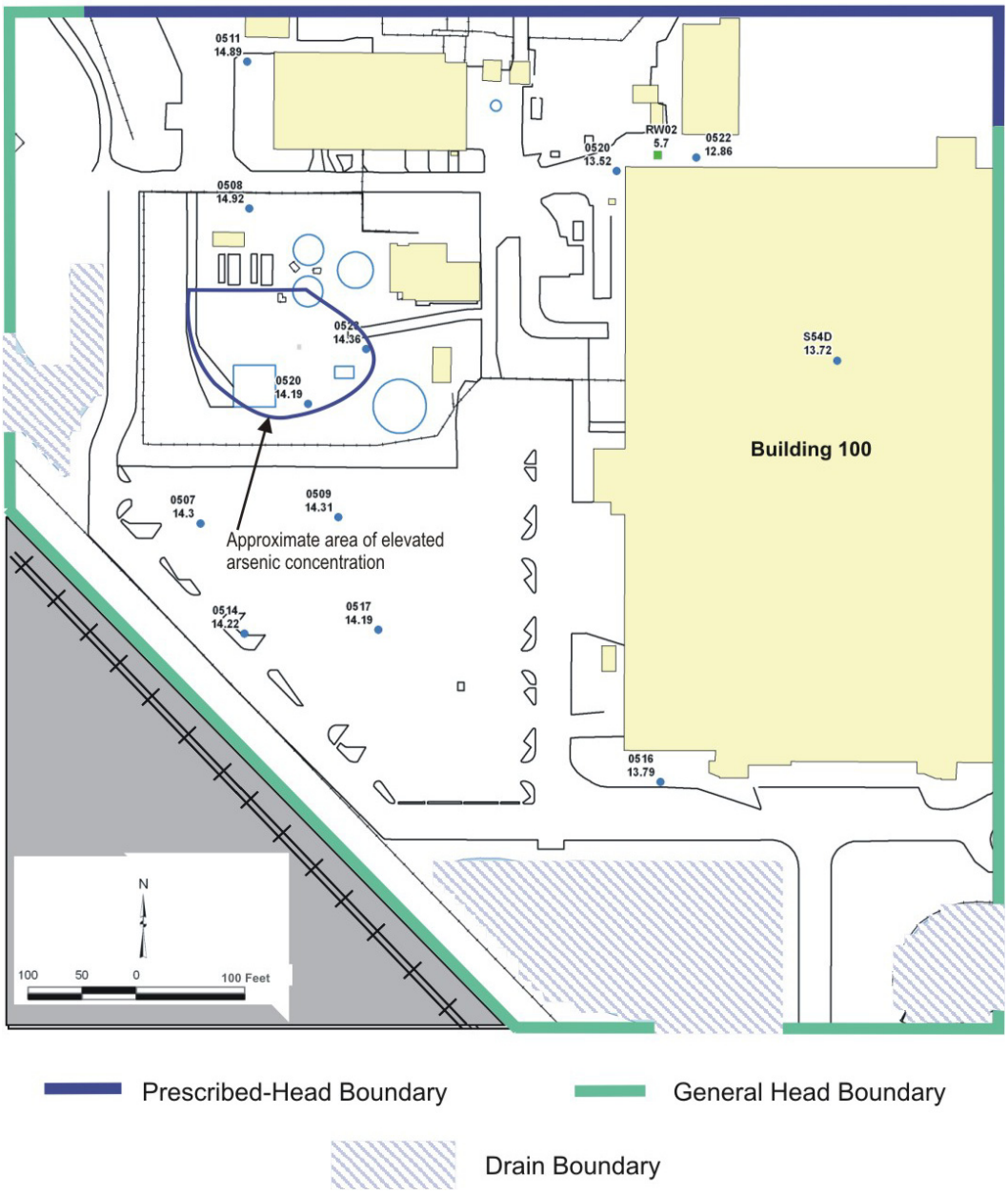

Figure B−1. Boundary Conditions in Model Layer 1

The model contains two layers, with the upper layer representing the shallow surficial aquifer (Layer 1) and the lower layer representing the deep surficial aquifer (Layer 2). The top and bottom elevations of Layer 1 are set respectively at 20 and 0 ft above mean sea level (msl). The top and bottom elevations of Layer 2 are set at 0 and –20 ft above msl, respectively.

The finite-difference grid for the flow and transport model consists of 96 rows and 94 columns, and all model cells have uniform dimensions of 10 ft by 10 ft. Thus a total of 18,048 cells are contained within both model layers. Not all of these cells are included in the flow and transport

computations, however, as the area southwest of the railroad tracks that skirt the STAR Center are excluded from the simulation domain.

B5.2 Hydraulic Parameters

A uniform horizontal hydraulic conductivity of 1 ft/day was used in the flow model, and vertical hydraulic conductivity was assigned a value of 0.1 ft/day (Table B−1). Model cells in Layer 1 representing unpaved areas at the site were assigned a uniform, constant recharge rate of 5.5 in/yr (0.00126 ft/day). Effective porosity of aquifer materials was set at 0.3, or 30 percent.

Table B−1. Hydraulic and Transport Parameters Used in the Model

Parameter	Value
Hydraulic Conductivity (x-direction)	1.0 ft/day
Hydraulic Conductivity (y-direction)	1.0 ft/day
Hydraulic Conductivity (z-direction)	0.1 ft/day
Porosity	0.3 (dimensionless)
Recharge	0.00126 in/day
Longitudinal Dispersivity	10 ft
Transverse Dispersivity	1 ft
Vertical Dispersivity	0.1 ft
Distribution Coefficient (K_d)	63 L/kg and 6.3 L/kg
Bulk Density	1.605 kg/L

B5.3 Flow Sources, Sinks, and Boundary Conditions

Cells along the perimeter of the model were handled using either prescribed-head or general head boundaries (see Figure B−1 and Figure B−2). Drain boundary conditions were assigned to Layer 1 cells within the pond footprints. Using this type of condition in lieu of treating the ponds as prescribed head boundaries made it possible to account for some shallow-zone ground water migrating below pond beds, which appear to be above the base of the aquifer's shallow zone. Maps showing the areal distribution of cells at which the various types of boundary conditions were assigned to Layers 1 and 2 are presented in Figure B−1 and Figure B−2, respectively.

Zero flow conditions were assumed across the model base (i.e., at the interface between Layer 2 and the Hawthorn). A uniform inflow rate of 5.5 in/yr (0.00126 ft/day) was assigned to Layer 1 cells in unpaved areas to represent recharge in these locales from rainfall. Zero recharge was assumed at all other Layer 1 cells (i.e., in paved areas and at ponds).

The water budget of the flow model was determined largely as a result of the model solution itself. That is, flow rates feeding the ground water system (inflows) at and near the north model boundary were computed as a result of using either prescribed-head or general head boundary conditions at these locations. Similarly, outflows along the west, southwest, south, and east boundaries in both layers, and at the ponds in Layer 1, were computed using the respective boundary parameters assigned to these areas.

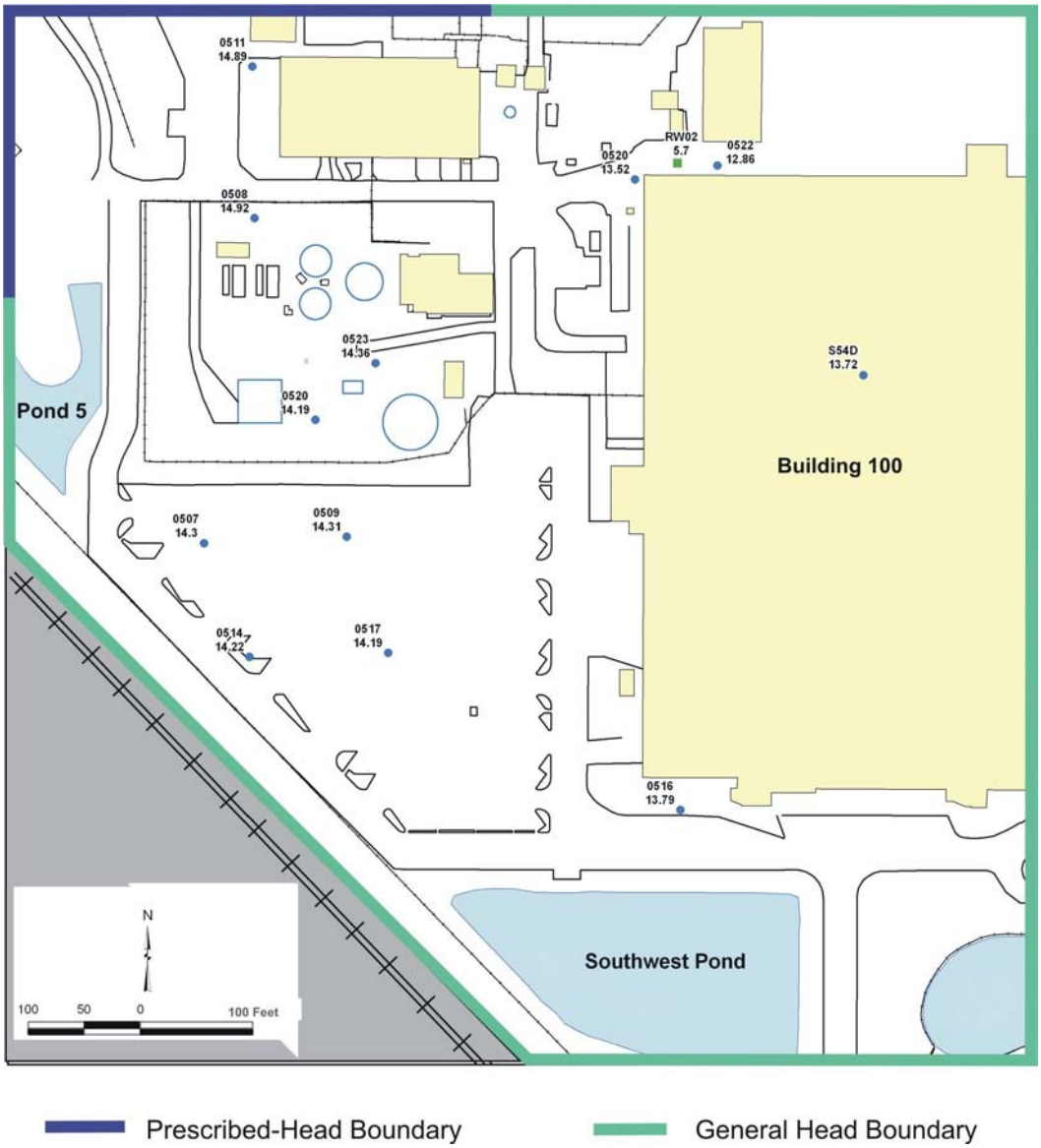

Figure B−2. Boundary Conditions in Model Layer 2

B5.4 Transport Parameters

A uniform longitudinal dispersivity of 10 ft was used in the model to account for spreading of dissolved arsenic along the direction of flow (Table B−1). Selection of this value was based on the assumption that dispersivity should be representative of a variety of factors that either reflect or affect transport distance (see Section B3.4). These factors include the size of the existing area of elevated arsenic concentrations, the total transport simulation time, estimated transport distances for non-retarded constituents over that time span, and estimated transport distances of arsenic as affected by its sorption to aquifer materials.

Examination of the area of existing arsenic contamination at concentrations equaling or exceeding 10 µg/L suggested that this area was about 200 ft long (in an east-west direction) by 150 ft wide (in a north-south direction) Assuming that much of this plume expanse was reflective

of past dissolved arsenic transport distances of about 100 ft away from a contaminant source, a longitudinal dispersivity amounting to 10 percent of this transport distance resulted in an estimated longitudinal dispersivity of 10 ft.

Other calculations based on potential future transport distances were based on the selection of a total transport simulation time of 500 years. For a non-retarded constituent migrating at an average ground water velocity of 2 ft/yr, 500 years of transport resulted in a total transport distance of 1,000 ft, 10 percent of which was 100 ft. A comparable calculation for a non-retarded constituent migrating at a higher average velocity of 10 ft/yr produced a total travel distance of 5,000 ft over 500 years, 10 percent of which was 500 ft. In contrast, equivalent retarded velocities resulting from use of a retardation factor of 337 (per Section B3.4) were 0.006 and 0.03 ft/yr, which in turn signified total travel distances over 500 years of 3 and 15 ft, respectively. Accordingly, 10 percent of each of these latter values produced estimated longitudinal dispersivities of 0.3 and 1.5 ft., respectively.

Given that these considerations resulted in a wide range of estimated longitudinal dispersivities, a value of 10 ft was considered a compromise between the extreme low and high values that were calculated. It was decided that sensitivity runs would be made with the resulting model using a K_d that was 10 percent of the 63 L/kg value resulting from the Duke Engineering and Services (1999) study. With these simulations, the above-mentioned longitudinal dispersivities (for a retardation factor of 337) would be effectively reduced to about 3 and 15 ft, respectively, which spanned the adopted dispersivity of 10 ft. Transverse horizontal and transverse vertical dispersivities were assigned uniform values of 1 and 0.1 ft, respectively.

B6.0 Model Calibration

Calibration of the flow model was achieved through a trial-and-error process, in which flow conditions were manipulated mostly by adjusting parameters used for the prescribed-head and general head boundary conditions applied along the model's perimeter. Several model runs were made until the residuals between observed and computed hydraulic heads were reduced to relatively small values.

B6.1 Calibration Targets

Measured water elevations at 22 monitoring wells during September 2006 were used as calibration targets. Of this total, 13 elevations were from wells screened in the shallow surficial aquifer and nine elevations were from deep surficial aquifer wells. During the flow calibration process, attempts were also made to produce water level contours that resembled those shown in Figure 7 and Figure 8 in the main report for the respective shallow and deep zones of the surficial aquifer.

Contour plots of the steady-state water elevations produced by the model for Layers 1 and 2 are presented in Figure B−3 and Figure B−4, respectively. Visual inspection of these plots suggests that the model performs reasonably well in matching observed flow patterns at the WWNA and surrounding areas during the wet season.

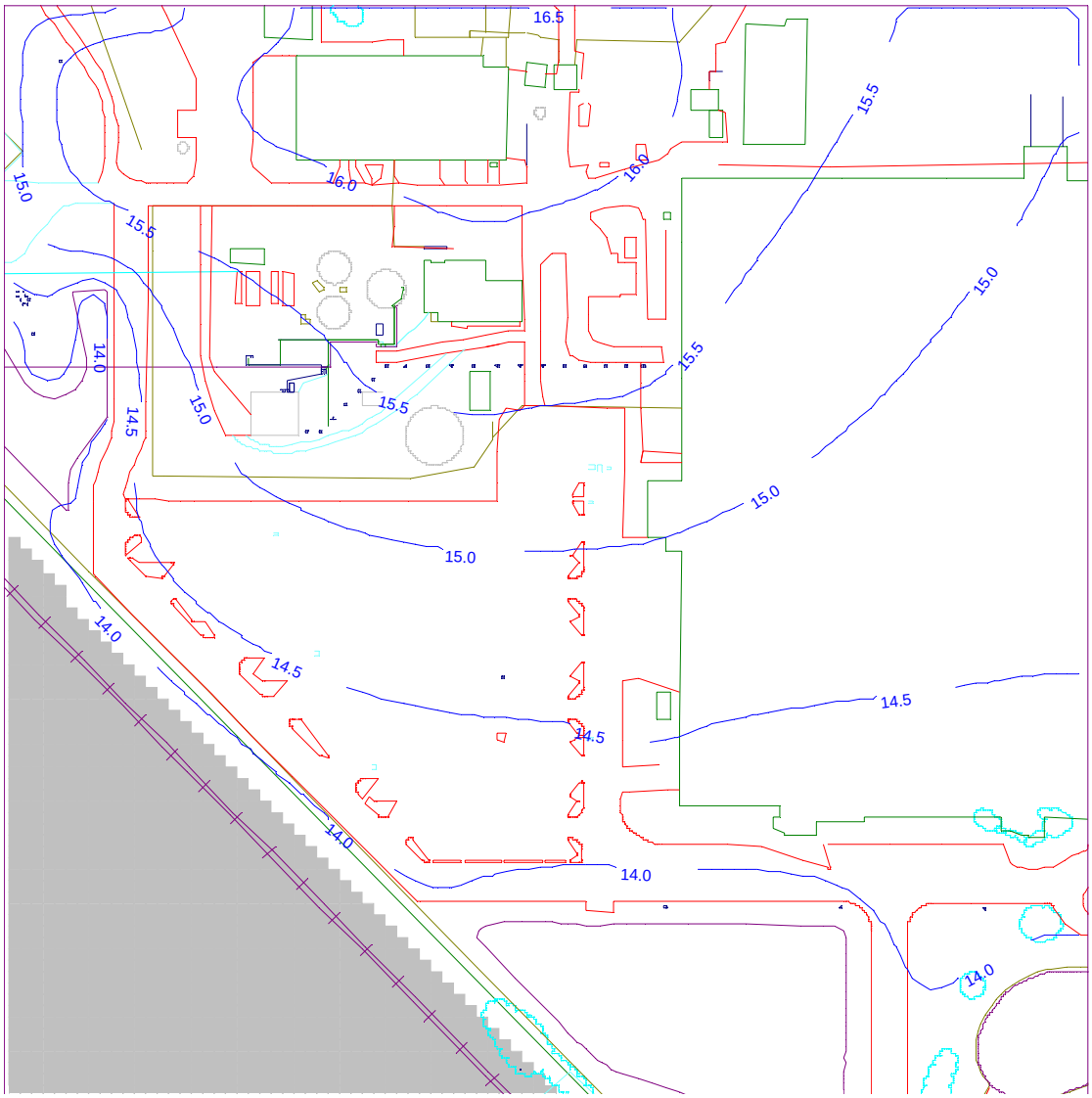

Figure B−3. Model-Computed Ground-Water Elevations (ft above msl) in Layer 1

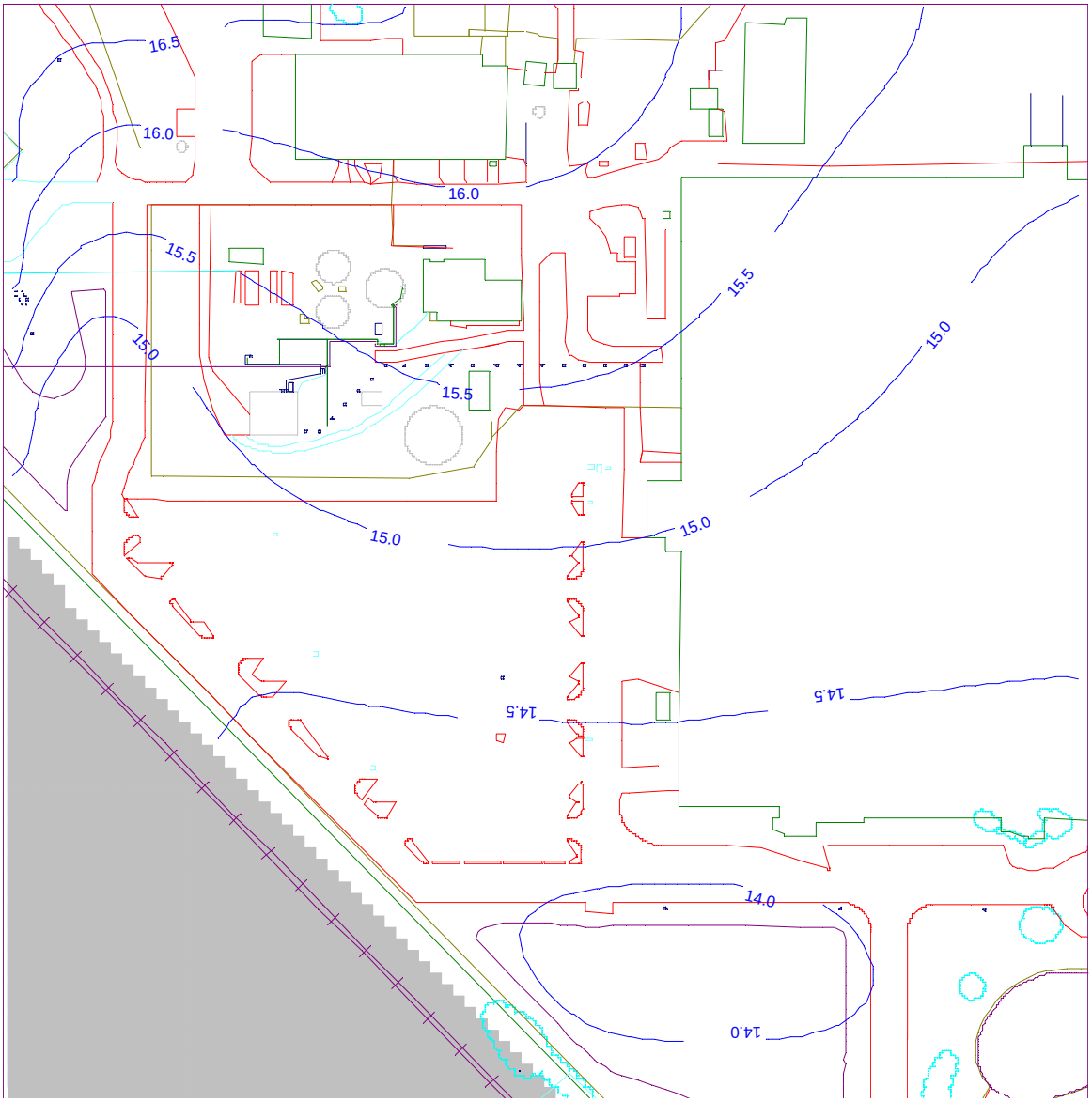

Figure B−4. Model-Computed Ground-Water Elevations (ft above msl) in Layer 2

B6.2 Calibration Performance

Table B−2 presents a listing of the monitoring wells used for flow model calibration, observed and model-computed water elevations at the wells, and corresponding residuals (observed water elevation minus computed elevation). As shown, residuals range from –0.76 ft to 0.86 ft, and the mean of the residuals is 0.11 ft. The distribution of the residuals is well balanced in the sense that the number of positive values is the same as the number of negative residuals. This balanced distribution is also illustrated in Figure B−5, which consists of a scatter plot of observed and computed water levels. A perfect fit between observed and computed water levels would show all plotted values on this graph falling on a straight line.

Table B−2. Water Elevation Residuals in the WWNA Flow Model

Monitoring Well	Model Layer	Observed Water Elevation (ft above msl)	Computed Water Elevation (ft above msl)	Elevation Residual (Observed minus Computed) (ft)
18-0500	1	16.18	15.42	0.76
18-0502	1	16.07	15.26	0.81
18-0507	2	14.81	14.71	0.10
18-0508	2	16.58	15.72	0.86
18-0509	2	15.2	14.91	0.29
18-0510	2	14.55	14.99	-0.44
18-0520	2	15.38	15.24	0.14
18-0522	1	15.82	15.29	0.53
18-0523	2	15.79	15.49	0.30
18-0525	1	16.06	15.55	0.51
18-0526	1	14.96	14.53	0.43
18-RW0501	1	16.05	15.26	0.79
10-0500	1	15.76	15.93	-0.17
06-0500	1	15.54	15.87	-0.33
06-0501	1	15.47	15.74	-0.27
09-0500	1	15.88	15.97	-0.09
12-0516	2	14.1	14.15	-0.05
12-0520	2	15.06	15.82	-0.76
12-RW02	2	15.48	15.74	-0.26
12-S31B	1	15.23	15.68	-0.45
12-TE03	1	14.62	14.92	-0.30
23-SW01	1	13.58	13.61	-0.03
			Mean =	0.11

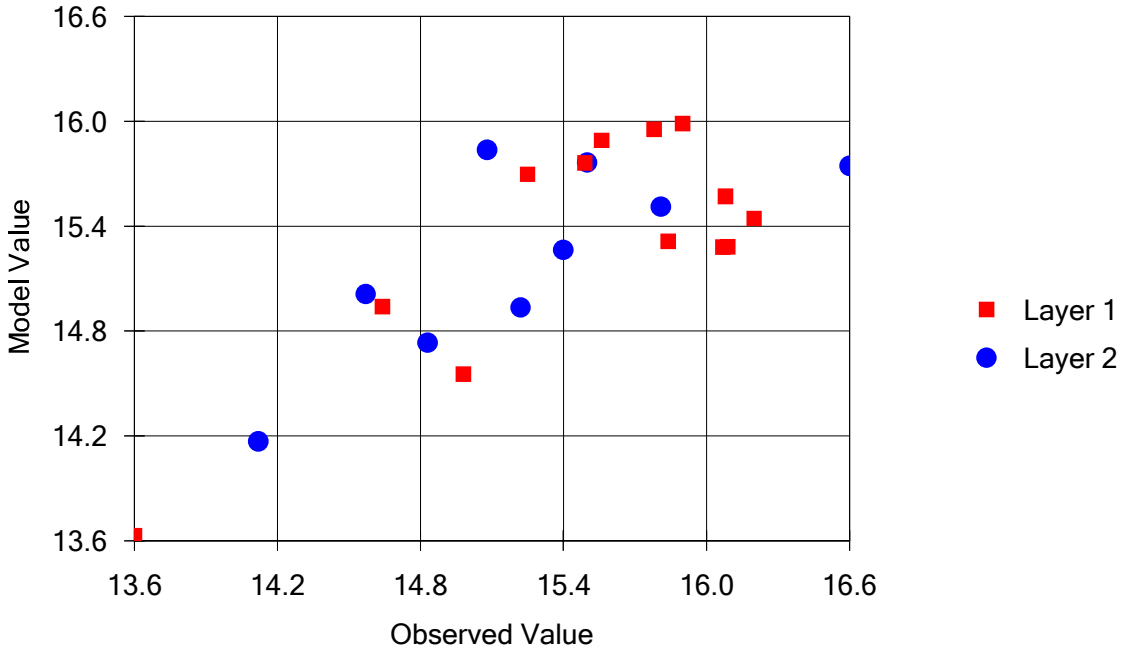

Figure B−5. Scatter Plot of Observed and Model-Computed Water Elevations (ft above msl)

Further assessment of the flow model's ability to match observed water elevations within the modeled area is seen in the standard deviation of the residuals, which is 0.46 ft. Dividing this number by the range of the observed water elevations (3 ft) produces a normalized measure of calibration performance of 0.15 (dimensionless), or 15 percent, which can be considered a reasonable fit between observed and model-generated water elevations.

B7.0 Predictive Simulations

As summarized in Table B−3, four predicative simulations of arsenic transport were conducted using the calibrated flow model and different projections of arsenic behavior in future years. Two of the model runs (Simulations 1 and 3) were based on the assumption that past soil removal efforts at the WWNA have removed future sources of the contaminant in ground water, and that ground water arsenic levels in the existing area of elevated concentration will gradually decrease due to recharge-driven dilution, dispersion and possible flushing to surface water in the ponds. The two additional model runs (Simulations 2 and 4) assumed that continued downward flushing of arsenic sorbed on unsaturated zone soils will maintain arsenic concentrations in a portion of the existing area of contamination at relatively high, constant values. The simulations also accounted for variations in the degree of arsenic sorption that could be observed in the future.

Table B−3. Summary of Predictive Simulations

Simulation	Continuing Source	K_d (L/kg)
1 (Base Case)	No	63
2	Yes	63
3	No	6.3
4	Yes	6.3

Dissolved arsenic concentrations used as initial conditions in the predictive simulations were developed by kriging concentrations measured in September 2006 at several wells located in and near the existing area of contamination. A map of the resulting initial distribution of arsenic at concentrations >100 µg/L in Layer 1 is presented in Figure B−6. Most of the existing arsenic mass in the initial distribution is located in the upper surficial aquifer, where current arsenic concentrations can be as high as 145 µg/L. In contrast the maximum observed concentration in the deep surficial aquifer is about 35 µg/L (no map for this layer). Because this study and previous investigations indicate that very little arsenic is transported from Layer 1 to Layer 2 Layer 1 concentrations are of greatest interest with regard to the future fate of arsenic at the WWNA. As a consequence, only Layer 1 model results are discussed in this section.

B7.1 Base-Case Simulation

A base-case transport simulation (Simulation 1) was performed in which it was assumed that a source of arsenic in the unsaturated zone no longer exists and the average K_d determined for arsenic in the Duke Engineering and Services (1999) study (K_d = 63 L/kg) was applicable. This model run was expected to be the most optimistic of all predictive simulations in the sense that it would show arsenic concentrations gradually decreasing in the existing area of contamination but the quantity of arsenic migrating from this area would be severely limited due to heavy retardation of its transport (retardation factor = 337).

Simulation 1 accounted for 500 years of arsenic migration. The distributions of resulting computed concentrations >100 µg/L after 50, 100, 250, and 500 years are illustrated in Figure B−7 through Figure B−10, respectively. These figures indicate that, over the 500-year period, the arsenic plume (>100 µg/L) remains relatively constant in size but the maximum concentration within the plume decreases.

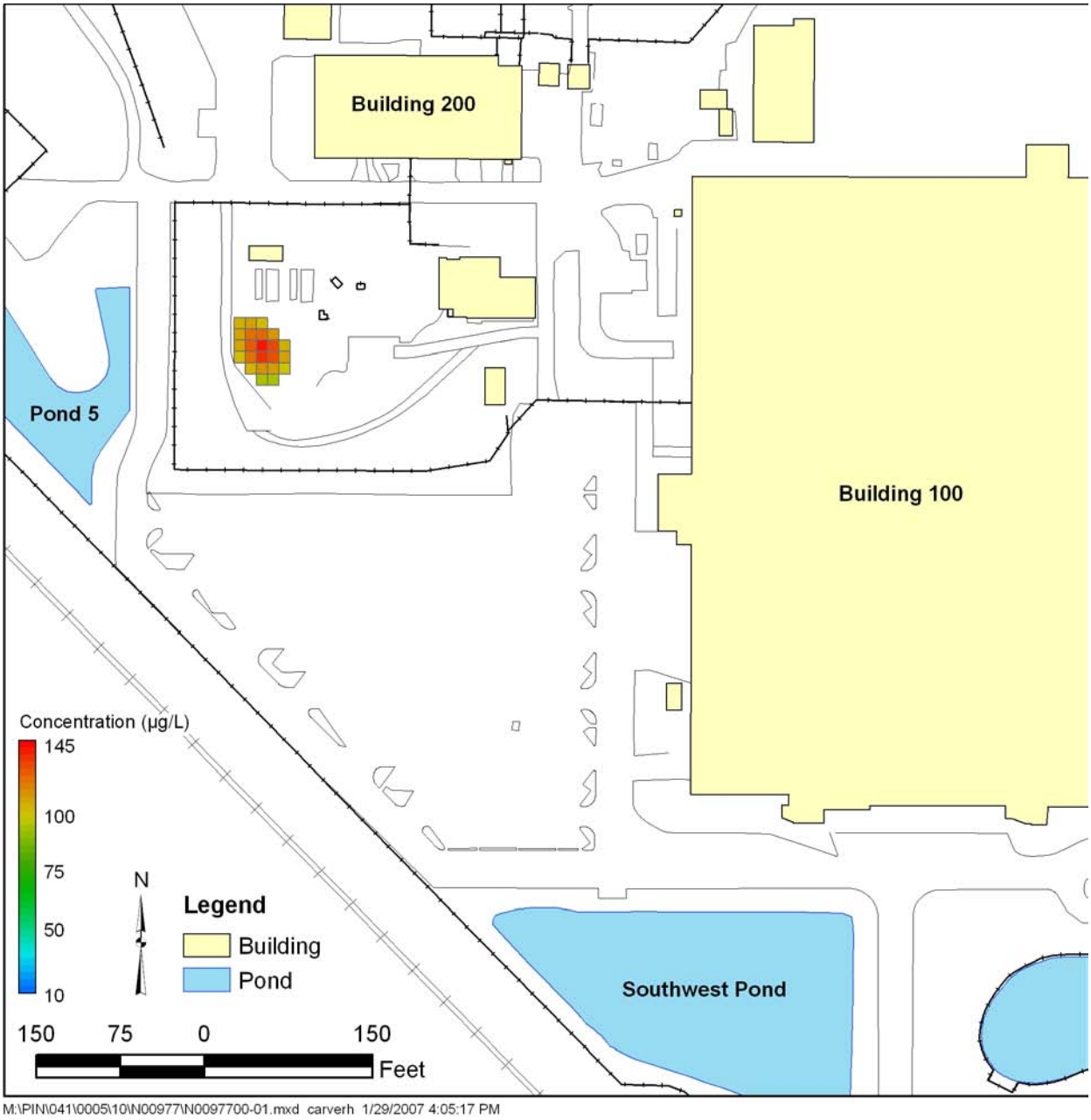

Figure B−6. Initial Arsenic Concentrations >100 µg/L in Layer 1 of the Transport Model

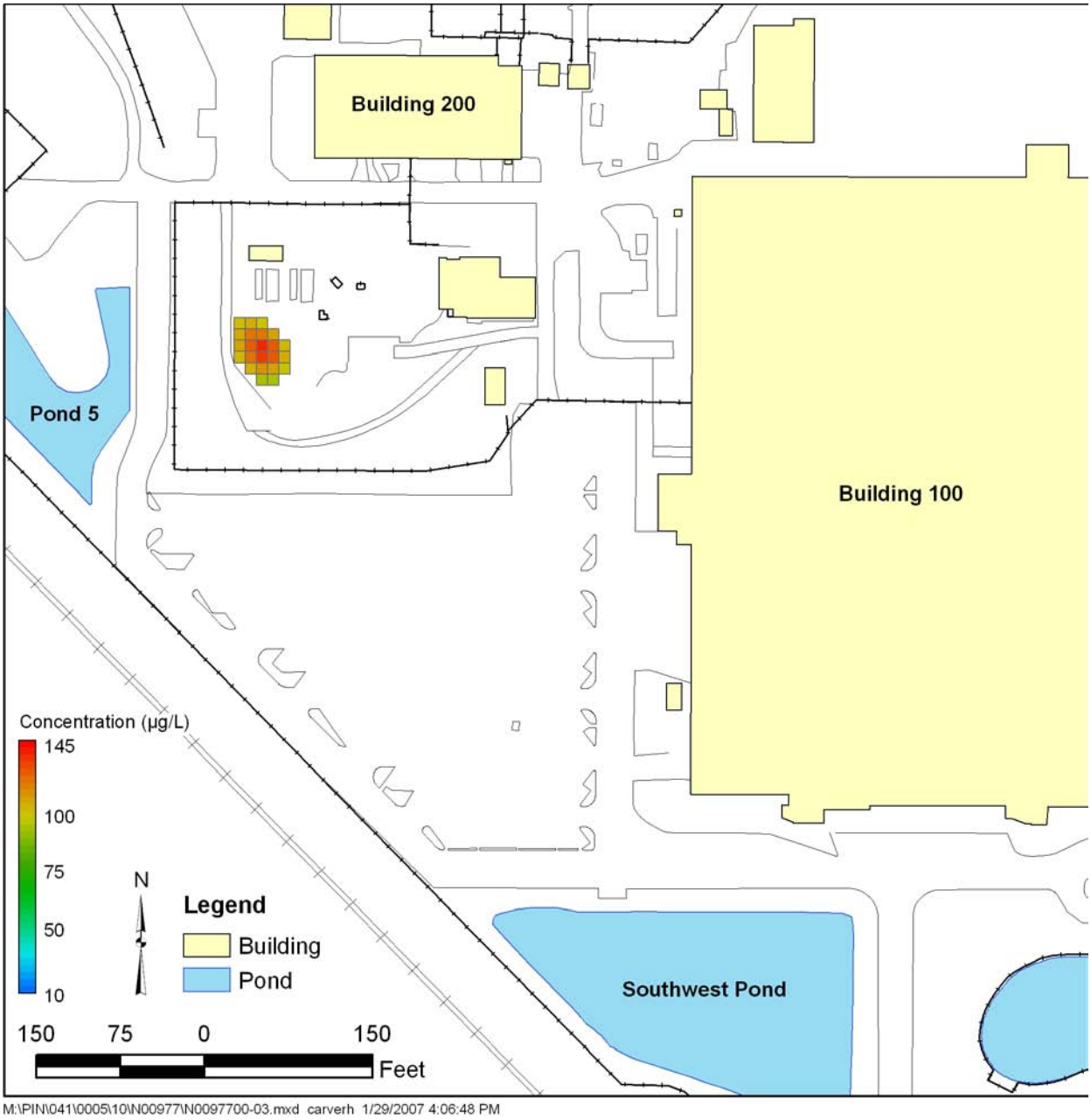

Figure B−7. Base-Case (Simulation 1) Computed Arsenic Concentrations (>100 µg/L) in Layer 1 after 50 Years of Transport

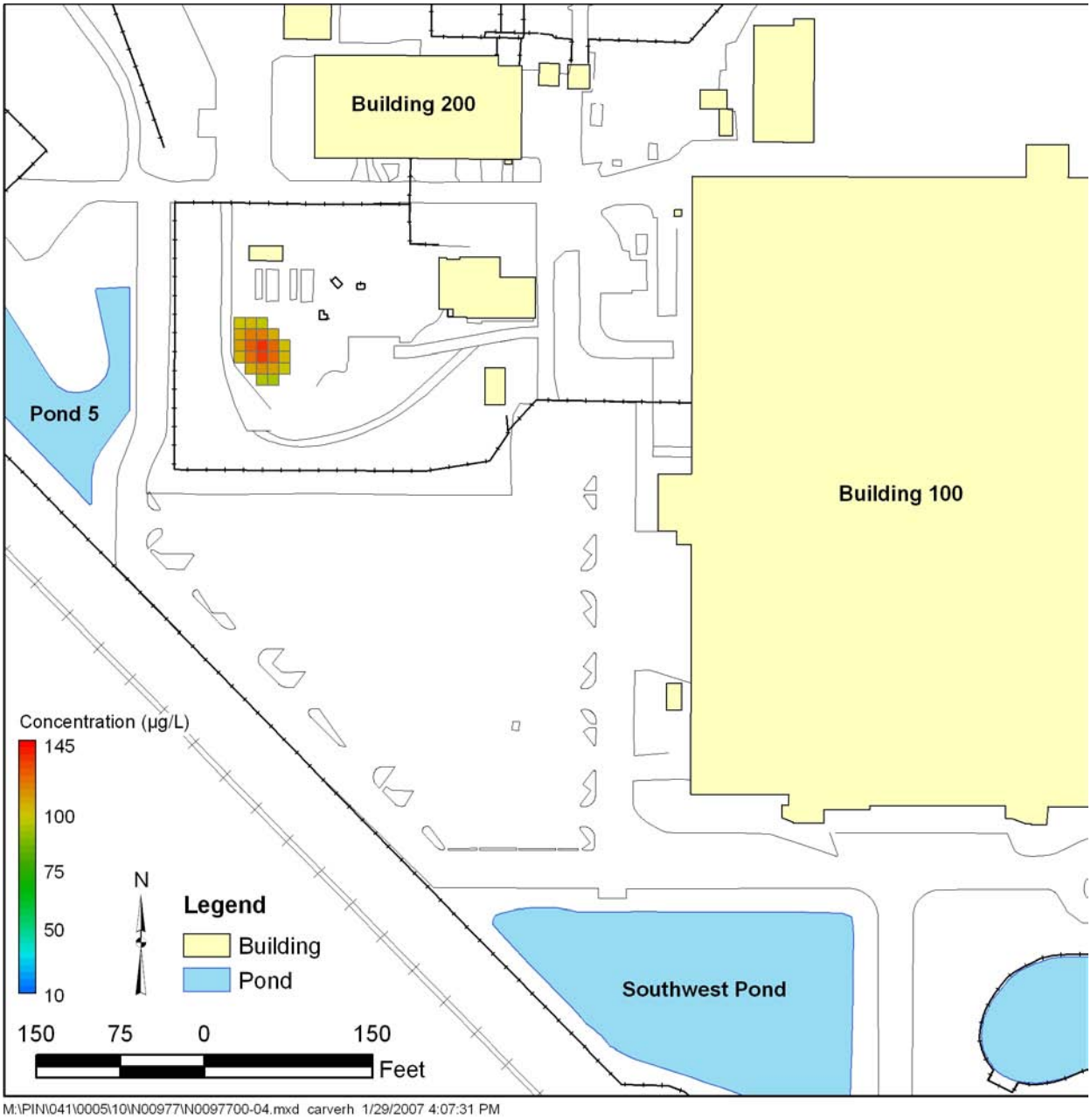

Figure B−8. Base-Case (Simulation 1) Computed Arsenic Concentrations (>100 µg/L) in Layer 1 after 100 Years of Transport

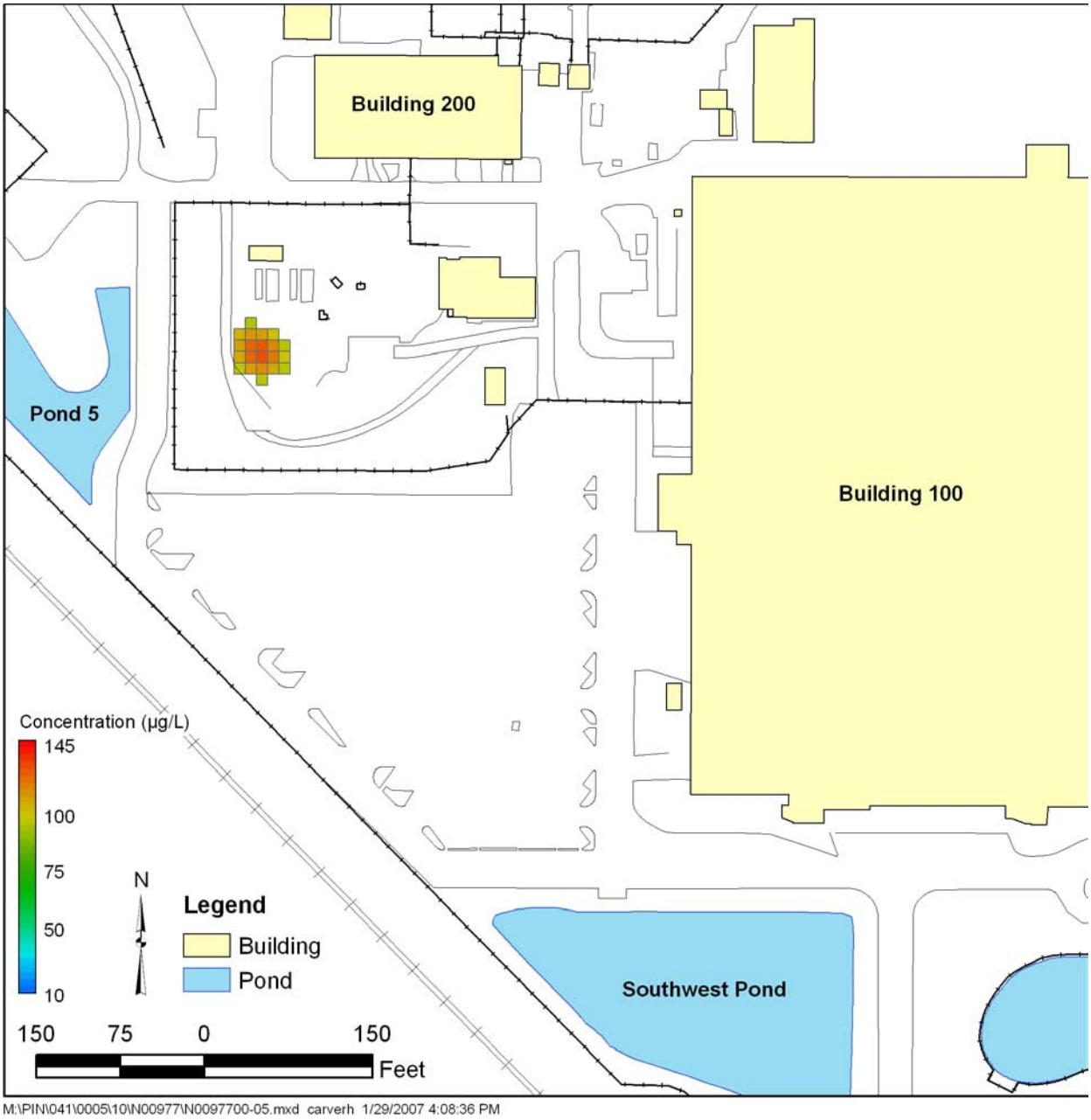

Figure B−9. Base-Case (Simulation 1) Computed Arsenic Concentrations (>100 µg/L) in Layer 1 after 250 Years of Transport

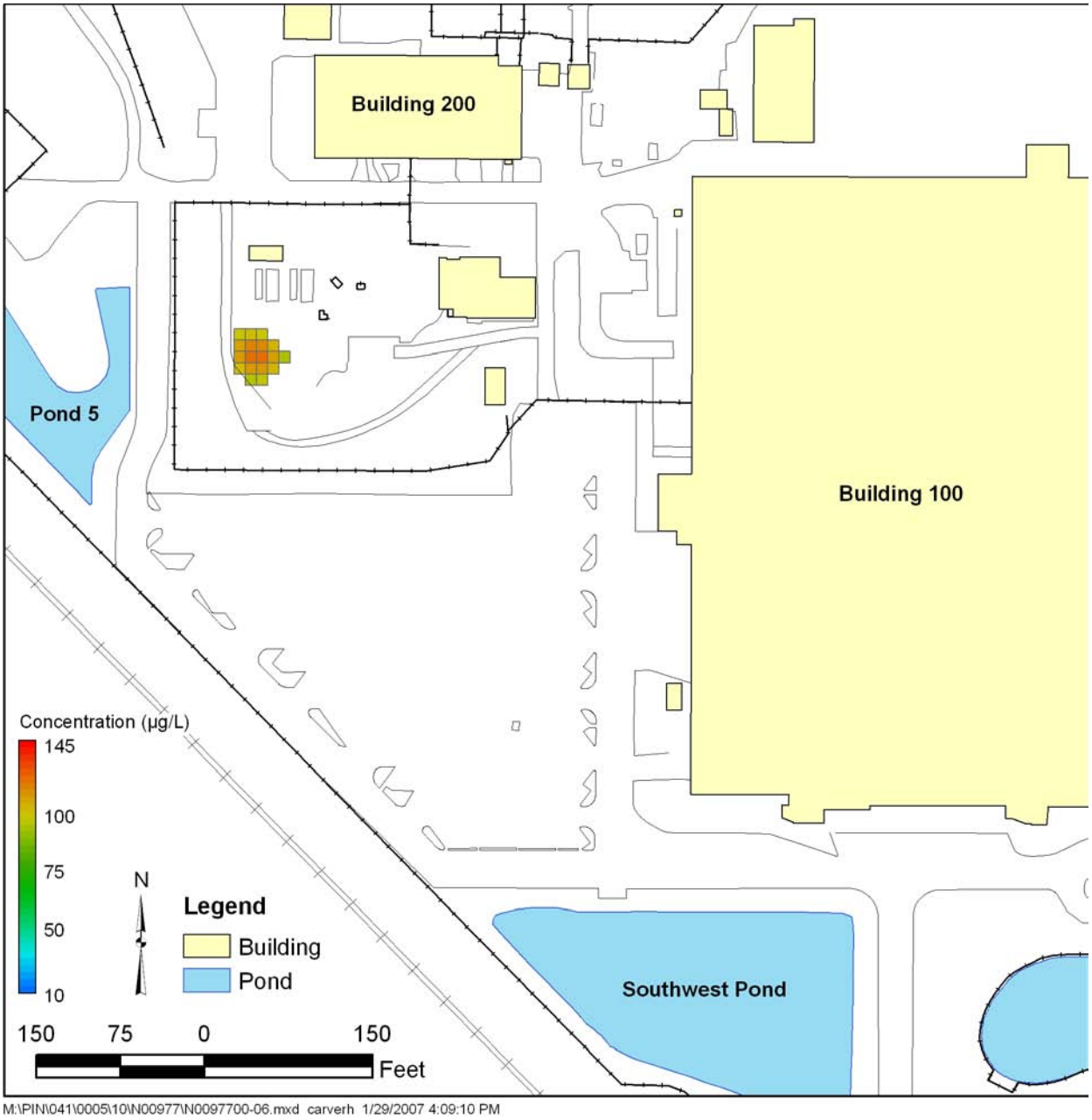

Figure B−10. Base-Case (Simulation 1) Computed Arsenic Concentrations (>100 µg/L) in Layer 1 after 500 Years of Transport

B7.2 Constant Concentration Source in the Area of Arsenic Contamination

The second model run (Simulation 2) accounted for 500 years of arsenic migration assuming a K_d of 63 L/kg and a continuing source would keep concentrations constant in selected model cells within the existing area of contamination. The cells selected for invoking constant concentration conditions followed a line extending from the west-northwest end of the area of contamination to its east-southeast end and tracing the largest existing concentrations. As with Simulation 1, the initial concentrations for this run are shown in Figure B−6. The distributions of resulting computed concentrations >100 μg/L after 50, 100, 250, and 500 years are illustrated in Figure B−11 through Figure B−14, respectively. Over the 500-year period, the arsenic plume (>100 μg/L) again remains relatively constant in size. However, unlike Simulation 1, the use of constant concentration conditions forces the maximum concentrations within the plume to remain relatively high.

B7.3 Simulations of Limited Sorption

The third and fourth model runs (Simulations 3 and 4) represented limited-sorption equivalents of Simulations 1 and 2. In particular, the used in Simulations 3 and 4 was 6.3 L/kg, or 10 percent of the K_d used in the earlier simulations. Although a K_d of 63 L/kg represents an average of 24 sorption measurements made by Duke Engineering and Services (1999) using site soil and ground water, additional model runs based on the lower K_d made it possible to assess more conservative scenarios of arsenic transport.

The distributions of computed concentrations >100 μg/L produced by Simulation 3 (no continuing source) after 50, 100, and 250 years are illustrated in Figure B−15 through Figure B−17, respectively. As these snapshots indicate, all computed arsenic concentrations decrease to <100 μg/L within 250 years of simulation time remains below 100 μg/L at 500 years. This disappearance of the relatively high arsenic concentrations is attributed to dilution and dispersion as the arsenic migrates west and south. Both of these contaminant attenuation processes become more effective when the use of a relatively low K_d permits arsenic to be more mobile.

The distributions of resulting computed concentrations >100 μg/L produced by Simulation 4 (continuing source in the form of constant concentrations at selected cells) after 50, 100, 250, and 500 years are shown in Figure B−18 through Figure B−21, respectively. Over the 500-year simulation period, the size of the arsenic plume (>100 μg/L) decreases slightly, as expected.

To evaluate the potential for arsenic entering Pond 5 or the Southwest Pond above the 50 μg/L surface water standard that applies for potential site uses (e.g., agricultural use; Table 62-302.530, Chapter 62-320 FAC), a map was generated showing arsenic concentrations of 50 μg/L and greater produced by Simulation 4 after 500 years of transport time (Figure B−22). This graphic shows that arsenic concentrations on the order of 50 μg/L do approach Pond 5 but never reach it. Though not shown, all remaining simulations suggest that arsenic concentrations of 50 μg/L or greater will either remain far from Pond 5 after 500 years or become nonexistent due to transport attenuation. All model runs indicate that arsenic contamination will always remain far upgradient of the Southwest Pond (e.g., Figure B−22).

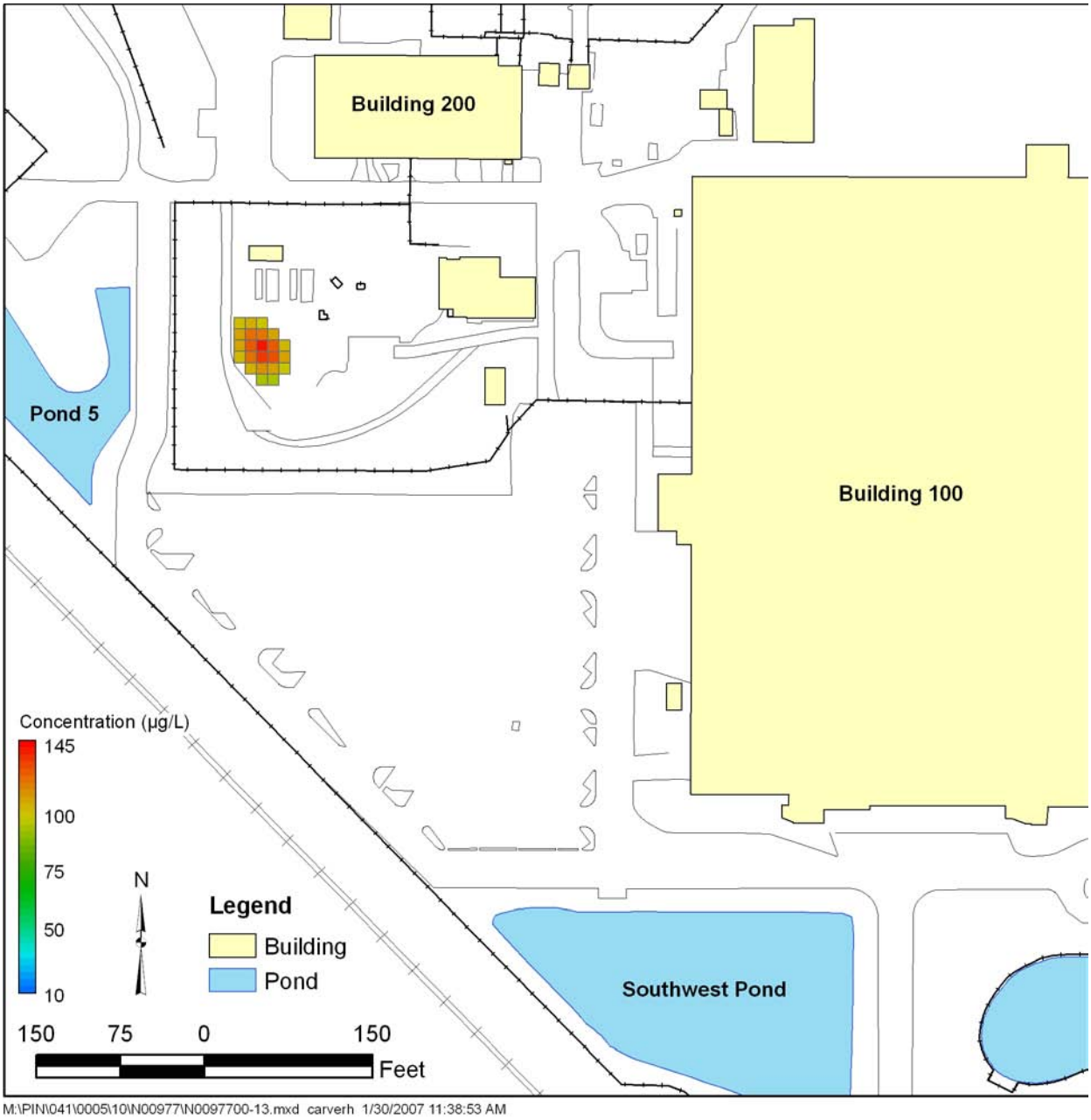

Figure B−11. Simulation 2 Arsenic Concentrations (>100 µg/L) in Layer 1 after 50 Years of Transport

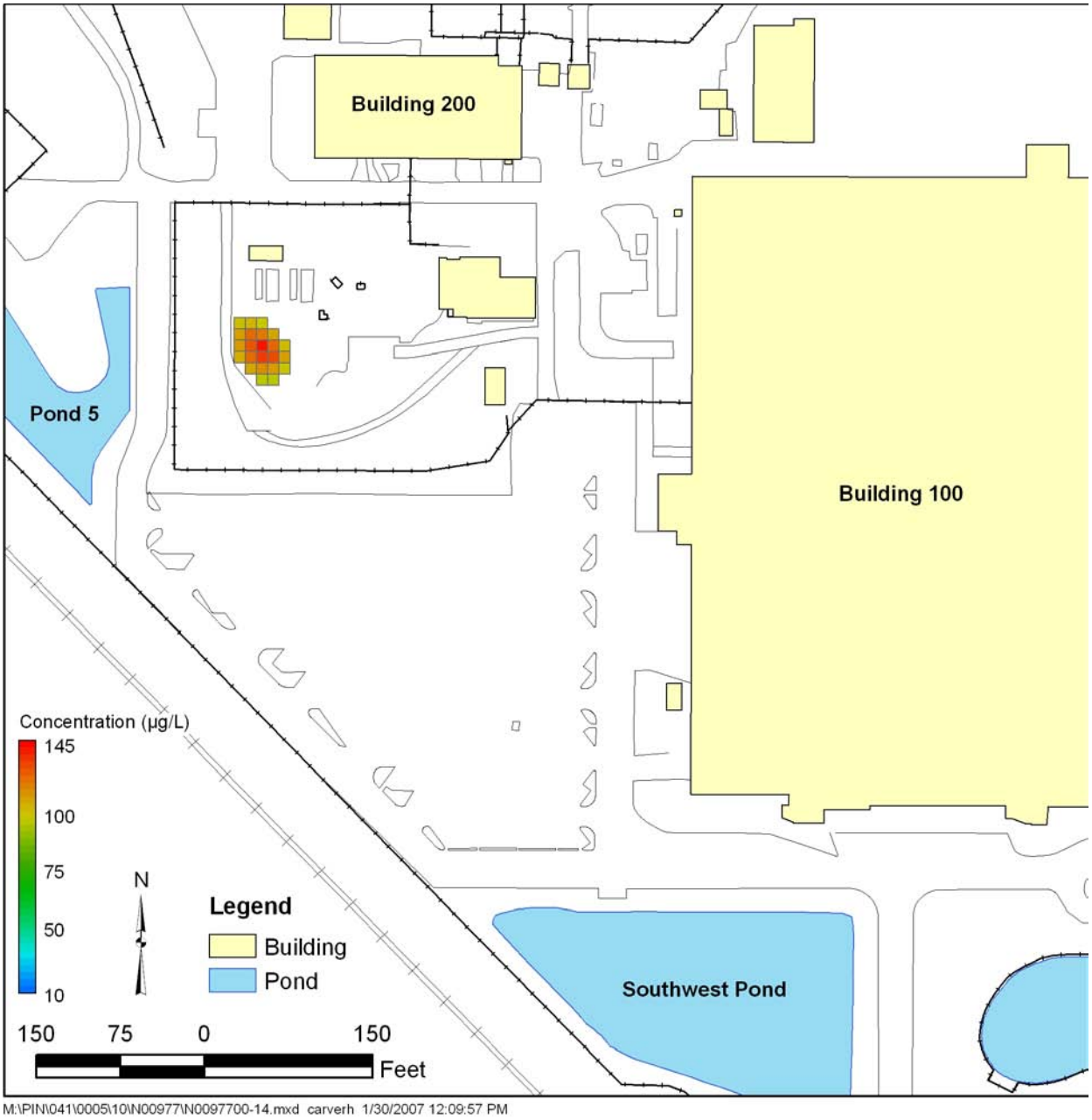

Figure B−12. Simulation 2 Arsenic Concentrations (>100 µg/L) in Layer 1 after 100 Years of Transport

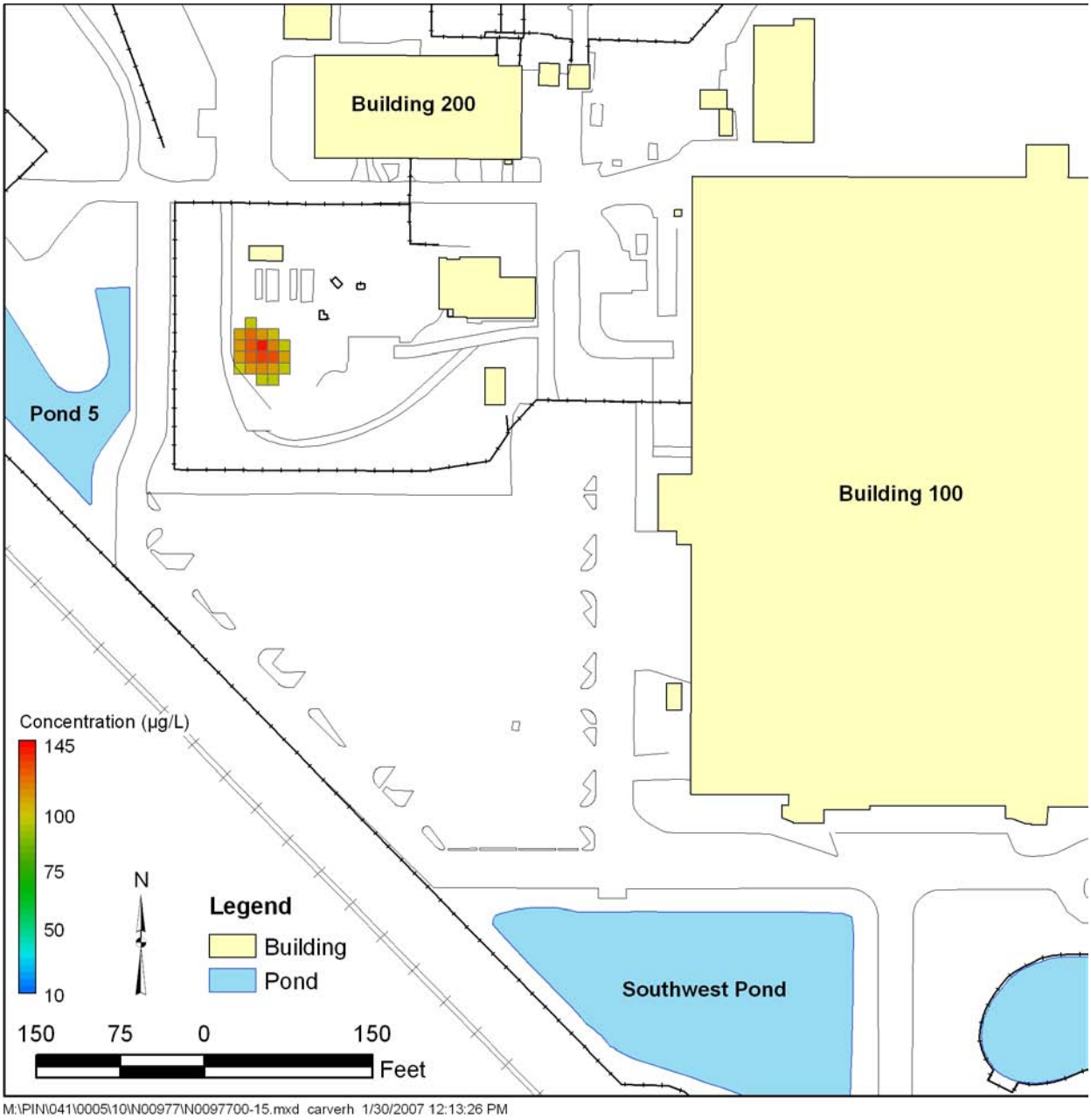

Figure B−13. Simulation 2 Arsenic Concentrations (>100 µg/L) in Layer 1 after 250 Years of Transport

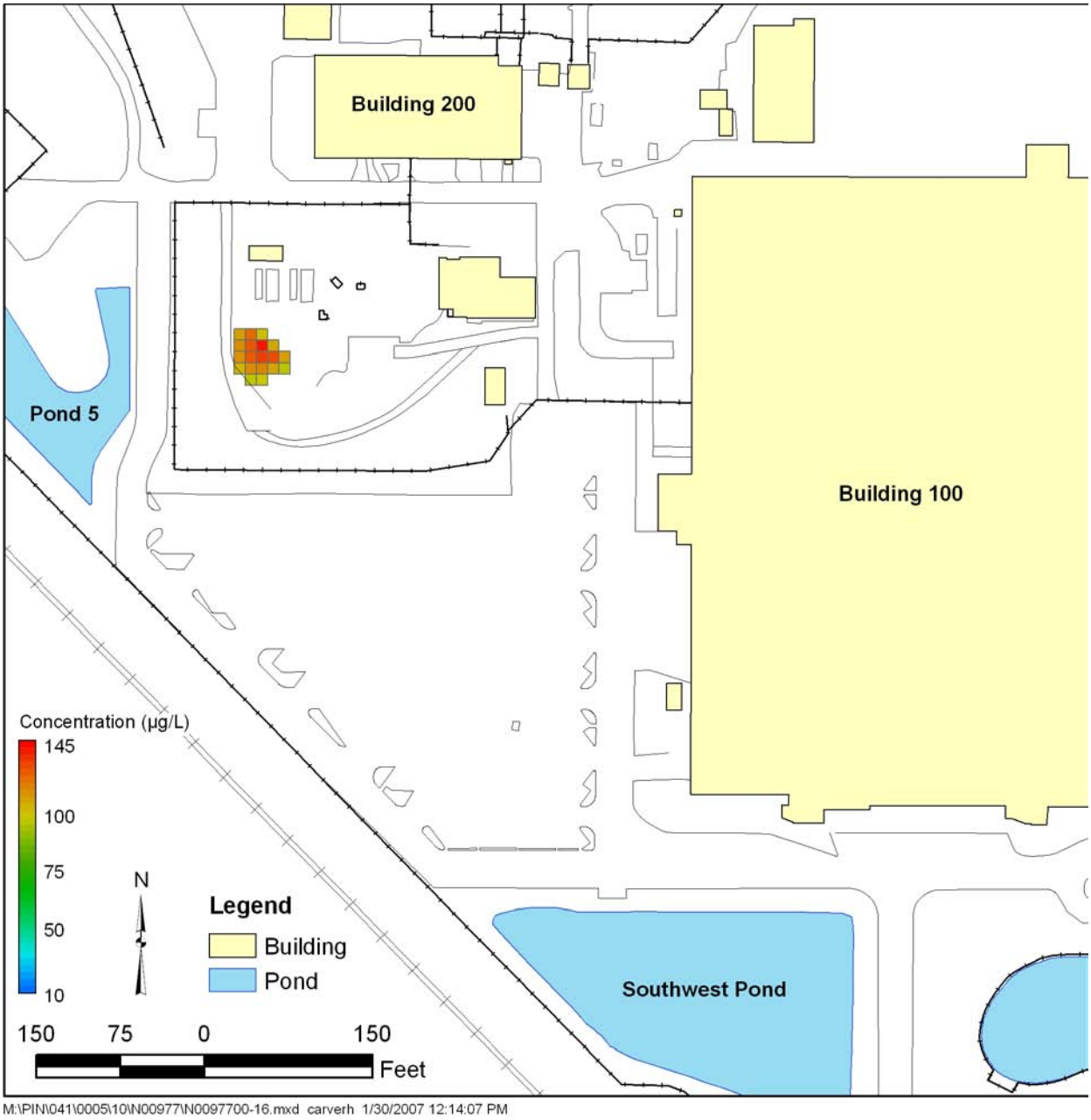

Figure B−14. Simulation 2 Arsenic Concentrations (>100 µg/L) in Layer 1 after 500 Years of Transport

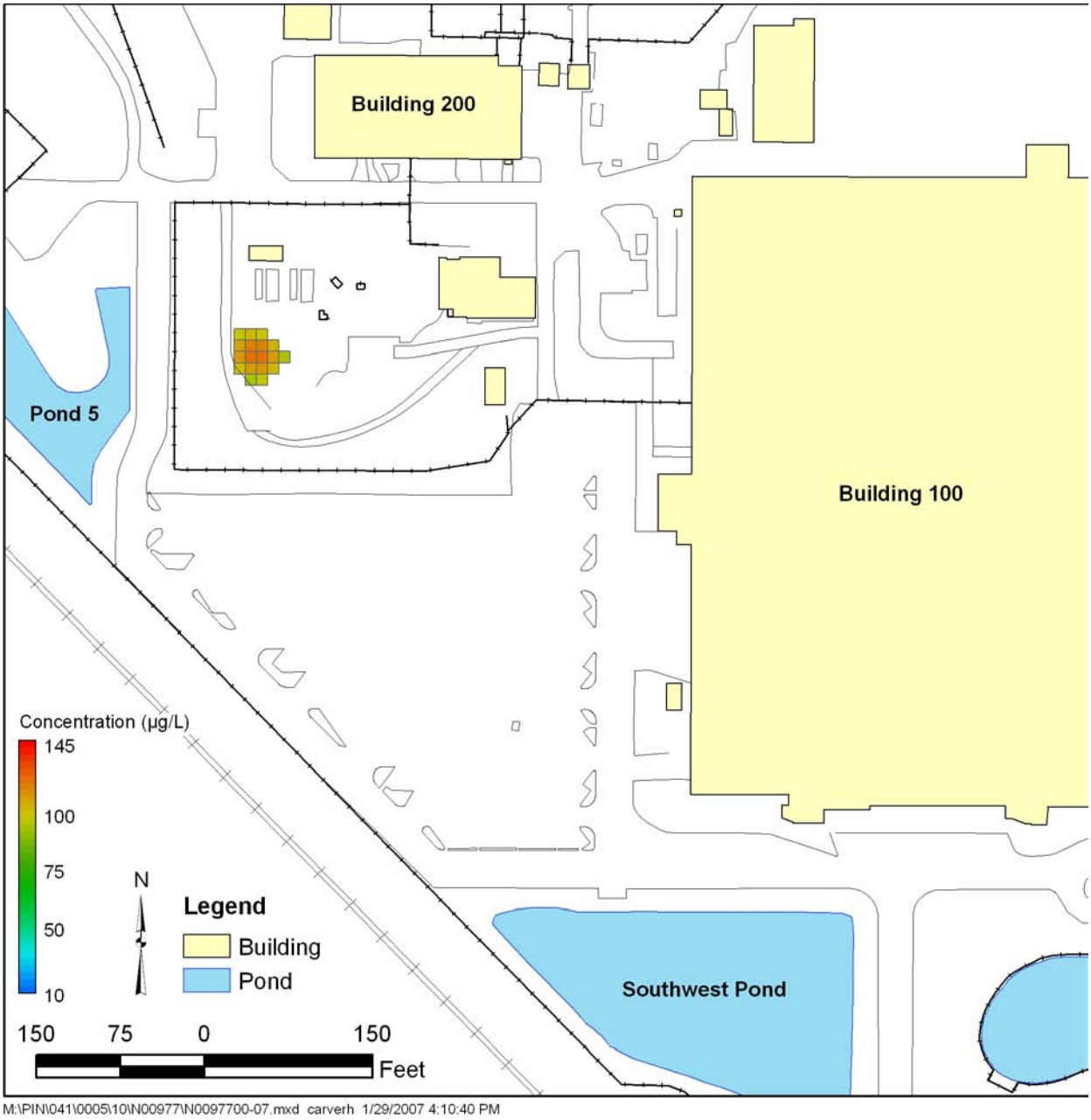

Figure B−15. Simulation 3 Arsenic Concentrations (>100 µg/L) in Layer 1 after 50 Years of Transport

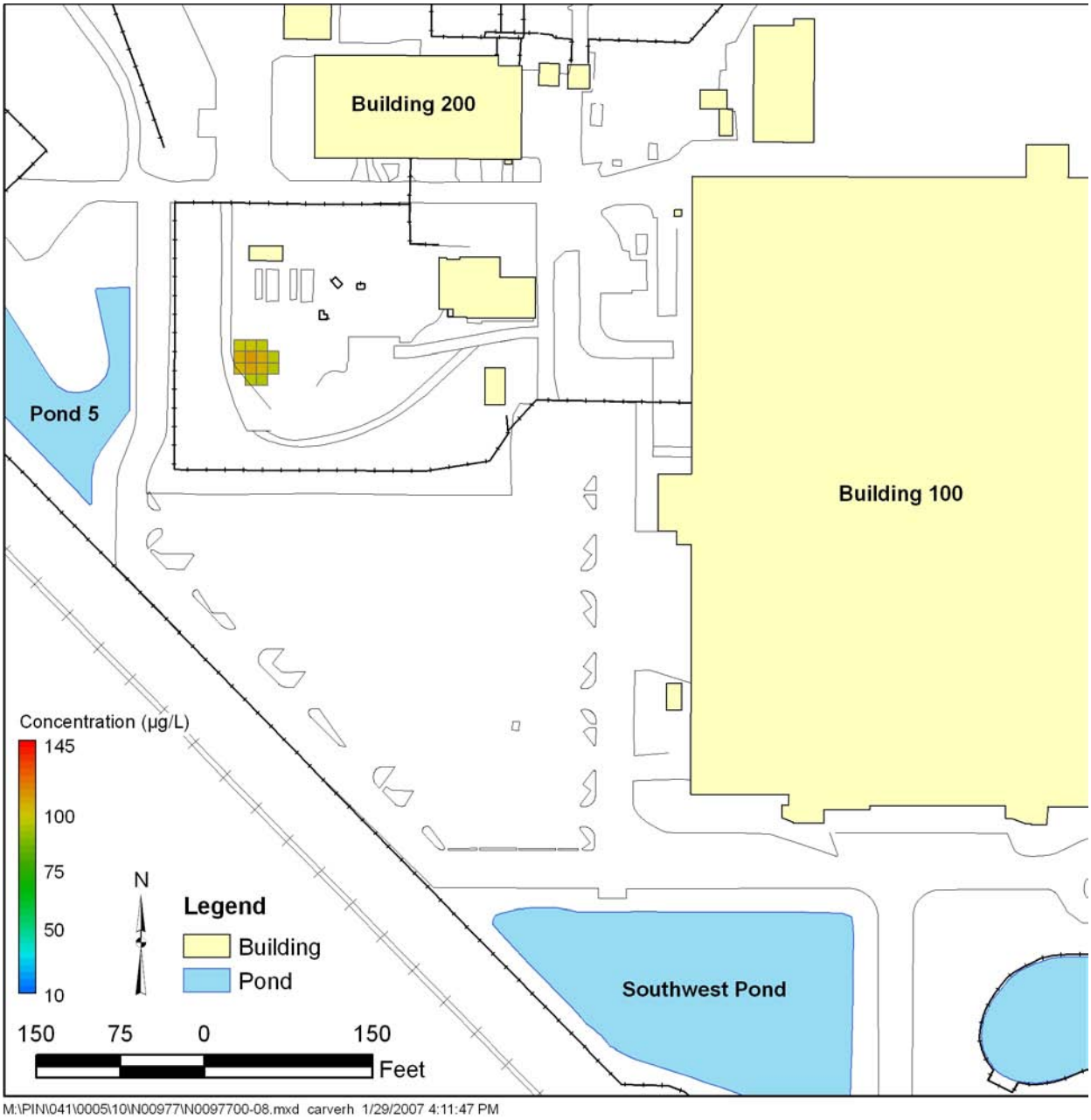

Figure B−16. Simulation 3 Arsenic Concentrations (>100 µg/L) in Layer 1 After 100 Years of Transport

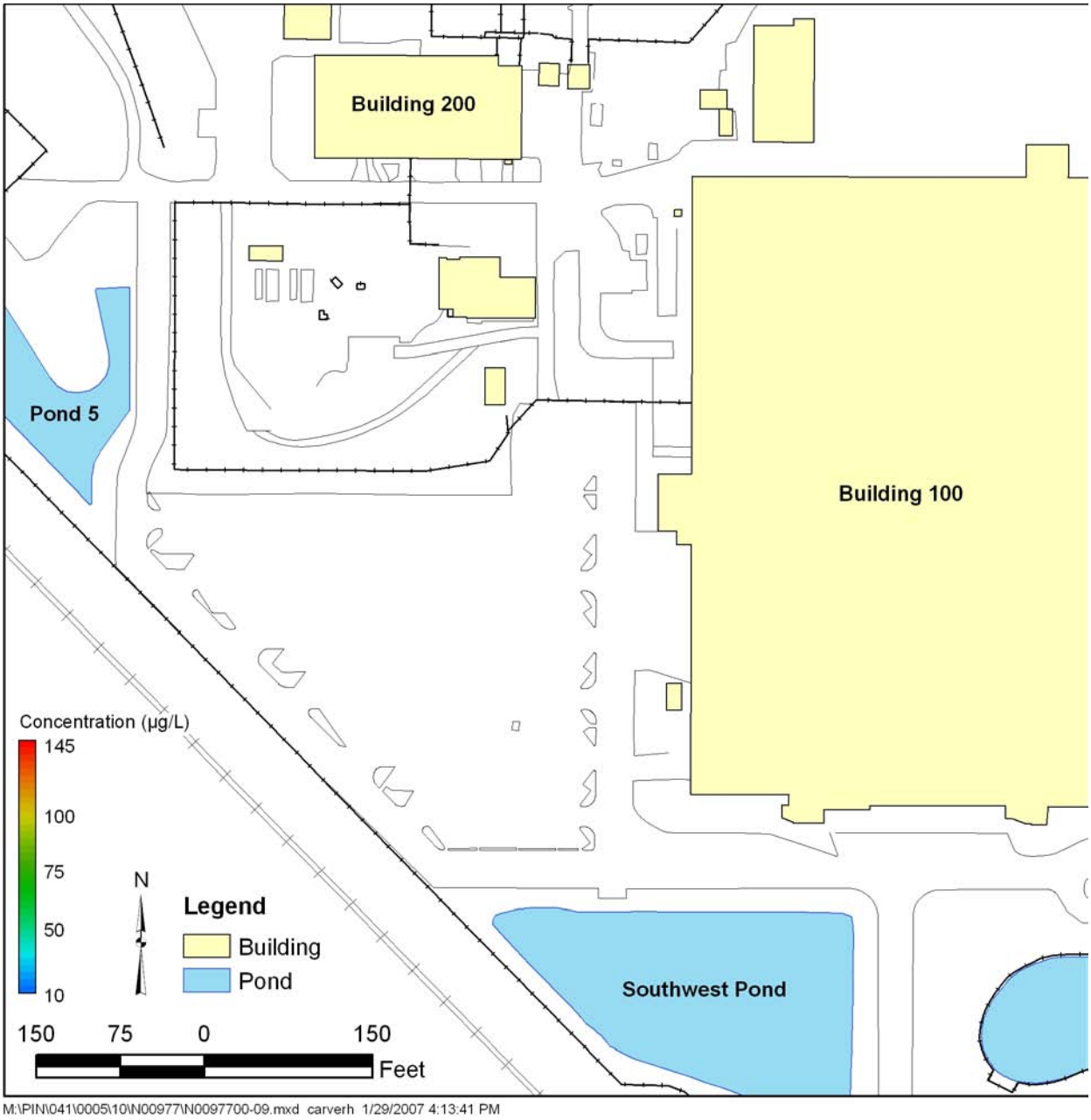

Figure B−17. Simulation 3 Arsenic Concentrations (>100 µg/L) in Layer 1 after 250 Years of Transport

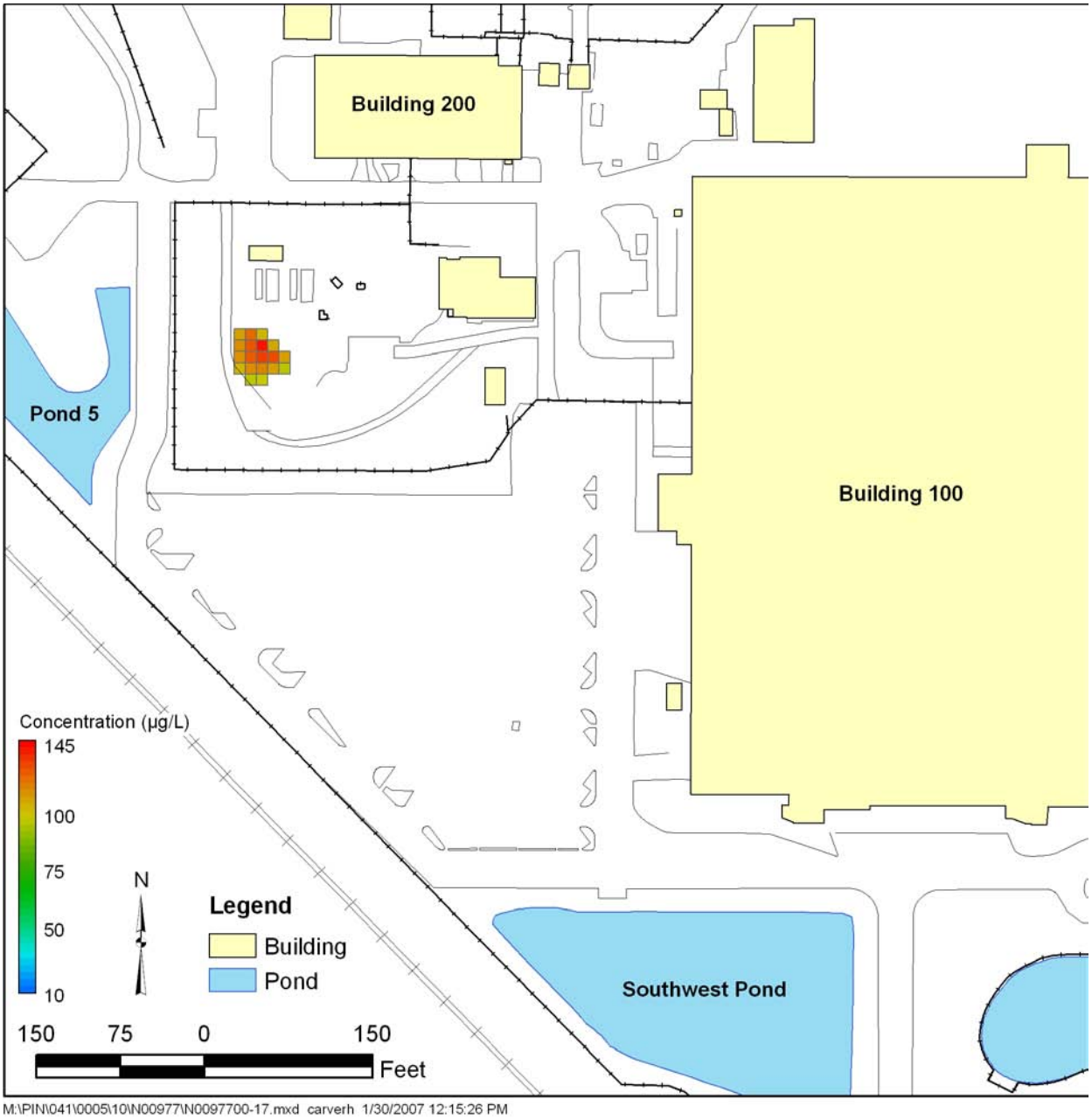

Figure B−18. Simulation 4 Arsenic Concentrations (>100 µg/L) in Layer 1 after 50 Years of Transport

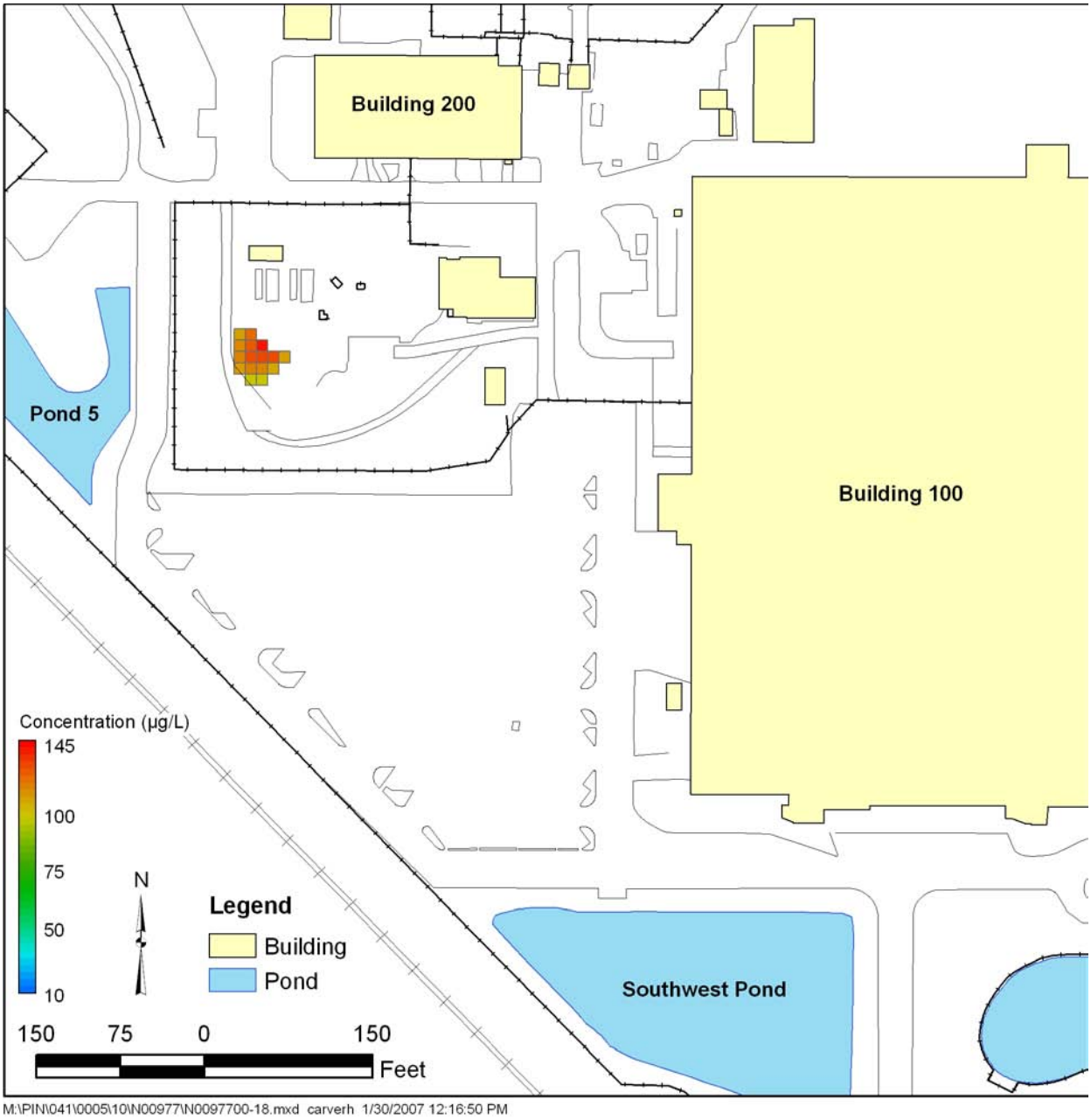

Figure B−19. Simulation 4 Arsenic Concentrations (>100 µg/L) in Layer 1 after 100 Years of Transport

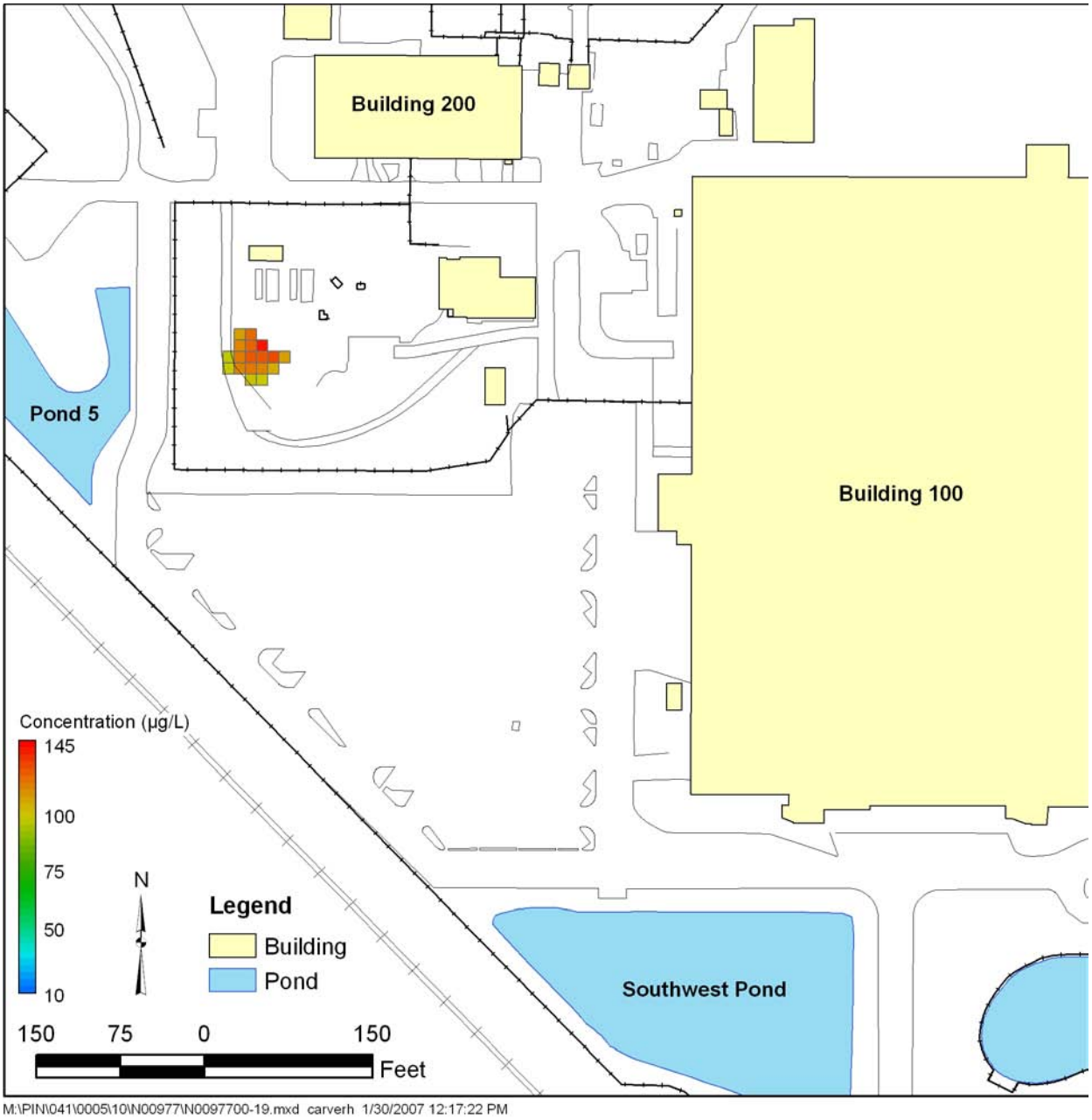

Figure B−20. Simulation 4 Arsenic Concentrations (>100 µg/L) in Layer 1 after 250 Years of Transport

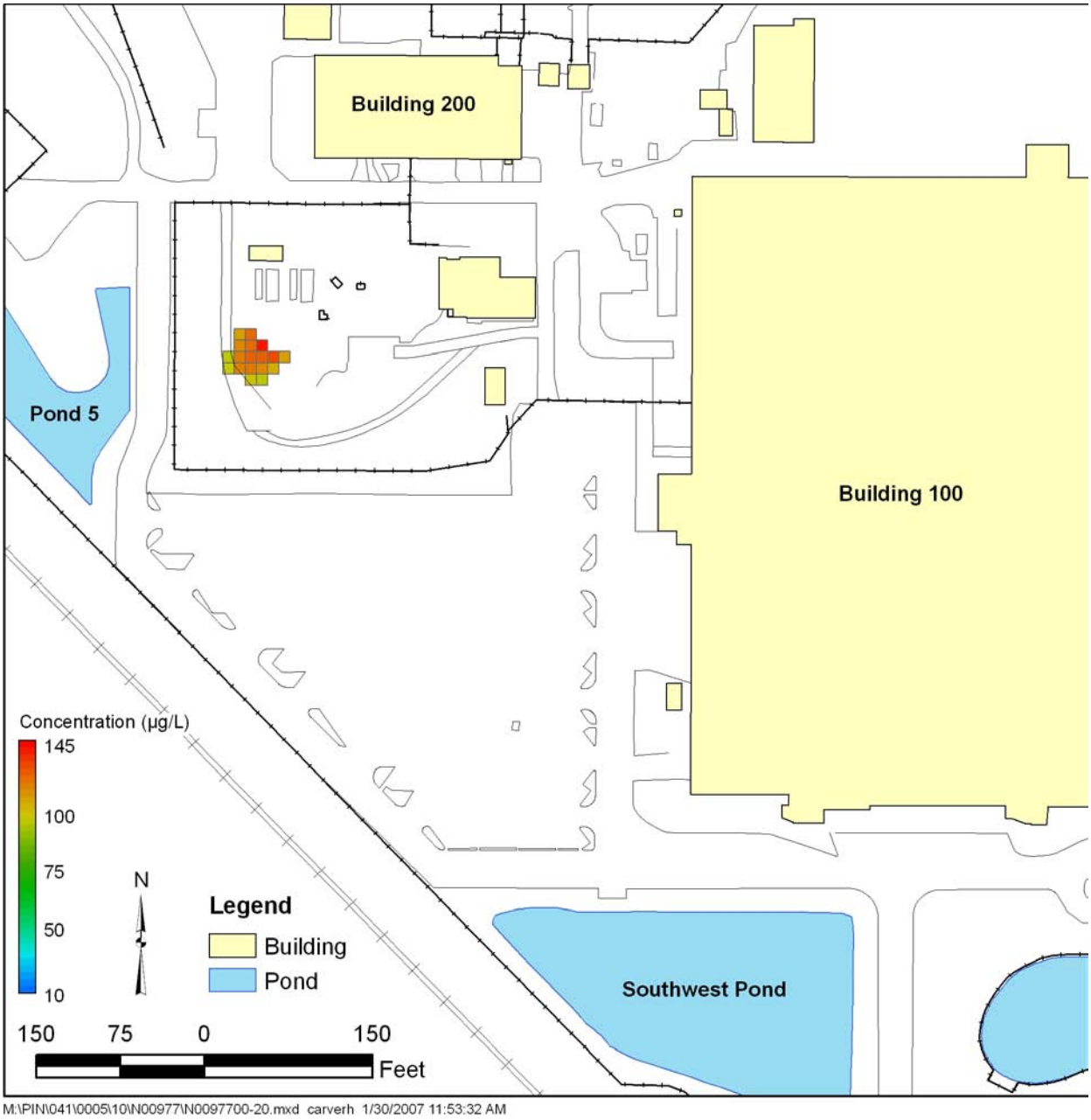

Figure B−21. Simulation 4 Arsenic Concentrations (>100 µg/L) in Layer 1 after 500 Years of Transport

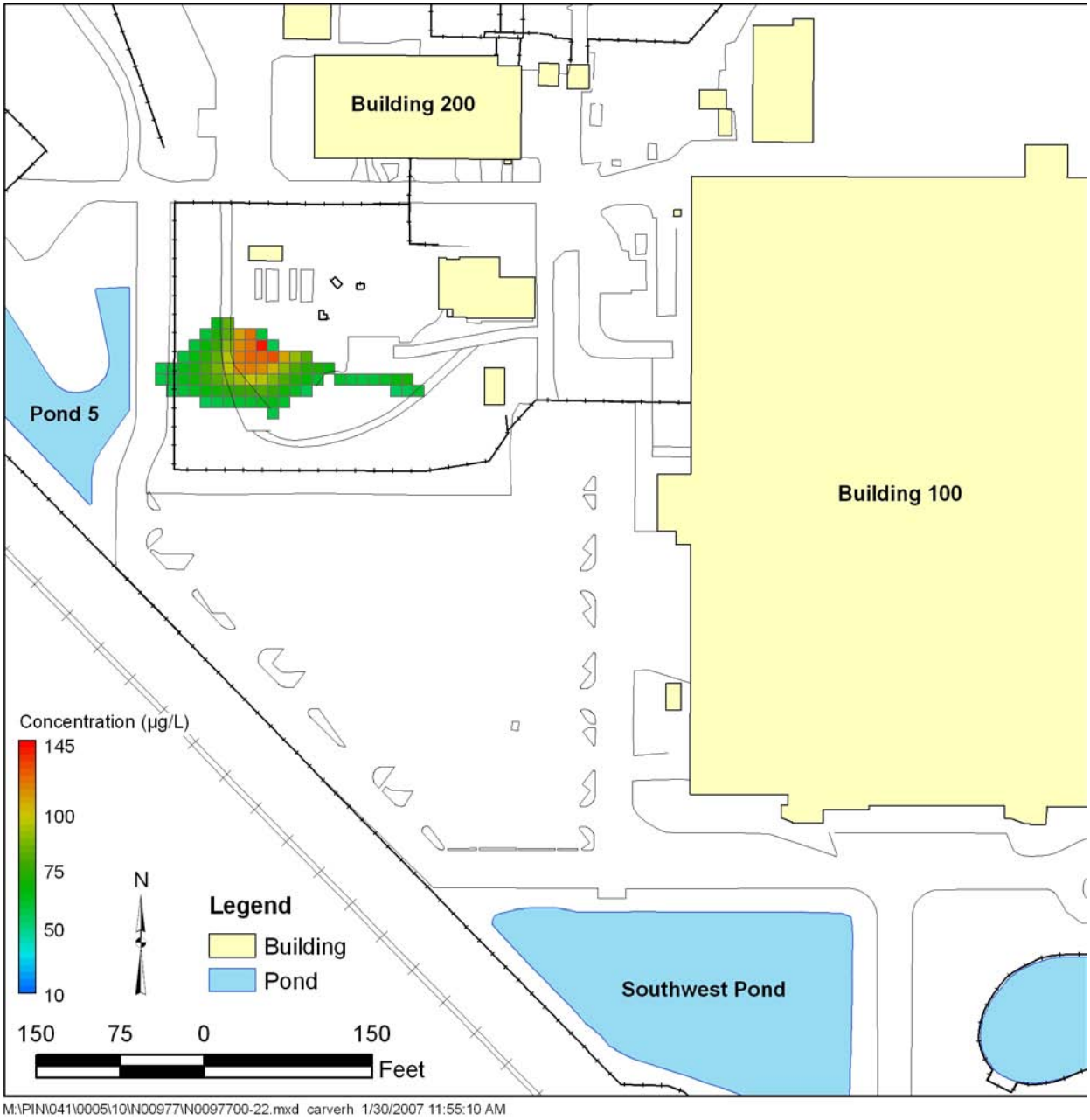

Figure B−22. Simulation 4 Arsenic Concentrations (>50 µg/L) in Layer 1 After 500 Years of Transport

To evaluate the potential for arsenic to migrate off the STAR Center property at concentrations above the 10 µg/L maximum contaminant level, maps were generated showing simulated arsenic concentrations of 10 µg/L and greater at 500 years from Simulation 3 (Figure B−23) and Simulation 4 (Figure B−24), both of which are based on a K_d of 6.3 L/kg. Both of these maps indicated that ground water containing arsenic concentrations >10 µg/L will not approach the property boundary located parallel to and northeast of the railroad tracks.

Figure B−23 and Figure B−24 indicate that, under conditions of limited sorption (K_d = 6.3 L/kg), the potential does exist for ground water containing arsenic >10 µg/L to eventually enter Pond 5.

However, because these concentrations fall far short of the 50 µg/L standard for surface water, they are not expected to be problematic.

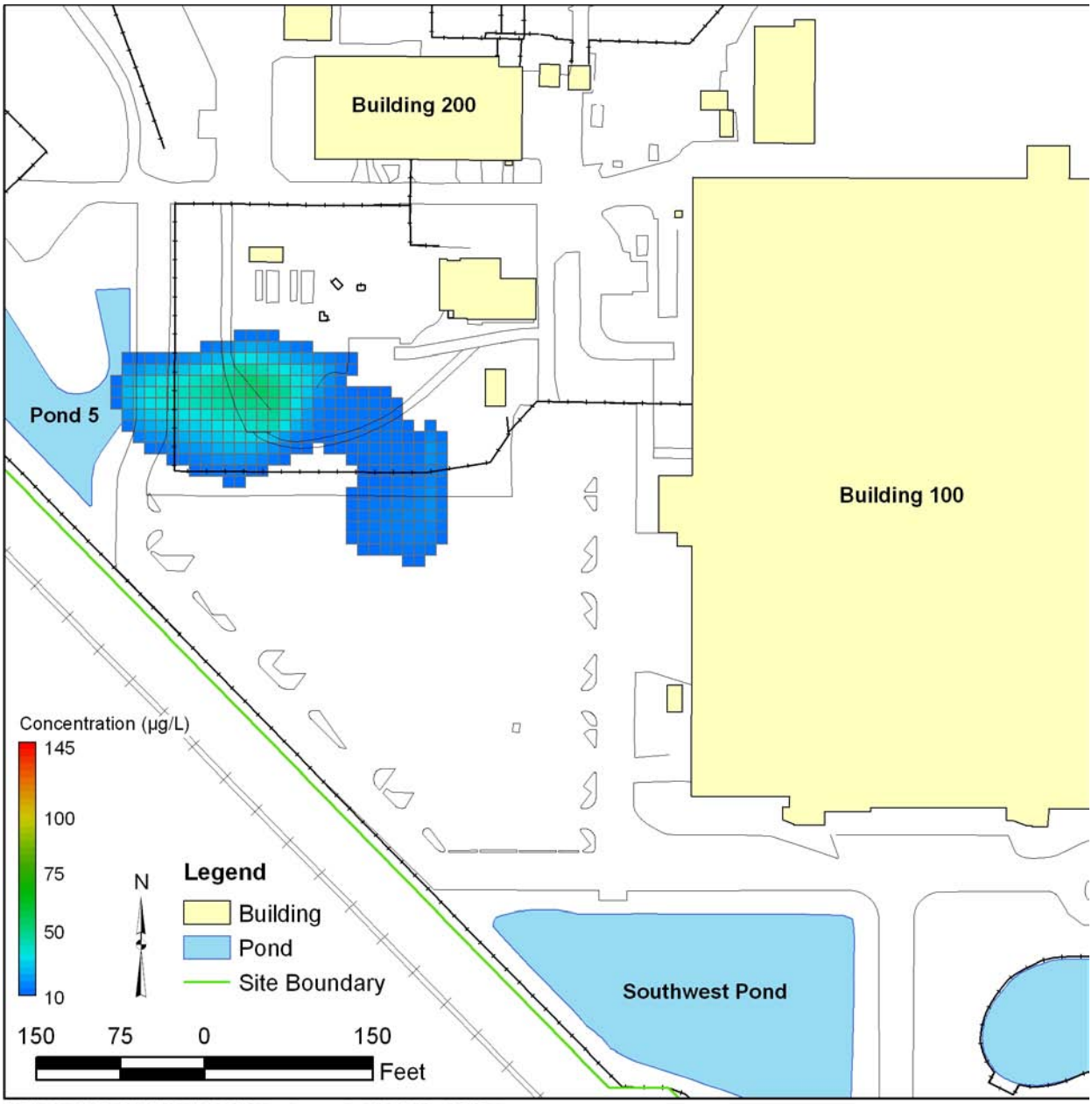

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Figure B−23. Simulation 3 Arsenic Concentrations (>10 µg/L) in Layer 1 after 500 Years of Transport

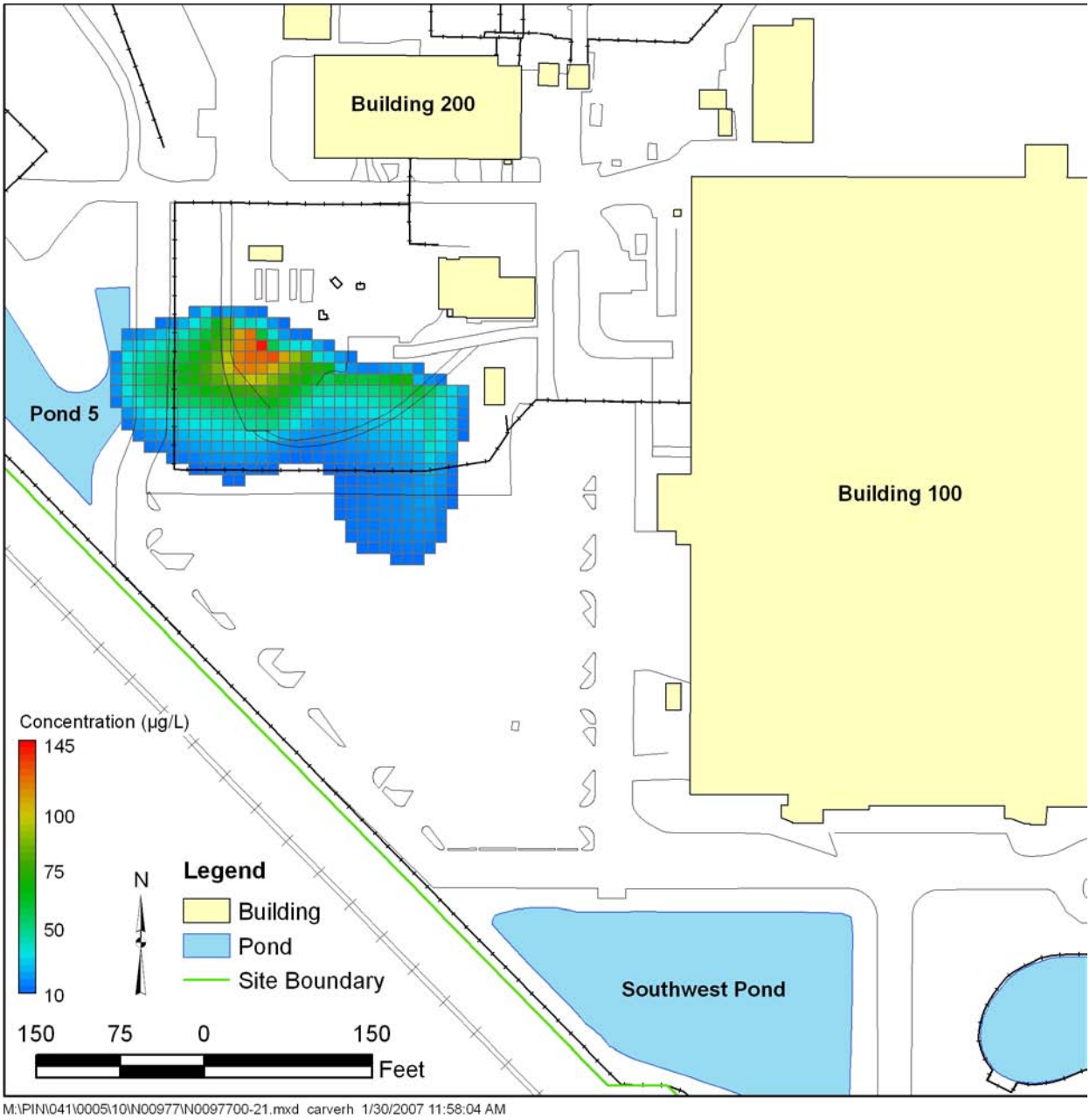

Figure B−24. Simulation 4 Arsenic Concentrations (>10 µg/L) in Layer 1 After 500 Years of Transport

B8.0 Summary and Conclusions

A numerical model of ground water flow and arsenic transport at the WWNA was used to project the disposition of arsenic 500 years in the future. Four different model scenarios were simulated, some of which account for conservative transport assumptions. The modeling results indicate that:

- The size of the existing arsenic plume, as defined the 100 μg/L CTL, will either remain relatively stable or decrease, never exceeding 1/4 acre.
- Ground water containing arsenic concentrations >50 μg/L will not enter the ponds on the STAR Center,
- Ground water containing arsenic concentrations >10 μg/L will not approach the STAR Center property boundary.
- Arsenic transport from the shallow surficial aquifer to the deep surficial aquifer will remain negligible.

B9.0 References

DOE (U.S. Department of Energy), 2002. *Pinellas Environmental Restoration Project, Ground Water Flow and Transport Modeling*, DOE Grand Junction Office, GJO-PIN 28.9-1.

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Harbaugh, A.W., and M.G. McDonald, 1996. *User's Documentation for MODFLOW-96, an Update to the U.S. Geological Survey Modular Finite-Difference Ground-Water Flow Model*, U.S. Geological Survey, Open-File Report 96-485.

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Zheng, C., 1990. MT3D: *A Modular Three-dimensional Transport Model for Simulation of Advection, Dispersion, and Chemical Reactions of Contaminants in Ground-water Systems*, U.S. EPA, R.S. Kerr Environmental Research Laboratory, Ada, Oklahoma.

Zheng, C., and P.P. Wang, 1999. *MT3DMS: A Modular Three-Dimensional Multispecies Transport Model for Simulation of Advection, Dispersion, and Chemical Reactions of Contaminants in Groundwater Systems*, Documentation and User's Guide, Contract Report SERDP-99-1, U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi.

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DECLARATION OF RESTRICTIVE COVENANT
WASTEWATER NEUTRALIZATION AREA SOLID WASTE MANAGEMENT UNIT

THIS DECLARATION OF RESTRICTIVE COVENANT (hereinafter "Declaration") is made this 16 day of September, 2015, by the Pinellas County Industrial Development Authority, a Special District created pursuant to Part III, Chapter 159, Florida Statutes, d/b/a PINELLAS COUNTY ECONOMIC DEVELOPMENT AUTHORITY, (hereinafter "GRANTOR") and the Florida Department of Environmental Protection (hereinafter "FDEP").

RECITALS

A. GRANTOR is the fee simple owner of that certain real property situated in the County of Pinellas, State of Florida, more particularly described in Exhibit A attached hereto and made a part hereof (hereinafter the "Restricted Property").

B. The FDEP Facility Identification Number for the Restricted Property is FL6 890 090 008 (PIN18). The facility name at the time of this Declaration is U.S. Department of Energy ("DOE") Wastewater Neutralization Area ("WWNA") Solid Waste Management Unit ("SWMU") and it currently operates as the Young – Rainey STAR Center Industrial Wastewater Neutralization Facility ("IWNF") which is a Pinellas County permitted discharge facility (Permit Number IE-3002-09/12). This Declaration addresses a discharge that was reported to the USEPA on April 7, 1993.

C. The discharge of chlorinated solvents and metals on the Restricted Property/WWNA SWMU is documented in the following reports that are incorporated by reference.

1. Long-Term Surveillance and Maintenance Plan for the Pinellas Site, November 2012, submitted by the U.S. DOE.

2. Sitewide Environmental Monitoring, Semiannual Progress Reports for the Young – Rainey STAR Center, submitted by the U.S. DOE and dated December 2012 through May 2013.

3. Young – Rainey STAR Center Wastewater Neutralization Area No Further Action With Controls Proposal, dated January 2007, submitted by the U.S. DOE.

4. Wastewater Neutralization Area/Building 200 Area Corrective Measures Implementation Plan Addendum, submitted by the U.S. DOE.

D. The reports noted in Recital C set forth the nature and extent of the contamination that is located on the Restricted Property. These reports confirm that contaminated soil and groundwater as defined by Chapter 62-780 Florida Administrative Code (F.A.C.), exist on the Restricted Property. Also these reports document that the groundwater contamination does not extend beyond the Restricted Property boundaries and that the groundwater contamination does not exceed ¼-acre, and that that the groundwater contamination is not migrating.

E. The intent of the restrictions in this Declaration is to reduce or eliminate the risk of exposure to users or occupants of the Restricted Property and to the environment of the contaminants, and to reduce or eliminate the threat of migration of the contaminants.

F. The FDEP has agreed to issue a Site Rehabilitation Completion Order with Conditions (hereinafter "Order") upon recordation of this Declaration and achievement of site rehabilitation in accordance with Chapter 62-780. The FDEP can unilaterally revoke the Order if the conditions of this Declaration or of the Order are not met. Additionally, if concentrations of chemicals of concern increase above the levels approved in the Order, or if a subsequent discharge occurs at the Restricted Property, the FDEP may require site rehabilitation to reduce concentrations of contamination to the levels allowed by the applicable FDEP rules. The Order relating to FDEP Facility No. FL6 890 090 008 (PIN18) can be found by contacting the appropriate FDEP district office or bureau.

G. GRANTOR deems it desirable and in the best interest of all present and future owners of the Restricted Property that an Order be obtained for the WWNA SWMU and that the Restricted Property be held subject to certain restrictions, all of which are more particularly hereinafter set forth.

NOW, THEREFORE, to induce the FDEP to issue the Order and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by each of the undersigned parties, GRANTOR agrees as follows:

1. The foregoing recitals are true and correct and are incorporated herein by reference.

2. GRANTOR hereby imposes on the Restricted Property the following restrictions:

a. i. There shall be no use of or access to the groundwater under the Restricted Property unless pre-approved in writing by FDEP's Division of Waste Management ("DWM") in addition to any authorizations required by the Division of Water Resource Management ("DWRM") and the Water Management District ("WMD").

a.ii. For any dewatering activities on the Restricted Property a plan approved by FDEP's DWM must be in place to address and ensure the appropriate handling, treatment and disposal of any extracted groundwater that may be contaminated.

a.iii. There shall be no construction of new stormwater swales, stormwater detention or retention facilities or ditches on the Restricted Property without prior written approval from FDEP's DWM in addition to any authorizations required by DWRM and the WMD.

b. Excavation and construction is not prohibited on the Restricted Property provided any contaminated soils that are excavated are removed and properly disposed of pursuant to Chapter 62-780, F.A.C. and any other applicable local, state, and federal requirements. Nothing herein shall limit any other legal requirements regarding construction methods and precautions that must be taken to minimize risk of exposure while conducting work in contaminated areas. Nothing in this Declaration shall prevent, limit or restrict any excavation or construction at or below the surface outside the boundary of the Restricted Property.

c. The following uses are prohibited in the WWNA SWMU as shown in Exhibit A: agricultural use of the land including forestry, fishing and mining; hotels or lodging; recreational uses including amusement parks, parks, camps, museums, zoos, or gardens; residential uses, and educational uses such as elementary or secondary schools, or day care services. These prohibited uses are specifically defined by using the North American Industry Classification System, United States, 2007 (NAICS), Executive Office of the President, Office of Management and Budget. The prohibited uses by code are: Sector 11 Agriculture, Forestry, Fishing and Hunting; Subsector 212 Mining (except Oil and Gas); Code 512132 Drive-In Motion Picture Theaters; Code 51912 Libraries and Archives; Code 53111 Lessors of Residential Buildings and Dwellings; Subsector 6111 Elementary and Secondary Schools; Subsector 623 Nursing and Residential Care Facilities; Subsector 624 Social Assistance; Subsector 711 Performing Arts, Spectator Sports and Related

Industries; Subsector 712 Museums, Historical Sites, and Similar Institutions; Subsector 713 Amusement, Gambling, and Recreation Industries; Subsector 721 Accommodation (hotels, motels, RV parks, etc.); Subsector 813 Religious, Grantmaking, Civic, Professional, and Similar Organizations; and Subsector 814 Private Households.

3. In the remaining paragraphs, all references to "GRANTOR" and "FDEP" shall also mean and refer to their respective successors and assigns.

4. For the purpose of monitoring the restrictions contained herein, FDEP is hereby granted a right of entry upon and access to the Restricted Property at reasonable times and with reasonable notice to the GRANTOR. Access to the Property is granted by an adjacent public right of way via Bryan Dairy Road.

5. It is the intention of GRANTOR that this Declaration shall touch and concern the Restricted Property, run with the land and with the title to the Restricted Property, and shall apply to and be binding upon and inure to the benefit of GRANTOR and FDEP, and to any and all parties hereafter having any right, title or interest in the Restricted Property or any part thereof. The FDEP may enforce the terms and conditions of this Declaration by injunctive relief and other appropriate available legal remedies. Any forbearance on behalf of the FDEP to exercise its right in the event of the failure of the GRANTOR to comply with the provisions of this Declaration shall not be deemed or construed to be a waiver of the FDEP's rights hereunder. This Declaration shall continue in perpetuity, unless otherwise modified in writing by GRANTOR and the FDEP as provided in paragraph 7 hereof. These restrictions may also be enforced in a court of competent jurisdiction by U.S. DOE and/or any other party that establishes proper standing. If the GRANTOR does not or will not be able to comply with any or all of the provisions of this Declaration, the GRANTOR shall notify FDEP in writing within three (3) calendar days. Additionally, GRANTOR shall notify FDEP thirty (30) days prior to any conveyance or sale, granting or transferring the Restricted Property or portion thereof, to any heirs, successors, assigns or grantees, including, without limitation, the conveyance of any security interest in said Restricted Property.

6. In order to ensure the perpetual nature of these restrictions, GRANTOR shall reference these restrictions in any subsequent lease or deed of conveyance within the Restricted Property, including the recording book and page of record of this Declaration. Furthermore, prior to the entry into a landlord-tenant relationship with respect to the Restricted Property, the GRANTOR agrees to notify in writing all proposed tenants of the Restricted Property of the existence and contents of this Declaration of Restrictive Covenant.

7. This Declaration is binding until a release of covenant is executed by the FDEP Secretary (or designee) and is recorded in the public records of the county in which the land is located. To receive prior approval from the FDEP to remove any requirement herein, cleanup target levels established pursuant to Florida Statutes

and FDEP rules must have been achieved. This Declaration may be modified in writing only. Any subsequent amendments must be executed by both GRANTOR and the FDEP and be recorded by the real property owner as an amendment hereto.

8. If any provision of this Declaration is held to be invalid by any court of competent jurisdiction, the invalidity of that provision shall not affect the validity of any other provisions of the Declaration. All such other provisions shall continue unimpaired in full force and effect.

9. GRANTOR covenants and represents that on the date of execution of this Declaration that GRANTOR is seized of the Restricted Property in fee simple and has good right to create, establish, and impose this restrictive covenant on the use of the Property. GRANTOR also covenants and warrants that the Restricted Property is free and clear of any and all liens, mortgages, or encumbrances that could impair GRANTOR'S rights to impose the restrictive covenant described in this Declaration or that is superior to the restrictive covenant described in this Declaration.

[DECLARATION EXECUTED ON FOLLOWING PAGES]

IN WITNESS WHEREOF, *{{GRANTOR}}* has executed this instrument, this 10th day of September, 2015

ATTEST: KEN BURKE
Clerk of the Circuit Court
Deputy Clerk Norman D. Fog
Print Name: Norman D. Fog

(OFFICIAL SEAL)

THE TERMS SPECIFIED HEREIN ARE SUBJECT TO APPROVAL IN OPEN SESSION BY THE BOARD OF COUNTY COMMISSIONERS,
PINELLAS COUNTY, FLORIDA

GRANTOR
PINELLAS COUNTY INDUSTRIAL DEVELOPMENT AUTHORITY d/b/a PINELLAS COUNTY ECONOMIC DEVELOPMENT AUTHORITY,

by and through its Board of County Commissioners

By: John Morroni
Name: *John Morroni, Chairman*

Address:
Young – Rainey STAR Center
7887 Bryan Dairy Road, Suite 120
Largo, Florida 33777

APPROVED AS TO FORM:
OFFICE OF THE COUNTY ATTORNEY

By: Cherylpay
~~Managing~~ Assistant County Attorney

Signed, sealed and delivered in the presence of:

Bernie C. Young Date: 9-10-15
Witness
Print Name: Bernie C. Young

Brian J. Date: 9/10/15
Witness
Print Name: BRIAN LOWACK

STATE OF Florida

COUNTY OF Pinellas

The foregoing instrument was acknowledged before me this 10th day of September 2015 by John Morroni.
Personally Known ✓ OR Produced Identification _____.
Type of Identification Produced _____.

Bernie C. Young
Signature of Notary Public

NOTARY PUBLIC STATE OF FLORIDA
BERNIE C. YOUNG
MY COMMISSION # FF 124388
EXPIRES: May 19, 2018
Bonded Thru Budget Notary Services

Approved as to form by:

Toni Sturtevant, Asst. General Counsel
Office of General Counsel

FLORIDA DEPARTMENT OF
ENVIRONTMENTAL
PROTECTION

By:

JOHN COATES,
Assistant Division Director

Dept. of Environmental Protection
Division of Waste Management
2600 Blairstone Road
Tallahassee, FL 32399-2400

Signed, sealed, and delivered in
in the presence of:

Witness Signature

WAYNE S. KIGER
Printed Name

9/16/15
Date

Witness Signature

Daniel S. Shores
Printed Name

9/16/2015
Date

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 16TH day of SEPTEMBER, 2015, by JOHN COATES, who is personally known to me.

JUDITH PENNINGTON
MY COMMISSION # FF 215917
EXPIRES: March 31, 2019
Bonded Thru Budget Notary Services

Notary Public, State of Florida at Large

EXHIBIT A
LEGAL DESCRIPTION AND ILLUSTRATION OF RESTRICTED PROPERTY

SCHEDULE A

DESCRIPTION:

A portion of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida being more particularly described as follows:

Commence at the East 1/4 corner of Section 13, Township 30 South, Range 15 East, Pinellas County, Florida; thence N 89°46'54" W a distance of 1351.84 feet along the East – West Mid Section line of said Section 13 to a point on the East line of the SW 1/4 of the NE 1/4 of said Section 13; thence N 00°08'10" E a distance of 588.83 feet along the East line of said SW 1/4 of the NE 1/4 to a point; thence leaving said East line N 89°50'08" W a distance of 77.09 feet to the Point of Beginning; thence continue N 89°50'08" W a distance of 394.00 feet; thence N 00°09'51" E a distance of 286.01 feet, thence S 89°50'08" E a distance of 394.00 feet; thence S 00°09'51" W a distance of 286.01 feet to the Point of Beginning.

Containing: 2.59 acres, more or less.

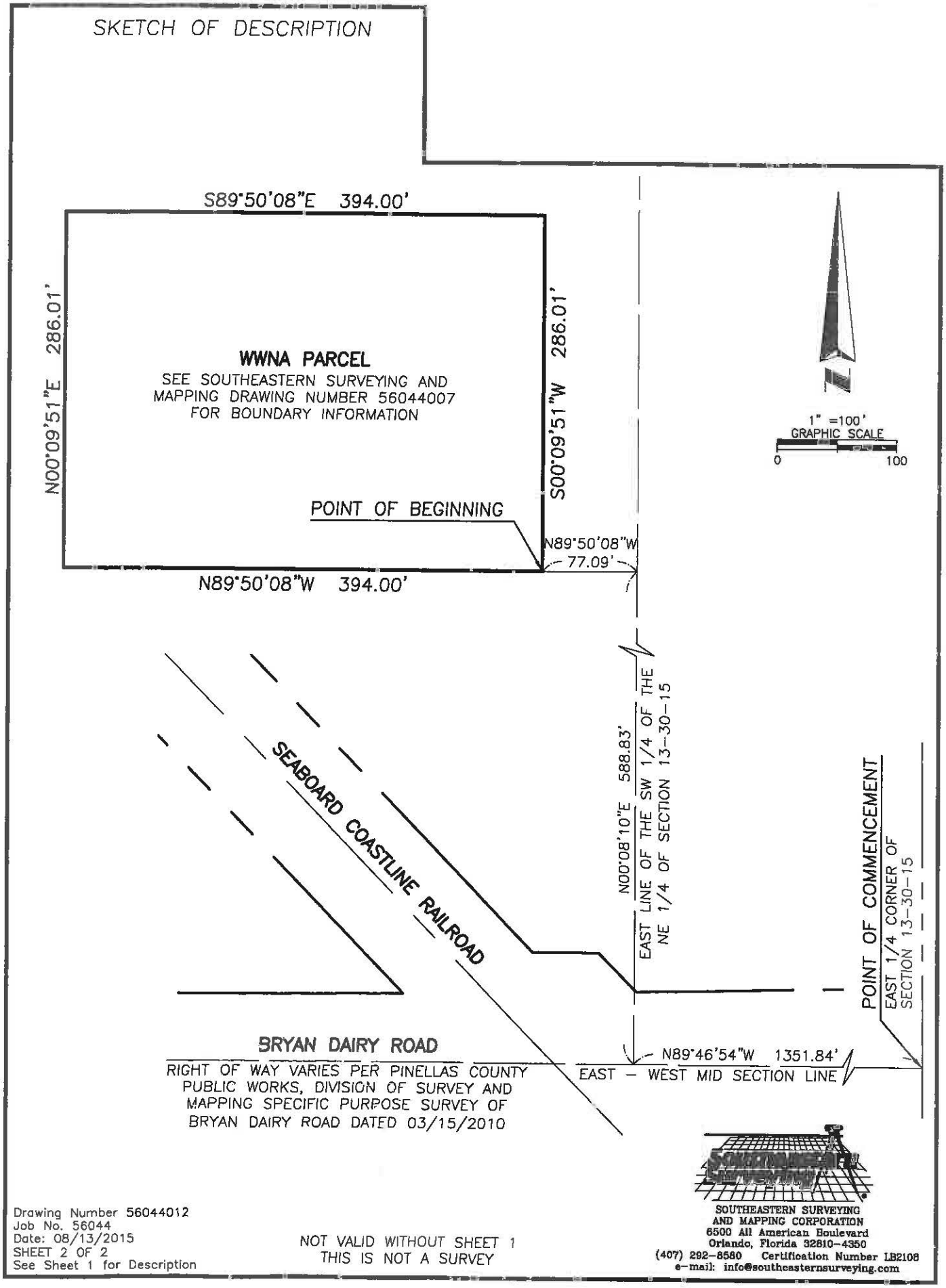
SURVEYOR'S REPORT:

1. Bearings shown hereon are based on the East – West Mid Section line of Section 13, Township 30 South, RANGE 15 EAST, Pinellas County, being North 89°46'54" West.

2. I hereby certify that the "Sketch of Description" of the above described property is true and correct to the best of my knowledge and belief as recently drawn under my direction and that it meets the Standards of Practice for Land Surveying Chapter 5J–17.050–.052 requirements.

DESCRIPTION	Date: August 13, 2015	56044012
FOR	Job Number: 56044 / Scale: 1" = 100'	
Stoller Newport News Nuclear (SN3)	Chapter 5J–17.050–.052, Florida Administrative Code requires that a legal description drawing bear the notation that **THIS IS NOT A SURVEY.**	SOUTHEASTERN SURVEYING AND MAPPING CORPORATION 10770 North 46th Street, Suite C-300 Tampa, Florida 33617 (813) 898-2711 Certification Number LB2108 Email: www.southeasternsurveying.com
	SHEET 1 OF 2 SEE SHEET 2 FOR SKETCH	CHARLES M. ARNETT Registered Land Surveyor Number 6884

SKETCH OF DESCRIPTION



Drawing Number 56044012
Job No. 56044
Date: 08/13/2015
SHEET 2 OF 2
See Sheet 1 for Description

NOT VALID WITHOUT SHEET 1
THIS IS NOT A SURVEY

SOUTHEASTERN SURVEYING AND MAPPING CORPORATION
6500 All American Boulevard
Orlando, Florida 32810-4350
(407) 292-8580 Certification Number LB2108
e-mail: info@southeasternsurveying.com

I, KENNETH P. BURKE, Clerk of the Circuit Court and Clerk Ex-Officio, Board of County Commissioners, do hereby certify that the above and foregoing is a true and correct copy of the original as it appears in the official files of the Board of County Commissioners of Pinellas County, Florida. Witness my hand and seal of said County FL this 6 day of September A.D. 20 [illegible]

KENNETH P. BURKE, Clerk of the Circuit Court Ex-Officio Clerk of the Board of County Commissioners, Pinellas County, Florida.

By: _____
Deputy Clerk

SEAL