

**Pinellas Environmental  
Restoration Project**

**Long-Term Surveillance and  
Maintenance Plan for the  
Pinellas Site**

**November 2012**



U.S. DEPARTMENT OF  
**ENERGY**

Legacy  
Management

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**Pinellas Environmental Restoration Project**

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**November 2012**

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## Abbreviations

bls	below land surface
CFR	<i>Code of Federal Regulations</i>
CMS	Corrective Measures Study
CMIP	Corrective Measures Implementation Plan
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
F.A.C.	<i>Florida Administrative Code</i>
FDEP	Florida Department of Environmental Protection
FOIA	Freedom of Information Act
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
NNSA	National Nuclear Security Administration

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
STAR Center	Young - Rainey Science, Technology, and Research Center
SWMU	solid-waste management unit
VOCs	volatile organic compounds
WWNA	Wastewater Neutralization Area

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## **Executive Summary**

The 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 Science, Technology, and Research Center and adjacent 4.5 Acre Site in Pinellas County, Florida. Four sites currently have contaminants in surficial aquifer groundwater at levels that exceed protective standards.

The 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 annual inspections, environmental monitoring, and records and data management. Discussions also include the institutional controls DOE plans to develop and implement at the site, and how these requirements will be implemented and monitored. The appendixes to the LTS&M Plan include the Site Monitoring Plan, institutional control documentation, permits, agreements, the annual inspection checklist, contact lists, and the Site Closure Strategy.

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## 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 Science, Technology, and Research Center (STAR Center) and adjacent 4.5 Acre Site in Pinellas County, Florida. 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), the Plume Stability Monitoring Plan for the Building 100 Area (Attachment 1 to 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), and the Site Closure Strategy (Appendix G).

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 located 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 of 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) onsite.

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 twelfth 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.

In summary, there are currently four active SWMUs: the Old Drum Storage Site (PIN06), the Industrial Drain Leaks–Building 100 Area (PIN12), the Northeast Site (PIN15), and the WWNA/Building 200 Area (PIN18) (Figure 2). Two SWMUs, PIN06 and PIN12, have been combined and are collectively known as the Building 100 Area.

In addition to the four SWMUs, the 4.5 Acre Site is a former part of the Pinellas Plant. The 4.5 Acre Site is located to the west of the STAR Center (Figure 2). This parcel was owned by DOE from 1957 to 1972, at which time 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 lease the property from a private landowner 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 plan also serves as the ICs Plan to meet state regulatory requirements. ICs for the site are currently being developed.

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, are 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.

Tasks that will or may be conducted in the future:

- Conducting maintenance, inspection, and enforcement of the land and groundwater use restrictions and other ICs necessary for the protectiveness of the remedies.
- 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 a 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 2,500 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 to prevent migration of the contaminant plume 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) prior to 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. Subsequently, several additional recovery wells were installed at the Northeast Site, and some of the old recovery wells were abandoned.

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

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, 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, 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 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 8,387 cubic yards of soil were excavated; of this total, 4,667 cubic yards were removed as clean overburden, and 3,720 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 ethenogenes* 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 that went on for 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 the 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 is proceeding to close the site under the FDEP's RBCA rules (Chapter 62-780.680 *Florida Administrative Code* [F.A.C.]) 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 (Chapter 62-780.750 F.A.C.). This document was approved by FDEP in December 2009. Closure monitoring was initiated with the September 2009 sampling event.

### **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 Building 100 Industrial Drain Leaks 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 and 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 prior to 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, and
- Evaluate the potential for occurrence of dense NAPLs.

The recommendations were addressed in the Building 100 Area CMIP Addendum (DOE1998). The Northeast Site treatment system was decommissioned in April 2004 prior to 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 2006f). 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 contaminants of potential concern (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 associated treatment system. Operation of these recovery wells and treatment system was terminated on August 21, 2006, with the approval of FDEP.

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, and 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 about 300 ft 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.

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.

### **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; also, 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/Bldg. 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. FDEP approved the document on May 24, 2007, and requested that DOE submit an updated Statement of Basis for the WWNA. Submittal of that document 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 such 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 one 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 prohibit movement of soil from this area to other parts of the STAR Center or to offsite locations. The area where these ICs would apply is approximately 2.5 acres in size. Subsequently, the decision was made to apply the non-residential deed restriction to the entire STAR Center property. Negotiations with the STAR Center to apply the ICs are ongoing.

### **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, 1,172 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 Chapter 62-780 F.A.C. 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 7,035 cubic yards of soil were excavated; of this total 4,464 cubic yards were removed as clean overburden, and 2,571 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 ethenogenes* 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 the 4.5 Acre Site* (DOE 2010) was prepared to describe the work that went on for 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 the 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 is proceeding to close the site under the FDEP’s RBCA rules (Chapter 62-780.680 F.A.C.) 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

(Chapter 62-780.750 F.A.C.). 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.

## **4.0 Regulatory Basis**

### **4.1 Permits and Agreements**

#### **4.1.1 RCRA Hazardous and Solid Waste Amendments Permit**

In February of 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 Section 403.722, Florida Statutes; and Chapters 62-4, 62-160, 62-730, 62-777, and 62-780, F.A.C.; 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.

Four active SWMUs remain under the original HSWA permit. The active SWMUs include the Northeast Site, the Building 100 Area (two SWMUs), and the WWNA/Building 200 Area. The Statement of Basis documents developed for the 13 inactive SWMUs serve as Class III permit modification requests to EPA Region 4. FDEP has modified the HSWA permit to reflect “no further action” status for the 13 inactive SWMUs. Activities under the permit are expected to continue into the next decade.

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 the 24-hour reporting requirements for an imminent or existing hazard to human health or the environment, and 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, and DOE came to an agreement with FDEP for alternative language to be used for the signs required.

The current 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 Chapter 62-780 F.A.C. 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 Southwest Florida Water Management District*, Chapter 40D-3, "Regulation of Wells," Appendix D 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 Chapter 373 of Florida Statutes and F.A.C. Chapters 17-21 and 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 will 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 prior to abandonment. The district may choose to send a representative to the site to observe the abandonment.

F.A.C. Chapter 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. F.A.C. rules governing construction methods include those for drilling, coring, boring, washing, jetting, driving, or 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 establishes the national hazardous waste management program and encompasses federal regulations, Sections 3001 through 3020. Applicable regulatory requirements for purposes of the STAR Center Environmental Restoration Project include Title 40 *Code of Federal Regulations* (CFR), Parts 260 through 264, 266, 268, 270, and 124. The State of Florida received authorization from EPA for implementing the HSWA Corrective Action Program in November 2000, under the provisions of Section 403.722 Florida Statutes and F.A.C. Chapters 62-4, 62-160, 62-522, 62-532, 62-550, and 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 by FDEP on April 17, 2005, under Chapter 62-780 F.A.C. The purpose of these regulations is to apply the default CTLs provided in Chapter 62-777, F.A.C. 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 being revised in 2012, 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, F.A.C., to determine the appropriate CTLs for a contaminated site.

DOE is working with FDEP to close the SWMUs (Northeast Site and WWNA) and the 4.5 Acre Site under the RBCA regulations. FDEP has given a verbal approval for a No Further Action with Controls closure for the WWNA pending development of ICs. Plume stability monitoring will be performed at the Building 100 Area to either establish a basis for a conditional closure or determine whether an interim action is required.

#### **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, and F.A.C. Chapters 62-204 through 62-297 and 62-4.

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 request to terminate 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 F.A.C. 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 F.A.C. 62-621.300 through 625.880. 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 F.A.C. 62-621.300(4)(a) 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 Projects use the DOE-Idaho Draft Guidance Manual, *NEPA Planning and Compliance Program Manual*, M451.X-1, to implement the requirements of NEPA at sites under LM purview.

#### **4.2.6 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 through 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 assist local emergency planners to 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 Material 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, and 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. In the northern half of the site (i.e., the 4.5 Acre and Northeast Sites), the surficial sediments range in thickness from about 25 to 30 ft. At the WWA and 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). Recent measurements (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 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 bbls 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 the Northeast Site, groundwater flow is primarily toward the east. A slurry wall along the northern boundary of this site forms a barrier to groundwater flow, as evidenced by a significant difference in water levels between the downgradient and upgradient sides of the wall. The surface water elevation of the East Pond indicates that, like the West Pond and Pond 5, it acts as a discharge point for the shallow surficial aquifer. In the shallow surficial aquifer at the Northeast Site, the hydraulic gradient ranges from approximately 0.003 to 0.005 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 east is about 3.5 to 6 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 0.001 ft/ft. Calculations using the approximations mentioned above indicate that groundwater flow beneath the building is estimated to be less than 2 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. At the WWNA, there is a very slight mound in the surficial aquifer from which there is flow toward the west and southeast.

## 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 Northeast Site, Building 100 Area, and 4.5 Acre Site in 2005 (DOE 2005). 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 previous 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, F.A.C.). 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), F.A.C. Thus, the applicable groundwater CTLs are those for groundwater of “low yield/poor quality” provided in Table 1 of Chapter 62-777, F.A.C. (listed in Table 1 of this LTS&M Plan). These poor-quality groundwater CTLs apply only on site; the regular CTLs apply to offsite locations.

### 5.2.2 Location of Contaminant Plumes

Figures 3 through 8 show the contaminant plume maps for the four contaminated areas. The plume maps encompass the wells in which any individual COPC exceeded its CTL (Table 1). Following FDEP’s May 2007 agreement to an RBCA closure at the WWNA, monitoring well sampling was discontinued; data from the last sampling event in March 2007 and the resulting arsenic plume are shown on Figure 7.

Table 1. Contaminants of Potential Concern and Cleanup Target Levels

Contaminants of Potential Concern	FDEP Cleanup Target Levels in Groundwater (µg/L) <sup>a, b</sup>
<b>Northeast Site</b>	
Trichloroethene	30
<i>cis</i> -1,2-Dichloroethene	700
Vinyl chloride	10
Benzene	10
Toluene	10,000
Methylene chloride	50
Arsenic	100
<b>Building 100 Area</b>	
Trichloroethene	30
1,1-Dichloroethene	70
<i>cis</i> -1,2-Dichloroethene	700
<i>trans</i> -1,2-Dichloroethene	1,000
Vinyl chloride	10
1,4-dioxane	32
Arsenic	100
<b>WWNA</b>	
Vinyl chloride	10
Arsenic	100
<b>4.5 Acre Site</b>	
Trichloroethene	30
<i>cis</i> -1,2-Dichloroethene	700
<i>trans</i> -1,2-Dichloroethene	1,000
Vinyl chloride	10
Benzene	10
Arsenic	100

<sup>a</sup> µg/L = micrograms per liter

<sup>b</sup> The listed CTLs are poor groundwater quality CTLs that apply only onsite. Offsite CTLs are a factor of 10 lower.

## **5.3 Site Controls**

The following are the site controls at the 4.5 Acre Site and each of the SWMUs at the STAR Center.

### **5.3.1 Northeast Site (PIN15)**

Access to the Northeast Site is limited on three sides by a 7 ft tall chain link fence with three locked gates. The locks are controlled by the LMS contractor and the adjacent STAR Center tenant. The fence on the east side of the property was demolished during adjacent county road construction, and will not be replaced. Warning signs are posted along the remaining fence 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 implemented. All of the wells at the Northeast Site are secured with locks or bolt-down covers.

### **5.3.2 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 only be accessed with permission of the tenant and STAR Center guards. The remaining Building 100 Area wells are secured with either locks or bolt-down covers.

### **5.3.3 Wastewater Neutralization Area (PIN18)**

Most of the WWNA wells are located within the tenant/STAR Center security fence described above in Section 5.3.2. All of the WWNA wells, both inside and outside the fence, are secured with locks.

### **5.3.4 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 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.” This LTS&M Plan includes the requirements specified in the LTS&M Program Plan (DOE 1999).

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, site ICs are still being developed. Once the first IC is in place, DOE will inspect the Pinellas Site at least annually to confirm that remedial action components, including associated ICs, remain in place and effective, and to determine if maintenance or additional monitoring is needed. DOE will notify FDEP and the STAR Center of the inspection at least 30 days 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 four contaminated areas of the site: Northeast Site, Building 100 Area, WWNA, and 4.5 Acre Site. 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 Figure 2, will be used for the site inspection.

#### **6.2.4 Institutional Controls Inspection**

The site ICs are currently being developed. Once the ICs are in place, 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 9 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 9). The inspectors will check the well access, painted surface, identification tag, hinge, cover, lock, above-grade protector or concrete pad, location, and other conditions that 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**

Typically, two inspectors will perform annual inspections. Inspectors will be experienced technicians or scientists who have the required knowledge, skills, and abilities to evaluate site conditions and recognize potential or actual problems.

### **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. In the report, DOE also will address maintenance results for the previous 12 months.

## **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**

Environmental monitoring at each site approved for conditional closure under Florida Global RBCA rules will be limited to the closure monitoring prescribed in F.A.C. Chapter 62-780.680. The details of the environmental monitoring at the STAR Center 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 10 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 prior to 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 health and safety 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 (NNSA) is responsible for all records pertaining to former Pinellas site employees and records for any health and safety issues associated with former site operations and maintenance. To obtain copies of these records, contact the NNSA Freedom of Information Act (FOIA) office at <http://www.nv.doe.gov/outreach/foia/default.aspx>.

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 FOIA office at [http://www.management.energy.gov/foia\\_pa.htm](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 Parts 1220–1238, “National Archives and Records Administration.”
- 44 U.S.C. Chapter 29, “Records Management by the Archivist of the United States and by the Administrator of General Services,” Chapter 31, “Records Management by Federal Agencies,” and Chapter 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 will be made 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 Parts 1220–1236, “Agency Records Management Program.”

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 will be 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 Geographical 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 414.1C, *Quality Assurance*, and *Quality*

*Systems for Environmental Data and Technology Programs, Requirements with Guidance for Use* (ANSI/ASQ E4-2004).

## **6.9 Health and Safety**

The Health and Safety 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 Health and Safety Program is described in the *Health and Safety 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 Health and Safety Plan. Personnel participating in LTS&M activities shall comply with all applicable health and safety requirements as specified by the LMS Health and Safety Program.

## **7.0 Institutional Controls Plan for the Pinellas Site**

Currently, ICs for the site are still being developed. Specifically, DOE is coordinating with personnel at the STAR Center and FDEP to develop a Declaration of Restrictive Covenant (DRC) for the STAR Center, and all parties have conceptually agreed to these proposed ICs.

FDEP notified the STAR Center that FDEP is prepared to issue a conditional closure for the WWNA pending filing of a DRC. Subsequently, the STAR Center began dialogue with DOE for development and implementation of a restrictive covenant. Once this agreement is complete, the STAR Center can take the matter before the Pinellas County Board of County Commissioners. The proposed ICs will restrict the depth of excavation and restrict installation of water wells except for groundwater monitoring purposes.

## **8.0 References**

ANSI/ASQ E4-2004. *Quality Systems for Environmental Data and Technology Programs—Requirements with Guidance for Use*, American National Standards Institute/American Society for Quality.

DOE (U.S. Department of Energy), 1987. *Comprehensive Environmental Assessment and Response Program, Phase I: Installation Assessment Pinellas Plant*, December.

DOE (U.S. Department of Energy), 1991a. *Interim Corrective Measures Study Northeast Site*, Pinellas Plant, Largo, Florida, May.

DOE (U.S. Department of Energy), 1991b. *RCRA Facility Investigation Report, Pinellas Plant*, Environmental Restoration Program, Albuquerque Operations Field Office, Albuquerque, New Mexico, September.

DOE (U.S. Department of Energy), 1994. *Statement of Basis for Twelve Solid Waste Management Units Recommended for No Further Action*, Pinellas Plant, Largo, Florida, January.

DOE (U.S. Department of Energy), 1996a. *Building 100 Area Corrective Measures Implementation Plan*, March.

DOE (U.S. Department of Energy), 1996b. *Building 100 Area Data Report*, October 1993 to July 1996, November.

DOE (U.S. Department of Energy), 1996c. *Building 100 Area Subsurface Investigations, Phases I, II, and III*, Volumes 1 and 2, January.

DOE (U.S. Department of Energy), 1996d. *Northeast Site Corrective Measures Implementation Plan*, March.

DOE (U.S. Department of Energy), 1996e. *Northeast Site Interim Measures Quarterly Progress Report*, January.

DOE (U.S. Department of Energy), 1996f. *Building 100 Area Corrective Measures Study Report Addendum*, July.

DOE (U.S. Department of Energy), 1997a. *Corrective Measures Study Report/Corrective Measures Implementation Plan WWNA/Building 200*, U.S. Department of Energy.

DOE (U.S. Department of Energy), 1997b. *Pinellas Plant Environmental Baseline Report*, prepared by Lockheed Martin Specialty Components, Inc. for U.S. Department of Energy, Pinellas Area Office, June.

DOE (U.S. Department of Energy), 1998. *Building 100 Corrective Measures Study Implementation Plan Addendum*, April.

DOE (U.S. Department of Energy), 1999. *Long-Term Surveillance and Maintenance Program Plan*, GJO-99-93-TAR, Grand Junction Office, Grand Junction, Colorado, June.

DOE (U.S. Department of Energy), 2000. *Wastewater Neutralization Area/Building 200 Area Corrective Measures Implementation Plan Addendum*, January.

DOE (U.S. Department of Energy), 2001. *Interim Measures Work Plan for Remediation of Non-Aqueous Phase Liquids at the Northeast Site* MAC-PIN 13.10.5-1, Grand Junction Office, Grand Junction, Colorado, November.

DOE (U.S. Department of Energy), 2002. *Long-Term Stewardship Planning Guidance for Closure Sites*, August.

DOE (U.S. Department of Energy), 2003a. *Northeast Site Area A NAPL Remediation Final Report*, GJO-2003-482-TAC, Grand Junction Office, Grand Junction, Colorado, September.

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

DOE (U.S. Department of Energy), 2005. *Annual Monitoring Plan*, September.

DOE (U.S. Department of Energy), 2007a. *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), 2007b. *4.5 Acre Site Source Characterization Data Report*, DOE-LM/1549-2007, Office of Legacy Management, Grand Junction, Colorado, December.

DOE (U.S. Department of Energy), 2008. *4.5 Acre Site Source Removal Feasibility Study*, DOE-LM/1606-2008, 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. *Data Report for Overburden Soil at the Northeast Site and the 4.5 Acre Site* LMS/PIN/N01395, Office of Legacy Management, Grand Junction, Colorado, July.

DOE (U.S. Department of Energy), 2009c. *Interim Remedial Action for Source Removal at the 4.5 Acre Site Final Report*, LMS/PIN/N01359, Office of Legacy Management, Grand Junction, Colorado, September.

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.

EPA (U.S. Environmental Protection Agency), 1988. *RCRA Facility Assessment Department of Energy—Fl6 890 090 008*, June.

EPA (U.S. Environmental Protection Agency), 1992. Letter to DOE, Gerald W. Johnson, Approval of Pinellas Site Remedial Facility Investigation Report, April.

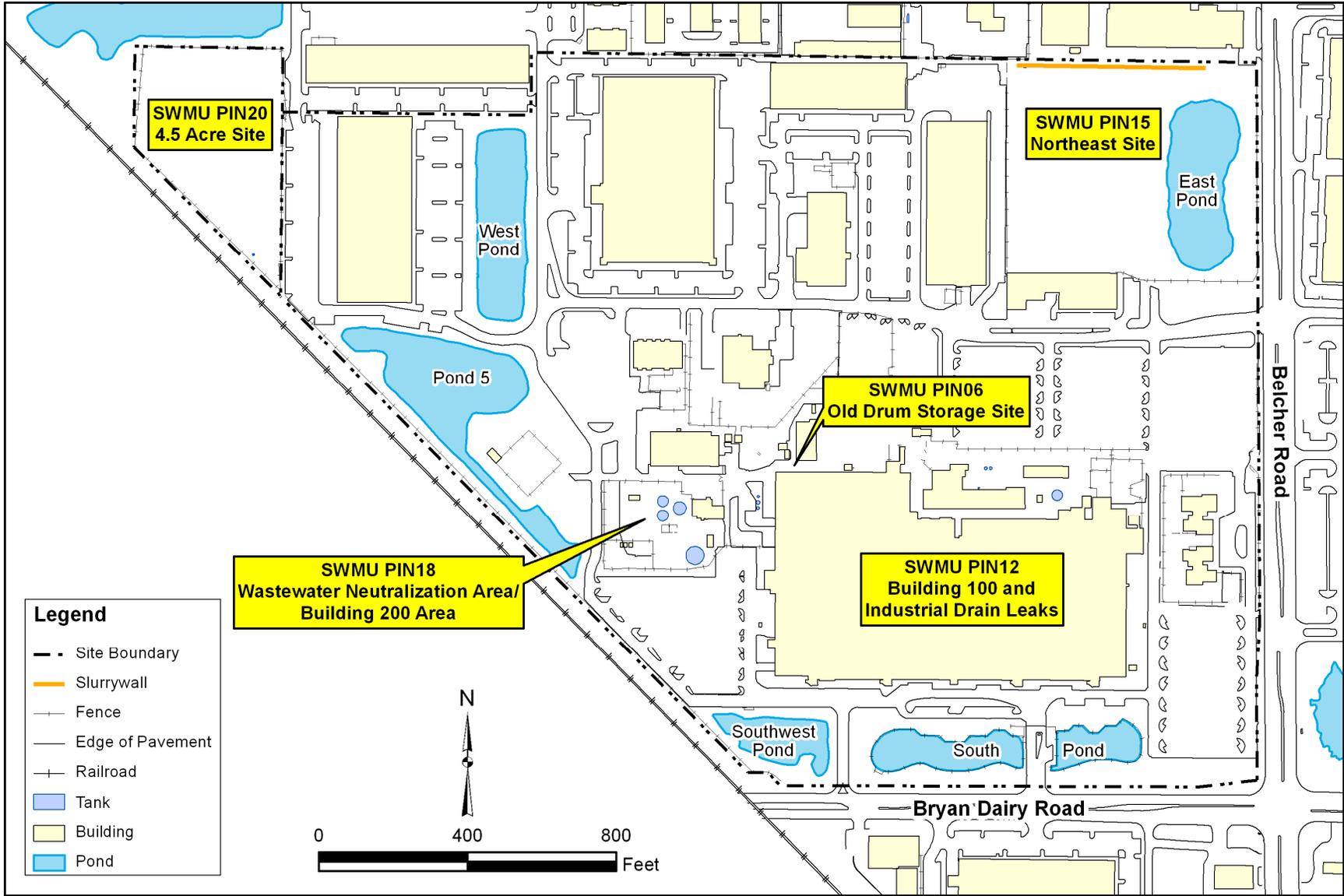
EPA (U.S. Environmental Protection Agency), 1994. *RCRA Facility Assessment Report, WWNA/Building 200 Area*, March.

HAZTECH, 1985. *Identification and Removal of Waste, Department of Energy Pinellas Plant, Largo, Florida*, prepared for General Electric Company Neutron Devices Department, September.

*Health and Safety Manual*, LMS/POL/S04320, continually updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy Office of Legacy Management, Grand Junction, Colorado.

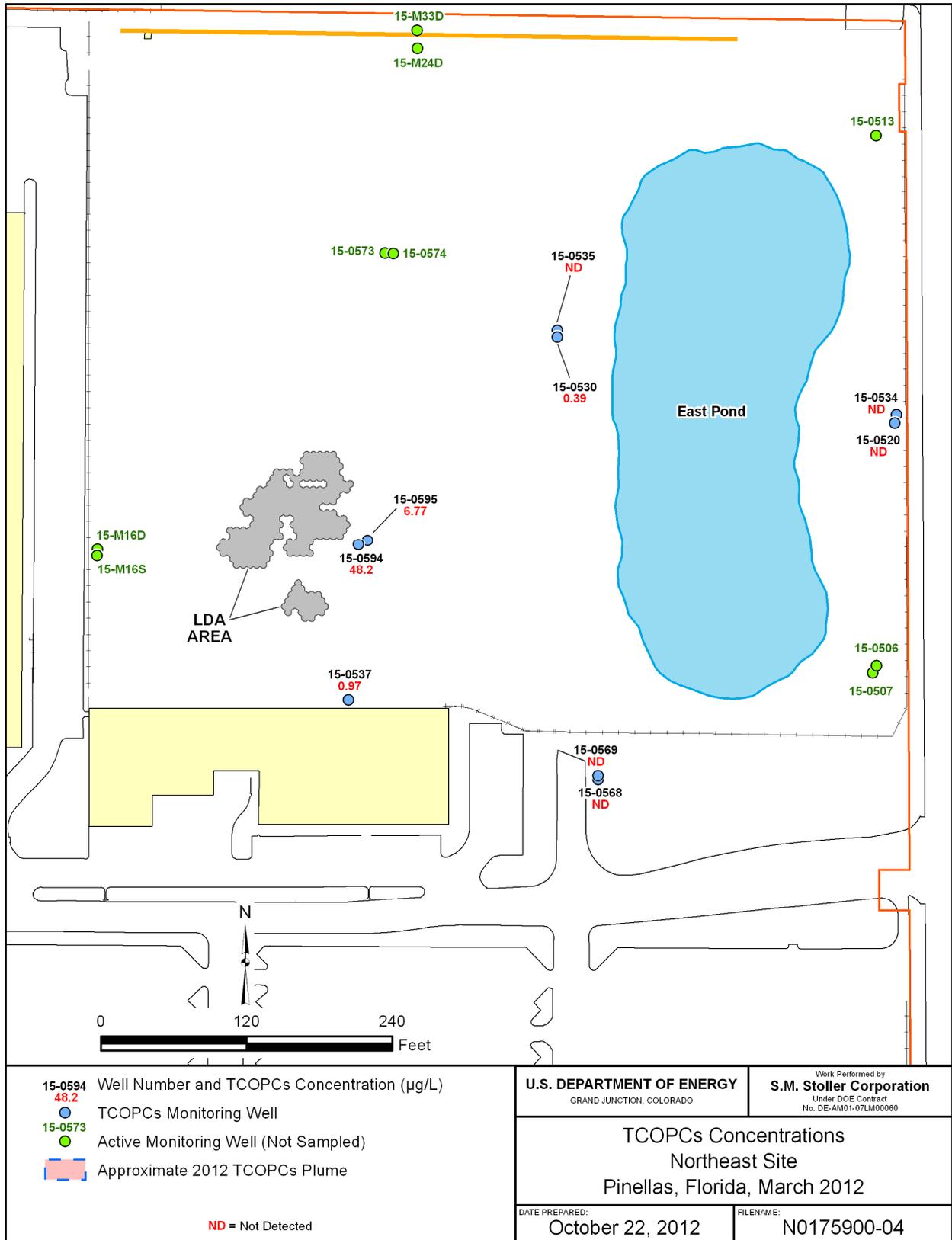
*Quality Assurance Manual*, LMS/POL/S04320, continually updated, prepared by S.M. Stoller Corporation for the U.S. Department of Energy Office of Legacy Management, Grand Junction, Colorado.





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



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Figure 3. Northeast Site Total COPC Concentrations

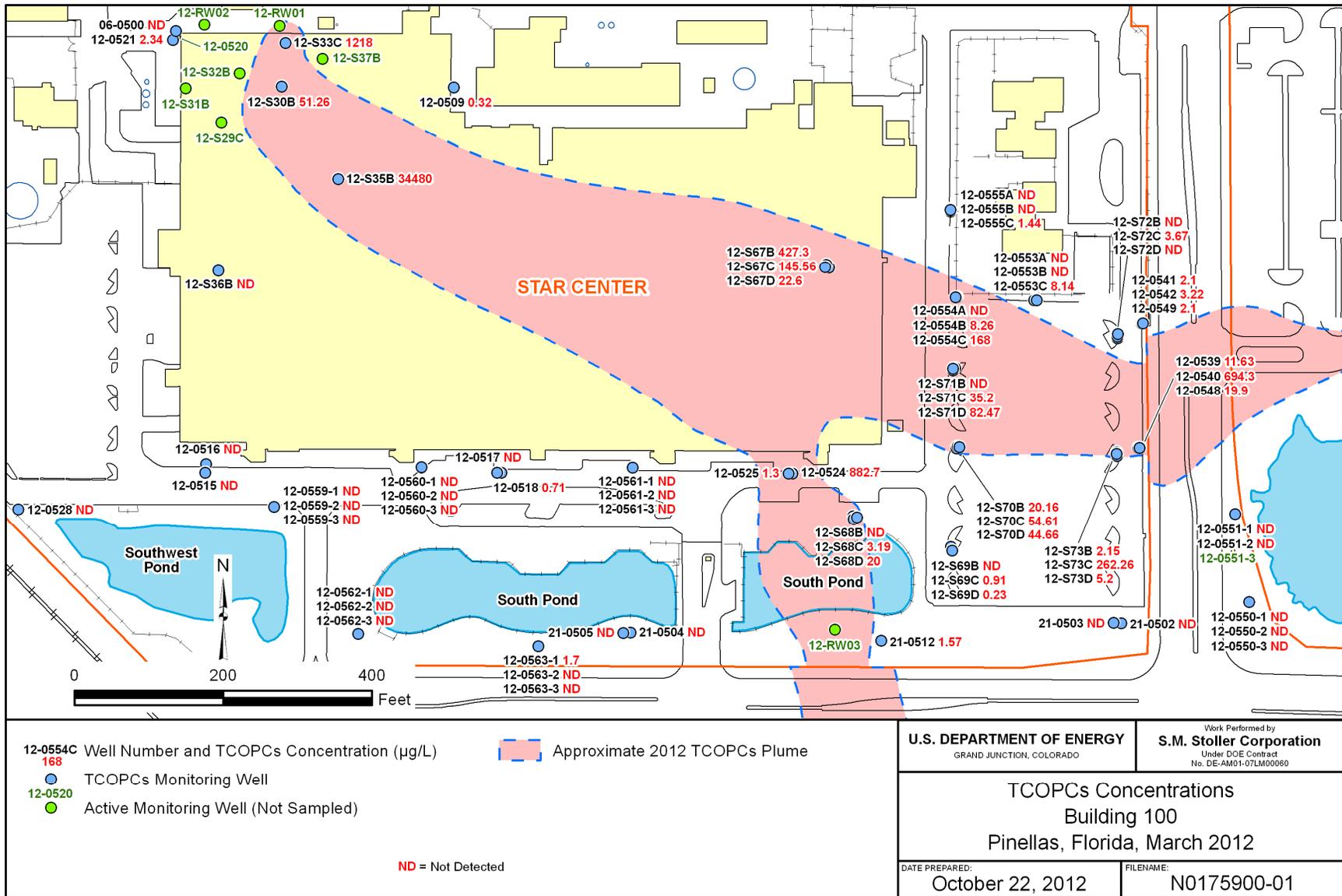
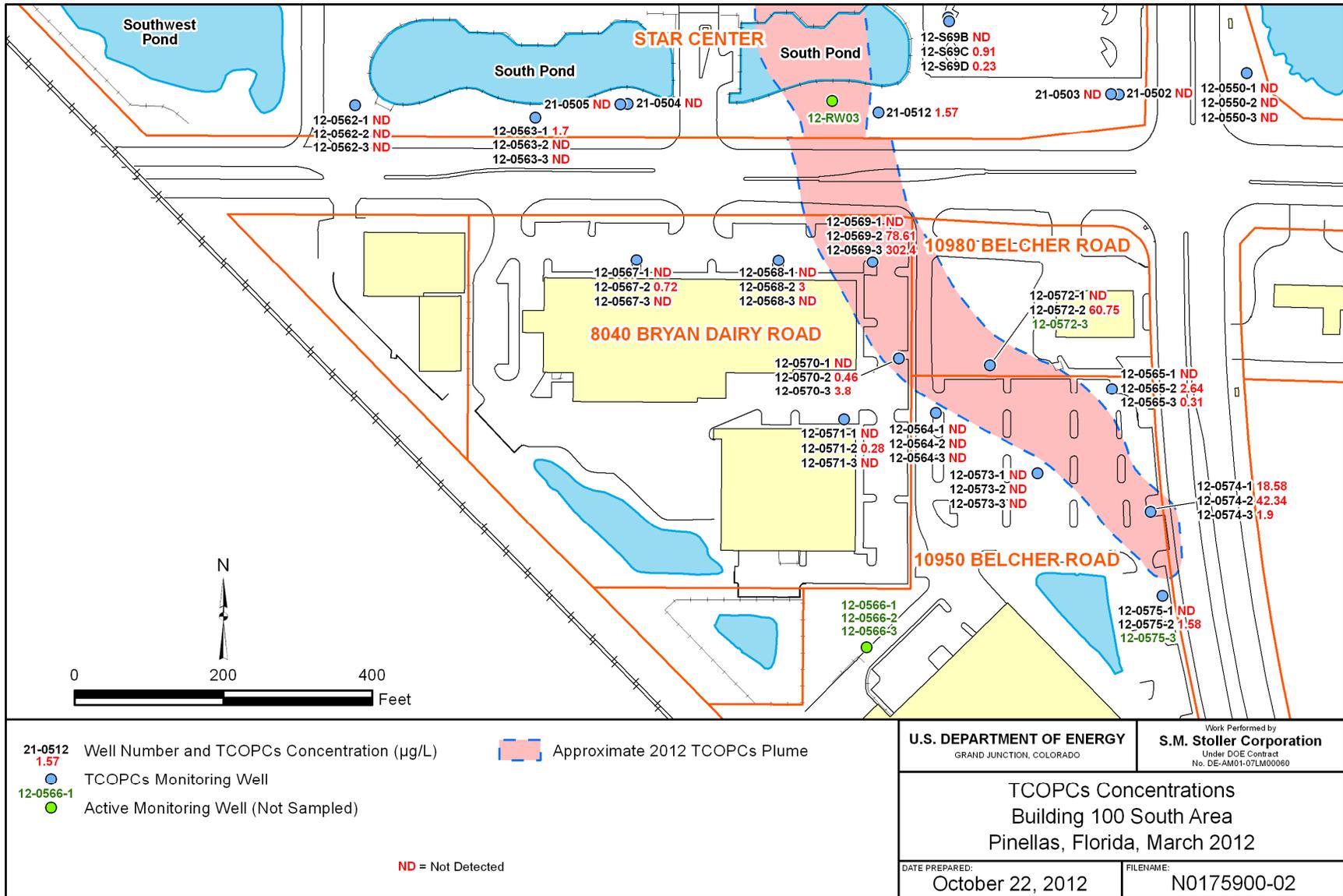
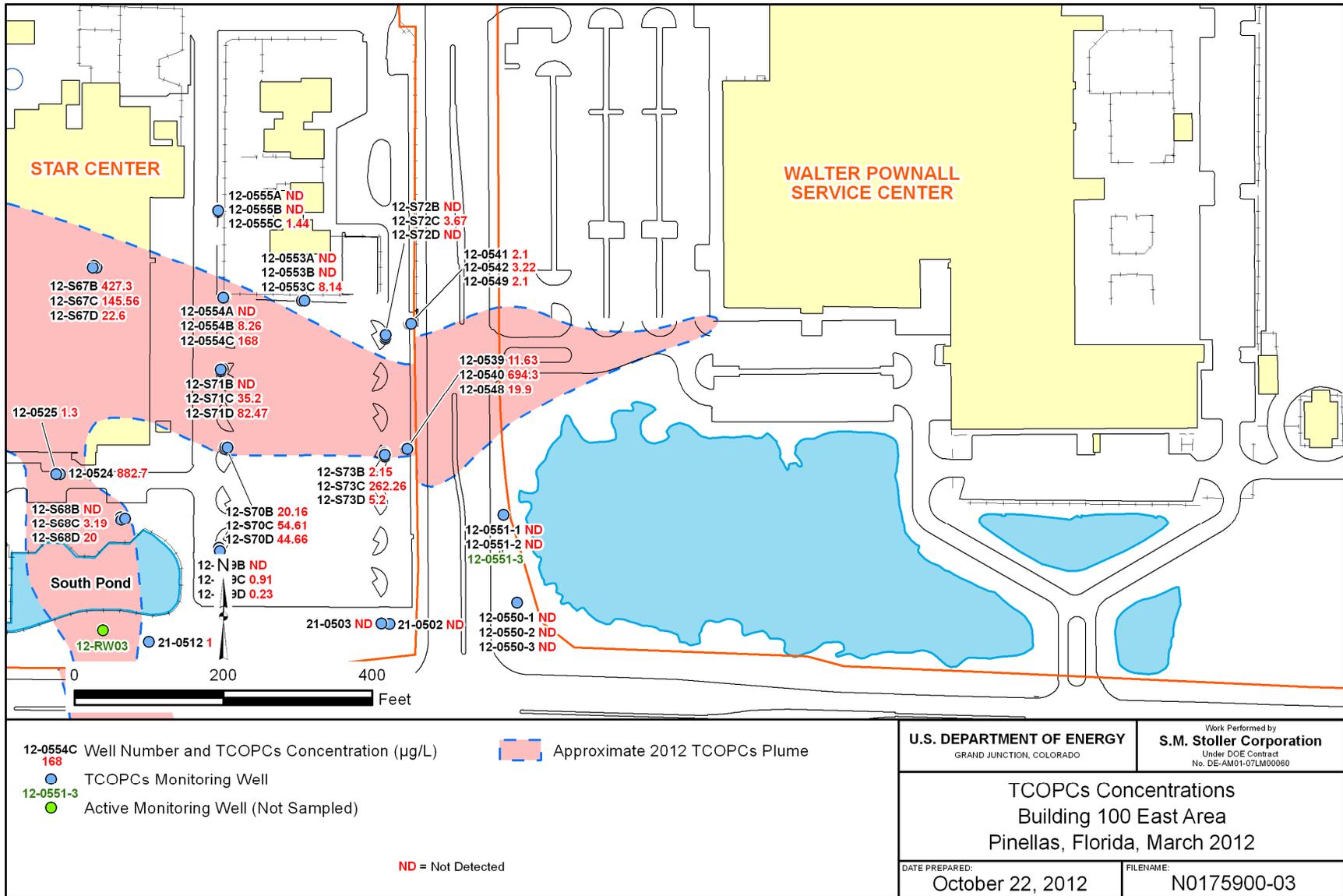


Figure 4. Building 100 Area Total COPC Concentrations



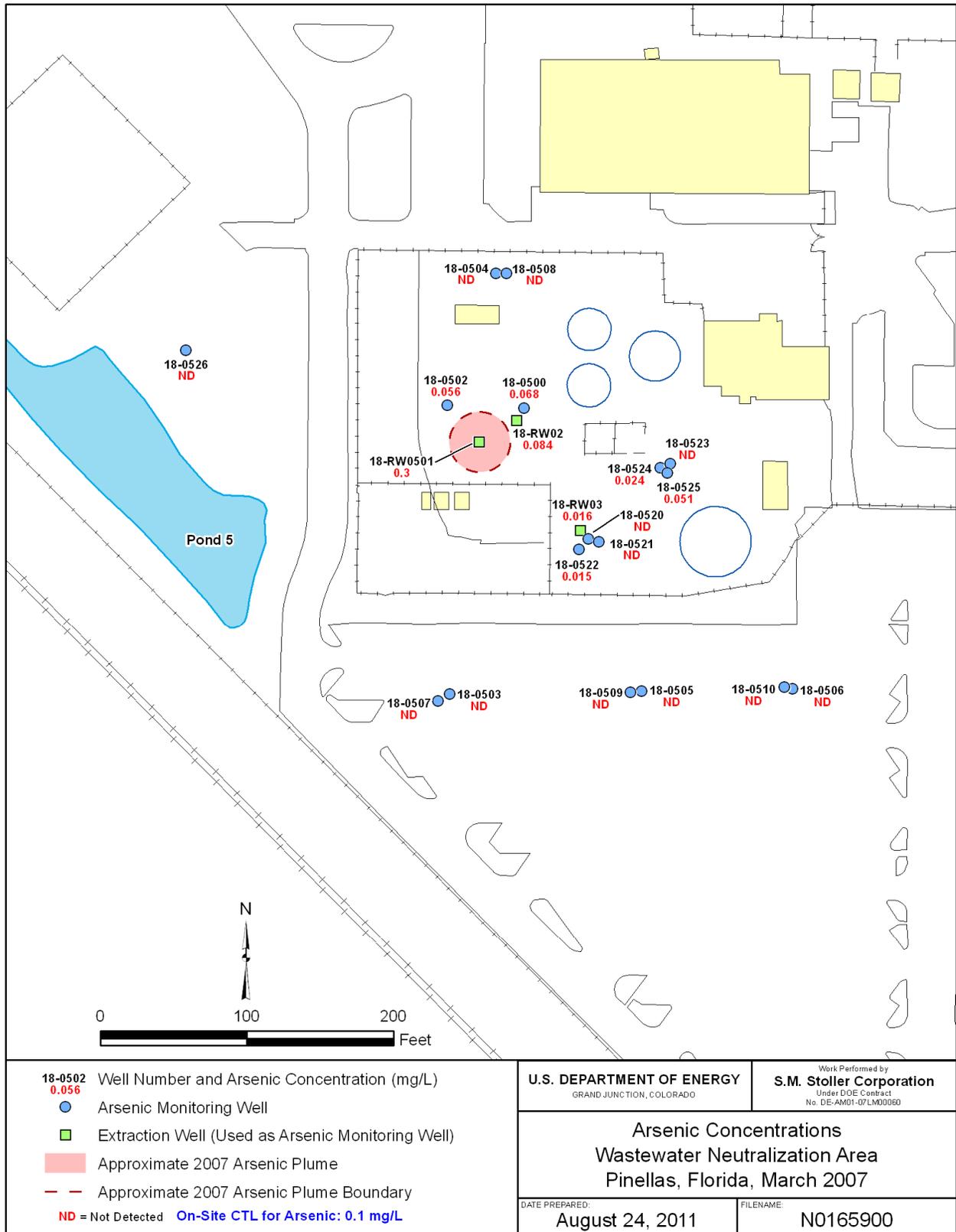
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Figure 5. Building 100 Area South Total COPC Concentrations



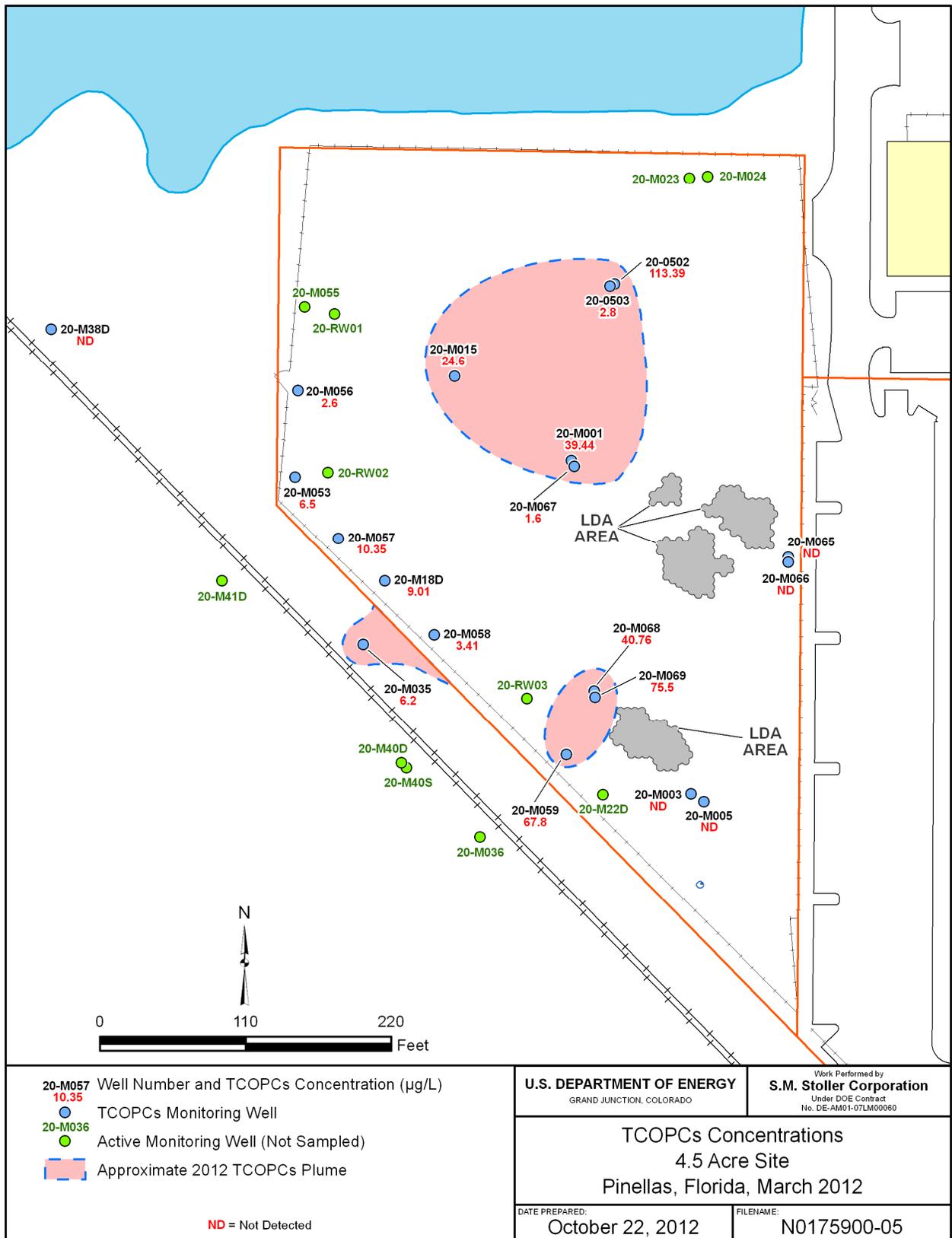
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Figure 6. Building 100 Area East Total COPC Concentrations



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Figure 7. WNA Arsenic Concentrations



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Figure 8. 4.5 Acre Site Total COPC Concentrations

<b>WELL INSPECTION REPORT</b>	<b>INSPECTED BY:</b> _____
<b>YOUNG-RAINEY STAR CENTER, LARGO, FL</b>	<b>DATE:</b> _____

<b>Well Number:</b> _____	<b>Type: Monitoring/Extraction</b>
---------------------------	------------------------------------

<b>WELL EXTERIOR CONDITIONS</b>	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				

<b>WELL INTERIOR CONDITIONS</b>		
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 (1)				
Bladder Pump Installed				

Notes: (1) Other than pump or tubing

*Figure 9. Well Inspection Report Form*

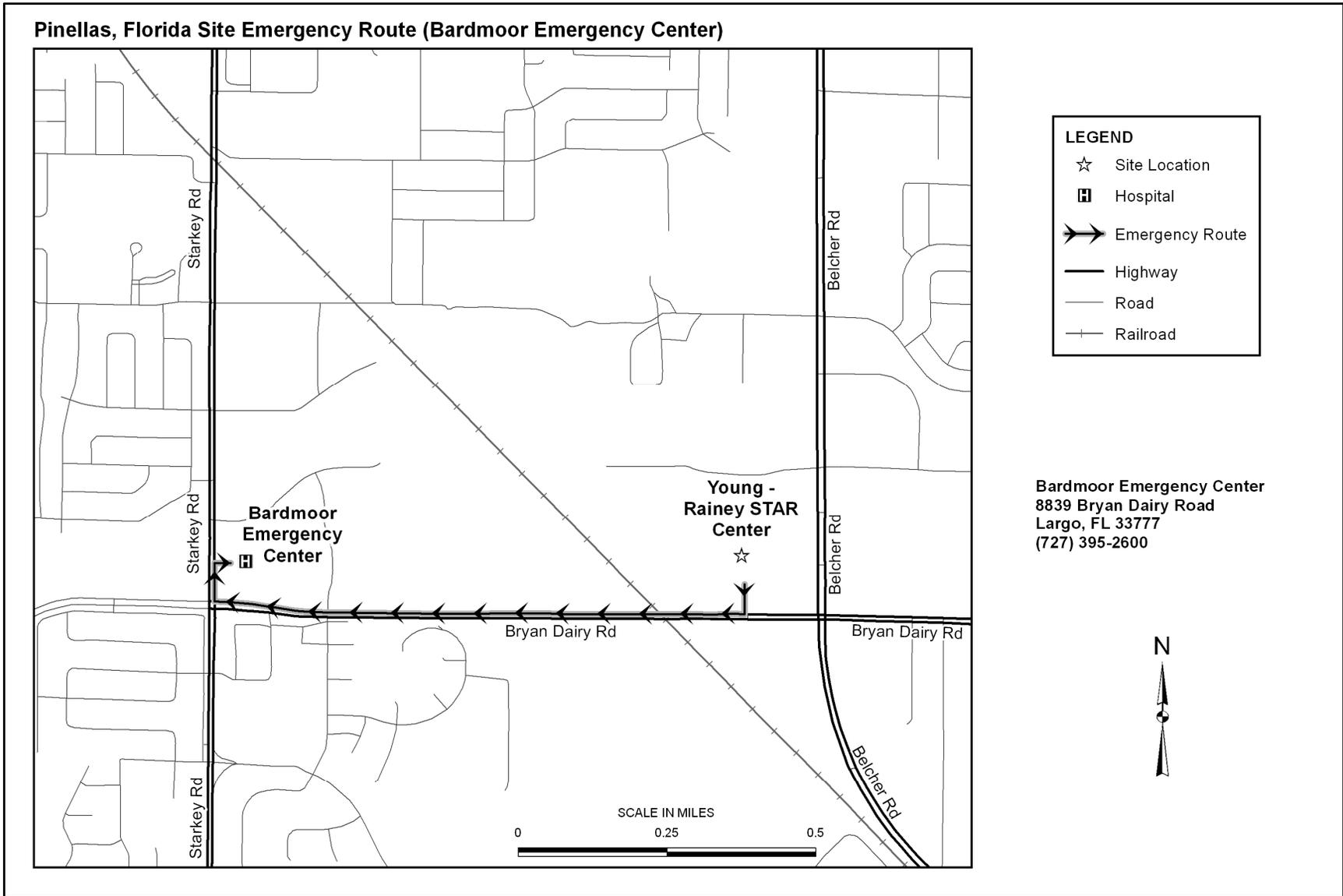
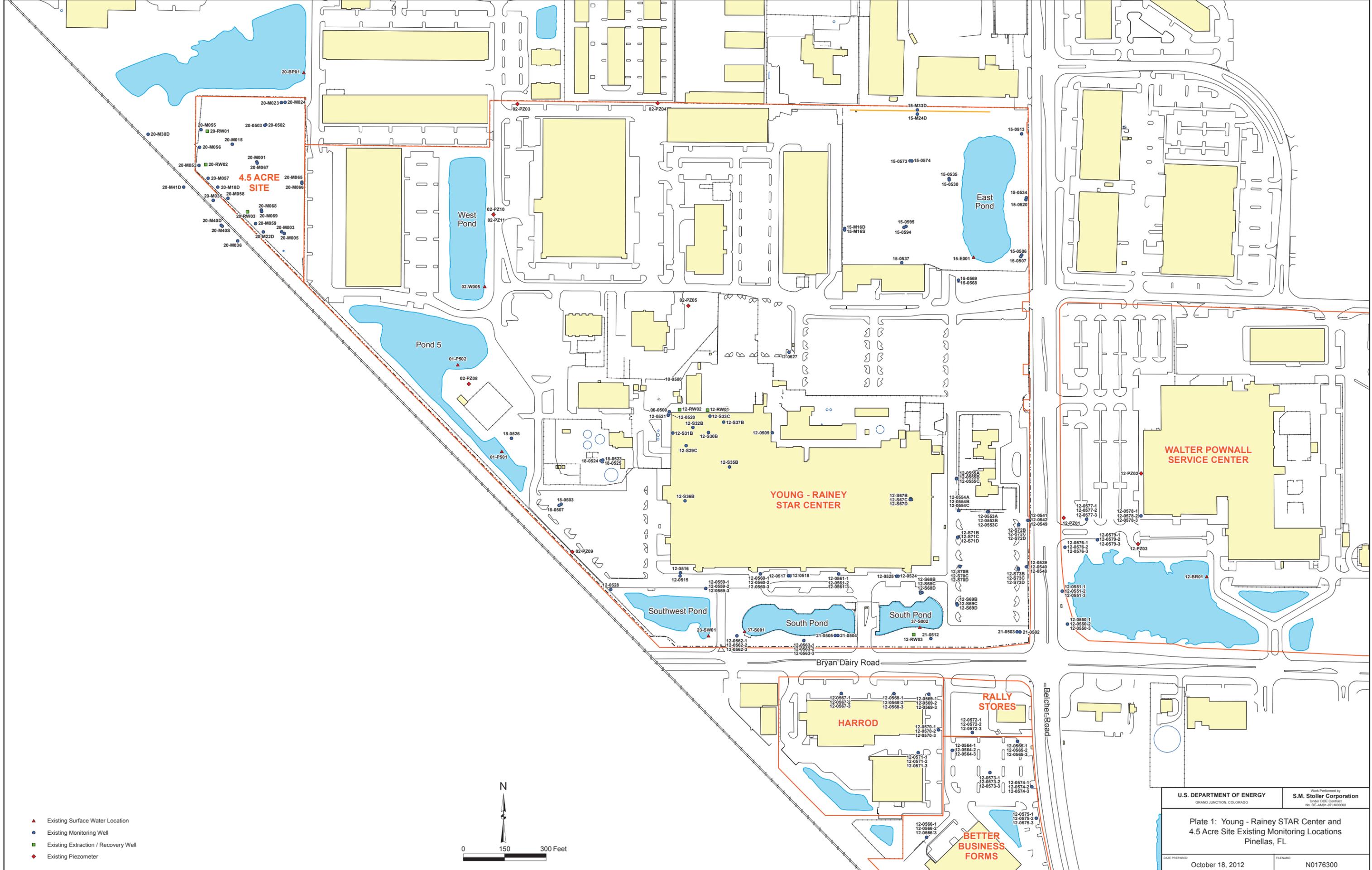


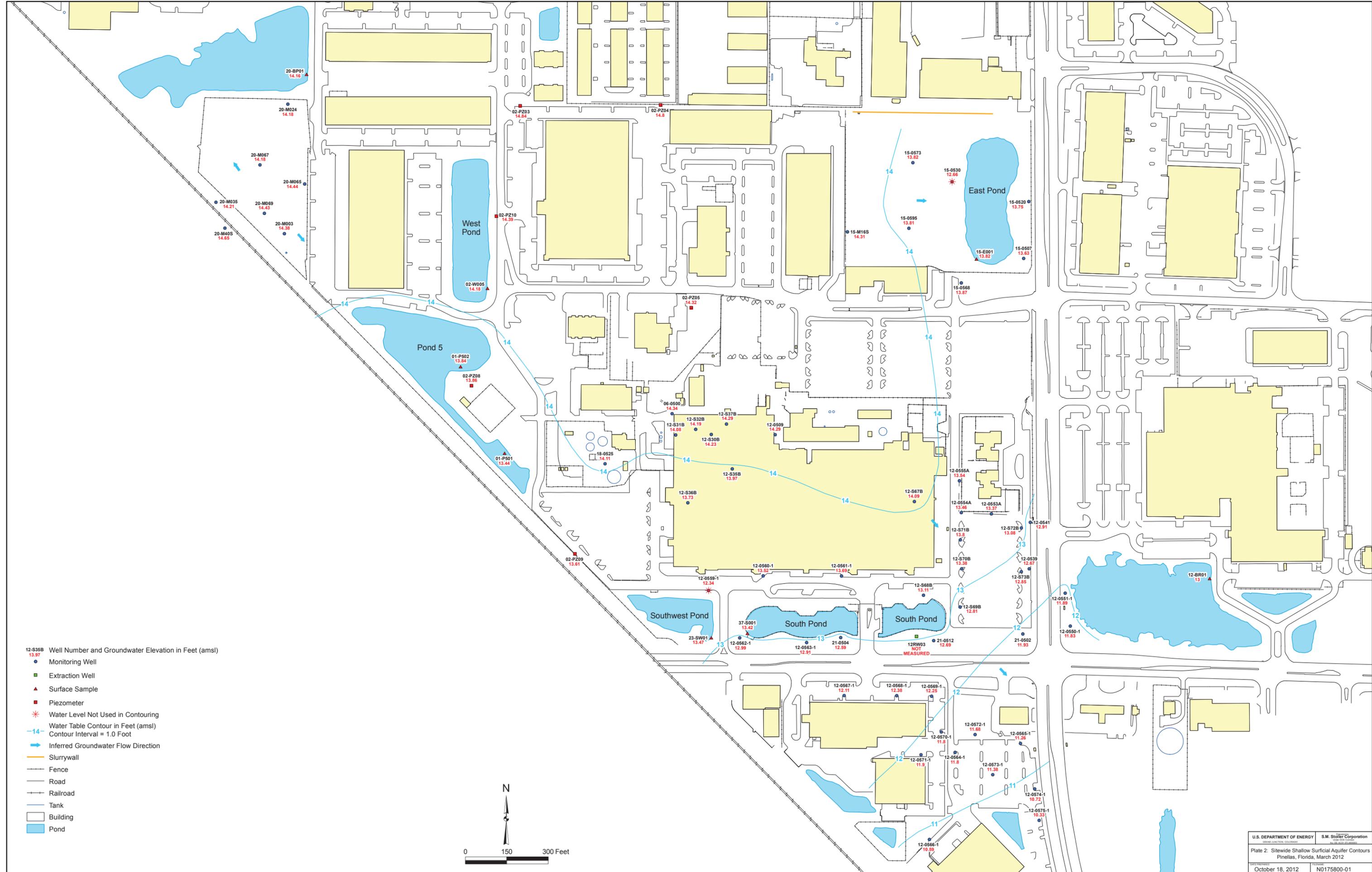
Figure 10. Emergency Route Map

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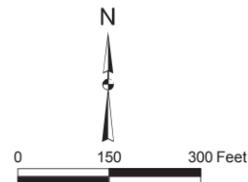


- ▲ Existing Surface Water Location
- Existing Monitoring Well
- Existing Extraction / Recovery Well
- ◆ Existing Piezometer

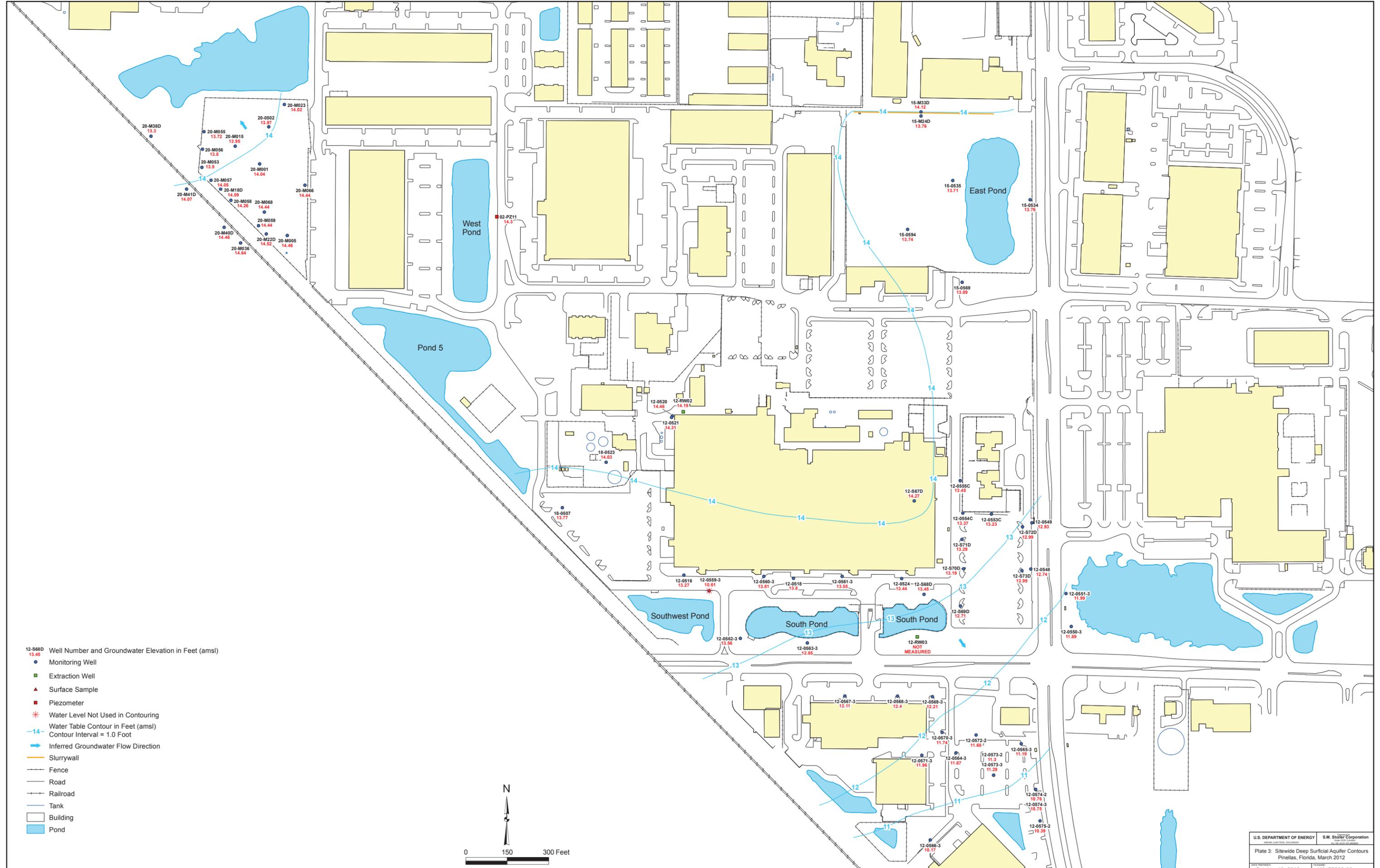
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<b>Plate 1: Young - Rainey STAR Center and          4.5 Acre Site Existing Monitoring Locations          Pinellas, FL</b>	
<small>DATE PREPARED:</small> October 18, 2012	<small>FILENAME:</small> N0176300



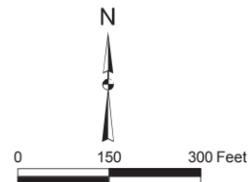
- 12-S35B Well Number and Groundwater Elevation in Feet (amsl)  
13.97
- Monitoring Well
- Extraction Well
- ▲ Surface Sample
- Piezometer
- \* Water Level Not Used in Contouring
- 14 Water Table Contour in Feet (amsl)
- Contour Interval = 1.0 Foot
- Inferred Groundwater Flow Direction
- Slurrywall
- Fence
- Road
- Railroad
- Tank
- Building
- Pond



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- 12-S68D  
13.45 Well Number and Groundwater Elevation in Feet (ams)
- Monitoring Well
- Extraction Well
- ▲ Surface Sample
- Piezometer
- \* Water Level Not Used in Contouring
- Water Table Contour in Feet (ams)
- Contour Interval = 1.0 Foot
- Inferred Groundwater Flow Direction
- Slurrywall
- Fence
- Road
- Railroad
- Tank
- Building
- Pond



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## **Appendix A**

### **Site Monitoring Plan**

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## Plate

Plate A1 Sampling Locations

## Attachments

Attachment 1 Plume Stability Monitoring Plan for the Building 100 Area  
Attachment 2 Program Directives

## Abbreviations

COPC	contaminant of potential concern
CTL	cleanup target level
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
F.A.C.	<i>Florida Administrative Code</i>
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 Pinellas, Florida, Site Monitoring Plan for all routine monitoring and sampling activities at the Young - Rainey Science, Technology, and Research Center (STAR Center) and the 4.5 Acre Site. This plan defines the analytical parameters for groundwater monitoring wells and surface water sampling locations. Samples are collected twice per year in March (dry season) and September (wet season). This plan also defines the approach for plume stability monitoring at the Building 100 Area at the STAR Center.

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/PLN/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 *Pinellas Environmental Restoration Project Quality Assurance Project Plan for the Young - Rainey STAR Center and 4.5 Acre Site* (DOE 2006) and the Sampling and Analysis Plan.

On May 24, 2007, FDEP provided verbal approval of the Wastewater Neutralization Area No Further Action with Controls proposal. That document proposed closure of the Wastewater Neutralization Area, noted that closure monitoring was complete, and stated that no additional monitoring would occur at that site. Therefore, all sampling activities at the Wastewater Neutralization Area have been discontinued.

## 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–1 lists the current COPCs and their associated cleanup target levels (CTLs). The COPCs are specific to each of the three areas: the Northeast Site and Building 100 Area at the STAR Center, and the 4.5 Acre Site. As described in Section A1.0, monitoring is no longer conducted at the Wastewater Neutralization Area due to the imminent regulatory closure of this area.

The COPCs listed in Table A–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 2003). Recent plume delineation work 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 onsite and offsite. 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 previous 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 (Chapter 62-550, *Florida Administrative Code* [F.A.C.]). 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 62-780.200 (35), F.A.C. Thus, the applicable groundwater CTLs are those for groundwater of “low yield/poor quality” provided in Table 1 of Chapter 62-777, F.A.C.

Use of these poor-quality groundwater CTLs applies only on 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.

### **A3.0 Monitoring Well Network Reconfiguration**

The monitoring well networks at the Northeast Site and the 4.5 Acre Site will remain as is because these sites are in closure monitoring. However, plume delineation was completed in mid-2012 at the Building 100 Area (DOE 2012), and because the stability of the plumes must be evaluated, the network of wells at this area must be altered.

The plume delineation work at the Building 100 Area strongly suggested the existence of relatively narrow preferential groundwater flow pathways (as opposed to the previous conceptual model of matrix flow), so wells will be installed in new locations to monitor the plumes. The plume delineation work was conducted using a drive-point sampler; sampling locations were closely spaced, and samples were collected at multiple depths at each location. This approach produced a relatively high data density, so wells can be targeted to specific locations within the plume. The choice of which wells to sample is explained in Attachment 1 (the Plume Stability Monitoring Plan for the Building 100 Area). Of the wells that will not be sampled, several will be retained for water level measurements and the remainder will be abandoned (Table A–2).

Plate A1 shows the existing monitoring wells as of November 2012, proposed new well locations, and surface water sampling locations. Table A–3 is a list of existing monitoring wells, recovery wells, and piezometers, including their installation dates, diameters, and screened intervals.

### **A4.0 Northeast Site and 4.5 Acre Site Monitoring**

#### **A4.1 Northeast Site**

The monitoring wells for closure monitoring at the Northeast Site were determined in the *Closure Monitoring Plan for the Northeast Site and 4.5 Acre Site* (DOE 2009). The wells and analytes are listed in Table A–4 and shown on Plate A1. The East Pond at the Northeast Site has been sampled for the last few years with no significant COPC detections, so sampling of this pond will be discontinued.

All of the Northeast Site volatile organic COPCs (Table A–1) 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 Northeast Site. Iron and aluminum will be analyzed using EPA Method 6010B.

#### **A4.2 4.5 Acre Site**

The monitoring wells for the 4.5 Acre Site were determined in the *Closure Monitoring Plan for the Northeast Site and 4.5 Acre Site* (DOE 2009). The 13 closure monitoring wells will be sampled semiannually (Table A-4; Plate A1). Six additional wells located along the property boundary (not part of the closure monitoring program) will be sampled semiannually for VOCs to monitor vinyl chloride concentrations along the west property boundary.

All of the 4.5 Acre Site volatile organic COPCs (Table A-1) 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 the VOCs in groundwater samples collected from the 4.5 Acre Site.

### **A5.0 Building 100 Area Monitoring**

The monitoring objective for the Building 100 Area is to determine if the contaminant plumes are stable on the STAR Center and the offsite properties. The method to determine plume stability is described in detail in Attachment 1 and is summarized here. The wells that will be sampled are shown on Plate A1 and listed in Table A-4.

The method for estimating plume stability at the Building 100 Area is calculation of the area under the curve for each of three well cross-sections in both the south and east plumes. The area under the curve at each cross-section presents a reasonable representation of the contaminant mass within the plane of the cross section at a point in time. Comparison of these values over time should demonstrate the relative stability of the plumes.

The South and Southwest Ponds at the Building 100 Area have been sampled for the last few years with no significant COPC detections, so sampling of these ponds will be discontinued. In addition, the two Floridan aquifer wells (12-0527 and 12-0528) have been sampled for many years with no detections, so sampling of these wells will be discontinued; these wells will not be abandoned in case future sampling is required.

All of the Building 100 Area volatile organic COPCs (Table A-1) 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, well below the 3.2 micrograms per liter CTL.

## **A6.0 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 Northeast Site and 4.5 Acre Site, water levels will be measured in all existing wells at these two sites to provide a more detailed evaluation of groundwater flow. Water levels will also be measured in wells at the Wastewater Neutralization Area.

Surface water level measurements will be taken during both semiannual sampling events at PIN15-E001 on the East Pond, PIN 23-SW01 on the Southwest Pond, PIN37-S001 on the South Pond, PIN02-W005 on the West Pond, PIN01-P501 and -P502 on Pond 5, PIN12-BR01 on the pond east of Belcher Road, and PIN20-BP01 on the 118th Place Pond (the pond north of the 4.5 Acre Site) (Plate A1).

## **A7.0 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 Quality Assurance Project Plan (DOE 2006). Program Directives will be attached to this document as they occur (Attachment 2).

Special (nonroutine) sampling events that are outside the scope of the routine sampling activities described in this plan are documented using an ad hoc sampling checklist. The ad hoc procedure is provided as an appendix to the Quality Assurance Project Plan (DOE 2006).

## **A8.0 Summary**

Table A-5 shows a summary of the number of samples that will be collected, based on the sampling frequencies recommended in this document. Table A-6 lists the number of existing wells at each site.

## **A9.0 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), 2006. *Pinellas Environmental Restoration Project Quality Assurance Project Plan for the Young - Rainey STAR Center and 4.5 Acre Site*, Office of Legacy Management, Grand Junction, Colorado, August.

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.

*Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites*, LMS/PLN/S04351, continually updated, prepared by the S.M. Stoller Corporation for the U.S. Department of Energy Office of Legacy Management, Grand Junction, Colorado.

Table A-1. Contaminants of Potential Concern and Cleanup Target Levels

Contaminants of Potential Concern	FDEP Cleanup Target Levels <sup>a</sup> (µg/L) <sup>b</sup>
<b>Northeast Site</b>	
Trichloroethene	30
Total 1,2-dichloroethene	630
<i>cis</i> -1,2-Dichloroethene	700
Vinyl chloride	10
Benzene	10
Toluene	10,000
Methylene chloride	50
Arsenic	100
Aluminum	2,000
Iron	3,000
<b>Building 100 Area</b>	
Trichloroethene	30
1,1-Dichloroethene	70
Total 1,2-Dichloroethene	630
<i>cis</i> -1,2-Dichloroethene	700
<i>trans</i> -1,2-Dichloroethene	1,000
Vinyl chloride	10
1,4-dioxane	32
Arsenic	100
<b>4.5 Acre Site</b>	
Trichloroethene	30
Total 1,2-dichloroethene	630
<i>cis</i> -1,2-Dichloroethene	700
<i>trans</i> -1,2-Dichloroethene	1,000
Vinyl chloride	10
Benzene	10
Arsenic	100

<sup>a</sup> 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.

<sup>b</sup> µg/L = micrograms per liter.

Table A-2. Existing Wells Not Sampled  
The highlighted wells will be abandoned.

<b>Building 100 Area</b>	PIN12-S29C
PIN06-0500	PIN12-S31B
PIN12-0509	PIN12-S32B
<b>PIN12-0515</b>	PIN12-S36B
<b>PIN12-0516</b>	PIN12-S37B
<b>PIN12-0517</b>	<b>PIN12-S72B</b>
<b>PIN12-0518</b>	<b>PIN12-S72C</b>
PIN12-0520	<b>PIN12-S72D</b>
PIN12-0521	PIN21-0502
PIN12-0550-1	PIN21-0503
PIN12-0550-2	PIN21-0504
PIN12-0550-3	PIN21-0505
PIN12-0551-3	<b>PIN21-0512</b>
<b>PIN12-0553A</b>	<b>Northeast Site</b>
<b>PIN12-0553B</b>	PIN15-0506
<b>PIN12-0553C</b>	PIN15-0507
<b>PIN12-0559-1</b>	PIN15-0513
<b>PIN12-0559-2</b>	PIN15-0573
<b>PIN12-0559-3</b>	PIN15-0574
<b>PIN12-0560-1</b>	PIN15-M16D
<b>PIN12-0560-2</b>	PIN15-M16S
<b>PIN12-0560-3</b>	PIN15-M24D
PIN12-0562-1	PIN15-M33D
PIN12-0562-2	<b>4.5 Acre Site</b>
PIN12-0562-3	PIN20-M023
<b>PIN12-0563-1</b>	PIN20-M024
<b>PIN12-0563-2</b>	PIN20-M036
<b>PIN12-0563-3</b>	<b>PIN20-M055</b>
PIN12-0564-1	<b>PIN20-M22D</b>
PIN12-0564-2	PIN20-M40D
PIN12-0564-3	PIN20-M40S
PIN12-0566-1	PIN20-M41D
PIN12-0566-2	PIN20-RW01
PIN12-0566-3	PIN20-RW02
PIN12-0567-1	PIN20-RW03
PIN12-0567-2	<b>Wastewater Neutralization Area</b>
PIN12-0567-3	PIN18-0503
PIN12-0572-3	PIN18-0507
PIN12-0575-3	<b>PIN18-0523</b>
PIN12-RW01	<b>PIN18-0524</b>
PIN12-RW02	<b>PIN18-0525</b>
PIN12-RW03	PIN18-0526

Table A-3. Well Completion Data

Well ID	Well Type	Screen Interval (ft below surface)	Well Diameter (inches)	Installation Date
<b>Building 100 Area</b>				
PIN06-0500	Monitoring Well	3-13	2	23-Apr-89
PIN12-0509	Monitoring Well	3-13	2	25-Apr-90
PIN12-0515	Monitoring Well	15-25	2	10-May-95
PIN12-0516	Monitoring Well	30-40	2	10-May-95
PIN12-0517	Monitoring Well	15-25	2	11-May-95
PIN12-0518	Monitoring Well	30-40	2	11-May-95
PIN12-0520	Monitoring Well	36-46	2	02-May-95
PIN12-0521	Monitoring Well	19.5-29.5	2	05-May-95
PIN12-0524	Monitoring Well	27-37	2	12-May-95
PIN12-0525	Monitoring Well	12-22	2	12-May-95
PIN12-0527	Monitoring Well	118-137.9	2	25-Aug-99
PIN12-0528	Monitoring Well	127-146.9	2	01-May-00
PIN12-0539	Monitoring Well	9.5-19.5	1	10-Oct-07
PIN12-0540	Monitoring Well	20-30	1	10-Oct-07
PIN12-0541	Monitoring Well	10-20	1	10-Oct-07
PIN12-0542	Monitoring Well	20-30	1	10-Oct-07
PIN12-0549	Monitoring Well	30-40	1	11-Dec-07
PIN12-0550-1	Monitoring Well	9-18	1.1	14-Feb-08
PIN12-0550-2	Monitoring Well	20-29	1.1	14-Feb-08
PIN12-0550-3	Monitoring Well	31-40	1.1	14-Feb-08
PIN12-0551-1	Monitoring Well	9-18	1.1	14-Feb-08
PIN12-0551-2	Monitoring Well	20-29	1.1	14-Feb-08
PIN12-0551-3	Monitoring Well	31-40	1.1	14-Feb-08
PIN12-0553A	Monitoring Well	3-13	1	14-Jun-08
PIN12-0553B	Monitoring Well	13-23	1	14-Jun-08
PIN12-0553C	Monitoring Well	23-33	1	14-Jun-08
PIN12-0554A	Monitoring Well	3-13	1	31-May-08
PIN12-0554B	Monitoring Well	13-23	1	31-May-08
PIN12-0554C	Monitoring Well	23-33	1	31-May-08
PIN12-0555A	Monitoring Well	2.5-12.5	1	07-Jun-08
PIN12-0555B	Monitoring Well	13-23	1	07-Jun-08
PIN12-0555C	Monitoring Well	23-33	1	07-Jun-08
PIN12-0559-1	Monitoring Well	9-18	1.1	23-Nov-08
PIN12-0559-2	Monitoring Well	20-29	1.1	23-Nov-08
PIN12-0559-3	Monitoring Well	31-40	1.1	23-Nov-08
PIN12-0560-1	Monitoring Well	9-18	1.1	22-Nov-08
PIN12-0560-2	Monitoring Well	20-29	1.1	22-Nov-08
PIN12-0560-3	Monitoring Well	31-40	1.1	22-Nov-08
PIN12-0561-1	Monitoring Well	9-18	1.1	22-Nov-08
PIN12-0561-2	Monitoring Well	20-29	1.1	22-Nov-08
PIN12-0561-3	Monitoring Well	31-40	1.1	22-Nov-08
PIN12-0562-1	Monitoring Well	9-18	1.1	24-Nov-08
PIN12-0562-2	Monitoring Well	20-29	1.1	24-Nov-08
PIN12-0562-3	Monitoring Well	31-40	1.1	24-Nov-08
PIN12-0563-1	Monitoring Well	9-18	1.1	21-Nov-08
PIN12-0563-2	Monitoring Well	20-29	1.1	21-Nov-08
PIN12-0563-3	Monitoring Well	31-40	1.1	21-Nov-08

Table A-3 (continued). Well Completion Data

Well ID	Well Type	Screen Interval (ft below surface)	Well Diameter (inches)	Installation Date
PIN12-0564-1	Monitoring Well	9-18	1.1	05-May-09
PIN12-0564-2	Monitoring Well	20-29	1.1	05-May-09
PIN12-0564-3	Monitoring Well	31-40	1.1	05-May-09
PIN12-0565-1	Monitoring Well	9-18	1.1	05-May-09
PIN12-0565-2	Monitoring Well	20-29	1.1	05-May-09
PIN12-0565-3	Monitoring Well	31-40	1.1	05-May-09
PIN12-0566-1	Monitoring Well	10-19	1.1	06-May-09
PIN12-0566-2	Monitoring Well	21-30	1.1	06-May-09
PIN12-0566-3	Monitoring Well	32-41	1.1	06-May-09
PIN12-0567-1	Monitoring Well	9-18	1.1	23-Sep-09
PIN12-0567-2	Monitoring Well	20-29	1.1	23-Sep-09
PIN12-0567-3	Monitoring Well	31-40	1.1	23-Sep-09
PIN12-0568-1	Monitoring Well	9-18	1.1	23-Sep-09
PIN12-0568-2	Monitoring Well	20-29	1.1	23-Sep-09
PIN12-0568-3	Monitoring Well	31-40	1.1	23-Sep-09
PIN12-0569-1	Monitoring Well	9-18	1.1	22-Sep-09
PIN12-0569-2	Monitoring Well	20-29	1.1	22-Sep-09
PIN12-0569-3	Monitoring Well	31-40	1.1	22-Sep-09
PIN12-0570-1	Monitoring Well	9-18	1.1	22-Mar-10
PIN12-0570-2	Monitoring Well	20-29	1.1	22-Mar-10
PIN12-0570-3	Monitoring Well	31-40	1.1	22-Mar-10
PIN12-0571-1	Monitoring Well	9-18	1.1	23-Mar-10
PIN12-0571-2	Monitoring Well	20-29	1.1	23-Mar-10
PIN12-0571-3	Monitoring Well	31-40	1.1	23-Mar-10
PIN12-0572-1	Monitoring Well	9-18	1.1	24-May-11
PIN12-0572-2	Monitoring Well	20-29	1.1	24-May-11
PIN12-0572-3	Monitoring Well	31-40	1.1	24-May-11
PIN12-0573-1	Monitoring Well	9-18	1.1	25-May-11
PIN12-0573-2	Monitoring Well	20-29	1.1	25-May-11
PIN12-0573-3	Monitoring Well	31-40	1.1	25-May-11
PIN12-0574-1	Monitoring Well	9-18	1.1	25-May-11
PIN12-0574-2	Monitoring Well	20-29	1.1	25-May-11
PIN12-0574-3	Monitoring Well	31-40	1.1	25-May-11
PIN12-0575-1	Monitoring Well	9-18	1.1	26-May-11
PIN12-0575-2	Monitoring Well	20-29	1.1	26-May-11
PIN12-0575-3	Monitoring Well	31-40	1.1	26-May-11
PIN12-0576-1	Monitoring Well	4-13	1.1	29-Aug-12
PIN12-0576-2	Monitoring Well	15-24	1.1	29-Aug-12
PIN12-0576-3	Monitoring Well	26-35	1.1	29-Aug-12
PIN12-0577-1	Monitoring Well	4-13	1.1	29-Aug-12
PIN12-0577-2	Monitoring Well	15-24	1.1	29-Aug-12
PIN12-0577-3	Monitoring Well	26-35	1.1	29-Aug-12
PIN12-0578-1	Monitoring Well	4-13	1.1	30-Aug-12
PIN12-0578-2	Monitoring Well	15-24	1.1	30-Aug-12
PIN12-0578-3	Monitoring Well	26-35	1.1	30-Aug-12
PIN12-0579-1	Monitoring Well	4-13	1.1	28-Aug-12
PIN12-0579-2	Monitoring Well	15-24	1.1	28-Aug-12
PIN12-0579-3	Monitoring Well	26-35	1.1	28-Aug-12
PIN12-RW01	Recovery Well	19-29	6	06-Jul-95

Table A-3 (continued). Well Completion Data

Well ID	Well Type	Screen Interval (ft below surface)	Well Diameter (inches)	Installation Date
PIN12-RW02	Recovery Well	25-35	6	07-Jul-95
PIN12-RW03	Recovery Well	3-38	4	25-Sep-08
PIN12-S29C	Monitoring Well	14-24	2	01-May-95
PIN12-S30B	Monitoring Well	5-15	2	01-May-95
PIN12-S31B	Monitoring Well	5-15	2	01-May-95
PIN12-S32B	Monitoring Well	5.5-15.5	2	01-May-95
PIN12-S33C	Monitoring Well	11-21	2	01-Jul-95
PIN12-S35B	Monitoring Well	5-15	2	01-Jul-95
PIN12-S36B	Monitoring Well	5-15	2	01-Jul-95
PIN12-S37B	Monitoring Well	5-15	2	01-Jul-95
PIN12-S67B	Monitoring Well	10-19.83	1	06-Sep-01
PIN12-S67C	Monitoring Well	20-29.83	1	06-Sep-01
PIN12-S67D	Monitoring Well	30-39.83	1	06-Sep-01
PIN12-S68B	Monitoring Well	10-20	1	19-Mar-02
PIN12-S68C	Monitoring Well	18-28	1	19-Mar-02
PIN12-S68D	Monitoring Well	30-40	1	19-Mar-02
PIN12-S69B	Monitoring Well	10-20	1	20-Mar-02
PIN12-S69C	Monitoring Well	20-30	1	20-Mar-02
PIN12-S69D	Monitoring Well	30-40	1	20-Mar-02
PIN12-S70B	Monitoring Well	10-20	1	19-Mar-02
PIN12-S70C	Monitoring Well	20-30	1	19-Mar-02
PIN12-S70D	Monitoring Well	30-40	1	19-Mar-02
PIN12-S71B	Monitoring Well	10-20	1	19-Mar-02
PIN12-S71C	Monitoring Well	20-30	1	19-Mar-02
PIN12-S71D	Monitoring Well	30-40	1	19-Mar-02
PIN12-S72B	Monitoring Well	10-20	1	19-Mar-02
PIN12-S72C	Monitoring Well	20-30	1	19-Mar-02
PIN12-S72D	Monitoring Well	30-40	1	19-Mar-02
PIN12-S73B	Monitoring Well	10-20	1	20-Mar-02
PIN12-S73C	Monitoring Well	20-30	1	20-Mar-02
PIN12-S73D	Monitoring Well	30-40	1	20-Mar-02
PIN21-0502	Monitoring Well	7-17	2	12-Aug-91
PIN21-0503	Monitoring Well	20-28	2	13-Aug-91
PIN21-0504	Monitoring Well	7-17	2	13-Aug-91
PIN21-0505	Monitoring Well	20-28	2	13-Aug-91
PIN21-0512	Monitoring Well	20-29.5	2	13-Oct-98
<b>Northeast Site</b>				
PIN15-0506	Monitoring Well	12-21.5	2	08-Jan-87
PIN15-0507	Monitoring Well	5-14.5	2	08-Jan-87
PIN15-0513	Monitoring Well	135-149.6	4	09-Jun-88
PIN15-0520	Monitoring Well	5-14.5	2	13-Apr-87
PIN15-0530	Monitoring Well	5-14.5	2	13-Apr-87
PIN15-0534	Monitoring Well	19.5-29	2	29-Sep-98
PIN15-0535	Monitoring Well	20.5-30	2	29-Sep-98
PIN15-0537	Monitoring Well	17.5-30	2	30-Sep-98
PIN15-0568	Monitoring Well	10-20	1	30-Jan-03
PIN15-0569	Monitoring Well	20-30	1	30-Jan-03
PIN15-0573	Monitoring Well	5-15	1	17-May-04
PIN15-0574	Monitoring Well	18-28	2	07-Jun-04

Table A-3 (continued). Well Completion Data

Well ID	Well Type	Screen Interval (ft below surface)	Well Diameter (inches)	Installation Date
PIN15-0594	Monitoring Well	20-30	1	20-Oct-09
PIN15-0595	Monitoring Well	10-20	1	27-May-11
PIN15-M16D	Monitoring Well	18.5-28.5	2	27-Sep-95
PIN15-M16S	Monitoring Well	5-14.5	2	10-Apr-87
PIN15-M24D	Monitoring Well	20-30	2	10-Jan-96
PIN15-M33D	Monitoring Well	20-30	2	10-Jan-96
<b>Wastewater Neutralization Area</b>				
PIN18-0503	Monitoring Well	10-20	2	23-Jul-93
PIN18-0507	Monitoring Well	27-37	2	26-Jul-93
PIN18-0523	Monitoring Well	32.5-42.5	2	05-Oct-94
PIN18-0524	Monitoring Well	20-30	2	05-Oct-94
PIN18-0525	Monitoring Well	5-15	2	05-Oct-94
PIN18-0526	Monitoring Well	19.5-29	2	04-Oct-94
<b>4.5 Acre Site</b>				
PIN20-0502	Monitoring Well	21.2-31.2	2	22-Mar-91
PIN20-0503	Monitoring Well	13.2-23.2	2	22-Mar-91
PIN20-M001	Monitoring Well	20-25	2	17-May-85
PIN20-M003	Monitoring Well	9-14	2	20-May-85
PIN20-M005	Monitoring Well	25.8-30.7	2	19-May-85
PIN20-M015	Monitoring Well	20.8-25.8		20-Aug-85
PIN20-M023	Monitoring Well	19.8-24.8	2	20-Oct-85
PIN20-M024	Monitoring Well	8.7-13.7	2	20-Oct-85
PIN20-M035	Monitoring Well	9-14	2	17-Feb-86
PIN20-M036	Monitoring Well	25-30	2	18-Feb-86
PIN20-M053	Monitoring Well	20-30	2	22-Jun-01
PIN20-M055	Monitoring Well	21-31	2	23-Jan-04
PIN20-M056	Monitoring Well	19-29	2	23-Jan-04
PIN20-M057	Monitoring Well	20-30	2	23-Jan-04
PIN20-M058	Monitoring Well	18-28	2	23-Jan-04
PIN20-M059	Monitoring Well	19-29	2	22-Jan-04
PIN20-M065	Monitoring Well	10-20	1	21-Oct-09
PIN20-M066	Monitoring Well	20-30	1	21-Oct-09
PIN20-M067	Monitoring Well	10-20	1	21-Oct-09
PIN20-M068	Monitoring Well	20-30	1	21-Oct-09
PIN20-M069	Monitoring Well	10-20	1	21-Oct-09
PIN20-M18D	Monitoring Well	20-30	2	25-Jun-99
PIN20-M22D	Monitoring Well	20-30	2	25-Jun-99
PIN20-M38D	Monitoring Well	20-30	2	19-Jul-89
PIN20-M40D	Monitoring Well	18-28	2	20-Jul-89
PIN20-M40S	Monitoring Well	4-14	2	20-Jul-89
PIN20-M41D	Monitoring Well	16-26	2	15-Jan-93
PIN20-RW01	Recovery Well	10-30	4	21-Jan-04
PIN20-RW02	Recovery Well	8-28	4	21-Jan-04
PIN20-RW03	Recovery Well	8-28	4	22-Jan-04
<b>Sitewide Piezometers</b>				
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

Table A-3 (continued). Well Completion Data

<b>Well ID</b>	<b>Well Type</b>	<b>Screen Interval (ft below surface)</b>	<b>Well Diameter (inches)</b>	<b>Installation Date</b>
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-4. Sampling Frequency and Analytes

Well	VOCs	1,4-dioxane	Al and Fe
<b>Building 100 Area</b>			
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	-
PIN12-0551-1	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	-
PIN12-0571-1	S	S	-
PIN12-0571-2	S	S	-
PIN12-0571-3	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	-
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	-

Table A-4 (continued). Sampling Frequency and Analytes

Well	VOCs	1,4-dioxane	Al and Fe
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	-
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	-

Table A-4 (continued). Sampling Frequency and Analytes

Well	VOCs	1,4-dioxane	Al and Fe
PIN12-S73B	S	S	-
PIN12-S73C	S	S	-
PIN12-S73D	S	S	-
<b>Northeast Site</b>			
PIN15-0520	S	-	S
PIN15-0530	S	-	S
PIN15-0534	S	-	S
PIN15-0535	S	-	S
PIN15-0537	S	-	S
PIN15-0568	S	-	S
PIN15-0569	S	-	S
PIN15-0594	S	-	S
PIN15-0595	S	-	S
<b>4.5 Acre Site</b>			
PIN20-0502	S	-	-
PIN20-0503	S	-	-
PIN20-M001	S	-	-
PIN20-M003	S	-	-
PIN20-M005	S	-	-
PIN20-M015	S	-	-
PIN20-M035	S	-	-
PIN20-M053	S	-	-
PIN20-M056	S	-	-
PIN20-M057	S	-	-
PIN20-M058	S	-	-
PIN20-M059	S	-	-
PIN20-M065	S	-	-
PIN20-M066	S	-	-
PIN20-M067	S	-	-
PIN20-M068	S	-	-
PIN20-M069	S	-	-
PIN20-M18D	S	-	-
PIN20-M38D	S	-	-

S = Semiannual

Al = aluminum

Fe = iron

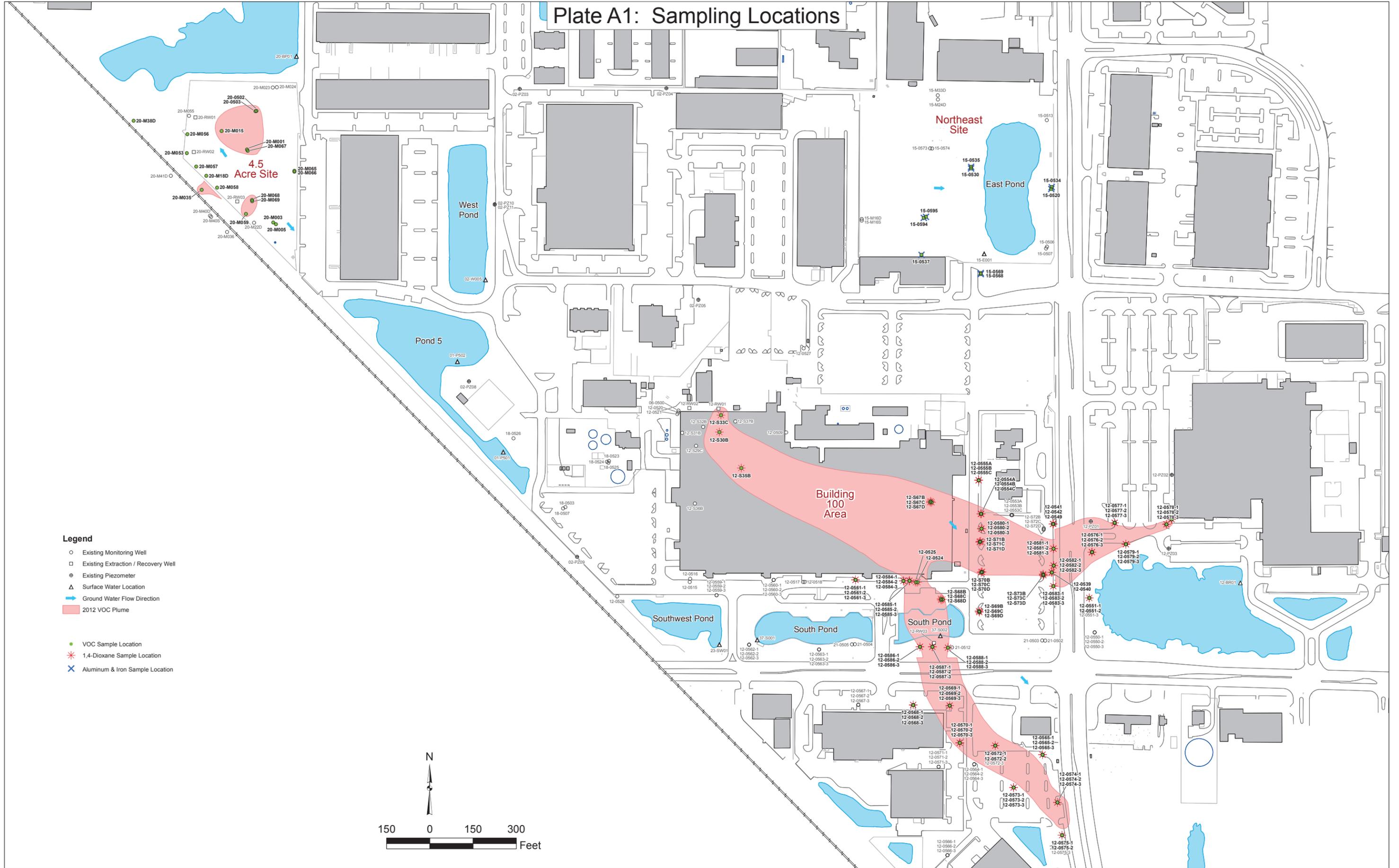
*Table A-5. Summary of Annual Monitoring Well Samples*

<b>Analyte</b>	<b>March</b>	<b>September</b>	<b>Fiscal Year Total</b>
VOCs	128	128	256
Aluminum and Iron	9	9	18
1,4-Dioxane	100	100	200
Event Total	237	237	474

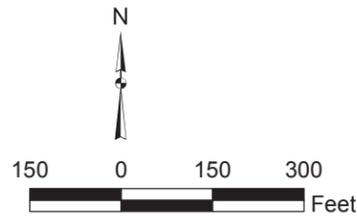
*Table A-6. Number of Existing Wells at Each Site*

<b>Site</b>	<b>Number of Existing Wells</b>
Building 100 Area	132
Northeast Site	18
4.5 Acre Site	30
Wastewater Neutralization Area	6

# Plate A1: Sampling Locations



- Legend**
- Existing Monitoring Well
  - Existing Extraction / Recovery Well
  - ⊕ Existing Piezometer
  - △ Surface Water Location
  - Ground Water Flow Direction
  - 2012 VOC Plume
  - VOC Sample Location
  - \* 1,4-Dioxane Sample Location
  - ✕ Aluminum & Iron Sample Location



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## **Attachment 1**

### **Plume Stability Monitoring Plan for the Building 100 Area**

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## Plate

Plate 1	Building 100 Area Plume Stability Monitoring Well Layout
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## Abbreviations

bls	below land surface
cDCE	<i>cis</i> -1,2-dichloroethene
COPC	contaminant of potential concern
CTL	cleanup target levels
DCE	dichloroethene
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
ft	feet
STAR Center	Young - Rainey Science, Technology, and Research Center
TCE	trichloroethene
tDCE	<i>trans</i> -1,2-dichloroethene
WPSC	Walter Pownall Service Center
VC	vinyl chloride

## 1.0 Purpose

Chemical compounds are present in groundwater beneath the Building 100 Area at the Young - Rainey Science, Technology, and Research Center (STAR Center) and adjacent properties at concentrations above regulatory thresholds. The Florida Department of Environmental Protection (FDEP) requires the U.S. Department of Energy (DOE) Office of Legacy Management to determine the stability of the associated groundwater contaminant plumes. This document is the monitoring plan to determine plume stability.

## 2.0 Site Conceptual Model

The sources of contamination at the Building 100 Area are releases from a former drum storage pad located near the northwest corner of Building 100 and leaks from drain lines beneath the building. The time frame for potential releases and leaks starts with initial operations in 1956 and extends until the underground drain lines were repaired for the second time in 1989. The released contaminants could have been dissolved in water and could also have been pure solvents that formed nonaqueous-phase liquids in the subsurface.

Groundwater flowing to the southeast past the contaminant source areas has resulted in two distinct contaminant plumes hydraulically downgradient from the building. The south plume exits the south side of the building and continues offsite south of Bryan Dairy Road onto private property for several hundred feet. The east plume exits the east side of the building and extends east across Belcher Road onto the Pinellas County Schools Walter Pownall Service Center (WPSC) property. Groundwater velocity is a few feet per year, but preferential flow pathways with a higher groundwater velocity likely exist.

The contaminants of potential concern (COPCs) for groundwater are trichloroethene (TCE); *cis*-1,2-dichloroethene (cDCE); *trans*-1,2-dichloroethene (tDCE); 1,1-dichloroethene (DCE); vinyl chloride (VC); and 1,4-dioxane. The highest contaminant concentrations are found in the deep surficial aquifer (about 20–40 feet below land surface [ft bls]), but contaminant concentrations that slightly exceed cleanup target levels (CTLs) are also found in the shallow surficial aquifer (generally 12–20 ft bls). The Hawthorn clay below the surficial aquifer prevents significant contaminant transport in the downward direction, so the surficial aquifer is the only contaminated groundwater of concern.

## 3.0 Use of Data Quality Objectives for Plume Stability Monitoring

The Environmental Protection Agency's *Guidance on Systematic Planning Using the Data Quality Objectives Process* was used to plan the plume stability monitoring.

### **3.1 Problem Statement**

Chemical compounds are present in groundwater beneath the STAR Center and adjacent properties at concentrations above regulatory thresholds. DOE is required to determine the stability of the associated groundwater contaminant plumes.

### **3.2 Study Goal**

The goal of this study is to develop a plume stability monitoring plan for the Building 100 groundwater contaminant plumes.

FDEP does not define plume stability and has no guidance on how to determine it. DOE's definition of plume stability is as follows:

1. Monitoring wells within the plume show level or declining trends in concentration of contaminants that exceed CTLs.
2. The plume is not advancing at any of its boundaries.

### **3.3 Information Inputs**

The following information was used in this study.

- Laboratory analytical data from monitoring wells and temporary well points
- Hydrogeologic data—pumping tests, water levels, surface water levels
- Lithologic data

### **3.4 Study Boundaries**

The study includes the STAR Center and impacted offsite property boundaries, which are all potential institutional control boundaries.

### **3.5 Analytic Approach**

FDEP requested that DOE develop a plan to evaluate the stability of the contaminant plumes at the Building 100 Area at the STAR Center. FDEP does not have a definition of plume stability or guidance for determining plume stability. Therefore, a literature search was conducted to identify methods for determining plume stability. The following table summarizes the methods that were identified.

Source	Description
EPA 2001	Estimate plume volume and average concentration for selected contaminants and compare the values over time.
Many sources	Time-concentration plots of individual contaminants in individual wells, including linear regression.
Many sources	Mann-Kendall or similar trend analysis.
Several sources	Mass flux, mass discharge, or mass balance. Several methods can be used to determine mass flux/discharge/balance, and these values are compared over time.
Presentation by David Pate, Midwest Environmental Consultants	Area under the curve. Uses data from lateral and longitudinal cross-sections to calculate an area under the curve, and these values are compared over time.
AFCEE 2002	Monitoring and Remediation Optimization System (MAROS) uses several different statistical methods for trend analysis.
Several sources	Numerous analytical and numerical fate and transport models. Use models to estimate plume stability.

These methods were evaluated for their applicability to the Pinellas site. The U.S. Environmental Protection Agency (EPA) method was eliminated because estimation of the plume volume would have a very high degree of uncertainty, potentially leading to misleading trends. Initially, three different methods (time-concentration plots for individual contaminants in individual wells, mass flux/mass discharge, and area under the curve) were chosen. After further consideration, it was determined that only one method should be used to avoid potential conflicts.

The area under the curve method was chosen for the following reasons. Summing the contaminant concentrations at each well triple in each cross-section minimizes the natural variability or “noise” inherent in individual contaminant concentrations in individual wells, allowing a higher-level perspective on concentration trends. The lateral cross-sections allow evaluation of the entire width of each plume as it emerges from under the building and at the site boundary; if the plume is expanding laterally (concentrations increasing at the sides of the plume), this will be seen as an increase in the area under the curve. The longitudinal cross-section in each plume will use wells in the centerline of the plume (the highest concentration area) to determine if the plume is expanding at its leading edge and if concentrations are decreasing, stable, or increasing in the plume centerline. The area under the curve method is explained in detail in Section 3.7.

### 3.6 Acceptance Criteria

The area under the curve values for cross-sections E1-E2, E3-E4, E5-E6, S1-E2, S2-S3, and S4-S5 (Plate 1) will be mathematically determined for each semiannual sampling event, starting with the March 2013 sampling event. The areas calculated for each cross-section will be plotted, and once sufficient values have been obtained, a linear regression line will be fitted to the data. The plume will be designated as unstable if the regression line shows an increasing trend.

### 3.7 Data Collection Plan

Nine new well triples must be installed to complete the cross-sections shown on Plate 1, and this work will be conducted prior to the March 2013 sampling event. Therefore, the March 2013 sampling event will be the initial event for plume stability monitoring.

The locations of the new wells are based on the detailed plume delineation work described in the 2012 *Building 100 Area Site Assessment Report*. New wells will be installed in the centerline of each plume; the centerline is the area of highest concentration as seen in a cross-section perpendicular to the long axis of the plume. New wells will also be installed where needed to define the lateral edges of the plumes. Each plume will have a lateral cross-section that spans the width of the plume at the edge of the building and at the STAR Center property boundary (e.g., east plume cross-sections E1-E2 and E3-E4, respectively, on Plate 1) and a longitudinal cross-section along the plume centerline (e.g., the E5-E6 cross section on Plate 1).

Each “data point” in the cross-sections is the location of a well triple (wells with three different screened intervals). The value plotted at each data point will be the sum of COPC concentrations in all sampled intervals in the well triple at that location. For example, in cross-section E1-E2, the northern data point in this cross-section will be the sum of TCE, cDCE, tDCE, 1,1-DCE, VC, and 1,4-dioxane concentrations measured in wells 12-0555A, 12-0555B, and 12-0555C.

For each sampling event, a “curve” will be plotted for each cross-section, and then the area under the curve will be calculated. An example of this plot for cross-section E1-E2 (excluding the centerline well triple that has yet to be installed) using historical data is shown in Figure 1. The area under the curve values will be tracked from event to event, and a linear regression line will be fitted to the data. The plume will be designated as unstable if the regression line shows an increasing trend. An example of this type of plot is shown in Figure 2.

In addition to the plume stability monitoring scheme presented above, several wells that are not part of a cross-section will also be sampled to determine whether the plume is advancing at any of its boundaries (Plate 1). At each of these well locations, the COPC concentrations from all screened intervals will be summed, and the sum will be plotted. For example, for the well triple 0570 located on the Harrod property, the COPC concentrations in all three screened intervals (0570-1, -2, and -3) will be summed and plotted. A linear regression line will be fit to the plotted data and, as with the area under the curve values, if the regression line shows an increasing trend, the plume will be designated as unstable. An example of this type of plot using historical data is shown in Figure 3.

The three wells in the northwest part of the building (12-S30B, 12-S33C, and 12-S35B) will be sampled to evaluate potential source depletion in this area with high COPC concentrations. Trends in these wells will not be part of the plume stability monitoring.

## 4.0 Sampling Approach

Groundwater samples will be collected from each cross-section monitoring well in March and September. All monitoring wells will be micropurged using a dedicated bladder pump or a peristaltic pump, and sampling will be performed when the field measurements have stabilized, in accordance with FDEP procedures.

All samples will be 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 samples will be 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).

All of the Building 100 Area volatile organic COPCs 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 volatile organic compounds in groundwater samples collected from monitoring wells at the Building 100 Area. One exception is 1,4-dioxane, which will be analyzed using a modified EPA Method 8260; the detection limit for this method is 0.64 microgram per liter, well below the 3.2 micrograms per liter CTL.

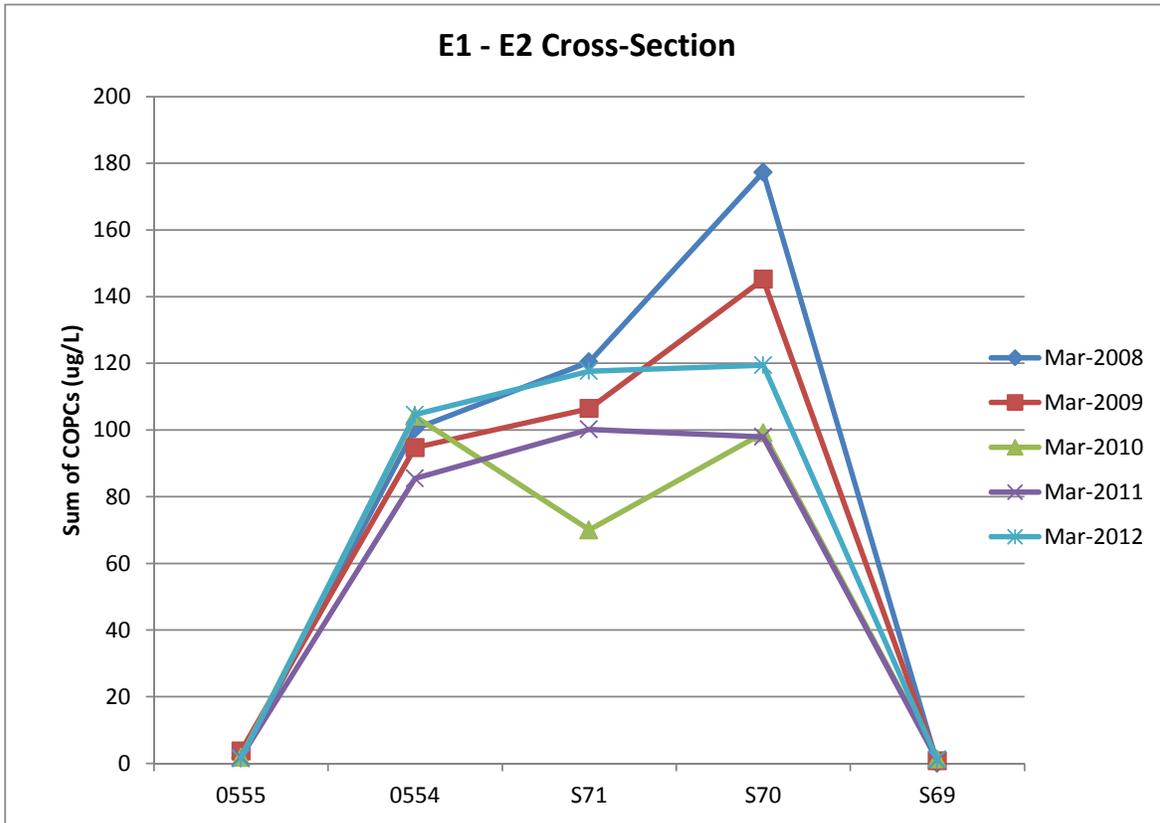


Figure 1. Example of an Area Under the Curve Plot

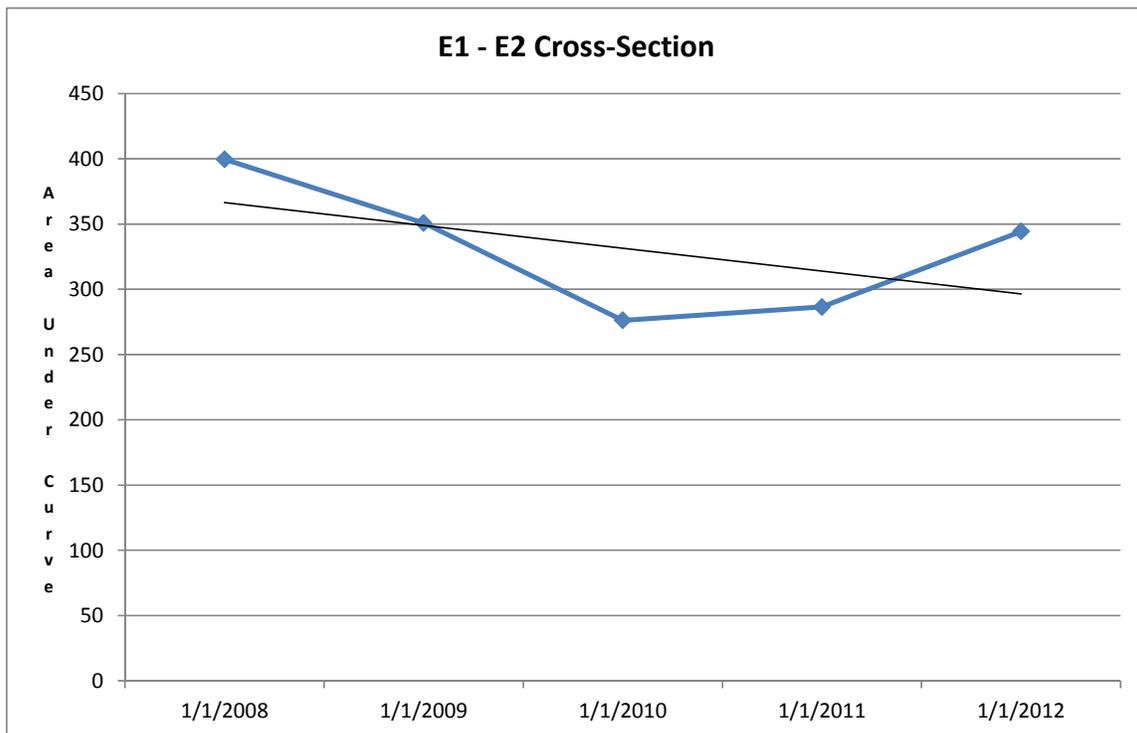


Figure 2. Example of a Trend Plot for Area Under the Curve Values

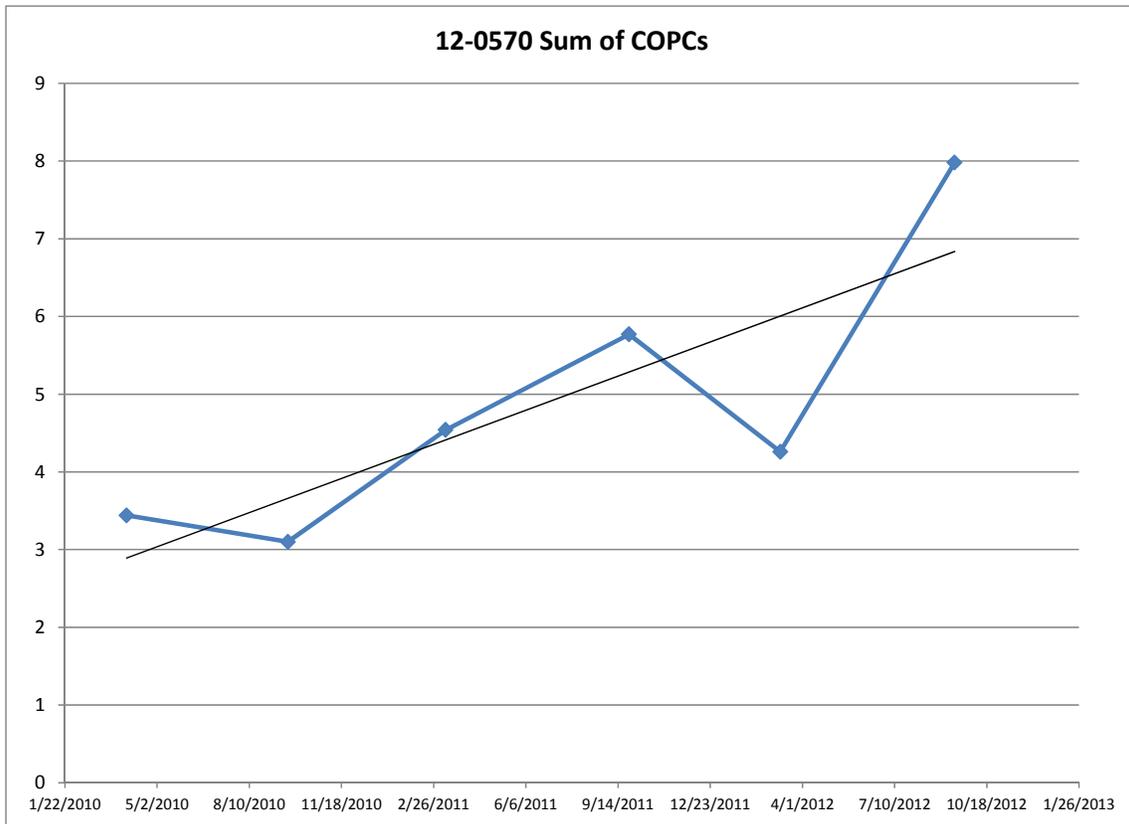
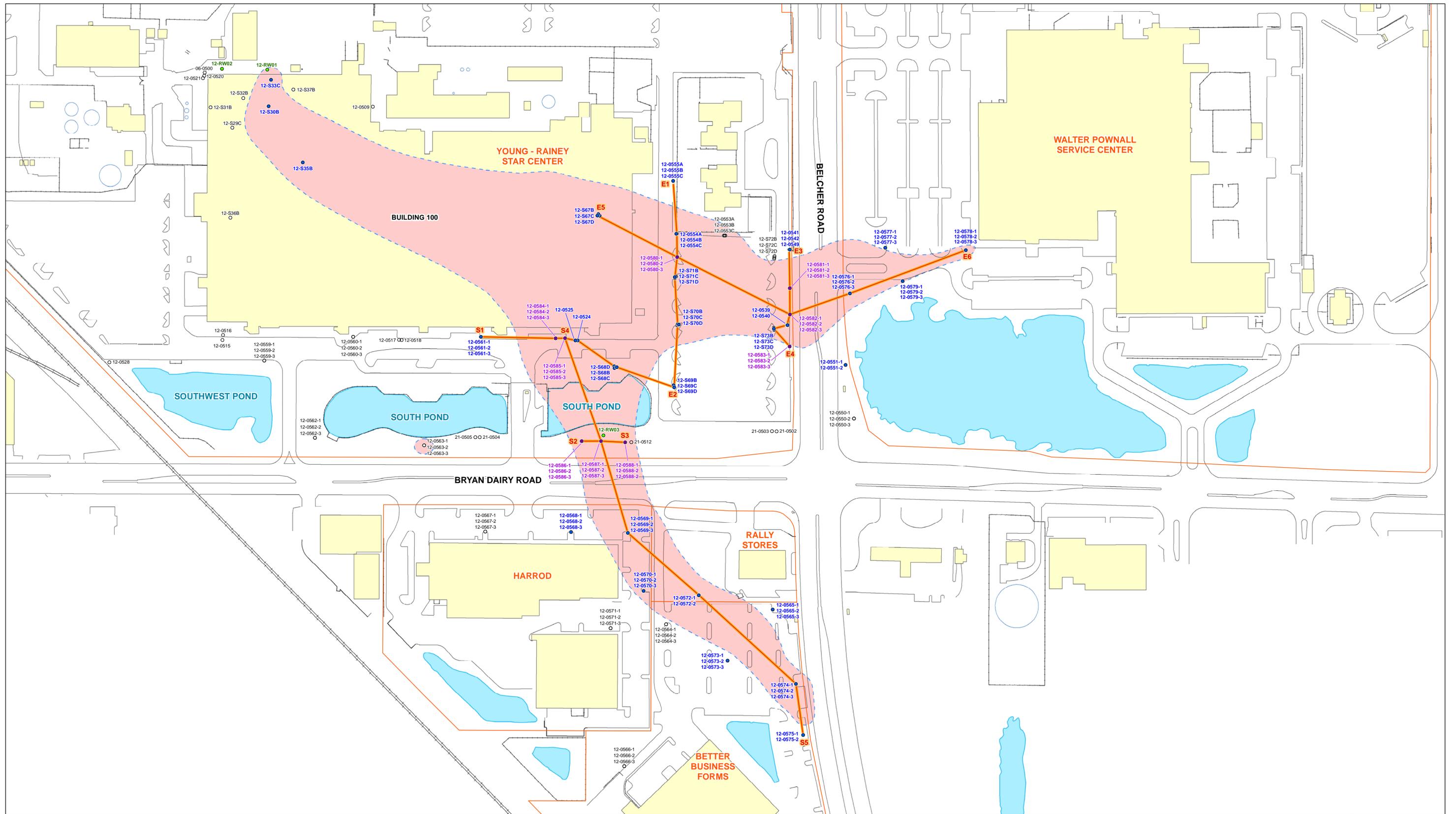


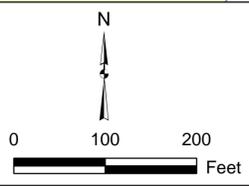
Figure 3. Example of Sum of COPCs Plot for Well 12-0570

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**Legend**

- Monitoring Well (Existing)
- Proposed Well (Pair or Triple)
- Extraction Well (Not Operating and Not Sampled)
- Other Active Monitoring Well (Not Sampled)
- E5 — E6 Line of Cross-Section
- Approximate 2012 TCOPCs Plume as Defined by Offsite CTLs



<b>U.S. DEPARTMENT OF ENERGY</b> <small>GRAND JUNCTION, COLORADO</small>	<small>Work Performed by</small> <b>S.M. Stoller Corporation</b> <small>Under DOE Contract No. DE-AM01-07LM00060</small>
<b>Plate 1: Building 100 Area Plume Stability</b> <b>Monitoring Well Layout</b> <b>Pinellas, FL, Site</b>	
<small>DATE PREPARED:</small> November 1, 2012	<small>FILENAME:</small> N0175000

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**Attachment 2**  
**Program Directives**

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## **Appendix B**

### **Institutional Control Documentation**

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## **Appendix C**

### **HSWA Permit**

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**January 9, 2012**

**SENT VIA EMAIL**

[Scott.Surovchak@lm.doe.gov](mailto:Scott.Surovchak@lm.doe.gov)  
[psacco@co.pinellas.fl.us](mailto: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](mailto: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](mailto:John.Armstrong@dep.state.fl.us)

James Dregne, DEP Tampa, [James.Dregne@dep.state.fl.us](mailto:James.Dregne@dep.state.fl.us)

Florida Fish & Wildlife Conservation Commission Planning Services

[FWCConservationPlanningServices@myfwc.com](mailto:FWCConservationPlanningServices@myfwc.com)

Patricia Gerard, Mayor, Largo, [pgerard@largo.com](mailto:pgerard@largo.com)

Heath Rauschenberger, U.S. Fish & Wildlife Service,

[heath\\_rauschenberger@fws.gov](mailto:heath_rauschenberger@fws.gov)

Karen Williams Seel, County Commissioner, District 5, [kseel@pinellascounty.org](mailto:kseel@pinellascounty.org)

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)**

<b>A.1. List of SWMUs/AOCs requiring Confirmatory Sampling:</b>				
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.				
<b>A.2. List of SWMUs/AOCs requiring a Site Assessment (a/k/a RCRA Facility Investigation [RFI]) or a Risk Assessment:</b>				
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
<b>A.3. List of SWMUs/AOCs requiring a Remedial Action Plan or Natural Attenuation with Monitoring Plan (a/k/a Corrective Measures Study [CMS]):</b>				
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



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

Filing and Acknowledgment

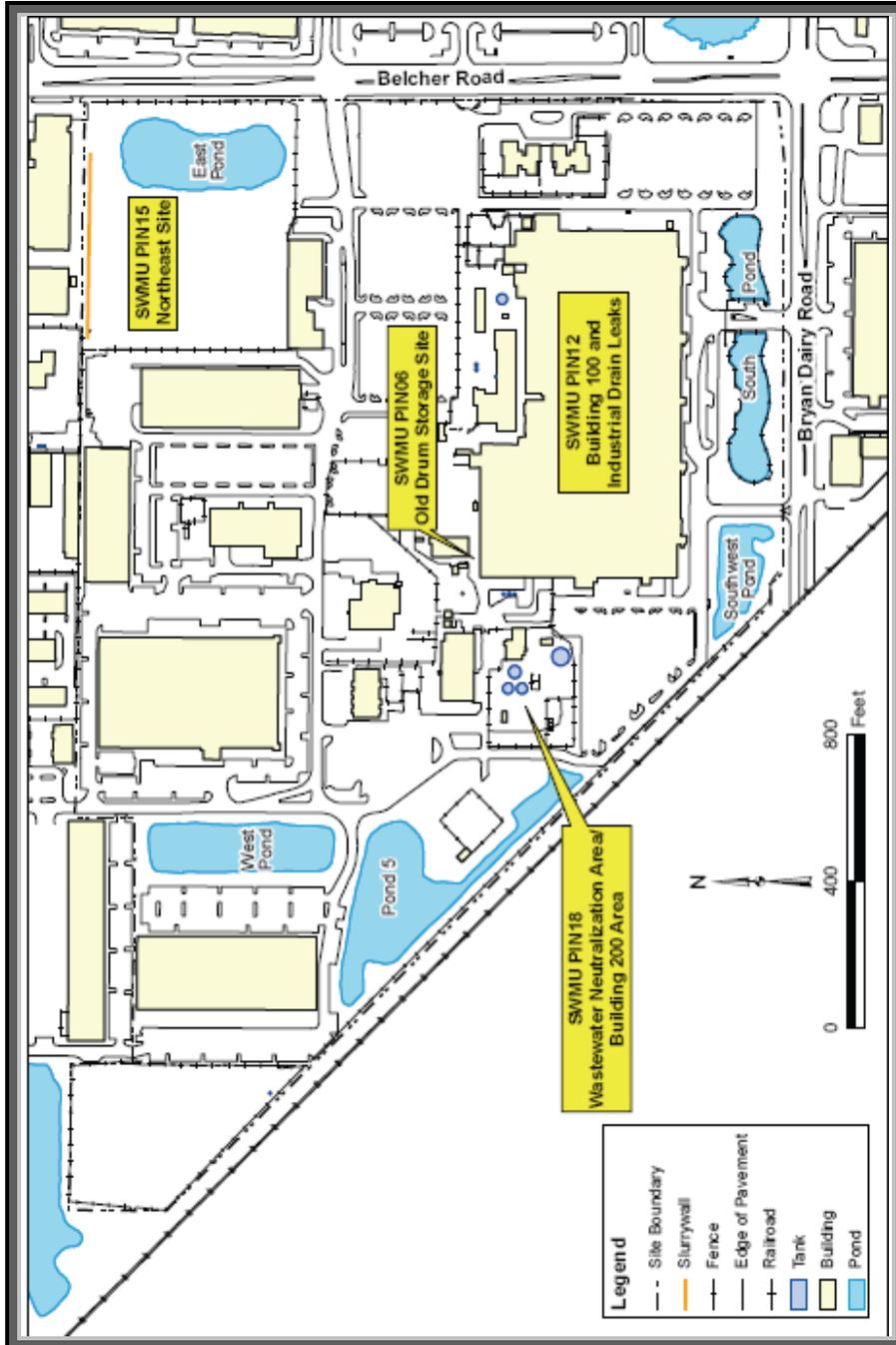
Filed on this date, pursuant to Section 120.52, Florida Statutes, with the designated Clerk, receipt of which is acknowledged.

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**CLERK**

January 9, 2012  
**DATE**

# ATTACHMENT A-FACILITY MAP



## **Appendix D**

### **4.5 Acre Site Remediation Agreement**

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**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.

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**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 Westward 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 Westward 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, created 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 said Section 13, same also being the point of intersection with Westward 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 Westward 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 Northeast 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' sha

[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 Devel 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 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. 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 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 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 44° 26' 42" E along a Southerly boundary line of said certain property described in Deed Book 1602, 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° 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**

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# 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 (OSWER No. 9355.7-03B-P) and from Section 6.2 of the *Long-Term Surveillance and Maintenance Plan for the Pinellas, Site*. 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	
<b>Site name: DOE Pinellas Environmental Restoration Project</b>	<b>Date(s) of inspection:</b>
<b>Location: Largo, FL</b>	<b>EPA ID:</b>
<b>Agencies accompanying DOE for portions of the annual inspection:</b> <input type="checkbox"/> FDEP <input type="checkbox"/> Other (list)_____	<b>Weather:</b>
<b>Remedy Includes:</b> Institutional controls Monitored Natural Attenuation Long Term Monitoring Other_____	
<b>Inspectors</b> _____	
<b>Participants</b> _____	
<b>Attachments:</b> <input type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached	
II. INTERVIEWS (Check all that apply)	
<b>1. Local Site Manager</b> _____	
Name	Title
Date	
Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone    Phone no. _____	
Problems, suggestions; <input type="checkbox"/> Report attached _____	
_____	
<b>2. Environmental Data Manager</b> _____	
Name	Title
Date	
Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone    Phone no. _____	
Check to ensure that environmental data is reviewed and trended.	
Problems, suggestions; <input type="checkbox"/> Report attached _____	
_____	
<b>3. Other Staff (as applicable)</b> _____	
Name	Title
Date	
Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone    Phone no. _____	
Problems, suggestions; <input type="checkbox"/> Report attached _____	
_____	

**4. Stakeholders and Institutional Control Contacts:** Contact to notify of annual inspection and to determine if there are any concerns or issues.

**Agency:**

**Contact Name:**

Phone Number \_\_\_\_\_

Problems; suggestions;  Report attached \_\_\_\_\_

**Agency:**

**Contact Name:**

Phone Number \_\_\_\_\_

Problems; suggestions;  Report attached \_\_\_\_\_

**Agency:**

**Contact Name:**

Phone Number \_\_\_\_\_

Problems; suggestions;  Report attached \_\_\_\_\_

**5. Other interviews:**  Report attached.

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**III. ONSITE DOCUMENTS & RECORDS VERIFIED** (Check all that apply)

**1. Documents**

<input type="checkbox"/> Surveillance and Maintenance Plan	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
<input type="checkbox"/> As-built drawings	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
<input type="checkbox"/> Maintenance logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A

Remarks \_\_\_\_\_

**2. Site-Specific Health and Safety Plan**

<input type="checkbox"/> Contingency plan/emergency response plan	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
---	--	-------------------------------------	------------------------------

Remarks \_\_\_\_\_

**3. Permits and Service Agreements**

<input type="checkbox"/> NPDES Permits	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
<input type="checkbox"/> HSWA Permit and Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
<input type="checkbox"/> Other permits _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> 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 \_\_\_\_\_  
 \_\_\_\_\_

**V. INSTITUTIONAL CONTROLS**

**Institutional Control (IC) Inspections**

**To Be Completed when ICs are attained.**

Note any observations: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**To Be Completed When ICs are attained.**

Note any observations: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**To Be Completed When ICs are attained.**

Note any observations: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**General**

1. **Land Use Changes On Site**       Yes       No  
 Remarks \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

2. **Land Use Changes Off Site**       Yes       No  
 Remarks \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**VI. 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 \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

7.     **Other Site Conditions:**  
Remarks \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**IX. GROUNDWATER MONITORING**

**1. Northeast Site Well Network**

- Properly secured/locked  Functioning  Sampled in accordance with LTS&M Plan
- Good condition  Evidence of surface water infiltration at casing  Needs maintenance
- Proper ID on each well  Acceptable quality of data
- Any issues with data trends (See Section II.2)

Remarks \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**2. Building 100 Groundwater Monitor Well Network**

- Properly secured/locked  Functioning  Sampled in accordance with LTS&M Plan
- Good condition  Evidence of surface water infiltration at casing  Needs maintenance
- Acceptable quality of data  Any issues with data trends (see Section II.2)

List wells checked by number \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Remarks \_\_\_\_\_  
\_\_\_\_\_

**3. 4.5 Acre Well Network**

- Properly secured/locked  Functioning  Sampled in accordance with LTS&M Plan
- Good condition  Evidence of surface water infiltration at casing  Needs maintenance
- Acceptable quality of data  Any issues with data trends (see Section II.2)

List wells checked by number \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Remarks \_\_\_\_\_  
\_\_\_\_\_

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## **Appendix F**

### **Contact List**

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*Table F-1. Emergency Phone Numbers and Contacts*

<b>Agency or Contractor Position/Contact</b>	<b>Phone Number</b>
EMT/Ambulance (Pinellas County Emergency Response System)	911, and then dial 541-8128/541-8129
Fire Department	911 and then 541-8128/541-8129
STAR Center Utility Operator	541-8176
STAR Center Communications Center	541-8128 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

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**Appendix G**  
**Site Closure Strategy**

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**Pinellas Environmental Restoration Project  
Site Closure Strategy  
for the  
Young - Rainey Star Center  
and 4.5 Acre Site**

**November 2012**

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## Abbreviations

cDCE	<i>cis</i> -1,2-dichloroethene
COPC	contaminants of potential concern
CTL	cleanup target level
CY	calendar year
DOE	U.S. Department of Energy
F.A.C.	<i>Florida Administrative Code</i>
FDEP	Florida Department of Environmental Protection
HSWA	Hazardous and Solid Waste Amendments
MCL	maximum contaminant level
µg/L	micrograms per liter
mg/L	milligrams per liter
NAPL	nonaqueous-phase liquid
RBCA	risk-based corrective action
STAR Center	Young - Rainey Science, Technology, and Research Center
TCE	trichloroethene
VC	vinyl chloride
WWNA	Wastewater Neutralization Area

## 1.0 Introduction

The S.M. Stoller Corporation prepared this document for the U.S. Department of Energy (DOE), Office of Legacy Management to briefly summarize the remedial and regulatory status of the environmental cleanup sites on the Young - Rainey Science, Technology, and Research Center (STAR Center) and adjacent 4.5 Acre Site, and document 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 risk-based corrective action (RBCA). 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 (Chapter 62-550, *Florida Administrative Code* [F.A.C.]). 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 62-780.200 (35), F.A.C. Thus, the applicable groundwater CTLs are those for groundwater of “low yield/poor quality” provided in Table 1 of Chapter 62-777, F.A.C. These CTL values are a factor of 10 higher than the MCL values. The Florida Department of Environmental Protection (FDEP) has allowed use of the poor water quality CTLs on site but maintains that the default CTLs apply to the offsite plume areas.

## 2.0 Northeast Site

### 2.1 Remedial Action Objectives

- Business—The existing lease with the owner of the site will be modified or replaced with an instrument providing DOE rights to maintain a well network, continued access to the property for monitoring/remediation purposes, and a Restrictive Covenant between the owner and FDEP to facilitate closure and redevelopment. Return the property to the STAR Center for beneficial reuse.
- Regulatory—Complete Risk Management Option II RBCA closure.
- Technical—Collect data to demonstrate the stability of the groundwater contaminant plume.

### 2.2 Conceptual Site Model

The contaminants of potential concern (COPCs) at the Northeast Site are trichloroethene (TCE); *cis*-1,2-dichloroethene (cDCE); vinyl chloride (VC); benzene; toluene; methylene chloride; arsenic; iron; and aluminum, and groundwater is the medium of concern for these contaminants. Arsenic is no longer monitored because concentrations do not exceed the 100 micrograms per liter (µg/L) poor water quality CTL. The source of the contaminants was drums of waste that were buried when DOE owned the site. Solvents leaked from the drums in the form of nonaqueous-phase liquids (NAPLs) into the subsurface. Some NAPL was present at shallow intervals, but most was found at the bottom of the surficial aquifer. Thermal NAPL remediation

and soil excavation from 2002 to 2009 removed the NAPLs from the subsurface, leaving only dissolved-phase contamination. Emulsified soybean oil and the microorganism *Dehalococcoides ethenogenes* were injected around the source areas and in selected areas of the remaining plume in January and February 2010 to enhance naturally occurring contaminant biodegradation processes. As a result of these actions, contaminant concentrations are decreasing significantly across the site.

Currently, two contaminant plumes exist, one associated with the former source area in the northern part of the site and one associated with the former source area in the southern part of the site. Both plumes appear to be shrinking, based on (1) a decrease in the number of wells in which contaminant concentrations exceeded the poor water quality CTLs and (2) decreasing contaminant concentrations over the last 5 years. Groundwater flows to the east/southeast at a velocity of a few feet per year. The current contaminant plume locations and the fact that the plumes are shrinking indicate that the plumes will remain within the property boundary. Sufficient water quality data were collected as of the September 2012 sampling event to determine plume stability and begin discussions with FDEP to cease closure monitoring.

## **2.3 Remedies**

Corrective action remedies have been completed; the site is currently in post-treatment closure monitoring.

## **2.4 Metrics**

- Business—The existing lease with the owner of the site will be modified or replaced with an instrument providing DOE rights to maintain a well network, continued access to the property for monitoring/remediation purposes, and a Restrictive Covenant between the owner and FDEP to facilitate closure and redevelopment.
- Regulatory—Collect data and submit a report to support a Conditional Site Rehabilitation Complete Order; implement a restrictive covenant.
- Technical—Continue monitoring until plume stability is confirmed.

## **2.5 Decision Logic**

FDEP is satisfied that the contaminant source has been removed. Because potential interference from the enhanced in situ bioremediation injection activity might mask groundwater contaminant concentrations by causing temporary increases in some concentrations, FDEP required a longer (3-year) post-remediation groundwater monitoring period. The current trend of declining contaminant concentrations indicates that DOE can proceed with a conditional RBCA closure of the site.

## **2.6 Gap Analysis**

- Business—The site requires a new realty instrument between DOE and the STAR Center.
- Regulatory—Groundwater monitoring is required until plume stability is confirmed.
- Technical—There are no technical data gaps for the Northeast Site.

## **2.7 Site Closure Strategy Schedule**

- Develop and implement a new realty instrument, including a restrictive covenant for the property in calendar year (CY) 2013.
- Continue closure monitoring until plume stability is confirmed.
- Submit a Site Rehabilitation Complete Report to FDEP in March 2013.
- Receive a Conditional Site Rehabilitation Complete Order from FDEP in July 2013.
- Conduct a public meeting for the final remedy.
- Revise the Hazardous and Solid Waste Amendments (HSWA) Permit to reflect updated site status.

## **3.0 Wastewater Neutralization Area (WWNA)**

### **3.1 Remedial Action Objectives**

- Business—The existing lease with the owner of the site will be modified or replaced with an instrument providing DOE rights to maintain a well network, continued access to the property for monitoring/remediation purposes, and a Restrictive Covenant between the owner and FDEP to facilitate closure and redevelopment.
- Regulatory—Complete Risk Management Option II RBCA closure.
- Technical—No further action required.

### **3.2 Conceptual Site Model**

Arsenic is the sole COPC for the WWNA, and groundwater is the medium of concern. The original source of arsenic at the WWNA is unknown. The dissolved arsenic plume (concentrations greater than the 100 µg/L poor water quality CTL) is confined to an area around two monitoring wells and is approximately 0.05 acre in size. The vertical extent of the arsenic plume is limited to the upper half of the surficial aquifer, above 16 feet below land surface, 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 soil/water distribution coefficient causes extremely slow transport of arsenic. Groundwater flow is to the south and southwest, but modeling has shown that arsenic will not affect the surface water in Pond 5 or the Southwest Pond and arsenic concentrations greater than the 10 µg/L offsite MCL will not be transported past the STAR Center property boundary. Concentration trends and groundwater modeling demonstrate that the arsenic plume currently is stable and will remain stable for the foreseeable future.

### **3.3 Remedies**

Corrective action remedies and closure monitoring have been completed; no further remedial action is required.

### **3.4 Metrics**

- Business—Include this site in a realty instrument that provides DOE continued use of the facilities and potential monitoring/remediation on the site and a Restrictive Covenant between the owner and FDEP to facilitate closure.
- Regulatory—Collect data and submit a report to support a Conditional Site Rehabilitation Complete Order and implement a restrictive covenant.
- Technical—There are no technical metrics because monitoring has not been required since FDEP approved the No Further Action with Controls proposal.

### **3.5 Decision Logic**

FDEP has approved a No Further Action with Controls proposal pending the development and implementation of a restrictive covenant on the property. Once the restrictive covenant is implemented, DOE can proceed with a conditional RBCA closure of the site.

### **3.6 Gap Analysis**

- Business—Develop a new realty instrument.
- Regulatory—Closure is contingent upon implementation of a restrictive covenant on the property.
- Technical—There are no technical data gaps for the WWNA.

### **3.7 Site Closure Strategy Schedule**

- Develop and implement a new realty instrument including a restrictive covenant for the site in CY 2013.
- Submit a Site Rehabilitation Complete Report to FDEP in March 2013.
- Receive a Conditional Site Rehabilitation Complete Order from FDEP in July 2013.
- Conduct a public meeting for the final remedy.
- Revise the HSWA Permit to reflect updated site status.

## **4.0 Building 100 Area**

### **4.1 Remedial Action Objectives**

- Business—Prevent the contamination from interfering with owner/tenant operations. Leases with the owners of the overlying properties will be initiated, modified, or replaced with an instrument providing DOE rights to maintain a well network, continued access to the property for monitoring/remediation purposes, and a Restrictive Covenant between the owner and FDEP to facilitate closure and redevelopment or continued operation with minimal impacts.
- Regulatory—FDEP has indicated that it will require only monitoring for the onsite contamination as long as the main building remains in place. If the building is ever demolished or vacated, then the contaminant source areas should be delineated and treated.

For the offsite contamination, FDEP has indicated that long-term monitoring and implementation of a restrictive covenant will be required for each property impacted by the groundwater contaminant plume.

- Technical—Collect data to demonstrate the stability of the groundwater contaminant plumes; continue to maintain data showing no risk of human exposure.

## 4.2 Conceptual Site Model

The sources of contamination at the Building 100 Area are 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. Historical information indicates that multiple source areas likely remain beneath the building. No source removal has been conducted due to the technical impracticability of accessing the subsurface for characterization or treatment beneath the occupied 11-acre building. Groundwater extraction and treatment was 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 nonaqueous-phase TCE may be present in the subsurface. The extent of characterization beneath the building is limited, so other source areas may be present.

The COPCs for the Building 100 Area are TCE; cDCE; *trans*-1,2-dichloroethene; 1,1-dichloroethene; VC; 1,4-dioxane; and arsenic. Arsenic is no longer monitored because concentrations do not exceed the 100 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 CTLs, originate under the building at multiple locations, and extend past the southern and eastern property boundaries onto private property south of Bryan Dairy Road and east of Belcher Road.

Groundwater flows to the southeast at a velocity ranging from 2 to 10 feet per year at most of the Building 100 Area, but preferential flow pathways with a higher groundwater velocity appear to extend onto private property to the east beneath Belcher Road and to the south beneath Bryan Dairy Road. Evidence for these preferential flow pathways includes 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 estimation of a groundwater velocity of 20 to 30 feet per year (possibly more) based on the distance that contaminants have traveled from potential source areas to the offsite locations.

In general, the highest concentration areas under the building have decreasing trends, an indication that contaminant source depletion may be occurring at some locations. Delineation of the plumes off site began in 2008 and was completed in August 2012. Several additional monitoring well clusters will be installed in the two plume areas and will be monitored for a few years to evaluate plume stability.

## 4.3 Remedies

If the plumes are stable, remedial action is not required until the building is vacated or demolished. If it is determined that the plumes are not stable, then DOE will implement onsite

plume control activities as identified in the Building 100 Plume Management Alternatives Analysis (DOE 2012).

#### **4.4 Metrics**

- Business—Maintain data showing no risk of human exposure. Develop new realty instruments with property owners.
- Regulatory—Establish a long-term monitoring plan.
- Technical—Establish a monitoring program designed to minimize cost while satisfying regulatory requirements.

#### **4.5 Decision Logic**

DOE is satisfied that there is no potential for human exposure to contaminants in groundwater beneath the building, and contaminant vapor flux modeling has shown 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 in the form of NAPLs remains under the building.

#### **4.6 Gap Analysis**

- Business—Leases with the owners of the overlying properties will be initiated, modified, or replaced with an instrument providing DOE rights to maintain a well network, continued access to the property for monitoring/remediation purposes, and a Restrictive Covenant between the owner and FDEP to facilitate closure and redevelopment or continued operation with minimal impacts.
- Regulatory—The contaminant source areas need to be confirmed and characterized.
- Technical—Additional onsite well clusters need to be installed and monitored to evaluate plume stability.

#### **4.7 Site Closure Strategy Schedule**

FDEP will consider a Risk Management Option III conditional closure for the Building 100 Area if the groundwater contaminant plumes prove to be stable. In the meantime, FDEP will require monitoring to confirm that the plumes are stable. If it is determined that the plumes are not stable, then DOE will implement onsite plume control activities as identified in the Building 100 Plume Management Alternatives Analysis. There are no scheduled activities for this site other than semiannual plume stability monitoring. Develop and implement new realty instruments for all affected properties.

## **5.0 4.5 Acre Site**

### **5.1 Remedial Action Objectives**

- Business—Lease with the owner of the property will be modified or replaced with an instrument providing DOE rights to maintain a well network, continued access to the

property for monitoring/remediation purposes, and a Restrictive Covenant between the owner and FDEP to facilitate closure and redevelopment or continued operation with minimal impacts. Return the property to the owner for beneficial reuse.

- Regulatory—Complete a Risk Management Option II RBCA closure.
- Technical—Collect data to demonstrate the stability of the groundwater contaminant plume.

## 5.2 Conceptual Site Model

The source of contamination at the 4.5 Acre Site is drums of waste that were buried in pits in about 1962. 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, *trans*-1,2-dichloroethene, 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, FDEP agrees that the source of contamination has been removed. Groundwater flows to the northwest at a velocity of a few feet per year, and plumes of dissolved phase contamination extend hydraulically downgradient from the former source areas. Emulsified soybean oil and the microorganism *Dehalococcoides ethenogenes* were injected around the source areas and in selected areas of the remaining plume in February 2009 to enhance naturally occurring contaminant biodegradation processes. Contaminant concentrations have decreased significantly in the treated areas.

The VC concentration slightly exceeds the offsite CTL at one small offsite area along the southwest property boundary. Over time, natural attenuation processes combined with a reduction in contaminant mass flux off the site (due to the enhanced biodegradation project) should result in diminution or disappearance of this offsite plume.

## 5.3 Remedies

Corrective action remedies have been completed; the site is currently in post-treatment closure monitoring.

## 5.4 Metrics

- Business—Develop a new realty instrument. The site is currently available for development.
- Regulatory—Collect data and submit a report to support a Conditional Site Rehabilitation Complete Order; implement a restrictive covenant.
- Technical—Continue monitoring until plume stability is confirmed.

## 5.5 Decision Logic

FDEP is satisfied that the contaminant source has been removed. Because potential interference from the enhanced in situ bioremediation injection activity might mask groundwater contaminant concentrations by causing temporary increases in some contaminant concentrations, FDEP requires a longer (3-year) post-remediation groundwater monitoring campaign. If the current trend of declining contaminant concentrations continues, DOE can proceed with a conditional RBCA closure of the site at the end of the prescribed monitoring period.

If VC concentrations above the offsite CTL persist at the offsite monitoring location after the end of the post-remediation groundwater monitoring period, additional monitoring may be required.

## 5.6 Gap Analysis

- Business—Develop a new realty instrument to facilitate development of the property.
- Regulatory—Closure is contingent upon implementation of a restrictive covenant on the property.
- Technical—Several monitoring wells are present on site along the southwest and west property boundaries, and VC concentrations in most of these wells exceed the offsite CTL. Only one well exists off site along these property boundaries, and VC concentrations in samples from that well exceed the offsite CTL. 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 monitoring wells in this offsite area would help define the extent of offsite contamination.

## 5.7 Site Closure Strategy Schedule

- Lease with the owner of the property will be modified or replaced with an instrument providing DOE rights to maintain a well network, continued access to the property for monitoring/remediation purposes, and a Restrictive Covenant between the owner and FDEP to facilitate closure and redevelopment or continued operation with minimal impacts.
- Continue closure monitoring until plume stability is confirmed.
- Submit a Site Rehabilitation Complete Report to FDEP.
- Receive a Conditional Site Rehabilitation Complete Order from FDEP.
- Conduct a public meeting for the final remedy.
- Revise the Remediation Agreement to reflect updated site status.

## 6.0 References

DOE (U.S. Department of Energy), 2012. *Draft Building 100 Area Plume Management Alternatives Analysis*, LMS/PIN/N01673, Office of Legacy Management, Grand Junction, Colorado, March.