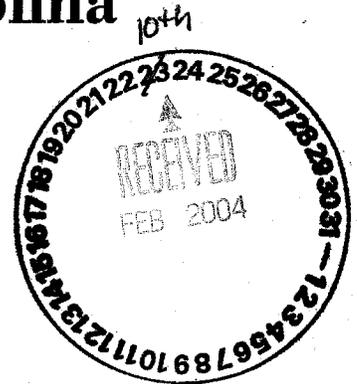
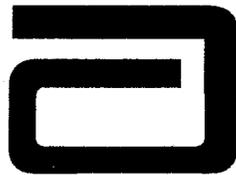


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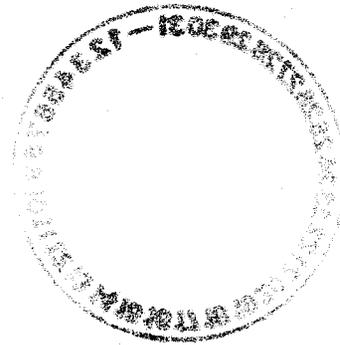
**Phase II Site Characterization Report  
Petroleum Release  
for Abbott Laboratories  
Laurinburg, North Carolina**



**February 2001**

**Prepared for  
Abbott Laboratories  
16900 N. US 15-401 Bypass  
Laurinburg, NC 28352**

**Prepared by  
Radian Engineering, Inc.  
Post Office Box 13000  
Research Triangle Park, North Carolina**



**Phase II Site Characterization Report Petroleum Release  
for Abbott Laboratories, Laurinburg, North Carolina  
February 2001**



Hospital Products Division

P.O. Box 1009  
Laurinburg, North Carolina 28353

27 June 2001

Sean Boyles  
Groundwater Section  
NC DENR Fayetteville Regional Office  
225 Green Street  
Suite 714  
Fayetteville, NC 28301-5043

Re: Fuel Release Assessment Reports  
Abbott Laboratories, Laurinburg, NC  
Incident Number 518280

Dear Mr. Boyles:

Enclosed for your review are two site characterization reports that define the nature and extent of soil and groundwater contamination that resulted from the above referenced No. 2 fuel oil release. The first report is entitled *Preliminary Site Characterization Report, Petroleum Release, Abbott Laboratories, Laurinburg, North Carolina, August 2000*. The second report is entitled *Phase II Site Characterization Report, Petroleum Release, Abbott Laboratories, Laurinburg, North Carolina, February 2001*.

The release was discovered on January 30, 2000 and reported to your office within 24 hours. Abbott immediately took action to mitigate the release and recover free product. Dale Lopez from the Surface Water Quality Branch made a site visit to evaluate environmental impacts on January 31, 2000. Abbott submitted a Free Product Recovery Report to your office on March 30, 2000.

Subsequently, Abbott initiated assessment activities to determine the nature and extent of soil and groundwater contamination. Preliminary site assessment activities began on April 11, 2000 and resulted in the development of the first site characterization report. A second phase of site assessment work began on October 2, 2000 to fill data gaps that remained after the preliminary assessment.

More than 30 soil samples have been collected and analyzed for Total Petroleum Hydrocarbon (TPH). Eleven groundwater monitoring wells have been installed and sampled. Two of the soil samples contain TPH Diesel Range Organics (DRO) at concentrations that exceed the NC DENR 40 mg/kg threshold. These soil samples, however, were collected from a depth that is within the seasonal saturated zone. Two of

Radian Engineering Inc.

---

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Morrisville, NC 27560  
(Mailing) P.O. Box 13000  
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February 22, 2001

Ms. Kimberly Kashmer  
Director of Safety, Environment, and Security  
Abbott Laboratories  
P.O. Box 1009  
Laurinburg, North Carolina 28353

**Subject: Phase II Site Characterization Report, Petroleum Release  
Abbott Laboratories, Laurinburg, North Carolina**

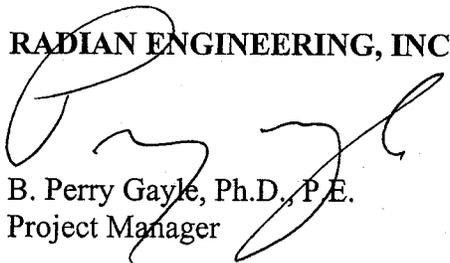
Dear Kim:

Enclosed is a copy of the Phase II Site Characterization Report, Petroleum Release, for the Abbott Laboratories facility located in Laurinburg, North Carolina. Copies have also been sent to John Robbins and Frank Miller. We would be pleased to discuss your preliminary review comments by phone or address any written comments you may provide.

Please feel free to call me at (919) 461-1295 with any comments or questions.

Sincerely,

**RADIAN ENGINEERING, INC.**

  
B. Perry Gayle, Ph.D., P.E.  
Project Manager

Enclosure

cc: John Robbins, Abbott Laboratories  
Frank Miller, Abbott Laboratories  
Project File

**PHASE II SITE CHARACTERIZATION REPORT  
PETROLEUM RELEASE**

**Incident Number 518280**

**Abbott Laboratories  
Laurinburg, North Carolina**

**Prepared for:**

**Abbott Laboratories  
16900 North US 15-401 Bypass  
PO Box 1009  
Laurinburg, NC 28352  
Scotland County**

**Prepared by:**

**Radian Engineering, Inc.  
P.O. Box 13000  
Research Triangle Park, North Carolina 27709  
(919) 461-1100**

**February 2001**

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**EXECUTIVE SUMMARY**

The Abbott Laboratories facility is located at 16900 North US 15-401 Bypass in Laurinburg, Scotland County, North Carolina. The facility and surrounding land parcel are owned by Abbott Laboratories.

On January 30, 2000, an underground release of No. 2 fuel oil was discovered leaking into a concrete-lined storm water ditch along the southeastern portion of the Abbott facility. Piping from a 3,000 gallon aboveground storage tank (AST) was cross-connected with abandoned underground piping from a 10,000 gallon underground storage tank (UST) that was removed in September 1997. The uncapped end of the abandoned underground piping terminated at a depth of approximately eight to ten feet below ground surface (bgs) in the vicinity of the former UST pit. An inventory of the fuel source suggests that approximately 1,500 gallons of fuel was released into the former UST pit at a depth of approximately eight to ten feet bgs. It was determined that since the release occurred from an AST through a former UST pipeline, the release would be administered under the North Carolina Department of Environment and Natural Resources (NCDENR) Groundwater Section program.

Immediate action was taken to prevent the off-site migration of the No. 2 fuel oil. Response activities included the construction of earthen dams and the use of absorbent pads to facilitate the recovery of fuel from the ditch. A series of test pits and free product recovery trenches were excavated in the vicinity of the former UST pit to facilitate the recovery of free product and contaminated groundwater. In addition, several tons of contaminated soil were excavated from the release area. All contaminated material was properly manifested and disposed off-site.

A preliminary soil and groundwater investigation was conducted according to the procedures outlined in the NCDENR Groundwater Section *Guidelines for Investigation and Remediation of Soil and Groundwater, Volume I, Sources Other than Petroleum Underground Storage Tanks*. The investigation concluded that soil underlying the site exceeded the NCDENR soil action level of 40 mg/kg for total petroleum hydrocarbons (TPH) diesel range organics

(DRO). The results of the preliminary investigation indicated that TPH DRO was detected in soil at two locations at a depth of seven to eight feet bgs. Groundwater samples collected from monitoring wells screened within the shallow water-bearing unit did not exceed NCDENR groundwater standards for BTEX; however, a groundwater sample collected from a monitoring well screened within the deeper water-bearing unit did exceed the groundwater standard of 1 µg/L for benzene.

A phase II site characterization has more recently been conducted to confirm the results of the preliminary investigation and to further define the extent of petroleum contamination in the soil and groundwater in the fuel release area. Activities included soil sampling and analysis of TPH DRO, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs). Results of the phase II site characterization indicated that TPH DRO and various VOCs and SVOCs are present in soil at a depth of seven to eight feet bgs at two locations.

Additional activities included groundwater sampling and analysis for VOCs, primarily benzene, toluene, ethylbenzene, and xylene (BTEX). Benzene was the only constituent of concern found in groundwater screening samples collected at 15 and 35 feet bgs. Two samples collected at 15 feet bgs and four samples collected at 35 feet bgs exceeded the NCDENR groundwater standard of 1 µg/L for benzene. Benzene and ethylbenzene were the only constituents of concern detected in the groundwater samples collected from monitoring wells during the phase II site characterization; however, only benzene was detected at levels above the NCDENR groundwater standard. The benzene contamination plume in groundwater extends approximately 160 feet south-southwest of the former UST pit and to a depth of approximately 40 feet within the sand unit underlying the fuel release site.

Based on the results of the phase II site characterization, it is recommended that monitoring wells within the fuel release site be assessed for the presence of free petroleum product on a weekly basis. If free petroleum product exists at a thickness greater than 0.1 foot, aggressive fluid vapor recovery (AFVR) should be conducted to remove the free product. In addition, it is recommended that groundwater monitoring be conducted on a semi-annual basis.

Proposed monitoring wells for sampling will include those located in the immediate vicinity of the release, others located around the former UST pit, and additional wells located downgradient from the fuel release area. Groundwater samples should be analyzed for BTEX. The objectives of groundwater monitoring would be to track the potential migration of groundwater impacted by BTEX above the NCDENR groundwater standards and to establish the dynamic boundaries of the groundwater contamination plume.

## **1.0 INTRODUCTION**

The Abbott Laboratories facility in Laurinburg, North Carolina is proactively seeking to determine the nature and extent of a No. 2 fuel oil release that occurred at the facility in January 2000. A preliminary site characterization was conducted from April to August 2000 to determine the distribution of petroleum constituents in the soil and groundwater in the area of the release. A phase II site characterization was conducted from October 2000 to February 2001 to confirm the results of the preliminary investigation and to further define the extent of petroleum contamination in the soil and groundwater in the fuel release area. This report provides the results of that effort.

### **1.1 Purpose and Scope**

The purpose of the phase II site characterization was to collect site-specific information needed to further delineate the lateral and vertical extent of petroleum contamination in soil and groundwater in the vicinity of the fuel release area. The scope of work included the following components: soil sampling and analysis of total petroleum hydrocarbons (TPH) diesel range organics (DRO), volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs); and groundwater sampling and analysis of VOCs, primarily benzene, toluene, ethylbenzene, and xylene (BTEX).

### **1.2 Report Organization**

This report is organized into seven sections and four appendices. Section 1.0 is an introduction that describes the purpose and scope of the investigation. Section 2.0 describes the facility, fuel release, and result of the preliminary site characterization. Section 3.0 provides the regional and site-specific hydrogeologic framework. Sections 4.0 provides the technical approach and analytical results for the phase II site characterization. Section 5.0 and 6.0 provide conclusions and recommendations, respectively and Section 7.0 provides a list of references cited in this report.

## 2.0 BACKGROUND

This section describes the site, discusses the initial fuel release response, and summarizes the preliminary site characterization activities and analytical results. Additional information and details of the fuel release response and preliminary site characterization are provided in the *Preliminary Site Characterization Report, Petroleum Release, for Abbott Laboratories, Laurinburg, North Carolina* (Radian Engineering, August 2000).

### 2.1 Site Description

The Abbott Laboratories facility was constructed on agricultural land in 1969 and has produced medical devices under SIC Code 3841 since 1970. The facility includes approximately 51 acres of land located at the intersection of U.S. Highway 401 and U.S. Highway 15-501, in Laurinburg, North Carolina, in Scotland County, as shown in Figure 2-1. The main plant building and adjoining parking lots are located in the center of the property and warehouses are located at the northeast corner of the property. There are also several small storage buildings and fuel tanks located on site as illustrated in Figure 2-2. Also present at the facility are numerous underground utilities including a natural gas line, multiple water lines, electrical power transmission cables, and fiber optic communication cables as illustrated in Figure 2-3.

### 2.2 Fuel Release and Response Action

On Sunday, January 30, 2000, a release of No. 2 fuel oil was discovered seeping into a concrete storm water ditch on the east side of the Abbott facility. The seeping fuel oil entered the storm water ditch from below the ground surface through expansion joints and cracks in the ditch. Figure 2-4 illustrates the location of the fuel release at the Abbott facility.

The facility stores No. 2 fuel oil in a 3,000-gallon aboveground storage tank (AST) for use as a back up fuel for boilers. The facility had switched from the primary fuel of natural gas to No. 2 fuel oil just before the release had occurred. At the time of the release,

aboveground piping associated with the fuel oil AST was cross connected with abandoned underground piping from a 10,000 gallon underground storage tank (UST) that was removed in September 1997. The uncapped end of the abandoned underground piping terminated at a depth of approximately eight to ten feet below ground surface (bgs) in the vicinity of the former UST pit. As a result of the cross connection, approximately 1,500 gallons of No. 2 fuel oil was released into the former UST pit area. Figure 2-3 illustrates the location of the former UST pit and the general area of the fuel release.

The release was reported to the North Carolina Division of Emergency Management, the North Carolina Division of Environment and Natural Resources (NCDENR) Division of Water Quality, the National Response Center, and the Scotland County Local Emergency Planning Committee. It was determined that since the release occurred from an AST through a former UST pipeline, the release would be administered under the NCDENR Groundwater Section program. The Groundwater Section is currently tracking this release as Incident Number 518280.

A Notice of Regulatory Requirements (NORR) was issued to Abbott on February 14, 2000 by the Fayetteville Regional Office of the NCDENR, Division of Water Quality, Groundwater Section. The NORR required that Abbott (1) take immediate action to terminate and control any further release and (2) to submit a Free Product Recovery Report within 45 days of receipt of the NORR. On March 30, 2000, Radian Engineering, on behalf of Abbott Laboratories, submitted the *Free Product Recovery Report* (Radian Engineering, 2000) to the Fayetteville Regional Office of the NCDENR Groundwater Section.

Following discovery of the No. 2 fuel oil, absorbent pads were placed in the storm water ditch to prevent the off-site migration of oil. Earthen dams were also constructed in the ditch to facilitate the recovery of fuel. In addition, a series of test pits were excavated in the vicinity of the former UST pit to allow contaminated soil and groundwater to be collected and disposed of. Approximately 39 tons of petroleum-contaminated soils, 594 gallons of petroleum product, and 18,156 gallons of petroleum contaminated water were removed from the fuel release site and disposed of at an off-site facility.

Between February 10 and 12, 2000, four free product recovery trenches were installed in the release area to facilitate the recovery of free petroleum product and to intercept free product migrating from the release area into the concrete storm water ditch (Figure 2-3). Approximately 3,000 gallons of contaminated groundwater was removed from the four trenches. In addition, the joints in the concrete storm water ditch, within the area of active free product seepage, were sealed to prevent continued free product seepage.

### **2.3 Preliminary Site Characterization**

Preliminary site characterization activities were conducted in the fuel release area during April and May 2000. The purpose of the preliminary site characterization was to delineate the lateral and vertical extent of petroleum contamination in soil and groundwater in the vicinity of the fuel release area. The scope of the project included soil and groundwater sampling and analysis according to the NCDENR Groundwater Section *Guidelines for Investigation and Remediation of Soil and Groundwater, Volume I, Sources Other than Petroleum Underground Storage Tanks* (NCDENR, 1998).

#### **2.3.1 Technical Approach**

Initial soil sampling was conducted to delineate the horizontal and vertical extent of contaminated soil. Soil sample locations are shown in Figure 2-5. Direct Push Technology (DPT) was used to collect 25 soil samples at an interval of four to five feet bgs, just below the water table. At eight of the 25 locations, probes were advanced to a depth of eight feet bgs. The samples were collected and analyzed to determine if the fuel had formed a smear zone due to seasonal groundwater fluctuations. The 33 soil samples were analyzed for TPH DRO and TPH Gasoline Range Organics (GRO) by Methods SW846 5030/8015 and SW846 3550/8015, respectively according to the NCDENR Groundwater Section memorandum, dated 4 October 1999 and entitled *Revised Policy for Soil Analytical Methods*.

Immunoassay field tests were used to qualitatively test the groundwater in the fuel release area for the presence of BTEX. The analytical soil results and BTEX immunoassay field

test results were used to site five shallow monitoring wells (FR-1 through FR-5) and one deep monitoring well (FR-6d) in the fuel release area. Monitoring well locations are shown in Figure 2-6.

Groundwater samples were collected from the six monitoring wells. The six groundwater samples were analyzed according to the NCDENR Groundwater Section *Guidelines for Investigation and Remediation of Soil and Groundwater, Volume I, Sources Other than Petroleum Underground Storage Tanks* (NCDENR, 1998) for BTEX using EPA Method 602, SVOCs using EPA Method 625, volatile petroleum hydrocarbon (VPH) using the Massachusetts Department of Environmental Protection (MADEP) method for VPH analysis, and extractable petroleum hydrocarbon (EPH) using the MADEP method for EPH analysis.

### 2.3.2 Summary of Preliminary Site Characterization Results

The qualified analytical results from the soil samples indicated that soil underlying the fuel release area did not exhibit characteristics of TPH GRO contamination; however, the soil did exceed the NCDENR action level of 40 mg/kg for TPH DRO at a depth of seven to eight feet bgs at sample locations G8 and G19. Sample G8 is located approximately 25 feet south of the former UST pit and the other sample, G19, is located approximately 65 feet northwest of the pit near the existing AST. Figure 2-5 illustrates the April 11, 2000 soil sample locations with analytical results. Contamination at sample location G19 is questionable given that it is located upgradient from the former UST pit and west of the storm water ditch. Given the location of G19, suspicion arises as to whether the contamination is attributable to the January 2000 fuel release or to another source.

The qualified analytical results for groundwater samples indicated that only benzene exceeded the groundwater standards and only in well FR-6d. The groundwater sample was found to contain benzene at 21  $\mu\text{g/L}$ . This result exceeds the NCDENR groundwater standard of 1  $\mu\text{g/L}$  for benzene. All other compounds detected were found at concentrations below the groundwater standards. Figure 2-6 illustrates the May 17, 2000 groundwater sample locations with analytical results.

Tentatively identified compounds (TICs) were also characterized for each groundwater sample and included unknown ketones, alcohols, organic acids, aromatic hydrocarbons, and polyaromatic hydrocarbons. When considered with respect to standard TIC interpretation processes these results were deemed to be unremarkable and to have no significance in assessing the distribution of contaminants at the site. Assessment and decision-making focused only on the results of method target analytes in characterizing the nature and distribution of chemicals in groundwater at the site.

### 3.0 HYDROGEOLOGIC FRAMEWORK

This section includes an overview of the regional and site-specific hydrogeologic framework, including geology and hydrogeology.

#### 3.1 Geology

Abbott Laboratories is located within the Flatwoods section of the Coastal Plain physiographic province. Locally, the Coastal Plain is characterized by shallow, southeast-trending, elliptical depressions of various sizes commonly known as "Carolina Bays." The bays overlie undisturbed Coastal Plain sediments and may be filled with peat and/or sand. The peat and/or sand reach a typical thickness of about nine feet. Below the fill, clayey sand or silty clay form the floor of the bays (Womack, 1981).

The Laurinburg facility is underlain by three major lithologic units: (1) an upper unit comprised predominantly of interbedded sandy clay, and silty, clayey sand, (2) a middle unit of sand with laterally discontinuous clay layers, and (3) the lower lithologic unit of the Middendorf Formation. The lithologic units are described below.

In the vicinity of the fuel release area, the interbedded unit ranges from ground surface to between four and ten feet bgs and dips toward the southwest. The unit consists of interbedded silty sands, clayey sands, sandy clay of low to medium plasticity, and sandy clayey silts with slight plasticity. The individual layers of sands and clays are laterally discontinuous and in general can not be correlated between boring locations.

Underlying the interbedded unit is a sand unit that consists predominantly of sand layers with laterally discontinuous clay layers. The sand layers range from well graded to poorly graded with some layers having more or less amounts of finer grained material. With depth, the texture transitions from silty sand to fine sand and finally to medium and coarse sand. Gravel lenses have been reported in the surficial sands. The top of the sand unit ranges from four to ten

feet bgs and, based upon earlier investigations, extends to a depth of 75 feet bgs. It is underlain by a confining clay layer that separates the sand unit from the Middendorf Formation.

The Middendorf formation is the basal Coastal Plain deposit and lies directly on volcanic rocks of the Carolina Slate Belt. The Middendorf is composed of massive clay layers interbedded with numerous lenticular sand layers. The Middendorf formation was not encountered during this investigation.

### 3.2 Groundwater Hydrology

Two aquifers are identified in the Laurinburg area: the surficial sand aquifer and portions of the Middendorf formation. The surficial sand aquifer represents the uppermost aquifer in the area. The aquifer is comprised of predominantly sand and clayey sand layers with clay lenses and occasional gravel lenses which supply water to shallow wells. Thin layers of sand generally are the best water-bearing zones within the aquifer, but do not yield large quantities of water. Groundwater in the surficial sand aquifer generally occurs under unconfined or water table conditions (Schipf, 1961). Groundwater in the surficial sand aquifer flows in the direction of lowest hydraulic head toward discharge areas, which typically include streams, swamps, and springs. The presence of laterally discontinuous clay lenses in the surficial sediments may result in isolated saturated zones or perched groundwater in the unsaturated zone (Schipf, 1961). The Middendorf formation underlies the surficial sediments and represents the most productive aquifer in the Laurinburg area. The Middendorf is composed of massive clay layers interbedded with numerous lenticular sand layers. The sand layers provide the most productive water-bearing zones, and groundwater occurring within the sand layer may be under confined conditions. The Middendorf aquifer supplies most of the groundwater used in the Laurinburg area (Schipf, 1961).

The uppermost aquifer underlying the site is comprised of fine to coarse sand deposits located between the depths of approximately 10 and 75 feet. This sand aquifer is overlain and underlain by deposits that appear to be at least semi-confining. The interbedded silty sand, clayey sand, and sandy clay deposits in the upper four to 10 feet likely constitute an

upper leaky confining unit with respect to the sand aquifer. Similarly, the clay layer underlying the sand aquifer constitutes a lower confining unit.

Table 3-1 shows a record of water level measurements collected on December 7, 2000 in monitoring wells associated with the fuel release investigation. Figure 3-1 shows the groundwater potentiometric surface in the interbedded unit. Based on this figure, groundwater flow in this less permeable unit flows south to southwest with localized mounding in the vicinity of the former UST pit possibly due to the presence of more permeable backfill in the former fuel tank pit. The groundwater potentiometric surface in the sand unit is shown in Figure 3-2. Groundwater flow in this sand unit is toward the south-southeast.

## 4.0 PHASE II SITE CHARACTERIZATION

The purpose of the phase II site characterization was to collect site-specific information needed to further delineate the lateral and vertical extent of petroleum contamination in soil and groundwater in the vicinity of the fuel release area. This section includes an overview of the technical approach implemented during the site characterization and the analytical results of the soil and groundwater sample analyses. Sample collection and analyses were conducted according to NCDENR Groundwater Section *Guidelines for Investigation and Remediation of Soil and Groundwater* (NCDENR, 2000). The analytical data upon which interpretations were made were evaluated based on U.S. EPA Contract Laboratory Program *National Functional Guidelines for Organic Data Review* (October 1999). A summary of field procedures used in the soil and groundwater investigation is provided in Appendix A.

### 4.1 Technical Approach

Prior to each sampling event, a sample location grid was established to optimize data collection. Figure 4-1 shows the soil sample locations and Figures 4-2 and 4-3 show groundwater screening and monitoring well locations, respectively. In establishing the sampling grids, consideration was given to data collected during the preliminary site characterization. Soil sample locations were chosen to further delineate the extent of TPH DRO, VOCs, and SVOCs in soil in the vicinity of the former pit. Eleven DPT locations were selected for groundwater screening for BTEX. Based on soil and groundwater screening results, four deep wells and one shallow well were installed to further delineate areas of BTEX contamination. Wells installed in the interbedded unit are described as shallow wells and wells installed in the sand unit are described as deep wells.

#### 4.1.1 Soil Sampling

On October 2, 2000, soil samples were collected from seven to eight feet bgs at five sampling locations using DPT. Four of the five soil sample locations (G3, G8, G19, and G20) were sampled during the preliminary investigation. Locations G3 and G20 were sampled

during the preliminary investigation at four to five feet bgs. During the phase II investigation, locations G3 and G20 were sampled at seven to eight feet bgs to define the lateral extent of contamination at the seven to eight feet bgs depth interval. Locations G8 and G19 were originally sampled at intervals of four to five and seven to eight feet bgs also. G8 and G19 were sampled again in October at an interval of seven to eight feet to confirm the results of the TPH DRO analyses from the preliminary investigation. The fifth location, G26 was sampled to further define the horizontal extent of TPH DRO contamination to the west of location G19. Soil sample locations from the October 2, 2000 sampling event are shown on Figure 4-1. The samples were shipped under chain of custody to an outside laboratory where they were prepared and analyzed for extractable TPH DRO using Methods SW846 3550/8015.

The NCDENR Groundwater Section guidance specifies that in the event contaminated soil, within the unsaturated zone, is located near the groundwater, analyses in addition to, or in lieu of TPH may be required to speciate VOCs and SVOCs. The additional analyses that may be required for No. 2 fuel oil contaminated soil are Method SW846 8260 for VOCs and Method SW846 8270 for SVOCs. This additional analysis was conducted as part of Abbott Laboratory's proactive approach to better understand the extent of the petroleum contamination of the soil

On November 27, 2000, the additional soil sampling was conducted at sample locations G8 and G19, which had shown elevated levels of TPH DRO during both the preliminary and phase II site characterizations. Soil samples from G8 and G19 were collected at the interval of seven to eight feet bgs. The samples were shipped under chain of custody to STL Laboratories of Austin, Texas, where they were prepared and analyzed for VOCs by Method SW846 8260B and SVOCs by Method SW846 8270C. Sample collection and handling procedures are described in Appendix A. Results of the soil sample analyses are discussed in Section 4.2.

#### 4.1.2 Groundwater Sampling

On October 3, 2000, groundwater screening samples were collected from 11 DPT sample locations. Two samples were collected at each location, one at a depth of approximately 15 feet bgs and the other at approximately 35 feet bgs. The samples were shipped under chain of custody to STL Laboratories of Tallahassee, Florida, for the analysis of BTEX using EPA Method 602. These groundwater screening sample locations are shown on Figure 4-2.

The groundwater screening results were used in conjunction with the soil sample results to help determine the locations and depths of additional deep groundwater monitoring wells in the sand unit. On November 27, 2000, four deep groundwater monitoring wells (FR-3d, FR-7d, FR-8d, and FR-9d) were installed by DPT in the sand unit and a shallow well (FR-6) was installed by hollow stem auger in the interbedded unit. The locations of the monitoring wells installed on November 27, 2000 are illustrated on Figure 4-3. Well installation procedures are described in Appendix A and monitoring well installation records are provided in Appendix B. A summary of well construction information for these and earlier wells is presented in Table 4-1.

Since benzene was detected at a depth of approximately 35 feet bgs during groundwater screening, the deep wells were screened from 29 to 35 feet bgs. The wells provide sampling points to delineate the distribution of petroleum constituents in the sand unit. FR-3d was installed south of the former UST pit to define the southern edge of the contaminant plume. FR-7d is located west of the former pit to define the plume boundary to the west. FR-8d defines the upgradient plume boundary to the north and FR-9d defines the plume boundary to the east of the fuel release area. Shallow monitoring well FR-6 was installed adjacent to deep monitoring well FR-6d and is screened from three to eight feet bgs. This well defines the distribution of petroleum constituents in the interbedded unit in the immediate vicinity of the fuel release.

On December 7, 2000, the five groundwater monitoring wells in the sand unit (FR-3d, FR-6d, FR-7d, FR-8d, and FR-9d) were sampled. FR-6 was not sampled in December due to the presence of free petroleum product. Prior to sampling the specific conductance, temperature, and pH of the groundwater was measured until parameter stabilization. The results

are summarized in Table 4-2. The groundwater samples were shipped under chain of custody to STL Laboratories of Tallahassee, Florida where they were analyzed for BTEX by EPA Method 602. The samples were analyzed for only BTEX since they were the only constituents of concern detected in groundwater during the preliminary site characterization conducted in May 2000. Results of the groundwater analyses are discussed in Section 4.3.

## 4.2 Soil Analytical Results

### 4.2.1 Total Petroleum Hydrocarbons

The qualified results of the phase II site characterization indicate that soil sample concentrations exceed the NCDENR action level of 40 mg/kg for TPH DRO in two of the five samples analyzed. Samples G8 and G19, both collected at seven to eight feet bgs, had concentrations of 517 mg/kg and 194 mg/kg TPH DRO, respectively. However, since soil samples G8 and G19 were saturated at the time of collection analytical results may reflect aqueous phase contaminants in addition to contaminants adsorbed to the soil. Qualified TPH DRO analytical results for the soil samples are summarized in Table 4-3. Concentrations exceeding the action level are shown in bold type. Soil sample locations and TPH DRO results exceeding the NCDENR action level are presented in Figure 4-1.

The results of analyses performed on samples collected at G8 and G19 in October 2000 confirm the presence of TPH DRO that was found at these locations in April 2000; however, the results of the two sampling events differ greatly. A result of 1260 mg/kg and 517 mg/kg TPH DRO was detected at G8 in April and October, respectively, and 52.5 mg/kg and 194 mg/kg TPH DRO was detected at G19 in April and October, respectively. This difference can be attributed to the variability in the distribution of contaminants within the soil at these two locations and the difficulty inherent in homogenizing soil samples.

Contamination at sample location G19 is suspicious given that it is located upgradient from the former UST pit and west of the storm water ditch. In an effort to determine whether the source of the contamination at G19 was related to the fuel release that occurred on

January 30, 2000, the gas chromatographs from the TPH DRO analysis on G19 were compared with those from the analysis of G8. The gas chromatographs suggest that the contamination at G19 originated from the same fuel source that has contaminated G8.

#### 4.2.2 Volatile Organic Compounds

For contaminated soil that is located within the unsaturated zone near groundwater, the NCDENR has established soil-to-groundwater cleanup levels for various VOCs. The qualified results of the phase II site characterization indicate that 11 VOCs were detected in soil sample G8 and six VOCs were detected in soil sample G19. The qualified VOCs analytical results for soil samples G8 and G19 are summarized in Table 4-4. Because soil samples G8 and G19 were saturated at the time of collection, comparison of the analytical results to the soil-to-groundwater cleanup levels is not directly applicable. However, it does suggest that most of the compounds detected are below the soil-to-groundwater cleanup levels. Only 1,2-dichloroethane and naphthalene were detected at levels above the soil-to-groundwater cleanup levels. Soil sample locations and VOCs results are presented in Figure 4-1.

The soil-to-groundwater cleanup levels are conservative, theoretically derived soil contaminant concentrations that are expected to be protective of groundwater. Based on the fact that the soil samples were collected from the saturated zone, the 1,2-dichloroethane concentrations found in the soil are possibly the result of the dissolved chlorinated VOC groundwater plume associated with the former solvent disposal pit located at the Abbott facility. The former disposal pit is located approximately 550 feet north-northwest and upgradient of the fuel release area. There is no evidence to suggest that the concentrations of 1,2-dichloroethane detected in soil in the vicinity of the fuel release are related to the fuel release or to other activities within the fuel release area.

Previous groundwater sampling in the fuel release area did not detect the presence of naphthalene in excess of 2L standards. Consequently, there is no evidence that the concentrations of naphthalene detected in soil are negatively impacting groundwater at the site.

### 4.2.3 **Semi-Volatile Organic Compounds**

For contaminated soil, the NCDENR has also established soil-to-groundwater cleanup levels for various SVOCs. The qualified results of the phase II site characterization indicate that five SVOCs were detected in soil sample G8 and three SVOCs were detected in soil sample G19. The qualified SVOCs analytical results for soil samples G8 and G19 are summarized in Table 4-5. Because soil samples G8 and G19 were saturated at the time of collection, comparison of the analytical results to the soil-to-groundwater cleanup levels is not directly applicable. However, it does suggest that most of the compounds detected are below the soil-to-groundwater cleanup levels. Only 2-methylnaphthalene was detected at levels above the soil-to-groundwater cleanup levels. Soil sample locations and SVOCs results are also presented in Figure 4-1.

Previous groundwater sampling in the fuel release area did not detect the presence of 2-methylnaphthalene in groundwater samples. Consequently, there is no evidence that the concentrations of 2-methylnaphthalene detected in soil are negatively impacting groundwater at the site.

### 4.3 **Groundwater Analytical Results**

Benzene was the only constituent of concern detected in the groundwater screening samples collected on October 2 and 3, 2000. Of the 11 samples collected at 15 feet bgs, only two samples, W-5s and W-12s, exhibited levels of benzene above the NCDENR groundwater standard of 1 µg/L. Four of the 11 samples collected at 35 feet bgs, W-5d, W-10d, W-11d, and W-12d, also exhibited levels of benzene above the 1 µg/L standard. Qualified analytical results for the screening samples collected at 15 feet 35 feet bgs are summarized in Table 4-6. Concentrations exceeding groundwater standards are shown in bold type. Groundwater screening sample locations and sample results above the NCDENR groundwater standards are illustrated on Figure 4-2. Figure 4-4 and Figure 4-5 shows the benzene contamination plume at depths of 15 feet and 35 feet bgs, respectively.

Benzene and ethylbenzene were the only constituents of concern detected in the groundwater samples collected from monitoring wells F-3d, FR-6d, FR-7d, FR-8d, and FR-9d on December 7, 2000. Of the five samples, only FR-3d and FR-6d exhibited levels of benzene above the NCDENR groundwater standard of 1  $\mu\text{g/L}$ . In addition, sample FR-6d and its duplicate were the only samples that contained ethylbenzene; however, the levels were considerably lower than the standard of 29  $\mu\text{g/L}$ . Qualified analytical results for the monitoring well samples are summarized in Table 4-7. Concentrations exceeding groundwater standards are shown in bold type. Groundwater monitoring well sample locations with analytical results are illustrated on Figure 4-3.

Cross-sections of benzene contamination plumes based on groundwater screening sample and monitoring well sample results indicate that the benzene contamination plume in groundwater extends approximately 160 feet south-southwest of the former UST pit and to a depth of approximately 40 feet within the sand unit underlying the site. The cross-sections and benzene contamination plumes are illustrated in Figures 4-6 through Figure 4-8.

## 5.0

## CONCLUSIONS

Based on the results of this phase II site characterization the following conclusions can be made:

- Soil exhibiting levels of TPH DRO, VOCs, and SVOCs are confined to the former UST pit area and to the area located south of the 3,000 gallon AST.
- Soil exhibiting levels of TPH DRO, VOCs, and SVOCs occurs primarily at seven to eight feet bgs.
- An analysis of the gas chromatographs from TPH DRO analyses of soil from sample locations G8 and G19, which was collected and analyzed in April and October 2000, suggest that the contamination at G8 and G19 originated from the same fuel source.
- The results of groundwater screening and monitoring well sampling indicate that benzene is the only constituent of concern present in the groundwater at concentrations above the NCDENR groundwater standards.
- The benzene contamination plume in groundwater extends approximately 160 feet south-southwest of the former UST pit and to a depth of approximately 40 feet within the sand unit underlying the site.

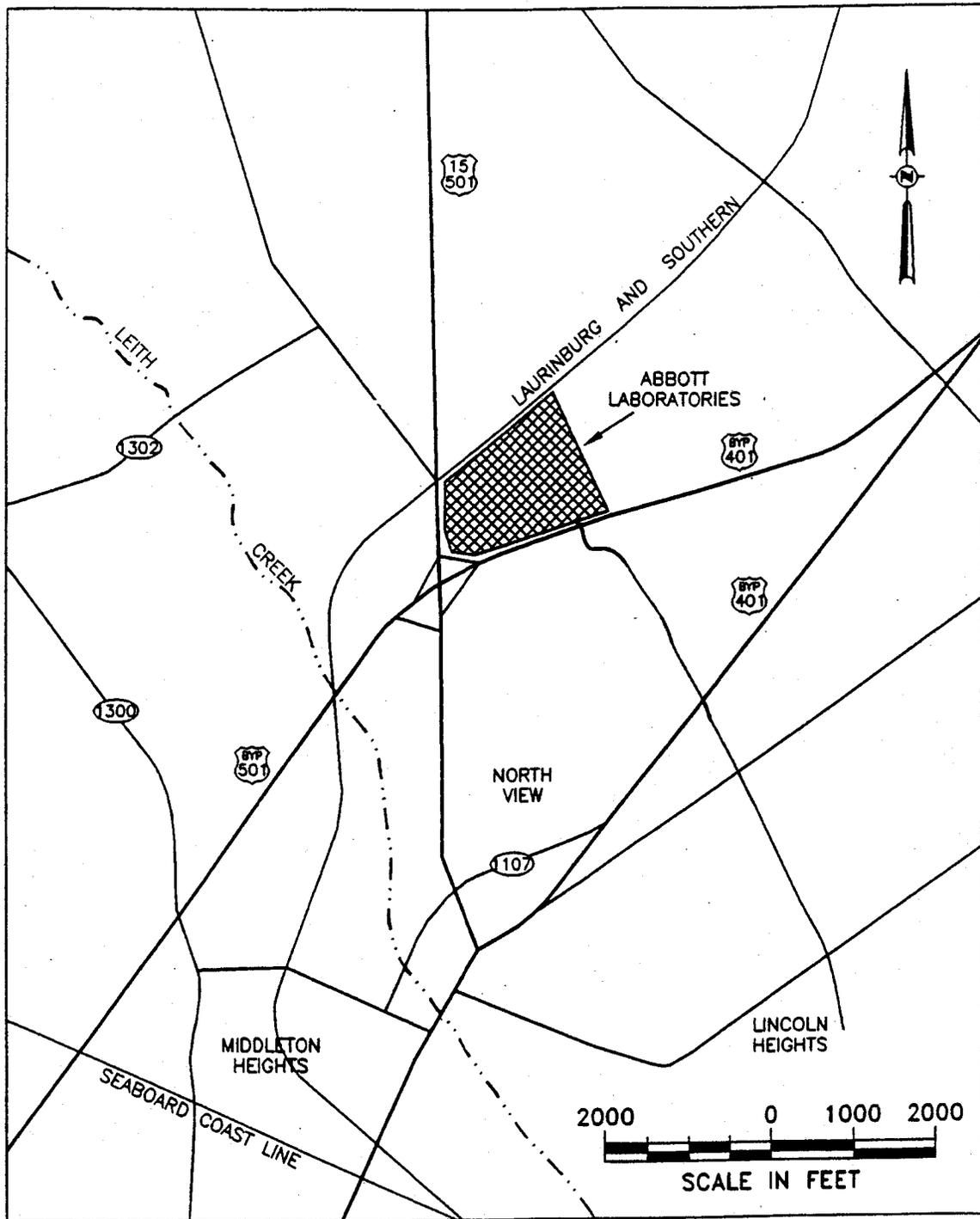
**RECOMMENDATIONS**

Based on the results of this phase II site characterization the following recommendations are presented:

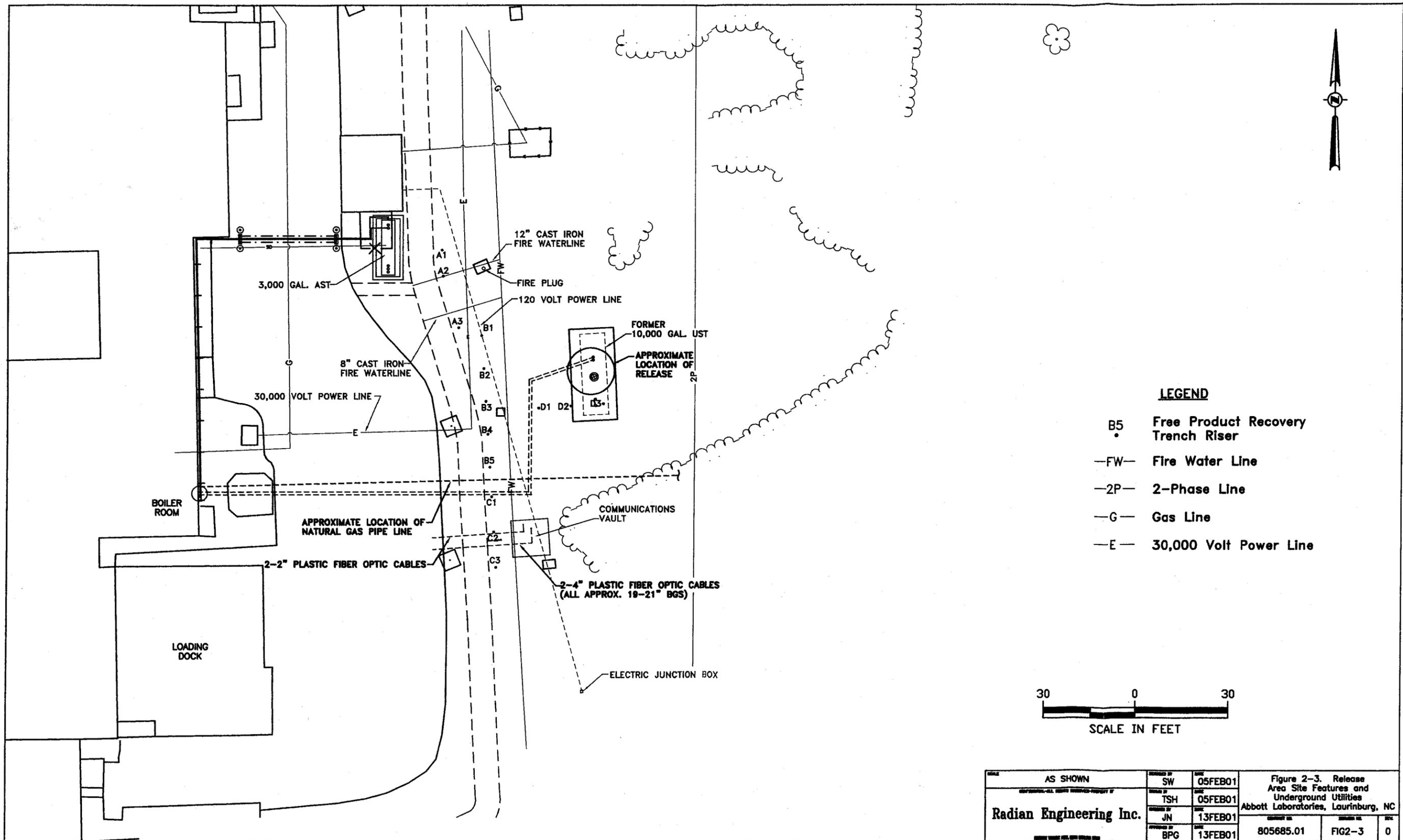
- Assess monitoring wells within the fuel release site for the presence of free petroleum product on a weekly basis. If free petroleum product exists at a thickness greater than 0.1 foot, conduct aggressive fluid vapor recovery (AFVR) to remove the free product.
- In an effort to track the potential migration of groundwater impacted by BTEX and to establish the dynamic boundaries of the groundwater contamination plume it is recommended that groundwater monitoring be conducted on a semi-annual basis. Monitoring wells within the fuel release area that are proposed for sampling include FR-1, FR-3, FR-3d, FR-5, FR-6, FR-6d, FR-7d, FR-8d, and FR-9d. Monitoring wells not associated with the fuel release site characterization, which are also proposed for sampling include MW-10b, MW-10d, MW-20b, and MW-20d. These four wells are located downgradient of the fuel release area. All groundwater samples should be analyzed for BTEX because they were the only analytes detected during the phase II site characterization.

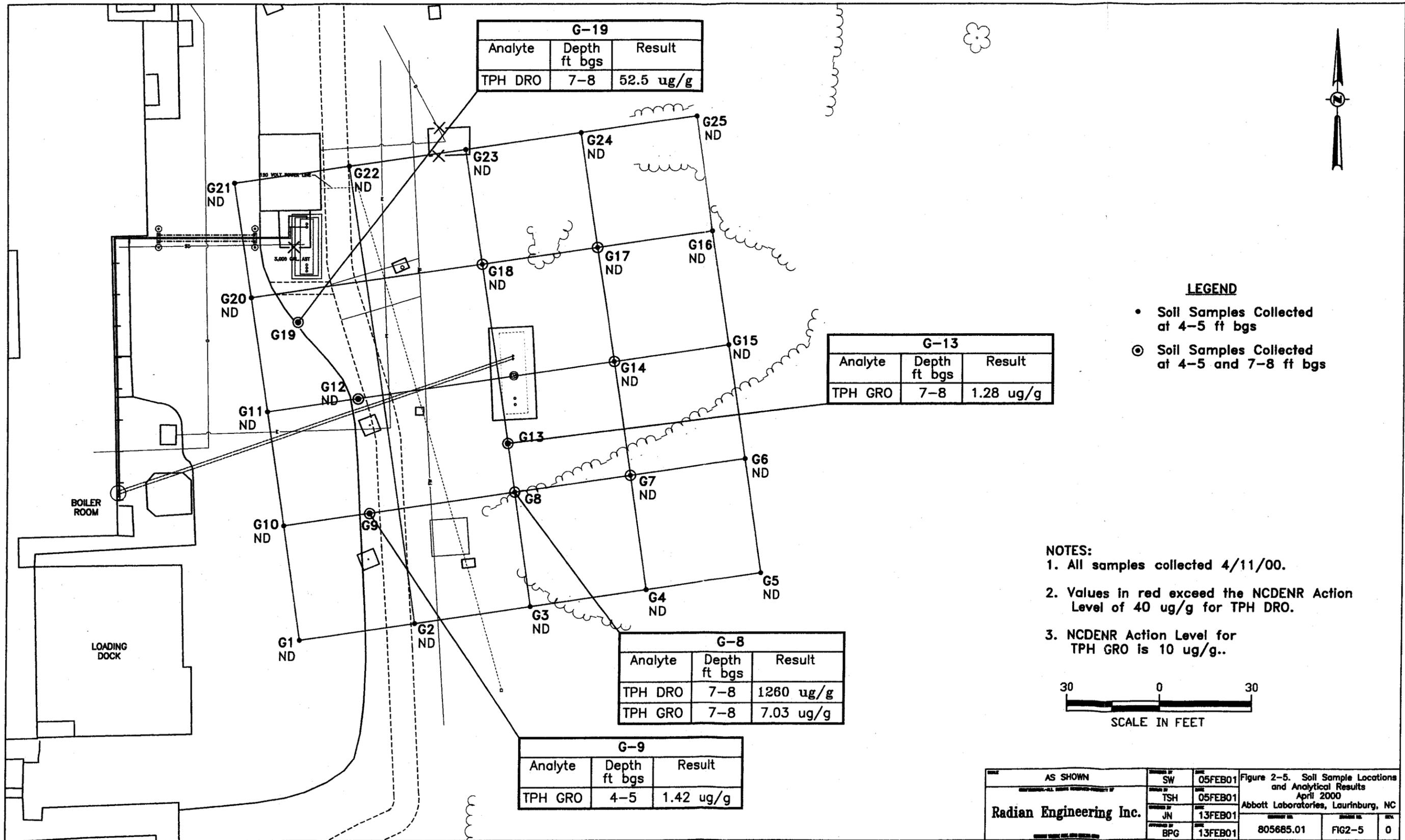
## 7.0 REFERENCES

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- Schipf, Robert G. *Geology and Groundwater Resources of the Fayetteville Area*. North Carolina Department of Water Resources, Groundwater Bulletin, No. 3, 1961.
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**Figure 2-1. Site Location  
Abbott Laboratories, Laurinburg, North Carolina**





G-19		
Analyte	Depth ft bgs	Result
TPH DRO	7-8	52.5 ug/g

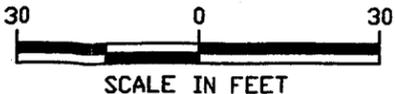
G-13		
Analyte	Depth ft bgs	Result
TPH GRO	7-8	1.28 ug/g

G-8		
Analyte	Depth ft bgs	Result
TPH DRO	7-8	1260 ug/g
TPH GRO	7-8	7.03 ug/g

G-9		
Analyte	Depth ft bgs	Result
TPH GRO	4-5	1.42 ug/g

- LEGEND**
- Soil Samples Collected at 4-5 ft bgs
  - ⊙ Soil Samples Collected at 4-5 and 7-8 ft bgs

- NOTES:**
- All samples collected 4/11/00.
  - Values in red exceed the NCDENR Action Level of 40 ug/g for TPH DRO.
  - NCDENR Action Level for TPH GRO is 10 ug/g..



AS SHOWN	SW	05FEB01	Figure 2-5. Soil Sample Locations and Analytical Results April 2000 Abbott Laboratories, Laurinburg, NC		
	TSH	05FEB01			
	JN	13FEB01			
	BPG	13FEB01			
<b>Radian Engineering Inc.</b>			805685.01	FIG2-5	0

FR-2		
Analyte	NCDENR Groundwater Standard	5/17/00
Benzene	1.0	0.81 J
Toluene	1000	0.26 J
Ethylbenzene	29	0.32 J
Xylenes	530	0.53 J
bis (2-Ethylhexyl) phthalate	3.0	0.70 J
Fluorene	280	0.68 J
Phenanthrene	210	2.3 J
C9-C12 Aliphatic Hydrocarbons	4.2 mg/L	0.030 mg/L
C9-C10 Aromatic Hydrocarbons	0.21 mg/L	0.090 mg/L
C11-C22 Aliphatic Hydrocarbons	NS	0.14 J mg/L

FR-1		
Analyte	NCDENR Groundwater Standard	5/17/00
Pyrene	210	0.62 J
C9-C10 Aromatic Hydrocarbons	0.21 mg/L	0.15 mg/L

FR-5		
Analyte	NCDENR Groundwater Standard	5/17/00
bis (2-Ethylhexyl) phthalate	3.0	1.4 J
C9-C10 Aromatic Hydrocarbon	0.21 mg/L	0.010 mg/L

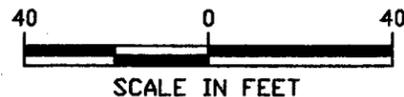
FR-6d		
Analyte	NCDENR Groundwater Standard	5/17/00
Benzene	1.0	21.0
Toluene	1000	1.9
Ethylbenzene	29	11.0
Xylenes	530	10.0
2,4-Dimethylphenol	140	1.7 J
Phenol	300	1.4 J
Acenaphthene	80	0.44 J
bis (2-Ethylhexyl) phthalate	3.0	0.59 J
C5-C8 Aliphatic Hydrocarbons	.42 mg/L	0.050 mg/L
C9-C12 Aliphatic Hydrocarbons	4.2 mg/L	0.14 mg/L
C9-C10 Aromatic Hydrocarbons	0.21 mg/L	0.15 mg/L

FR-4		
Analyte	NCDENR Groundwater Standard	5/17/00
Toluene	1000	0.14 J
bis (2-Ethylhexyl) phthalate	3.0	1.8 J

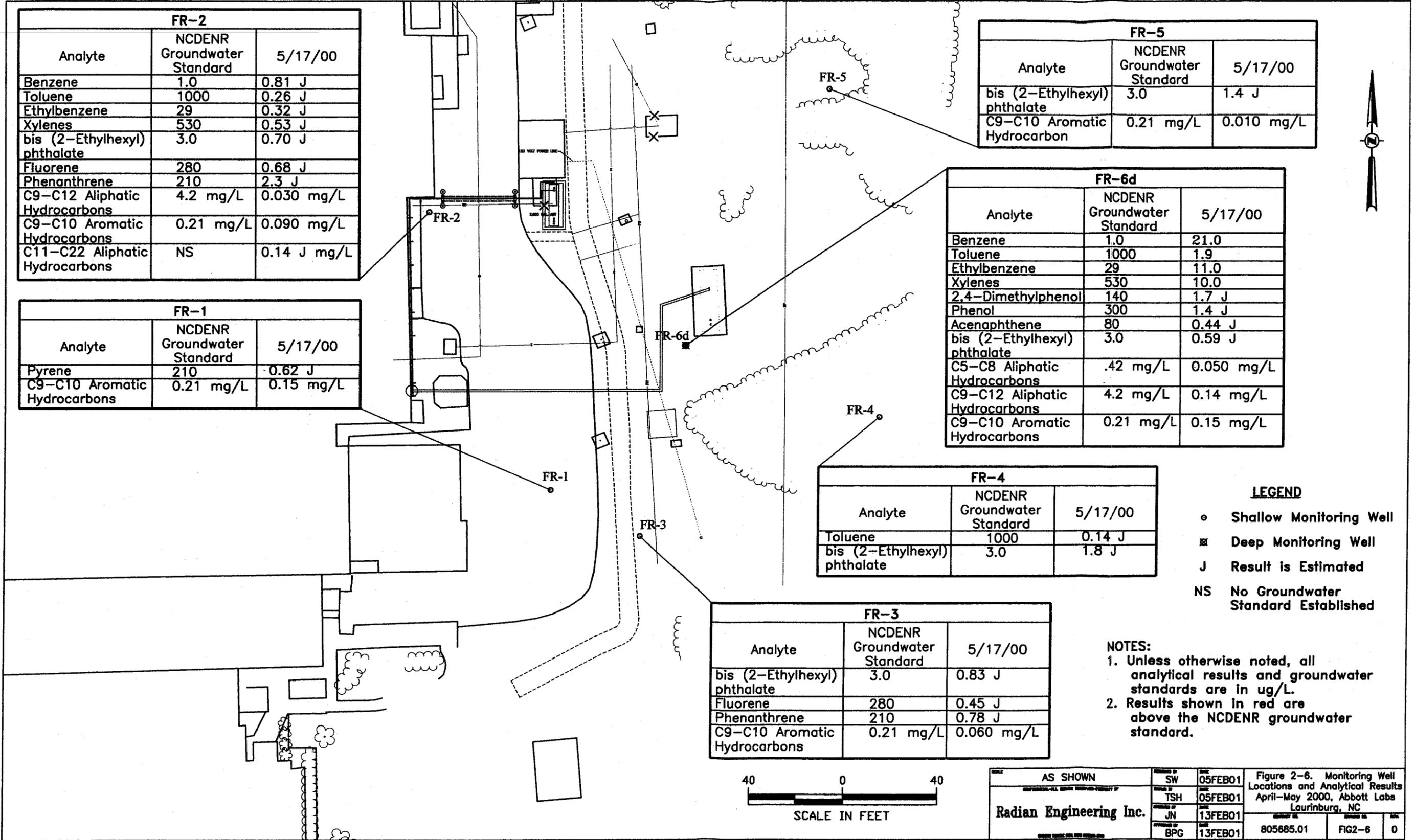
FR-3		
Analyte	NCDENR Groundwater Standard	5/17/00
bis (2-Ethylhexyl) phthalate	3.0	0.83 J
Fluorene	280	0.45 J
Phenanthrene	210	0.78 J
C9-C10 Aromatic Hydrocarbons	0.21 mg/L	0.060 mg/L

- LEGEND**
- Shallow Monitoring Well
  - ⊗ Deep Monitoring Well
  - J Result is Estimated
  - NS No Groundwater Standard Established

- NOTES:**
1. Unless otherwise noted, all analytical results and groundwater standards are in ug/L.
  2. Results shown in red are above the NC DENR groundwater standard.



AS SHOWN	DATE: 05FEB01	Figure 2-6. Monitoring Well Locations and Analytical Results April-May 2000, Abbott Labs Laurinburg, NC		
DESIGNED BY: TSH	DATE: 05FEB01	PROJECT NO: 805685.01	FIGURE NO: FIG2-6	SCALE: 0
CHECKED BY: JN	DATE: 13FEB01			
APPROVED BY: BPG	DATE: 13FEB01			



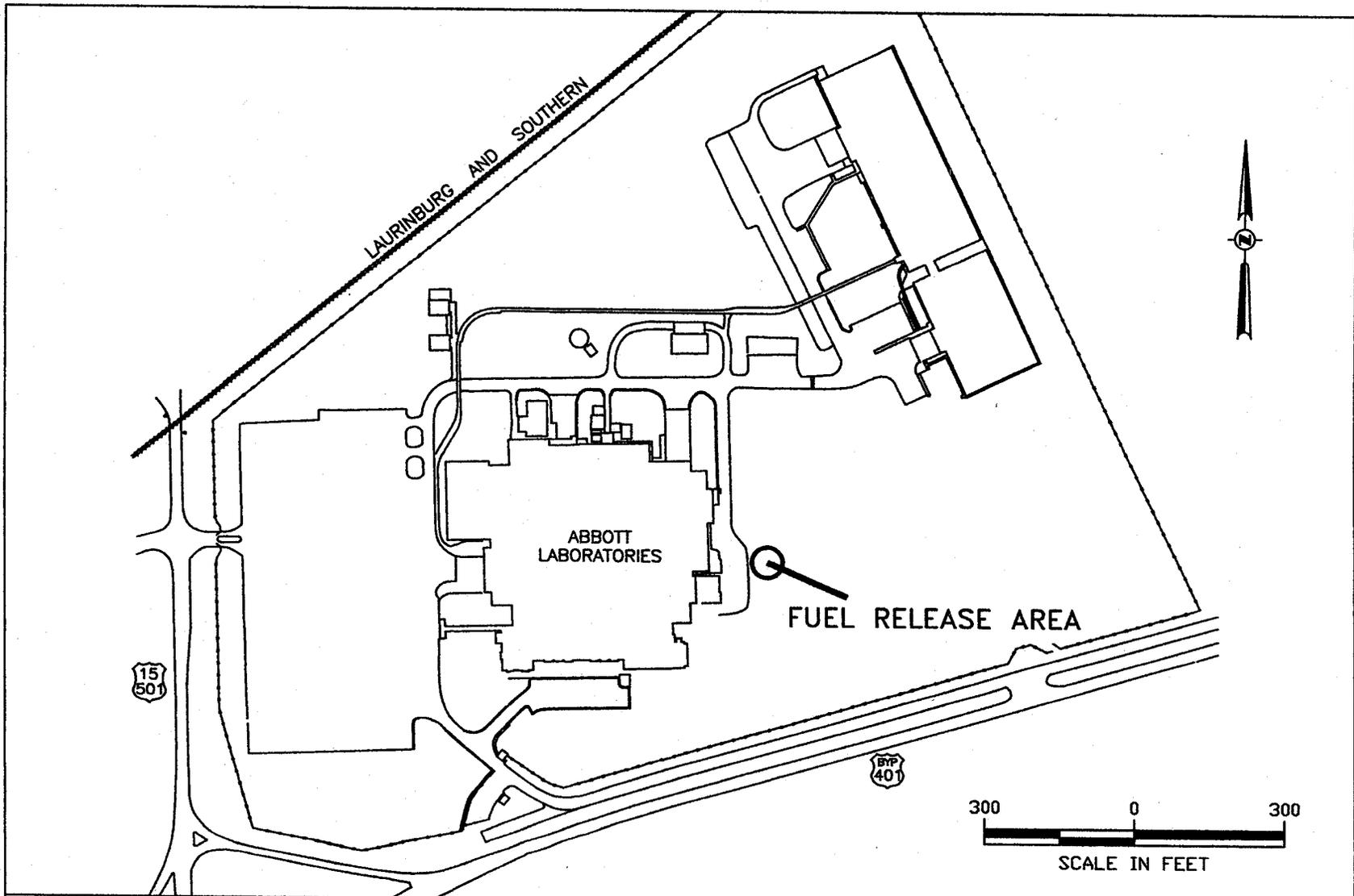


Figure 2-4. Approximate Location of Fuel Release  
Abbott Laboratories, Laurinburg, NC

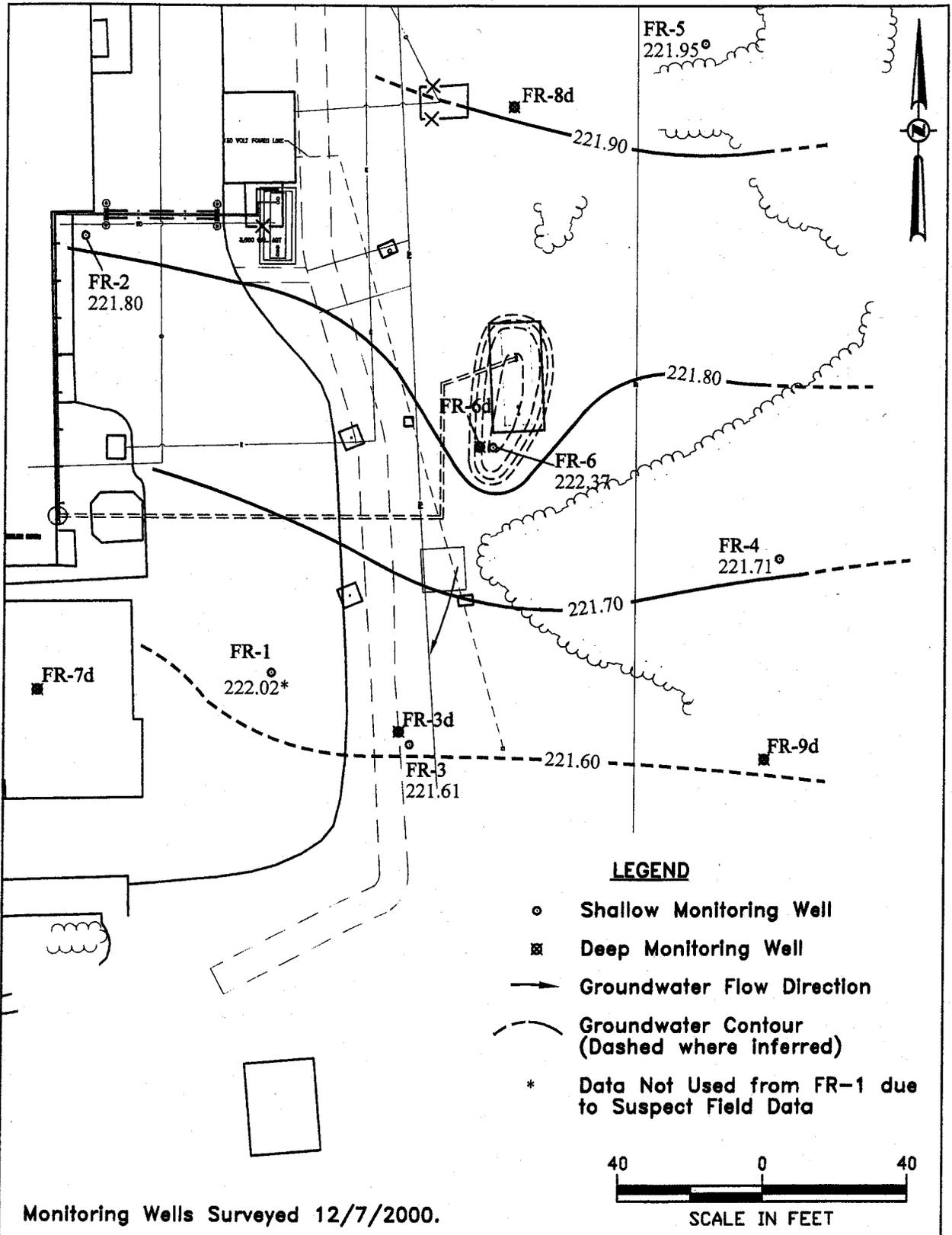


Figure 3-1. Groundwater Contour Map, Interbedded Unit December 7, 2000, Abbott Laboratories, Laurinburg, NC

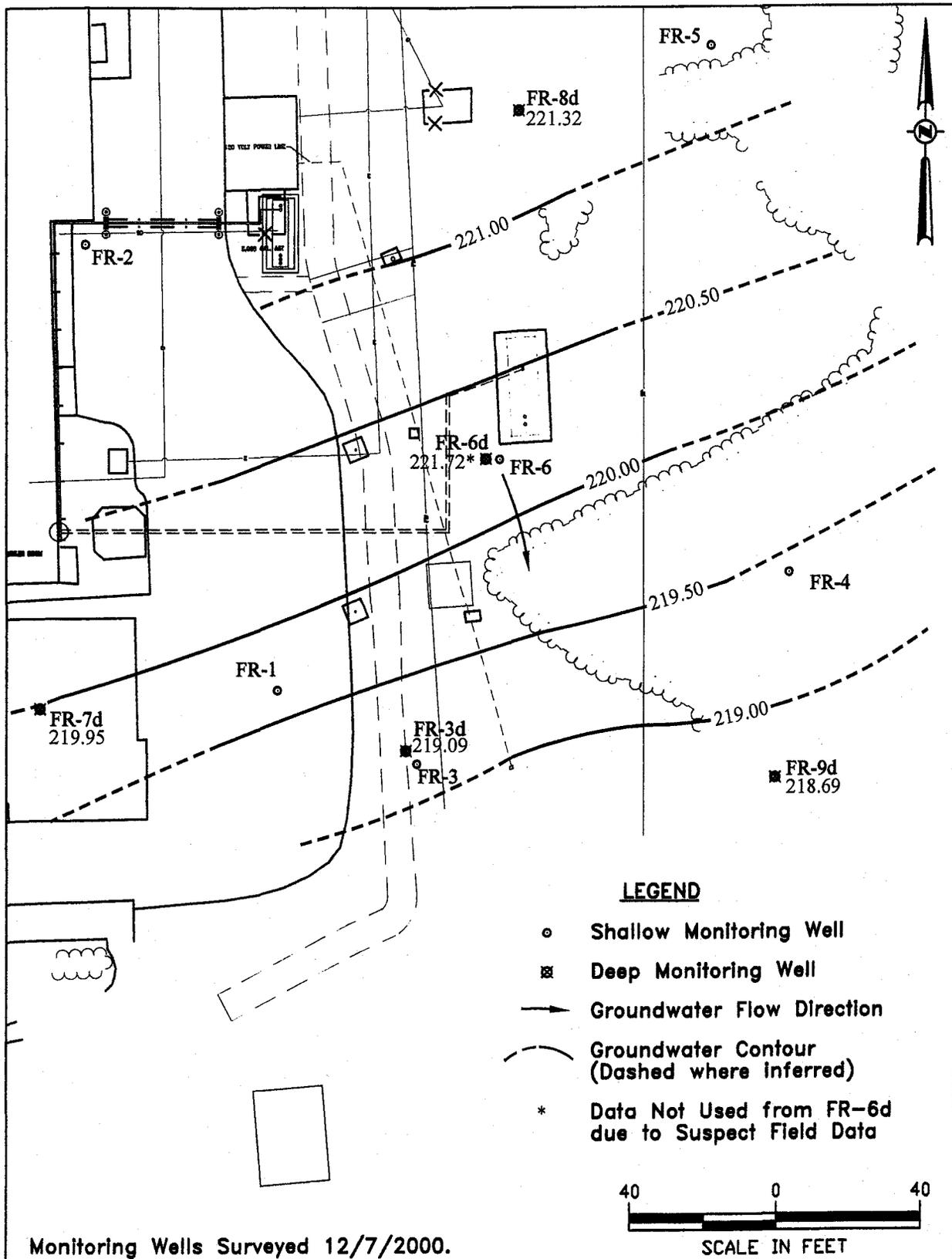
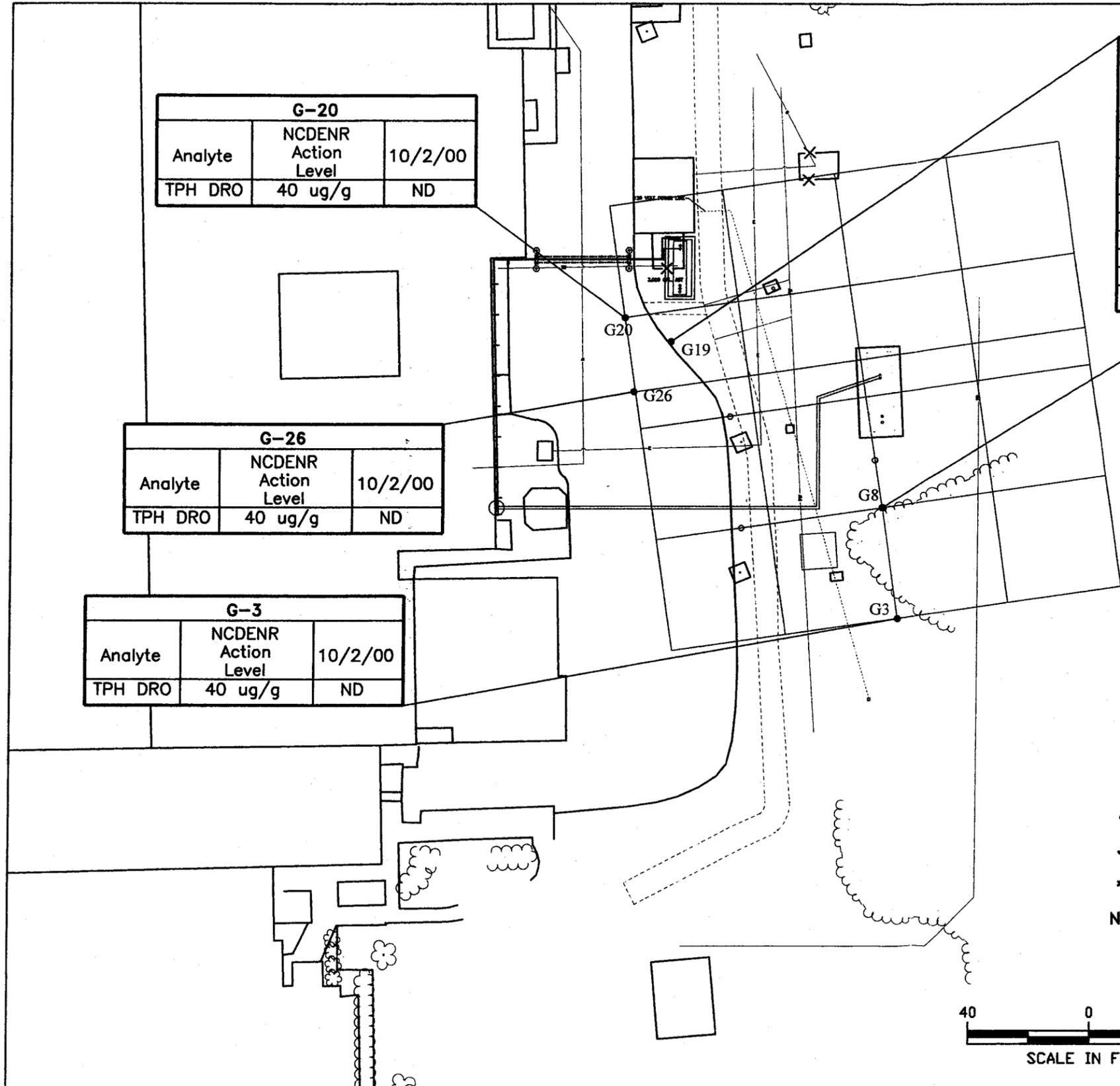


Figure 3-2. Groundwater Contour Map, Sand Unit  
 December 7, 2000, Abbott Laboratories, Laurinburg, NC



G-20		
Analyte	NCDENR Action Level	10/2/00
TPH DRO	40 ug/g	ND

G-26		
Analyte	NCDENR Action Level	10/2/00
TPH DRO	40 ug/g	ND

G-3		
Analyte	NCDENR Action Level	10/2/00
TPH DRO	40 ug/g	ND

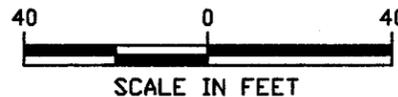
G-19			
Analyte	Units	Soil-to-Groundwater Cleanup Level	11/27/00
TPH DRO*	ug/g	40	194
n-Butylbenzene	ug/kg	4000	23.0 J
sec-Butylbenzene	ug/kg	3000	6.11 J
1,2-Dichloroethane	ug/kg	1.8	63.4
Naphthalene	ug/kg	580	44.2
1,2,4-Trimethylbenzene	ug/kg	800	53.2 J
1,3,5-Trimethylbenzene	ug/kg	700	16.2 J
Acenaphthene	ug/g	8.0	0.178 J
2-Methylnaphthalene	ug/g	3.0	1.38
Phenanthrene	ug/g	60	0.457

G-8			
Analyte	Units	Soil-to-Groundwater Cleanup Level	11/27/00
TPH DRO*	ug/g	40	517
n-Butylbenzene	ug/kg	4000	1,010
sec-Butylbenzene	ug/kg	3000	467 J
1,2-Dichloroethane	ug/kg	1.8	63.2
Ethylbenzene	ug/kg	240	152 J
Isopropylbenzene	ug/kg	2000	128 J
Naphthalene	ug/kg	580	1410
n-Propylbenzene	ug/kg	2000	413 J
Tetrachloroethene	ug/kg	7.4	3.22 J
1,2,4-Trimethylbenzene	ug/kg	800	3,410 J
1,3,5-Trimethylbenzene	ug/kg	700	1,070 J
Xylenes (total)	ug/kg	500	1,180 J
Acenaphthene	ug/g	8.0	0.474
Fluorene	ug/g	44	0.699
2-Methylnaphthalene	ug/g	3.0	5.17
Phenanthrene	ug/g	60	1.41
Pyrene	ug/g	286	0.212 J

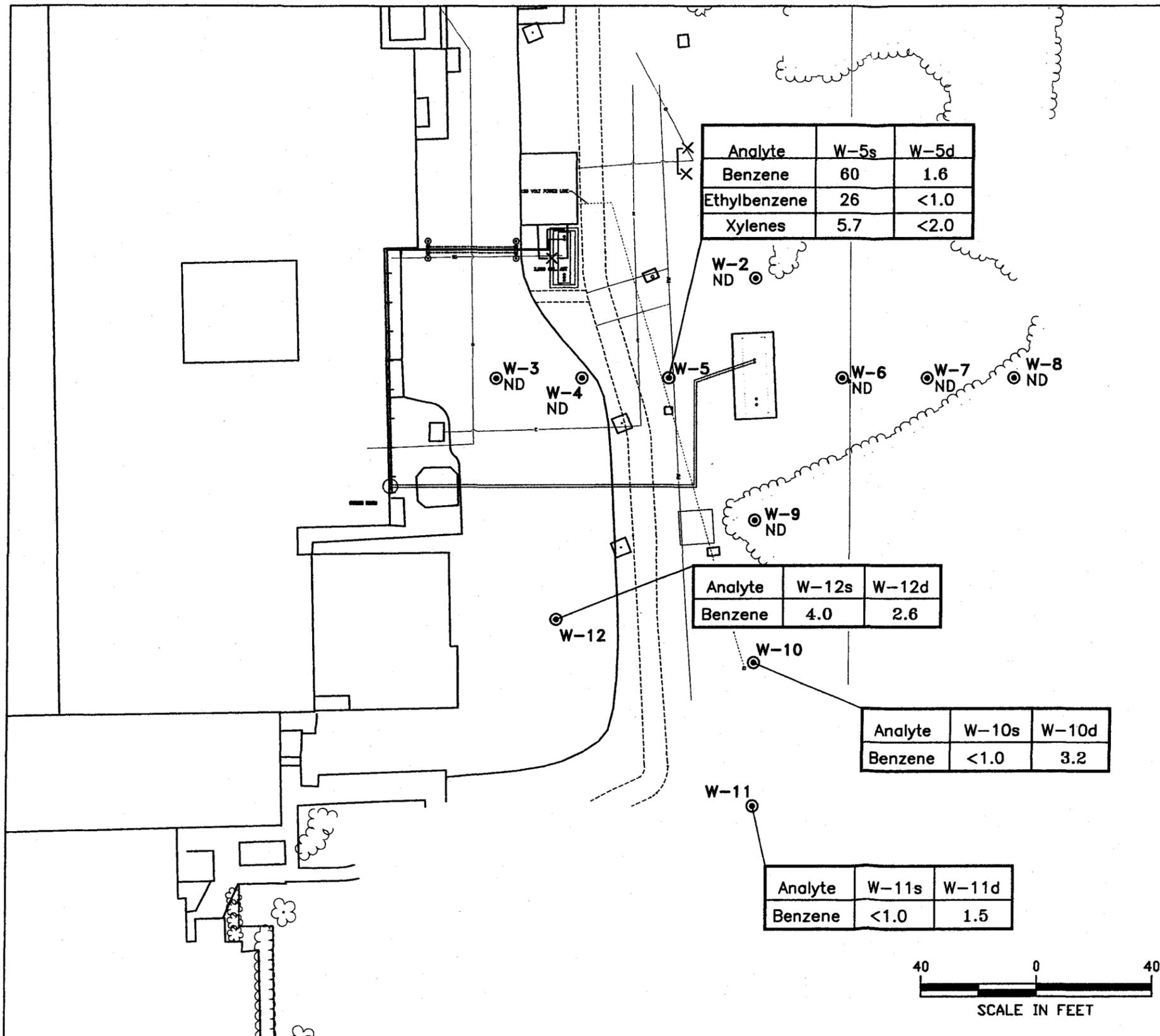
**LEGEND**

- Soil Sample Location
- J Result is Estimated
- \* Sample Collected 10/2/00
- ND Analyte not Detected above Method Detection Limit

**NOTE:**  
Results shown in red are above the NCDENR Action Levels or Soil-to-Groundwater cleanup levels.



AS SHOWN	SW	05FEB01	Figure 4-1. Soil Sample Locations and Analytical Results Oct. and Nov. 2000, Abbott Labs Laurinburg, NC		
	TSH	05FEB01			
	JN	13FEB01			
	BPG	13FEB01	805685.01	FIG4-1A	0



Analyte	W-5s	W-5d
Benzene	60	1.6
Ethylbenzene	26	<1.0
Xylenes	5.7	<2.0

Analyte	W-12s	W-12d
Benzene	4.0	2.6

Analyte	W-10s	W-10d
Benzene	<1.0	3.2

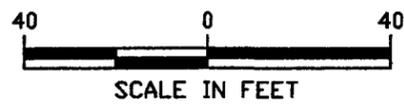
Analyte	W-11s	W-11d
Benzene	<1.0	1.5



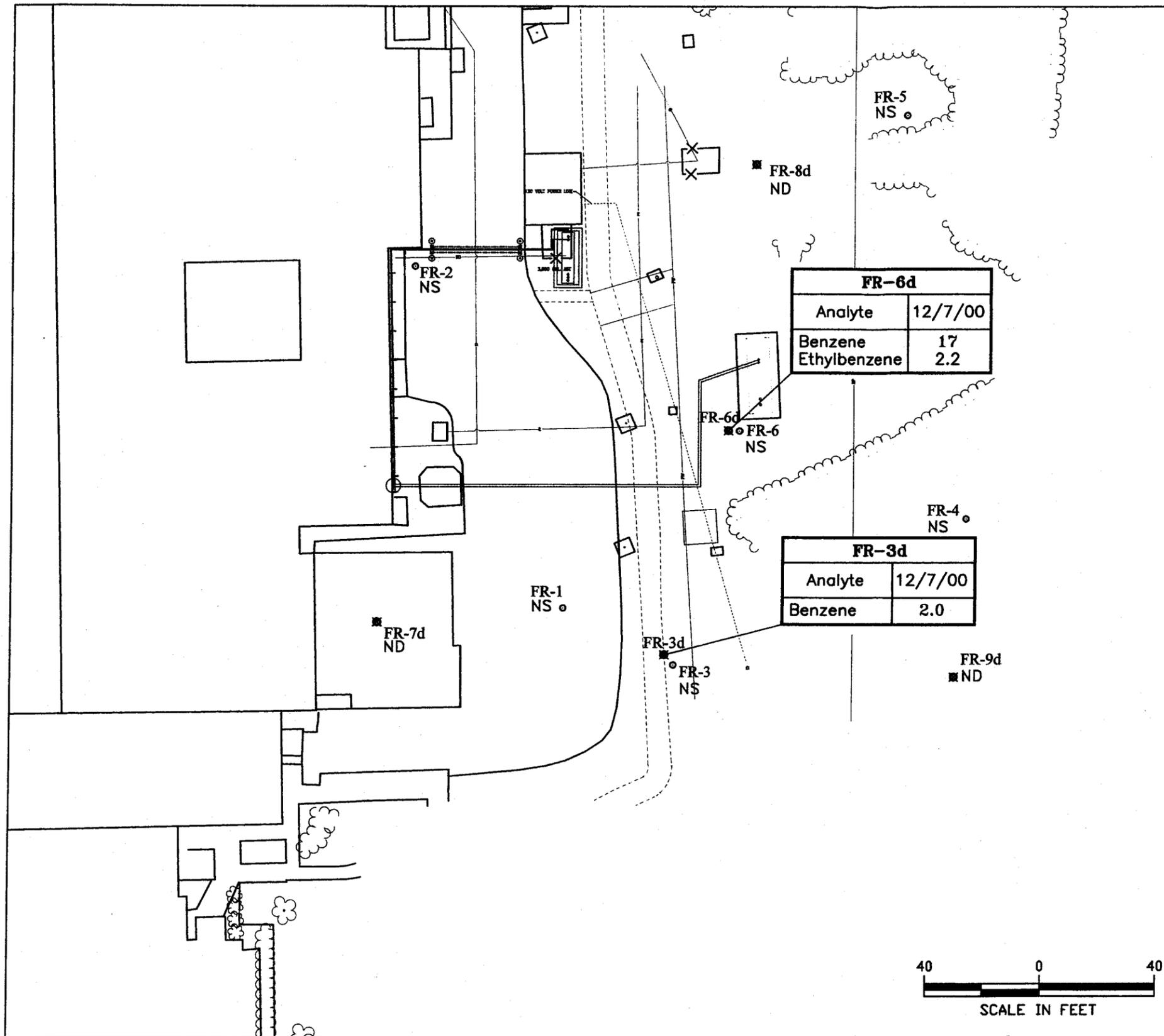
- LEGEND**
- W-5 Groundwater Sample Location
  - W-5s Sample Collected at Approximately 15 ft bgs
  - W-5d Sample Collected at Approximately 35 ft bgs
  - ND Analyte not Detected above Laboratory Reporting Limits at 15 ft. and 35 ft. bgs

**NCDENR Groundwater Standard:**  
 Benzene = 1 ug/L  
 Ethylbenzene = 29 ug/L  
 Xylenes = 530 ug/L

- NOTES:**
1. All samples collected on 10/3/00.
  2. All results in ug/L.



AS SHOWN	DATE OF SW	05FEB01	Figure 4-2. BTEX Groundwater Screening Locations and Analytical Results, October 2000 Abbott Labs, Laurinburg, NC			
	DATE OF TSH	05FEB01				
Radian Engineering Inc.	DATE OF JN	13FEB01				
	DATE OF BPG	13FEB01				
	PROJECT NO.	805685.01	FIGURE NO.	FIG4-2A	REV.	0

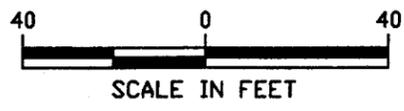


**LEGEND**

- Shallow Monitoring Well
- ⊠ Deep Monitoring Well
- ND Analyte not Detected above Method Detection Limit
- NS Not Sampled

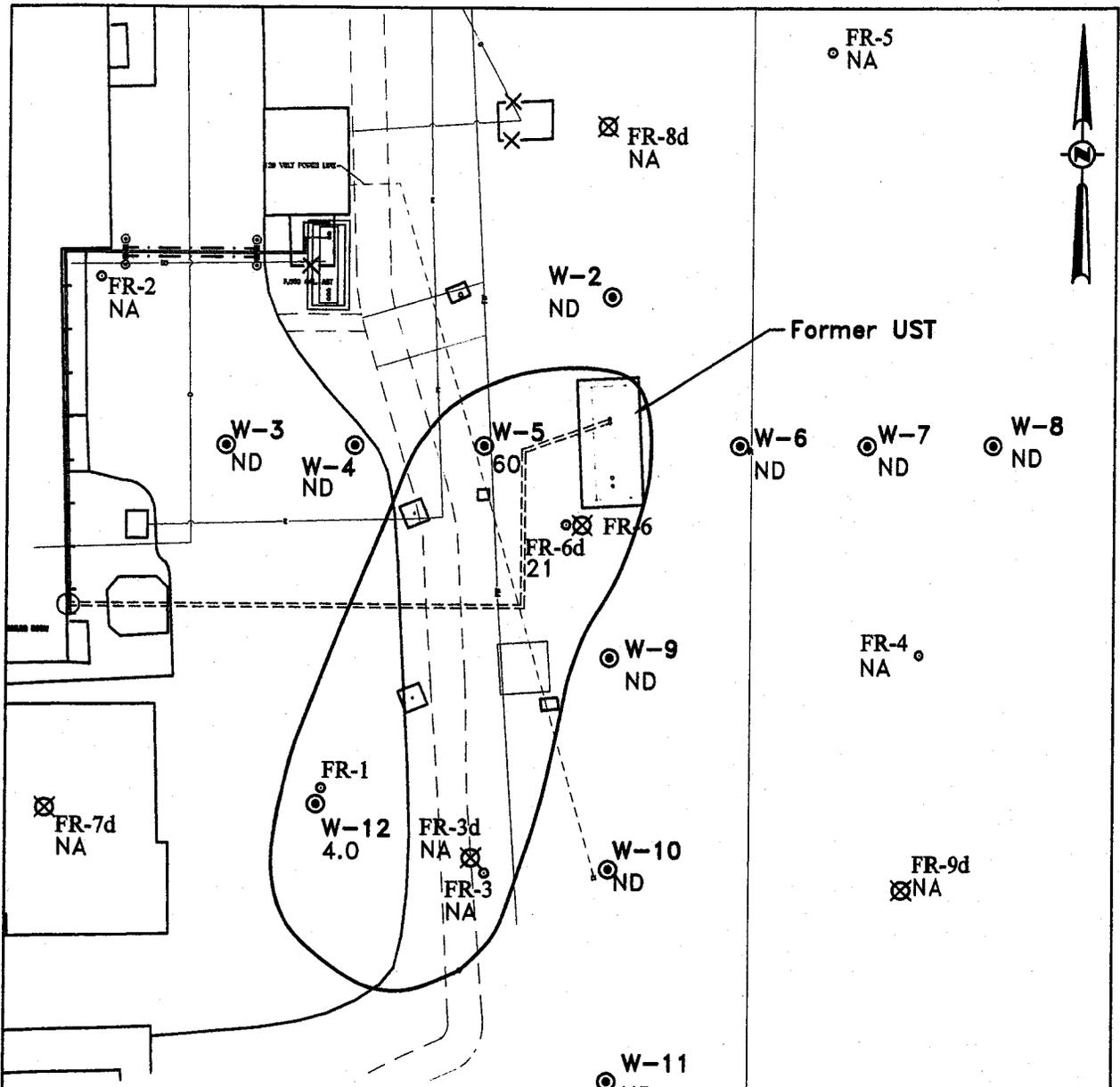
**NCDENR Groundwater Standard:**  
 Benzene = 1 ug/L  
 Ethylbenzene = 29 ug/L

- NOTES:**
1. Results shown in ug/L.
  2. Results shown in red are above the NCDENR groundwater standard.



AS SHOWN	SW	05FEB01	Figure 4-3. Monitoring Well Sampling Locations and Analytical Results, December 2000		
	TSH	05FEB01	Abbott Labs, Laurinburg, NC		
	JN	13FEB01			
	BPG	13FEB01	805685.01	FIG4-3A	0

**Radian Engineering Inc.**



**LEGEND**

- Shallow Monitoring Well
- ⊗ Deep Monitoring Well
- W-9 ○ Groundwater Screening Sample Location
- ND Not Detected Above Laboratory Reporting Limit
- NA Not Applicable due to Screen Interval

Values Listed are Benzene Concentrations in ug/L

— Boundary of Benzene Plume at 1 ug/L

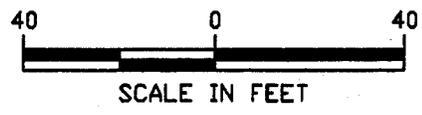


Figure 4-4. Approximate Location of Groundwater Contamination Plume, Benzene, 15 feet bgs, Phase II Site Characterization Abbott Laboratories, Laurinburg, NC

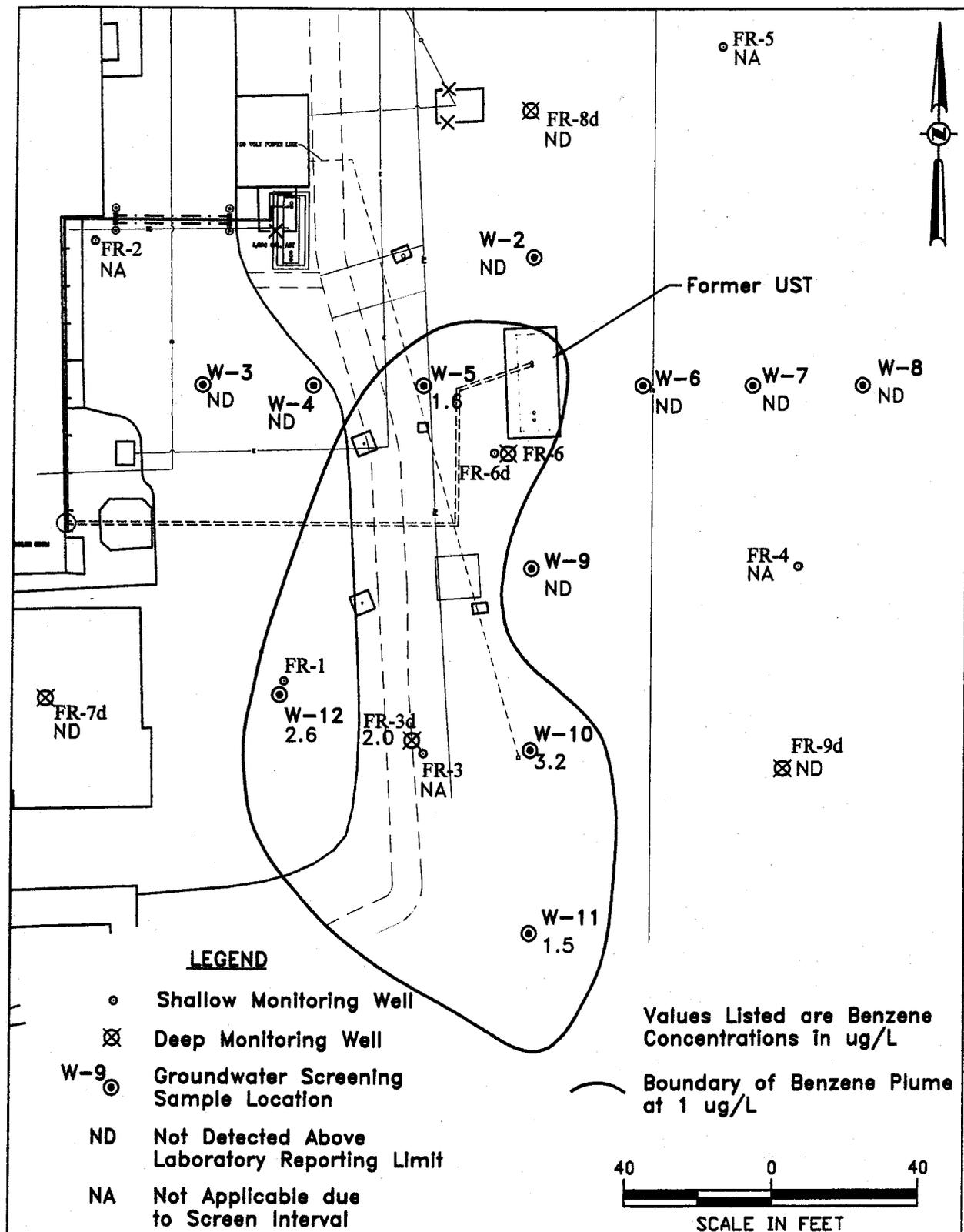
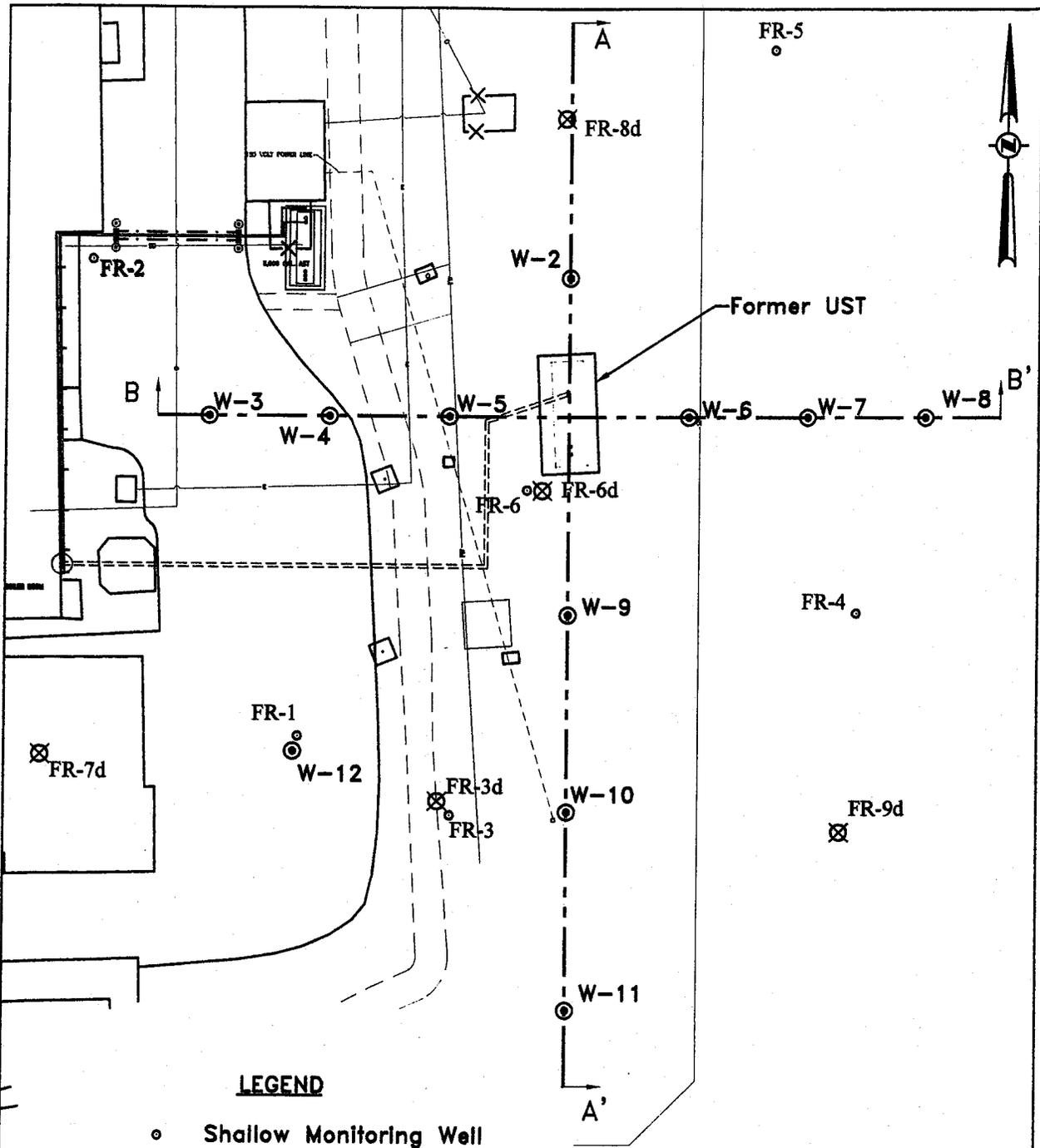


Figure 4-5. Approximate Location of Groundwater Contamination Plume, Benzene, 35 feet bgs, Phase II Site Characterization Abbott Laboratories, Laurinburg, NC



- LEGEND**
- Shallow Monitoring Well
  - ⊗ Deep Monitoring Well
  - W-9 ○ Groundwater Screening Sample Location

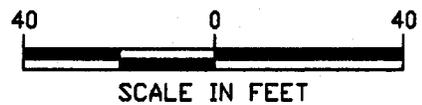


Figure 4-6. Cross Section Locations, Benzene Concentrations in Groundwater, Phase II Site Characterization Abbott Laboratories, Laurinburg, NC

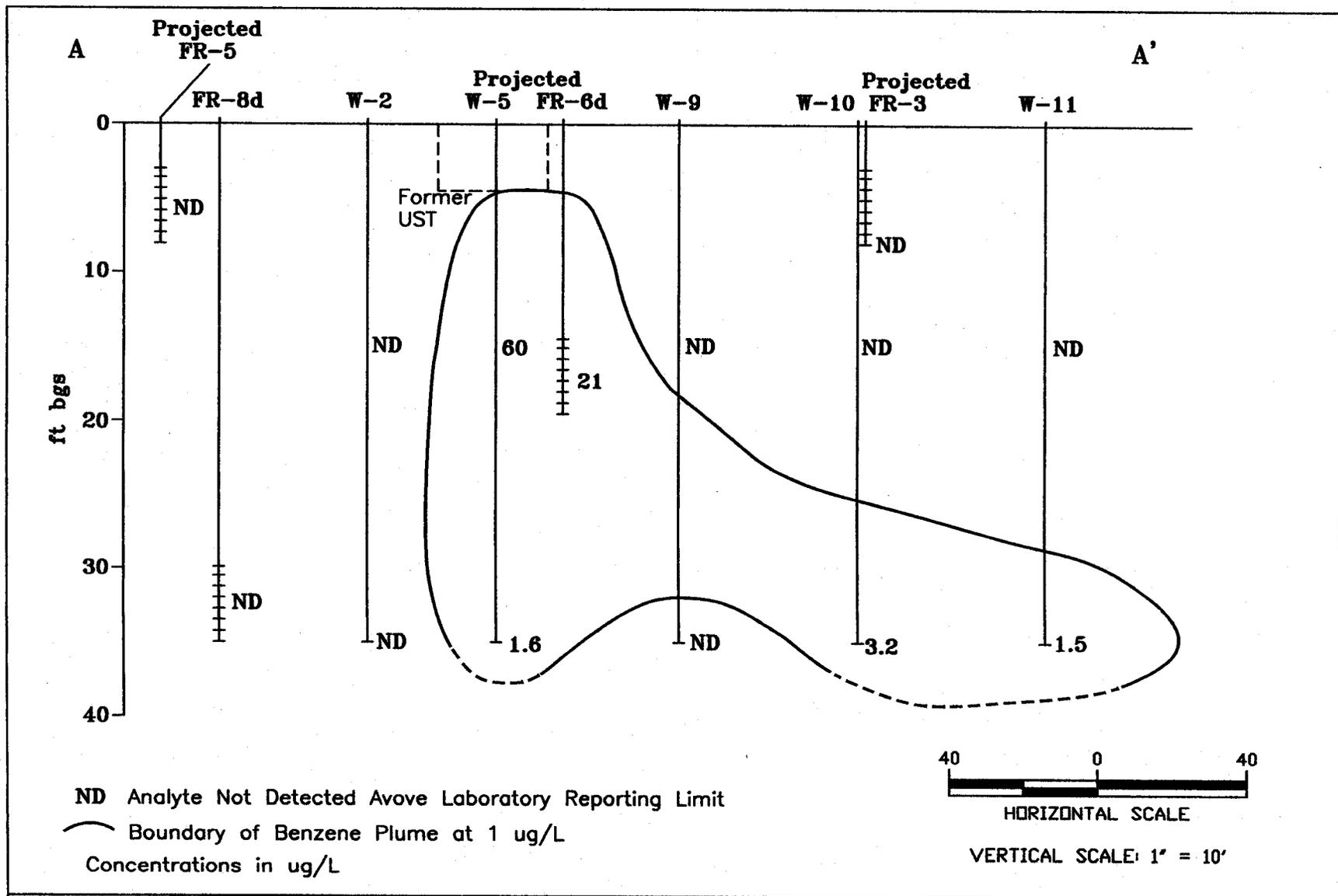


Figure 4-7. Cross Section A-A', Benzene Concentrations in Groundwater  
 Phase II Site Characterization, Abbott Laboratories, Laurinburg, NC

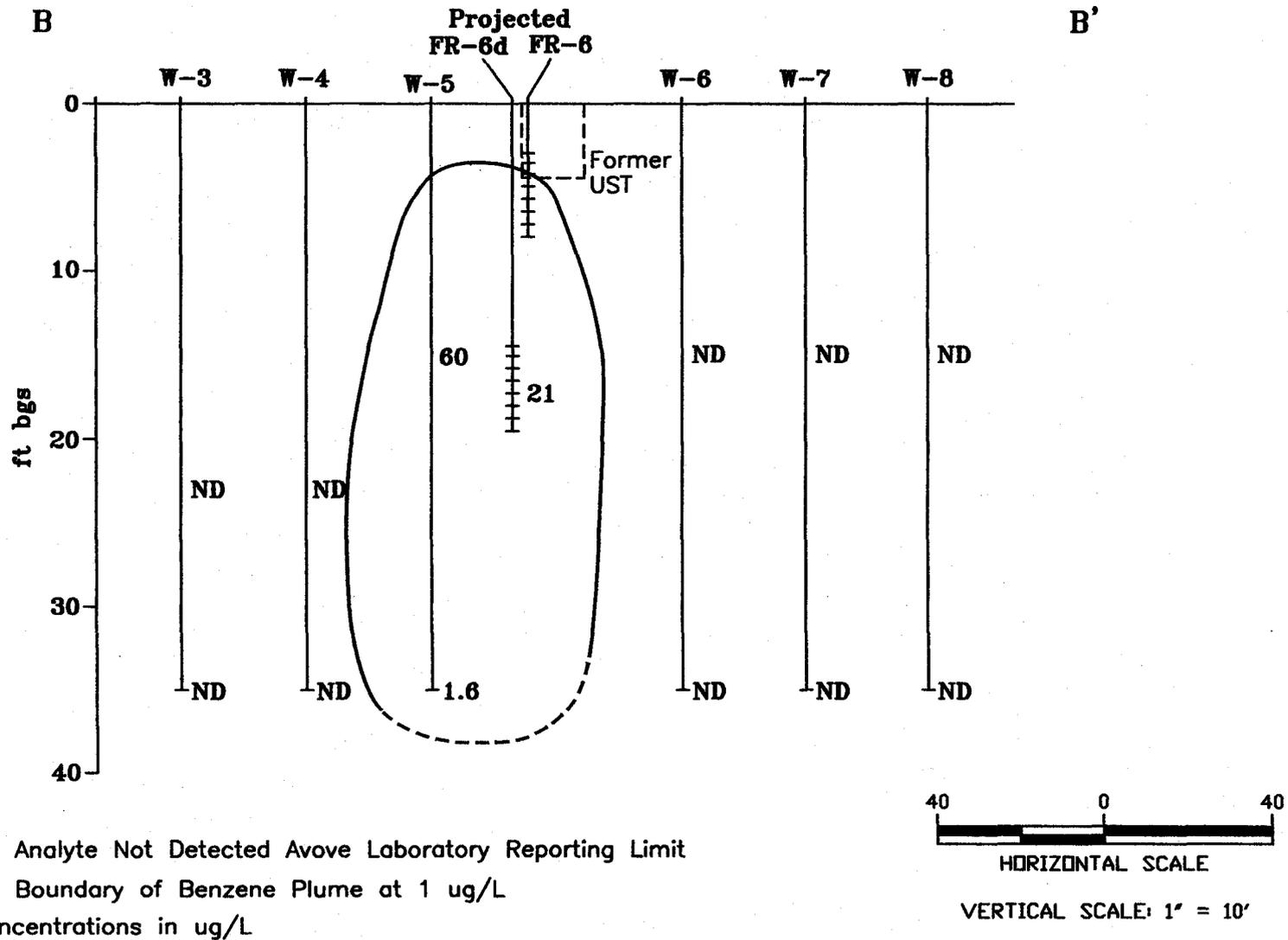


Figure 4-8. Cross Section B-B', Benzene Concentrations in Groundwater  
Phase II Site Characterization, Abbott Laboratories, Laurinburg, NC

**Table 3-1**

**Groundwater Elevation Data  
December 7, 2000  
Abbott Laboratories, Laurinburg, North Carolina**

<b>Well ID</b>	<b>Top of Casing Elevation (ft above msl)</b>	<b>Depth to Groundwater (ft below TOC)</b>	<b>Groundwater Elevation (ft above msl)</b>
FR-1	227.07	5.05	222.02
FR-2	227.06	5.26	221.80
FR-3	230.20	8.59	221.61
FR-3d	229.67	10.58	219.09
FR-4	230.53	8.82	221.71
FR-5	230.74	8.79	221.95
FR-6	230.66	8.29	222.37
FR-6d	230.66	8.94	221.72
FR-7d	226.45	6.50	219.95
FR-8d	230.82	9.50	221.32
FR-9d	230.81	12.12	218.69

TOC = top of monitoring well casing  
msl = mean sea level

Table 4-1

**Monitoring Well Construction Data  
Abbott Laboratories, Laurinburg, North Carolina**

Well ID	Installation Date	Top of Casing Elevation (ft)	Total Depth (ft bgs)	Screen Interval (ft bgs)	Filter Pack (ft bgs)	Bentonite Seal (ft bgs)	Grout (ft bgs)
FR-1	5/1/00	227.02	8	3 - 8	2 - 8	1 - 2	0 - 1
FR-2	5/1/00	227.01	8	3 - 8	2 - 8	1 - 2	0 - 1
FR-3	5/1/00	230.17	8	3 - 8	2 - 8	1 - 2	0 - 1
FR-3d	11/27/00	229.67	35	29 - 35	27 - 35	25 - 27	0 - 25
FR-4	5/1/00	230.51	8	3 - 8	2 - 8	1 - 2	0.5 - 1
FR-5	4/28/00	230.69	8	3 - 8	2 - 8	1 - 2	0.5 - 1
FR-6	11/27/00	230.66	8	3 - 8	2 - 8	1 - 2	0 - 1
FR-6d	4/28/00-5/1/00	230.62	19.5	14.5 - 19.5	13.5 - 19.5	11.5 - 13.5	0 - 11.5
FR-7d	11/27/00	226.45	35	29 - 35	27 - 35	25 - 27	0 - 25
FR-8d	11/27/00	230.82	35	29 - 35	27 - 35	25 - 27	0 - 25
FR-9d	11/27/00	230.81	35	29 - 35	27 - 35	25 - 27	0 - 25

bgs = below ground surface

**Table 4-2**

**Field Measurements  
December 7, 2000  
Abbott Laboratories, Laurinburg, NC**

<b>Well ID</b>	<b>Cumulative Purged Volume, gal</b>	<b>pH</b>	<b>Specific Conductance, <math>\mu\text{S}/\text{cm}</math></b>	<b>Temperature <math>^{\circ}\text{C}</math></b>
FR-3d	1.1	4.8	50	17
FR-6d	1.2	5.5	120	16
	2.5	6.0	130	17
	4.0	6.0	125	17
FR-7d	0.5	4.2	40	19
	1.2	4.8	40	19
FR-8d	0.5	4.8	110	16
	1.0	5.0	110	16
FR-9d	0.6	4.3	65	14

$^{\circ}\text{C}$  = Degrees Celsius

gal = Gallon

$\mu\text{S}/\text{cm}$  = Microsiemens per centimeter

Table 4-3

**Summary of Qualified Soil Analytical Results**  
**TPH DRO, 7 - 8 feet bgs**  
**October 2, 2000**  
**Abbott Laboratories, Laurinburg, North Carolina**

2/4/01  
 Substrate  
 Prob  
 10/2/00  
 10/2/00

Sample ID	Analyte				
	TPH DRO <sup>1</sup>	Diesel	Jet Fuel JP4	Kerosene	Lubricating Oil
G3	ND (1.76) U	ND (1.74)	ND (1.55)	ND (1.37)	ND (1.74)
G8	<b>517</b>	517	ND (15.0)	ND (13.3)	ND (16.9)
G19	<b>194</b>	194	ND (3.12)	ND (2.77)	ND (3.50)
G20	ND (3.65) U	ND (1.70)	ND (1.51)	ND (1.34)	ND (1.70)
G26	ND (3.16) U	ND (1.71)	ND (1.53)	ND (1.35)	ND (1.71)

<sup>1</sup> Total Petroleum Hydrocarbons, Diesel Range Organics

bgs = below ground surface

ND = Analyte not detected above method detection limit.

Method detection limits are shown in parentheses.

All results and method detection limits are in µg/g.

U = Blank contamination exists. The sample quantitation limit has been elevated to the concentration found in the sample and the sample has been designated as not present above this limit (ND).

NCDENR *Groundwater Section Guidelines for Investigation and Remediation of Soil and Groundwater* action level for medium and high boiling point fuels is 40 mg/kg (40 µg/g) as TPH DRO.

Results shown in bold are above the action level for medium and high boiling point fuels.

Table 4-4

**Summary of Qualified Soil Analytical Results  
Volatile Organic Compounds, 7 - 8 feet bgs  
November 27, 2000  
Abbott Laboratories, Laurinburg, North Carolina**

R6

24,000

11,200

Analyte	NCDENR Soil-to-Groundwater Cleanup Levels	Sample ID	
		G8	G19
n-Butylbenzene	4,000	1010 J	23.0 J
sec-Butylbenzene	3,000	467 J	6.11 J
1,2-Dichloroethane	1.8	<b>63.2</b>	<b>63.4</b>
Ethylbenzene	240	152 J	ND (0.474) UJ
Isopropyl benzene	2,000	128 J	ND (0.513) UJ
Naphthalene	580	<b>1,410</b>	44.2
n-Propylbenzene	2,000	413 J	ND (0.834) UJ
Tetrachloroethene	7.4	3.22 J	ND (0.542) UJ
1,2,4-Trimethylbenzene	800	3,410 J	53.2 J
1,3,5-Trimethylbenzene	700	1,070 J	16.2 J
Xylenes (total)	500	1,180 J	ND (0.903) UJ

bgs = below ground surface

Method detection limits are shown in parentheses.

All results, cleanup levels, and method detection limits are in micrograms/kilogram (µg/kg).

ND = Analyte not detected above the associated method detection limit.

J = Sample concentration is estimated

UJ = Analyte not detected above the associated method detection limit and the method detection limit is estimated.

Results shown in bold are above the NCDENR Soil-to-Groundwater Cleanup Level

Only results for detected analytes have been reported.

Table 4-5

**Summary of Qualified Soil Analytical Results  
Semi-Volatile Organic Compounds, 7 - 8 feet bgs  
November 27, 2000  
Abbott Laboratories, Laurinburg, North Carolina**

Analyte	NCDENR Soil-to-Groundwater Cleanup Levels	Sample ID	
		G8	G19
Acenaphthene	8	0.474	0.178 J
Fluorene	44	0.699	ND (0.00883)
2-Methylnaphthalene	3	<b>5.17</b>	1.38
Phenanthrene	60	1.41	0.457
Pyrene	286	0.212 J	ND (0.00735)

C6H5N  
11.2

bgs = below ground surface

Method detection limits are shown in parentheses.

All results, standards, and method detection limits are in micrograms/gram ( $\mu\text{g/g}$ ).

ND = Analyte not detected above method detection limit.

J = Sample concentration is estimated

Results shown in bold are above the NCDENR Soil-to-Groundwater Cleanup Level

Only results for detected analytes have been reported.

Table 4-6

**Summary of Qualified Analytical Results  
Groundwater Screening Samples, BTEX, 15 and 35 ft bgs  
October 3, 2000  
Abbott Laboratories, Laurinburg, North Carolina**

Sample ID	Analyte and Results			
	Benzene (1)	Toluene (1000)	Ethylbenzene (29)	Xylenes (530)
W-2s	ND (1.0)	ND (1.1) U	ND (1.0)	ND (2.0)
W-2d	ND (1.0)	ND (1.6) U	ND (1.0)	ND (2.0)
W-3s	ND (1.0)	ND (1.4) U	ND (1.0)	ND (2.0)
W-3d	ND (1.0)	ND (1.8) U	ND (1.0)	ND (2.0)
W-4s	ND (1.0)	ND (1.5) U	ND (1.0)	ND (2.0)
W-4d	ND (1.0)	ND (1.4) U	ND (1.0)	ND (2.0)
W-5s	<b>60</b>	ND (6.0) U	26	5.7
W-5s (dup.)	<b>60</b>	ND (5.7) U	28	6.6
W-5d	<b>1.6</b>	ND (3.8) U	ND (1.0)	ND (2.0)
W-6s	ND (1.0)	ND (2.7) U	ND (1.0)	ND (2.0)
W-6d	ND (1.0)	ND (4.1) U	ND (1.0)	ND (2.0)
W-7s	ND (1.0)	ND (1.2) U	ND (1.0)	ND (2.0)
W-7d	ND (1.0)	ND (3.5) U	ND (1.0)	ND (2.0)
W-8s	ND (1.0)	ND (1.6) U	ND (1.0)	ND (2.0)
W-8d	ND (1.0)	ND (3.2) U	ND (1.0)	ND (2.0)
W-9s	ND (1.0)	ND (1.0)	ND (1.0)	ND (2.0)
W-9s (dup.)	ND (1.0)	ND (3.0) U	ND (1.0)	ND (2.0)
W-9d	ND (1.0)	ND (1.7) U	ND (1.0)	ND (2.0)
W-10s	ND (1.0)	ND (1.4) U	ND (1.0)	ND (2.0)
W-10d	<b>3.2</b>	ND (2.7) U	ND (1.0)	ND (2.0)
W-11s	ND (1.0)	ND (1.8) U	ND (1.0)	ND (2.0)
W-11d	<b>1.5</b>	ND (2.5) U	ND (1.0)	ND (2.0)
W-12s	<b>4.0</b>	ND (1.0)	ND (1.0)	ND (2.0)
W-12d	<b>2.6</b>	ND (1.1) U	ND (1.0)	ND (2.0)

NCDENR Groundwater Standards are shown in parentheses below analyte.

All results, standards, and reporting limits are in micrograms/liter (µg/L).

W-2s = sample collected at 15 feet bgs

W-2d = sample collected at 35 feet bgs

Laboratory reporting limits are shown in parentheses.

ND = Analyte not detected above laboratory reporting limits.

U = Blank contamination exists. The sample quantitation limit has been elevated to the concentration found in the sample and the sample has been designated as not present above this limit (ND).

Results shown in bold are above the NCDENR Groundwater Standards.

Table 4-7

**Summary of Qualified Analytical Results  
Groundwater Monitoring Well Samples, BTEX  
December 7, 2000  
Abbott Laboratories, Laurinburg, North Carolina**

Sample ID	Analyte and Results			
	Benzene (1)	Toluene (1000)	Ethylbenzene (29)	Xylenes (530)
FR-3d	<b>2.0</b>	ND (1.0)	ND (1.0)	ND (2.0)
FR-6d	<b>17</b>	ND (1.0)	2.2	ND (2.0)
FR-6d (dup.)	<b>17</b>	ND (1.0)	2.2	ND (2.0)
FR-7d	ND (1.0)	ND (1.0)	ND (1.0)	ND (2.0)
FR-8d	ND (1.0)	ND (1.0)	ND (1.0)	ND (2.0)
FR-9d	ND (1.0)	ND (1.0)	ND (1.0)	ND (2.0)

NCDENR Groundwater Standards are shown in parentheses below analyte.  
 Laboratory reporting limits are shown in parentheses.  
 All results, standards, and reporting limits are in micrograms/liter ( $\mu\text{g/L}$ ).  
 ND = Analyte not detected above laboratory reporting limits  
 Results shown in bold are above the NCDENR Groundwater Standards.

**APPENDIX A**  
**SUMMARY OF FIELD PROCEDURES**

**APPENDIX A**  
**FIELD PROCEDURES**

This appendix briefly describes the field procedures used in conducting the phase II site characterization. The procedures pertain to direct-push probing, well installation, sample collection and handling, field measurements, equipment decontamination, and waste management.

**A.1      Soil Boring and Sampling**

Soil borings were advanced to collect samples for laboratory analysis. A truck-mounted Geoprobe™ was used to collect soil samples from the area surrounding the former UST pit. The Geoprobe™ was positioned over the selected sampling point and a decontaminated closed piston sampler was advanced to the prescribed depth using hydraulically-applied static force and a percussion hammer. A new cellulose acetate butyrate (CAB) liner was sealed within the sampler by the closed piston tip, which locks into the cutting shoe. At the desired depth, the piston was unlocked allowing it to retract into the sample tube and the sampler was driven through the prescribed sampling interval. The sampling tools were then retrieved and the soil sample was handled as described in Section A.1.1 and A.1.2.

**A.1.1      Grab Soil Sample Collection**

Upon retrieval at the surface, the soil sampler was opened, exposing the soil in the sample tube and allowing the CAB liner to be removed from the closed piston sampler. Soil in the polymer liner was then exposed by splitting the liner with a clean knife blade. The sampler wearing new, disposable nitrile gloves then immediately prepared the sample for laboratory analysis. The samples for TPH and SVOCs analysis were transferred directly from the sample tubing into a clean 4-oz sample jar that was filled completely and sealed with a Teflon-lined cap. Upon sealing, each sample was labeled and immediately placed into an insulated cooler containing ice for storage. Procedures used to manage samples after collection are described in Section A.10.

### A.1.2 En Core® Soil Sample Collection

Samples for VOCs analysis were collected using an En Core® sampling device. The En Core® sampling device was prepared for sample collection according to the manufacturer's sampling procedures. Upon retrieval of the CAB liner, using the En Core® T-Handle, the sampler was pushed into the soil until the coring body was completely full. An o-ring inside the En Core® T-Handle was forced into the viewing hole of the handle indicating that the sampler was full. The En Core® sampler was removed from the soil liner. While the coring body was still on the T-Handle it was capped and locked into place. The capped sampler was removed from the T-Handle, labeled, and placed in a plastic bag and immediately placed into an insulated cooler containing ice for storage. Procedures used to manage samples after collection are described in Section A.10.

### A.2 Groundwater Screening

A truck-mounted Geoprobe™ was used to collect groundwater samples for laboratory analysis. The Geoprobe™ was positioned over the selected sampling point and a decontaminated screen point sampler was advanced to the prescribed depth using hydraulically-applied static force and a percussion hammer. When the sampler reached the desired depth, the wire-wound screen was exposed to permit formation water to enter the sampling assembly. A clean Waterra™ tubing system was fully inserted into the assembly by the sampling team. Once groundwater had entered the tubing, the water was transferred directly from the tubing into three 40-mL vials by gravity flow. The vials were completely filled and sealed without headspace using Teflon-lined septum caps. The vials were placed into an insulated cooler containing ice for storage. Procedures used to manage samples after collection are described in Section A.10.

When sample collection was completed at a particular depth, the sampler assembly was removed from the probe hole. Another decontaminated screen point sampler assembly was then inserted into the probe hole and advanced to the next desired depth interval. Following the completion of the sampling the probe hole was immediately abandoned by grouting as described in Section A.12.

### A.3 Well Installation

One shallow and four deep, single-cased wells were installed at the site. Installation procedures are summarized below. All drill cuttings and fluids generated during well construction were containerized in 55-gallon drums and staged on-site as described in Section A.13.

#### A.3.1 Hollow Stem Auger

The shallow, single-cased well boring was advanced by a truck-mounted drilling rig using a hollow stem auger (HSA). Following completion of drilling, an assembly of two-inch ID, flush-threaded, Schedule 40, PVC casing and 0.010-inch factory-slotted screen was inserted into the well boring. All PVC casing and screen was new and received from the manufacturer sealed in protective packaging. Five feet of well screen was used in the shallow well. A filter pack consisting of clean, No. 1 grade sand was placed around the well screen. The filter pack extended from the bottom of each boring to at least one foot above the top of the screen. A seal of bentonite pellets at least one-foot thick was placed above the filter pack. The boring was then filled to the ground surface. The above grade well was secured with a riser end cap and a lockable metal outer casing. A concrete pad was formed around the well head for additional protection.

#### A.3.2 DPT

The deep, single-cased wells were advanced using DPT. The probe rods were first driven to 36 feet bgs with DPT using 2.125-inch outside diameter (OD) probe rods. The 0.5-inch inside diameter by 1.375-inch OD prepacked screen was lowered into the rods by attaching threaded 0.5-inch Schedule 80 PVC. In each well, a filter pack consisting of clean sand was placed to a level of 2 feet above the prepacked filter through the probing rods. A 2-foot bentonite seal was then placed above the filter pack and each well was grouted and terminated at the land surface. Each at-grade well head was finished with a lockable expansion cap within a watertight access vault or finished above grade with a lockable metal outer casing.

#### A.4 Well Development

All monitoring wells were developed by overpumping using clean Waterra™ foot-valve and tubing systems. Development was continued until the water was free of sediment or until no additional improvement in quality was apparent. Development water was contained and managed as discussed in Section A.13.

#### A.5 Surveying

All soil borings were located relative to permanent site features using an engineer's tape measure accurate to 0.01 feet. Locations were recorded at the time of soil sampling.

All wells were surveyed following installation using a Total Station Surveying Instrument to establish horizontal and vertical control. Positions of the well locations were established relative to permanent site features. All locations were surveyed to the nearest 0.01-foot. At each monitoring well, the vertical elevation referenced to mean sea level was surveyed to the nearest 0.01-foot. The elevation was established at the measuring point marked on the edge of each uncapped PVC well casing.

#### A.6 Water-Level Measurement

The water-levels in each well were measured to determine the volume of water to be purged prior to groundwater sampling. Water-level measurements were also performed to interpret groundwater flow directions and to estimate hydraulic gradients at the site. The depth to water in each monitoring well was measured with a clean battery operated water-level indicator. The measuring point marked on the top of each PVC well casing served as the reference point. To minimize errors, the measurement was repeated until two consecutive readings agreed within 0.01 foot. Results were recorded in the field log book. For consistency between the wells, one observer using a single water-level indicator measured the depth to water.

Prior to moving to another well the water-level indicator was decontaminated as described in Section A.11.2.

#### A.7 Well Purging

Prior to groundwater sampling, each well was purged to ensure that water representative of the aquifer was collected. Each monitoring well was purged prior to sample collection by removing three well volumes of water or until enough water had been removed to leave the well dry. Purging was performed using a clean Waterra™ foot-valve and tubing system. The following general procedures were followed in each case:

First, the length of the water column in each well was calculated based on the well depth and depth to water measured in the well prior to beginning purging. The length of the water column was then converted to a volume measurement by considering the well diameter. Multiplying the resulting value by three established the amount of water to be purged from the well.

Next, purging was initiated and water from the Waterra™ tubing was collected in a graduated bucket to measure the amount of water removed. Purging continued until the required three well volumes had been removed or the well had been pumped dry. The time and the volume of water removed were recorded in the field log book.

Immediately upon the completion of purging, samples were collected as described in Section A.8. All purge water was managed as described in Section A.13.

#### A.8 Groundwater Sampling

At each well, sampling team members wore new, disposable nitrile gloves. Small diameter Waterra™ tubing and foot-valves were used to collect the water samples from the wells. The samples for VOCs analysis were collected in three clean, labeled, 40-mL glass vials that were completely filled and sealed without headspace using Teflon-lined septum caps. The

sample vials typically contain hydrochloric acid for preservation of the sample. However, in some cases it was noted that calcium carbonate in the samples was reacting with the acid causing air bubbles in the sample. In such cases, the sample was discarded and the samples were collected a second time in vials without hydrochloric acid. Immediately upon sample collection, the vials were placed into an insulated cooler containing wet ice for storage. Procedures used to manage samples after collection are described in Section A.10.

#### **A.9 Field Quality Control Samples**

Four types of quality control (QC) samples were prepared and submitted to the analytical laboratory with the field samples. The QC samples, which were used to verify that all sampling and analytical techniques were performed properly, included trip blanks, equipment blanks, distilled water blanks, and blind duplicates.

##### **A.9.1 Trip Blank**

A trip blank is a VOC sample vial filled in the laboratory with analyte-free water, transported to the site, handled like a sample, and returned to the laboratory for analysis. Trip blanks were not opened in the field. The trip blank for soil samples were the same as for water samples. One trip blank accompanied every cooler of soil and water samples sent to the laboratory for the analysis of VOCs. Trip blanks were analyzed for VOCs only.

##### **A.9.2 Equipment Blank**

Equipment blanks are analyte-free water that is poured through a sampling device, transferred to a sample bottle, and transported to a laboratory for analysis. Equipment blanks were prepared for the tubing used to collect the groundwater samples. The blanks were analyzed for VOCs (BTEX).

##### **A.9.3 Distilled Water Blank**

It was noted that several samples for VOCs analysis were showing characteristics of a reaction between the hydrochloric acid preservative and calcium carbonate in the sample. These samples were discarded and collected a second time in vials without hydrochloric acid. The acid in the vials was washed out with distilled water. Because the distilled water could potentially be contaminated, a distilled water blank was collected for laboratory analysis of VOCs (BTEX).

##### **A.9.4 Blind Duplicates**

Blind duplicate groundwater samples were collected at sampling locations that were most likely contaminated. The duplicates were used to demonstrate acceptable method precision by the laboratory at the time of analysis. The duplicates were analyzed for VOCs (BTEX).

#### **A.10 Sample Documentation, Packaging, and Shipping**

The following procedures were used to manage the field samples and QC samples following collection. All samples were classified as environmental samples for shipping purposes.

##### **A.10.1 Sample Custody and Documentation**

Once collected, all samples remained in the possession of the sampling team or were locked in an on-site location at all times prior to transfer of custody for shipment to the laboratory. Prior to packaging, each sample's unique identification number was entered on the chain of custody record along with the names of the samplers, type of sample, time of collection, number of containers, requested analyses, and any sample preservation used. A separate chain of custody accompanied each sample-shipping container.

#### **A.10.2 Sample Packaging**

The following procedure was followed in preparing each sample-shipping container. A medium-sized, insulated cooler was selected and its drain plug was sealed with duct tape on both the interior and exterior sides of the cooler. The cooler was lined with absorbent material and a large plastic bag. Each sample container was placed in an appropriately sized plastic freezer bag and sealed. Several layers of sample bottles were then placed in the cooler with fresh ice, double-bagged in gallon-size plastic freezer bags, added on top of and below each layer. The signed chain of custody was inserted into a plastic freezer bag and placed on the interior of the cooler. The cooler lid was taped shut and secured with signed custody seals. Appropriate shipping labels were then affixed to the top of the cooler.

#### **A.10.3 Sample Shipment**

The packaged samples were delivered to a commercial overnight carrier for shipment to the laboratory on a priority basis. A copy of each air bill was retained to document the shipment.

#### **A.11 Equipment Decontamination**

All non-dedicated, non-disposable sampling equipment was decontaminated between each use. A plastic-lined decontamination pad was constructed on the east side of the facility and served as a central decontamination area. All large equipment was decontaminated in this area. Most small equipment (i.e., instrument probes) was decontaminated at each work site. All wash and rinse water was containerized in 55-gallon drums and left on-site for temporary storage pending proper disposal.

##### **A.11.1 Large Equipment**

Large equipment included all downhole probing tools that came into contact with soil during probing, soil sampling, and well installation. After each use, this equipment was

initially decontaminated at the work site by physically removing and containing the bulk of the soil cuttings adhering to the drilling rods and augers. The equipment was then transported to the central decontamination area for further cleaning using a high-pressure wash from the site's potable water supply. Soil samplers were also scrubbed in a phosphate-free soap and water solution followed by rinsing liberally in potable water. Finally, the decontaminated equipment was allowed to air dry.

##### **A.11.2 Small Equipment**

Small equipment was decontaminated by washing in a phosphate-free soap and water solution. The equipment was then rinsed in distilled water and allowed to air dry.

#### **A.12 Borehole Abandonment**

After the initial soil sampling and groundwater screening sample collection, all test borings were abandoned by cement grout. The prepared grout mix was added to the boreholes using the gravity fill method. A small amount of additional grout was placed at the ground surface to offset potential shrinkage or settlement.

#### **A.13 Management of Investigation Derived Waste**

Investigation-derived waste (IDW) included soil and water generated during soil sampling, well installation, well purging, and equipment decontamination. This IDW was contained in 55-gallon, DOT-approved, steel drums. Upon filling, each drum was sealed and labeled as to point of origination, date of accumulation, and contents. The drums were staged on-site within the fenced portion of the facility pending proper disposal. IDW also included nonhazardous, disposable sampling equipment which was bagged and disposed in a municipal landfill.

**WELL CONSTRUCTION RECORD** WELL CONTRACTOR: Chris Bost  
 WELL CONTRACTOR CERTIFICATION #: 2736  
 FR 3D STATE WELL CONSTRUCTION PERMIT: \_\_\_\_\_

1. WELL USE (check Applicable box): Residential  Municipal  Industrial  Agricultural  Monitoring   
 Recovery  Heat Pump Water Injection  Other  If Other, List Use: \_\_\_\_\_

2. WELL LOCATION: (Show sketch of the location below)  
 Nearest Town: Laurinburg County: Scotland

Highway 15/501 & 401  
(Road Name and Numbers, Community, or Subdivision and Lot No.)  
 3. OWNER Abbott Laboratories  
 Address Highway 15/501 & 401 DEPTH \_\_\_\_\_ DRILLING LOG \_\_\_\_\_  
(Street or Route No.) From To Formation Description  
Laurinburg, NC 28352 See Geologist Notes  
City or Town State Zip Code

4. DATE DRILLED 11/27/00  
 5. TOTAL DEPTH 35  
 6. CUTTINGS COLLECTED YES  NO   
 7. DOES WELL REPLACE EXISTING WELL? YES  NO   
 8. STATIC WATER LEVEL Below Top of Casing: \_\_\_\_\_ FT.  
(Use "-" if Above Top of Casing)  
 9. TOP OF CASING IS 2.5 FT. Above Land Surface\*  
\*Top of casing terminated prior below land surface requires a variance in accordance with 15A NCAC 2C .0118  
 10. YIELD (gpm): \_\_\_\_\_ METHOD OF TEST \_\_\_\_\_  
 11. WATER ZONES (depth): \_\_\_\_\_

12. CHLORINATION: Type \_\_\_\_\_ Amount \_\_\_\_\_ If additional space is needed use back of form  
 13. CASING: \_\_\_\_\_

LOCATION SKETCH  
 (Show direction and distance from at least two State Roads, or other map reference points)

Depth	Diameter	Wall Thickness or Weight/Ft.	Material
From <u>0</u> To <u>29</u> Ft.	<u>0.5</u>	<u>Sch 80</u>	<u>PVC</u>
From _____ To _____ Ft.			
From _____ To _____ Ft.			

14. GROUT:

Depth	Material	Method
From <u>0</u> To <u>25</u> Ft.	<u>Portland</u>	<u>Pour</u>
From <u>25</u> To <u>27</u> Ft.	<u>Bentonite</u>	<u>Pour</u>

15. SCREEN:

Depth	Diameter	Slot Size	Material
From <u>29</u> To <u>35</u> Ft.	<u>0.5</u> in.	<u>0.01</u> in.	<u>PVC</u>
From _____ To _____ Ft.			
From _____ To _____ Ft.			

16. SAND/GRAVEL PACK:

Depth	Size	Material
From <u>27</u> To <u>29</u> Ft.	<u>#3</u>	<u>Silica</u>
From <u>29</u> To <u>35</u> Ft.	<u>20/40</u>	<u>Silica</u>

17. REMARKS: FR 3D

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

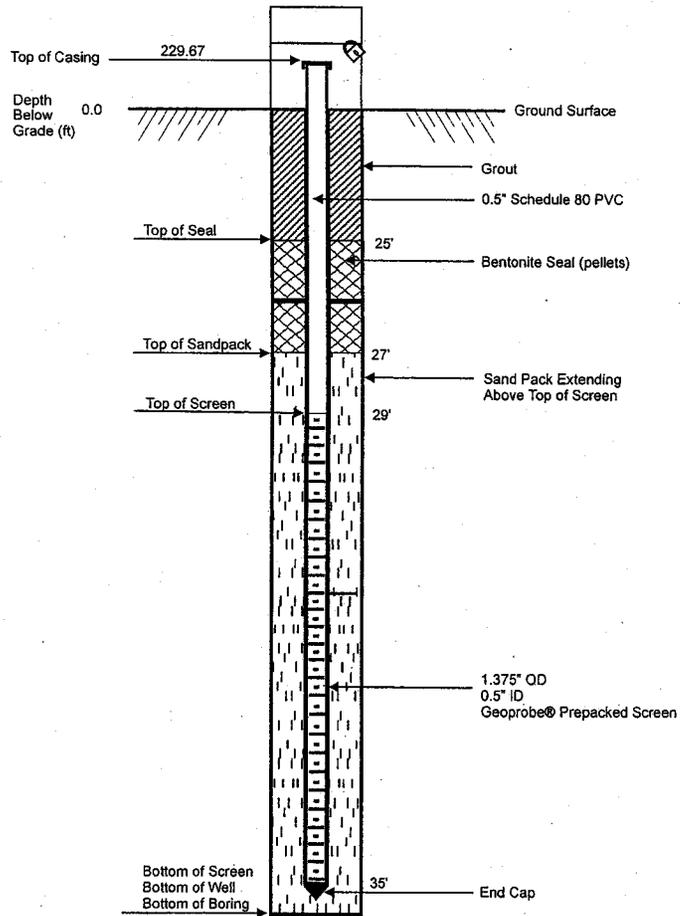
FOR OFFICE USE ONLY  
 Quoted No: \_\_\_\_\_  
 Serial No. \_\_\_\_\_

Chris Bost January 30, 2001  
 SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE  
 Submit original to Division of Water Quality, Groundwater Section within 30 days  
 GW-1 REV. 03/2000

APPENDIX B  
 MONITORING WELL INSTALLATION RECORDS

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section  
 1636 Mail Service Center - Raleigh, N.C. 27699-1636-Phone (919) 733-3221

Monitoring Well Schematic



FR-3d

(Not to Scale)

000150C-KL-RTP

**WELL CONSTRUCTION RECORD** WELL CONTRACTOR: PARRATT-WOLFF, INC.  
 WELL CONTRACTOR CERTIFICATION #: 2487/A. CHAPEL  
 STATE WELL CONSTRUCTION PERMIT #: \_\_\_\_\_

1. WELL USE (Check Applicable Box): Residential  Municipal  Industrial  Agricultural  Monitoring   
 Recovery  Heat Pump Water Injection  Other  (If Other, List Use: \_\_\_\_\_)

2. WELL LOCATION: (Show sketch of the location below)  
 Nearest Town: LAURINBURG County: SCOTLAND

JCT. RTE 401 & 15/501  
 (Road Name and Numbers, Community, or Subdivision and Lot No.)

3. OWNER ABBOTT LABORATORIES DRILLING LOG DEPTH  
 Address JCT. RTE. 401 & 15/501 From To Formation Description  
 (Street or Route No.)  
LAURINBURG NC 28352 NO SAMPLING  
 City or Town State Zip Code

4. DATE DRILLED 11/27/00  
 5. TOTAL DEPTH 8.0'

6. CUTTINGS COLLECTED YES  NO   
 7. DOES WELL REPLACE EXISTING WELL? YES  NO   
 8. STATIC WATER LEVEL Below Top of Casing: \_\_\_\_\_ FT.  
 (Use 'x' if Above Top of Casing)

9. TOP OF CASING IS \_\_\_\_\_ FT. Above Land Surface\*  
 \*Top of casing terminated at or below land surface requires a variance in accordance with 15A NCAC 2C.0118

10. YIELD (gpm): \_\_\_\_\_ METHOD OF TEST \_\_\_\_\_

11. WATER ZONES (depth): \_\_\_\_\_

12. CHLORINATION: Type \_\_\_\_\_ Amount \_\_\_\_\_  
 13. CASING: \_\_\_\_\_ If additional space is needed use back of form

LOCATION SKETCH  
 (Show direction and distance from at least two State Roads, or other map reference points)

From	To	Depth	Diameter	Wall Thickness or Weight/Ft.	Material
0	3		2"	SCH40	PVC

From	To	Depth	Material	Method
0	1		BENTONITE	TREMIE
1	2		PORTLAND	TREMIE

From	To	Depth	Diameter	Slot Size	Material
3	8		2 in.	.010 in.	PVC

From	To	Depth	Size	Material
2	8		#1	SAND

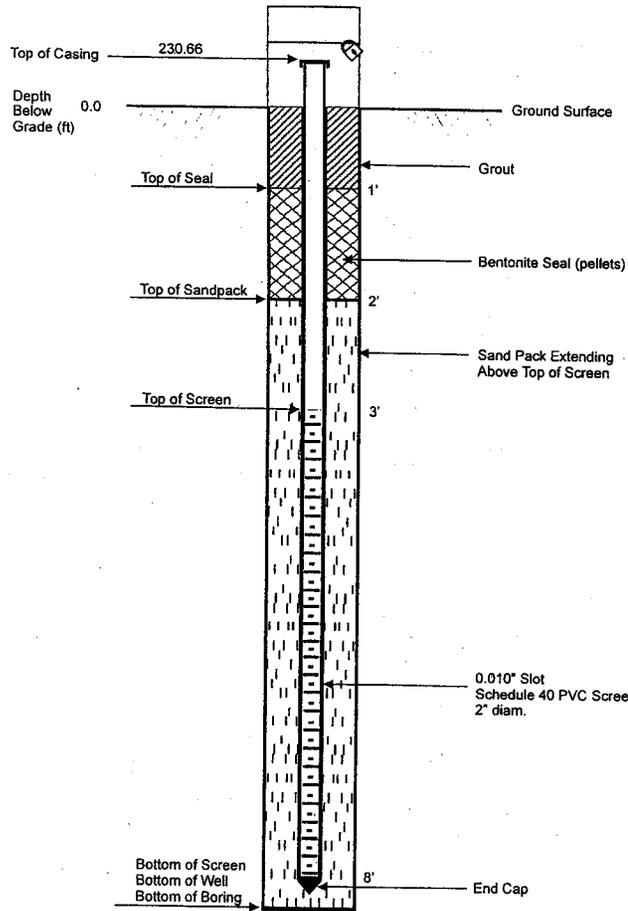
17. REMARKS: \_\_\_\_\_

18. I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C. WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

FOR OFFICE USE ONLY  
 Quad No: \_\_\_\_\_  
 Serial No. \_\_\_\_\_

SIGNATURE OF PERSON CONSTRUCTING THE WELL: [Signature] DATE: 11/30/01  
 Submit original to Division of Water Quality, Groundwater Section within 30 days

Monitoring Well Schematic



FR-6

(Not to Scale)

000153C-KL RTP

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section  
1636 Mall Service Center - Raleigh, N.C. 27669-1636-Phone (919) 733-3221

**WELL CONSTRUCTION RECORD**

WELL CONTRACTOR: Chris Best  
WELL CONTRACTOR CERTIFICATION #: 2736  
STATE WELL CONSTRUCTION PERMIT#: \_\_\_\_\_

FR 7D

1. WELL USE (Check Appropriate Box): Residential  Municipal  Industrial  Agricultural  Monitoring   
Recovery  Heat Pump Water Injection  Other  If Other, List Use: \_\_\_\_\_

2. WELL LOCATION: (Show sketch of the location below)  
Nearest Town: Laurinburg County: Scotland  
Highway 15/501 & 401

3. OWNER Abbott Laboratories DEPTH From To DRILLING LOG Formation Description  
Address Highway 15/501 & 401 See Geologist Notes  
Laurinburg, NC 28352  
City or Town State Zip Code

4. DATE DRILLED 11/27/00  
5. TOTAL DEPTH 35  
6. CUTTINGS COLLECTED YES  NO   
7. DOES WELL REPLACE EXISTING WELL? YES  NO   
8. STATIC WATER LEVEL Below Top of Casing: \_\_\_\_\_ FT.  
9. TOP OF CASING IS 0 FT. Above Land Surface\*  
\*Top of casing terminated after below land surface requires a variance in accordance with 15A NCAC 2C .0118  
10. YIELD (gpm): \_\_\_\_\_ METHOD OF TEST \_\_\_\_\_  
11. WATER ZONES (depth): \_\_\_\_\_

12. CHLORINATION: Type \_\_\_\_\_ Amount \_\_\_\_\_ If additional space is needed use back of form

13. CASING: LOCATION SKETCH (Show direction and distance from at least two State Roads, or other map reference points)  
From 0 To 29 Ft. Diameter 0.5 Wall Thickness or Weight/Pt. Sch 80 Material PVC

14. GROUT: From 0 To 25 Ft. Material Portland Method Pour  
From 25 To 27 Ft. Material Bentonite Method Pour

15. SCREEN: From 29 To 35 Ft. Diameter 0.5 in. Slot Size 0.01 in. Material PVC  
From \_\_\_\_\_ To \_\_\_\_\_ Ft. \_\_\_\_\_ in. \_\_\_\_\_ in. \_\_\_\_\_ in.

16. SAND/GRAVEL PACK: From 27 To 29 Ft. Size #3 Material Silica  
From 29 To 35 Ft. 20/40 Silica

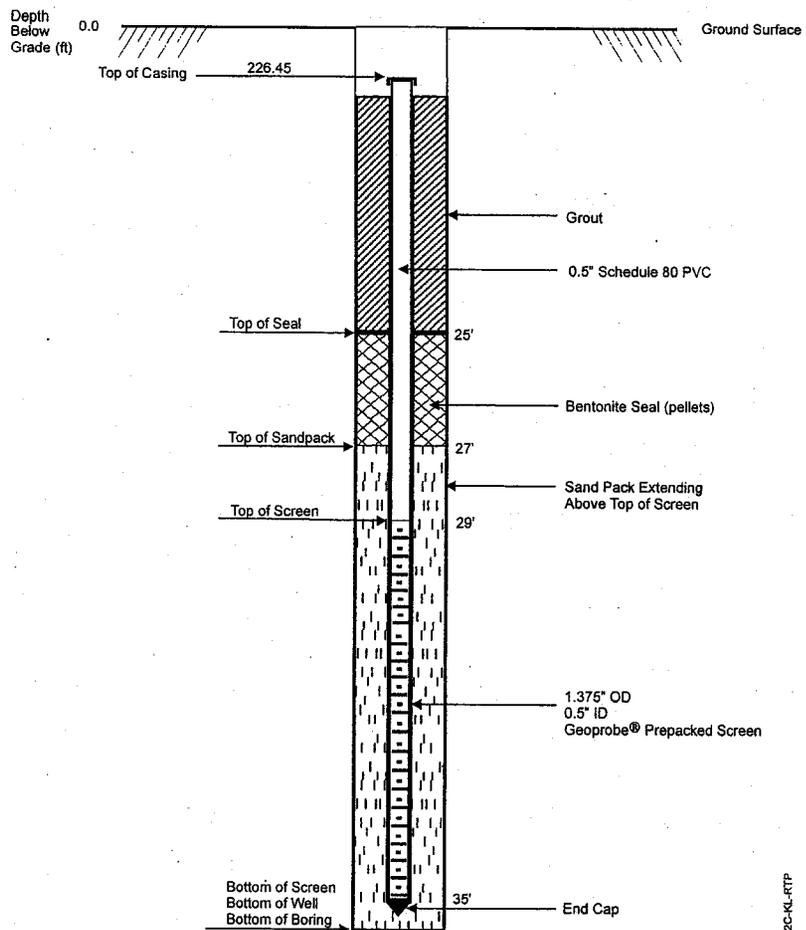
17. REMARKS: FR 7D

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

FOR OFFICE USE ONLY  
Quad No: \_\_\_\_\_  
Serial No. \_\_\_\_\_

Chris Best January 30, 2001  
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE  
Submit original to Division of Water Quality, Groundwater Section within 30 days  
GW-1 REV. 03/2000

Monitoring Well Schematic



FR-7d

(Not to Scale)

001E2C-KL-RTP

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section  
1636 Mail Service Center - Raleigh, N.C. 27699-1636-Phone (919) 733-3221

**WELL CONSTRUCTION RECORD** WELL CONTRACTOR: Chris Best  
WELL CONTRACTOR CERTIFICATION #: 2736  
FR 8D STATE WELL CONSTRUCTION PERMIT#: \_\_\_\_\_

- WELL USE (Check Applicable Box): Residential  Municipal  Industrial  Agricultural  Monitoring   
Recovery  Heat Pump Water Injection  Other  If Other, List Use: \_\_\_\_\_
- WELL LOCATION: (Show sketch of the location below)  
Nearest Town: Laurinburg County: Scotland  
Highway 15/501 & 401  
(Road Name and Numbers, Community, or Subdivision and Lot No.)
- OWNER: Abbott Laboratories  
Address: Highway 15/501 & 401 See Geologist NOTES  
(Street or Route No.)  
Laurinburg, NC 28352  
City or Town State Zip Code
- DATE DRILLED: 11/27/00
- TOTAL DEPTH: 35
- CUTTINGS COLLECTED: YES  NO
- DOES WELL REPLACE EXISTING WELL? YES  NO
- STATIC WATER LEVEL Below Top of Casing: \_\_\_\_\_ FT.  
(Use "-" if Above Top of Casing)
- TOP OF CASING IS 2.5 FT. Above Land Surface\*  
\*Top of casing terminated after below land surface requires a variance in accordance with 15A NCAC 2C .0118
- YIELD (gpm): \_\_\_\_\_ METHOD OF TEST: \_\_\_\_\_
- WATER ZONES (depth): \_\_\_\_\_

12. CHLORINATION: Type \_\_\_\_\_ Amount \_\_\_\_\_ If additional space is needed use back of form

13. CASING:

From	To	Depth	Diameter	Wall Thickness or Weight	Material
From <u>0</u>	To <u>29</u>	Fl.	<u>0.5</u>	Sch 80	PVC
From _____	To _____	Fl.	_____	_____	_____
From _____	To _____	Fl.	_____	_____	_____

LOCATION SKETCH  
(Show direction and distance from at least two State Roads, or other map reference points)

14. GROUT:

From	To	Depth	Material	Method
From <u>0</u>	To <u>25</u>	Fl.	Portland	Pour
From <u>25</u>	To <u>27</u>	Fl.	Bentonite	Pour

15. SCREEN:

From	To	Depth	Diameter	Slot Size	Material
From <u>29</u>	To <u>35</u>	Fl.	<u>0.5</u>	<u>0.01</u>	in. PVC
From _____	To _____	Fl.	_____	_____	_____
From _____	To _____	Fl.	_____	_____	_____

16. SAND/GRAVEL PACK:

From	To	Depth	Size	Material
From <u>27</u>	To <u>29</u>	Fl.	<u>#3</u>	Silica
From <u>29</u>	To <u>35</u>	Fl.	<u>20/40</u>	Silica

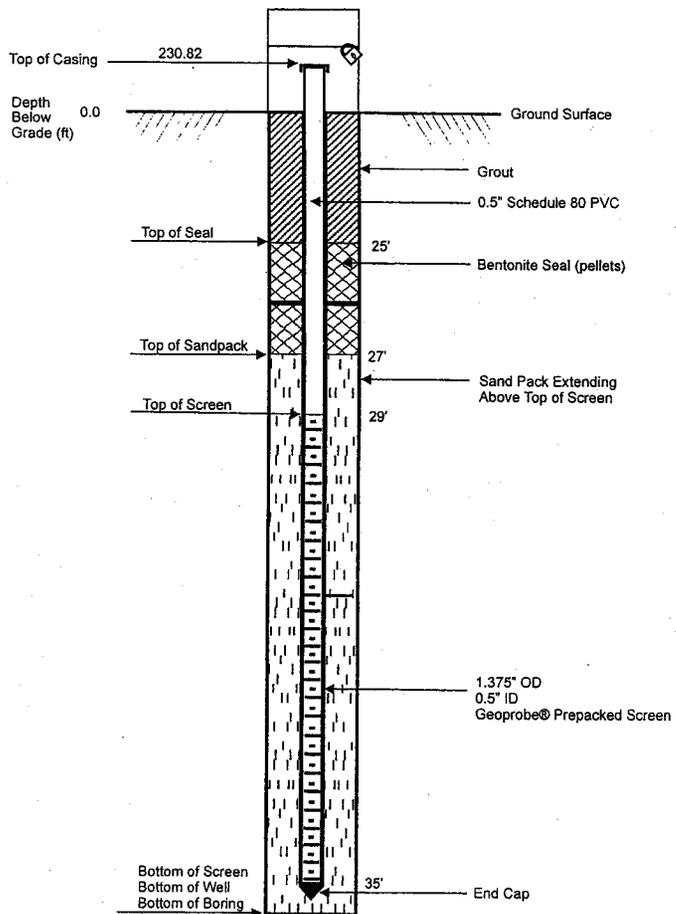
17. REMARKS: FR 8D

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

FOR OFFICE USE ONLY  
Quad No: \_\_\_\_\_  
Serial No. \_\_\_\_\_

Chris Best January 30, 2001  
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE  
Submit original to Division of Water Quality, Groundwater Section within 30 days  
GW-1 REV. 03/2000

Monitoring Well Schematic



FR-8d

(Not to Scale)

000148C-RL-RTP

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section  
1636 Mail Service Center - Raleigh, N.C. 27699-1636-Phone (919) 733-3221

**WELL CONSTRUCTION RECORD** WELL CONTRACTOR: Chris Bost  
FR 9D WELL CONTRACTOR CERTIFICATION #: 2736  
STATE WELL CONSTRUCTION PERMIT#: \_\_\_\_\_

1. WELL USE (Check Appropriate Box): Residential  Municipal  Industrial  Agricultural  Monitoring   
Recovery  Heat Pump Water Injection  Other  If Other, List Use: \_\_\_\_\_

2. WELL LOCATION: (Show sketch of the location below)  
Nearest Town: Laurinburg County: Scotland

3. OWNER: Abbott Laboratories (Road Name and Numbers, Community, or Subdivision and Lot No.)  
Address: Highway 15/501 & 401 (Street or Route No.)  
Laurinburg, NC 28352 City or Town State Zip Code  
DEPTH From To DRILLING LOG Formation Description  
See Geologist Notes

4. DATE DRILLED 11/27/00  
5. TOTAL DEPTH 35  
6. CUTTINGS COLLECTED YES  NO   
7. DOES WELL REPLACE EXISTING WELL? YES  NO   
8. STATIC WATER LEVEL Below Top of Casing: \_\_\_\_\_ FT.  
9. TOP OF CASING IS 2.5 FT. Above Land Surface\* (Use "-" if Above Top of Casing)  
\*Top of casing terminated above below land surface requires a variance in accordance with 15A NCAC 2C .0118  
10. YIELD (gpm): \_\_\_\_\_ METHOD OF TEST \_\_\_\_\_  
11. WATER ZONES (depth): \_\_\_\_\_  
12. CHLORINATION: Type \_\_\_\_\_ Amount \_\_\_\_\_ If additional space is needed use back of form

13. CASING: LOCATION SKETCH (Show direction and distance from at least two State Roads, or other map reference points)  
From 0 To 29 Ft. Diameter 0.5 Ft. Wall Thickness or Weight/Ft. Sch 80 Material PVC

14. GROUT: From 0 To 25 Ft. Material Portland Method Pour  
From 25 To 27 Ft. Material Bentonite Method Pour

15. SCREEN: From 29 To 35 Ft. Diameter 0.5 in. Slot Size 0.01 in. Material PVC  
From \_\_\_\_\_ To \_\_\_\_\_ Ft. Diameter \_\_\_\_\_ in. Slot Size \_\_\_\_\_ in. Material \_\_\_\_\_  
From \_\_\_\_\_ To \_\_\_\_\_ Ft. Diameter \_\_\_\_\_ in. Slot Size \_\_\_\_\_ in. Material \_\_\_\_\_

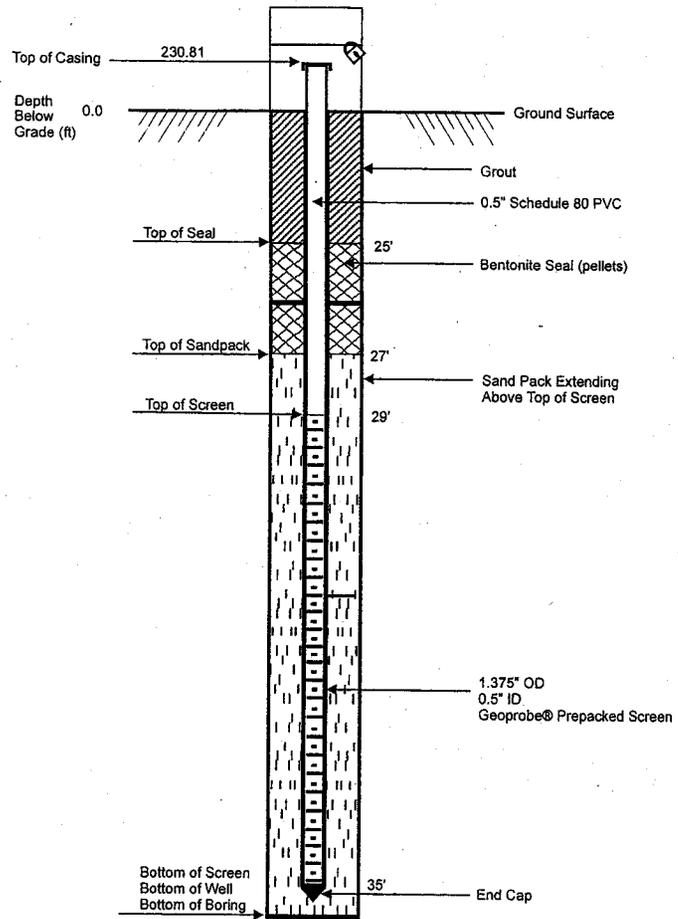
16. SAND/GRAVEL PACK: From 27 To 29 Ft. Depth \_\_\_\_\_ Ft. Size #3 Material Silica  
From 29 To 35 Ft. Depth \_\_\_\_\_ Ft. Size 20/40 Material Silica

17. REMARKS: FR 9D

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

FOR OFFICE USE ONLY  
Cased No: \_\_\_\_\_  
Serial No: \_\_\_\_\_  
SIGNATURE OF PERSON CONSTRUCTING THE WELL: Chris Bost DATE: January 30, 2001  
Submit original to Division of Water Quality, Groundwater Section within 30 days  
GW-1 REV. 03/2000

### Monitoring Well Schematic



FR-9d

(Not to Scale)

000161C-KL-RTP

**APPENDIX C**  
**QUALIFIED ANALYTICAL DATA**

**DATA VALIDATION REPORTS FOR SOIL SAMPLES  
COLLECTED ON OCTOBER 2, 2000**

Abbott Labs, Laurinburg, North Carolina  
January 2000 Fuel Release - Soil Analysis  
Data Validation Report  
URS-Radian, November 2000

#### Introduction

URS-Radian of RTP, NC collected five (5) soil samples at the Abbott Labs facility in Laurinburg, North Carolina on October 2, 2000 and submitted them to STL in Austin, Texas for the analysis of Total Petroleum Hydrocarbons (TPH) by SW-846 8015 (California Luft). The extractable analysis included the determination of diesel, JP-4, kerosene, lubricating oil and Diesel Range Organics (DRO). All analytical results were reported by STL of Austin, Texas under Work Order Number 20010013.

URS-Radian has reviewed the analytical results from the October 2000 sampling event. Accuracy was determined from the review of holding times, spike recoveries, continuing calibration, and blank contamination. Precision was based on the evaluation of laboratory duplicate results. The evaluation of the data was modeled after the *Contract Laboratory Program National Functional Guidelines for Organic Data Review (U.S. EPA, October 1999)*. Sample results have been qualified based on the results of the data review process, as described below.

#### Sample Condition upon Receipt and Holding Times

STL received samples intact and in good condition on October 4, 2000. The temperature of the samples upon receipt at the Austin, Texas laboratory was 1°Celsius. As required by US EPA, samples were extracted within 14 days and analyzed within 40 days of the extraction.

#### Laboratory Control Samples

Laboratory control samples (LCS), also known as blank spikes, are blank samples fortified (spiked) with known concentrations of analyte of interest. The percent recoveries of the LCS are used to assess overall analytical accuracy. Precision is evaluated based on the relative percent difference (RPD) between duplicate results. An evaluation of the LCS results for all analyses indicates that acceptable accuracy and precision were obtained for all target analytes included in the standard cocktail.

#### Blank Contamination

Laboratory blanks are clean liquid and/or solid matrix samples prepared by the analytical laboratory and analyzed in the same manner as the investigative samples. The blanks are used to ensure that the investigative samples are not contaminated during the sample preparation, sample analysis, or from a previous sample analysis (instrument carry-over).

DRO were detected during the TPH analysis of the method blank. Sample specific blank contamination levels were determined for all TPH samples. Sample results that were not significantly greater than that detected in the blank (5 times) have been qualified due to the presence of blank contamination. Affected results have been flagged "ND" and detection limits elevated to the amount present in the sample and flagged with a "U".

Abbott Laboratories, Laurinburg, NC  
January 2000 Fuel Release- Soil Analysis  
Data Validation Report (URS-Radian)  
November 6, 2000

Page 2 of 2

#### Surrogate Spikes

System monitoring compounds (surrogates) are compounds, which are not expected to be detected in the field samples, but which are chemically similar to the organic analytes of interest. Surrogate recoveries are used to assess extraction efficiencies, possible matrix effects, and overall analytical accuracy. Surrogate recoveries met quality control limits for all project samples during the TPH analyses.

#### Matrix Spikes

Matrix spikes (MS) are samples spiked with known concentrations of analytes of interest. MS percent recoveries and duplicate results are used to assess extraction efficiencies, possible matrix effects, and overall analytical accuracy and precision. The criteria for accuracy and precision were met during the MS and MS duplicate analysis of sample G3 for diesel.

#### Calibration

Control limits for initial and continuing instrument calibrations are established to ensure that the instrument is capable of producing accurate quantitative data at the beginning and throughout each of the analyses.

Since the results of the initial calibration were not included in the laboratory report, the evaluation was based on the review of the continuing calibration data. Laboratory specifications were met during all continuing calibrations conducted on instrument GC12 for the TPH methods.

SECTION IV  
Analytical Results

Chromatography  
SW8015-CA LUFT

Client Sample ID	G19	G20	G26
Lab Sample ID	2001001303	2001001304	2001001305
Matrix	Solid	Solid	Solid
Reported As	DRY WEIGHT	DRY WEIGHT	DRY WEIGHT
% Moisture	15.6	13.6	14.1
Date/Time Collected	10/02/2000 16:10	10/02/2000 16:00	10/02/2000 16:17
Date/Time Prepared	10/11/2000 14:00	10/11/2000 14:00	10/11/2000 14:00
Date/Time Analyzed	10/22/2000 20:28	10/22/2000 17:45	10/22/2000 18:26
Dilution Factor	2.0000	1.0000	1.0000
Instrument	GC12	GC12	GC12
Units	ug/g	ug/g	ug/g

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL
Diesel	68334-30-5	194		3.50	0.000	ND		1.70	0.000	ND		1.71	0.000
Diesel Range Organics	DRO	194	B	3.50	0.000	3.65 U, ND JB		1.70	0.000	3.16 U, ND JB		1.71	0.000
Jet Fuel JP4	94114-58-6	ND		3.12	0.000	ND		1.51	0.000	ND		1.53	0.000
Kerosene	8008-20-6	ND		2.77	0.000	ND		1.34	0.000	ND		1.35	0.000
Lubricating oil	8012-95-1	ND		3.50	0.000	ND		1.70	0.000	ND		1.71	0.000

SECTION IV - Analytical Results - 10/27/2000 15:41  
 LIMS Workorder: Laurinberg TPH [20010013] Abbott Laboratories  
 STL Austin

Sample results have been qualified by URS-Radian based on criteria of the data review process, which is modeled after the Contract Laboratory Program National Functional guidelines for Organic Data Review (US EPA, October 1999).

SECTION IV  
Analytical Results

Chromatography  
SW8015-CA LUFT

Client Sample ID	G3	G8
Lab Sample ID	2001001301	2001001302
Matrix	Solid	Solid
Reported As	DRY WEIGHT	DRY WEIGHT
% Moisture	15.6	12.5
Date/Time Collected	10/02/2000 16:40	10/02/2000 16:30
Date/Time Prepared	10/11/2000 14:00	10/11/2000 14:00
Date/Time Analyzed	10/22/2000 14:09	10/22/2000 19:47
Dilution Factor	1.0000	10.0000
Instrument	GC12	GC12
Units	ug/g	ug/g

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL
Diesel	68334-30-5	ND		1.74	0.000	517		16.9	0.000				
Diesel Range Organics	DRO	1.76 U, ND JB		1.74	0.000	517	B	16.9	0.000				
Jet Fuel JP4	94114-58-6	ND		1.55	0.000	ND		15.0	0.000				
Kerosene	8008-20-6	ND		1.37	0.000	ND		13.3	0.000				
Lubricating oil	8012-95-1	ND		1.74	0.000	ND		16.9	0.000				

SECTION IV - Analytical Results - 10/27/2000 15:41  
 LIMS Workorder: Laurinberg TPH [20010013] Abbott Laboratories  
 STL Austin

Sample results have been qualified by URS-Radian based on criteria of the data review process, which is modeled after the Contract Laboratory Program National Functional guidelines for Organic Data Review (US EPA, October 1999).

**DATA VALIDATION REPORT  
FOR GROUNDWATER SCREENING SAMPLES  
COLLECTED ON OCTOBER 3, 2000**

**Abbott Labs, Laurinburg, North Carolina  
Fuel Release- Groundwater Analysis  
Data Validation Report  
URS-Radian, November 2000**

**Introduction**

URS-Radian of RTP, NC collected twenty-four (24) groundwater samples, one (1) equipment blank, and one (1) distilled water blank at the Abbott Labs facility in Laurinburg, North Carolina on October 3, 2000 and submitted them to STL Savannah Laboratories in Tallahassee, Florida for the analysis of volatile organic compounds (VOC), specifically BTEX, by EPA Method 602.

A trip blank was shipped with the samples to the laboratory for the analysis of VOC. All analytical results were reported by STL Savannah of Tallahassee under Work Order Number T0-43257.

URS-Radian has reviewed the analytical results from the October 2000 sampling event. Accuracy was determined from the review of holding times and blank contamination. Precision was based on the evaluation of laboratory and field duplicate results. The evaluation of the data was modeled after the *Contract Laboratory Program National Functional Guidelines for Organic Data Review (U.S. EPA, October 1999)*. Sample results have been qualified based on the results of the data review process, as described below.

**Sample Condition upon Receipt and Holding Times**

STL received samples intact and in good condition on October 4, 2000. Technical holding times were assessed by comparing the sampling dates with that of the preservation and analysis dates. The volatile organic analysis (VOA) vials were not preserved due to a reaction between the hydrochloric acid preservative and calcium carbonate in the samples. VOA vials containing acid were rinsed with distilled water before sampling. The samples for the VOA were analyzed within EPA-established holding time of 7 days for unpreserved samples.

**Laboratory Control Samples**

Laboratory control samples (LCS), also known as blank spikes, are blank samples fortified (spiked) with known concentrations of analyte of interest. The percent recoveries of the LCS are used to assess overall analytical accuracy. Precision is evaluated based on the relative percent difference (RPD) between duplicate results. An evaluation of the LCS results for all analyses indicates that acceptable accuracy and precision were obtained for all target analytes included in the standard cocktail.

**Blank Contamination**

Laboratory blanks are clean liquid and/or solid matrix samples prepared by the analytical laboratory and analyzed in the same manner as the investigative samples. The blanks are used to ensure that the investigative samples are not contaminated during the sample preparation, sample analysis, or from a previous sample analysis (instrument carry-over).

The equipment blank consists of analyte-free water that is poured over or through sampling equipment and collected into the sample vials. Equipment blanks measure contamination potentially caused by improper decontamination of sampling equipment and sample vials.

The distilled water blank is used to assess contamination that was potentially introduced during preparation of the sample vials.

Trip blanks are analyte-free water samples that accompany volatile investigative samples during all stages of shipment, storage, and analysis. The trip blanks are used to assess the potential for artificial introduction of VOC into the investigative samples during the transportation and sample handling processes.

Target analytes were not detected during the VOA of the method, trip, and equipment blank. Toluene was detected during the VOA of the distilled water blank at a concentration of 1.2 micrograms per liter ( $\mu\text{g/l}$ ). Sample results that were not significantly greater (five (5) times) than that detected in the distilled water blank were qualified as not present above the associated level and flagged with a U.

#### Surrogate Spikes

System monitoring compounds (surrogates) are compounds, which are not expected to be detected in the field samples, but which are chemically similar to the organic analytes of interest. Surrogate recoveries are used to assess extraction efficiencies, possible matrix effects, and overall analytical accuracy.

The surrogate recovery for a,a,a-trifluorotoluene was within the laboratory control limits (70-130% recovery) during the VOA if all samples.

#### Field Duplicate Results

After taking blank contamination into account precision was deemed acceptable during the analysis of field sample W-5s and its duplicate W-99 and W-9s and its duplicate W-100.

LOG NO: T0-43257  
Received: 04 OCT 00  
Reported: 10 OCT 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbot-Laurinburg-FR

Sampled By: Client

Code: 141701010

Page 6

#### REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION	LIQUID SAMPLES	DATE/ TIME SAMPLED	
43257-26	W-11s		10-03-00/16:50	
43257-27	W-11d		10-03-00/17:05	
43257-28	Trip Blank 2		10-03-00	
PARAMETER		43257-26	43257-27	43257-28
Purgeable Aromatics (602)				
Benzene, ug/l		<1.0	1.5	<1.0
Toluene, ug/l		<1.8 U	<2.5 U	<1.0
Ethylbenzene, ug/l		<1.0	<1.0	<1.0
Total Xylenes, ug/l		<2.0	<2.0	<2.0
Surrogate - a,a,a-Trifluorotoluene		85 %	85 %	78 %
Prep Date		10.06.00	10.06.00	10.06.00
Analysis Date		10.06.00	10.06.00	10.06.00
Dilution Factor		1	1	1



2846 Industrial Plaza Dr. • Tallahassee, FL 32301 • Tel: 850 878 3994 • Fax: 850 878 9504 • www.stl-inc.com

STL Tallahassee

LOG NO: TO-43257  
Received: 04 OCT 00  
Reported: 10 OCT 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbot-Laurinburg-FR  
Sampled By: Client  
Code: 104301016  
Page 7

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED		
43257-29	Method Blank			
43257-30	Accuracy (%Rec)			
43257-31	Precision (%RPD)			
PARAMETER		43257-29	43257-30	43257-31
Purgeable Aromatics (602)				
Benzene, ug/l	<1.0		100 %	0 %
Toluene, ug/l	<1.0		105 %	4.5 %
Ethylbenzene, ug/l	<1.0		---	---
Total Xylenes, ug/l	<2.0		---	---
Surrogate - a,a,a-Trifluorotoluene	87 %		86 %	---
Prep Date	10.05.00		10.05.00	---
Analysis Date	10.06.00		10.05.00	---
Dilution Factor	1		1	---

Sample Results have been qualified by URS-Radian based on criteria of the data review process, which is modeled after the Contract Laboratory Program National Functional Guidelines for Organic Data Review (U.S. EPA, October 1999).



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STL Tallahassee

LOG NO: TO-43257  
Received: 04 OCT 00  
Reported: 10 OCT 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbot-Laurinburg-FR  
Sampled By: Client  
Code: 141701010  
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION ; QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED		
43257-32	Method Blank #2			
43257-33	Accuracy (%Rec)			
43257-34	Precision (%RPD)			
PARAMETER		43257-32	43257-33	43257-34
Purgeable Aromatics (602)				
Benzene, ug/l	<1.0		100 %	0 %
Toluene, ug/l	<1.0		105 %	4.5 %
Ethylbenzene, ug/l	<1.0		---	---
Total Xylenes, ug/l	<2.0		---	---
Surrogate - a,a,a-Trifluorotoluene	86 %		85 %	---
Prep Date	10.07.00		10.07.00	---
Analysis Date	10.07.00		10.07.00	---
Dilution Factor	1		1	---

Sample Results have been qualified by URS-Radian based on criteria of the data review process, which is modeled after the Contract Laboratory Program National Functional Guidelines for Organic Data Review (U.S. EPA, October 1999).



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Project: 805685.01/Abbot-Laurinburg-FR  
Sampled By: Client  
Code: 092401011  
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED		
43257-35	Reporting Limit (RL)			
43257-36	Method Detection Limit (MDL)			
43257-37	LCS Accuracy Control Limit (%R)			
43257-38	LCS Precision Control Limit (Advisory) %RPD			
PARAMETER	43257-35	43257-36	43257-37	43257-38
Purgeable Aromatics (602)				
Benzene, ug/l	1.0	0.10	39-150 %	<31 %
Toluene, ug/l	1.0	0.13	46-148 %	<25 %
Ethylbenzene, ug/l	1.0	0.14	---	---
Total Xylenes, ug/l	2.0	0.38	---	---
Surrogate - a,a,a-Trifluorotoluene	---	---	70-130 %	---

Methods: EPA 40 CFR Part 136  
North Carolina Certification No.: 389

Laura B. Snead, Project Manager

Sample Results have been qualified by URS-Radian based on criteria of the data review process, which is modeled after the Contract Laboratory Program National Functional Guidelines for Organic Data Review (U.S. EPA, October 1999).

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Project: 805685.01/Abbot-Laurinburg-FR  
Sampled By: Client  
Code: 141701010  
Page 1

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED			
43257-1	W-4s	10-03-00/08:15			
43257-2	DI-1	10-03-00/08:30			
43257-3	W-4d	10-03-00/08:45			
43257-4	W-3s	10-03-00/09:05			
43257-5	W-3d	10-03-00/09:20			
PARAMETER	43257-1	43257-2	43257-3	43257-4	43257-5
Purgeable Aromatics (602)					
Benzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene, ug/l	<1.5 U	1.2	<1.4 U	<1.4 U	<1.8 U
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Total Xylenes, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0
Surrogate - a,a,a-Trifluorotoluene	83 %	83 %	82 %	80 %	82 %
Prep Date	10.06.00	10.06.00	10.06.00	10.06.00	10.06.00
Analysis Date	10.06.00	10.06.00	10.06.00	10.06.00	10.06.00
Dilution Factor	1	1	1	1	1

Sample Results have been qualified by URS-Radian based on criteria of the data review process, which is modeled after the Contract Laboratory Program National Functional Guidelines for Organic Data Review (U.S. EPA, October 1999).

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Sampled By: Client  
Code: 141701010  
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED			
43257-6	W-12s	10-03-00/10:00			
43257-7	W-12d	10-03-00/10:15			
43257-8	W-2s	10-03-00/10:30			
43257-9	W-2d	10-03-00/10:45			
43257-10	W-6s	10-03-00/11:20			
PARAMETER	43257-6	43257-7	43257-8	43257-9	43257-10
Purgeable Aromatics (602)					
Benzene, ug/l	4.0	2.6	<1.0	<1.0	<1.0
Toluene, ug/l	<1.0	<1.1 U	<1.1 U	<1.6 U	<2.7 U
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Total Xylenes, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0
Surrogate - a,a,a-Trifluorotoluene	84 %	85 %	84 %	87 %	86 %
Prep Date	10.06.00	10.06.00	10.06.00	10.06.00	10.07.00
Analysis Date	10.06.00	10.06.00	10.06.00	10.06.00	10.07.00
Dilution Factor	1	1	1	1	1

Sample Results have been qualified by URS-Radian based on criteria of the data review process, which is modeled after the Contract Laboratory Program National Functional Guidelines for Organic Data Review (U.S. EPA, October 1999).

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Sampled By: Client  
Code: 141701010  
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED			
43257-11	W-6d	10-03-00/11:35			
43257-12	W-7s	10-03-00/13:25			
43257-13	TB-1	10-03-00			
43257-14	W-7d	10-03-00/13:45			
43257-15	EB-1	10-03-00/13:50			
PARAMETER	43257-11	43257-12	43257-13	43257-14	43257-15
Purgeable Aromatics (602)					
Benzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene, ug/l	<4.1 U	<1.2 U	<1.0	<3.5 U	<1.0
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Total Xylenes, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0
Surrogate - a,a,a-Trifluorotoluene	91 %	85 %	79 %	91 %	82 %
Prep Date	10.07.00	10.07.00	10.06.00	10.07.00	10.06.00
Analysis Date	10.07.00	10.07.00	10.06.00	10.07.00	10.06.00
Dilution Factor	1	1	1	1	1

Sample Results have been qualified by URS-Radian based on criteria of the data review process, which is modeled after the Contract Laboratory Program National Functional Guidelines for Organic Data Review (U.S. EPA, October 1999).

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REPORT OF RESULTS

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED				
43257-16	W-8s	10-03-00/13:55				
43257-17	W-8d	10-03-00/14:15				
43257-18	W-5s	10-03-00/14:50				
43257-19	W-99	10-03-00/14:50				
43257-20	W-5d	10-03-00/15:10				
PARAMETER	43257-16	43257-17	43257-18	43257-19	43257-20	
Purgeable Aromatics (602)						
Benzene, ug/l	<1.0	<1.0	60	60	1.6	
Toluene, ug/l	<1.6 U	<3.2 U	<6.0 U	<5.7 U	<3.8 U	
Ethylbenzene, ug/l	<1.0	<1.0	26	28	<1.0	
Total Xylenes, ug/l	<2.0	<2.0	5.7	6.6	<2.0	
Surrogate - a,a,a-Trifluorotoluene	85 %	91 %	75 %	72 %	82 %	
Prep Date	10.07.00	10.07.00	10.07.00	10.06.00	10.06.00	
Analysis Date	10.07.00	10.07.00	10.07.00	10.06.00	10.06.00	
Dilution Factor	1	1	1	1	1	

Sample Results have been qualified by URS-Radian based on criteria of the data review process, which is modeled after the Contract Laboratory Program National Functional Guidelines for Organic Data Review (U.S. EPA, October 1999).



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Code: 141701010

REPORT OF RESULTS

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED				
43257-21	W-9s	10-03-00/15:25				
43257-22	W-9d	10-03-00/15:40				
43257-23	W-100	10-03-00/15:25				
43257-24	W-10s	10-03-00/16:20				
43257-25	W-10d	10-03-00/16:35				
PARAMETER	43257-21	43257-22	43257-23	43257-24	43257-25	
Purgeable Aromatics (602)						
Benzene, ug/l	<1.0	<1.0	<1.0	<1.0	3.2	
Toluene, ug/l	<1.0	<1.7 U	<3.0 U	<1.4 U	<2.7 U	
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Xylenes, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	
Surrogate - a,a,a-Trifluorotoluene	84 %	88 %	82 %	87 %	85 %	
Prep Date	10.06.00	10.07.00	10.06.00	10.06.00	10.06.00	
Analysis Date	10.06.00	10.07.00	10.06.00	10.06.00	10.06.00	
Dilution Factor	1	1	1	1	1	

Sample Results have been qualified by URS-Radian based on criteria of the data review process, which is modeled after the Contract Laboratory Program National Functional Guidelines for Organic Data Review (U.S. EPA, October 1999).

**DATA VALIDATION REPORT FOR SOIL SAMPLES  
COLLECTED ON NOVEMBER 27, 2000**

**Abbott Labs, Laurinburg, North Carolina  
Fuel Release- Groundwater Analysis  
Data Validation Report  
URS-Radian, January 2001**

**Introduction**

On November 27, 2000, URS Corporation (Radian) collected two soil samples (G-8 and G-19) at the Abbott Laboratories facility in Laurinburg, NC. The soil samples were shipped to Severn Trent Laboratories (STL) in Austin, Texas for the analysis of volatile and semi-volatile organic compounds by SW-846 Methods 8260B and 8270C, respectively. A trip blank was included with the shipment of samples for the analysis of volatile organic compounds (VOC). The results were reported by STL under work order number 20011213.

URS reviewed the data to determine if data quality objectives were met. Qualitative and quantitative limitations associated with the analytical results were identified and defined based on the results of specific quality control (QC) criteria. Accuracy was determined from the review of holding times, spike recoveries, calibration results, and blank contamination. Precision was based on the evaluation of laboratory duplicate results. The data review process used for this project was modeled after the *Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA, October 1999)*. Sample results have been appropriately qualified based on criteria of the data review process. Results of the data validation are summarized below.

**Sample Condition upon Receipt and Holding Times**

All samples were received intact and in good condition by the laboratory. The temperature (3°) of the sample containers upon receipt at the laboratories was within specification limits of 2-6° Celsius. Samples were prepared and analyzed within EPA-established holding times.

**Calibration**

Control limits for initial and continuing instrument calibrations are established to ensure that the instrument is capable of producing accurate quantitative data at the beginning and throughout each of the analyses.

Gas chromatograph/mass spectrometer (GC/MS) instrument tuning and performance checks are performed to ensure the instrument's ability to provide appropriate mass-resolution, identification, and sensitivity. The tuning compound mass-ion abundance criteria for the GC/MS analyses were reported within control limits. All samples were analyzed for VOC and semi-volatile organic compounds (SVOC) by GC/MS within twelve hours of the performance check standard.

Since the results of the initial calibration were not included in the laboratory report, the evaluation was based on the review of the continuing calibration data. Laboratory specifications were met during all volatile and semivolatile organic continuing calibrations. The recovery of the standard, however, was not within 20% of the true value for target analytes during the following continuing calibrations:

- Volatile organic continuing calibration of November 30 at 17:39 on instrument MSDB: acetone (74%)

- Volatile organic continuing calibration of December 8 at 09:35 on instrument MSDB: chloromethane (75%)
- Volatile organic continuing calibration of December 10 at 17:31 on instrument MSDB: 2-butanone (181%), chloromethane (77%).

Associated sample results were qualified as estimated (J, UJ) for those analytes with a recovery that was less than 80% in the continuing calibration. When the recovery of the continuing calibration standard was greater than 120%, associated positive sample results were qualified as estimated (J).

#### Laboratory Control Samples

Laboratory control samples (LCS) are blank samples fortified (spiked) with known concentrations of analyte of interest. The percent recoveries of the LCS are used to assess digestion efficiencies and overall analytical accuracy. Precision is evaluated based on the relative percent difference (RPD) between duplicate results.

The results of the LCS and duplicate analyses met laboratory specification limits for all target analytes included in the standard cocktail, except as noted below.

LCS ID	Parameter	Outliers	QC Limits	Action
1018310/1018311	Carbon disulfide	36 and 27%R, 29%RPD	49-255%R, <21%RPD	None <sup>1</sup>
1018519/1018520	n-Butyl benzene	64%RPD	<37%RPD	J, UJ
	sec-Butyl benzene	63%RPD	<31%RPD	
	tert-Butyl benzene	63%RPD	<30%RPD	
	1,4-Dichlorobenzene	44%RPD	<30%RPD	
	1,2-Dichlorobenzene	47%RPD	<27%RPD	
	1,3-Dichlorobenzene	47%RPD	<31%RPD	
	Ethyl benzene	44%RPD	<24%RPD	
	Hexachloro-1,3-butadiene	69%RPD	<42%RPD	
	Isopropyl benzene	55%RPD	<33%RPD	
	n-Propyl benzene	57%RPD	<29%RPD	
	Tetrachloroethene	37%RPD	<27%RPD	
	Toluene	26%RPD	<19%RPD	
	1,2,4-Trichlorobenzene	59%RPD	<43%RPD	
	1,2,4-Trimethylbenzene	57%RPD	<28%RPD	
	1,3,5-Trimethylbenzene	57%RPD	<30%RPD	
	Xylenes (total)	42%RPD	<22%RPD	

J Estimated value  
 LCS Laboratory control sample  
 QC Quality control  
 %R Percent recovery  
 RPD Relative percent difference  
 UJ Not detected and the detection limit is estimated

<sup>1</sup> The laboratory attributed the poor accuracy and precision to the aging of the standard. The continuing calibration results indicate acceptable accuracy; therefore, no action is required.

#### Blanks

Laboratory blanks are clean liquid and/or solid matrix samples prepared by the analytical laboratory and analyzed in the same manner as the investigative samples. The blanks are used to ensure that the investigative samples are not contaminated during the sample preparation, sample analysis, or from a previous sample analysis (instrument carry-over). Trip blanks are analyte-free water samples that accompany volatile investigative samples during all stages of shipment, storage, and analysis. The trip blanks are used to assess the potential for artificial introduction of VOC into the investigative samples during the transportation and sample handling processes.

Acetone, 2-butanone (MEK), and methylene chloride are common laboratory blank contaminants. These three analytes were detected in laboratory blanks during the VOA. Acetone was also detected in the trip blank at a concentration similar to that found in the laboratory blanks. The following VOC were also detected in blanks: n-butyl benzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, ethyl benzene, naphthalene, toluene, 1,2,4-trimethylbenzene, and xylenes. Target analytes were not detected during the analysis of the laboratory blank for SVOC. Sample results that were not significantly greater (ten times for common laboratory contaminants and five times for all others) than that detected in the blanks have been qualified due to the presence of blank contamination. Affected sample results have been flagged "ND" and detection limits elevated to the amount present in the sample and flagged with a "U".

#### Internal Standards

Internal standards are analytes of interest that are added to each sample prior to the organic analyses to ensure that GC/MS sensitivity and responses remain stable.

Internal standard area counts were outside acceptance criteria during December 10 volatile organic analysis (VOA) of soil sample G-8. Affected results, which were I-flagged by the laboratory, have been qualified as estimated (J, UJ) in sample G-8.

#### Surrogate Spikes

System monitoring compounds (surrogates) are those compounds, which are not expected to be detected in the field samples, but which are chemically similar to the organic analytes of interest. Surrogate recoveries are used to assess extraction efficiencies, possible matrix effects, and overall analytical accuracy.

Surrogate spike recoveries fell within laboratory specification limits during the VOA and semivolatiles organic analysis (SVOA) of all project samples.

#### Matrix Spikes

Matrix spikes (MS) are samples spiked with known concentrations of analytes of interest. MS percent recoveries and duplicate results are used to assess extraction efficiencies, possible matrix effects, and overall analytical accuracy and precision.

The criteria for accuracy and precision were met during the semivolatiles organic MS and MS duplicate (MSD) analysis of sample G-19 for all target analytes, except fluorene. The MS recovery (135%) was greater than laboratory QC limits (75-126%R). Qualification of the fluorene result in the parent sample was not warranted since the MSD recovery fell within QC limits.

Batch samples were selected for the volatile organic MS and MSD analyses. The results of these QC analyses were not included in the analytical report. A review of this data is not required, however, because the results may not be representative of conditions at the site.

**Sample Results**

The laboratory provided results for all project-specified volatile and semivolatile organic target analytes. In addition, reporting limits of the undiluted sample analyses were less than or equal to soil-to-groundwater clean-up levels presented in Table 3 of the "Groundwater Section Guidelines For The Investigation And Remediation Of Soil And Groundwater" (NCDENR, July 2000).

Due to an analyst error, low-level VOA were conducted on sample provided to the laboratory in wide mouth glass jars, instead of Encore samplers.

When sample concentrations exceed the calibration range (flagged with an E by the laboratory), the results from the reanalysis that are within the calibration range are considered more accurate.

The laboratory flagged analytical results that were less than the practical quantitation limit and sample detection limit with a J and U, respectively. These results are considered estimates and have been J-Flagged.

**SECTION IV  
Analytical Results**

**MS-VOA  
SW8260B**

Client Sample ID  
Lab Sample ID  
Matrix  
Reported As  
% Moisture  
Date/Time Collected  
Date/Time Prepared  
Date/Time Analyzed  
Dilution Factor  
Instrument  
Units

Client Sample ID	G-19	G-19	G-8
Lab Sample ID	2001121301	2001121301	2001121302
Matrix	Solid	Solid	Solid
Reported As	DRY WEIGHT	DRY WEIGHT	DRY WEIGHT
% Moisture	12.6	12.6	18.3
Date/Time Collected	11/27/2000 09:10	11/27/2000 09:10	11/27/2000 12:10
Date/Time Prepared	12/08/2000 16:35	12/10/2000 18:01	12/10/2000 18:36
Date/Time Analyzed	12/08/2000 16:35	12/10/2000 18:01	12/10/2000 18:36
Dilution Factor	100.0000	1.0000	1.0000
Instrument	MSDB	MSDB	MSDB
Units	ug/Kg	ug/Kg	ug/Kg

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL
Acetone	67-64-1	226	ND J	188	0.000 R	3.80	ND JB	1.86	0.000	4.10	ND JB	2.02	0.000
Benzene	71-43-2	ND		40.6	0.000	ND		0.402	0.000	ND		0.436	0.000
2-Butanone (MEK)	78-93-3	222	ND JB	128	0.000	ND		1.26	0.000	ND		1.37	0.000
n-Butylbenzene	104-51-8	142	J	94.8	0.000	23.0	J	0.939	0.000	304	R EHR	1.02	0.000
sec-Butylbenzene	135-98-8	116	J	70.0	0.000	6.11	J	0.702	0.000	206	R EHR	0.261	0.000
tert-Butylbenzene	98-06-6	ND		37.2	0.000	ND		0.566	0.000	ND	UJ	0.614	0.000
Carbon disulfide	75-15-0	ND		42.3	0.000	ND		0.419	0.000	ND		0.454	0.000
Chloromethane	74-87-3	ND		92.0	0.000	ND	UJ	0.911	0.000	ND	UJ	0.988	0.000
Dibromochloromethane	124-48-1	ND		41.7	0.000	ND		0.413	0.000	ND		0.448	0.000
1,2-Dibromoethane	106-93-4	ND		38.3	0.000	ND		0.379	0.000	ND		0.411	0.000
1,4-Dichlorobenzene	106-46-7	77.1	ND J	79.0	0.000	ND	UJ	0.723	0.000	ND	UJ	0.785	0.000
1,2-Dichlorobenzene	95-50-1	ND		39.3	0.000	ND	UJ	0.389	0.000	ND	UJ	0.422	0.000
1,3-Dichlorobenzene	541-73-1	ND		54.2	0.000	ND	UJ	0.537	0.000	ND	UJ	0.583	0.000
1,1-Dichloroethane	75-34-3	ND		46.4	0.000	ND		0.459	0.000	ND		0.498	0.000
1,2-Dichloroethane	107-06-2	ND		37.2	0.000	63.4		0.328	0.000	63.2		0.356	0.000
1,1-Dichloroethene	75-35-4	ND		34.0	0.000	ND		0.336	0.000	ND		0.365	0.000
cis-1,2-Dichloroethene	156-59-2	ND		31.6	0.000	ND		0.313	0.000	ND		0.339	0.000
trans-1,2-Dichloroethene	156-60-5	ND		37.2	0.000	ND		0.368	0.000	ND		0.399	0.000
1,2-Dichloropropane	78-87-5	ND		38.3	0.000	ND		0.379	0.000	ND		0.411	0.000
cis-1,3-Dichloropropene	10061-01-5	ND		36.7	0.000	ND		0.363	0.000	ND		0.394	0.000
trans-1,3-Dichloropropene	10061-02-6	ND		51.1	0.000	ND		0.506	0.000	ND		0.548	0.000

SECTION IV  
Analytical Results

MS-VOA  
SW8260B

Client Sample ID	G-19	G-19	G-8
Lab Sample ID	2001121301	2001121301	2001121302

Continued

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL		
Ethylbenzene	100-41-4	23.2	ND	U	47.90	0.000	R	ND	U	0.474	0.000	152	J	0.514	0.000
Hexachloro-1,3-butadiene	87-68-3	ND			107	0.000		ND	U	1.06	0.000	ND	U	1.15	0.000
2-Hexanone	591-78-6	ND			78.2	0.000		ND	U	0.774	0.000	ND		0.840	0.000
Isopropylbenzene	98-82-8	76.3	J		51.9	0.000		ND	U	0.513	0.000	128	J	0.557	0.000
Methyl tert-butyl ether (MTBE)	1634-04-4	34.7	U		68.6	0.000		ND	U	0.679	0.000	ND		0.737	0.000
Methylene chloride	75-09-2	92.8	U	ND	30.8	0.000		1.19	U	0.385	0.000	0.677	U	0.330	0.000
Naphthalene	91-20-3	168	U	ND	64.6	0.000		44.2	U	0.634	0.000	38.8	J	0.688	0.000
n-Propylbenzene	103-65-1	ND			84.2	0.000		ND	U	0.834	0.000	466	R	0.905	0.000
1,1,2,2-Tetrachloroethane	79-34-5	ND			55.6	0.000		ND	U	0.551	0.000	ND		0.597	0.000
Tetrachloroethene	127-18-4	ND			54.7	0.000		ND	U	0.542	0.000	3.22	J	0.588	0.000
Toluene	108-88-3	182	U	ND	34.8	0.000		ND	U	0.344	0.000	4.07	U	0.379	0.000
1,2,4-Trichlorobenzene	120-82-1	ND			82.2	0.000		ND	U	0.814	0.000	ND	U	0.882	0.000
1,2,4-Trimethylbenzene	95-63-6	174	U	ND	59.0	0.000		53.2	J	0.584	0.000	2950	R	0.634	0.000
1,3,5-Trimethylbenzene	108-67-8	132	J		58.9	0.000		16.2	J	0.583	0.000	1010	R	0.632	0.000
Xylenes (Total)	1330-20-7	186	U	ND	91.2	0.000	V	ND	U	0.903	0.000	1200	R	0.879	0.000

SECTION IV - Analytical Results - 12/14/2000 11:21

LIMS Workorder: Fuel release site [20011213] Abbott Laboratories

34  
Sulfide and Inorganic Data Review (U.S. EPA, October 1999 and February 1991, respectively)

SECTION IV  
Analytical Results  
Surrogates

MS-VOA  
SW8260B

Client Sample ID	G-19	G-19	G-8
Lab Sample ID	2001121301	2001121301	2001121302
Matrix	Solid	Solid	Solid
Reported As	DRY WEIGHT	DRY WEIGHT	DRY WEIGHT
% Moisture	12.6	12.6	18.3
Date/Time Collected	11/27/2000 09:10	11/27/2000 09:10	11/27/2000 12:10
Date/Time Prepared	12/08/2000 16:35	12/10/2000 18:01	12/10/2000 18:36
Date/Time Analyzed	12/08/2000 16:35	12/10/2000 18:01	12/10/2000 18:36
Dilution Factor	100.0000	1.0000	1.0000
Instrument	MSDB	MSDB	MSDB
Units	ug/Kg	ug/Kg	ug/Kg

Surrogate Compound	% Recovery	Limits	F	% Recovery	Limits	F	% Recovery	Limits	F
1-Bromo-4-fluorobenzene	101	12-138		99	27-145		125	27-145	
1,2-Dichloroethane-d4	65	21-135		91	57-145		92	57-145	
Toluene-d8	72	22-130		102	61-135		98	61-135	

SECTION IV - Analytical Results - 12/14/2000 11:21

LIMS Workorder: Fuel release site [20011213] Abbott Laboratories

34  
Sulfide and Inorganic Data Review (U.S. EPA, October 1999 and February 1991, respectively)

SECTION IV  
Analytical Results

MS-VOA  
SW8260B

Client Sample ID  
Lab Sample ID  
Matrix  
Reported As  
% Moisture  
Date/Time Collected  
Date/Time Prepared  
Date/Time Analyzed  
Dilution Factor  
Instrument  
Units

G-8	TRIP BLANK
2001121302	2001121303
Solid	Solid
DRY WEIGHT	Received
18.3	NA
11/27/2000 12:10	11/20/2000 00:00
12/11/2000 15:20	11/30/2000 19:43
12/11/2000 15:20	11/30/2000 19:43
100.0000	1.0000
MSDB	MSDB
ug/Kg	ug/Kg

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL
Acetone	67-64-1	342	J	199	0.000	2.20	J	1.65	0.000				
Benzene	71-43-2	ND		43.0	0.000	ND		0.356	0.000				
2-Butanone (MEK)	78-93-3	ND		155	0.000	ND		1.12	0.000				
n-Butylbenzene	104-51-8	1010	J	100	0.000	ND		0.832	0.000				
sec-Butylbenzene	135-98-8	467	J	75.1	0.000	ND		0.622	0.000				
tert-Butylbenzene	98-06-6	ND		60.6	0.000	ND		0.502	0.000				
Carbon disulfide	75-15-0	43.2	J	44.8	0.000	ND		0.371	0.000				
Chloromethane	74-87-3	ND		97.4	0.000	ND		0.807	0.000				
Dibromochloromethane	124-48-1	ND		44.2	0.000	ND		0.366	0.000				
1,2-Dibromoethane	106-93-4	ND		40.6	0.000	ND		0.336	0.000				
1,4-Dichlorobenzene	106-46-7	ND		77.4	0.000	ND		0.641	0.000				
1,2-Dichlorobenzene	95-50-1	ND		41.6	0.000	ND		0.345	0.000				
1,3-Dichlorobenzene	541-73-1	ND		57.5	0.000	ND		0.476	0.000				
1,1-Dichloroethane	75-34-3	ND		49.1	0.000	ND		0.407	0.000				
1,2-Dichloroethane	107-06-2	ND		35.1	0.000	ND		0.291	0.000				
1,1-Dichloroethene	75-35-4	ND		36.0	0.000	ND		0.298	0.000				
cis-1,2-Dichloroethene	156-59-2	ND		33.4	0.000	ND		0.277	0.000				
trans-1,2-Dichloroethene	156-60-5	ND		39.4	0.000	ND		0.326	0.000				
1,2-Dichloropropane	78-87-5	ND		40.6	0.000	ND		0.336	0.000				
cis-1,3-Dichloropropene	10061-01-5	ND		38.9	0.000	ND		0.322	0.000				
trans-1,3-Dichloropropene	10061-02-6	ND		54.1	0.000	ND		0.448	0.000				

SECTION IV - Analytical Results - 12/14/2000 11:21

LIMS Workorder: Fuel release site [20011213] Abbott Laboratories

Sample results have been qualified by Radian International based on the criteria of the data review process, which is modeled after the Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review (U.S. EPA, October 1999 and February 1994, respectively)

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SECTION IV  
Analytical Results

MS-VOA  
SW8260B

Client Sample ID  
Lab Sample ID

G-8	TRIP BLANK
2001121302	2001121303

Continued

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL
Ethylbenzene	100-41-4	161	J	56.7	0.000	ND		0.420	0.000				
Hexachloro-1,3-butadiene	87-68-3	ND		114	0.000	ND		0.942	0.000				
2-Hexanone	591-78-6	ND		82.8	0.000	ND		0.686	0.000				
Isopropylbenzene	98-82-8	180	J	54.9	0.000	ND		0.455	0.000				
Methyl tert-butyl ether (MTBE)	1634-04-4	ND		72.7	0.000	ND		0.602	0.000				
Methylene chloride	75-09-2	48.9	J	34.6	0.000	ND		0.270	0.000				
Naphthalene	91-20-3	1410	J	67.8	0.000	ND		0.562	0.000				
n-Propylbenzene	103-65-1	413	J	89.2	0.000	ND		0.739	0.000				
1,1,2,2-Tetrachloroethane	79-34-5	ND		58.2	0.000	ND		0.488	0.000				
Tetrachloroethene	127-18-4	ND		57.9	0.000	ND		0.480	0.000				
Toluene	108-88-3	153	J	36.8	0.000	ND		0.305	0.000				
1,2,4-Trichlorobenzene	120-82-1	ND		87.0	0.000	ND		0.721	0.000				
1,2,4-Trimethylbenzene	95-63-6	3410	J	62.5	0.000	ND		0.518	0.000				
1,3,5-Trimethylbenzene	108-67-8	1070	J	62.4	0.000	ND		0.517	0.000				
Xylenes (Total)	1330-20-7	1180	J	96.6	0.000	ND		0.800	0.000				

SECTION IV - Analytical Results - 12/14/2000 11:21

LIMS Workorder: Fuel release site [20011213] Abbott Laboratories

Sample results have been qualified by Radian International based on the criteria of the data review process, which is modeled after the Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review (U.S. EPA, October 1999 and February 1994, respectively)

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**SECTION IV  
Analytical Results  
Surrogates**

MS-VOA  
SW8260B

Client Sample ID	G-8	TRIP BLANK
Lab Sample ID	2001121302	2001121303
Matrix	Solid	Solid
Reported As	DRY WEIGHT	Received
% Moisture	18.3	NA
Date/Time Collected	11/27/2000 12:10	11/20/2000 00:00
Date/Time Prepared	12/11/2000 15:20	11/30/2000 19:43
Date/Time Analyzed	12/11/2000 15:20	11/30/2000 19:43
Dilution Factor	100.0000	1.0000
Instrument	MSDB	MSDB
Units	ug/Kg	ug/Kg

Surrogate Compound	% Recovery	Limits	F	% Recovery	Limits	F	% Recovery	Limits	F
1-Bromo-4-fluorobenzene	105	12-138	100	27-145					
1,2-Dichloroethane-d4	66	21-135	95	57-145					
Toluene-d8	72	22-130	100	61-135					

SECTION IV - Analytical Results - 12/14/2000 11:21

LIMS Workorder: Fuel release site [20011213] Abbott Laboratories

STX results have been qualified by Radian International based on the criteria of the data review process, which is modeled after the Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review (U.S. EPA, October 1999 and February 1994, respectively)

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**SECTION IV  
Analytical Results**

Semivolatiles  
SW8270C

Client Sample ID	G-19	G-8	G-8
Lab Sample ID	2001121301	2001121302	2001121302
Matrix	Solid	Solid	Solid
Reported As	DRY WEIGHT	DRY WEIGHT	DRY WEIGHT
% Moisture	12.6	18.3	18.3
Date/Time Collected	11/27/2000 09:10	11/27/2000 12:10	11/27/2000 12:10
Date/Time Prepared	11/29/2000 14:57	11/29/2000 14:57	11/29/2000 14:57
Date/Time Analyzed	12/04/2000 18:42	12/04/2000 21:03	12/05/2000 16:31
Dilution Factor	1.0000	1.0000	5.0000
Instrument	5971	5971	5971
Units	ug/g	ug/g	ug/g

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL
Acenaphthene	83-32-9	0.178	J	0.00564	0.000	0.474		0.00601	0.000	0.345	JR	0.0301	0.000
Acenaphthylene	208-96-8	ND		0.0116	0.000	ND		0.0124	0.000	ND		0.0619	0.000
Anthracene	120-12-7	ND		0.0116	0.000	ND		0.0123	0.000	ND		0.0617	0.000
Benzo(a)anthracene	56-55-3	ND		0.00974	0.000	ND		0.0104	0.000	ND		0.0520	0.000
Benzo(a)pyrene	50-32-8	ND		0.0120	0.000	ND		0.0128	0.000	ND		0.0638	0.000
Benzo(b)fluoranthene	205-99-2	ND		0.0126	0.000	ND		0.0134	0.000	ND		0.0671	0.000
Benzo(g,h,i)perylene	191-24-2	ND		0.0323	0.000	ND		0.0345	0.000	ND		0.172	0.000
Benzo(k)fluoranthene	207-08-9	ND		0.0108	0.000	ND		0.0115	0.000	ND		0.0576	0.000
Benzoic acid	65-85-0	ND		0.577	0.000	ND		0.615	0.000	ND		3.07	0.000
bis(2-Chloroethyl)ether	111-44-4	ND		0.00554	0.000	ND		0.00591	0.000	ND		0.0296	0.000
Chrysene	218-01-9	ND		0.00778	0.000	ND		0.00830	0.000	ND		0.0415	0.000
Dibenz(a,h)anthracene	53-70-3	ND		0.0216	0.000	ND		0.0230	0.000	ND		0.116	0.000
Dibenzofuran	132-64-9	ND		0.00595	0.000	ND		0.00635	0.000	ND		0.0318	0.000
2,4-Dimethylphenol	105-67-9	ND		0.0507	0.000	ND		0.0541	0.000	ND		0.271	0.000
Fluoranthene	206-44-0	ND		0.00841	0.000	ND		0.00897	0.000	ND		0.0448	0.000
Fluorene	86-73-7	ND		0.00883	0.000	0.699		0.00942	0.000	0.696	JR	0.0471	0.000
Indeno(1,2,3-cd)pyrene	193-39-5	ND		0.0166	0.000	ND		0.0177	0.000	ND		0.0883	0.000
2-Methylnaphthalene	91-57-6	1.38		0.00756	0.000	2.06	ER	0.00807	0.000	5.17		0.0403	0.000
Phenanthrene	85-01-8	0.457		0.00638	0.000	1.41		0.00680	0.000	1.29	JR	0.0340	0.000
Pyrene	129-00-0	ND		0.00735	0.000	0.212	J	0.00784	0.000	ND		0.0392	0.000

SECTION IV - Analytical Results - 12/08/2000 08:41

LIMS Workorder: Fuel release site [20011213] Abbott Laboratories

STX results have been qualified by Radian International based on the criteria of the data review process, which is modeled after the Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review (U.S. EPA, October 1999 and February 1994, respectively)

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**SECTION IV.  
Analytical Results  
Surrogates**

**Semivolatiles  
SW8270C**

<b>Client Sample ID</b>	G-19	G-8	G-8
<b>Lab Sample ID</b>	2001121301	2001121302	2001121302
<b>Matrix</b>	Solid	Solid	Solid
<b>Reported As</b>	DRY WEIGHT	DRY WEIGHT	DRY WEIGHT
<b>% Moisture</b>	12.6	18.3	18.3
<b>Date/Time Collected</b>	11/27/2000 09:10	11/27/2000 12:10	11/27/2000 12:10
<b>Date/Time Prepared</b>	11/29/2000 14:57	11/29/2000 14:57	11/29/2000 14:57
<b>Date/Time Analyzed</b>	12/04/2000 18:42	12/04/2000 21:03	12/05/2000 16:31
<b>Dilution Factor</b>	1.0000	1.0000	5.0000
<b>Instrument</b>	5971	5971	5971
<b>Units</b>	ug/g	ug/g	ug/g

Surrogate Compound	% Recovery	Limits	F	% Recovery	Limits	F	% Recovery	Limits	F
2-Fluorobiphenyl	117	70-133		115	70-133		96	70-133	
2-Fluorophenol	105	53-123		118	53-123		103	53-123	
Nitrobenzene-d5	107	57-135		116	57-135		101	57-135	
Phenol-d5	111	59-132		116	59-132		100	59-132	
Terphenyl-d14	100	67-134		117	67-134		72	67-134	
2,4,6-Tribromophenol	118	49-149		118	49-149		86	49-149	

SECTION IV - Analytical Results - 12/08/2000 08:41  
 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
 STL Austin  
 Sample results have been qualified by Radian International based on the criteria of the data review process, which is modeled after the Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review (U.S. EPA, October 1999 and February 1994, respectively)

DATA VALIDATION REPORT  
 FOR GROUNDWATER MONITORING WELL SAMPLES  
 COLLECTED ON DECEMBER 7, 2000

Abbott Labs, Laurinburg, North Carolina  
Fuel Release- Groundwater Analysis  
Data Validation Report  
URS-Radian, January 2001

Abbott Laboratories, Laurinburg, NC  
Fuel Release- Groundwater Analysis  
Data Validation Report (URS-Radian)  
February 2, 2001

Page 2 of 2

#### Introduction

URS-Radian of RTP, NC collected five (5) groundwater samples and one (1) duplicate sample at the Abbott Labs facility in Laurinburg, North Carolina on December 7, 2000 and submitted them to STL Savannah Laboratories in Tallahassee, Florida for the analysis of volatile organic compounds (VOC), specifically BTEX, by EPA Method 602.

All analytical results were reported by STL Savannah of Tallahassee under Work Order Number T0-44059.

URS-Radian has reviewed the analytical results from the December 2000 sampling event. Accuracy was determined from the review of holding times and blank contamination. Precision was based on the evaluation of laboratory and field duplicate results. The evaluation of the data was modeled after the *Contract Laboratory Program National Functional Guidelines for Organic Data Review (U.S. EPA, October 1999)*. Sample results have been qualified based on the results of the data review process, as described below.

#### Sample Condition upon Receipt and Holding Times

STL received samples intact and in good condition on December 8, 2000. Technical holding times were assessed by comparing the sampling dates with that of the preservation and analysis dates. The samples for the volatile organic analysis were analyzed within EPA-established holding time of 14 days for preserved samples.

#### Laboratory Control Samples

Laboratory control samples (LCS), also known as blank spikes, are blank samples fortified (spiked) with known concentrations of analyte of interest. The percent recoveries of the LCS are used to assess overall analytical accuracy. Precision is evaluated based on the relative percent difference (RPD) between duplicate results. An evaluation of the LCS results for all analyses indicates that acceptable accuracy and precision were obtained for all target analytes included in the standard cocktail.

#### Blank Contamination

Laboratory blanks are clean liquid and/or solid matrix samples prepared by the analytical laboratory and analyzed in the same manner as the investigative samples. The blanks are used to ensure that the investigative samples are not contaminated during the sample preparation, sample analysis, or from a previous sample analysis (instrument carry-over). Volatile organics were not detected during the analysis of the laboratory blank.

Trip blanks are analyte-free water samples that accompany volatile investigative samples during all stages of shipment, storage, and analysis. The trip blanks are used to assess the potential for artificial introduction of VOC into the investigative samples during the transportation and sample handling processes. Target analytes were not detected during the volatile organic analysis of the trip blank.

#### Field Duplicate Results

Precision was deemed acceptable during the analysis of field sample FR-6d and its duplicate.

#### Sample Results

The laboratory reported results for four VOC with detection limits below the requested method detection limits.

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2846 Industrial Plaza Dr. • Tallahassee, FL 32301 • Tel: 850 878 3994 • Fax: 850 878 9504 • www.stl-inc.com

STL Tallahassee

LOG NO: T0-44059  
Received: 08 DEC 00  
Reported: 20 DEC 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbott - Laurinburg  
Sampled By: Client  
Code: 091401221

Page 1

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED				
44059-1	FR-3d	12-07-00/10:45				
44059-2	FR-6d	12-07-00/11:05				
44059-3	FR-7d	12-07-00/10:20				
44059-4	FR-8d	12-07-00/09:45				
44059-5	FR-9d	12-07-00/09:20				
PARAMETER	44059-1	44059-2	44059-3	44059-4	44059-5	
Purgeable Aromatics (602)						
Benzene, ug/l	2.0	17	<1.0	<1.0	<1.0	
Toluene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Ethylbenzene, ug/l	<1.0	2.2	<1.0	<1.0	<1.0	
Xylenes, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	
Prep Date	12.14.00	12.14.00	12.14.00	12.14.00	12.14.00	
Analysis Date	12.14.00	12.14.00	12.14.00	12.14.00	12.14.00	
Dilution Factor	1	1	1	1	1	

Sample results have been qualified by Radian International based on the criteria of the data review process, which is modeled after the Contract Laboratory Program *National Functional Guidelines for Organic and Inorganic Review* (U.S. EPA, October 1999 and February 1994, respectively).

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STL Tallahassee

LOG NO: T0-44059  
Received: 08 DEC 00  
Reported: 20 DEC 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbott - Laurinburg  
Sampled By: Client  
Code: 091401221

Page 2

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED		
44059-6	Blind dup	12-07-00/11:10		
44059-7	Trip Blank	12-07-00		
PARAMETER	44059-6	44059-7		
Purgeable Aromatics (602)				
Benzene, ug/l	17	<1.0		
Toluene, ug/l	<1.0	<1.0		
Ethylbenzene, ug/l	2.2	<1.0		
Xylenes, ug/l	<2.0	<2.0		
Prep Date	12.14.00	12.14.00		
Analysis Date	12.14.00	12.14.00		
Dilution Factor	1	1		

Sample results have been qualified by Radian International based on the criteria of the data review process, which is modeled after the Contract Laboratory Program *National Functional Guidelines for Organic and Inorganic Review* (U.S. EPA, October 1999 and February 1994, respectively).

SEVERN  
TRENT  
SERVICES

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STL Tallahassee

LOG NO: T0-44059  
Received: 08 DEC 00  
Reported: 20 DEC 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbott - Laurinburg  
Sampled By: Client  
Code: 091401221  
Page 3

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION	QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED		
44059-8	Method Blank				
44059-9	Reporting Limit (RL)				
44059-10	Method Detection Limit (MDL)				
44059-11	Accuracy (%Rec)				
44059-12	Precision (%RPD)				
PARAMETER	44059-8	44059-9	44059-10	44059-11	44059-12
Purgeable Aromatics (602)					
Benzene, ug/l	<1.0	1.0	0.10	115 %	0 %
Toluene, ug/l	<1.0	1.0	0.13	110 %	0 %
Ethylbenzene, ug/l	<1.0	1.0	0.14	---	---
Xylenes, ug/l	<2.0	2.0	0.27	---	---
Prep Date	12.13.00	---	---	12.13.00	---
Analysis Date	12.13.00	---	---	12.13.00	---
Dilution Factor	1	---	---	1	---

Sample results have been qualified by Radian International based on the criteria of the data review process, which is modeled after the Contract Laboratory Program *National Functional Guidelines for Organic and Inorganic Review* (U.S. EPA, October 1999 and February 1994, respectively).

SEVERN  
TRENT  
SERVICES

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STL Tallahassee

LOG NO: T0-44059  
Received: 08 DEC 00  
Reported: 20 DEC 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbott - Laurinburg  
Sampled By: Client  
Code: 091401221  
Page 4

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION	QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
44059-13	LCS Accuracy Control Limit (%R)		
44059-14	LCS Precision Control Limit (Advisory) %RPD		
PARAMETER	44059-13	44059-14	
Purgeable Aromatics (602)			
Benzene, %	39-150 %	<31 %	
Toluene, %	46-148 %	<25 %	
Methods: EPA 40 CFR Part 136 NC Certification No. 389			

  
Laura B. Snead, Project Manager

Sample results have been qualified by Radian International based on the criteria of the data review process, which is modeled after the Contract Laboratory Program *National Functional Guidelines for Organic and Inorganic Review* (U.S. EPA, October 1999 and February 1994, respectively).

**APPENDIX D**  
**LABORATORY REPORTS**

**LABORATORY ANALYTICAL REPORTS**  
**FOR GROUNDWATER SCREENING SAMPLES**  
**COLLECTED ON OCTOBER 3, 2000**

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STL Tallahassee

LOG NO: T0-43257  
Received: 04 OCT 00  
Reported: 10 OCT 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbot-Laurinburg-FR  
Sampled By: Client  
Code: 141701010  
Page 1

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES					DATE/ TIME SAMPLED
43257-1	W-4s					10-03-00/08:15
43257-2	DI-1					10-03-00/08:30
43257-3	W-4d					10-03-00/08:45
43257-4	W-3s					10-03-00/09:05
43257-5	W-3d					10-03-00/09:20
PARAMETER	43257-1	43257-2	43257-3	43257-4	43257-5	
Purgeable Aromatics (602)						
Benzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Toluene, ug/l	1.5	1.2	1.4	1.4	1.8	
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Xylenes, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	
Surrogate - a,a,a-Trifluorotoluene	83 %	83 %	82 %	80 %	82 %	
Prep Date	10.06.00	10.06.00	10.06.00	10.06.00	10.06.00	
Analysis Date	10.06.00	10.06.00	10.06.00	10.06.00	10.06.00	
Dilution Factor	1	1	1	1	1	

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STL Tallahassee

LOG NO: T0-43257  
Received: 04 OCT 00  
Reported: 10 OCT 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbot-Laurinburg-FR  
Sampled By: Client  
Code: 141701010  
Page 2

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES					DATE/ TIME SAMPLED
43257-6	W-12s					10-03-00/10:00
43257-7	W-12d					10-03-00/10:15
43257-8	W-2s					10-03-00/10:30
43257-9	W-2d					10-03-00/10:45
43257-10	W-6s					10-03-00/11:20
PARAMETER	43257-6	43257-7	43257-8	43257-9	43257-10	
Purgeable Aromatics (602)						
Benzene, ug/l	4.0	2.6	<1.0	<1.0	<1.0	
Toluene, ug/l	<1.0	1.1	1.1	1.6	2.7	
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Xylenes, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	
Surrogate - a,a,a-Trifluorotoluene	84 %	85 %	84 %	87 %	86 %	
Prep Date	10.06.00	10.06.00	10.06.00	10.06.00	10.07.00	
Analysis Date	10.06.00	10.06.00	10.06.00	10.06.00	10.07.00	
Dilution Factor	1	1	1	1	1	



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STL Tallahassee

LOG NO: T0-43257  
Received: 04 OCT 00  
Reported: 10 OCT 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbot-Laurinburg-FR  
Sampled By: Client  
Code: 141701010  
Page 3

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED				
43257-11	W-6d	10-03-00/11:35				
43257-12	W-7s	10-03-00/13:25				
43257-13	TB-1	10-03-00				
43257-14	W-7d	10-03-00/13:45				
43257-15	EB-1	10-03-00/13:50				
PARAMETER	43257-11	43257-12	43257-13	43257-14	43257-15	
Purgeable Aromatics (602)						
Benzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Toluene, ug/l	4.1	1.2	<1.0	3.5	<1.0	
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Xylenes, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	
Surrogate - a, a, a-Trifluorotoluene	91 %	85 %	79 %	91 %	82 %	
Prep Date	10.07.00	10.07.00	10.06.00	10.07.00	10.06.00	
Analysis Date	10.07.00	10.07.00	10.06.00	10.07.00	10.06.00	
Dilution Factor	1	1	1	1	1	



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STL Tallahassee

LOG NO: T0-43257  
Received: 04 OCT 00  
Reported: 10 OCT 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbot-Laurinburg-FR  
Sampled By: Client  
Code: 141701010  
Page 4

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED				
43257-16	W-8s	10-03-00/13:55				
43257-17	W-8d	10-03-00/14:15				
43257-18	W-5s	10-03-00/14:50				
43257-19	W-99	10-03-00/14:50				
43257-20	W-5d	10-03-00/15:10				
PARAMETER	43257-16	43257-17	43257-18	43257-19	43257-20	
Purgeable Aromatics (602)						
Benzene, ug/l	<1.0	<1.0	60	60	1.6	
Toluene, ug/l	1.6	3.2	6.0	5.7	3.8	
Ethylbenzene, ug/l	<1.0	<1.0	26	28	<1.0	
Total Xylenes, ug/l	<2.0	<2.0	5.7	6.6	<2.0	
Surrogate - a, a, a-Trifluorotoluene	85 %	91 %	75 %	72 %	82 %	
Prep Date	10.07.00	10.07.00	10.07.00	10.06.00	10.06.00	
Analysis Date	10.07.00	10.07.00	10.07.00	10.06.00	10.06.00	
Dilution Factor	1	1	1	1	1	

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STL Tallahassee

LOG NO: T0-43257  
Received: 04 OCT 00  
Reported: 10 OCT 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbot-Laurinburg-FR

Sampled By: Client  
Code: 141701010

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES					DATE/ TIME SAMPLED
43257-21	W-9s					10-03-00/15:25
43257-22	W-9d					10-03-00/15:40
43257-23	W-100					10-03-00/15:25
43257-24	W-10s					10-03-00/16:20
43257-25	W-10d					10-03-00/16:35
PARAMETER	43257-21	43257-22	43257-23	43257-24	43257-25	
<b>Purgeable Aromatics (602)</b>						
Benzene, ug/l	<1.0	<1.0	<1.0	<1.0	3.2	
Toluene, ug/l	<1.0	1.7	3.0	1.4	2.7	
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Xylenes, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	
Surrogate - a,a,a-Trifluorotoluene	84 %	88 %	82 %	87 %	85 %	
Prep Date	10.06.00	10.07.00	10.06.00	10.06.00	10.06.00	
Analysis Date	10.06.00	10.07.00	10.06.00	10.06.00	10.06.00	
Dilution Factor	1	1	1	1	1	

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LOG NO: T0-43257  
Received: 04 OCT 00  
Reported: 10 OCT 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbot-Laurinburg-FR

Sampled By: Client  
Code: 141701010

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES			DATE/ TIME SAMPLED
43257-26	W-11s			10-03-00/16:50
43257-27	W-11d			10-03-00/17:05
43257-28	Trip Blank 2			10-03-00
PARAMETER	43257-26	43257-27	43257-28	
<b>Purgeable Aromatics (602)</b>				
Benzene, ug/l	<1.0	1.5	<1.0	
Toluene, ug/l	1.8	2.5	<1.0	
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	
Total Xylenes, ug/l	<2.0	<2.0	<2.0	
Surrogate - a,a,a-Trifluorotoluene	85 %	85 %	78 %	
Prep Date	10.06.00	10.06.00	10.06.00	
Analysis Date	10.06.00	10.06.00	10.06.00	
Dilution Factor	1	1	1	

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STL Tallahassee

LOG NO: T0-43257  
Received: 04 OCT 00  
Reported: 10 OCT 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbot-Laurinburg-FR  
Sampled By: Client  
Code: 104301016  
Page 7

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED		
43257-29	Method Blank			
43257-30	Accuracy (%Rec)			
43257-31	Precision (%RPD)			
PARAMETER		43257-29	43257-30	43257-31
Purgeable Aromatics (602)				
Benzene, ug/l		<1.0	100 %	0 %
Toluene, ug/l		<1.0	105 %	4.5 %
Ethylbenzene, ug/l		<1.0	---	---
Total Xylenes, ug/l		<2.0	---	---
Surrogate - a,a,a-Trifluorotoluene		87 %	86 %	---
Prep Date		10.05.00	10.05.00	---
Analysis Date		10.06.00	10.05.00	---
Dilution Factor		1	1	---

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STL Tallahassee

LOG NO: T0-43257  
Received: 04 OCT 00  
Reported: 10 OCT 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbot-Laurinburg-FR  
Sampled By: Client  
Code: 141701010  
Page 8

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED		
43257-32	Method Blank #2			
43257-33	Accuracy (%Rec)			
43257-34	Precision (%RPD)			
PARAMETER		43257-32	43257-33	43257-34
Purgeable Aromatics (602)				
Benzene, ug/l		<1.0	100 %	0 %
Toluene, ug/l		<1.0	105 %	4.5 %
Ethylbenzene, ug/l		<1.0	---	---
Total Xylenes, ug/l		<2.0	---	---
Surrogate - a,a,a-Trifluorotoluene		86 %	85 %	---
Prep Date		10.07.00	10.07.00	---
Analysis Date		10.07.00	10.07.00	---
Dilution Factor		1	1	---

2946 Industrial Plaza Dr., Tallahassee, FL 32301 • Tel: 850 878-3994 • Fax: 850 878-9504 • www.stllab.com

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LOG NO: 70-43257  
Received: 04 OCT 00  
Reported: 10 OCT 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbot-Laurinburg-FR  
Sampled By: Client  
Code: 092401011  
Page 9

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION	QC REPORT FOR LIQUID SAMPLES	TIME SAMPLED	DATE
43257-35	Reporting Limit (RL)			
43257-36	Method Detection Limit (MDL)			
43257-37	LCS Accuracy Control Limit (%R)			
43257-38	LCS Precision Control Limit (Advisory) (%RPD)			
PARAMETER				
43257-35		43257-36	43257-37	43257-38

Purgeable Aromatics (602)	Benzene, ug/l	Toluene, ug/l	m,p-Dichlorobenzene, ug/l	Total Xylenes, ug/l	Surrogate - a,a,a-Trifluorotoluene
	1.0	0.10	39-150 *	<21 *	
	1.0	0.13	46-148 *	<25 *	
	1.0	0.14			
	2.0	0.38			
			70-130 *		

Methods: EPA 40 CFR Part 136  
North Carolina Certification No.: 389

*Laura B. Sneed*  
Laura B. Sneed, Project Manager

STL Tallahassee is a part of Severn Trent Laboratories, Inc.

Serial Number 024165

PROJECT REFERENCE		PROJECT NO.	PROJECT LOCATION (STATE)	MATRIX TYPE	REQUIRED ANALYSES				PAGE	OF	
Abbott-Laurinburg-FR		805685.01	NC						21	2	
STL (LAB) PROJECT MANAGER		P.O. NUMBER	CONTRACT NO.						STANDARD REPORT DELIVERY		
Laura Sneed		805685.01							DATE DUE		
CLIENT (SITE) PM		CLIENT PHONE	CLIENT FAX						EXPEDITED REPORT DELIVERY (SURCHARGE)		
S. Wallin/R. Willis		919-461-1385							DATE DUE		
CLIENT NAME		CLIENT EMAIL							NUMBER OF COOLERS SUBMITTED PER SHIPMENT:		
Radian Intl.									42		
CLIENT ADDRESS		1600 Perimeter Park Dr. Morrisville, NC 27560									
COMMUNITY CONTRACTING THIS WORK IS PERMITTED BY:		P.O. Box 13000 RTP, NC 27709									
DATE	TIME	SAMPLE IDENTIFICATION		COMPOSITION (G) OR GRAV (G)	MOLECULAR (WATER)	SOLID OR SEMISOLID	NON-HALOGENATED	NUMBER OF CONTAINERS SUBMITTED	REMARKS		
10-3-00	1345	W-7d		GX				3	No HCl - 7 day hold		
10-3-00	1350	EB-1		GX			3				
10-3-00	1355	W-8s		GX			3				
10-3-00	1415	W-8d		GX			3				
10-3-00	1450	W-5s		GX			3				
10-3-00	1450	W-99		GX			3				
10-3-00	1510	W-5d		GX			3				
10-3-00	1525	W-9s		GX			3				
10-3-00	1540	W-9d		GX			3				
10-3-00	1525	W-100		GX			3				
10-3-00	1620	W-10s		GX			3				
10-3-00	1635	W-10d		GX			3				
RELINQUISHED BY: (SIGNATURE)		DATE	TIME	RELINQUISHED BY: (SIGNATURE)		DATE	TIME	RELINQUISHED BY: (SIGNATURE)		DATE	TIME
<i>E. Knight</i>		9/19/00	1600	<i>R. Willis</i>		10-3-00	2000				
RECEIVED BY: (SIGNATURE)		DATE	TIME	RECEIVED BY: (SIGNATURE)		DATE	TIME	RECEIVED BY: (SIGNATURE)		DATE	TIME
<i>R. Willis</i>		9-24-00		<i>T. Sides</i>		10-3-00	2000				
LABORATORY USE ONLY											
RECEIVED FOR LABORATORY BY: (SIGNATURE)		DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	STL-SL LOG NO.	LABORATORY REMARKS:				
<i>Carol Strickland</i>		10/4/00	0900	YES		1043257					

ORIGINAL



**STL Austin**  
 14046 Summit Drive  
 Austin, TX 78728  
 Tel: (512) 244-0855  
 Fax: (512) 244-0160

Laboratory Tallahassee  
 Chain of Custody Record

PROJECT			MS / MSD	NO. OF CONTAINERS	ANALYSES										REMARKS						
SITE:																					
Abbott Laurinburg - Fuel Release			3	X																	
Lawningburg, NC																					
PREPARED BY (Signature) <i>BWILLIS</i>																					
FIELD SAMPLE LD.	SAMPLE MATRIX	DAY/TIME																			
TB-1	W	9.19.00/1440																			
REMARKS												RELINQUISHED BY: -	DATE	TIME							
Fedex # 8184 4563 1705 <sup>red cooler</sup>												Attention: <i>Laura Sneed</i>	<i>BWILLIS</i>	10.3.00	20.00						
RECEIVED BY:	DATE	TIME	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME	RELINQUISHED BY:	DATE	TIME										
<i>Fedex</i>	10.3.00	20.00				<i>Cheryl Stunkel</i>	10.14.00	09.00													
RECEIVED FOR LABORATORY BY:												DATE	TIME	AIRBILL NO.	OPENED BY:	DATE	TIME	TEMP °C	SEAL #	CONDITION	
REMARKS:												T043257									

Serial Number U24164

STL Savannah Laboratories										ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD										
PROJECT REFERENCE <i>Abbott Laurinburg - FR</i>					PROJECT NO. <i>805685.01</i>					PROJECT LOCATION (STATE) <i>NC</i>					MATRIX TYPE					
STL (LAB) PROJECT MANAGER <i>Laura Sneed</i>					P.O. NUMBER <i>805685.01</i>					CONTRACT NO.					REQUIRED ANALYSES					
CLIENT (SITE) PM <i>Shannon Wallin/Rhodes</i>					CLIENT PHONE <i>919-461-1385</i>					CLIENT FAX					PAGE 1 OF 1					
CLIENT NAME <i>Radian International</i>					CLIENT EMAIL										STANDARD REPORT DELIVERY <input type="checkbox"/>					
CLIENT ADDRESS <i>1600 Perimeter Park Dr. Morrisville, NC 27560</i>					COMPANY CONTRACTING THIS WORK (if applicable) <i>P.O. Box 13000, Research Triangle Park NC, 27709</i>										EXPEDITED REPORT DELIVERY (SURCHARGE) <input type="checkbox"/>					
DATE					TIME					SAMPLE IDENTIFICATION					NUMBER OF CONTAINERS SUBMITTED					
10.3.00					08:15					<i>W-3s W-4s</i>					3					
10.3.00					08:30					<i>DI-1</i>					3					
10.3.00					08:45					<i>W-4d</i>					3					
10.3.00					09:05					<i>W-3s</i>					3					
10.3.00					09:20					<i>W-3d</i>					3					
10.3.00					10:00					<i>W-12s</i>					3					
10.3.00					10:15					<i>W-12d</i>					3					
10.3.00					10:30					<i>W-2s</i>					3					
10.3.00					10:45					<i>W-2d</i>					3					
10.3.00					11:20					<i>W-6s</i>					3					
10.3.00					11:35					<i>W-6d</i>					3					
10.3.00					13:25					<i>W-7s</i>					3					
RELINQUISHED BY: (SIGNATURE)			DATE			TIME			RELINQUISHED BY: (SIGNATURE)			DATE			TIME					
<i>E. Litch Knight</i>			9/19/00			16:00			<i>BWILLIS</i>			10.3.00			20.00					
RECEIVED BY: (SIGNATURE)			DATE			TIME			RECEIVED BY: (SIGNATURE)			DATE			TIME					
<i>BWILLIS</i>			10.3.00			20.00			<i>Fedex</i>			10.3.00			20.00					
LABORATORY USE ONLY																				
RECEIVED FOR LABORATORY BY: (SIGNATURE)			DATE			TIME			CUSTODY INTACT			CUSTODY SEAL NO.			STL-SL LOG NO.			LABORATORY REMARKS:		
<i>Cheryl Stunkel</i>			10/14/00			09:00			YES						T043257					

ORIGINAL



LABORATORY ANALYTICAL REPORTS FOR SOIL SAMPLES  
COLLECTED ON OCTOBER 2, 2000

## STL Austin Laboratory Analysis Report

October 27, 2000

Martha Meyers-Lee  
Radian International LLC  
1600 Perimeter Park Dr.  
Morrisville, NC 27560

(919)461-1519 (Business)

RE: Laboratory Reference: Laurinberg TPH [20010013] Abbott Laboratories

Dear Martha Meyers-Lee:

STL Austin received samples with a request for the analytical fractions listed below.  
Results for the indicated analytical fractions and associated quality control data are enclosed in this report.

Fraction	Status	Reported	Approval Signature - Title
Chromatography	Re-Issue	10/27/2000	<i>Lab Analyst Lab Manager</i>

STL Austin appreciates your business and looks forward to serving you again. If you have any questions concerning your report or need any additional information, please call me at (512)310-5249 or fax inquiries to (512)244-0160.

Sincerely,

  
Jane Lindsey  
Client Services/Project Manager

**SECTION I**  
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Section I - Table of Contents - 10/27/2000 15:41  
LIMS Workorder: Laurinberg TPH [20010013] Abbott Laboratories  
STL Austin

**SECTION II**  
Report Summaries

**Chromatography**

Client Name: Abbott Laboratories  
Client Code: ABBOTT

Project Name: Laurinberg TPH [20010013] Abbott Laboratories  
Facility Name:

**Workorder Summary**

Client Sample ID	Lab Sample ID	Sample Matrix	Method Citation	Method Description
G3	2001001301	Solid	SW8015-CA LUFT	TPH-Diesel
G8	2001001302	Solid	SW8015-CA LUFT	TPH-Diesel
G19	2001001303	Solid	SW8015-CA LUFT	TPH-Diesel
G20	2001001304	Solid	SW8015-CA LUFT	TPH-Diesel
G26	2001001305	Solid	SW8015-CA LUFT	TPH-Diesel

**Protocol Summary**

Client Sample ID	Lab Sample ID	Date & Time Collected	Date & Time Received	Prep Batch ID	Date & Time Prepared	Analysis Batch ID	Date & Time Analyzed	Hold Time Spec			
								Prep Spec	Actual	Analysis Spec	Actual

**Method: SW8015-CA LUFT**

Client Sample ID	Lab Sample ID	Date & Time Collected	Date & Time Received	Prep Batch ID	Date & Time Prepared	Analysis Batch ID	Date & Time Analyzed	Prep Spec	Actual	Analysis Spec	Actual
G3	2001001301	10/02/00 16:40	10/04/00 10:21	8764	10/11/00 14:00	9051	10/22/00 14:09	14D	9D	40D	11D
G8	2001001302	10/02/00 16:30	10/04/00 10:21	8764	10/11/00 14:00	9051	10/22/00 19:47	14D	9D	40D	11D
G19	2001001303	10/02/00 16:10	10/04/00 10:21	8764	10/11/00 14:00	9051	10/22/00 20:28	14D	9D	40D	11D
G20	2001001304	10/02/00 16:00	10/04/00 10:21	8764	10/11/00 14:00	9051	10/22/00 17:45	14D	9D	40D	11D
G26	2001001305	10/02/00 16:17	10/04/00 10:21	8764	10/11/00 14:00	9051	10/22/00 18:26	14D	9D	40D	11D

SECTION III  
Comments and Flag Definitions

Chromatography

Standard Data Qualifiers

Flag	Definition
*	Interference in parent subtracted from MS/MSD result.
B	Analyte detected in method blank and concentration > MDL
J	Result > or = MDL and <PQL
NA	Not analyzed/Not available
ND	Not detected at the specified reporting limit
Q	Result does not meet tolerance in Protocol Specification
U	Result less than sample specific method detection limit

Analyst Comments

Flag	Affected Sample	Method	Comment
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Sample Condition Comments

Affected Sample	Comment
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SECTION IV  
Analytical Results

Chromatography  
SW8015-CA LUFT

	G19	G20	G26
Client Sample ID	2001001303	2001001304	2001001305
Lab Sample ID			
Matrix	Solid	Solid	Solid
Reported As	DRY WEIGHT	DRY WEIGHT	DRY WEIGHT
% Moisture	15.6	13.6	14.1
Date/Time Collected	10/02/2000 16:10	10/02/2000 16:00	10/02/2000 16:17
Date/Time Prepared	10/11/2000 14:00	10/11/2000 14:00	10/11/2000 14:00
Date/Time Analyzed	10/22/2000 20:28	10/22/2000 17:45	10/22/2000 18:26
Dilution Factor	2.0000	1.0000	1.0000
Instrument	GC12	GC12	GC12
Units	ug/g	ug/g	ug/g

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL
Diesel	68334-30-5	194		3.50	0.000	ND		1.70	0.000	ND		1.71	0.000
Diesel Range Organics	DRO	194	B	3.50	0.000	3.65	JB	1.70	0.000	3.16	JB	1.71	0.000
Jet Fuel JP4	94114-58-6	ND		3.12	0.000	ND		1.51	0.000	ND		1.53	0.000
Kerosene	8008-20-6	ND		2.77	0.000	ND		1.34	0.000	ND		1.35	0.000
Lubricating oil	8012-95-1	ND		3.50	0.000	ND		1.70	0.000	ND		1.71	0.000

SECTION IV  
Analytical Results  
Surrogates

Chromatography  
SW8015-CA LUFT

Client Sample ID	G19	G20	G26
Lab Sample ID	2001001303	2001001304	2001001305
Matrix	Solid	Solid	Solid
Reported As	DRY WEIGHT	DRY WEIGHT	DRY WEIGHT
% Moisture	15.6	13.6	14.1
Date/Time Collected	10/02/2000 16:10	10/02/2000 16:00	10/02/2000 16:17
Date/Time Prepared	10/11/2000 14:00	10/11/2000 14:00	10/11/2000 14:00
Date/Time Analyzed	10/22/2000 20:28	10/22/2000 17:45	10/22/2000 18:26
Dilution Factor	2.0000	1.0000	1.0000
Instrument	GC12	GC12	GC12
Units	ug/g	ug/g	ug/g

Surrogate Compound	% Recovery	Limits	F	% Recovery	Limits	F	% Recovery	Limits	F
Octacosane	108	39-182		107	39-182		118	39-182	

SECTION IV  
Analytical Results

Chromatography  
SW8015-CA LUFT

Client Sample ID	G3	G8
Lab Sample ID	2001001301	2001001302
Matrix	Solid	Solid
Reported As	DRY WEIGHT	DRY WEIGHT
% Moisture	15.6	12.5
Date/Time Collected	10/02/2000 16:40	10/02/2000 16:30
Date/Time Prepared	10/11/2000 14:00	10/11/2000 14:00
Date/Time Analyzed	10/22/2000 14:09	10/22/2000 19:47
Dilution Factor	1.0000	10.0000
Instrument	GC12	GC12
Units	ug/g	ug/g

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL
Diesel	68334-30-5	ND		1.74	0.000	517		16.9	0.000				
Diesel Range Organics	DRO	1.76	J*B	1.74	0.000	517	B	16.9	0.000				
Jet Fuel JP4	94114-58-6	ND		1.55	0.000	ND		15.0	0.000				
Kerosene	8008-20-6	ND		1.37	0.000	ND		13.3	0.000				
Lubricating oil	8012-95-1	ND		1.74	0.000	ND		16.9	0.000				

**SECTION IV**  
**Analytical Results**  
**Surrogates**

**Chromatography**  
**SW8015-CA LUFT**

Client Sample ID	G3	G8
Lab Sample ID	2001001301	2001001302
Matrix	Solid	Solid
Reported As	DRY WEIGHT	DRY WEIGHT
% Moisture	15.6	12.5
Date/Time Collected	10/02/2000 16:40	10/02/2000 16:30
Date/Time Prepared	10/11/2000 14:00	10/11/2000 14:00
Date/Time Analyzed	10/22/2000 14:09	10/22/2000 19:47
Dilution Factor	1.0000	10.0000
Instrument	GC12	GC12
Units	ug/g	ug/g

Surrogate Compound	% Recovery	Limits	F	% Recovery	Limits	F	% Recovery	Limits	F
Octacosane	107	39-182		109	39-182				

SECTION IV - Analytical Results - 10/27/2000 15:41  
 LIMS Workorder: Laurinberg TPH [20010013] Abbott Laboratories  
 STL Austin

**SECTION V**  
**Calibration and QC Information**  
**Calibration Verification Results**

**Chromatography**  
**SW8015-CA LUFT**

Sample Type: JET Cont. Cal. Check  
 Analysis Batch ID: 9051 Instrument Data File: 12AJ21004 Date/Time Analyzed: 10/21/2000 19:04  
 Instrument ID: GC12 Analyst: MRA Units: ug/mL

Parameter	Reference Value	Measured Conc	Flag	% Recovery	Flag	QC Limits % Recovery
Jet Fuel IP4	500	488		98		85-115

SECTION V - Calibration and QC Information - 10/27/2000 15:41  
 LIMS Workorder: Laurinberg TPH [20010013] Abbott Laboratories  
 STL Austin

**SECTION V**  
**Calibration and QC Information**  
**Calibration Verification Results**

**Chromatography**  
**SW8015-CA LUFT**

Sample Type: KER Cont. Cal. Check  
Analysis Batch ID: 9051  
Instrument ID: GC12  
Instrument Data File: 12AJ21005  
Analyst: MRA  
Date/Time Analyzed: 10/21/2000 19:45  
Units: ug/mL

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits	%Recovery
Kerosene	500	440		88		85-115	

SECTION V - Calibration and QC Information - 10/27/2000 15:41  
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STL Austin

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**SECTION V**  
**Calibration and QC Information**  
**Calibration Verification Results**

**Chromatography**  
**SW8015-CA LUFT**

Sample Type: DSL Cont. Cal. Check  
Analysis Batch ID: 9051  
Instrument ID: GC12  
Instrument Data File: 12AJ21006  
Analyst: MRA  
Date/Time Analyzed: 10/21/2000 20:26  
Units: ug/mL

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits	%Recovery
Diesel	500	502		100		85-115	

SECTION V - Calibration and QC Information - 10/27/2000 15:41  
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STL Austin

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SECTION V  
Calibration and QC Information  
Calibration Verification Results

Chromatography  
SW8015-CA LUFT

Sample Type: JET Cont. Cal. Check  
Analysis Batch ID: 9051  
Instrument ID: GC12  
Instrument Data File: 12AJ21024  
Analyst: MRA  
Date/Time Analyzed: 10/22/2000 08:41  
Units: ug/mL

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits %Recovery
Jet Fuel JP4	500	512		102		85-115

SECTION V  
Calibration and QC Information  
Calibration Verification Results

Chromatography  
SW8015-CA LUFT

Sample Type: KER Cont. Cal. Check  
Analysis Batch ID: 9051  
Instrument ID: GC12  
Instrument Data File: 12AJ21025  
Analyst: MRA  
Date/Time Analyzed: 10/22/2000 09:22  
Units: ug/mL

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits %Recovery
Kerosene	500	544		109		85-115

SECTION V  
Calibration and QC Information  
Calibration Verification Results

Chromatography  
SW8015-CA LUFT

Sample Type: DSL Cont. Cal. Check  
Analysis Batch ID: 9051 Instrument Data File: 12AJ21026 Date/Time Analyzed: 10/22/2000 10:03  
Instrument ID: GC12 Analyst: MRA Units: ug/mL

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits %Recovery
Diesel	500	570		114		85-115

SECTION V  
Calibration and QC Information  
Calibration Verification Results

Chromatography  
SW8015-CA LUFT

Sample Type: JET Cont. Cal. Check  
Analysis Batch ID: 9051 Instrument Data File: 12AJ21042 Date/Time Analyzed: 10/22/2000 21:09  
Instrument ID: GC12 Analyst: MRA Units: ug/mL

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits %Recovery
Jet Fuel JP4	500	502		100		85-115

SECTION V  
Calibration and QC Information  
Calibration Verification Results

Chromatography  
SW8015-CA LUFT

Sample Type: KER Cont. Cal. Check  
Analysis Batch ID: 9051 Instrument Data File: 12AJ21043 Date/Time Analyzed: 10/22/2000 21:50  
Instrument ID: GC12 Analyst: MRA Units: ug/mL

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits	%Recovery
Kerosene	500	529		106		85-115	

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SECTION V  
Calibration and QC Information  
Calibration Verification Results

Chromatography  
SW8015-CA LUFT

Sample Type: DSL Cont. Cal. Check  
Analysis Batch ID: 9051 Instrument Data File: 12AJ21044 Date/Time Analyzed: 10/22/2000 22:31  
Instrument ID: GC12 Analyst: MRA Units: ug/mL

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits	%Recovery
Diesel	500	562		112		85-115	

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STL Austin

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**SECTION V**  
**Calibration and QC Information**  
**Spiked Sample Results**

Chromatography  
 SW8015-CA LUFT

Client Sample ID: G3  
 Sample Type: Matrix Spike  
 Prep Batch ID: 8764  
 Analysis Batch ID: 9051

Instrument ID: GC12  
 Units: ug/g  
 Matrix: Solid

% Moisture: 15.6  
 Analyst: MRA

Parameter	Parent Sample		Spiked Sample			Spiked Sample Duplicate				QC Limits	
	Conc	Fig	Spk Conc	Conc	%Rec Fig	Spk Conc	Conc	%Rec Fig	RPD Fig	%Rec	RPD
Diesel	ND		50	51.3	87	49.9	60.9	103	17	58-129	28

Note: Spike Concentration for solid matrices not adjusted for percent moisture.

SECTION V - Calibration and QC Information - 10/27/2000 15:41  
 LIMS Workorder: Laurinberg TPH [20010013] Abbott Laboratories  
 STL Austin

**SECTION V**  
**Calibration and QC Information**  
**Method Blank Results**

Chromatography  
 SW8015-CA LUFT

Method Blank ID	1016084
Sample Type	Method Blank
Matrix	Solid
Date/Time Prepared	10/11/2000 14:00
Date/Time Analyzed	10/22/2000 10:44
Instrument	GC12
Units	ug/g

Surrogate Compound	% Recovery	Limits	F	% Recovery	Limits	F	% Recovery	Limits	F
Octacosane	97	39-182							

**SECTION V**  
**Calibration and QC Information**  
**Method Blank Results**

**Chromatography**  
**SW8015-CA LUFT**

Method Blank ID	1016084
Sample Type	Method Blank
Matrix	Solid
Date/Time Prepared	10/11/2000 14:00
Date/Time Analyzed	10/22/2000 10:44
Instrument	GC12
Units	ug/g

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL
Diesel	68334-30-5	ND		1.48	0.000								
Diesel Range Organics	DRO	2.30	J	1.48	0.000								
Jet Fuel JP4	94114-58-6	ND		1.32	0.000								
Kerosene	8008-20-6	ND		1.17	0.000								
Lubricating oil	8012-95-1	ND		1.48	0.000								

SECTION V - Calibration and QC Information - 10/27/2000 15:41  
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**SECTION V**  
**Calibration and QC Information**  
**Spiked Sample Results**

**Chromatography**  
**SW8015-CA LUFT**

Surrogate Compounds	Lab ID: 1016087	Lab ID: 1016088	QC Recovery Limits		
	%Recovery	Flags	%Recovery	Flags	QC Recovery Limits
Octacosane	102		115		39-182

Note: Spike Concentration for solid matrices not adjusted for percent moisture.

SECTION V - Calibration and QC Information - 10/27/2000 15:41  
 LIMS Workorder: Laurinberg TPH [20010013] Abbott Laboratories  
 STL Austin

**SECTION V**  
**Calibration and QC Information**  
**Control Sample Results**

**Chromatography**  
**SW8015-CA LUFT**

**Client Sample ID:** LCS for HBN 8764 [EX/1659]  
**Prep Batch ID:** 8764  
**Analysis Batch ID:** 9051

**Instrument ID:** GC12  
**Units:** ug/g  
**Matrix:** Solid

**% Moisture:** NA  
**Analyst:** MRA

Parameter	Control Sample			Control Sample Duplicate				QC Limits		
	Lab ID: 1016089 File ID: 12A121028	Spk Amt	Conc	%Rec Flg	Lab ID: File ID:	Spk Amt	Conc	%Rec Flg	RPD Flg	%Rec RPD
Diesel	50	48.8	98							58-129

**SECTION V**  
**Calibration and QC Information**  
**Control Sample Results**

**Chromatography**  
**SW8015-CA LUFT**

Surrogate Compounds	Lab ID: 1016089	Flags	Lab ID:	Flags	QC Recovery Limits
	%Recovery		%Recovery		
Octacosane	111				39-182

**SECTION V**  
**Calibration and QC Information**  
**Control Sample Results**

**Chromatography**  
**SW8015-CA LUFT**

**Client Sample ID:** LCS for HBN 8764 [EX/1659]  
**Prep Batch ID:** 8764  
**Analysis Batch ID:** 9051

**Instrument ID:** GC12  
**Units:** ug/g  
**Matrix:** Solid

**% Moisture:** NA  
**Analyst:** MRA

Parameter	Control Sample			Control Sample Duplicate				QC Limits		
	Lab ID: 1016090 File ID: 12AJ21029	Spk Amt	Conc	%Rec. Flg	Spk Amt	Conc	%Rec. Flg	RPD Flg	%Rec	RPD
Diesel	50	48.6	97						58-129	

**SECTION V**  
**Calibration and QC Information**  
**Control Sample Results**

**Chromatography**  
**SW8015-CA LUFT**

Surrogate Compounds	Lab ID: 1016090		Lab ID:		QC Recovery Limits
	%Recovery	Flags	%Recovery	Flags	
Octacosane	114				39-182

**SECTION V**  
**Calibration and QC Information**  
**Control Sample Results**

**Chromatography**  
**SW8015-CA LUFT**

**Client Sample ID:** LCS for HBN 8764 [EX/1659]  
**Prep Batch ID:** 8764  
**Analysis Batch ID:** 9051

**Instrument ID:** GC12  
**Units:** ug/g  
**Matrix:** Solid

**% Moisture:** NA  
**Analyst:** MRA

Parameter	Control Sample			Control Sample Duplicate			QC Limits		
	Lab ID: 1016085 File ID: 12AJ21030 Spk Amt	Conc	%Rec Flg	Lab ID: 1016086 File ID: 12AJ21031 Spk Amt	Conc	%Rec Flg	RPD Flg	%Rec	RPD
Diesel	50	41.2	82	50	47.3	95	15	58-129	28

**SECTION V**  
**Calibration and QC Information**  
**Control Sample Results**

**Chromatography**  
**SW8015-CA LUFT**

Surrogate Compounds	Lab ID: 1016085		Lab ID: 1016086		QC Recovery Limits
	%Recovery	Flags	%Recovery	Flags	
Octacosane	104		106		39-182

**SECTION VI**  
Batch Summaries

Extraction/Digestion Batch Summary  
Chromatography  
SW8015-CA LUFT

Extraction Batch ID: 8764

Start Date/Time: 10/11/2000 14:00  
Stop Date/Time: 10/11/2000 14:00

Analyst: SRK

Client Sample ID	Lab Sample ID	Sample Type	Matrix	Sample Size		Preparation Method
				Initial	Final	
MB for HBN 8764 [EX/1659]	1016084	Method Blank	Solid	20 g	2 mL	SW3550B
LCS for HBN 8764 [EX/1659]	1016085	Lab Control Sample	Solid	20 g	2 mL	SW3550B
LCSd for HBN 8764 [EX/1659]	1016086	Lab Control Sample Duplicate	Solid	20 g	2 mL	SW3550B
G3	2001001301	Field Sample	Solid	20.21 g	2 mL	SW3550B
G3	1016087	Matrix Spike	Solid	20 g	2 mL	SW3550B
G3	1016088	Matrix Spike Duplicate	Solid	20.04 g	2 mL	SW3550B
G8	2001001302	Field Sample	Solid	20.05 g	2 mL	SW3550B
G19	2001001303	Field Sample	Solid	20.02 g	2 mL	SW3550B
G20	2001001304	Field Sample	Solid	20.21 g	2 mL	SW3550B
G26	2001001305	Field Sample	Solid	20.15 g	2 mL	SW3550B
LCS for HBN 8764 [EX/1659]	1016089	Lab Control Sample	Solid	20 g	2 mL	SW3550B
LCS for HBN 8764 [EX/1659]	1016090	Lab Control Sample	Solid	20 g	2 mL	SW3550B

**SECTION VI**  
Batch Summaries

Analysis Batch Summary  
Chromatography  
SW8015-CA LUFT

Analysis Batch ID: 9051

Instrument ID: GC12

Analyst: MRA

Sequence	Client Sample ID	Lab Sample ID	Analysis		Sample Type	Analysis File ID	Sub-Batch ID
			Date	Time			
1	INSTRUMENT QC	1652	10/21/2000	17:03:05	Primer	12AJ21001	0
2	Lube for HBN 9051 [CH/1518]	1016711	10/21/2000	17:42:14	Lube Oil	12AJ21002	0
3	SBCH for HBN 9051 [CH/1518]	1016712	10/21/2000	18:23:10	System Blank	12AJ21003	0
4	INSTRUMENT QC	1414	10/21/2000	19:04:04	JET Cont. Cal. Check	12AJ21004	0
5	INSTRUMENT QC	1415	10/21/2000	19:45:11	KER Cont. Cal. Check	12AJ21005	0
6	INSTRUMENT QC	1413	10/21/2000	20:26:10	DSL Cont. Cal. Check	12AJ21006	0
7	MB for HBN 8228 [EX/1633]	1014737	10/21/2000	21:07:10	Method Blank	12AJ21007	0
8	LCS for HBN 8228 [EX/1633]	1014738	10/21/2000	21:48:01	Lab Control Sample	12AJ21008	0
9	LCSd for HBN 8228 [EX/1633]	1014739	10/21/2000	22:28:57	Lab Control Sample Duplicate	12AJ21009	0
10	??????????	2000905713	10/21/2000	23:09:49	Field Sample	12AJ21010	0
11	??????????	2000905714	10/21/2000	23:50:34	Field Sample	12AJ21011	0
12	??????????	2000905715	10/22/2000	00:31:35	Field Sample	12AJ21012	0
13	??????????	2000905716	10/22/2000	01:12:24	Field Sample	12AJ21013	0
14	??????????	2000905717	10/22/2000	01:53:16	Field Sample	12AJ21014	0
15	SBCH for HBN 9051 [CH/1518]	1016716	10/22/2000	02:34:17	System Blank	12AJ21015	0
16	LCS for HBN 8498 [EX/1642]	1015313	10/22/2000	03:15:08	Lab Control Sample	12AJ21016	0
17	MB for HBN 8498 [EX/1642]	1015312	10/22/2000	03:55:58	Method Blank	12AJ21017	0
18	LCSd for HBN 8498 [EX/1642]	1015314	10/22/2000	04:36:53	Lab Control Sample Duplicate	12AJ21018	0
19	??????????	2000911713	10/22/2000	05:17:37	Field Sample	12AJ21019	0
20	??????????	2000911714	10/22/2000	05:58:28	Field Sample	12AJ21020	0
21	??????????	2000911715	10/22/2000	06:39:26	Field Sample	12AJ21021	0
22	??????????	2000911716	10/22/2000	07:20:13	Field Sample	12AJ21022	0
23	??????????	2000911717	10/22/2000	08:00:58	Field Sample	12AJ21023	0
24	INSTRUMENT QC	1414	10/22/2000	08:41:46	JET Cont. Cal. Check	12AJ21024	0
25	INSTRUMENT QC	1415	10/22/2000	09:22:42	KER Cont. Cal. Check	12AJ21025	0
26	INSTRUMENT QC	1413	10/22/2000	10:03:26	DSL Cont. Cal. Check	12AJ21026	0
29	MB for HBN 8764 [EX/1659]	1016084	10/22/2000	10:44:15	Method Blank	12AJ21027	0
30	LCS for HBN 8764 [EX/1659]	1016089	10/22/2000	11:25:06	Lab Control Sample	12AJ21028	0
31	LCS for HBN 8764 [EX/1659]	1016090	10/22/2000	12:06:04	Lab Control Sample	12AJ21029	0

**SECTION VI**  
Batch Summaries

Analysis Batch Summary  
Chromatography  
SW8015-CA LUFT

Analysis Batch ID: 9051 continued

Sequence	Client Sample ID	Lab Sample ID	Analysis		Sample Type	Analysis File ID	Sub-Batch ID
			Date	Time			
32	LCS for HBN 8764 [EX/1659]	1016085	10/22/2000	12:47:05	Lab Control Sample	12AJ21030	0
33	LCSd for HBN 8764 [EX/1659]	1016086	10/22/2000	13:28:11	Lab Control Sample Duplicate	12AJ21031	0
36	G3	2001001301	10/22/2000	14:09:10	Field Sample	12AJ21032	0
37	G3	1016088	10/22/2000	15:43:23	Matrix Spike Duplicate	12AJ21034	0
38	G8	2001001302	10/22/2000	16:24:18	Field Sample	12AJ21035	0
39	G19	2001001303	10/22/2000	17:05:06	Field Sample	12AJ21036	0
42	G20	2001001304	10/22/2000	17:45:50	Field Sample	12AJ21037	0
45	G26	2001001305	10/22/2000	18:26:34	Field Sample	12AJ21038	0
46	G3	1016087	10/22/2000	19:07:20	Matrix Spike	12AJ21039	0
49	G8	2001001302	10/22/2000	19:47:12	Field Sample	12AJ21040	0
52	G19	2001001303	10/22/2000	20:28:15	Field Sample	12AJ21041	0
53	INSTRUMENT QC	1414	10/22/2000	21:09:52	JET Cont. Cal. Check	12AJ21042	0
54	INSTRUMENT QC	1415	10/22/2000	21:50:46	KER Cont. Cal. Check	12AJ21043	0
55	INSTRUMENT QC	1413	10/22/2000	22:31:35	DSL Cont. Cal. Check	12AJ21044	0

SECTION VI - Batch Summaries - 10/27/2000 15:41  
LIMS Workorder: Laurinberg TPH [20010013] Abbott Laboratories  
STL Austin

**SECTION VII**  
Certifications

State/Agency	ID #
Arkansas Department of Pollution Control and Ecology	
California Environmental Laboratory Accreditation Program / Waste Water/Hazardous Waste	2257
Kansas Department of Health and Environment / Solid and Hazardous Waste/Drinking Water	E-10165
Louisiana Department of Environmental Quality, ELAP / Waste Water/Hazardous Waste/Air/Emissions	
New Jersey Department of Environmental Protection	82005
New York State Department of Health / Waste Water/Hazardous Waste	10915
North Carolina Dept. of Natural Resources & Community Development / Waste Water	302
Oklahoma Water Resources Board / Waste Water	8720
South Carolina Dept. of Health & Environmental Control	82003002
Utah Department of Health / Solid and Hazardous Waste	RADC
Wisconsin Department of Natural Resources	999885260
US Air Force/AFCEE	Participating Laboratory
US Army Corps of Engineers (ACE)	
US Department of Agriculture / Restricted Soils Permit	S-42350

SECTION VII - Certifications - 10/27/2000 15:41  
LIMS Workorder: Laurinberg TPH [20010013] Abbott Laboratories  
STL Austin



**STL Austin**  
 14046 Summit Drive  
 Austin, TX 78728  
 Tel: (512) 244-0855  
 Fax: (512) 244-0160

**Laboratory Chain of Custody Record**

PROJECT <i>Advt. Soil &amp; GW Assessment</i>			MS / MSD	NO. OF CONTAINERS	TPH DRD	ANALYSES										REMARKS	
SITE: <i>Abbott Labs, Laurinburg, NC</i>																	
PREPARED BY (Signature) <i>Shannon Wallis</i>																	
FIELD SAMPLE LD.	SAMPLE MATRIX	DAY/TIME															
G3	Soil	10-2-00 / 1640	1	X													
G8	Soil	10-2-00 / 1630	1	X													
G19	Soil	10-2-00 / 1610	1	X													
G20	Soil	10-2-00 / 1600	1	X													
G26	Soil	10-2-00 / 1617	1	X													
REMARKS <i>Please send chromatographs w/results</i>																	
Attention: <i>Jane Lindsey</i>																	
RELINQUISHED BY: _____ DATE _____ TIME _____																	
RECEIVED BY:	DATE	TIME	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME	RELINQUISHED BY:	DATE	TIME	RELINQUISHED BY:	DATE	TIME	RELINQUISHED BY:	DATE	TIME
<i>Rhoda Willis</i>	<i>7-29-00</i>		<i>Shannon Wallis</i>														

RECEIVED FOR LABORATORY BY:	DATE	TIME	AIRBILL NO.	OPENED BY:	DATE	TIME	TEMP °C	SEAL #	CONDITION
<i>C. Spindler</i>	<i>10/3/00</i>								
REMARKS: <i>20010013</i> <i>ADD 20-1334</i>									

100 **fedEx USA Airbill** Tracking 8236 2619 7575

**1 From** This portion can be removed for Recipient's records.  
 Date *10-3-00* FedEx Tracking Number *823626197575*

**2 Your Internal Billing Reference** *805685.01*

**3 To** Recipient's Name *Jane Lindsey* Phone *512 244-0855*  
 Company *Severn Trent Laboratories*  
 Address *14046 Summit Park Bldg. B*  
 City *Austin* State *TX* ZIP *78728*

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LABORATORY ANALYTICAL REPORTS FOR SOIL SAMPLES  
COLLECTED ON NOVEMBER 27, 2000

## STL Austin Laboratory Analysis Report

December 22, 2000

Martha Meyers-Lee  
Radian International LLC  
1600 Perimeter Park Dr.  
Morrisville, NC 27560

(919)461-1519 (Business)

RE: Laboratory Reference: Fuel release site [20011213] Abbott Laboratories

Dear Martha Meyers-Lee:

STL Austin received samples with a request for the analytical fractions listed below.  
Results for the indicated analytical fractions and associated quality control data are enclosed in this report.

Fraction	Status	Reported	Approvals/Signature - Title
MS-VOA	Re-Issue	12/22/2000	<i>[Signature]</i> <i>[Signature]</i> <i>[Signature]</i> 12/22/00

STL Austin appreciates your business and looks forward to serving you again. If you have any questions concerning your report or need any additional information, please call me at (512)310-5249 or fax inquiries to (512)244-0160.

Sincerely,

Jane Lindsey  
Client Services/Project Manager

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LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
STL Austin

**SECTION II**  
**Report Summaries**

**MS-VOA**

Client Name: Abbott Laboratories  
Client Code: ABBOTT

Project Name: Fuel release site [20011213] Abbott Laboratories  
Facility Name:

**Workorder Summary**

Client Sample ID	Lab Sample ID	Sample Matrix	Method Citation	Method Description
G-19	2001121301	Solid	SW8260B	Volatiles by GC/MS
G-8	2001121302	Solid	SW8260B	Volatiles by GC/MS
TRIP BLANK	2001121303	Solid	SW8260B	Volatiles by GC/MS

**Protocol Summary**

Client Sample ID	Lab Sample ID	Date & Time Collected	Date & Time Received	Prep Batch ID	Date & Time Prepared	Analysis Batch ID	Date & Time Analyzed	Hold Time Spec			
								Prep Spec	Actual	Analysis Spec	Actual
<b>Method: SW8260B</b>											
G-19	2001121301	11/27/00 09:10	11/28/00 09:30	9657	12/08/00 16:35	9657	12/08/00 16:35	14D	11D	14D	11D
G-19	2001121301	11/27/00 09:10	11/28/00 09:30	9657	12/10/00 18:01	9657	12/10/00 18:01	14D	13D	14D	13D
G-8	2001121302	11/27/00 12:10	11/28/00 09:30	9657	12/11/00 15:20	9657	12/11/00 15:20	14D	14D	14D	14D
G-8	2001121302	11/27/00 12:10	11/28/00 09:30	9657	12/10/00 18:36	9657	12/10/00 18:36	14D	13D	14D	13D
TRIP BLANK	2001121303	11/20/00 00:00	11/28/00 09:30	9592	11/30/00 19:43	9592	11/30/00 19:43	14D	10D	14D	10D

SECTION II - Report Summaries - 12/22/2000 13:57  
LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
STL Austin

SECTION III  
Comments and Flag Definitions

MS-VOA

Standard Data Qualifiers

Flag	Definition
B	Analyte detected in method blank and concentration > MDL
E	Analyte concentration exceeded calibration range
I	Internal standard area count outside acceptance criteria
J	Result > or = MDL; and <PQL
NA	Not analyzed/Not available
ND	Not detected at the specified reporting limit
Q	Result does not meet tolerance in Protocol Specification
R	Result reported elsewhere
U	Result less than sample specific method detection limit

Analyst Comments

Flag	Affected Sample	Method	Comment
	G-19	SW8260B	For batch 9657 see QCER 2292.
	MBH for HBN 9657 [MSV/11426]	SW8260B	For batch 9657 see QCER 2303.
	TRIP BLANK	SW8260B	For batch 9592 see QCER 2265.

Sample Condition Comments

Affected Sample	Comment

SECTION III - Comments and Flag Definitions - 12/22/2000 13:57  
LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
STL Austin

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SECTION IV  
Analytical Results

MS-VOA  
SW8260B

Client Sample ID  
Lab Sample ID  
Matrix  
Reported As  
% Moisture  
Date/Time Collected  
Date/Time Prepared  
Date/Time Analyzed  
Dilution Factor  
Instrument  
Units

G-19	G-19	G-8
2001121301	2001121301	2001121302
Solid	Solid	Solid
DRY WEIGHT	DRY WEIGHT	DRY WEIGHT
12.6	12.6	18.3
11/27/2000 09:10	11/27/2000 09:10	11/27/2000 12:10
12/08/2000 16:35	12/10/2000 18:01	12/10/2000 18:36
12/08/2000 16:35	12/10/2000 18:01	12/10/2000 18:36
1.00000	1.0000	1.0000
MSDB	MSDB	MSDB
ug/Kg	ug/Kg	ug/Kg

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL
Acetone	67-64-1	226	J	188	0.000	3.80	JB	1.86	0.000	4.10	JB	2.02	0.000
Benzene	71-43-2	ND		40.6	0.000	ND		0.402	0.000	ND		0.436	0.000
2-Butanone (MEK)	78-93-3	222	JB	128	0.000	ND		1.26	0.000	ND		1.37	0.000
n-Butylbenzene	104-51-8	143	J	94.8	0.000	23.0		0.939	0.000	394	EIR	1.02	0.000
sec-Butylbenzene	135-98-8	116	J	70.9	0.000	6.11		0.702	0.000	296	EIR	0.761	0.000
tert-Butylbenzene	98-06-6	ND		57.2	0.000	ND		0.566	0.000	ND		0.614	0.000
Carbon disulfide	75-15-0	ND		42.3	0.000	ND		0.419	0.000	ND		0.454	0.000
Chloromethane	74-87-3	ND		92.0	0.000	ND		0.911	0.000	ND		0.988	0.000
Dibromochloromethane	124-48-1	ND		41.7	0.000	ND		0.413	0.000	ND		0.448	0.000
1,2-Dibromoethane	106-93-4	ND		38.3	0.000	ND		0.379	0.000	ND		0.411	0.000
1,4-Dichlorobenzene	106-46-7	77.1	J	73.0	0.000	ND		0.723	0.000	ND		0.785	0.000
1,2-Dichlorobenzene	95-50-1	ND		39.3	0.000	ND		0.389	0.000	ND		0.422	0.000
1,3-Dichlorobenzene	541-73-1	ND		54.2	0.000	ND		0.537	0.000	ND		0.583	0.000
1,1-Dichloroethane	75-34-3	ND		46.4	0.000	ND		0.459	0.000	ND		0.498	0.000
1,2-Dichloroethane	107-06-2	ND		33.2	0.000	63.4		0.328	0.000	63.2		0.356	0.000
1,1-Dichloroethene	75-35-4	ND		34.0	0.000	ND		0.336	0.000	ND		0.365	0.000
cis-1,2-Dichloroethene	156-59-2	ND		31.6	0.000	ND		0.313	0.000	ND		0.339	0.000
trans-1,2-Dichloroethene	156-60-5	ND		37.2	0.000	ND		0.368	0.000	ND		0.399	0.000
1,2-Dichloropropane	78-87-5	ND		38.3	0.000	ND		0.379	0.000	ND		0.411	0.000
cis-1,3-Dichloropropene	10061-01-5	ND		36.7	0.000	ND		0.363	0.000	ND		0.394	0.000
trans-1,3-Dichloropropene	10061-02-6	ND		51.1	0.000	ND		0.506	0.000	ND		0.548	0.000

SECTION IV - Analytical Results - 12/22/2000 13:57  
LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
STL Austin

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**SECTION IV  
Analytical Results**

MS-VOA  
SW8260B

Client Sample ID	G-19	G-19	G-8
Lab Sample ID	2001121301	2001121301	2001121302

Continued

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL
Ethylbenzene	100-41-4	23.2	U	47.9	0.000	ND		0.474	0.000	152		0.514	0.000
Hexachloro-1,3-butadiene	87-68-3	ND		107	0.000	ND		1.06	0.000	ND	I	1.15	0.000
2-Hexanone	591-78-6	ND		78.2	0.000	ND		0.774	0.000	ND		0.840	0.000
Isopropylbenzene	98-82-8	76.3	J	51.9	0.000	ND		0.513	0.000	128		0.557	0.000
Methyl tert-butyl ether (MTBE)	1634-04-4	34.7	U	68.6	0.000	ND		0.679	0.000	ND		0.737	0.000
Methylene chloride	75-09-2	92.8	J	30.8	0.000	1.19	JB	0.305	0.000	0.677	JB	0.330	0.000
Naphthalene	91-20-3	168	J	64.0	0.000	44.2		0.634	0.000	38.8	I	0.688	0.000
n-Propylbenzene	103-65-1	ND		84.2	0.000	ND		0.834	0.000	466	EIR	0.905	0.000
1,1,2,2-Tetrachloroethane	79-34-5	ND		55.6	0.000	ND		0.551	0.000	ND		0.597	0.000
Tetrachloroethene	127-18-4	ND		54.7	0.000	ND		0.542	0.000	3.22	J	0.588	0.000
Toluene	108-88-3	182	JB	34.8	0.000	ND		0.344	0.000	4.07	J	0.373	0.000
1,2,4-Trichlorobenzene	120-82-1	ND		82.2	0.000	ND		0.814	0.000	ND	I	0.882	0.000
1,2,4-Trimethylbenzene	95-63-6	174	J	59.0	0.000	53.2		0.584	0.000	2950	EIR	0.634	0.000
1,3,5-Trimethylbenzene	108-67-8	132	J	58.9	0.000	16.2		0.583	0.000	1010	EIR	0.633	0.000
Xylenes (Total)	1330-20-7	106	J	91.2	0.000	ND		0.903	0.000	1200	ER	0.979	0.000

SECTION IV - Analytical Results - 12/22/2000 13:57  
LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
STL Austin

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**SECTION IV  
Analytical Results  
Surrogates**

MS-VOA  
SW8260B

Client Sample ID	G-19	G-19	G-8
Lab Sample ID	2001121301	2001121301	2001121302
Matrix	Solid	Solid	Solid
Reported As	DRY WEIGHT	DRY WEIGHT	DRY WEIGHT
% Moisture	12.6	12.6	18.3
Date/Time Collected	11/27/2000 09:10	11/27/2000 09:10	11/27/2000 12:10
Date/Time Prepared	12/08/2000 16:35	12/10/2000 18:01	12/10/2000 18:36
Date/Time Analyzed	12/08/2000 16:35	12/10/2000 18:01	12/10/2000 18:36
Dilution Factor	100.0000	1.0000	1.0000
Instrument	MSDB	MSDB	MSDB
Units	ug/Kg	ug/Kg	ug/Kg

Surrogate Compound	% Recovery	Limits	F	% Recovery	Limits	F	% Recovery	Limits	F
1-Bromo-4-fluorobenzene	101	12-138	99	27-145	125	27-145			
1,2-Dichloroethane-d4	65	21-135	91	57-145	92	57-145			
Toluene-d8	72	22-130	102	61-135	98	61-135			

SECTION IV - Analytical Results - 12/22/2000 13:57  
LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
STL Austin

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**SECTION IV  
Analytical Results**

MS-VOA  
SW8260B

Client Sample ID  
Lab Sample ID  
Matrix  
Reported As  
% Moisture  
Date/Time Collected  
Date/Time Prepared  
Date/Time Analyzed  
Dilution Factor  
Instrument  
Units

G-8	TRIP BLANK
2001121302	2001121303
Solid	Solid
DRY WEIGHT	Received
18.3	NA
11/27/2000 12:10	11/20/2000 00:00
12/11/2000 15:20	11/30/2000 19:43
12/11/2000 15:20	11/30/2000 19:43
100.0000	1.0000
MSDB	MSDB
ug/Kg	ug/Kg

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL
Acetone	67-64-1	312	J	199	0.000	2.20	J	1.65	0.000				
Benzene	71-43-2	ND		43.0	0.000	ND		0.356	0.000				
2-Butanone (MEK)	78-93-3	197	JB	135	0.000	ND		1.12	0.000				
n-Butylbenzene	104-51-8	1010		100	0.000	ND		0.832	0.000				
sec-Butylbenzene	135-98-8	467	J	75.1	0.000	ND		0.622	0.000				
tert-Butylbenzene	98-06-6	ND		60.6	0.000	ND		0.502	0.000				
Carbon disulfide	75-15-0	43.2	U	44.8	0.000	ND		0.371	0.000				
Chloromethane	74-87-3	ND		97.4	0.000	ND		0.807	0.000				
Dibromochloromethane	124-48-1	ND		44.2	0.000	ND		0.366	0.000				
1,2-Dibromoethane	106-93-4	ND		40.6	0.000	ND		0.336	0.000				
1,4-Dichlorobenzene	106-46-7	ND		77.4	0.000	ND		0.641	0.000				
1,2-Dichlorobenzene	95-50-1	ND		41.6	0.000	ND		0.345	0.000				
1,3-Dichlorobenzene	541-73-1	ND		57.5	0.000	ND		0.476	0.000				
1,1-Dichloroethane	75-34-3	ND		49.1	0.000	ND		0.407	0.000				
1,2-Dichloroethane	107-06-2	ND		35.1	0.000	ND		0.291	0.000				
1,1-Dichloroethene	75-35-4	ND		36.0	0.000	ND		0.298	0.000				
cis-1,2-Dichloroethene	156-59-2	ND		33.4	0.000	ND		0.277	0.000				
trans-1,2-Dichloroethene	156-60-5	ND		39.4	0.000	ND		0.326	0.000				
1,2-Dichloropropane	78-87-5	ND		40.6	0.000	ND		0.336	0.000				
cis-1,3-Dichloropropene	10061-01-5	ND		38.9	0.000	ND		0.322	0.000				
trans-1,3-Dichloropropene	10061-02-6	ND		54.1	0.000	ND		0.448	0.000				

SECTION IV - Analytical Results - 12/22/2000 13:57  
LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
STL Austin

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**SECTION IV  
Analytical Results**

MS-VOA  
SW8260B

Client Sample ID  
Lab Sample ID

G-8	TRIP BLANK
2001121302	2001121303

Continued

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL
Ethylbenzene	100-41-4	161	J	50.7	0.000	ND		0.420	0.000				
Hexachloro-1,3-butadiene	87-68-3	ND		114	0.000	ND		0.942	0.000				
2-Hexanone	591-78-6	ND		82.8	0.000	ND		0.686	0.000				
Isopropylbenzene	98-82-8	189	J	54.9	0.000	ND		0.455	0.000				
Methyl tert-butyl ether (MTBE)	1634-04-4	ND		72.7	0.000	ND		0.602	0.000				
Methylene chloride	75-09-2	48.9	J	32.6	0.000	ND		0.270	0.000				
Naphthalene	91-20-3	1410		67.8	0.000	ND	B	0.562	0.000				
n-Propylbenzene	103-65-1	413	J	89.2	0.000	ND		0.739	0.000				
1,1,2,2-Tetrachloroethane	79-34-5	ND		58.9	0.000	ND		0.488	0.000				
Tetrachloroethene	127-18-4	ND		57.9	0.000	ND		0.480	0.000				
Toluene	108-88-3	153	JB	36.8	0.000	ND	B	0.305	0.000				
1,2,4-Trichlorobenzene	120-82-1	ND		87.0	0.000	ND		0.721	0.000				
1,2,4-Trimethylbenzene	95-63-6	3410		62.5	0.000	ND		0.518	0.000				
1,3,5-Trimethylbenzene	108-67-8	1070		62.4	0.000	ND		0.517	0.000				
Xylenes (Total)	1330-20-7	1180	J	96.6	0.000	ND		0.800	0.000				

SECTION IV - Analytical Results - 12/22/2000 13:57  
LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
STL Austin

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**SECTION IV  
Analytical Results  
Surrogates**

MS-VOA  
SW8260B

Client Sample ID	G-8	TRIP BLANK
Lab Sample ID	2001121302	2001121303
Matrix	Solid	Solid
Reported As	DRY WEIGHT	Received
% Moisture	18.3	NA
Date/Time Collected	11/27/2000 12:10	11/20/2000 00:00
Date/Time Prepared	12/11/2000 15:20	11/30/2000 19:43
Date/Time Analyzed	12/11/2000 15:20	11/30/2000 19:43
Dilution Factor	100.0000	1.0000
Instrument	MSDB	MSDB
Units	ug/Kg	ug/Kg

Surrogate Compound	% Recovery	Limits	F	% Recovery	Limits	F	% Recovery	Limits	F
1-Bromo-4-fluorobenzene	105	12-138		100	27-145				
1,2-Dichloroethane-d4	66	21-135		95	57-145				
Toluene-d8	72	22-130		100	61-135				

SECTION IV - Analytical Results - 12/22/2000 13:57  
LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
STL Austin

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**SECTION V  
Calibration and QC Information  
Calibration Verification Results**

MS-VOA  
SW8260B

Sample Type: Continuing Calibration Check  
Analysis Batch ID: 9592 Instrument Data File: B1130011.D Date/Time Analyzed: 11/30/2000 17:39  
Instrument ID: MSDB Analyst: BJP Units: ug/Kg

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits %Recovery
Acetone	50	36.8	J	74		
Benzene	50	51.5		103		
2-Butanone (MEK)	50	43.0		86		
n-Butylbenzene	50	52.0		104		
sec-Butylbenzene	50	51.2		102		
tert-Butylbenzene	50	52.3		105		
Carbon disulfide	50	47.3		95		
Chloromethane	50	50.9		102		
Dibromochloromethane	50	52.0		104		
1,2-Dibromoethane	50	51.9		104		
1,4-Dichlorobenzene	50	52.5		105		
1,2-Dichlorobenzene	50	51.2		102		
1,3-Dichlorobenzene	50	52.8		106		
1,1-Dichloroethane	50	47.7		95		
1,2-Dichloroethane	50	47.3		95		
1,1-Dichloroethene	50	45.9		92		80-120
cis-1,2-Dichloroethene	50	53.3		107		
trans-1,2-Dichloroethene	50	46.5		93		
1,2-Dichloropropane	50	52.0		104		80-120
cis-1,3-Dichloropropene	50	52.9		106		
trans-1,3-Dichloropropene	50	52.4		105		
Ethylbenzene	50	50.8		102		80-120
Hexachloro-1,3-butadiene	50	50.7		101		
2-Hexanone	50	44.5		89		
Isopropylbenzene	50	50.6		101		
Methyl tert-butyl ether (MTBE)	50	43.3		87		

SECTION V - Calibration and QC Information - 12/22/2000 13:57  
LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
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**SECTION V**  
**Calibration and QC Information**  
**Calibration Verification Results**

MS-VOA  
 SW8260B

Sample Type: Continuing Calibration Check  
 Analysis Batch ID: 9592 Instrument Data File: B1130011.D Date/Time Analyzed: 11/30/2000 17:39  
 Instrument ID: MSDB Analyst: BJP Units: ug/Kg

Continued

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits %Recovery
Methylene chloride	50	47.9		96		
Naphthalene	50	47.0		94		
n-Propylbenzene	50	54.0		108		
1,1,2,2-Tetrachloroethane	50	49.0		98		
Tetrachloroethene	50	51.6		103		
Toluene	50	51.0		102		80-120
1,2,4-Trichlorobenzene	50	50.7		101		
1,2,4-Trimethylbenzene	50	51.0		102		
1,3,5-Trimethylbenzene	50	52.9		106		
Xylenes (Total)	150	154		103		

**SECTION V**  
**Calibration and QC Information**  
**Calibration Verification Results**

MS-VOA  
 SW8260B

Sample Type: Continuing Calibration Check  
 Analysis Batch ID: 9657 Instrument Data File: B1207008.D Date/Time Analyzed: 12/08/2000 09:35  
 Instrument ID: MSDB Analyst: BJP Units: ug/Kg

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits %Recovery
Acetone	50	57.0		114		
Benzene	50	44.2		88		
2-Butanone (MEK)	50	59.2		118		
n-Butylbenzene	50	48.1		96		
sec-Butylbenzene	50	48.2		96		
tert-Butylbenzene	50	48.8		98		
Carbon disulfide	50	40.2		80		
Chloromethane	50	37.3		75		
Dibromochloromethane	50	50.8		102		
1,2-Dibromoethane	50	50.5		101		
1,4-Dichlorobenzene	50	48.8		98		
1,2-Dichlorobenzene	50	47.0		94		
1,3-Dichlorobenzene	50	48.1		96		
1,1-Dichloroethane	50	43.5		87		
1,2-Dichloroethane	50	47.3		95		
1,1-Dichloroethene	50	43.6		87		80-120
cis-1,2-Dichloroethene	50	44.4		89		
trans-1,2-Dichloroethene	50	47.9		96		
1,2-Dichloropropane	50	46.1		92		80-120
cis-1,3-Dichloropropene	50	46.9		94		
trans-1,3-Dichloropropene	50	50.3		101		
Ethylbenzene	50	48.6		97		80-120
Hexachloro-1,3-butadiene	50	49.8		100		
2-Hexanone	50	59.9		120		
Isopropylbenzene	50	47.5		95		
Methyl tert-butyl ether (MTBE)	50	44.0		88		

SECTION V - Calibration and QC Information - 12/22/2000 13:57  
 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
 STL Austin

**SECTION V**  
**Calibration and QC Information**  
**Calibration Verification Results**

MS-VOA  
 SW8260B

Sample Type: Continuing Calibration Check  
 Analysis Batch ID: 9657 Instrument Data File: B1207008.D Date/Time Analyzed: 12/08/2000 09:35  
 Instrument ID: MSDB Analyst: BJP Units: ug/Kg

Continued

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits %Recovery
Methylene chloride	50	45.6		91		
Naphthalene	50	46.2		92		
n-Propylbenzene	50	50.6		101		
1,1,2,2-Tetrachloroethane	50	52.0		104		
Tetrachloroethene	50	49.3		99		
Toluene	50	46.7		93		80-120
1,2,4-Trichlorobenzene	50	48.9		98		
1,2,4-Trimethylbenzene	50	48.0		96		
1,3,5-Trimethylbenzene	50	47.6		95		
Xylenes (Total)	150	142		95		

**SECTION V**  
**Calibration and QC Information**  
**Calibration Verification Results**

MS-VOA  
 SW8260B

Sample Type: Continuing Calibration Check  
 Analysis Batch ID: 9657 Instrument Data File: B1207026.D Date/Time Analyzed: 12/10/2000 17:31  
 Instrument ID: MSDB Analyst: BJP Units: ug/Kg

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits	%Recovery
Acetone	50	58.5		117			
Benzene	50	47.5		95			
2-Butanone (MEK)	50	90.6		181			
n-Butylbenzene	50	47.8		96			
sec-Butylbenzene	50	48.7		97			
tert-Butylbenzene	50	48.7		97			
Carbon disulfide	50	50.5		101			
Chloromethane	50	38.3		77			
Dibromochloromethane	50	50.1		100			
1,2-Dibromoethane	50	50.7		101			
1,4-Dichlorobenzene	50	48.7		97			
1,2-Dichlorobenzene	50	48.1		96			
1,3-Dichlorobenzene	50	48.8		98			
1,1-Dichloroethane	50	51.5		103			
1,2-Dichloroethane	50	48.7		97			
1,1-Dichloroethene	50	49.2		98		80-120	
cis-1,2-Dichloroethene	50	47.6		95			
trans-1,2-Dichloroethene	50	51.5		103			
1,2-Dichloropropane	50	47.7		95		80-120	
cis-1,3-Dichloropropene	50	49.4		99			
trans-1,3-Dichloropropene	50	50.4		101			
Ethylbenzene	50	47.9		96		80-120	
Hexachloro-1,3-butadiene	50	47.6		95			
2-Hexanone	50	56.8		114			
Isopropylbenzene	50	47.4		95			
Methyl tert-butyl ether (MTBE)	50	51.0		102			

SECTION V - Calibration and QC Information - 12/22/2000 13:57  
 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
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**SECTION V**  
**Calibration and QC Information**  
**Calibration Verification Results**

MS-VOA  
 SW8260B

Sample Type: Continuing Calibration Check  
 Analysis Batch ID: 9657 Instrument Data File: B1207026.D Date/Time Analyzed: 12/10/2000 17:31  
 Instrument ID: MSDB Analyst: BJP Units: ug/Kg

Continued

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits	%Recovery
Methylene chloride	50	49.3		99			
Naphthalene	50	47.5		95			
n-Propylbenzene	50	50.0		100			
1,1,2,2-Tetrachloroethane	50	50.7		101			
Tetrachloroethene	50	47.8		96			
Toluene	50	46.8		94		80-120	
1,2,4-Trichlorobenzene	50	48.0		96			
1,2,4-Trimethylbenzene	50	48.9		98			
1,3,5-Trimethylbenzene	50	48.7		97			
Xylenes (Total)	150	144		96			

SECTION V - Calibration and QC Information - 12/22/2000 13:57  
 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
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**SECTION V**  
**Calibration and QC Information**  
**Calibration Verification Results**

MS-VOA  
 SW8260B

Sample Type: Continuing Calibration Check  
 Analysis Batch ID: 9657 Instrument Data File: B1207032.D Date/Time Analyzed: 12/11/2000 14:49  
 Instrument ID: MSDB Analyst: BJP Units: ug/Kg

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits %Recovery
Acetone	50	49.8	J	100		
Benzene	50	54.7		109		
2-Butanone (MEK)	50	58.9		118		
n-Butylbenzene	50	56.7		113		
sec-Butylbenzene	50	57.3		115		
tert-Butylbenzene	50	56.9		114		
Carbon disulfide	50	55.7		111		
Chloromethane	50	41.1		82		
Dibromochloromethane	50	58.5		117		
1,2-Dibromoethane	50	53.8		108		
1,4-Dichlorobenzene	50	57.3		115		
1,2-Dichlorobenzene	50	56.7		113		
1,3-Dichlorobenzene	50	55.8		112		
1,1-Dichloroethane	50	56.7		113		
1,2-Dichloroethane	50	54.2		108		
1,1-Dichloroethene	50	58.2		116		80-120
cis-1,2-Dichloroethene	50	57.1		114		
trans-1,2-Dichloroethene	50	58.6		117		
1,2-Dichloropropane	50	56.3		113		80-120
cis-1,3-Dichloropropene	50	57.5		115		
trans-1,3-Dichloropropene	50	56.9		114		
Ethylbenzene	50	56.5		113		80-120
Hexachloro-1,3-butadiene	50	51.7		103		
2-Hexanone	50	49.9		100		
Isopropylbenzene	50	58.2		116		
Methyl tert-butyl ether (MTBE)	50	59.9		120		

SECTION V - Calibration and QC Information - 12/22/2000 13:57  
 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
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**SECTION V**  
**Calibration and QC Information**  
**Calibration Verification Results**

MS-VOA  
 SW8260B

Sample Type: Continuing Calibration Check  
 Analysis Batch ID: 9657 Instrument Data File: B1207032.D Date/Time Analyzed: 12/11/2000 14:49  
 Instrument ID: MSDB Analyst: BJP Units: ug/Kg

Continued

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits %Recovery
Methylene chloride	50	55.8		112		
Naphthalene	50	52.9		106		
n-Propylbenzene	50	56.6		113		
1,1,2,2-Tetrachloroethane	50	53.1		106		
Tetrachloroethene	50	58.5		117		
Toluene	50	56.7		113		80-120
1,2,4-Trichlorobenzene	50	53.4		107		
1,2,4-Trimethylbenzene	50	58.4		117		
1,3,5-Trimethylbenzene	50	57.5		115		
Xylenes (Total)	150	174		116		

**SECTION V**  
**Calibration and QC Information**  
**Mass Spectrometer Tune**

MS-VOA  
 SW8260B  
 BFB

Analysis Batch ID: 9592  
 Instrument ID: MSDB

Instrument Data File: B1130010.D  
 Injection Time: 11/30/2000 17:12

Date Analyzed: 11/30/2000 17:12  
 Analyst: BJP

Mass/Energy	Ion Abundance Criteria		% Relative Abundance
	Lower Limit	Upper Limit	
50	15	40	27.3
75	30	60	53.7
95	100	100	100
96	5	9	6.6
173	0	2	0
174	50		54.7
175	5	9	8.6
176	95	101	96.3
177	5	9	7.3

SECTION V - Calibration and QC Information - 12/22/2000 13:57  
 LJMS Workorder: Fuel release site [20011213] Abbott Laboratories  
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**SECTION V**  
**Calibration and QC Information**  
**Mass Spectrometer Tune**

MS-VOA  
 SW8260B  
 BFB

Analysis Batch ID: 9657  
 Instrument ID: MSDB

Instrument Data File: B1207008.D  
 Injection Time: 12/08/2000 09:35

Date Analyzed: 12/08/2000 09:35  
 Analyst: BJP

Mass/Energy	Ion Abundance Criteria		% Relative Abundance
	Lower Limit	Upper Limit	
50	15	40	37.2
75	30	60	54.2
95	100	100	100
96	5	9	6.1
173	0	2	0
174	50		70.4
175	5	9	7.5
176	95	101	97.8
177	5	9	6.4

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 LJMS Workorder: Fuel release site [20011213] Abbott Laboratories  
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**SECTION V**  
**Calibration and QC Information**  
**Mass Spectrometer Tune**

MS-VOA  
 SW8260B  
 BFB

Analysis Batch ID: 9657  
 Instrument ID: MSDB

Instrument Data File: B1207026.D  
 Injection Time: 12/10/2000 17:31

Date Analyzed: 12/10/2000 17:31  
 Analyst: BJP

Mass/Energy	Ion Abundance Criteria		% Relative Abundance
	Lower Limit	Upper Limit	
50	15	40	35.8
75	30	60	52.8
95	100	100	100
96	5	9	6.2
173	0	2	0
174	50		69.3
175	5	9	6.7
176	95	101	95.5
177	5	9	5.7

SECTION V - Calibration and QC Information - 12/22/2000 13:57  
 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
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**SECTION V**  
**Calibration and QC Information**  
**Mass Spectrometer Tune**

MS-VOA  
 SW8260B  
 BFB

Analysis Batch ID: 9657  
 Instrument ID: MSDB

Instrument Data File: B1207032.D  
 Injection Time: 12/11/2000 14:49

Date Analyzed: 12/11/2000 14:49  
 Analyst: BJP

Mass/Energy	Ion Abundance Criteria		% Relative Abundance
	Lower Limit	Upper Limit	
50	15	40	31.1
75	30	60	46.7
95	100	100	100
96	5	9	5.6
173	0	2	0
174	50		86
175	5	9	7.3
176	95	101	99.8
177	5	9	6.1

SECTION V - Calibration and QC Information - 12/22/2000 13:57  
 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
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**SECTION V**  
**Calibration and QC Information**  
**Method Blank Results**

MS-VOA  
 SW8260B

Method Blank ID  
 Sample Type  
 Matrix  
 Date/Time Prepared  
 Date/Time Analyzed  
 Instrument  
 Units

1018312	1018521	1018522
Method Blank	Method Blank	Method Blank
Solid	Solid	Solid
11/30/2000 19:16	12/08/2000 12:47	12/08/2000 13:20
11/30/2000 19:16	12/08/2000 12:47	12/08/2000 13:20
MSDB	MSDB	MSDB
ug/Kg	ug/Kg	ug/Kg

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL
Acetone	67-64-1	1.53	U	1.65	0.000	2.72	J	1.65	0.000	161	U	165	0.000
Benzene	71-43-2	ND		0.356	0.000	ND		0.356	0.000	ND		35.6	0.000
2-Butanone (MEK)	78-93-3	ND		1.12	0.000	ND		1.12	0.000	152	J	112	0.000
n-Butylbenzene	104-51-8	0.453	U	0.832	0.000	ND		0.832	0.000	ND		83.2	0.000
sec-Butylbenzene	135-98-8	ND		0.622	0.000	ND		0.622	0.000	ND		62.2	0.000
tert-Butylbenzene	98-06-6	ND		0.502	0.000	ND		0.502	0.000	ND		50.2	0.000
Carbon disulfide	75-15-0	ND		0.371	0.000	ND		0.371	0.000	ND		37.1	0.000
Chloromethane	74-87-3	ND		0.807	0.000	ND		0.807	0.000	ND		80.7	0.000
Dibromochloromethane	124-48-1	ND		0.366	0.000	ND		0.366	0.000	ND		36.6	0.000
1,2-Dibromoethane	106-93-4	ND		0.336	0.000	ND		0.336	0.000	ND		33.6	0.000
1,4-Dichlorobenzene	106-46-7	0.518	U	0.641	0.000	ND		0.641	0.000	ND		64.1	0.000
1,2-Dichlorobenzene	95-50-1	ND		0.345	0.000	ND		0.345	0.000	ND		34.5	0.000
1,3-Dichlorobenzene	541-73-1	0.380	U	0.476	0.000	ND		0.476	0.000	ND		47.6	0.000
1,1-Dichloroethane	75-34-3	ND		0.407	0.000	ND		0.407	0.000	ND		40.7	0.000
1,2-Dichloroethane	107-06-2	ND		0.291	0.000	ND		0.291	0.000	ND		29.1	0.000
1,1-Dichloroethene	75-35-4	ND		0.298	0.000	ND		0.298	0.000	ND		29.8	0.000
cis-1,2-Dichloroethene	156-59-2	ND		0.277	0.000	ND		0.277	0.000	ND		27.7	0.000
trans-1,2-Dichloroethene	156-60-5	ND		0.326	0.000	ND		0.326	0.000	ND		32.6	0.000
1,2-Dichloropropane	78-87-5	ND		0.336	0.000	ND		0.336	0.000	ND		33.6	0.000
cis-1,3-Dichloropropene	10061-01-5	ND		0.322	0.000	ND		0.322	0.000	ND		32.2	0.000
trans-1,3-Dichloropropene	10061-02-6	ND		0.448	0.000	ND		0.448	0.000	ND		44.8	0.000
Ethylbenzene	100-41-4	0.144	U	0.420	0.000	ND		0.420	0.000	ND		42.0	0.000
Hexachloro-1,3-butadiene	87-68-3	ND		0.942	0.000	ND		0.942	0.000	ND		94.2	0.000
2-Hexanone	591-78-6	ND		0.686	0.000	ND		0.686	0.000	ND		68.6	0.000
Isopropylbenzene	98-82-8	ND		0.455	0.000	ND		0.455	0.000	ND		45.5	0.000

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**SECTION V**  
**Calibration and QC Information**  
**Method Blank Results**

MS-VOA  
 SW8260B

Method Blank ID

1018312	1018521	1018522
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Continued

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL
Methyl tert-butyl ether (MTBE)	1634-04-4	ND		0.602	0.000	ND		0.602	0.000	ND		60.2	0.000
Methylene chloride	75-09-2	0.220	U	0.270	0.000	0.715	J	0.270	0.000	ND		27.0	0.000
Naphthalene	91-20-3	1.24	J	0.562	0.000	ND		0.562	0.000	ND		56.2	0.000
n-Propylbenzene	103-65-1	ND		0.739	0.000	ND		0.739	0.000	ND		73.9	0.000
1,1,2,2-Tetrachloroethane	79-34-5	ND		0.488	0.000	ND		0.488	0.000	ND		48.8	0.000
Tetrachloroethene	127-18-4	ND		0.480	0.000	ND		0.480	0.000	ND		48.0	0.000
Toluene	108-88-3	0.319	J	0.305	0.000	ND		0.305	0.000	126	J	30.5	0.000
1,2,4-Trichlorobenzene	120-82-1	ND		0.721	0.000	ND		0.721	0.000	ND		72.1	0.000
1,2,4-Trimethylbenzene	95-63-6	ND		0.518	0.000	ND		0.518	0.000	44.3	U	51.8	0.000
1,3,5-Trimethylbenzene	108-67-8	ND		0.517	0.000	ND		0.517	0.000	ND		51.7	0.000
Xylenes (Total)	1330-20-7	0.628	U	0.800	0.000	ND		0.800	0.000	ND		80.0	0.000

SECTION V - Calibration and QC Information - 12/22/2000 13:57  
 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
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**SECTION V**  
**Calibration and QC Information**  
**Method Blank Results**

MS-VOA  
 SW8260B

Method Blank ID	1018312	1018521	1018522
Method Blank	Method Blank	Method Blank	Method Blank
Matrix	Solid	Solid	Solid
Date/Time Prepared	11/30/2000 19:16	12/08/2000 12:47	12/08/2000 13:20
Date/Time Analyzed	11/30/2000 19:16	12/08/2000 12:47	12/08/2000 13:20
Instrument	MSDB	MSDB	MSDB
Units	ug/Kg	ug/Kg	ug/Kg

Surrogate Compound	% Recovery	Limits	F	% Recovery	Limits	F	% Recovery	Limits	F
1-Bromo-4-fluorobenzene	98	27-145		103	27-145		143	12-138	Q
1,2-Dichloroethane-d4	93	57-145		103	57-145		90	21-135	
Toluene-d8	100	61-135		104	61-135		102	22-130	

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 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
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**SECTION V**  
**Calibration and QC Information**  
**Control Sample Results**

MS-VOA  
 SW8260B

Client Sample ID: LCS for HBN 9592 [MSV/1420]  
 Prep Batch ID: 9592  
 Analysis Batch ID: 9592

Instrument ID: MSDB  
 Units: ug/Kg  
 Matrix: Solid

% Moisture: NA  
 Analyst: BJP

Parameter	Control Sample			Control Sample Duplicate				QC Limits			
	Lab ID: 1018310 File ID: B1130012.D	Spk Amt	Conc	%Rec Flg	Lab ID: 1018311 File ID: B1130013.D	Spk Amt	Conc	%Rec Flg	RPD Flg	%Rec	RPD
Acetone	50	37.1	74		50	39.8	80	7.8		0.1-250	111
Benzene	50	52.4	105		50	50.0	100	4.9		66-132	20
2-Butanone (MEK)	50	37.8	76		50	40.2	80	5.1		0.1-178	69
n-Butylbenzene	50	52.4	105		50	51.3	103	1.9		16-169	37
sec-Butylbenzene	50	53.5	107		50	53.4	107	0		27-141	31
tert-Butylbenzene	50	52.1	104		50	50.6	101	2.9		33-155	30
Carbon disulfide	50	18.2	36	Q	50	13.5	27	Q	29	49-255	21
Chloromethane	50	33.8	68		50	37.9	76	11		16-156	26
Dibromochloromethane	50	54.9	110		50	52.4	105	4.7		42-156	23
1,2-Dibromoethane	50	53.5	107		50	50.7	101	5.8		32-180	40
1,4-Dichlorobenzene	50	53.2	106		50	52.2	104	1.9		50-160	30
1,2-Dichlorobenzene	50	50.0	100		50	50.8	102	2		50-158	27
1,3-Dichlorobenzene	50	53.4	107		50	51.1	102	4.8		48-158	31
1,1-Dichloroethane	50	48.3	97		50	49.6	99	2		66-136	23
1,2-Dichloroethane	50	52.1	104		50	49.0	98	5.9		49-137	29
1,1-Dichloroethene	50	48.3	97		50	47.7	95	2.1		64-160	27
cis-1,2-Dichloroethene	50	48.1	96		50	48.3	97	1		66-138	24
trans-1,2-Dichloroethene	50	47.8	96		50	50.1	100	4.1		70-138	25
1,2-Dichloropropane	50	53.3	111		50	53.5	107	3.7		60-128	19
cis-1,3-Dichloropropene	50	53.3	107		50	51.3	103	3.8		38-132	20
trans-1,3-Dichloropropene	50	52.0	104		50	51.9	104	0		20-136	24
Ethylbenzene	50	52.6	105		50	52.0	104	1		64-144	24
Hexachloro-1,3-butadiene	50	49.1	98		50	51.1	102	4		0.1-155	42
2-Hexanone	50	43.3	87		50	43.8	88	1.1		0.1-173	50

SECTION V - Calibration and QC Information - 12/22/2000 13:57  
 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
 STL Austin

**SECTION V**  
**Calibration and QC Information**  
**Control Sample Results**

MS-VOA  
 SW8260B

Parameter	Control Sample continued			Control Sample Duplicate continued				QC Limits	
	Lab ID: 1018310			Lab ID: 1018311				%Rec	RPD
	Spk Amt	Conc	%Rec Flg	Spk Amt	Conc	%Rec Flg	RPD Flg		
Isopropylbenzene	50	52.2	104	50	50.9	102	1.9	35-156	33
Methylene chloride	50	49.3	99	50	51.1	102	3	49-135	24
Naphthalene	50	44.5	89	50	49.9	100	12	0.1-199	53
n-Propylbenzene	50	53.7	107	50	53.1	106	0.9	39-149	29
1,1,2,2-Tetrachloroethane	50	51.9	104	50	50.0	100	3.9	29-165	38
Tetrachloroethene	50	54.0	108	50	50.8	102	5.7	57-155	27
Toluene	50	51.5	103	50	50.9	102	1	65-131	19
1,2,4-Trichlorobenzene	50	46.2	92	50	52.1	104	12	0.1-182	43
1,2,4-Trimethylbenzene	50	52.6	105	50	50.9	102	2.9	33-154	28
1,3,5-Trimethylbenzene	50	52.7	105	50	52.9	106	0.9	34-152	30
Xylenes (Total)	150	156	104	150	154	103	1	64-148	22

SECTION V - Calibration and QC Information - 12/22/2000 13:57  
 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
 STL Austin

**SECTION V**  
**Calibration and QC Information**  
**Control Sample Results**

MS-VOA  
 SW8260B

Surrogate Compounds	Lab ID: 1018310		Lab ID: 1018311		QC Recovery Limits
	%Recovery	Flags	%Recovery	Flags	
1-Bromo-4-fluorobenzene	101		100		27-145
1,2-Dichloroethane-d4	100		95		57-145
Toluene-d8	100		101		61-135

SECTION V - Calibration and QC Information - 12/22/2000 13:57  
 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
 STL Austin

**SECTION V**  
**Calibration and QC Information**  
**Control Sample Results**

MS-VOA  
 SW8260B

Client Sample ID: LCS for HBN 9657 [MSV/1426]  
 Prep Batch ID: 9657  
 Analysis Batch ID: 9657

Instrument ID: MSDB  
 Units: ug/Kg  
 Matrix: Solid

% Moisture: NA  
 Analyst: BJP

Parameter	Control Sample			Control Sample Duplicate				QC Limits	
	Lab ID: 1018519	File ID: B1207023.D		Lab ID: 1018520	File ID: B1207024.D		RPD Flg	%Rec	RPD
	Spk Amt	Conc	%Rec Flg	Spk Amt	Conc	%Rec Flg			
Acetone	50	54.7	109	50	46.8	94	15	0.1-250	111
Benzene	50	58.3	117	50	50.0	100	16	66-132	20
2-Butanone (MEK)	50	60.9	122	50	44.0	88	32	0.1-178	69
n-Butylbenzene	50	64.2	128	50	32.9	66	64 Q	16-169	37
sec-Butylbenzene	50	69.1	138	50	35.8	72	63 Q	27-141	31
tert-Butylbenzene	50	65.9	132	50	34.7	69	63 Q	33-155	30
Carbon disulfide	50	53.7	107	50	52.1	104	2.8	49-255	21
Chloromethane	50	48.1	96	50	47.6	95	1	16-156	26
Dibromochloromethane	50	59.3	119	50	49.2	98	19	42-156	23
1,2-Dibromoethane	50	53.2	106	50	43.8	88	19	32-180	40
1,4-Dichlorobenzene	50	60.7	121	50	38.4	77	44 Q	50-160	30
1,2-Dichlorobenzene	50	59.1	118	50	36.7	73	47 Q	50-158	27
1,3-Dichlorobenzene	50	60.0	120	50	36.9	74	47 Q	48-158	31
1,1-Dichloroethane	50	58.2	116	50	49.8	100	15	66-136	23
1,2-Dichloroethane	50	51.6	103	50	43.9	88	16	49-137	29
1,1-Dichloroethene	50	59.8	120	50	50.8	102	16	64-160	27
cis-1,2-Dichloroethene	50	55.3	111	50	48.6	97	13	66-138	24
trans-1,2-Dichloroethene	50	62.4	125	50	53.6	107	16	70-138	25
1,2-Dichloropropane	50	58.5	117	50	50.6	101	15	60-128	19
cis-1,3-Dichloropropene	50	54.7	109	50	46.5	93	16	38-132	20
trans-1,3-Dichloropropene	50	57.2	114	50	46.1	92	21	20-136	24
Ethylbenzene	50	64.8	130	50	41.3	83	44 Q	64-144	24
Hexachloro-1,3-butadiene	50	62.4	125	50	30.6	61	69 Q	0.1-155	42
2-Hexanone	50	54.4	109	50	44.2	88	21	0.1-173	50

SECTION V - Calibration and QC Information - 12/22/2000 13:57  
 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
 STL Austin

**SECTION V**  
**Calibration and QC Information**  
**Control Sample Results**

MS-VOA  
 SW8260B

Parameter	Control Sample continued			Control Sample Duplicate continued				QC Limits	
	Lab ID: 1018519	File ID: B1207023.D		Lab ID: 1018520	File ID: B1207024.D		RPD Flg	%Rec	RPD
	Spk Amt	Conc	%Rec Flg	Spk Amt	Conc	%Rec Flg			
Isopropylbenzene	50	64.2	128	50	36.5	73	55 Q	35-156	33
Methylene chloride	50	57.5	115	50	49.4	99	15	49-135	24
Naphthalene	50	51.2	102	50	30.6	61	50	0.1-199	53
n-Propylbenzene	50	68.4	137	50	38.0	76	57 Q	39-149	29
1,1,2,2-Tetrachloroethane	50	53.7	107	50	42.0	84	24	29-165	38
Tetrachloroethene	50	63.6	127	50	43.4	87	37 Q	57-155	27
Toluene	50	61.5	123	50	47.3	95	26 Q	65-131	19
1,2,4-Trichlorobenzene	50	59.0	118	50	32.1	64	59 Q	0.1-182	43
1,2,4-Trimethylbenzene	50	63.4	127	50	35.5	71	57 Q	33-154	28
1,3,5-Trimethylbenzene	50	64.4	129	50	36.2	72	57 Q	34-152	30
Xylenes (Total)	150	186	124	150	121	81	42 Q	64-148	22

SECTION V - Calibration and QC Information - 12/22/2000 13:57  
 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
 STL Austin

**SECTION V**  
**Calibration and QC Information**  
**Control Sample Results**

MS-VOA  
 SW8260B

Surrogate Compounds	Lab ID: 1018519		Lab ID: 1018520		QC Recovery Limits
	%Recovery	Flags	%Recovery	Flags	
1-Bromo-4-fluorobenzene	103		100		27-145
1,2-Dichloroethane-d4	103		100		57-145
Toluene-d8	101		103		61-135

SECTION V - Calibration and QC Information - 12/22/2000 13:57  
 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
 STL Austin

**SECTION VI**  
**Batch Summaries**

**Extraction/Digestion Batch Summary**  
 MS-VOA  
 SW8260B

Extraction Batch ID: 9592

Start Date/Time: 11/30/2000 17:12  
 Stop Date/Time: 12/01/2000 05:09

Analyst: BJP

Client Sample ID	Lab Sample ID	Sample Type	Matrix	Sample Size		Preparation Method
				Initial	Final	
INSTRUMENT QC	1000	GC/MS Tune	Solid	5 g	5 g	SW8260B
INSTRUMENT QC	1406	Continuing Calibration Check	Solid	5 g	5 g	SW8260B
LCS for HBN 9592 [MSV/1420]	1018310	Lab Control Sample	Solid	5 g	5 g	SW8260B
LCSD for HBN 9592 [MSV/1420]	1018311	Lab Control Sample Duplicate	Solid	5 g	5 g	SW8260B
MBL for HBN 9592 [MSV/1420]	1018312	Method Blank	Solid	5 g	5 g	SW8260B
TRIP BLANK	2001121303	Field Sample	Solid	5 g	5 g	SW8260B
??????????	2001114916	Field Sample	Solid	6.45 g	5 g	SW5035
??????????	2001114909	Field Sample	Solid	1 g	5 g	SW5035
??????????	2001114910	Field Sample	Solid	1.07 g	5 g	SW5035
??????????	2001114911	Field Sample	Solid	1.05 g	5 g	SW5035
??????????	2001114913	Field Sample	Solid	1.06 g	5 g	SW5035
??????????	2001114914	Field Sample	Solid	1.05 g	5 g	SW5035
??????????	2001114919	Field Sample	Solid	1.07 g	5 g	SW5035
??????????	2001124101	Field Sample	Solid	5.08 g	5 g	SW8260B
??????????	1018317	Matrix Spike	Solid	5.04 g	5 g	SW8260B
??????????	1018318	Matrix Spike Duplicate	Solid	5.09 g	5 g	SW8260B
??????????	2001116801	Field Sample	Solid	5.09 g	5 g	SW8260B
??????????	1018313	Matrix Spike	Solid	5 g	5 g	SW8260B
??????????	1018314	Matrix Spike Duplicate	Solid	5.09 g	5 g	SW8260B
??????????	2001116701	Field Sample	Solid	5.05 g	5 g	SW8260B
??????????	1018315	Matrix Spike	Solid	5.03 g	5 g	SW8260B
??????????	1018316	Matrix Spike Duplicate	Solid	5.09 g	5 g	SW8260B
??????????	2001116702	Field Sample	Solid	5 g	5 g	SW8260B
??????????	2001116703	Field Sample	Solid	5 g	5 g	SW8260B
??????????	2001116704	Field Sample	Solid	5.09 g	5 g	SW8260B
??????????	2001116705	Field Sample	Solid	5.09 g	5 g	SW8260B

SECTION VI - Batch Summaries - 12/22/2000 13:57  
 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
 STL Austin

**SECTION VI**  
**Batch Summaries**

**Extraction/Digestion Batch Summary**  
**MS-VOA**  
**SW8260B**

Extraction Batch ID: 9657

Start Date/Time: 12/08/2000 09:35  
Stop Date/Time: 12/11/2000 18:47

Analyst: BJP

Client Sample ID	Lab Sample ID	Sample Type	Matrix	Sample Size		Preparation Method
				Initial	Final	
INSTRUMENT QC	1000	GC/MS Tune	Solid	5 g	5 g	SW8260B
INSTRUMENT QC	1406	Continuing Calibration Check	Solid	5 g	5 g	SW8260B
MBL for HBN 9657 [MSV/1426]	1018521	Method Blank	Solid	5 g	5 g	SW8260B
MBH for HBN 9657 [MSV/1426]	1018522	Method Blank	Solid	5 g	5 g	SW8260B
ZZZZZZZZZZ	2001203702	Field Sample	Solid	5 g	5 g	SW8260B
ZZZZZZZZZZ	2001203701	Field Sample	Solid	5.08 g	5 g	SW8260B
ZZZZZZZZZZ	1018525	Matrix Spike	Solid	5.04 g	5 g	SW8260B
ZZZZZZZZZZ	1018526	Matrix Spike Duplicate	Solid	5.09 g	5 g	SW8260B
G-19	2001121301	Field Sample	Solid	5.02 g	5 g	SW8260B
ZZZZZZZZZZ	2001200601	Field Sample	Solid	5.03 g	5 g	SW8260B
ZZZZZZZZZZ	2001201001	Field Sample	Solid	5.03 g	5 g	SW8260B
ZZZZZZZZZZ	1018523	Matrix Spike	Solid	5.03 g	5 g	SW8260B
ZZZZZZZZZZ	1018524	Matrix Spike Duplicate	Solid	5.09 g	5 g	SW8260B
LCS for HBN 9657 [MSV/1426]	1018519	Lab Control Sample	Solid	5 g	5 g	SW8260B
LCSD for HBN 9657 [MSV/1426]	1018520	Lab Control Sample Duplicate	Solid	5 g	5 g	SW8260B
INSTRUMENT QC	1000	GC/MS Tune	Solid	5 g	5 g	SW8260B
INSTRUMENT QC	1406	Continuing Calibration Check	Solid	5 g	5 g	SW8260B
G-19	2001121301	Field Sample	Solid	5.07 g	5 g	SW8260B
G-8	2001121302	Field Sample	Solid	5 g	5 g	SW8260B
INSTRUMENT QC	1000	GC/MS Tune	Solid	5 g	5 g	SW8260B
INSTRUMENT QC	1406	Continuing Calibration Check	Solid	5 g	5 g	SW8260B
G-8	2001121302	Field Sample	Solid	5.07 g	5 g	SW8260B
ZZZZZZZZZZ	2001203701	Field Sample	Solid	5 g	5 g	SW8260B

SECTION VI - Batch Summaries - 12/22/2000 13:57

LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
STL Austin

**SECTION VI**  
**Batch Summaries**

**Analysis Batch Summary**  
**MS-VOA**  
**SW8260B**

Analysis Batch ID: 9592

Instrument ID: MSDB

Analyst: BJP

Sequence	Client Sample ID	Lab Sample ID	Analysis		Sample Type	Analysis File ID	Sub-Batch ID
			Date	Time			
4	INSTRUMENT QC	1000	11/30/2000	17:12:00	GC/MS Tune	B1130010.D	0
5	INSTRUMENT QC	1406	11/30/2000	17:39:00	Continuing Calibration Check	B1130011.D	0
6	LCS for HBN 9592 [MSV/1420]	1018310	11/30/2000	18:07:00	Lab Control Sample	B1130012.D	0
7	LCSD for HBN 9592 [MSV/1420]	1018311	11/30/2000	18:34:00	Lab Control Sample Duplicate	B1130013.D	0
8	MBL for HBN 9592 [MSV/1420]	1018312	11/30/2000	19:16:00	Method Blank	B1130014.D	0
10	TRIP BLANK	2001121303	11/30/2000	19:43:00	Field Sample	B1130015.D	0
11	ZZZZZZZZZZ	2001114916	11/30/2000	20:26:00	Field Sample	B1130016.D	0
12	ZZZZZZZZZZ	2001114909	11/30/2000	20:55:00	Field Sample	B1130017.D	0
13	ZZZZZZZZZZ	2001114910	11/30/2000	21:22:00	Field Sample	B1130018.D	0
14	ZZZZZZZZZZ	2001114911	11/30/2000	21:50:00	Field Sample	B1130019.D	0
15	ZZZZZZZZZZ	2001114913	11/30/2000	22:17:00	Field Sample	B1130020.D	0
16	ZZZZZZZZZZ	2001114914	11/30/2000	22:44:00	Field Sample	B1130021.D	0
17	ZZZZZZZZZZ	2001114919	11/30/2000	23:11:00	Field Sample	B1130022.D	0
18	ZZZZZZZZZZ	2001124101	11/30/2000	23:39:00	Field Sample	B1130023.D	0
19	ZZZZZZZZZZ	1018317	12/01/2000	00:06:00	Matrix Spike	B1130024.D	0
20	ZZZZZZZZZZ	1018318	12/01/2000	00:34:00	Matrix Spike Duplicate	B1130025.D	0
21	ZZZZZZZZZZ	2001116801	12/01/2000	01:01:00	Field Sample	B1130026.D	0
22	ZZZZZZZZZZ	1018313	12/01/2000	01:29:00	Matrix Spike	B1130027.D	0
23	ZZZZZZZZZZ	1018314	12/01/2000	01:56:00	Matrix Spike Duplicate	B1130028.D	0
24	ZZZZZZZZZZ	2001116701	12/01/2000	02:24:00	Field Sample	B1130029.D	0
25	ZZZZZZZZZZ	1018315	12/01/2000	02:51:00	Matrix Spike	B1130030.D	0
26	ZZZZZZZZZZ	1018316	12/01/2000	03:19:00	Matrix Spike Duplicate	B1130031.D	0
27	ZZZZZZZZZZ	2001116702	12/01/2000	03:46:00	Field Sample	B1130032.D	0
28	ZZZZZZZZZZ	2001116703	12/01/2000	04:14:00	Field Sample	B1130033.D	0
29	ZZZZZZZZZZ	2001116704	12/01/2000	04:41:00	Field Sample	B1130034.D	0
30	ZZZZZZZZZZ	2001116705	12/01/2000	05:09:00	Field Sample	B1130035.D	0

SECTION VI - Batch Summaries - 12/22/2000 13:57

LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
STL Austin

**SECTION VI**  
**Batch Summaries**

**Analysis Batch Summary**  
**MS-VOA**  
**SW8260B**

Analysis Batch ID: 9657

Instrument ID: MSDB

Analyst: BJP

Sequence	Client Sample ID	Lab Sample ID	Analysis		Sample Type	Analysis File ID	Sub-Batch ID
			Date	Time			
1	INSTRUMENT QC	1000	12/08/2000	09:35:00	GC/MS Tune	B1207008.D	0
2	INSTRUMENT QC	1406	12/08/2000	09:35:00	Continuing Calibration Check	B1207008.D	0
3	MBL for HBN 9657 [MSV/1426]	1018521	12/08/2000	12:47:00	Method Blank	B1207011.D	0
4	MBH for HBN 9657 [MSV/1426]	1018522	12/08/2000	13:20:00	Method Blank	B1207012.D	0
5	ZZZZZZZZZZ	2001203702	12/08/2000	14:35:00	Field Sample	B1207013.D	0
6	ZZZZZZZZZZ	2001203701	12/08/2000	15:08:00	Field Sample	B1207014.D	0
7	ZZZZZZZZZZ	1018525	12/08/2000	15:40:00	Matrix Spike	B1207015.D	0
8	ZZZZZZZZZZ	1018526	12/08/2000	16:07:00	Matrix Spike Duplicate	B1207016.D	0
10	G-19	2001121301	12/08/2000	16:35:00	Field Sample	B1207017.D	0
11	ZZZZZZZZZZ	2001200601	12/08/2000	17:30:00	Field Sample	B1207019.D	0
12	ZZZZZZZZZZ	2001201001	12/08/2000	17:57:00	Field Sample	B1207020.D	0
13	ZZZZZZZZZZ	1018523	12/08/2000	18:25:00	Matrix Spike	B1207021.D	0
14	ZZZZZZZZZZ	1018524	12/08/2000	18:52:00	Matrix Spike Duplicate	B1207022.D	0
15	LCS for HBN 9657 [MSV/1426]	1018519	12/08/2000	19:20:00	Lab Control Sample	B1207023.D	0
16	LCSD for HBN 9657 [MSV/1426]	1018520	12/08/2000	19:48:00	Lab Control Sample Duplicate	B1207024.D	0
17	INSTRUMENT QC	1000	12/10/2000	17:31:00	GC/MS Tune	B1207026.D	0
18	INSTRUMENT QC	1406	12/10/2000	17:31:00	Continuing Calibration Check	B1207026.D	0
21	G-19	2001121301	12/10/2000	18:01:00	Field Sample	B1207027.D	0
24	G-8	2001121302	12/10/2000	18:36:00	Field Sample	B1207028.D	0
25	INSTRUMENT QC	1000	12/11/2000	14:49:00	GC/MS Tune	B1207032.D	0
26	INSTRUMENT QC	1406	12/11/2000	14:49:00	Continuing Calibration Check	B1207032.D	0
27	G-8	2001121302	12/11/2000	15:20:00	Field Sample	B1207033.D	0
28	ZZZZZZZZZZ	2001203701	12/11/2000	18:47:00	Field Sample	B1207034.D	0

SECTION VI - Batch Summaries - 12/22/2000 13:57  
LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
STL Austin

**SECTION VII**  
**Certifications**

State/Agency	ID #
Arkansas Department of Pollution Control and Ecology	
California Environmental Laboratory Accreditation Program / Waste Water/Hazardous Waste	2257
Kansas Department of Health and Environment / Solid and Hazardous Waste/Drinking Water	E-10165
Louisiana Department of Environmental Quality, ELAP / Waste Water/Hazardous Waste/Air/Emissions	
New Jersey Department of Environmental Protection	82005
New York State Department of Health / Waste Water/Hazardous Waste	10915
North Carolina Dept. of Natural Resources & Community Development / Waste Water	302
Oklahoma Water Resources Board / Waste Water	8720
South Carolina Dept. of Health & Environmental Control	82003002
Utah Department of Health / Solid and Hazardous Waste	RADC
Wisconsin Department of Natural Resources	999885260
US Air Force/AFCEE	Participating Laboratory
US Army Corps of Engineers (ACE)	
US Department of Agriculture / Restricted Soils Permit	S-42350

SECTION VII - Certifications - 12/22/2000 13:57  
LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
STL Austin



### Quality Control Exception Report

QCER #: 2265      Analysis Date: 11/30/00      File ID(s):  
Status: Complete      Spec: 07      B1130012,13  
Queue: MSV      Instrument: MSDB  
Analyst: BJP      Matrix: S  
HBN: 9592

Work Order	HSN	Client	CSC
20011213		ABBOTT	JAL

#### Analytical Problem Identification

LCS/LCSD Precision

LCS/LCSD Recovery

#### Analytical Probable Cause

Standard

#### Analytical Corrective Action Taken

QCER written

#### Comments:

The LCS/D recovery and precision was low and unacceptable for Carbon Disulfide. The cause is due to the aging of the standard and a replacement was not available to reanalyze the LCS/D. This written QCER was the corrective action taken.



### Quality Control Exception Report

QCER #: 2303      Analysis Date: 12/8/00      File ID(s):  
Status: Complete      Spec:  
Queue: MSV      Instrument: MSDB  
Analyst: BJP      Matrix:  
HBN: 0

Work Order	HSN	Client	CSC
20011213		ABBOTT	JAL

#### Analytical Problem Identification

Surrogate Recovery

#### Analytical Probable Cause

Other      Unknown

#### Analytical Corrective Action Taken

QCER written

#### Comments:

The surrogate recovery of 1-Bromo-4-fluorobenzene did not meet criteria. The cause is unknown. Due to sample expiration, the batch was not reanalyzed. *sample*



## Quality Control Exception Report

QCER #: 2292      Analysis Date: 12/8/00      File ID(s):  
Status: Complete      Spec: 07      B1207023,24  
Queue: MSV      Instrument: MSDB  
Analyst: BJP      Matrix: S  
HBN: 9657

Work Order      HSN      Client      CSC  
20011213           ABBOTT      JAL

Analytical Problem Identification  
LCS/LCSD Precision  
LCS/LCSD Recovery  
Analytical Probable Cause  
Unknown  
Analytical Corrective Action Taken  
QCER written

**Comments:**  
The recovery and precision for Bromonethane in the LCS/D did not meet criteria. The cause is unknown and the project manager was consulted. Since Bromonethane was not present in the samples, this QC ER was the requested corrective action.

Monday, December 11, 2000      QCER #: 2292

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## STL Austin Laboratory Analysis Report

December 08, 2000

Martha Meyers-Lee  
Radian International LLC  
1600 Perimeter Park Dr.  
Morrisville, NC 27560

(919)461-1519 (Business)

RE: Laboratory Reference: Fuel release site [20011213] Abbott Laboratories

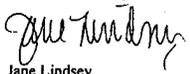
Dear Martha Meyers-Lee:

STL Austin received samples with a request for the analytical fractions listed below.  
Results for the indicated analytical fractions and associated quality control data are enclosed in this report.

Fraction	Status	Reported	Approval Signature - Title
Semivolatiles	ENCLOSED	12/08/2000	<i>J. D. Lindsey</i> Lab Manager

STL Austin appreciates your business and looks forward to serving you again. If you have any questions concerning your report or need any additional information, please call me at (512)310-5249 or fax inquiries to (512)244-0160.

Sincerely,

  
Jane Lindsey  
Client Services/Project Manager

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LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
STL Austin

**SECTION II**  
**Report Summaries**

**Semivolatiles**

Client Name: Abbott Laboratories  
Client Code: ABBOTT

Project Name: Fuel release site [20011213] Abbott Laboratories  
Facility Name:

**Workorder Summary**

Client Sample ID	Lab Sample ID	Sample Matrix	Method Citation	Method Description
G-19	2001121301	Solid	SW8270C	Semivolatiles by GC/MS
G-8	2001121302	Solid	SW8270C	Semivolatiles by GC/MS

**Protocol Summary**

Client Sample ID	Lab Sample ID	Date & Time Collected	Date & Time Received	Prep Batch ID	Date & Time Prepared	Analysis Batch ID	Date & Time Analyzed	Hold Time Spec		
								Prep Spec	Actual	Analysis Spec Actual

Method: SW8270C

G-19	2001121301	11/27/00 09:10	11/28/00 09:30	9565	11/29/00 14:57	9617	12/04/00 18:42	14D	2D	40D	5D
G-8	2001121302	11/27/00 12:10	11/28/00 09:30	9565	11/29/00 14:57	9617	12/04/00 21:03	14D	2D	40D	5D
G-8	2001121302	11/27/00 12:10	11/28/00 09:30	9565	11/29/00 14:57	9640	12/05/00 16:31	14D	2D	40D	6D

SECTION II - Report Summaries - 12/08/2000 08:41

LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
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**SECTION III**  
**Comments and Flag Definitions**

**Semivolatiles**

**Standard Data Qualifiers**

Flag	Definition
E	Analyte concentration exceeded calibration range
F	Interference or coelution suspected.
J	Result > or = MDL and <PQL
NA	Not analyzed/Not available
ND	Not detected at the specified reporting limit
Q	Result does not meet tolerance in Protocol Specification
R	Result reported elsewhere
U	Result less than sample specific method detection limit

**Analyst Comments**

Flag	Affected Sample	Method	Comment
	G-19	SW8270C	Samples in batch 9617 see QCER 2263.
	G-8	SW8270C	See QCER 2270.

**Sample Condition Comments**

Affected Sample	Comment
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SECTION III - Comments and Flag Definitions - 12/08/2000 08:41  
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**SECTION IV**  
**Analytical Results**

**Semivolatiles**  
**SW8270C**

Client Sample ID	G-19	G-8	G-8
Lab Sample ID	2001121301	2001121302	2001121302
Matrix	Solid	Solid	Solid
Reported As	DRY WEIGHT	DRY WEIGHT	DRY WEIGHT
% Moisture	12.6	18.3	18.3
Date/Time Collected	11/27/2000 09:10	11/27/2000 12:10	11/27/2000 12:10
Date/Time Prepared	11/29/2000 14:57	11/29/2000 14:57	11/29/2000 14:57
Date/Time Analyzed	12/04/2000 18:42	12/04/2000 21:03	12/05/2000 16:31
Dilution Factor	1.0000	1.0000	5.0000
Instrument	5971	5971	5971
Units	ug/g	ug/g	ug/g

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL
Acenaphthene	83-32-9	0.178	J	0.00564	0.000	0.474		0.00601	0.000	0.545	JR	0.0301	0.000
Acenaphthylene	208-96-8	ND		0.0116	0.000	ND		0.0124	0.000	ND		0.0619	0.000
Anthracene	120-12-7	ND		0.0116	0.000	ND		0.0123	0.000	ND		0.0617	0.000
Benz(a)anthracene	56-55-3	ND		0.00974	0.000	ND		0.0104	0.000	ND		0.0520	0.000
Benz(a)pyrene	50-32-8	ND		0.0120	0.000	ND		0.0128	0.000	ND		0.0638	0.000
Benzo(b)fluoranthene	205-99-2	ND		0.0126	0.000	ND		0.0134	0.000	ND		0.0671	0.000
Benzo(g,h,i)perylene	191-24-2	ND		0.0323	0.000	ND		0.0345	0.000	ND		0.172	0.000
Benzo(k)fluoranthene	207-08-9	ND		0.0108	0.000	ND		0.0115	0.000	ND		0.0576	0.000
Benzoic acid	65-85-0	ND		0.577	0.000	ND		0.615	0.000	ND		3.07	0.000
bis(2-Chloroethyl)ether	111-44-4	ND		0.00554	0.000	ND		0.00591	0.000	ND		0.0296	0.000
Chrysene	218-01-9	ND		0.00778	0.000	ND		0.00830	0.000	ND		0.0415	0.000
Dibenz(a,h)anthracene	53-70-3	ND		0.0216	0.000	ND		0.0230	0.000	ND		0.115	0.000
Dibenzofuran	132-64-9	ND		0.00595	0.000	ND		0.00635	0.000	ND		0.0318	0.000
2,4-Dimethylphenol	105-67-9	ND		0.0507	0.000	ND		0.0541	0.000	ND		0.271	0.000
Fluoranthene	206-44-0	ND		0.00841	0.000	ND		0.00897	0.000	ND		0.0448	0.000
Fluorene	86-73-7	ND		0.00883	0.000	0.699		0.00942	0.000	0.696	JR	0.0471	0.000
Indeno(1,2,3-cd)pyrene	193-39-5	ND		0.0166	0.000	ND		0.0177	0.000	ND		0.0883	0.000
2-Methylnaphthalene	91-57-6	1.38		0.00756	0.000	7.06	ER	0.00807	0.000	5.17		0.0403	0.000
Phenanthrene	85-01-8	0.457		0.00638	0.000	1.41		0.00680	0.000	1.29	JR	0.0340	0.000
Pyrene	129-00-0	ND		0.00735	0.000	0.212	J	0.00784	0.000	ND		0.0392	0.000

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**SECTION IV  
Analytical Results  
Surrogates**

**Semivolatiles  
SW8270C**

**Client Sample ID**  
**Lab Sample ID**  
**Matrix**  
**Reported As**  
**% Moisture**  
**Date/Time Collected**  
**Date/Time Prepared**  
**Date/Time Analyzed**  
**Dilution Factor**  
**Instrument**  
**Units**

Client Sample ID	G-19	G-8	G-8
Lab Sample ID	2001121301	2001121302	2001121302
Matrix	Solid	Solid	Solid
Reported As	DRY WEIGHT	DRY WEIGHT	DRY WEIGHT
% Moisture	12.6	18.3	18.3
Date/Time Collected	11/27/2000 09:10	11/27/2000 12:10	11/27/2000 12:10
Date/Time Prepared	11/29/2000 14:57	11/29/2000 14:57	11/29/2000 14:57
Date/Time Analyzed	12/04/2000 18:42	12/04/2000 21:03	12/05/2000 16:31
Dilution Factor	1.0000	1.0000	5.0000
Instrument	5971	5971	5971
Units	ug/g	ug/g	ug/g

Surrogate Compound	% Recovery	Limits	F	% Recovery	Limits	F	% Recovery	Limits	F
2-Fluorobiphenyl	117	70-133		115	70-133		96	70-133	
2-Fluorophenol	105	53-123		118	53-123		103	53-123	
Nitrobenzene-d5	107	57-135		116	57-135		101	57-135	
Phenol-d5	111	59-132		116	59-132		100	59-132	
Terphenyl-d14	100	67-134		117	67-134		72	67-134	
2,4,6-Tribromophenol	118	49-149		118	49-149		86	49-149	

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**SECTION V  
Calibration and QC Information  
Calibration Verification Results**

**Semivolatiles  
SW8270C**

Sample Type: Continuing Calibration Check  
Analysis Batch ID: 9617 Instrument Data File: 12245.D Date/Time Analyzed: 12/04/2000 15:33  
Instrument ID: 5971 Analyst: MCL Units: ug/mL

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits	%Recovery
Acenaphthene	50	48.5		97		80-120	
Acenaphthylene	50	48.0		96			
Anthracene	50	48.8		98			
Benz(a)anthracene	50	48.2		96			
Benz(a)pyrene	50	45.9		92		80-120	
Benzo(b)fluoranthene	50	48.9		98			
Benzo(g,h,i)perylene	50	50.3		101			
Benzo(k)fluoranthene	50	49.3		99			
Benzoic acid	50	53.3		107			
bis(2-Chloroethyl)ether	50	49.2		98			
Chrysene	50	49.3		99			
Dibenz(a,h)anthracene	50	50.0		100			
Dibenzofuran	50	47.3		95			
2,4-Dimethylphenol	50	50.8		102			
Fluoranthene	50	48.9		98		80-120	
Fluorene	50	50.2		100			
Indeno(1,2,3-cd)pyrene	50	50.1		100			
2-Methylnaphthalene	50	46.4		93			
Phenanthrene	50	46.0		92			
Pyrene	50	48.8		98			

SECTION V - Calibration and QC Information - 12/08/2000 08:41  
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**SECTION V**  
**Calibration and QC Information**  
**Calibration Verification Results**

Semivolatiles  
 SW8270C

Sample Type: Continuing Calibration Check  
 Analysis Batch ID: 9640 Instrument Data File: 12254.D Date/Time Analyzed: 12/05/2000 13:22  
 Instrument ID: 5971 Analyst: MCL Units: ug/mL

Parameter	Reference Value	Measured Conc	Flag	%Recovery	Flag	QC Limits	%Recovery
Acenaphthene	50	49.5		99		80-120	
Acenaphthylene	50	48.4		97			
Anthracene	50	49.4		99			
Benz(a)anthracene	50	48.0		96			
Benz(a)pyrene	50	48.1		96		80-120	
Benzo(b)fluoranthene	50	47.2		94			
Benzo(g,h,i)perylene	50	52.9		106			
Benzo(k)fluoranthene	50	50.0		100			
Benzoic acid	50	50.1		100			
bis(2-Chloroethyl)ether	50	50.8		102			
Chrysene	50	49.5		99			
Dibenz(a,h)anthracene	50	50.6		101			
Dibenzofuran	50	49.0		98			
2,4-Dimethylphenol	50	51.1		102			
Fluoranthene	50	49.1		98		80-120	
Fluorene	50	49.6		99			
Indeno(1,2,3-cd)pyrene	50	51.3		103			
2-Methylnaphthalene	50	47.0		94			
Phenanthrene	50	45.7		91			
Pyrene	50	49.3		99			

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 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
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**SECTION V**  
**Calibration and QC Information**  
**Mass Spectrometer Tune**

Semivolatiles  
 SW8270C  
 DFTPP

Analysis Batch ID: 9617 Instrument Data File: 12244.D Date Analyzed: 12/04/2000 15:14  
 Instrument ID: 5971 Injection Time: 12/04/2000 15:14 Analyst: MCL

Mass/Energy	Ion Abundance Criteria		% Relative Abundance
	Lower Limit	Upper Limit	
51	30	60	46.5
68	0	2	0
69	0	100	75.1
70	0	2	.8
127	40	60	56.9
197	0	1	0
198	100	100	100
199	5	9	6.6
275	10	30	19.9
365	1	100	3.7
441	0.01	100	79.6
442	40	100	65.9
443	17	23	19.3

SECTION V - Calibration and QC Information - 12/08/2000 08:41  
 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
 STL Austin

SECTION V  
Calibration and QC Information  
Mass Spectrometer Tune

Semivolatiles  
SW8270C  
DFTPP

Analysis Batch ID: 9640  
Instrument ID: 5971

Instrument Data File: 12253.D  
Injection Time: 12/05/2000 13:03

Date Analyzed: 12/05/2000 13:03  
Analyst: MCL

Mass/Energy	Ion Abundance Criteria		% Relative Abundance
	Lower Limit	Upper Limit	
51	30	60	45.3
68	0	2	0
69	0	100	76
70	0	2	.3
127	40	60	54.3
197	0	1	0
198	100	100	100
199	5	9	6.7
275	10	30	17.5
365	1	100	3.3
441	0.01	100	87
442	40	100	50.9
443	17	23	18.1

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SECTION V  
Calibration and QC Information  
Method Blank Results

Semivolatiles  
SW8270C

Method Blank ID	1018216	1018216
Sample Type	Method Blank	Method Blank
Matrix	Solid	Solid
Date/Time Prepared	11/29/2000 14:57	11/29/2000 14:57
Date/Time Analyzed	12/04/2000 17:54	12/05/2000 15:44
Instrument	5971	5971
Units	ug/g	ug/g

Parameter	CAS	Conc	Flag	DL	RL	Conc	Flag	DL	RL	Conc	Flag	DL	RL
Acenaphthene	83-32-9	ND		0.00494	0.000	ND		0.00494	0.000				
Acenaphthylene	208-96-8	ND		0.0102	0.000	ND		0.0102	0.000				
Anthracene	120-12-7	ND		0.0101	0.000	ND		0.0101	0.000				
Benz(a)anthracene	56-55-3	ND		0.00854	0.000	ND		0.00854	0.000				
Benz(a)pyrene	50-32-8	ND		0.0105	0.000	ND		0.0105	0.000				
Benzo(b)fluoranthene	205-99-2	ND		0.0110	0.000	ND		0.0110	0.000				
Benzo(g,h,i)perylene	191-24-2	ND		0.0283	0.000	ND		0.0283	0.000				
Benzo(k)fluoranthene	207-08-9	ND		0.00947	0.000	ND		0.00947	0.000				
Benzoic acid	65-85-0	ND		0.505	0.000	ND		0.505	0.000				
bis(2-Chloroethyl)ether	111-44-4	ND		0.00486	0.000	ND		0.00486	0.000				
Chrysene	218-01-9	ND		0.00682	0.000	ND		0.00682	0.000				
Dibenz(a,h)anthracene	53-70-3	ND		0.0189	0.000	ND		0.0189	0.000				
Dibenzofuran	132-64-9	ND		0.00522	0.000	ND		0.00522	0.000				
2,4-Dimethylphenol	105-67-9	ND		0.0445	0.000	ND		0.0445	0.000				
Fluoranthene	206-44-0	ND		0.00737	0.000	ND		0.00737	0.000				
Fluorene	86-73-7	ND		0.00774	0.000	ND		0.00774	0.000				
Indeno(1,2,3-cd)pyrene	193-39-5	ND		0.0145	0.000	ND		0.0145	0.000				
2-Methylnaphthalene	91-57-6	ND		0.00663	0.000	ND		0.00663	0.000				
Phenanthrene	85-01-8	ND		0.00559	0.000	ND		0.00559	0.000				
Pyrene	129-00-0	ND		0.00644	0.000	ND		0.00644	0.000				

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**SECTION V**  
**Calibration and QC Information**  
**Method Blank Results**

Semivolatiles  
 SW8270C

Method Blank ID	1018216	1018216
Sample Type	Method Blank	Method Blank
Matrix	Solid	Solid
Date/Time Prepared	11/29/2000 14:57	11/29/2000 14:57
Date/Time Analyzed	12/04/2000 17:54	12/05/2000 15:44
Instrument	5971	5971
Units	ug/g	ug/g

Surrogate Compound	% Recovery	Limits	F	% Recovery	Limits	F	% Recovery	Limits	F
2-Fluorobiphenyl	115	85-121		113	85-121				
2-Fluorophenol	103	75-111		105	75-111				
Nitrobenzene-d5	97	84-119		95	84-119				
Phenol-d5	109	77-124		108	77-124				
Terphenyl-d14	101	85-125		99	85-125				
2,4,6-Tribromophenol	110	76-136		107	76-136				

SECTION V - Calibration and QC Information - 12/08/2000 08:41  
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**SECTION V**  
**Calibration and QC Information**  
**Spiked Sample Results**

Semivolatiles  
 SW8270C

Client Sample ID: G-19  
 Sample Type: Matrix Spike  
 Prep Batch ID: 9565  
 Analysis Batch ID: 9617

Instrument ID: 5971  
 Units: ug/g  
 Matrix: Solid

% Moisture: 12.6  
 Analyst: MCL

Parameter	Parent Sample		Spiked Sample			Spiked Sample Duplicate				QC Limits		
	Conc	Flg	Spk Conc	Conc	%Rec Flg	Spk Conc	Conc	%Rec Flg	RPD Flg	%Rec	RPD	
	2001121301 Dil Fac: 1.0000		Lab ID: 1018217 Dil Fac: 1.0000 File ID: 12250.D			Lab ID: 1018218 Dil Fac: 1.0000 File ID: 12251.D						
Acenaphthene	0.178	J	3.32	4.64	117	3.32	4.41	111	5.3	75-123	43	
Acenaphthylene	ND		3.32	4.24	111	3.32	4.00	105	5.6	74-124	44	
Anthracene	ND		3.32	4.77	125	3.32	4.36	115	8.3	67-125	43	
Benz(a)anthracene	ND		3.32	4.41	116	3.32	4.10	108	7.1	74-126	47	
Benz(a)pyrene	ND		3.32	4.17	110	3.32	3.92	103	6.6	71-124	45	
Benzo(b)fluoranthene	ND		3.32	3.99	105	3.32	3.32	87	19	66-125	51	
Benzo(g,h,i)perylene	ND		3.32	4.63	122	3.32	4.36	115	5.9	72-131	45	
Benzo(k)fluoranthene	ND		3.32	4.19	110	3.32	4.06	107	2.8	64-128	47	
Benzoic acid	ND		3.32	4.14	109	3.32	4.06	107	1.9			
bis(2-Chloroethyl)Ether	ND		3.32	4.29	113	3.32	4.14	109	3.6	67-129	45	
Chrysene	ND		3.32	4.45	117	3.32	4.18	110	6.2	64-155	46	
Dibenz(a,h)anthracene	ND		3.32	4.79	126	3.32	4.41	116	8.3	76-128	45	
Dibenzofuran	ND		3.32	4.56	120	3.32	4.34	114	5.1	77-126	44	
2,4-Dimethylphenol	ND		3.32	3.06	81	3.32	3.27	86	6	35-129	49	
Fluoranthene	ND		3.32	4.55	120	3.32	4.24	111	7.8	73-125	43	
Fluorene	ND		3.32	5.11	135	Q	3.32	4.73	124	8.5	75-126	41
Indeno(1,2,3-cd)pyrene	ND		3.32	4.68	123	3.32	4.38	115	6.7	73-129	45	
2-Methylnaphthalene	1.38		3.32	5.12	98	3.32	4.75	89	9.6	65-139	45	
Phenanthrene	0.457		3.32	4.86	116	3.32	4.48	106	9	70-129	43	
Pyrene	ND		3.32	3.90	103	3.32	3.68	97	6	73-131	47	

Note: Spike Concentration for solid matrices not adjusted for percent moisture.

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 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
 STL Austin

**SECTION V**  
**Calibration and QC Information**  
**Spiked Sample Results**

Semivolatiles  
 SW8270C

Surrogate Compounds	Lab ID: 1018217		Lab ID: 1018218		QC Recovery Limits
	%Recovery	Flags	%Recovery	Flags	
2-Fluorobiphenyl	124	Q	117		85-121
2-Fluorophenol	115	Q	108		75-111
Nitrobenzene-d5	112		104		84-119
Phenol-d5	119		108		77-124
Terphenyl-d14	101		91		85-125
2,4,6-Tribromophenol	129		119		76-136

Note: Spike Concentration for solid matrices not adjusted for percent moisture.

SECTION V - Calibration and QC Information - 12/08/2000 08:41  
 LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
 STL Austin

**SECTION V**  
**Calibration and QC Information**  
**Control Sample Results**

Semivolatiles  
 SW8270C

Client Sample ID: LCS for HBN 9565 [EX/1697]  
 Prep Batch ID: 9565  
 Analysis Batch ID: 9617

Instrument ID: 5971  
 Units: ug/g  
 Matrix: Solid

% Moisture: NA  
 Analyst: MCL

Parameter	Control Sample			Control Sample Duplicate				QC Limits		
	Lab ID: 1018214 File ID: 12246.D	Spk Amt	Conc	%Rec Flg	Lab ID: 1018215 File ID: 12247.D	Spk Amt	Conc	%Rec Flg	RPD Flg	%Rec RPD
Acenaphthene	3.33	3.84	115	3.33	3.84	115	0		75-123	43
Acenaphthylene	3.33	3.59	108	3.33	3.55	107	0.9		74-124	44
Anthracene	3.33	3.72	112	3.33	3.76	113	0.9		67-125	43
Benz(a)anthracene	3.33	3.87	116	3.33	3.91	117	0.9		74-126	47
Benz(a)pyrene	3.33	3.66	110	3.33	3.66	110	0		71-124	45
Benzo(b)fluoranthene	3.33	3.32	100	3.33	3.30	99	1		66-125	51
Benzo(g,h,i)perylene	3.33	4.05	122	3.33	4.04	121	0.8		72-131	45
Benzo(k)fluoranthene	3.33	4.00	120	3.33	3.76	113	6		64-128	47
Benzoic acid	3.33	3.34	100	3.33	3.36	101	1			
bis(2-Chloroethyl)ether	3.33	3.83	115	3.33	3.71	111	3.5		67-129	45
Chrysene	3.33	3.93	118	3.33	3.94	118	0		64-155	46
Dibenz(a,h)anthracene	3.33	4.13	124	3.33	4.11	123	0.8		76-128	45
Dibenzofuran	3.33	3.83	115	3.33	3.81	114	0.9		77-126	44
2,4-Dimethylphenol	3.33	2.73	82	3.33	2.73	82	0		35-129	49
Fluoranthene	3.33	3.84	115	3.33	3.85	115	0		73-125	43
Fluorene	3.33	4.21	126	3.33	4.21	126	0		75-126	41
Indeno(1,2,3-cd)pyrene	3.33	4.05	122	3.33	4.06	122	0		73-129	45
2-Methylnaphthalene	3.33	3.85	115	3.33	3.77	113	1.8		65-139	45
Phenanthrene	3.33	3.81	114	3.33	3.81	114	0		70-129	43
Pyrene	3.33	3.80	114	3.33	3.80	114	0		73-131	47

SECTION V  
Calibration and QC Information  
Control Sample Results

Semivolatiles  
SW8270C

Surrogate Compounds	Lab ID: 1018214		Lab ID: 1018215		QC Recovery Limits
	%Recovery	Flags	%Recovery	Flags	
2-Fluorobiphenyl	125	Q	113		85-121
2-Fluorophenol	117	Q	101		75-111
Nitrobenzene-d5	109		98		84-119
Phenol-d5	122		110		77-124
Terphenyl-d14	110		104		85-125
2,4,6-Tribromophenol	128		117		76-136

SECTION V - Calibration and QC Information - 12/08/2000 08:41  
LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
STL Austin

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SECTION V  
Calibration and QC Information  
Control Sample Results

Semivolatiles  
SW8270C

Client Sample ID: LCS for HBN 9565 [EX/1697]  
Prep Batch ID: 9565  
Analysis Batch ID: 9640

Instrument ID: 5971  
Units: ug/g  
Matrix: Solid

% Moisture: NA  
Analyst: MCL

Parameter	Control Sample			Control Sample Duplicate				QC Limits			
	Lab ID: 1018214 File ID: 12255.D	Spk Amt	Conc	%Rec Flg	Lab ID: 1018215 File ID: 12256.D	Spk Amt	Conc	%Rec Flg	RPD Flg	%Rec	RPD
Acenaphthene	3.33	3.74	112	3.33	3.74	112	0			75-123	43
Acenaphthylene	3.33	3.54	106	3.33	3.50	105	0.9			74-124	44
Anthracene	3.33	3.48	104	3.33	3.49	105	1			67-125	43
Benz(a)anthracene	3.33	3.81	114	3.33	3.73	112	1.8			74-126	47
Benz(a)pyrene	3.33	3.67	110	3.33	3.58	107	2.8			71-124	45
Benzo(b)fluoranthene	3.33	3.28	98	3.33	3.22	97	1			66-125	51
Benzo(g,h,i)perylene	3.33	4.08	123	3.33	3.91	117	5			72-131	45
Benzo(k)fluoranthene	3.33	3.87	116	3.33	3.82	115	0.9			64-128	47
Benzoic acid	3.33	3.23	97	3.33	3.23	97	0				
bis(2-Chloroethyl)ether	3.33	3.57	107	3.33	3.46	104	2.8			67-129	45
Chrysene	3.33	3.82	115	3.33	3.77	113	1.8			64-155	46
Dibenz(a,h)anthracene	3.33	4.01	120	3.33	3.94	118	1.7			76-128	45
Dibenzofuran	3.33	3.72	112	3.33	3.72	112	0			77-126	44
2,4-Dimethylphenol	3.33	2.63	79	3.33	2.64	79	0			35-129	49
Fluoranthene	3.33	3.63	109	3.33	3.61	108	0.9			73-125	43
Fluorene	3.33	4.01	120	3.33	4.00	120	0			75-126	41
Indeno(1,2,3-cd)pyrene	3.33	3.98	120	3.33	3.91	117	2.5			73-129	45
2-Methylnaphthalene	3.33	3.75	113	3.33	3.64	109	3.6			65-139	45
Phenanthrene	3.33	3.64	109	3.33	3.61	108	0.9			70-129	43
Pyrene	3.33	3.78	113	3.33	3.73	112	0.9			73-131	47

SECTION V - Calibration and QC Information - 12/08/2000 08:41  
LIMS Workorder: Fuel release site [20011213] Abbott Laboratories  
STL Austin

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**SECTION V**  
**Calibration and QC Information**  
**Control Sample Results**

**Semivolatiles**  
**SW8270C**

Surrogate Compounds	Lab ID: 1018214		Lab ID: 1018215		QC Recovery Limits
	%Recovery	Flags	%Recovery	Flags	
2-Fluorobiphenyl	122	Q	112		85-121
2-Fluorophenol	111		98		75-111
Nitrobenzene-d5	106		97		84-119
Phenol-d5	115		106		77-124
Terphenyl-d14	110		100		85-125
2,4,6-Tribromophenol	123		111		76-136

**SECTION VI**  
**Batch Summaries**

**Extraction/Digestion Batch Summary**  
**Semivolatiles**  
**SW8270C**

Extraction Batch ID: 9565

Start Date/Time: 11/29/2000 14:57  
 Stop Date/Time: 11/30/2000 08:35

Analyst: SDM

Client Sample ID	Lab Sample ID	Sample Type	Matrix	Sample Size		Preparation Method
				Initial	Final	
LCS for HBN 9565 [EX/1697]	1018214	Lab Control Sample	Solid	30 g	1 mL	SW3540C
LCSD for HBN 9565 [EX/1697]	1018215	Lab Control Sample Duplicate	Solid	30 g	1 mL	SW3540C
MB for HBN 9565 [EX/1697]	1018216	Method Blank	Solid	30 g	1 mL	SW3540C
G-19	2001121301	Field Sample	Solid	30.09 g	1 mL	SW3540C
G-19	1018217	Matrix Spike	Solid	30.1 g	1 mL	SW3540C
G-19	1018218	Matrix Spike Duplicate	Solid	30.08 g	1 mL	SW3540C
G-8	2001121302	Field Sample	Solid	30.18 g	1 mL	SW3540C

**SECTION VI**  
Batch Summaries

Analysis Batch Summary  
Semivolatiles  
SW8270C

Analysis Batch ID: 9617 Instrument ID: 5971 Analyst: MCL

Sequence	Client Sample ID	Lab Sample ID	Analysis		Sample Type	Analysis File ID	Sub-Batch ID
			Date	Time			
1	INSTRUMENT QC	1101	12/04/2000	15:14:00	GC/MS Tune	12244.D	0
2	INSTRUMENT QC	1406	12/04/2000	15:33:00	Continuing Calibration Check	12245.D	0
3	LCS for HBN 9565 [EX/1697]	1018214	12/04/2000	16:20:00	Lab Control Sample	12246.D	0
4	LCSD for HBN 9565 [EX/1697]	1018215	12/04/2000	17:07:00	Lab Control Sample Duplicate	12247.D	0
5	MB for HBN 9565 [EX/1697]	1018216	12/04/2000	17:54:00	Method Blank	12248.D	0
6	G-19	2001121301	12/04/2000	18:42:00	Field Sample	12249.D	0
7	G-19	1018217	12/04/2000	19:29:00	Matrix Spike	12250.D	0
8	G-19	1018218	12/04/2000	20:16:00	Matrix Spike Duplicate	12251.D	0
9	G-8	2001121302	12/04/2000	21:03:00	Field Sample	12252.D	0

Analysis Batch ID: 9640 Instrument ID: 5971 Analyst: MCL

Sequence	Client Sample ID	Lab Sample ID	Analysis		Sample Type	Analysis File ID	Sub-Batch ID
			Date	Time			
1	INSTRUMENT QC	1101	12/05/2000	13:03:00	GC/MS Tune	12253.D	0
2	INSTRUMENT QC	1406	12/05/2000	13:22:00	Continuing Calibration Check	12254.D	0
3	LCS for HBN 9565 [EX/1697]	1018214	12/05/2000	14:09:00	Lab Control Sample	12255.D	0
4	LCSD for HBN 9565 [EX/1697]	1018215	12/05/2000	14:56:00	Lab Control Sample Duplicate	12256.D	0
5	MB for HBN 9565 [EX/1697]	1018216	12/05/2000	15:44:00	Method Blank	12258.D	0
6	G-8	2001121302	12/05/2000	16:31:00	Field Sample	12259.D	0

**SECTION VII**  
Certifications

State/Agency	ID #
Arkansas Department of Pollution Control and Ecology	
California Environmental Laboratory Accreditation Program / Waste Water/Hazardous Waste	2257
Kansas Department of Health and Environment / Solid and Hazardous Waste/Drinking Water	E-10165
Louisiana Department of Environmental Quality, ELAP / Waste Water/Hazardous Waste/Air/Emissions	
New Jersey Department of Environmental Protection	82005
New York State Department of Health / Waste Water/Hazardous Waste	10915
North Carolina Dept. of Natural Resources & Community Development / Waste Water	302
Oklahoma Water Resources Board / Waste Water	8720
South Carolina Dept. of Health & Environmental Control	82003002
Utah Department of Health / Solid and Hazardous Waste	RADC
Wisconsin Department of Natural Resources	999885260
US Air Force/AFCEE	Participating Laboratory
US Army Corps of Engineers (ACE)	
US Department of Agriculture / Restricted Soils Permit	S-42350



## Quality Control Exception Report

QCER #: 2270      Analysis Date: 12/5/00      File ID(s):  
Status: Complete      Spec: 827S 06.00  
Queue: MSSV      Instrument: 5971  
Analyst: MCL      Matrix: S  
HBN: 0

Work Order	HSN	Client	CSC
20011213		ABBOTT	JAL

### Analytical Problem Identification

Surrogate Recovery

### Analytical Probable Cause

Unknown

### Analytical Corrective Action Taken

No action required

### Comments:

LCS1018214: 2-fluorobiphenyl 122% Per CSC, ok to report without further action.



## Quality Control Exception Report

QCER #: 2263      Analysis Date: 12/4/00      File ID(s):  
Status: Complete      Spec: 827S 06.00  
Queue: MSSV      Instrument: 5971  
Analyst: MCL      Matrix: S  
HBN: 9617

Work Order	HSN	Client	CSC
20011213		ABBOTT	JAL

### Analytical Problem Identification

LCS/LCSD Recovery

MS/MSD Recovery

Surrogate Recovery

### Analytical Probable Cause

Unknown

Matrix effect

### Analytical Corrective Action Taken

No action required

### Comments:

LCS: 2-Fluorophenol 117% 2-fluorobiphenyl 125% fluorene 127% Due to unknown reasons.

MS 1018217: fluorene 135%, 2-fluorobiphenyl 124%, 2-Fluorophenol 115%. This appears to be due to matrix effect.

Per CSC, ok to report without further action.



LOG NO: T0-44059  
Received: 08 DEC 00  
Reported: 20 DEC 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbott - Laurinburg  
Sampled By: Client  
Code: 091401221  
Page 1

**LABORATORY ANALYTICAL REPORTS  
FOR GROUNDWATER MONITORING WELL SAMPLES  
COLLECTED ON DECEMBER 7, 2000**

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED				
44059-1	FR-3d	12-07-00/10:45				
44059-2	FR-6d	12-07-00/11:05				
44059-3	FR-7d	12-07-00/10:20				
44059-4	FR-8d	12-07-00/09:45				
44059-5	FR-9d	12-07-00/09:20				
PARAMETER	44059-1	44059-2	44059-3	44059-4	44059-5	
Purgeable Aromatics (602)						
Benzene, ug/l	2.0	17	<1.0	<1.0	<1.0	
Toluene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Ethylbenzene, ug/l	<1.0	2.2	<1.0	<1.0	<1.0	
Xylenes, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	
Prep Date	12.14.00	12.14.00	12.14.00	12.14.00	12.14.00	
Analysis Date	12.14.00	12.14.00	12.14.00	12.14.00	12.14.00	
Dilution Factor	1	1	1	1	1	

**SEVERN  
TRENT  
SERVICES**

2846 Industrial Plaza Dr. • Tallahassee, FL 32301 • Tel: 850 878 3994 • Fax: 850 878 9504 • www.stl-inc.com

STL Tallahassee

LOG NO: T0-44059  
Received: 08 DEC 00  
Reported: 20 DEC 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbott - Laurinburg  
Sampled By: Client  
Code: 091401221  
Page 2

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	
44059-6	Blind dup	12-07-00/11:10	
44059-7	Trip Blank	12-07-00	
PARAMETER		44059-6	44059-7
Purgeable Aromatics (602)			
Benzene, ug/l		17	<1.0
Toluene, ug/l		<1.0	<1.0
Ethylbenzene, ug/l		2.2	<1.0
Xylenes, ug/l		<2.0	<2.0
Prep Date		12.14.00	12.14.00
Analysis Date		12.14.00	12.14.00
Dilution Factor		1	1

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STL Tallahassee

LOG NO: T0-44059  
Received: 08 DEC 00  
Reported: 20 DEC 00

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbott - Laurinburg  
Sampled By: Client  
Code: 091401221  
Page 3

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED				
44059-8	Method Blank					
44059-9	Reporting Limit (RL)					
44059-10	Method Detection Limit (MDL)					
44059-11	Accuracy (%Rec)					
44059-12	Precision (%RPD)					
PARAMETER		44059-8	44059-9	44059-10	44059-11	44059-12
Purgeable Aromatics (602)						
Benzene, ug/l		<1.0	1.0	0.10	115 %	0 %
Toluene, ug/l		<1.0	1.0	0.13	110 %	0 %
Ethylbenzene, ug/l		<1.0	1.0	0.14	---	---
Xylenes, ug/l		<2.0	2.0	0.27	---	---
Prep Date		12.13.00	---	---	12.13.00	---
Analysis Date		12.13.00	---	---	12.13.00	---
Dilution Factor		1	---	---	1	---

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LOG NO: 10-44059  
Received: 08 DEC 00  
Reported: 20 DEC 00

**SEVERN**  
**TRENT**  
**SERVICES**

Ms. Shannon Wallin  
Radian International  
P.O. Box 13000  
Research Triangle Park, NC 27709

Project: 805685.01/Abbott - Laurinburg

Sampled By: Client  
Code: 091401221

REPORT OF RESULTS

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LOG NO	SAMPLE DESCRIPTION / QC REPORT FOR LIQUID SAMPLES	DATE / TIME SAMPLED
44059-13	ICS Accuracy Control Limit (R)	
44059-14	ICS Precision Control Limit (Advisory) (RPD)	
PARAMETER		
	44059-13	44059-14
Purgeable Aromatics (602)		
Benzene, %	39-150 %	<31 %
Toluene, %	46-148 %	<25 %

Methods: EPA 40 CFR Part 135  
NC Certification No. 399

*Laura B. Sneed*  
Laura B. Sneed, Project Manager

Final Page Of Report

STL Tallahassee is a part of Severn Trent Laboratories, Inc.

Serial Number 015053

SEVERN TRENT SERVICES		ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD		<input type="checkbox"/> 5102 LaRoche Avenue, Savannah, GA 31404 Phone: (912) 354-7858 Fax: (912) 352-0165 <input checked="" type="checkbox"/> 2846 Industrial Plaza Drive, Tallahassee, FL 32301 Phone: (850) 878-3994 Fax: (850) 878-9504 <input type="checkbox"/> 900 Lakeside Drive, Mobile, AL 36693 Phone: (334) 666-6633 Fax: (334) 666-6696 <input type="checkbox"/> 6712 Benjamin Road, Suite 100, Tampa, FL 33634 Phone: (813) 885-7427 Fax: (813) 885-7049													
PROJECT REFERENCE <b>Abbott - Laurinburg</b>	PROJECT NO. <b>805685.01</b>	PROJECT LOCATION (STATE) <b>NC</b>	MATRIX TYPE	REQUIRED ANALYSIS	PAGE 1 OF 1												
STL (LAB) PROJECT MANAGER <b>Laura Sneed</b>	P.O. NUMBER <b>805685.01</b>	CONTRACT NO.			STANDARD REPORT DELIVERY DATE DUE <b>12-21-00</b>												
CLIENT (SITE) <b>RBS - Radian</b>	CLIENT PHONE <b>(919) 461-1100</b>	CLIENT FAX <b>(919) 461-1415</b>			EXPEDITED REPORT DELIVERY (SURCHARGE) DATE DUE												
CLIENT NAME <b>R. Willis</b>	CLIENT E-MAIL																
CLIENT ADDRESS <b>1600 Perimeter Park Dr. Morrisville, NC 27560</b>	COMPANY CONTRACTING THIS WORK (if applicable)				NUMBER OF COOLERS SUBMITTED PER SHIPMENT: <b>1</b>												
SAMPLE		SAMPLE IDENTIFICATION		REMARKS													
DATE	TIME																
12-7-00	1045	FR-3d	XX3	XX	BTEX only												
12-7-00	1105	FR-6d	XX3	XX													
12-7-00	1020	FR-7d	XX3	XX													
12-7-00	0945	FR-8d	XX3	XX													
12-7-00	0920	FR-9d	XX3	XX													
12-7-00	1110	Blind dup	XX3	XX													
12-7-00	LAB	Trip Blank	XX3	XX													
<i>RWS (over)</i>																	
RELINQUISHED BY: (SIGNATURE) <i>D. Knight</i>	DATE 12/1/00	TIME 1600	RELINQUISHED BY: (SIGNATURE) <i>R. Willis</i>	DATE 12/7/00	TIME 1600												
RECEIVED BY: (SIGNATURE) <i>R. Willis</i>	DATE 12-4-00	TIME 1600	RECEIVED BY: (SIGNATURE)	DATE	TIME												
<table border="1"> <tr> <td>ANALYSIS FOR LABORATORY</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(SIGNATURE)</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>						ANALYSIS FOR LABORATORY						(SIGNATURE)					
ANALYSIS FOR LABORATORY																	
(SIGNATURE)																	