

# **WELL INSTALLATION PLAN**

**NYSDEC – FRANKLIN CLEANERS SITE  
Hempstead, New York**

**SITE NO: 1-30-050  
NYSDEC Contract #D004184**

*Prepared for:*

New York State Department of Environmental Conservation  
Division of Environmental Remediation

*Prepared by:*

Environmental Products and Services, Inc.  
Westchester, NY

March 2001



# WELL INSTALLATION PLAN

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SITE NO: 1-30-050

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# WELL INSTALLATION PLAN

## NYSDEC - FRANKLIN CLEANERS SITE

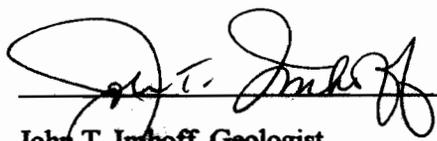
Hempstead, New York

Site No: 1-30-050

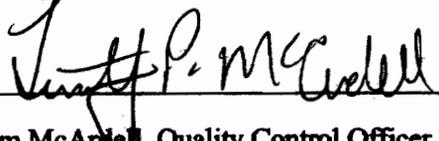
### 1.0 PLAN IDENTIFICATION AND APPROVALS

Project Title: Site Remediation  
Project Location: Franklin Cleaners Site  
206-208B South Franklin Street  
Hempstead, NY  
DEC Site No: 1-30-050  
EPS Project No.: W0000  
Prepared By: John T. Imhoff, Geologist  
Date Prepared: December 28, 2000  
Revision No.: 0

Prepared by:

  
\_\_\_\_\_  
John T. Imhoff, Geologist

3/29/01  
Date

  
\_\_\_\_\_  
Tim McArnell, Quality Control Officer

3/29/01  
Date

## **2.0 INTRODUCTION**

Environmental Products and Services, Inc. (EPS) has prepared this Well Installation Plan for well installation activities to be conducted at the Franklin Cleaners Site, Incorporated Village of Hempstead, Nassau County, New York (Figure 1). This Well Installation Plan was prepared as a thirty (30) day submittal, based on the New York State Department of Environmental Conservation (Department) Franklin Cleaners Site Contract Document Number D004184, NYS Site No: 1-30-050 dated June 26, 2000 (*Contract Documents*).

As described in the Work and Waste Handling Plan dated December 29, 2000, EPS will construct, and operate a Soil Vapor Extraction (SVE) System and an Air Sparging System at the above-mentioned site. Soil vapor extraction wells, air sparging wells, groundwater monitoring wells, and vapor monitoring wells will be installed at the site in association with the installation of the SVE System and Air Sparging System.

## **3.0 DRILLING METHODS**

Soil borings will be advanced via conventional drilling technology utilizing a skid and/or truck-mounted drill rig(s) to turn 4 1/4-inch, inside diameter (i.d.), hollow-stem augers (HSA). Where appropriate, (i.e., outside of buildings) two-inch by two-foot split-spoon samplers will be driven ahead of the auger bit to facilitate continuous soil sample collection. Sampling from borings advanced inside the buildings will be collected with a 2-foot (or 5-foot) by 3-inch continuous sampler that is turned into the ground and filled with sample as the augers are advanced. Filled samplers will be extracted from the ground, disarticulated to allow for soil description and classification by an on-site geologist. Only vegetable oil-based (e.g., Crisco, Pam Cooking Spray) lubricants or lubricants designed specifically for environmental purposes shall be used during drilling.

Drilling equipment and other equipment (as necessary) will be decontaminated via a high-pressure wash system will be provided for the equipment decontamination pad and will be suitably sized to provide a minimum pressure of 500 psi at a 0.5 gallons per minute flow and a nominal temperature of 200°F. Wash units for equipment decontamination will be self-contained, portable, high- pressure water or steam.

Disposable sampling equipment will be used whenever possible, to reduce the potential for cross-contamination between samples resulting from insufficient cleaning. Non-disposable sampling equipment will either be chemically decontaminated with a solution of water and phosphate detergent (i.e., Liquinox or Alconox) followed by rinses with potable water, or will be decontaminated with the high-pressure wash system described previously.

Because the site is a former dry cleaner location, waste generated during drilling may potentially be contaminated by dry cleaning solvent (tetrachloroethylene). Drill cuttings and decontamination water will be will be considered F-Listed hazardous waste unless

and until representative sampling is conducted, verifying that tetrachloroethylene or its breakdown components (i.e, trichloroethylene, dichloroethylene, vinyl chloride) are not present in such waste. It is presumed, and disposal facilities with whom arrangements for disposal have been made, that concentrations of hazardous constituents in the waste will not exceed land-ban restrictions.

EPS will contain drill cuttings and wastewater, generated during the project in leak-proof, vapor-tight containers located near the borehole during drilling. Soil cuttings will be containerized in new, NYSDOT-approved, 55-gallon "ring top" drums. Wastewater will be contained in NYSDOT-approved, 55-gallon "closed top" drums with bungs in the lid. Upon filling, drums will be relocated to a drum storage area. Wastes will not be allowed to flow on the Project Site surface and will be contained and secured at the end of each workday.

EPS will manage wastewater disposal through Clean Water of New York, Inc. (brokerage) to dispose of wastewater at the following facility:

Name: Radiac Research Corporation  
Address: 261 Kent Avenue  
Brooklyn, NY 11211  
Contact Name: Louis Comacho  
Contact Phone: 1-718-963-2233

Drill Cuttings, and other solid-matrix waste such as spent Carbon will be managed through Allied Waste Services, Inc. of Merrick, NY (Broker) for disposal.

Unless other arrangements are made prior to disposal, with the approval of the Engineer and the Department, transportation of waste shall be provided by:

Environmental Products and Services, Inc.  
New York I.D. No. 7A-010  
Federal I.D. NY980761191  
Address: 365 Route 9W  
Congers, New York 10920  
Contact Name: David Scott  
Contact Phone: (914) 267-4828

#### **4.0 SOIL VAPOR EXTRACTION WELLS**

Two soil vapor extraction wells (SVE-1 and SVE-2) will be installed by EPS at the locations illustrated on Figure 2. The two soil vapor extraction wells will be completed with well screens, casing, well heads, and transition piping. Each soil vapor extraction well will be constructed in a borehole having a minimum diameter of 6 inches. Vapor extraction well casings will be 2-inch diameter Schedule 40 flush-joint threaded polyvinyl chloride (PVC) pipes. Vapor extraction well screens will be 2-inch diameter, continuous wrap, wire-wound, Schedule 40 PVC.

SVE-1 will be installed to a total depth of 22 feet below grade and will consist of 12 feet of PVC screen and 10 feet of PVC riser. SVE-2 will be installed to a depth of 12 feet below grade and consist of 7 feet of PVC screen and 5 feet of PVC riser.

Two monitoring ports will be provided at the well head of each soil vapor extraction well. One of the monitoring ports will be a 2-inch NPT nozzle equipped with a threaded cap and the other monitoring port will be designed for collecting gas phase syringe samples. The sampling ports will be equipped with removable caps, which provide a gas-tight seal when the sampling ports are not in service.

EPS will construct the soil vapor extraction wells to provide airflow throughout the zone of soil contamination while at the same time minimizing the potential for entrainment and transport of groundwater in the gas phase. With respect to the placement of vapor extraction well screens, seasonal variations in groundwater table elevations will be taken into consideration, as well as the potential for fluctuations in groundwater table elevations due to upwelling as a result of the applied vacuum and water table mounding due to air sparging.

EPS will furnish and install sand pack, bentonite seal, and well grout seal materials as necessary to achieve the required air flow in each soil vapor extraction well and to seal off air flow within the borehole from the surface. Well casings and screens will be installed straight, plumb, and concentric in the borehole.

A geologist shall provide oversight of well construction activities and prepare soil vapor extraction well construction logs for each well. Typed logs will be submitted to the Engineer within 14 days of the date of completion of well construction.

#### **5.0 VAPOR MONITORING PROBES**

Four vapor monitoring probes will be installed by EPS at the locations illustrated on Figure 2. Vapor monitoring probes SVM-2, SVM-3, and SVM-4 will be located inside existing buildings and SVM-1 will be located on the east side of the building.

Each vapor monitoring probe will consist of a ¾-inch nominal diameter, Schedule 40 flush-jointed threaded PVC riser pipe, screen, bottom cap, and threaded PVC lab cock valve. The probe heads will be protected by a flush-mounted concrete encasement with a locking steel manhole cover. The encasement cover will be equipped with a steel frame and lid. The frame and lid will be suitable for the intended service. The encasement lid and frame will be provided by a firm regularly engaged in the manufacture of such items and result in a flush weather tight surface closure. The asphalt or concrete at the surface surrounding each probe head encasement will be restored to original or specified condition as directed by the Engineer.

Vapor monitoring probe well screens will be ¾-inch nominal diameter and Schedule 40 slotted PVC pipe. SVM-1 will be installed 20 feet below grade and consist of 5 feet of PVC screen and 15 feet of PVC riser. SVM-2, SVM-3, and SVM-4 will be installed 10 feet below grade and consist of 5 feet of PVC screen and 5 feet of PVC riser. The screen of the vapor monitoring probes will be positioned so that the bottom of the screened interval is situated no less than one foot above the bottom of the borehole. The screen and riser pipe will not be dropped or allowed to fall uncontrolled into the borehole. The casing and screen will be installed straight, plumb, and concentric in the borehole. The casing and screen assembly will be suspended from the surface during the entire probe completion procedure. The top of the casing will be protected in such a manner that prevents foreign materials or probe completion materials from entering the probe during completion.

After the screen and riser has been installed into the borehole, the sand pack will be installed from the bottom of the borehole to two feet above the top of the screen. Two feet of granular bentonite plug will be emplaced above the sand pack, and the remainder of the annular space will be filled with bentonite cement grout. The material will fill the entire annular space between the probe and the wall of the borehole.

A tremie pipe having an inside diameter of not less than one inch will be lowered to the bottom of the annulus between the hole and probe. The tremie pipe will be arranged so that water used and materials fed at uniform rates are discharged as the material fills the hole from the bottom up. The tremie pipe will be raised at a rate that shall keep the bottom of the pipe no more than two feet above the top of the surface of the material already in the hole and no more than 2 feet below the surface of the material at all times.

A geologist shall provide oversight of probe construction activities and prepare vapor monitoring probe construction logs for each probe. Typed logs will be submitted to the Engineer within 14 days of the date of completion of probe construction.

## **6.0 AIR SPARGING WELLS**

Three air sparging wells will be installed by EPS at the locations shown on Figure 2. The air sparging wells will be completed with well screens, casing, wellheads, and transition

pipng to the air supply. Air sparge wells AS-2 and AS-3 will be located inside existing buildings. AS-1 will be located on the east side of the building.

Each air sparge well will consist of a 2-inch nominal diameter, Schedule 40 flush-jointed threaded PVC riser pipe. Air sparging well screen will be 2-foot length new commercially fabricated continuous wrap, wire-wound Schedule 40 PVC. The wells will include a two-foot long solid section of PVC riser placed below the well screen as a collection sump.

EPS will construct the air sparging wells to provide air flow into the contaminated zone of the aquifer. AS-1 will be installed 29 feet below grade with the screened section between 25 and 27 feet below grade and 25 feet of PVC riser above and 2 feet of PVC riser below the 2 feet of PVC screen. AS-2 and AS-3 will be installed 19 feet below grade with the screened section between 15 and 17 feet below grade and 15 feet of PVC riser above and 2 feet of PVC riser below the 2 feet of PVC screen. The construction of the wells will achieve the required air flow in the air sparging wells and seal off air flow from the borehole to the surface. The well casings and screens will be installed straight, plumb, and concentric in the borehole.

A geologist shall provide oversight of air sparging well construction activities and prepare construction logs for each well. Typed logs will be submitted to the Engineer within 14 days of the date of completion of well construction.

EPS will develop the air sparging wells. Well development will be supplemented by measurements of field parameters including turbidity, temperature, pH, dissolved oxygen, and conductivity. Development shall continue until the well water contains 50 NTUs or less, as measured with a turbidity meter and the field parameters stabilize for a minimum of three consecutive readings of 10 percent or less variability for each of the parameters or until the Engineer approves cessation of development. The sediment-free condition is to be measured within the first 15 minutes of pumping following start-up. EPS will contain development water in accordance with the approved Work and Waste Handling Plan.

After well development is complete, EPS will install an airline connected from the air sparging blower discharge to the air sparging wells. This airline will be 1-inch diameter steel pipe or as approved by the Engineer. A well plug sealing the annular space between the airline and PVC wells will be installed at the top of the wells.

One monitoring port will be provided at the wellhead of each air sampling well as necessary to measure temperature at the wellheads.

## **7.0 GROUNDWATER MONITORING WELLS**

EPS will provide the labor, materials, supplies, equipment, facilities, and incidentals necessary to construct and develop groundwater monitoring wells ASM-1 and ASM-2.

The groundwater monitoring wells will be installed by EPS at the locations shown on Figure 2. Groundwater monitoring well ASM-1 will be installed inside the building to a depth of 20 feet below the basement floor. Monitoring well ASM-2 will be installed outside the building to a depth of 30 feet below ground surface. The depth of the screened interval for ASM-1 will be from five feet to 20 feet below grade and for ASM-2 will be from 15 to 30 feet below grade with riser extending to the surface.

The monitoring wells will be constructed of threaded flush joint 2-inch I.D. Schedule 40 PVC riser pipe and 15-foot long 2-inch I.D. Schedule 40 slotted well screen with a slot size of 0.010 inches. Well casings and screens will be installed straight, plumb, and concentric.

Sand will be placed around the well screen. Finer grained sand will be placed two feet above the well screen. Sand will be well rounded, washed, and sized with a diameter and gradation determined to be compatible with the native aquifer formation. A two-foot bentonite seal will be placed above the sand pack. EPS will provide documentation from the manufacturer that the bentonite is contaminant free. The cement/bentonite grout will be pressure pumped into the borehole using a tremie pipe to ensure that no bridging occurs within the hole and that the grout extends from the top of seal to the ground surface. The cement/bentonite mix shall be prepared by combining 12 gallons of potable water, four pounds of pure bentonite, and one 94-pound bag of Type 1 cement.

EPS will furnish and install steel protective flush mount well vaults with a watertight seal. Provision will be made to allow water to drain from the vault. A locking removable air-tight well cap will be placed in the well riser pipe. The locks for each protective casing will be provided by EPS and keyed uniformly. Two keys will be provided to the Engineer and two keys will be provided to the Department

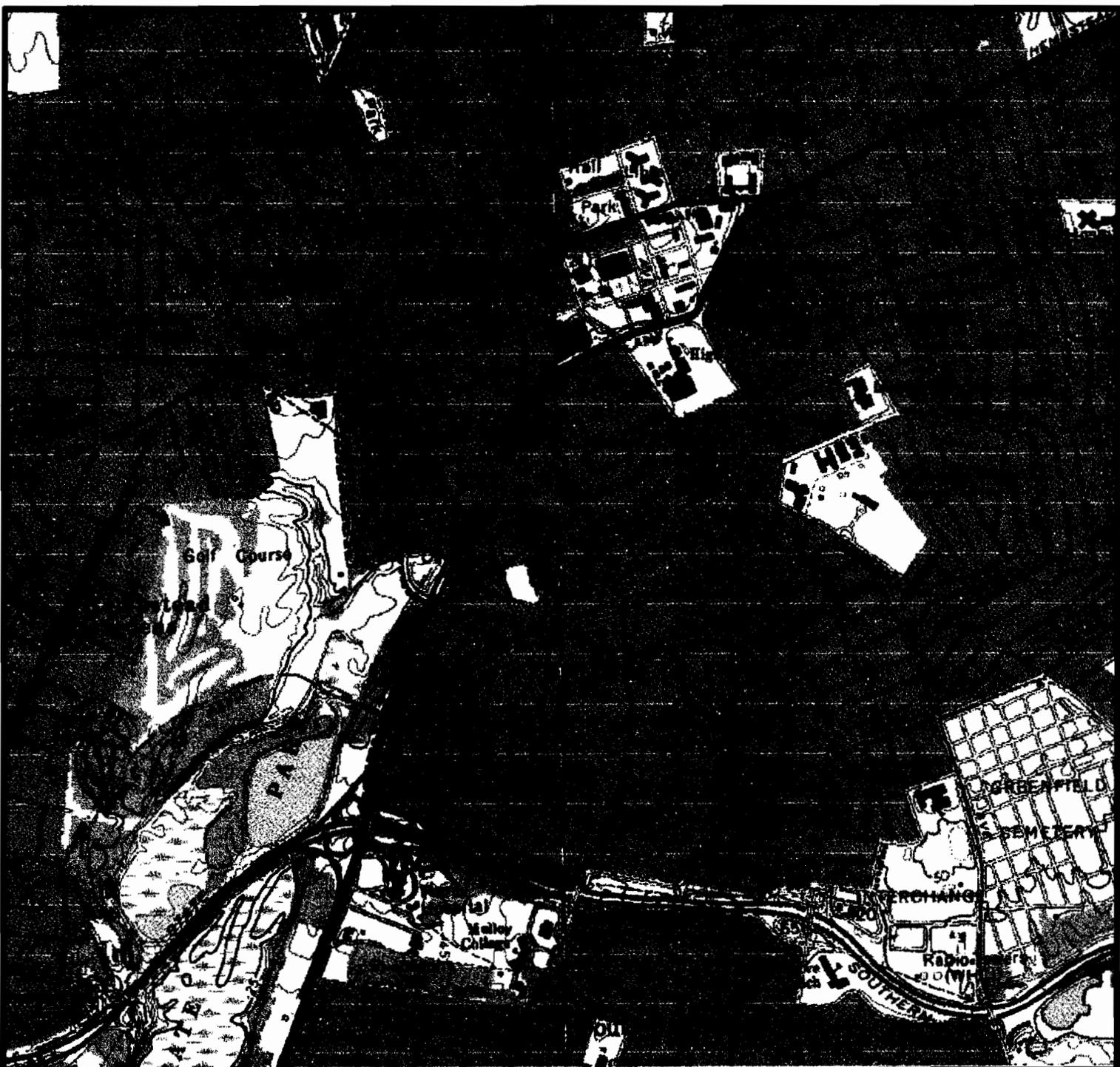
A geologist shall provide oversight of groundwater monitoring well construction activities and prepare groundwater monitoring well construction logs for each well. Typed logs will be submitted to the Engineer within 14 days of the date of completion of well construction.

## **8.0 WELL DECOMMISSIONING**

EPS will decommission SVE and air sparge wells, vapor monitoring probes and groundwater monitoring wells as part of completion of the project at the site as determined by the Engineer, with the exception of one groundwater monitoring well and one vapor monitoring probe, which will remain in place.

In decommissioning the probes and wells, EPS will remove and dispose off site the protective outer casings, manhole covers and frames, and as much of the casing as possible. The remaining casing will be overdrilled and perforated to the deepest extent possible, and plugged with non-shrink cement/bentonite grout with a tremie pipe from the

bottom of the borehole, upwards to ground level in one continuous operation. EPS will decommission the wells and probes in accordance with NYSDEC's Groundwater Monitoring Well Decommissioning Procedures dated May 1995 and to the satisfaction of the Engineer.

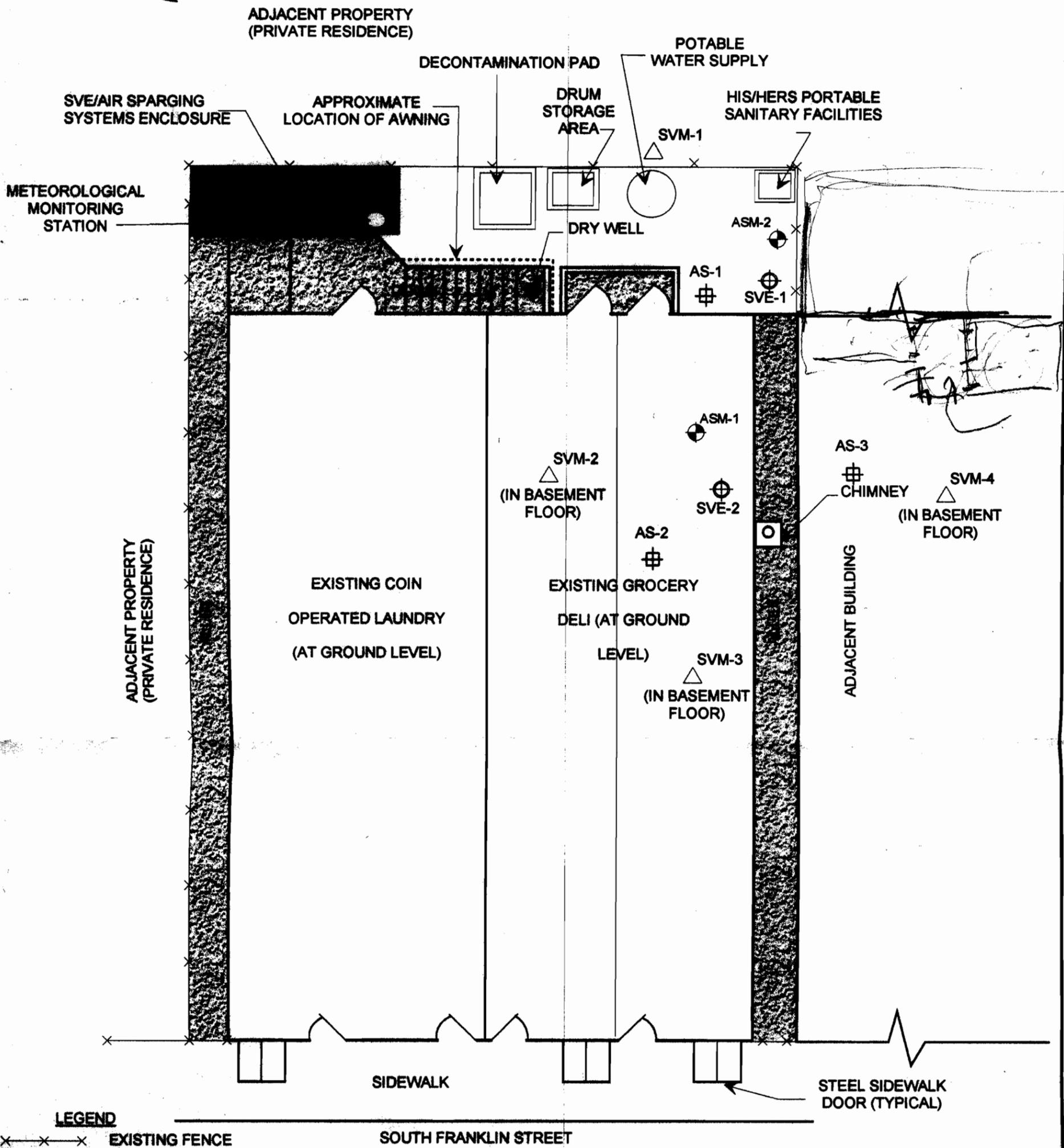


scale in feet  
 Approx. scale: 1" = 2083 ft  
 Scale 1:25,000



Source: USGS 7.5 min.

<b>Figure No.:</b> 1	<b>Quadrangle:</b> Freeport, NY
<b>Project No.:</b> W0000	<b>Prepared by:</b> Geoscience
<b>Client:</b> NYSDEC	<b>Project location:</b> Franklin Cleaners Site 206-208B South Franklin Street Hempstead, NY



**LEGEND**

- x—x—x—x— EXISTING FENCE
- █ EXISTING CONCRETE
- △ SVM-1 VAPOR MONITORING PROBE TO BE INSTALLED BY EPS
- ⊕ ASM-1 GROUNDWATER MONITORING WELLS TO BE INSTALLED BY EPS
- ⊕ SVE-1 SOIL VAPOR EXTRACTION WELLS TO BE INSTALLED BY EPS
- ⊕ AS-1 AIR SPARGE WELLS TO BE INSTALLED BY EPS



**Environmental Products & Services, Inc.**

DATE: January 2001

PROJECT NO.: W0000

SITE LAYOUT DIAGRAM

SCALE: 1" = 10'

FIGURE NO.: 2

DRAWN BY: Geoscience

LOCATION: Hempstead, NY



ADJACENT PROPERTY  
(PRIVATE RESIDENCE)

SVE/AIR SPARGING  
SYSTEMS ENCLOSURE

APPROXIMATE  
LOCATION OF AWNING

METEOROLOGICAL  
MONITORING  
STATION

DECONTAMINATION PAD

DRUM  
STORAGE  
AREA

DRY WELL

POTABLE  
WATER SUPPLY

HISHERS PORTABLE  
SANITARY FACILITIES

SVM-1  
△

ASM-1  
⊙

SVE-1  
⊕

AS-1  
⊕

VAPOR MONITORING PROBE TO BE INSTALLED BY EPS

GROUNDWATER MONITORING WELLS TO BE INSTALLED BY EPS

SOIL VAPOR EXTRACTION WELLS TO BE INSTALLED BY EPS

AIR SPARGE WELLS TO BE INSTALLED BY EPS



**Environmental Products & Services, Inc.**

SITE LAYOUT DIAGRAM

DATE: January 2001

PROJECT NO.: W0000

SCALE: 1" = 10'

FIGURE NO.: 2

DRAWN BY: Geoscience

LOCATION: Hempstead, NY

# Environmental

Products & Services, Inc.

# Subsurface Log

Hole No.:  
Sheet

SVE-1

Date started:

Date Finished:

Client: NYSDEC  
Location: Franklin Cleaners Site  
Hempstead, NY

Method of Investigation:

Project No.: W0000

Drilling Co.: EPS

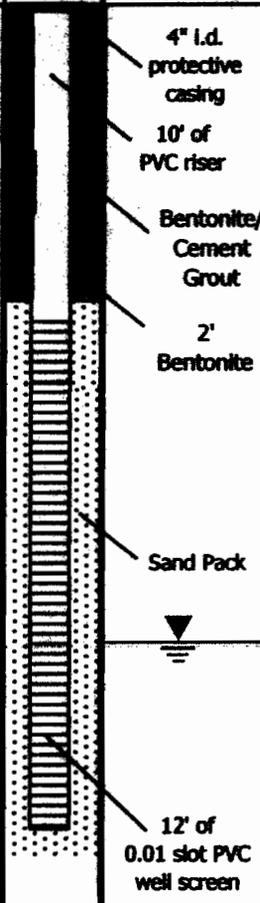
Driller:  
D. Helper:  
Drill Rig:

Weather:  
Partly Cloudy

P. Manager:

Geologist:

Depth (ft.)	Sample					Sample Description	Field Analytical Readings	Well Details	Groundwater and Other Observations
	No.	Depth (ft.)	Blows per 6"	"N"	Recovery (ft.)				
5									
10									
15									
20									
25									
30									
35									



Sample Types:  
 S = Split Spoon:   X   T = Shelby Tube:         
 R = Rock Core:        O =         
 N = ASTM D1586



# Environmental Products & Services, Inc.

# Subsurface Log

Hole No.: SVE-2  
Sheet

Date started:  
Date Finished:

Client: NYSDEC  
Location: Franklin Cleaners Site  
Hempstead, NY

Method of investigation:

Project No.: W0000

Drilling Co.: EPS

Driller:  
D. Helper:  
Drill Rig:

Weather:  
Partly Cloudy

P. Manager:

Geologist:

Depth (ft.)	Sample				Sample Description	Field Analytical Readings	Well Details	Groundwater and Other Observations
	No.	Depth (ft.)	Blows per 6"	Recovery (ft.)				
5								4" I.d. protective casing
								Bentonite Seal
								5' of PVC riser
10								7' of 0.01 slot PVC well screen
								Sand Pack
15								
20								
25								
30								
35								

**Sample Types:**

S = Split Spoon:   X   T = Shelby Tube:         
R = Rock Core:        O =         
N = ASTM D1586

**Backfill Well Key**

 Cement  Native Fill  
 Sand  Bentonite

**Environmental**  
Products & Services, Inc.

**Subsurface**  
**Log**

Hole No.: SVM-1  
Sheet

Date started:  
Date Finished:

Client: NYSDEC  
Location: Franklin Cleaners Site  
Hempstead, NY

Method of investigation:

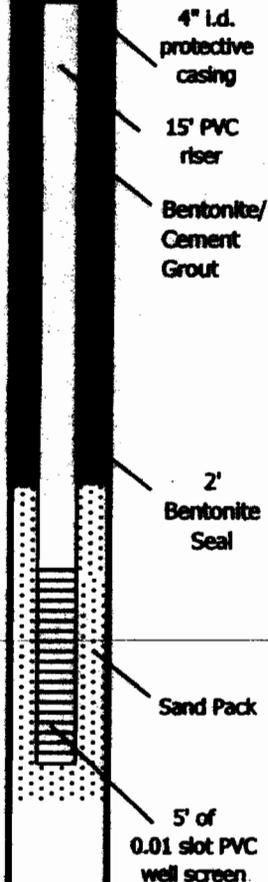
Project No.: W0000  
P. Manager:

Drilling Co.: EPS  
Geologist:

Driller:  
D. Helper:  
Drill Rig:

Weather:  
Partly Cloudy

Depth (ft.)	Sample					Sample Description	Field Analytical Readings	Well Details	Groundwater and Other Observations
	No.	Depth (ft.)	Blows per 6"	"N"	Recovery (ft.)				
5									
10									
15									
20									
25									
30									
35									



Sample Types:  
S = Split Spoon:   X   T = Shelby Tube:         
R = Rock Core:        O =         
N = ASTM D1586





# Environmental

Products & Services, Inc.

# Subsurface Log

Hole No.:  
Sheet

SVM-3

Date started:

Date Finished:

Client: NYSDEC  
Location: Franklin Cleaners Site  
Hempstead, NY

Method of investigation:

Project No.: W0000

Drilling Co.: EPS

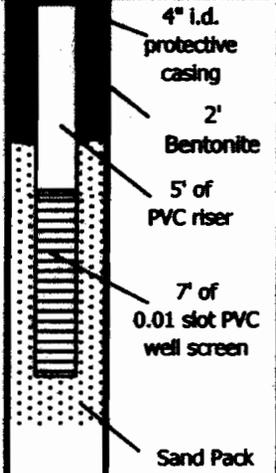
Driller:  
D. Helper:  
Drill Rig:

Weather:  
Partly Cloudy

P. Manager:

Geologist:

Depth (ft.)	Sample					Sample Description	Field Analytical Readings	Well Details	Groundwater and Other Observations
	No.	Depth (ft.)	Blows per 6"	"N"	Recovery (ft.)				
5									
10									
15									
20									
25									
30									
35									



Sample Types:  
S = Split Spoon:   X   T = Shelby Tube:         
R = Rock Core:        O =         
N = ASTM D1586

**Backfill Well Key**

 Cement	 Native Fill
 Sand	 Bentonite





**Environmental**  
Products & Services, Inc.

**Subsurface**  
**Log**

Hole No.: AS-2  
Sheet

Date started:  
Date Finished:

Client: NYSDEC  
Location: Franklin Cleaners Site  
Hempstead, NY

Method of investigation:

Project No.: W0000

Drilling Co.: EPS

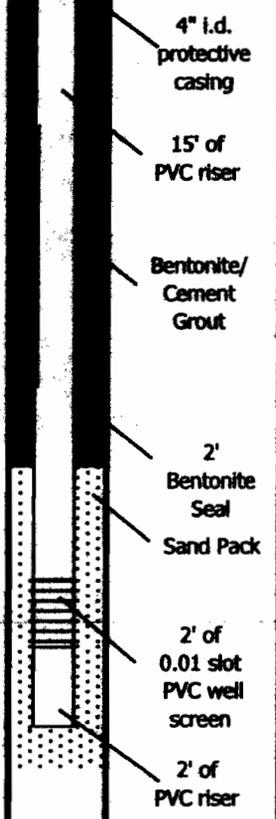
Driller:  
D. Helper:  
Drill Rig:

Weather:  
Partly Cloudy

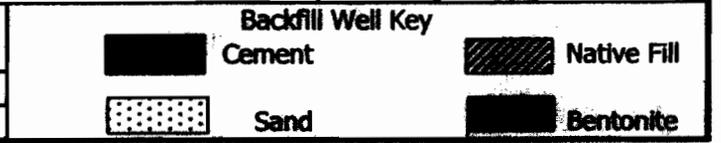
P. Manager:

Geologist:

Depth (ft.)	Sample					Sample Description	Field Analytical Readings	Well Details	Groundwater and Other Observations
	No.	Depth (ft.)	Blows per 6"	"N"	Recovery (ft.)				
5									
10									
15									
20									
25									
30									
35									



Sample Types:  
S = Split Spoon:   X   T = Shelby Tube:         
R = Rock Core:        O =         
N = ASTM D1586



# Environmental

Products & Services, Inc.

# Subsurface Log

Hole No.: AS-3  
Sheet

Date started:  
Date Finished:

Client: NYSDEC  
Location: Franklin Cleaners Site  
Hempstead, NY

Method of Investigation:

Project No.: W0000

Drilling Co.: EPS

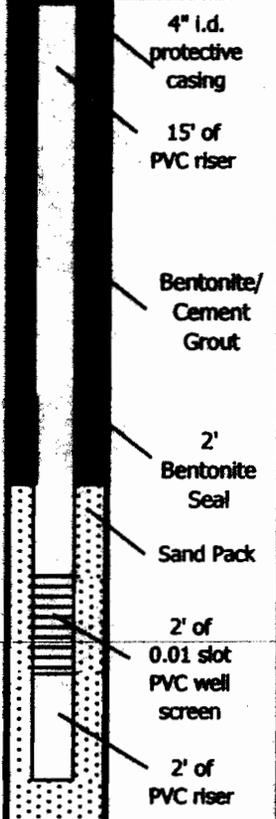
Driller:  
D. Helper:  
Drill Rig:

Weather:  
Partly Cloudy

P. Manager:

Geologist:

Depth (ft.)	Sample				Sample Description	Field Analytical Readings	Well Details	Groundwater and Other Observations
	No.	Depth (ft.)	Blows per 6"	"N" Recovery (ft.)				
5								
10								
15								
20								
25								
30								
35								



Sample Types:  
S = Split Spoon:   X   T = Shelby Tube:         
R = Rock Core:        O =         
N = ASTM D1586



**Environmental**  
Products & Services, Inc.

**Subsurface**  
**Log**

Hole No.: ASM-1  
Sheet

Date started:  
Date Finished:

Client: NYSDEC  
Location: Franklin Cleaners Site  
Hempstead, NY

Method of investigation:

Project No.: W0000

Drilling Co.: EPS

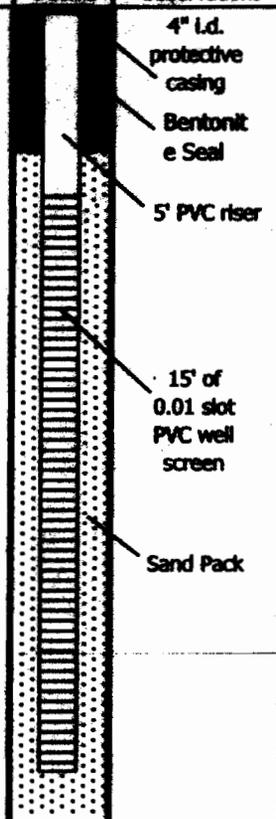
Driller:  
D. Helper:  
Drill Rig:

Weather:  
Partly Cloudy

P. Manager:

Geologist:

Depth (ft.)	Sample					Sample Description	Field Analytical Readings	Well Details	Groundwater and Other Observations
	No.	Depth (ft.)	Blows per 6"	"N"	Recovery (ft.)				
5									
10									
15									
20									
25									
30									
35									



Sample Types:  
S = Split Spoon:      X      T = Shelby Tube:       
R = Rock Core:      O =       
N = ASTM D1586



**Environmental**  
Products & Services, Inc.

**Subsurface**  
**Log**

Hole No.: ASM-2  
Sheet

Date started:  
Date Finished:

Client: NYSDEC  
Location: Franklin Cleaners Site  
Hempstead, NY

Method of investigation:

Project No.: W0000

Drilling Co.: EPS

Driller:  
D. Helper:  
Drill Rig:

Weather:  
Partly Cloudy

P. Manager:

Geologist:

Depth (ft.)	Sample					Sample Description	Field Analytical Readings	Well Details	Groundwater and Other Observations
	No.	Depth (ft.)	Blows per 6"	"N"	Recovery (ft.)				
5									4" I.d. protective casing
									Bentonite/Cement Grout
10									15' PVC
15									2' Bentonite
20									
25									15' of 0.01 slot PVC well screen
30									Sand Pack
35									

Sample Types:  
 S = Split Spoon:   X   T = Shelby Tube:         
 R = Rock Core:        O =         
 N = ASTM D1586

**Backfill Well Key**

 Cement	 Native Fill
 Sand	 Bentonite

