



**REPLACEMENT OF TEMPORARY  
MONITORING WELLS WORK PLAN**

**Whirlpool Corporation**

**Ft. Smith, Arkansas**

EPA No. ARD042755389

AFIN No. 66-00048

CAO LIS 13-202

Prepared for:  
**Arkansas Department of Environmental Quality**  
**Little Rock, Arkansas**

Prepared by:  
**ENVIRON International Corporation**  
**St. Louis, Missouri**

Date:  
**December 2014**

Project Number:  
**34-34399A**

## **TABLE OF CONTENTS**

	<u><b>Page</b></u>
<b>1 INTRODUCTION .....</b>	<b>1</b>
<b>2 MONITORING WELL REPLACEMENT WORK PLAN .....</b>	<b>2</b>
<b>3 SCHEDULE .....</b>	<b>3</b>

## **LIST OF ATTACHMENTS**

- Figure 1: Location of Small Diameter Monitoring Wells  
Table 1: Summary of 0.75 Inch Diameter Monitoring Wells  
Appendix A: Boring Logs and Well Construction Diagrams

## **1 INTRODUCTION**

ENVIRON International Corporation (ENVIRON), on behalf of Whirlpool Corporation, is submitting this Replacement of Temporary Monitoring Wells Work Plan (Work Plan) as described in the ENVIRON/Whirlpool October 22, 2014, correspondence providing responses to Arkansas Department of Environmental Quality (ADEQ) comments on the 2014 Second Quarter Progress Report.

ADEQ's comment indicated that seventeen 0.75 inch diameter PVC monitoring wells exist as part of the groundwater monitoring network for the Whirlpool site (many of these 0.75 inch diameter monitoring wells are located at offsite locations). ADEQ indicated the 0.75 inch diameter monitoring wells should only be used as temporary monitoring locations (as per ADPCE PRCR 96-4). Therefore, ADEQ requested that the 0.75 inch diameter monitoring wells be replaced.

The 0.75 inch diameter monitoring wells were installed between 2001 and 2005 (Geoprobe® Systems 0.75 inch diameter prepack monitoring wells) to characterize the extent of groundwater impact at onsite and offsite locations. By 2005, twenty 0.75 inch diameter wells had been installed beginning near the facility's north property boundary at Ingersol Avenue and eventually extending northeast to Brazil Avenue (Figure 1). Seventeen of the small diameter wells are currently in service. MW-42B and MW-43 were damaged and capped in place in 2009 and abandoned on October 30, 2014. MW-46 was replaced by a MW-46R, a 2 inch diameter monitoring well in 2006.

Boring logs are available for 13 of the 17 wells (see Table 1 and Appendix A). As-built well construction diagrams are available for the remaining four wells (MW-32, MW-33, MW-34 and MW-36) (Appendix A). Detailed lithologic logs were not completed for these borings at the time of original well completion.

The seventeen 0.75 inch diameter wells are sampled during the quarterly groundwater sampling events in accordance with the Remedial Action Decision Document (RADD).

## **2 MONITORING WELL REPLACEMENT WORK PLAN**

The drilling and installation of the new monitoring wells will be completed using hollow stem auger or sonic drilling techniques. For the four 0.75 inch diameter wells without boring logs (MW-32, MW-33, MW-34 and MW-36), the respective well will be abandoned by over-drilling with an 8.25 inch inside diameter hollow stem auger or 6 inch diameter core will be removed via sonic drilling techniques. These larger diameter drilling methods will entirely remove the existing 0.75 inch diameter wells. A boring will be performed adjacent to the abandoned well and will be continuously sampled to the surface of the underlying shale, and soil samples will be logged and field screened with a photoionization detector (PID) by an ENVIRON geologist. A replacement well will be constructed in the new boring.

The remaining thirteen 0.75 inch diameter wells will be abandoned by over-drilling with an 8.25 inch inside diameter hollow stem auger or 6 inch diameter core removed via sonic drilling techniques. Then each of the thirteen replacement wells will be constructed in the larger diameter boring used to remove the respective 0.75 inch diameter wells.

All work will be supervised by an Arkansas registered professional geologist.

The new replacement wells will be installed to surface of shale. Each well will be constructed with a 2 inch diameter PVC casing and a 5 or 10 foot long PVC well screen depending upon the construction details for the previous well (see Table 1 for the respective well screen lengths). A 20/40 grade sand pack will be installed in the well annulus around the PVC screen to approximately 2 feet above the top of the screen followed by 2 feet of annular seal consisting of hydrated bentonite chips above the top of the sand pack. The remainder of the annular space will be pressure grouted with a bentonite/cement grout installed with a tremie pipe from the bottom of the open well annulus to the surface. The wells will be completed at the surface with a traffic rated flush mount protective cover installed within a concrete apron.

All newly constructed monitoring wells will be properly developed in accordance with ADEQ guidance (Interim Policy PRCR 96-4 Section L Page 9).

A licensed Arkansas surveyor will survey the wells for location and elevation after installation.

Drill cuttings/spoil and purge water will be properly managed and contained in drums to facilitate disposal characterization following completion of the borings and monitoring wells.

### **3 SCHEDULE**

The schedule for well replacement will be dependent upon negotiating and procuring access to the well sites to over-drill and remove the existing wells. Properties requiring physical access are depicted on Figure 1. Well locations on the Whirlpool property or locations within the City of Fort Smith right-of-way will be replaced during the first or second quarter of 2015 depending upon weather conditions and grant of access to respective right-of-way by the city of Ft. Smith. Wells within the Jenny Lind Road right-of-way will be abandoned in January 2015 for the pending road construction project and will be replaced after road construction activities are completed.

The status of monitoring well replacement will be noted in subsequent quarterly monitoring reports. A summary report providing information regarding the monitoring well replacements will be included in a subsequent quarterly report.

## **FIGURE**



## SMALL DIAMETER MONITORING WELL LOCATIONS

Whirlpool Facility - Fort Smith, Arkansas

Figure  
1

DRAFTED BY: KTS

DATE: 11/07/2014

PROJECT: 2131344B

# TABLE

**Table 1**  
**Small Diameter Monitoring Wells**

Well ID	X	Y	Ground Elevation	Screen Length (ft)	Year Installed	Boring Log or Construction Diagram	RADD Well Type
<b>MW-31</b>	590,824.28	369,285.97	476.1	10	2001	Log	Plume
<b>MW-32</b>	590,908.57	369,279.28	475.7	10	2001	Diagram	Onsite
<b>MW-33</b>	590,993.85	369,275.59	474.9	10	2001	Diagram	Onsite
<b>MW-34</b>	590,911.55	369,338.58	474.3	10	2001	Diagram	Onsite
<b>MW-36</b>	591,078.78	369,328.96	473.4	10	2001	Diagram	Plume
<b>MW-39</b>	590,832.98	369,420.55	475.6	10	2003	Log	Plume
<b>MW-40</b>	590,998.23	369,622.46	473.4	10	2003	Log	Plume
<b>MW-41</b>	591,060.95	369,469.18	472.3	10	2003	Log	Offsite
<b>MW-46</b>	NA	NA	NA	5	2003	Log	NA
<b>MW-50</b>	591,414.69	370,212.94	463.2	10	2003	Log	Plume
<b>MW-55</b>	591,291.28	369,892.57	465.5	5	2004	Log	Offsite
<b>MW-56</b>	591,687.16	369,730.47	463.4	5	2004	Log	Offsite
<b>MW-57</b>	591,690.00	369,811.21	463.1	5	2004	Log	Offsite
<b>MW-58</b>	591,569.86	369,906.54	462.9	5	2005	Log	Offsite
<b>MW-60</b>	591,710.19	370,193.02	461.0	5	2005	Log	Plume
<b>MW-61</b>	592,002.72	370,175.08	459.8	5	2005	Log	Plume
<b>MW-62</b>	591,790.55	369,569.35	464.5	5	2005	Log	Plume
<b>MW-63</b>	591,993.61	369,560.16	464.0	5	2005	Log	Plume

Notes:

1. MW-42B and MW-43 abandoned in October 2014
2. MW-46R replaced MW-46. MW-46R is a two inch diameter PVC monitoring well
3. X and Y coordinates, Arkansas State Plane (North Zone) Feet
4. Horizontal datum, NAD83. Vertical datum, NAVD88

# **APPENDIX A**

## **Boring Logs and Well Construction Diagrams**

**MW-31  
DRILLING LOG**

W.O. NO. 58102 Boring/Well ID MW-31 Date Drilled 1/4/01  
Project Whirlpool, Ft. Smith Owner Whirlpool Corporation  
Location Fort Smith, Arkansas Boring T.D. 30' Boring Diam. 2.125"  
N. Coord. 9348.48' E. Coord. 7675.35' Surface Elevation 476.03' MSL Datum  
Screen: Type Slotted Schedule 40 PVC Diam. 0.81" Length 10' Slot Size 0.010"  
Casing: Type Schedule 40 PVC Diam. 0.75" Length 17.6' Sump Length 0.1'  
Top of Casing Elevation 476.03' Stickup 0.2'  
Depth to Water: 1. Ft. 10 (Boring) 2. Ft. 3.7 (Well)  
Drilling Company Tri-State Testing Svcs., Inc. Driller Ken Smith  
Drilling Method GeoProbe Log By Roberta Smith

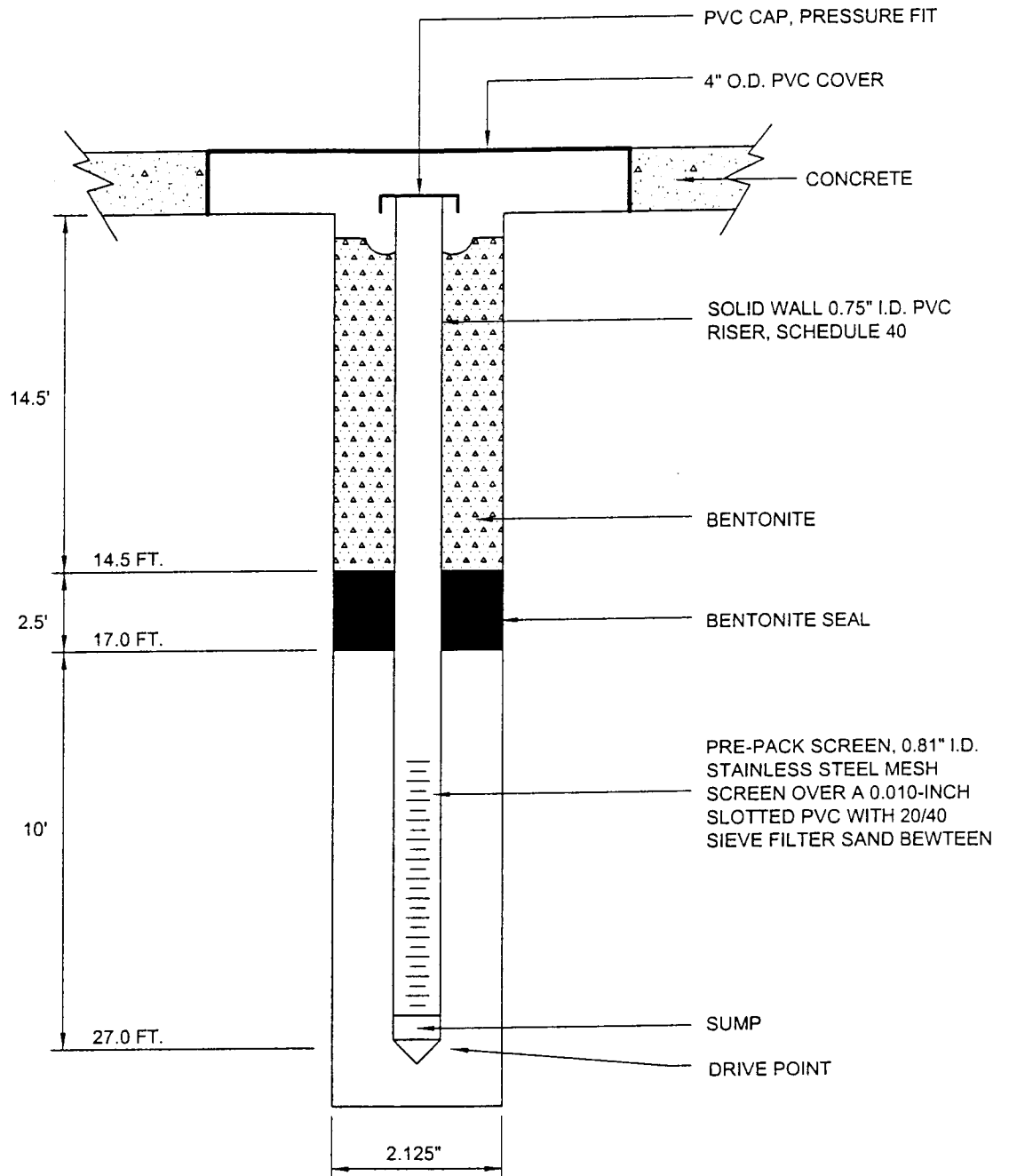
SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
476.03	0				0-4	0-0.5	SILTY SAND: dark brown, slightly moist, soft, organic rich with grass and rootlets
475						0.5-2	SILTY SAND: medium brown, moist, soft, rocks up to 0.75 inches in diameter present
						2-3	
					4-8	3-4.5	SILTY CLAY: grayish brown, slightly moist, firm, some iron nodules and orange streaking present
	5					4.5-8	SILTY SAND: black, dry, gravel and rock inclusions up to 1 inch in diameter are present
470							SILTY CLAY: silty clay grading to clay, medium brown, moist, firm, massive
					8-12	8-8.5	GRAVEL: medium brown, moist, loose, soft, mixture with rocks up to 1 inch in diameter
						8.5-9	
	10					9-12	SILTY SAND: medium brown, moist, loose, soft, rock inclusions up to 1 inch in diameter
465					12-16	12-12.5	SILTY CLAY: medium brown grading to reddish brown at 11 feet, moist, firm, gray and red inclusions present beginning at 11 feet
						12.5-13.5	GRAVEL: medium brown, loose, wet, with rocks up to 0.5 inches in diameter
						13.5-16	SILTY CLAY: medium brown, wet, fluffy, with rock inclusions up to 0.5 inches in diameter
460	15				16-20	16-17	SILTY CLAY: reddish brown with gray and orange streaking, moist, firm, massive
						17-24	GRAVEL: medium brown, loose
							SILTY CLAY: medium brown grading to reddish brown and gray, very moist grading to slightly moist, soft from 17 - 18 feet, firm from 18-24 feet
455	20				20-24		
					24-28	24-24.5	SILTY CLAY: medium reddish brown, moist, loose
						24.5-25.5	GRAVEL: medium brown, moist, loose
	25					25.5-26	SILTY CLAY: medium reddish brown, moist, soft, loose
450						26-27	SANDY CLAY: light brown, moist, soft
						27-28	SILTY CLAY: reddish light brown, firm, with rock inclusions up to 0.5 inches in diameter
					28-30	28-29	SANDY CLAY: light brown, wet, soft, some gravel present
						29-29.5	Other: reddish, dry, brittle, iron-rich material
	30					29.5-30	SHALE: gray, slightly moist, firm, weathered
							T.D. = 30'

~1' above bedrock

# MW-32



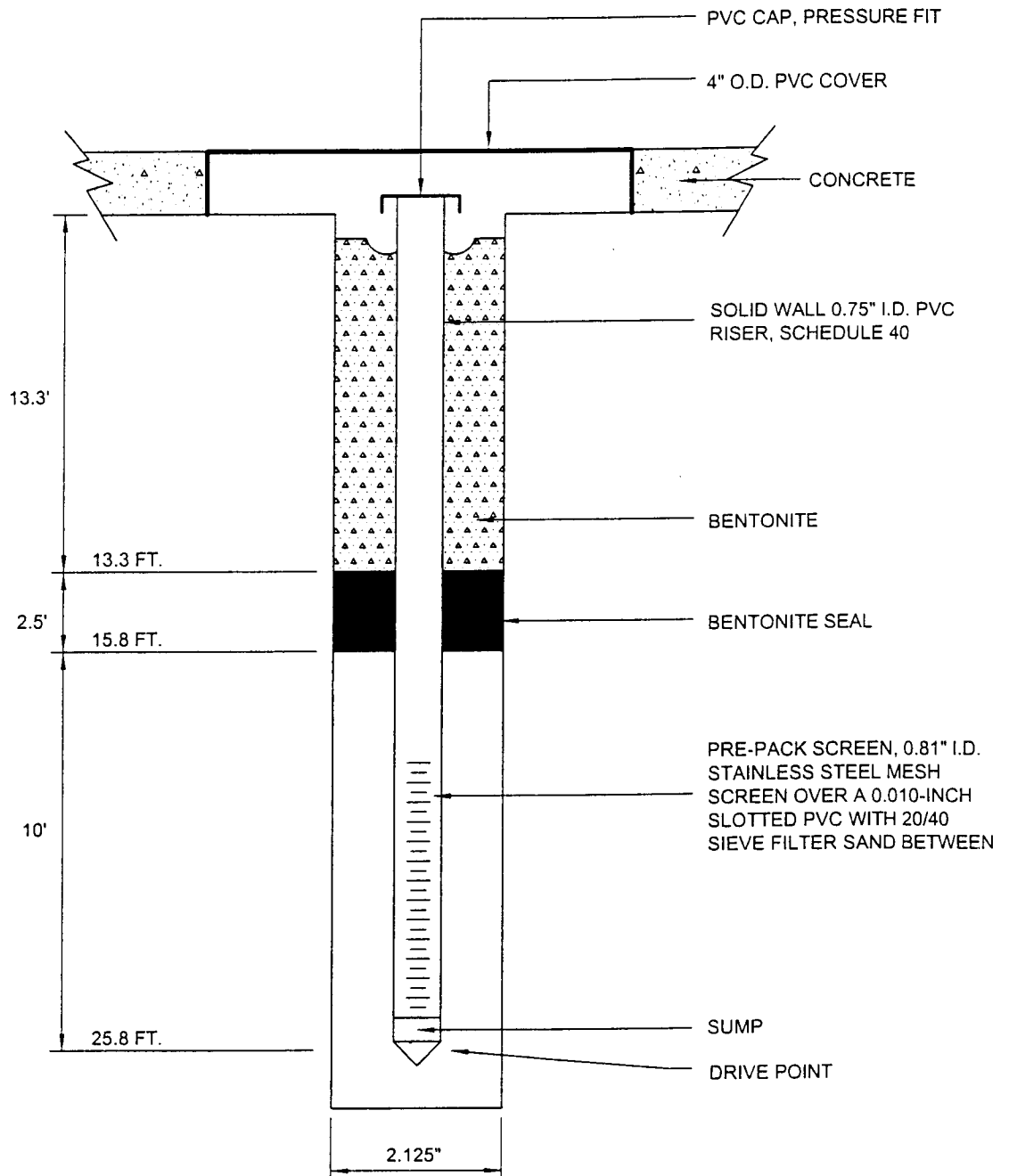
**ERM-Southwest, Inc.**  
HOUSTON · NEW ORLEANS · AUSTIN · DALLAS · BEAUMONT

FIGURE 2  
MW-32 CONSTRUCTION DETAIL  
OFFSITE INVESTIGATION  
Whirlpool Corporation  
Fort Smith, Arkansas



DESIGN: RS	CHKD.:	DATE: 01/23/01	REV.:
DRAWN: LMc	SCALE: N.T.S.	W.O.NO.: 581002A020 A01	

# MW-33



**ERM-Southwest, Inc.**

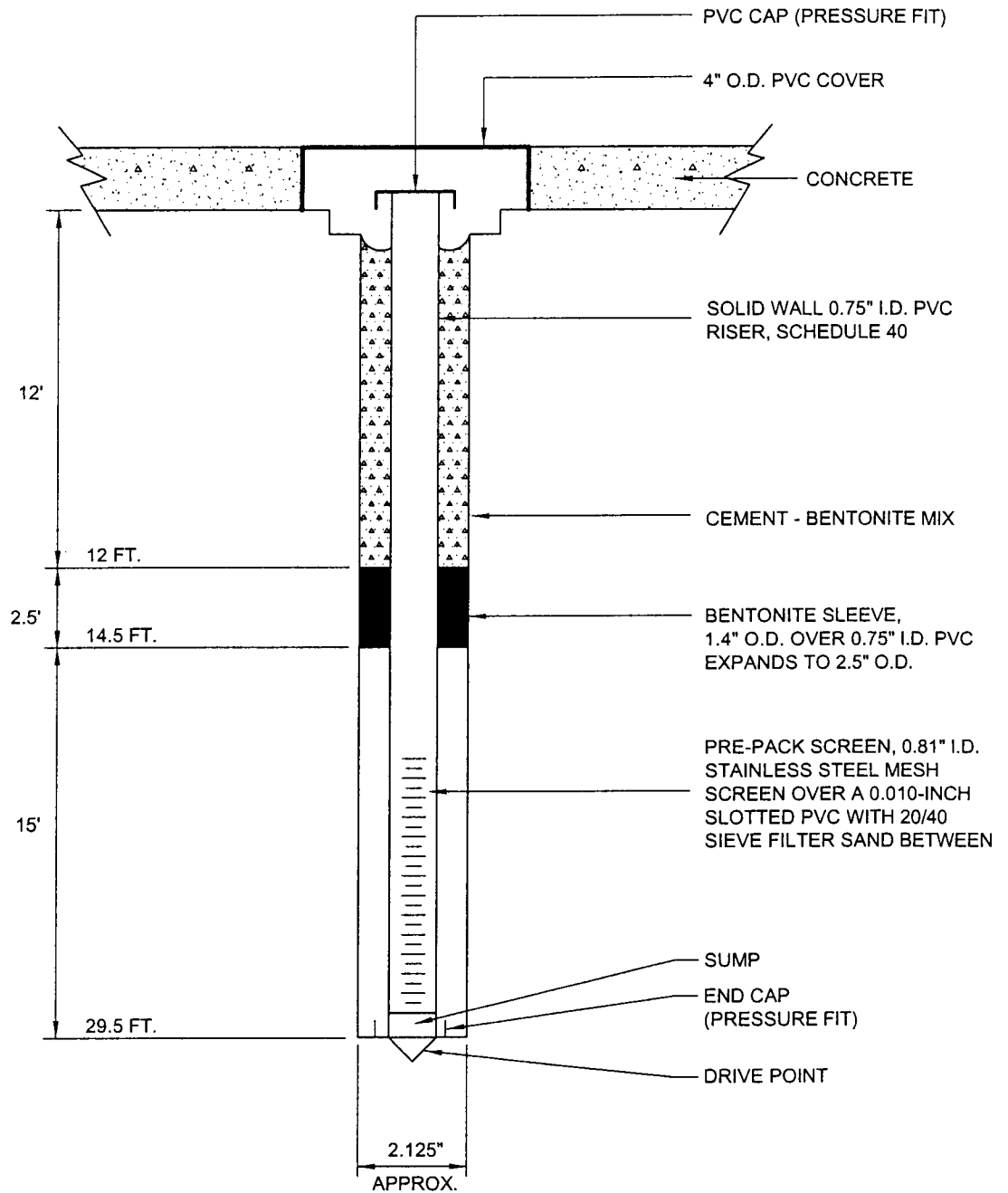
HOUSTON · NEW ORLEANS · AUSTIN · DALLAS · BEAUMONT

FIGURE 3  
MW-33 CONSTRUCTION DETAIL  
OFFSITE INVESTIGATION  
Whirlpool Corporation  
Fort Smith, Arkansas



DESIGN: RS	CHKD.:	DATE: 01/23/01	REV.:
DRAWN: LMc	SCALE: N.T.S.	W.O.NO.: 581002A021 A01	

# MW-34



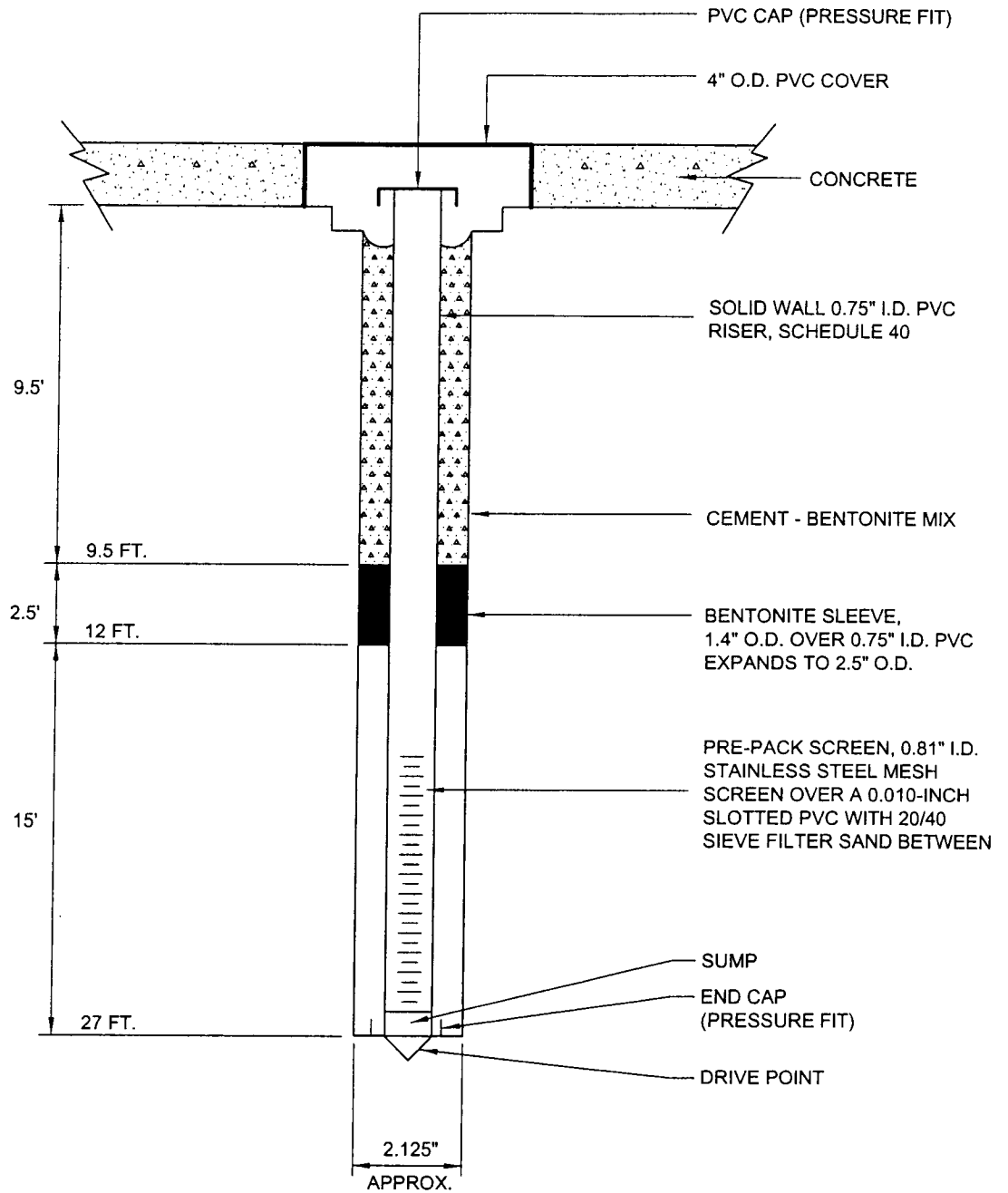
**ERM-Southwest, Inc.**  
HOUSTON • NEW ORLEANS • AUSTIN • DALLAS • BEAUMONT

FIGURE 1  
MW-34 CONSTRUCTION DETAIL  
OFFSITE INVESTIGATION  
Whirlpool Corporation  
Fort Smith, Arkansas



DESIGN: RS	CHKD.:	DATE: 04/02/01	REV.:
DRAWN: LMc	SCALE: N.T.S.	W.O.NO.: 581005A203 D01	

# MW-36



**ERM-Southwest, Inc.**  
HOUSTON · NEW ORLEANS · AUSTIN · DALLAS · BEAUMONT

**FIGURE 3**  
**MW-36 CONSTRUCTION DETAIL**  
**OFFSITE INVESTIGATION**  
Whirlpool Corporation  
Fort Smith, Arkansas



DESIGN: RS	CHKD.:	DATE: 04/02/01	REV.:
DRAWN: LMc	SCALE: N.T.S.	W.O.NO.: 581005A202 D01	



# MW-39 DRILLING LOG

W.O. NO. 58113 Boring/Well ID MW-39 Date Drilled 7/14/03  
Project Off-site delineation Owner Whirlpool Corporation  
Location Fort Smith, AR Boring T.D. 29.5' Boring Diam. 3"  
N. Coord. \_\_\_\_\_ E. Coord. \_\_\_\_\_ Surface Elevation 0' MSL Datum  
Screen: Type Stainless prepak Diam. 0.75" Length 10' Slot Size 0.01"  
Casing: Type Schedule 40 PVC Diam. 0.75" Length 19.5' Sump Length 0'  
Top of Casing Elevation 0' Stickup 0'  
Depth to Water: 1. Ft. \_\_\_\_\_ ( \_\_\_\_\_ ) 2. Ft. \_\_\_\_\_ ( \_\_\_\_\_ )  
Drilling Company TWF Drilling Driller Sammy Smith  
Drilling Method Geoprobe Log By Troy Meinen

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM HEADSPACE (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0	0					0-4	0-0.5 0.5-2.8	SILTY CLAY: Grayish-brown, dry, hard, occasional rootlets, occurring 1/2" diameter pieces of black shale. SILTY SAND to SANDY SILT: pale brown, moist to dry, crumbly, stiff, abundant rootlets.
					0.0			
					0.0		2.8-4.5	SILTY SANDY CLAY: Pale brown with reddish-brown mottling, moist, slightly plastic to crumbly, occasional rootlets, occurring 1/4" diameter iron nodules.
					0.0	4-8	4.5-5.7	SILTY SANDY CLAY: Strong brown to orange with dark brown mottling, moist to dry, firm, abundant iron nodules and dark brown mottling large occasional pockets of pale brown, soft, silty clay.
-5	5				0.0		5.7-7.5	SILTY CLAY: Strong brown, dark brown, and orange mottled, moist, stiff to firm, occasional 1/2" diameter iron nodules, occasional 1/2" diameter to 1" diameter calcareous nodules.
					0.0		7.5-8	SILTY CLAY: Pale brown, dark brown, and orange mottled, moist, stiff to soft, occasional 1/2" to 1" diameter calcareous nodules.
					0.0	8-10	8-9	SILTY CLAY: Strong brown with pale brown and minor dark brown mottling, moist, firm to hard, crumbly to plastic.
					0.0		9-11.1	SILTY CLAY: Strong brown with minor pale gray and abundant dark brown mottling, moist, hard, crumbly, abundant 1/4" diameter calcareous nodules and iron nodules.
-10	10				0.0	10-12		
					0.0		11.1-11.6	SILTY SANDY CLAY: Strong brown with pale brown mottling and minor dark brown mottling, moist, stiff to firm, plastic.
					0.0	12-14	11.6-12.2 12.2-15.5	CLAYEY SILTY SAND: Strong brown with abundant dark brown mottling, moist, stiff, crumbly, abundant 1/4"-1/2" calcareous and iron nodules. SILTY SANDY CLAY: Strong brown with pale brown and minor dark brown mottling, moist, stiff, slightly plastic.
					0.0	14-16		
-15	15							



# MW-39 DRILLING LOG

W.O. NO. 58113 Boring/Well ID MW-39 Date Drilled 7/14/03  
Project Off-site delineation Owner Whirlpool Corporation  
Location Fort Smith, AR Boring T.D. 29.5' Boring Diam. 3"  
N. Coord. \_\_\_\_\_ E. Coord. \_\_\_\_\_ Surface Elevation 0' MSL Datum  
Screen: Type Stainless prepak Diam. 0.75" Length 10' Slot Size 0.01"  
Casing: Type Schedule 40 PVC Diam. 0.75" Length 19.5' Sump Length 0'  
Top of Casing Elevation 0' Stickup 0'  
Depth to Water: 1. Ft. \_\_\_\_\_ ( \_\_\_\_\_ ) 2. Ft. \_\_\_\_\_ ( \_\_\_\_\_ )  
Drilling Company TWF Drilling Driller Sammy Smith  
Drilling Method Geoprobe Log By Troy Meinen

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM HEADSPACE (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-15	15				0.0	16-20	15.5-16 16-18.7	SILTY CLAYEY SAND: Brown to strong brown with minor dark brown mottling, moist to wet, soft to firm, slightly crumbly. SILTY CLAYEY SAND TO SILTY SANDY CLAY: strong brown to brown with occasional dark brown mottling, moist to wet, soft to firm, slightly crumbly to slightly plastic (clay content high but varies).
					0.0			
					0.0		18.7-19 19-20	SILTY CLAY: Reddish-brown with occasional dark brown mottling, moist, hard, plastic. SILTY CLAYEY SAND TO SILTY SANDY CLAY: strong brown to brown with occasional dark brown mottling, moist to wet, soft to firm, slightly crumbly to slightly plastic (clay content high but varies), with silty sand pocket with medium-grained sand at base, bro
-20	20				0.0	20-24	20-24	SILTY SANDY CLAY: Strong brown, moist, stiff to firm, plastic.
					0.0			
					0.0			
					0.0	24-25.5	24-24.5 24.5-25.5	CLAYEY SILTY SAND: Strong brown with dark brown mottling, moist to wet, stiff, occasional 1/4" quartzite gravel, sand grain size increases with depth to medium-grained at 24.5'.
-25	25				0.0	25.5-27	25.5-26 26-27.5	GRAVELLY SANDY CLAY to CLAYEY SAND: strong brown with pale gray mottling, moist, hard, crumbly 1/4" to 1/2" diameter quartzite gravel. SILTY GRAVELLY CLAYEY SAND: brown, water-saturated, 1/4" to 1/2" diameter quartzite gravel.
					0.0	27-28		GRAVELLY SANDY CLAY to CLAYEY SAND: strong brown with pale gray mottling, wet to water-saturated, hard, crumbly 1/4" to 1/2" diameter quartzite gravel.
					0.0	28-29.5	27.5-28 28-29	GRAVELLY SAND: Strong brown, water-saturated, dense, medium to coarse-grained with 1/2" to 1" diameter quartzite gravel.
					0.0		29-29.5	SILTY CLAY: Brown to brownish-gray, moist to wet, stiff to hard, plastic, grades to fissil gray shale at base.
-30	30							SHALE: Gray with occasional brown mottling along fractures, fissil, weathered.



# MW-39 DRILLING LOG

W.O. NO. 58113 Boring/Well ID MW-39 Date Drilled 7/14/03  
Project Off-site delineation Owner Whirlpool Corporation  
Location Fort Smith, AR Boring T.D. 29.5' Boring Diam. 3"  
N. Coord. \_\_\_\_\_ E. Coord. \_\_\_\_\_ Surface Elevation 0' MSL Datum  
Screen: Type Stainless prepak Diam. 0.75" Length 10' Slot Size 0.01"  
Casing: Type Schedule 40 PVC Diam. 0.75" Length 19.5' Sump Length 0'  
Top of Casing Elevation 0' Stickup 0'  
Depth to Water: 1. Ft. \_\_\_\_\_ ( \_\_\_\_\_ ) 2. Ft. \_\_\_\_\_ ( \_\_\_\_\_ )  
Drilling Company TWF Drilling Driller Sammy Smith  
Drilling Method Geoprobe Log By Troy Meinen

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM HEADSPACE (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-30	30							T.D. = 29.5'
-35	35							
-40	40							
-45	45							



# MW-40 DRILLING LOG

W.O. NO. 58113 Boring/Well ID MW-40 Date Drilled 7/14/03  
Project Off-site delineation Owner Whirlpool Corporation  
Location Fort Smith, AR Boring T.D. 28.5' Boring Diam. 3"  
N. Coord. \_\_\_\_\_ E. Coord. \_\_\_\_\_ Surface Elevation 0' MSL Datum  
Screen: Type Stainless prepak Diam. 0.75" Length 10' Slot Size 0.01"  
Casing: Type Schedule 40 PVC Diam. 0.75" Length 17.8' Sump Length 0'  
Top of Casing Elevation 0' Stickup 0'  
Depth to Water: 1. Ft. \_\_\_\_\_ ( \_\_\_\_\_ ) 2. Ft. \_\_\_\_\_ ( \_\_\_\_\_ )  
Drilling Company TWF Drilling Driller Sammy Smith  
Drilling Method Geoprobe Log By Troy Meinen

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM Headspace (ppm)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0	0					0-4	0-0.3 0.3-0.8 0.8-2	SILTY SANDY CLAY: Gray, dry to damp, soft, crumbly, abundant rootlets. WEATHERED SHALE MIXED WITH SILT: black to dark gray, soft, crumbly, fissil (fill material). SILTY SANDY CLAY: Strong brown, black, and gray mottled, moist to wet, firm, plastic, abundant rootlets.
					0.0		2-3.5	SANDY SILT: Brown with occasional dark brown mottling, water-saturated, soft, crumbly. (Boring is at edge of a 2 ft deep wet drainage ditch).
					0.0	4-8	3.5-4 4-6.2	SILTY CLAY: Brown with occasional dark brown mottling, water-saturated, soft, crumbly. SANDY CLAYEY SILT: Brown and strong brown with occasional dark brown mottling, wet to water-saturated, soft.
-5	5				0.0		6.2-8.5	SILTY SANDY CLAY: Strong brown with gray mottling, moist, stiff to hard, plastic.
					0.0	8-10	8.5-9.5	SILTY SANDY CLAY: Strong brown with occasional pale gray mottling, moist, stiff to hard.
					0.0	10-12	9.5-10.8	SILTY SANDY CLAY: Strong brown with gray mottling, moist, stiff to hard, plastic.
-10	10				0.0	12-14	10.8-11 11-11.5 11.5-14	SILTY CLAY: Pale brown, wet, soft, fine-grained. SILTY CLAY: Gray with occasional strong brown mottling, moist, stiff, plastic. SILTY CLAY: Strong brown with occasional gray to pale gray mottling, moist, stiff, plastic. At 12.5ft dark brown to very dark gray mottling
					0.0	14-16	14-14.5 14.5-15.5	SILTY SANDY CLAY: Strong brown with occasional dark brown mottling, moist, firm, plastic. CLAYEY SANDY SILT: Strong brown, wet to water-saturated, soft, loose, with coarse-grained sand to small gravel.
-15	15							



# MW-40 DRILLING LOG

W.O. NO. 58113 Boring/Well ID MW-40 Date Drilled 7/14/03  
 Project Off-site delineation Owner Whirlpool Corporation  
 Location Fort Smith, AR Boring T.D. 28.5' Boring Diam. 3"  
 N. Coord. \_\_\_\_\_ E. Coord. \_\_\_\_\_ Surface Elevation 0' MSL Datum  
 Screen: Type Stainless prepak Diam. 0.75" Length 10' Slot Size 0.01"  
 Casing: Type Schedule 40 PVC Diam. 0.75" Length 17.8' Sump Length 0'  
 Top of Casing Elevation 0' Stickup 0'  
 Depth to Water: 1. Ft. \_\_\_\_\_ ( \_\_\_\_\_ ) 2. Ft. \_\_\_\_\_ ( \_\_\_\_\_ )  
 Drilling Company TWF Drilling Driller Sammy Smith  
 Drilling Method Geoprobe Log By Troy Meinen

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM Headspace (ppm)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-15	15				0.0	16-18	15.5-16 16-18	SILTY CLAY: Strong brown and pale gray, stiff to hard. SILTY SANDY CLAY: Strong brown with occasional pale gray mottling, moist, stiff, slightly crumbly to plastic. At 15.6ft occasional 1/2" diameter iron nodules.
					0.0	18-20	18-19.2 19.2-20	SILTY SANDY CLAY: Strong brown with occasional pale gray mottling, moist, stiff, slightly crumbly to plastic, with occasional dark brown 1/4" to 1/2" diameter nodules, grades to sand at base. SILTY CLAYEY SAND WITH GRAVEL: strong brown to brown, wet to water-saturated, dense, gravel is 1/8" to 1/4" diameter quartzite.
-20	20				0.0	20-24	20-21.5	SILTY SANDY CLAY: Strong brown with gray mottling, wet, stiff, plastic.
					0.0		21.5-23.3	SILTY SANDY GRAVEL: water-saturated, loose to flowing, 1/8"-1/4" diameter quartzite gravel, grades to clayey gravel.
					0.0	24-26	23.3-23.9 23.9-24 24-25	CLAYEY GRAVEL: wet to water-saturated, stiff, crumbly. GRAVELLY CLAY: Strong brown, wet to moist, hard, plastic, gravel is 1/4" to 1/2" diameter quartzite.
-25	25				0.0	26-28.5	25-25.8 25.8-26.2 26.2-26.3 26.3-26.7 26.7-28	SILTY SANDY GRAVEL: strong brown to brown, water-saturated, dense, 1/8" to 1/4" quartzite gravel. GRAVELLY SILTY SAND: strong brown, water-saturated, dense, crumbly, 1/4" to 1/2" diameter quartzite gravel. SANDY CLAY: Strong brown with very pale grey mottling, moist to wet, hard, crumbly, occasional quartzite gravel (1/2" to 1" diameter). SANDY GRAVEL: brown to strong brown, wet, hard, dense, gravel is 1/2" diameter quartzite.
					0.0		28-28.5	SANDY SILTY CLAY: Pale gray with strong brown mottling, moist, stiff to hard, plastic. SILTY CLAY: Strong brown to orange with occasional gray mottling, fissil to slightly blocky texture, (weathered shale). SHALE: Gray, moist, hard, slightly crumbly, fissil.
-30	30							



# MW-40 DRILLING LOG

W.O. NO. 58113 Boring/Well ID MW-40 Date Drilled 7/14/03  
Project Off-site delineation Owner Whirlpool Corporation  
Location Fort Smith, AR Boring T.D. 28.5' Boring Diam. 3"  
N. Coord.            E. Coord.            Surface Elevation 0' MSL Datum  
Screen: Type Stainless prepak Diam. 0.75" Length 10' Slot Size 0.01"  
Casing: Type Schedule 40 PVC Diam. 0.75" Length 17.8' Sump Length 0'  
Top of Casing Elevation 0' Stickup 0'  
Depth to Water: 1. Ft.            (            ) 2. Ft.            (            )  
Drilling Company TWF Drilling Driller Sammy Smith  
Drilling Method Geoprobe Log By Troy Meinen

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM Headspace (ppm)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-30	30							T.D. = 28.5'
-35	35							
-40	40							
-45	45							



# MW-41 DRILLING LOG

W.O. NO. 58113 Boring/Well ID MW-41 Date Drilled 7/15/03  
Project Off-site delineation Owner Whirlpool Corporation  
Location Fort Smith, AR Boring T.D. 29' Boring Diam. 8"  
N. Coord. \_\_\_\_\_ E. Coord. \_\_\_\_\_ Surface Elevation 0' MSL Datum  
Screen: Type Stainless prepak Diam. 0.75" Length 10' Slot Size 0.01"  
Casing: Type Schedule 40 PVC Diam. 0.75" Length 18.7' Sump Length 0'  
Top of Casing Elevation 0' Stickup 0'  
Depth to Water: 1. Ft. \_\_\_\_\_ ( \_\_\_\_\_ ) 2. Ft. \_\_\_\_\_ ( \_\_\_\_\_ )  
Drilling Company TWF Drilling Driller Sammy Smith  
Drilling Method Geoprobe Log By Troy Meinen

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM HEADSPACE (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0	0					0-4	0-0.5 0.5-3	SILTY CLAY: Gray, moist, firm, plastic to slightly crumbly, abundant rootlets, occasional iron nodules. SILTY CLAY: Gray with orange mottling, moist, firm to stiff, plastic, abundant rootlets, occasional iron nodules to 1/4" diameter. At 2.6' to 3' no orange mottling.
					0.0		3-4.3	SILTY SANDY CLAY: Brown with gray mottling, moist, slightly plastic to slightly crumbly.
					0.0	4-8	4.3-5.5	SILTY CLAY: Brown to pale brown with minor dark brown and orange mottling, moist, hard, crumbly, blocky, abundant 1/4" to 1/2" calcareous nodules and occasional 1/4" diameter iron nodules.
-5	5				0.0		5.5-6.5	SILTY CLAY: Strong brown and pale gray mottled, moist, stiff to hard, plastic, occasional calcareous nodules to 1" diameter, occasional iron nodules to 1/2" diameter.
					0.0		6.5-8.2	SILTY CLAY: Pale brown with minor strong brown and gray mottling, moist, hard, plastic. At 7' sandy and softer.
						8-12	8.2-9	SILTY CLAY: Gray and strong brown mottled, wet, soft, plastic.
					0.0		9-9.2 9.2-12	SILTY SAND: Brown, water-saturated, loose to flowing, medium-grained, abundant dark gray grains. SILTY SANDY CLAY: Strong brown to orange with pale gray mottling and minor dark brown mottling, moist, hard, plastic, occasional iron nodules to 1/2" diameter.
-10	10				0.0			
						12-16	12-19	SILTY CLAY: Pale gray with occasional orange to strong brown mottling, moist, hard, plastic. At 16' to 18' orange to strong brown with occasional iron nodules to 1/8" diameter. At 18' to 19' pale gray and sandy.
-15	15				0.0			



# MW-41 DRILLING LOG

W.O. NO. 58113 Boring/Well ID MW-41 Date Drilled 7/15/03  
Project Off-site delineation Owner Whirlpool Corporation  
Location Fort Smith, AR Boring T.D. 29' Boring Diam. 8"  
N. Coord.            E. Coord.            Surface Elevation 0' MSL Datum  
Screen: Type Stainless prepak Diam. 0.75" Length 10' Slot Size 0.01"  
Casing: Type Schedule 40 PVC Diam. 0.75" Length 18.7' Sump Length 0'  
Top of Casing Elevation 0' Stickup 0'  
Depth to Water: 1. Ft.            (            ) 2. Ft.            (            )  
Drilling Company TWF Drilling Driller Sammy Smith  
Drilling Method Geoprobe Log By Troy Meinen

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OV M HEADSPACE (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-15	15				0.0	16-20		
					0.0			
					0.0		19-19.5	SAND TO SILTY SAND: strong brown with minor pale brown mottling, water-saturated, dense, medium-grained quartz.
-20	20				0.0	20-24	19.5-20	GRAVELY SILTY SANDY CLAY: strong brown, moist to wet, hard, crumbly, 1/2"-1" diameter quartzite gravel.
					0.0		20-21	SILTY SANDY CLAYEY GRAVEL: strong brown, water-saturated, dense, crumbly, 1/2"-1" diameter quartzite gravel, 1/8" gravel and medium and coarse-grained sand.
					0.0		21-22	SILTY SANDY GRAVEL, strong brown, water-saturated, dense, crumbly, 1/2"-1" diameter quartzite gravel, 1/8" diameter quartzite gravel and medium and coarse-grained quartz sand.
					0.0		22-26.5	SILTY SANDY GRAVEL: strong brown, water-saturated, dense, 1/4"-1/8" diameter quartzite gravel.
-25	25					24-29		
							26.5-29	SILTY CLAY AND SHALE: strong brown to orange grading to dark gray to black, moist, fissil (zone describes cuttings).
-30	30							T.D. = 29'



# MW-50 DRILLING LOG

W.O. NO. 581-013 Boring/Well ID MW-50 Date Drilled 11/13/2003

Project Off-Site Delineation Owner Whirlpool Corporation

Location Fort Smith, AR Boring T.D. 18.6' Boring Diam. 3"

N. Coord. \_\_\_\_\_ E. Coord. \_\_\_\_\_ Surface Elevation 0' Ft. MSL Datum

Screen: Type 65 Mesh stainless steel Diam. 0.75" Length 10' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 0.75" Length 8' Sump Length 0'

Top of Casing Elevation 0' Stickup 0'

Depth to Water: 1. Ft. 0 ( \_\_\_\_\_ ) 2. Ft. 0 ( \_\_\_\_\_ )

Drilling Company TWF Drilling Driller Ed Wilson

Drilling Method Geoprobe/Hollow Stem Auger Log By Karin Shultz

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM Headspace (ppm)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0	0					0-4	0-1.8	NO RECOVERY: Sediment too soft.
-2	2				0.0		1.8-2.4	CLAYEY SILT: Dark brown, damp, nonplastic, very fine-grained, abundant rootlets, trace of gravel (up to 1/4"-diameter).
							2.4-4.5	SILTY CLAY: Brown, red, and pale brown mottled with some yellowish-red, damp, stiff, slightly plastic, rootlets. From 4'-4.3' becomes brown with trace of gray and dark brown mottling, moist, plastic to slightly plastic, soft. From 4.3'-4.5' damp, plastic, firm.
-4	4					4-6		
					0.0		4.5-4.9	SANDY SILTY CLAY INTERMIXED WITH CLAYEY SAND, dark brown with some pale brown and yellowish-red mottled, damp, slightly plastic, stiff, with a parting of silty clay, gray, slightly plastic, soft, with some loose silt.
							4.9-6.8	SILTY CLAY: Brown and pale brown mottled, dry to damp, plastic, soft to firm, with a parting of clayey silt, yellowish-red, loose.
-6	6					6-8	6.8-6.10	From 5.8'-6' becomes slightly plastic to nonplastic, firm, moist. From 6'-6.8' becomes pale brown, damp, slightly plastic, stiff, with a seam of clayey silt, gray, nonplastic, medium dense, with trace of yellowish-red mottled.
					0.0		6.8-8	CLAY: Light gray with trace of yellowish-red mottled, damp, plastic, soft to firm, with trace of silt.
-8	8					8-12	8-8.11	SANDY CLAYEY SILT: Yellowish-red with some gray mottling, dry, dense to medium dense, nonplastic, crumbly, very fine-grained, black clayey burrowing, luster, nodules (up to 1/4"-diameter), becomes looser towards base.
							8.11-9.1	
							9.1-11.2	SILTY CLAY: Brown with trace of yellowish-red mottled, wet, plastic. CLAY: Reddish-brown, damp, stiff, plastic.
-10	10							SILTY CLAY: Gray, damp, slightly plastic, stiff to firm, with lamination of silty clayey sand, yellowish-red, nonplastic, trace of iron concretions.



# MW-50 DRILLING LOG

W.O. NO. 581-013 Boring/Well ID MW-50 Date Drilled 11/13/2003

Project Off-Site Delineation Owner Whirlpool Corporation

Location Fort Smith, AR Boring T.D. 18.6' Boring Diam. 3"

N. Coord. \_\_\_\_\_ E. Coord. \_\_\_\_\_ Surface Elevation 0' Ft. MSL Datum

Screen: Type 65 Mesh stainless steel Diam. 0.75" Length 10' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 0.75" Length 8' Sump Length 0'

Top of Casing Elevation 0' Stickup 0'

Depth to Water: 1. Ft. 0 ( \_\_\_\_\_ ) 2. Ft. 0 ( \_\_\_\_\_ )

Drilling Company TWF Drilling Driller Ed Wilson

Drilling Method Geoprobe/Hollow Stem Auger Log By Karin Shultz

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM Headspace (ppm)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-10	10				0.0			
-12	12				0.0	12-14	11.2-11.8 11.8-12 12-14	CLAY: Yellowish-red, damp to moist, plastic, very stiff, becoming hard towards base, decreasing moisture towards base. GRAVELLY CLAY: Red and dark brown mottled, damp to moist, with abundant gravel (up to 1/2"-diameter), very dense, hard, with abundant iron and black staining. SANDY CLAY: GRAVELLY SANDY CLAY, red and yellowish-brown mottled, wet, abundant gravel (poorly sorted, up to 1"-diameter), in a sandy clayey matrix, dense, nonplastic, hard. Increasing gravelly clayey sand towards base.
-14	14				0.0	14-16	14-15.3	CLAYEY SILTY SAND: GRAVELLY CLAYEY SILTY SAND, wet, abundant gravels (up to 1"-diameter), dense to loose, semirounded and angular.
-16	16				0.0	16-18.6	15.3-17.6	CLAYEY SILTY SAND: Gray and yellowish-brown, wet, medium dense to very loose, fine-grained.
-18	18				0.0		17.6-18.6	CLAY: Dark gray, plastic, hard, weathered, fissile to shale at 17.8'.  T.D. = 18.6'
-20	20							



# MW-55 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-55 Date Drilled 11/17/2004  
 Project WP Offsite Delineation Owner Whirlpool  
 Location Ft. Smith, AR Boring T.D. 21' Boring Diam. 3"  
 N. Coord. 9984.19 E. Coord. 8104.37 Surface Elevation 465.5' Ft. MSL Datum  
 Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"  
 Casing: Type Schedule 40 PVC Diam. 0.75" Length 15.5' Sump Length 0.5'  
 Top of Casing Elevation 0' Stickup 0'  
 Depth to Water: 1. Ft.            (            ) 2. Ft.            (            )  
 Drilling Company CCI Driller Donna R. Lewis  
 Drilling Method Direct Push/Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0	0				37.9	0-4	0-0.4	CLAYEY SILT: dark brown, moist, loose, abundant root hairs, roots, and vegetative matter, 100% recovery, strong pine odor.
					0		0.4-0.75	SILTY CLAY: greyish medium brown to greyish reddish brown, moist, plastic, very soft, slight pine odor, 100% recovery, slight pine odor.
					0		0.75-3.7	SILTY CLAY: reddish light brown, wet, plastic, very soft, occasional iron nodules (~2 mm), 72% recovery, no detectable odor.
-2	2							
					0	4-8	3.7-5.2	SILTY CLAY: mottled orange and light brown, moist, plastic, soft, occasional silt veins (light brown), clay nodules (reddish light brown very soft, 1-3 cm), rare iron nodules (~2 mm), 100% recovery, no detectable odor.
					0		5.2-5.8	SILTY CLAY: orangish light brown, moist, plastic, soft, abundant sand veins (light brown and orange), 100% recovery, no detectable odor.
-6	6				0		5.8-6.4	SILTY CLAY: mottled orange and light to medium grey, moist, plastic, soft, occasional sand veins (light brown and orange), 100% recovery, no detectable odor.
					0		6.4-8	SILTY CLAY: medium to dark grey with orange and light brown mottling, moist, plastic, soft, 100% recovery, no detectable odor.
-8	8				0	8-12	8-8.9	SILTY CLAY: medium to dark grey with orange and light brown mottling, moist, plastic, very soft, 100% recovery, no detectable odor.
					0		8.9-10.7	SANDY SILTY CLAY: orange with light grey mottling, moist, plastic, clay interbeds with abundant iron nodules, occasional silt veins (light brown and orange), abundant iron nodules (~2 mm), 100% recovery, no detectable odor.
-10	10							



# MW-55 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-55 Date Drilled 11/17/2004  
Project WP Offsite Delineation Owner Whirlpool  
Location Ft. Smith, AR Boring T.D. 21' Boring Diam. 3"  
N. Coord. 9984.19 E. Coord. 8104.37 Surface Elevation 465.5' Ft. MSL Datum  
Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"  
Casing: Type Schedule 40 PVC Diam. 0.75" Length 15.5' Sump Length 0.5'  
Top of Casing Elevation 0' Stickup 0'  
Depth to Water: 1. Ft.            (            ) 2. Ft.            (            )  
Drilling Company CCI Driller Donna R. Lewis  
Drilling Method Direct Push/Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-10	10				0			SILTY CLAY: orange with occasional reddish medium brown and light grey mottling, moist, plastic, stiff, common silt to very fine sand veins (orange and light grey), 100% recovery, no detectable odor.
					0		10.7-11.3	SANDY CLAY: light grey with orange mottling, moist, plastic, soft, occasional sand veins (light grey and orange), 100% recovery, no detectable odor.
					0		11.3-12	SILTY CLAY: reddish light brown, moist, plastic, very soft, 100% recovery, no detectable odor.
-12	12				0	12-15	12-12.4	SILTY SANDY CLAY: greyish light brown, moist, plastic, very soft, rare silt veins (light grey), 100% recovery, no detectable odor.
					0		12.4-12.9	SANDY SILTY CLAY: light grey with orange and greyish medium brown, moist, plastic, stiff, occasional silt veins (orange, light brown, and black), 100% recovery, no detectable odor.
					0		12.9-13.6	SANDY CLAY: orange with light grey and medium brown mottling, moist, slightly plastic, very soft, 100% recovery, no detectable odor.
-14	14				0		13.6-14.2	SANDY CLAY: light grey with orange mottling, moist, slightly plastic, very soft, occasional silt veins (light grey and black), 100% recovery, no detectable odor.
					0		14.2-14.4	SILTY CLAYEY SAND: orange, saturated, loose, 100% recovery, no detectable odor.
					0	15-18	14.4-15.7	SILTY SANDY CLAY: orange, moist, plastic, stiff, abundant quartzite gravels (~2 mm), occasional iron nodules (~2 mm), and occasional clay inclusions (light grey, ~2-5 mm), 100% recovery, no detectable odor.
-16	16				0		15.7-16.15	GRAVELLY CLAY: greenish light grey, moist, plastic, stiff, abundant quartzite gravels (~1-2 cm), 100% recovery, no detectable odor.
					0		16.15-16.75	GRAVELLY CLAY: orange with rare greenish light grey mottling, moist, slightly plastic, stiff, abundant quartzite gravels (~1-3 cm), rare iron nodules (~2 mm), 100% recovery, no detectable odor.
-18	18				0		16.75-18	SILTY SAND: orange, saturated, flowing, occasional quartzite gravels (~1 cm), 100% recovery, no detectable odor.
					0	18-21	18-18.7	SANDY CLAY: orange with light brown and medium grey mottling and rare black mottling, moist, slightly plastic, stiff, common quartzite gravels (~1-3 cm), 100% recovery, no detectable odor.
					0		18.7-19.7	SILTY CLAY: orange with light grey and black laminae, moist, plastic, stiff, occasional silt laminae (orange, light grey, and black), 100% recovery, no detectable odor.
-20	20				0		19.7-20.2	


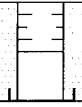



# MW-55 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-55 Date Drilled 11/17/2004  
Project WP Offsite Delineation Owner Whirlpool  
Location Ft. Smith, AR Boring T.D. 21' Boring Diam. 3"  
N. Coord. 9984.19 E. Coord. 8104.37 Surface Elevation 465.5' Ft. MSL Datum  
Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"  
Casing: Type Schedule 40 PVC Diam. 0.75" Length 15.5' Sump Length 0.5'  
Top of Casing Elevation 0' Stickup 0'  
Depth to Water: 1. Ft.            (            ) 2. Ft.            (            )  
Drilling Company CCI Driller Donna R. Lewis  
Drilling Method Direct Push/Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-20	20				0 0 0	20.2-20.4 20.4-21		<p>SILTY CLAY: light grey with orange and black laminae, moist, plastic, very stiff, occasional silt laminae (light grey, orange, and black), 100% recovery, no detectable odor.</p> <p>SHALE: dark grey with occasional orange mottlings, damp, crumbly, hard, fissile, 100% recovery, no detectable odor.</p> <p>T.D. = 21'</p>
-22	22							
-24	24							
-26	26							
-28	28							
-30	30							



# MW-56 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-56 Date Drilled 11/18/2004  
 Project WP Offsite Delineation Owner Whirlpool  
 Location Ft. Smith, AR Boring T.D. 21' Boring Diam. 3"  
 N. Coord. 9846.68 E. Coord. 8510.04 Surface Elevation 463.4' Ft. MSL Datum  
 Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"  
 Casing: Type Schedule 40 PVC Diam. 0.75" Length 14.5' Sump Length 0.5'  
 Top of Casing Elevation 0' Stickup 0'  
 Depth to Water: 1. Ft. \_\_\_\_\_ ( \_\_\_\_\_ ) 2. Ft. \_\_\_\_\_ ( \_\_\_\_\_ )  
 Drilling Company CCI Driller Donna R. Lewis  
 Drilling Method Direct Push/Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0	0				0-4	0-2.3	NO RECOVERY: 0% recovery, extremely wet conditions.
-2	2					2.3-4	SILTY SANDY CLAY: greyish medium brown with orange mottling, moist, plastic, soft, 100% recovery, no detectable odor.
-4	4				4-8	4-5.2	SILTY SANDY CLAY: dark grey with occasional light grey mottling, moist, plastic, stiff, occasional very fine sand and silt inclusions (orange and light grey, ~1 cm), 100% recovery, no detectable odor.
-6	6					5.2-6.15	SILTY SANDY CLAY: dark grey with light grey mottling, moist, plastic, stiff, occasional very fine sand and silt inclusions (orange and light grey, ~1 cm), occasional iron nodules (1-2 mm), 100% recovery, no detectable odor.
						6.15-6.75	SILTY CLAY: light grey with dark grey mottling, moist, plastic, stiff, occasional silt veins (orange), occasional iron nodules (~2 mm), 100% recovery, no detectable odor.
						6.75-8.7	SILTY CLAY: light grey with occasional dark grey mottling and occasional orange mottling, moist, plastic, stiff, occasional silt and very fine sand (orange and rare light brown) veins, occasional iron nodules (~2 mm), silt and very fine sand inclusions (orange and rare light brown, <1 cm), 100% recovery, no detectable odor.
-8	8				8-12	8.7-9.2	SILTY CLAY: light grey with orange mottling, moist, plastic, clay interbeds with abundant iron nodules, stiff, abundant silt and very fine sand inclusions (light brown, <1 cm), occasional quartzite gravels (~1-2 cm), 100% recovery, no detectable odor.
-10	10					9.2-10.2	SILTY SANDY CLAY: orange with light grey mottling, moist, plastic, stiff, occasional silt and very fine sand (orange, light brown, and black) veins, occasional iron nodules (~2-4 mm), 100% recovery, no detectable odor.



# MW-56 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-56 Date Drilled 11/18/2004

Project WP Offsite Delineation Owner Whirlpool

Location Ft. Smith, AR Boring T.D. 21' Boring Diam. 3"

N. Coord. 9846.68 E. Coord. 8510.04 Surface Elevation 463.4' Ft. MSL Datum

Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 0.75" Length 14.5' Sump Length 0.5'

Top of Casing Elevation 0' Stickup 0'

Depth to Water: 1. Ft. \_\_\_\_\_ ( \_\_\_\_\_ ) 2. Ft. \_\_\_\_\_ ( \_\_\_\_\_ )

Drilling Company CCI Driller Donna R. Lewis

Drilling Method Direct Push/Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-10	10					10.2-11.55	SANDY CLAY: with gravel, light brown with orange and black mottling, moist, very slightly plastic, stiff, abundant iron nodules (~1 mm to ~1 cm), 100% recovery, no detectable odor.
						11.55-11.75	SANDY CLAY: light brown with orange and black mottling, moist, plastic, stiff, 100% recovery, no detectable odor.
-12	12				12-15	11.75-12	SANDY CLAY: light grey with orange and light brown mottling, moist, plastic, stiff, occasional very fine sand and silt inclusions (orange and light brown, ~1 cm), occasional iron nodules (1-2 mm), 100% recovery, no detectable odor.
						12-12.55	
						12.55-13.15	SILTY SAND: orangish light brown, wet, loose, 100% recovery, no detectable odor.
						13.15-14.5	CLAYEY SAND: orange, wet, loose, occasional iron nodules (~2 mm), abundant quartzite gravels (~1cm), 100% recovery, no detectable odor.
-14	14					14.5-15	SANDY CLAY: orange, wet, very slightly plastic, stiff, 100% recovery, abundant quartzite gravels (~1cm), no detectable odor.
					15-18	15-15.8	CLAYEY SAND: light brown, saturated, loose, 100% recovery, no detectable odor.
						15.8-18	GRAVELLY CLAY: orange, moist, stiff, abundant iron nodules (~2 mm - 1 cm), abundant quartzite gravels (~1-3 cm), 100% recovery, no detectable odor.
-16	16						
-18	18				18-21	18-18.5	SANDY CLAY: reddish light brown, saturated, slightly plastic, very soft, 100% recovery, no detectable odor.
						18.5-18.8	GRAVELLY CLAY: orange, moist, slightly plastic, stiff, abundant iron nodules (~2 mm), 100% recovery, no detectable odor.
						18.8-19.5	
						19.5-21	SILTY SANDY CLAY: orange with light and medium grey mottling, moist, plastic, very stiff, 100% recovery, no detectable odor.
-20	20						SHALE: dark grey with occasional orange mottlings, damp, crumbly, hard, fissile, 100% recovery, no detectable odor.





# MW-56 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-56 Date Drilled 11/18/2004  
Project WP Offsite Delineation Owner Whirlpool  
Location Ft. Smith, AR Boring T.D. 21' Boring Diam. 3"  
N. Coord. 9846.68 E. Coord. 8510.04 Surface Elevation 463.4' Ft. MSL Datum  
Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"  
Casing: Type Schedule 40 PVC Diam. 0.75" Length 14.5' Sump Length 0.5'  
Top of Casing Elevation 0' Stickup 0'  
Depth to Water: 1. Ft.            (            ) 2. Ft.            (            )  
Drilling Company CCI Driller Donna R. Lewis  
Drilling Method Direct Push/Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-20	20						SHALE: dark grey with occasional orange mottlings, damp, crumbly, hard, fissile, 100% recovery, no detectable odor.  T.D. = 21'
-22	22						
-24	24						
-26	26						
-28	28						
-30	30						



# MW-57 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-57 Date Drilled 11/18/2004

Project WP Offsite Delineation Owner Whirlpool

Location Ft. Smith, AR Boring T.D. 20.5' Boring Diam. 3"

N. Coord. 9927.44 E. Coord. 8506.98 Surface Elevation 463.1' Ft. MSL Datum

Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 0.75" Length 14' Sump Length 0.5'

Top of Casing Elevation 0' Stickup 0'

Depth to Water: 1. Ft. \_\_\_\_\_ ( \_\_\_\_\_ ) 2. Ft. \_\_\_\_\_ ( \_\_\_\_\_ )

Drilling Company CCI Driller Donna R. Lewis

Drilling Method Direct Push/Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0	0					0-4	0-1.5	SILTY SANDY CLAY: medium brown, saturated, plastic, very soft, occasional iron nodules (~2 mm), 100% recovery, no detectable odor.
					0		1.5-3.45	SILTY SANDY CLAY: light to medium brown with orange mottling, moist, plastic, stiff, occasional silt and very fine sand (orange, and light brown) veins, occasional silt and very fine sand inclusions (orange and light brown, <1 cm), 100% recovery, no detectable odor.
-2	2				0		3.45-4.1	SANDY CLAY: medium brown with orange mottling, slightly damp, plastic, stiff, occasional silt and very fine sand (orange, and light brown) veins and inclusions (orange and light brown, <1 cm), 100% recovery, no detectable odor.
-4	4				0	4-8	4.1-4.3	GRAVEL: quartzite gravel in a clay matrix, orange, moist, iron nodules (~2-4 mm), 100% recovery, no detectable odor.
					0		4.3-5.9	SILTY CLAY: light grey with orange mottling, moist, plastic, stiff, occasional silt (light brown) veins and inclusions, occasional iron nodules (~2 mm), 100% recovery, no detectable odor.
					0		5.9-6.55	SANDY SILT: light brown to light grey, slightly damp, loose, 100% recovery, no detectable odor.
-6	6				0		6.55-6.8	SILTY CLAY: light grey with dark grey mottling, moist, plastic, soft, occasional silt (light brown) veins and inclusions, 100% recovery, no detectable odor.
					0		6.8-8	SILTY CLAY: dark brown with black and orange mottling, moist, plastic, soft, occasional silt inclusions (orange, light brown, and dark brown, <1 cm), 100% recovery, no detectable odor.
-8	8				0	8-12	8-8.8	SILTY CLAY: light to medium brown, wet, slightly plastic, very soft, 100% recovery, no detectable odor.
					0		8.8-9.95	SILTY SANDY CLAY: orange, moist, slightly plastic, stiff, abundant iron nodules (~2-4 mm), 100% recovery, no detectable odor.
-10	10				0		9.95-13.5	SANDY SILTY CLAY: light grey and orange, moist, plastic, stiff, occasional iron nodules (~2 mm), occasional silt and very fine sand inclusions (light brown, <1 cm), 100% recovery, no detectable odor.



# MW-57 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-57 Date Drilled 11/18/2004  
Project WP Offsite Delineation Owner Whirlpool  
Location Ft. Smith, AR Boring T.D. 20.5' Boring Diam. 3"  
N. Coord. 9927.44 E. Coord. 8506.98 Surface Elevation 463.1' Ft. MSL Datum  
Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"  
Casing: Type Schedule 40 PVC Diam. 0.75" Length 14' Sump Length 0.5'  
Top of Casing Elevation 0' Stickup 0'  
Depth to Water: 1. Ft.            (            ) 2. Ft.            (            )  
Drilling Company CCI Driller Donna R. Lewis  
Drilling Method Direct Push/Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-10	10							
-12	12					12-16		SILTY CLAY: light greenish grey with orange mottling, moist, plastic, stiff, occasional silt (light brown) veins, 100% recovery, no detectable odor.
					0		13.5-13.7	SANDY SILTY CLAY: light grey with rare orange mottlings, moist, plastic, stiff, occasional silt and very fine sand (light brown) veins and inclusions, 100% recovery, no detectable odor.
-14	14				0		13.7-14.45	SANDY SILTY CLAY: orange with rare light grey mottling, moist, plastic, stiff, abundant iron nodules (~2 mm), numerous quartzite gravels (~2-3 cm), 100% recovery, no detectable odor.
					0		14.45-15.2	SANDY SILTY CLAY: dark brown, moist, slightly plastic, stiff, abundant iron nodules (~2 mm), 100% recovery, no detectable odor.
					0		15.2-15.5	SANDY CLAY: mottled light grey and orange, moist, slightly plastic, soft, occasional quartzite gravels (~3-4 cm), 100% recovery, no detectable odor.
					0		15.5-15.85	SANDY CLAY: orange, moist, slightly plastic, soft, abundant iron nodules (~2 mm), occasional quartzite gravels (~1cm), 100% recovery, no detectable odor.
-16	16				0	16-19	15.85-16	CLAYEY SILTY SAND: orangish light brown, saturated, flowing, 100% recovery, no detectable odor.
					0		16-16.6	SANDY CLAY: orange with light grey mottling, moist, slightly plastic, soft, occasional quartzite gravels (~1-3 cm), 100% recovery, no detectable odor.
					0		16.6-17.55	GRAVELLY CLAY: orange, moist, plastic, stiff, abundant quartzite gravels (~2-3 cm), 100% recovery, no detectable odor.
-18	18				0		17.55-18.5	SILTY CLAY: greenish grey, moist, plastic, soft, 100% recovery, no detectable odor.
					0		18.5-18.8	SILTY CLAY: dark brown to dark grey, damp, plastic, very stiff, 100% recovery, no detectable odor.
					0		18.8-19	SHALE: dark grey with occasional orange mottlings, damp, crumbly, hard, fissile, 100% recovery, no detectable odor.
					0		19-20.5	
-20	20							



# MW-57 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-57 Date Drilled 11/18/2004

Project WP Offsite Delineation Owner Whirlpool

Location Ft. Smith, AR Boring T.D. 20.5' Boring Diam. 3"

N. Coord. 9927.44 E. Coord. 8506.98 Surface Elevation 463.1' Ft. MSL Datum

Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 0.75" Length 14' Sump Length 0.5'

Top of Casing Elevation 0' Stickup 0'


Depth to Water: 1. Ft.            (            ) 2. Ft.            (            )

Drilling Company CCI Driller Donna R. Lewis

Drilling Method Direct Push/Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-20	20				0			SHALE: dark grey with occasional orange mottlings, damp, crumbly, hard, fissile, 100% recovery, no detectable odor. T.D. = 20.5'
-22	22							
-24	24							
-26	26							
-28	28							
-30	30							



# MW-58 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-58 Date Drilled 11/19/2004

Project WP Offsite Delineation Owner Whirlpool

Location Ft. Smith, AR Boring T.D. 19' Boring Diam. 3"

N. Coord. 10012.09 E. Coord. 8380.45 Surface Elevation 462.9' Ft. MSL Datum

Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 0.75" Length 12.5' Sump Length 0.5'

Top of Casing Elevation 0' Stickup 0'

Depth to Water: 1. Ft. \_\_\_\_\_ ( \_\_\_\_\_ ) 2. Ft. \_\_\_\_\_ ( \_\_\_\_\_ )

Drilling Company CCI Driller Donna R. Lewis

Drilling Method Direct Push/Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0	0					0-4	0-1.65	SILTY SANDY CLAY: medium brown with iron staining along root hairs, wet, plastic, very soft, abundant root hairs, vegetative debris in top 0.3 ft., 61% recovery, no detectable odor.
					0		1.65-2.3	SILTY SANDY CLAY: medium brown with occasional orange mottlings, saturated, plastic, very soft, occasional iron nodules (~2 mm), 100% recovery, no detectable odor.
-2	2				0		2.3-2.85	SILTY SANDY CLAY: dark brown with red mottlings, moist, plastic, soft, occasional silt and very fine sand (light brown) veins and inclusions, 100% recovery, no detectable odor.
					0		2.85-5.15	SILTY SANDY CLAY: dark brown with orange mottlings, moist, plastic, soft, occasional silt and very fine sand (light brown) veins and inclusions, 100% recovery, no detectable odor.
-4	4					4-8	5.15-8	SILTY CLAY: light greenish grey with orange mottling and rare dark grey and brown mottling, moist, plastic, stiff, occasional silt and very fine sand (light brown and orange) veins and inclusions, 100% recovery, no detectable odor.
					0			
-6	6							
-8	8				0	8-12	8-9.7	SILTY CLAY: light greenish grey with orange mottlings and rare dark grey to dark brown mottling, very moist, plastic, very soft, occasional silt and very fine sand (light brown and orange) veins and inclusions, occasional iron nodules (2mm to 1 cm), 100% recovery, no detectable odor.
					0		9.7-10.25	SILTY SANDY CLAY: light greenish grey, moist, plastic, stiff, occasional silt and very fine sand (light brown and orange) veins and inclusions, occasional iron nodules (2mm to 1 cm), 100% recovery, no detectable odor.
-10	10							



# MW-58 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-58 Date Drilled 11/19/2004

Project WP Offsite Delineation Owner Whirlpool

Location Ft. Smith, AR Boring T.D. 19' Boring Diam. 3"

N. Coord. 10012.09 E. Coord. 8380.45 Surface Elevation 462.9' Ft. MSL Datum

Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 0.75" Length 12.5' Sump Length 0.5'

Top of Casing Elevation 0' Stickup 0'

Depth to Water: 1. Ft. ( ) 2. Ft. ( )

Drilling Company CCI Driller Donna R. Lewis

Drilling Method Direct Push/Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-10	10				0		10.25-11.55	SANDY CLAY: orange, moist, plastic, stiff, abundant iron nodules (~2-4 mm), occasional quartzite gravels (~1cm), 100% recovery, no detectable odor.
-12	12				0	12-15	11.55-12	SILTY CLAY: mottled orange, black and rarely light brown, moist, plastic, stiff, occasional silt (light brown and orange) veins, 100% recovery, no detectable odor.
					0		12-12.55	
					0		12.55-13.4	SANDY CLAY: light grey with orange and black mottling, moist, slightly plastic, stiff, 100% recovery, no detectable odor.
					0			CLAYEY SAND: light grey with orange and black mottling, moist, dense, 100% recovery, no detectable odor.
-14	14				0		13.4-14.1	CLAYEY SAND: mottled orange and light grey, moist, dense, occasional quartzite gravels (~2-3 cm), 100% recovery, no detectable odor.
					0		14.1-15	CLAYEY SAND: orange, moist, dense, abundant iron nodules (~2 mm - 1 cm), occasional quartzite gravels (~2-3 cm), 100% recovery, no detectable odor.
					0	15-19	15-16	SILTY SAND: orangish medium brown, saturated, flowing, 100% recovery, no detectable odor.
-16	16				0		16-16.55	SANDY CLAY: orange, moist, very slightly plastic, stiff, occasional iron nodules (~2 mm), occasional quartzite gravels (~3 mm - 1 cm), 100% recovery, no detectable odor.
					0		16.55-17	
					0		17-17.6	CLAYEY SAND: orange, wet, loose, occasional quartzite gravels (~2 mm), 100% recovery, no detectable odor.
-18	18				0		17.6-18.2	SILTY CLAY: orange with dark brown light grey and black mottling, slightly damp, slightly plastic, very stiff, occasional silt (light brown, black and orange) veins, 100% recovery, no detectable odor.
					0		18.2-19	SILTY CLAY: dark brown to dark grey with orange, light grey and black mottling, slightly damp, slightly plastic, hard, occasional silt (black, light brown, and orange) veins, 100% recovery, no detectable odor.
					0			SHALE: black, damp, crumbly, hard, fissile, 100% recovery, no detectable odor.
-20	20							T.D. = 19'



# MW-60 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-60 Date Drilled 4/4/2005

Project WP Offsite Delineation Owner Whirlpool

Location Fort Smith, AR Boring T.D. 17.5' Boring Diam. 3"

N. Coord. 10307.87 E. Coord. 8503.43 Surface Elevation 461' Ft. MSL Datum

Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 0.75" Length 12' Sump Length 0.5'

Top of Casing Elevation 0' Stickup 0'

Depth to Water: 1. Ft. 11.34 (4-5-05 17:21; predevelopment) 2. Ft. 5.8 (4-11-05 10:17; postdevelopment)

Drilling Company CCI Driller Donna R. Lewis

Drilling Method Direct Push/Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0	0					0-4	0-1.7	SANDY CLAY: dark brown with minor yellowish-red mottling, moist, plastic, very soft, abundant roots and root hairs, 100% recovery, no detectable odor.
					0 ppm		1.7-2.2	SANDY CLAY: dark brown, damp, slightly plastic, very soft, occasional root hairs, 100% recovery.
-2	2				3.3 ppm		2.2-2.8	CLAYEY SAND: brown, saturated, loose, 100% recovery, no odor.
					0 ppm		2.8-3.5	SANDY CLAY: brown, very moist, plastic, very soft, occasional iron nodules (2 mm), 100% recovery, no odor.
					0 ppm		3.5-4	SANDY CLAY: saturated, slightly plastic, very soft, occasional iron nodules (2 mm), 100% recovery, no odor.
-4	4				0 ppm	4-8	4-5.1	SANDY CLAY: mottled light grey, yellowish-red, and reddish-brown, very moist, slightly plastic, stiff, occasional iron nodules (2 mm), 100% recovery, no odor.
					0 ppm		5.1-5.4	SANDY CLAY: reddish-brown, moist, plastic, stiff, abundant iron nodules (2 mm), 100% recovery, no odor.
					0 ppm		5.4-5.75	SANDY CLAY: mottled light grey, yellowish-red, and reddish-brown, very moist, slightly plastic, stiff, occasional iron nodules (2 mm), 100% recovery, no odor.
-6	6				0 ppm		5.75-6	SANDY CLAY: reddish-brown, moist, plastic, stiff, abundant iron nodules (2 mm), 100% recovery, no odor.
					0 ppm		6-6.2	SANDY CLAY: mottled light grey, yellowish-red, and reddish-brown, very moist, slightly plastic, stiff, occasional iron nodules (2 mm), 100% recovery, no odor.
					0 ppm		6.2-6.8	SANDY CLAY: reddish-brown, moist, plastic, stiff, abundant iron nodules (2 mm), 100% recovery, no odor.
					0 ppm		6.8-7.2	SANDY CLAY: mottled light grey, yellowish-red, and reddish-brown, very moist, slightly plastic, stiff, occasional iron nodules (2 mm), 100% recovery, no odor.
-8	8				0 ppm		7.2-8	SANDY CLAY: reddish-brown, moist, plastic, stiff, abundant iron nodules (2 mm), 100% recovery, no odor.
					0 ppm		8-10.6	SANDY CLAY: mottled light grey, yellowish-red, and reddish-brown, very moist, slightly plastic, stiff, occasional iron nodules (2 mm), 100% recovery, no odor.
-10	10				0 ppm	8-12	8-10.6	SANDY CLAY: reddish-brown, moist, plastic, stiff, abundant iron nodules (2 mm), 100% recovery, no odor.
								SANDY CLAY: greyish-brown, saturated, slightly plastic, very soft, 100% recovery, no odor.



# MW-60 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-60 Date Drilled 4/4/2005

Project WP Offsite Delineation Owner Whirlpool

Location Fort Smith, AR Boring T.D. 17.5' Boring Diam. 3"

N. Coord. 10307.87 E. Coord. 8503.43 Surface Elevation 461' Ft. MSL Datum

Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 0.75" Length 12' Sump Length 0.5'

Top of Casing Elevation 0' Stickup 0'

Depth to Water: 1. Ft. 11.34 ( 4-5-05 17:21; predevelopment ) 2. Ft. 5.8 ( 4-11-05 10:17; postdevelopment )

Drilling Company CCI Driller Donna R. Lewis

Drilling Method Direct Push/Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-10	10				0 ppm		10.6-11.1	SANDY CLAY TO CLAYEY SAND: dark greyish brown with minor yellowish-red mottling, damp, very slightly plastic, stiff, abundant iron nodules (2 mm), abundant coarse-grained sand, 100% recovery, no odor.
					0 ppm		11.1-12	
-12	12				0 ppm	12-16	12-13.8	SANDY CLAY TO CLAYEY SAND: mottled yellowish-red and greenish-grey, damp, very slightly plastic, stiff, abundant iron nodules (2 mm), abundant coarse-grained sand, 100% recovery, no odor.
					0 ppm		13.8-15.4	GRAVELLY SANDY CLAY: mottled yellowish-red and brown, damp, stiff, very slightly plastic, occasional iron nodules (2 mm), abundant gravel (1-3 cm, quartzite), abundant coarse-grained sand, 100% recovery, no odor.
-14	14				0 ppm		15.4-17.5	SHALE: weathered, dark grey with minor yellowish-red mottling, very slightly damp, hard, fissile, 100% recovery, no odor.
-16	16				0 ppm	16-17.5		
-18	18				0 ppm			T.D. = 17.5'
-20	20							



# MW-61 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-61 Date Drilled 4/4/2005  
 Project WP Offsite Delineation Owner Whirlpool  
 Location Fort Smith, AR Boring T.D. 16' Boring Diam. 3"  
 N. Coord. 10308.13 E. Coord. 8796.61 Surface Elevation 459.8' Ft. MSL Datum  
 Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"  
 Casing: Type Schedule 40 PVC Diam. 0.75" Length 10.5' Sump Length 0.5'  
 Top of Casing Elevation 0' Stickup 0'  
 Depth to Water: 1. Ft. 12.13 ( 4-5-05 17:12; predevelopment ) 2. Ft. 7.98 ( 4-11-05 17:12; postdevelopment )  
 Drilling Company CCI Driller Donna R. Lewis  
 Drilling Method Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0	0					0-5	0-1	SANDY CLAY: dark brown, moist, slightly plastic, very soft, abundant roots and root hairs, 100% recovery, no odor.
					0 ppm		1-2	SANDY CLAY: brown, moist, slightly plastic, very soft, occasional root hairs, 100% recovery, no odor.
-2	2				0 ppm		2-4.5	SANDY CLAY: mottled yellowish-red and brown, damp very slightly plastic, soft, occasional iron nodules (2 mm), occasional quartzite gravel (2 cm), 100% recovery, no odor.
-4	4				0 ppm		4.5-5	SANDY CLAY: reddish-brown, damp, very slightly plastic, stiff, abundant iron nodules (2-4 mm), 100% recovery, no odor.
					0 ppm	5-8	5-5.4	SANDY CLAY: yellowish-red with minor light brown mottling, slightly damp, very slightly plastic, stiff, occasional iron nodules (2-4 mm), 100% recovery, no odor.
					76 ppm		5.4-6.2	SANDY CLAY: reddish-brown, damp, very slightly plastic, stiff, abundant iron nodules (2-4 mm), 100% recovery, no odor.
-6	6				83 ppm		6.2-6.5	SANDY CLAY: mottled yellowish-red and light grey, slightly damp, slightly plastic, soft, 100% recovery, no odor.
							6.5-6.8	SANDY CLAY: mottled yellowish-red and light grey, slightly damp, slightly plastic, soft, 100% recovery, no odor.
							6.8-7.2	SANDY CLAY: reddish-brown, damp, very slightly plastic, stiff, abundant iron nodules (2-4 mm), 100% recovery, no odor.
							7.2-8	SANDY CLAY: mottled yellowish-red and light grey, slightly damp, slightly plastic, soft, 100% recovery, no odor.
-8	8				254 ppm	8-12	8-10.8	SANDY CLAY: reddish-brown, damp, very slightly plastic, stiff, abundant iron nodules (2-4 mm), 100% recovery, no odor.
								SANDY CLAY: reddish-brown, saturated, slightly plastic, very soft, 100% recovery, no odor.
-10	10							



# MW-61 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-61 Date Drilled 4/4/2005

Project WP Offsite Delineation Owner Whirlpool

Location Fort Smith, AR Boring T.D. 16' Boring Diam. 3"

N. Coord. 10308.13 E. Coord. 8796.61 Surface Elevation 459.8' Ft. MSL Datum

Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 0.75" Length 10.5' Sump Length 0.5'

Top of Casing Elevation 0' Stickup 0'

Depth to Water: 1. Ft. 12.13 ( 4-5-05 17:12; predevelopment ) 2. Ft. 7.98 ( 4-11-05 17:12; postdevelopment )

Drilling Company CCI Driller Donna R. Lewis

Drilling Method Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-10	10				763 ppm 512 ppm 534 ppm		10.8-11 11-11.2 11.2-12	GRAVELLY SANDY CLAY: with gravel (quartzite 1-2 cm), damp, slightly plastic, soft, 100% recovery, no odor. SILTY CLAY: light brown, damp, stiff, slightly plastic, 100% recovery, no odor.
-12	12				524 ppm	12-16	12-14.3	GRAVELLY CLAY: yellowish-brown, damp, plastic, soft, abundant quartzite (1-3 cm), 100% recovery, no odor. SANDY CLAY: yellowish-brown, damp, slightly plastic, soft, occasional iron nodules (2 mm), occasional quartzite (2 mm - 1 cm), 100% recovery, no odor.
-14	14				151 ppm		14.3-15.1	CLAYEY SAND: coarse-grained sand, saturated, loose, occasional quartzite (1-2 cm), 100% recovery, no odor.
					757 ppm 0 ppm		15.1-15.3 15.3-16	SILTY CLAY: yellowish-red, damp, slightly plastic, stiff, 100% recovery, no odor. SHALE: dark grey with minor yellowish-red mottling, very slightly damp, hard, fissile, 100% recovery, no odor.
-16	16				0 ppm			T.D. = 16'
-18	18							
-20	20							



# MW-62 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-62 Date Drilled 4/4/2005  
 Project WP Offsite Delineation Owner Whirlpool  
 Location Fort Smith, AR Boring T.D. 21' Boring Diam. 3"  
 N. Coord. 9693.47 E. Coord. 8622.29 Surface Elevation 464.5' Ft. MSL Datum

Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 0.75" Length 15.5' Sump Length 0.5'

Top of Casing Elevation 0' Stickup 0'

Depth to Water: 1. Ft. 3.46 (4-6-05 16:15; predevelopment) 2. Ft. 3.22 (4-11-05 10:36; postdevelopment)

Drilling Company CCI Driller Donna R. Lewis

Drilling Method Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0	0					0-4	0-1	SILTY CLAY: dark brown with minor yellowish-red mottling, moist, loose, abundant root hairs, poor recovery, no odor.
					0 ppm		1-1.4	SILTY CLAY: dark brown, moist, plastic, very soft, occasional root hairs, 100% recovery, no odor.
					0 ppm		1.4-2	SILTY CLAY: brown with occasional yellowish-red mottling, moist, plastic, very soft, rare root hairs, 100% recovery, no odor.
-2	2				0 ppm		2-2.7	SILTY CLAY: brown with occasional yellowish-red mottling, wet, plastic, very soft, 100% recovery, no odor.
					0 ppm		2.7-3.1	SILTY CLAY: brown with occasional red mottling, moist, plastic, very soft, 100% recovery, no odor.
					0 ppm		3.1-4	SILTY CLAY: brown with occasional yellowish-red mottling, damp, slightly plastic, stiff, occasional light brown silt to very fine sandy veins and inclusions, 100% recovery, no odor.
-4	4				0 ppm	4-8	4-5	SILTY CLAY: brown with occasional red mottling, moist, plastic, very soft, 100% recovery, no odor.
					0 ppm		5-6	SILTY SANDY CLAY: brown with occasional yellowish-red and light brown mottling, damp, slightly plastic, stiff, occasional silt and very fine sand veins (light brown), 100% recovery, no odor.
-6	6				0 ppm		6-6.5	SILTY SANDY CLAY: light grey with occasional yellowish-red mottling, damp, slightly plastic, stiff, occasional silt and very fine sand veins (light brown), 100% recovery, no odor.
					0 ppm		6.5-7.1	SILTY SANDY CLAY: mottled light grey and yellowish-red, damp, slightly plastic, stiff, occasional iron nodules (1-3 mm), 100% recovery, no odor.
					0 ppm		7.1-10.7	SILTY SANDY CLAY: mottled light grey and yellowish-red, damp, slightly plastic, stiff, slightly plastic, 100% recovery, no odor.
-8	8					8-12		
-10	10							



# MW-62 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-62 Date Drilled 4/4/2005

Project WP Offsite Delineation Owner Whirlpool

Location Fort Smith, AR Boring T.D. 21' Boring Diam. 3"

N. Coord. 9693.47 E. Coord. 8622.29 Surface Elevation 464.5' Ft. MSL Datum

Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 0.75" Length 15.5' Sump Length 0.5'

Top of Casing Elevation 0' Stickup 0'

Depth to Water: 1. Ft. 3.46 (4-6-05 16:15; predevelopment) 2. Ft. 3.22 (4-11-05 10:36; postdevelopment)

Drilling Company CCI Driller Donna R. Lewis

Drilling Method Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-10	10				0 ppm		10.7-11.3	SANDY CLAY: yellowish-red with minor light grey mottling, damp, very slightly plastic, stiff, abundant iron nodules (2-4 mm), 100% recovery, no odor.
					0 ppm		11.3-12	SANDY GRAVELLY CLAY: yellowish-red, damp, very slightly plastic, stiff, abundant iron nodules (2-4 mm), abundant quartzite (1 cm), 100% recovery, no odor.
-12	12				0 ppm	12-16	12-13.1	SILTY SANDY CLAY: mottled yellowish-red, light grey, and dark grey, damp, plastic, soft, 100% recovery, no odor.
					0 ppm		13.1-16.2	SANDY GRAVELLY CLAY: yellowish-red, damp, very slightly plastic, stiff, abundant iron nodules (2-4 mm), abundant quartzite (1 cm), 100% recovery, no odor.
-14	14							
					0 ppm	16-20	16.2-16.3	SILTY SANDY CLAY: brown with minor red mottling, moist, plastic, very soft, plastic, 100% recovery, no odor.
-16	16				0 ppm		16.3-17.2	GRAVELLY CLAY: yellowish-red, damp, very slightly plastic, stiff, abundant iron nodules (2-4 mm), abundant quartzite (1-3 cm), 100% recovery, no odor.
					0 ppm		17.2-18.5	GRAVELLY CLAYEY SAND: with clay, mottled light brown and yellowish-red, damp, loose, abundant quartzite (1-3 cm), 100% recovery, no odor.
-18	18				0 ppm		18.5-20.3	SANDY CLAY: brown, saturated, slightly plastic, very soft, 100% recovery, no odor.
-20	20							



# MW-62 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-62 Date Drilled 4/4/2005

Project WP Offsite Delineation Owner Whirlpool

Location Fort Smith, AR Boring T.D. 21' Boring Diam. 3"

N. Coord. 9693.47 E. Coord. 8622.29 Surface Elevation 464.5' Ft. MSL Datum

Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 0.75" Length 15.5' Sump Length 0.5'

Top of Casing Elevation 0' Stickup 0'

Depth to Water: 1. Ft. 3.46 (4-6-05 16:15; predevelopment) 2. Ft. 3.22 (4-11-05 10:36; postdevelopment)

Drilling Company CCI Driller Donna R. Lewis

Drilling Method Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-20	20				0 ppm	20-21	20.3-21	SHALE: dark grey, very slightly damp, hard, fissile, 100% recovery, no odor. T.D. = 21'
-22	22							
-24	24							
-26	26							
-28	28							
-30	30							



# MW-63 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-63 Date Drilled 4/5/2005

Project WP Offsite Delineation Owner Whirlpool

Location Fort Smith, AR Boring T.D. 21.5' Boring Diam. 3"

N. Coord. 9692.48 E. Coord. 8826.28 Surface Elevation 464' Ft. MSL Datum

Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 0.75" Length 16' Sump Length 0.5'

Top of Casing Elevation 0' Stickup 0'

Depth to Water: 1. Ft. 5.91 ( 4-6-05 14:00; predevelopment ) 2. Ft. 2.78 ( 4-11-05 10:40; postdevelopment )

Drilling Company CCI Driller Donna R. Lewis

Drilling Method Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0	0				0 ppm	0-4	0-0.45	CLAYEY SILT: brown with minor yellowish-red mottling, moist, loose, abundant root hairs, 100% recovery, no odor.
					0 ppm		0.45-1.15	SILTY CLAY: brown, moist, plastic, soft, rare root hairs, 100% recovery, no odor.
					0 ppm		1.15-3.2	SILTY SANDY CLAY: saturated, very slightly plastic, soft, 29 % recovery, no odor.
-2	2				0 ppm		3.2-3.6	SANDY CLAY: brown with occasional red mottling, moist, plastic, soft, 100% recovery, no odor.
					0 ppm		3.6-4	SANDY CLAY: brown with occasional yellowish-red mottling, moist, plastic, soft, 100% recovery, no odor.
-4	4				0 ppm	4-8	4-4.7	NO RECOVERY: no recovery.
					0 ppm		4.7-5.1	SANDY CLAY: brown with minor red mottling, moist, plastic, soft, 100% recovery, no odor.
					0 ppm		5.1-5.8	SANDY CLAY: brown with minor yellowish-red mottling, saturated, very slightly plastic, very soft, 100% recovery, no odor.
-6	6				0 ppm		5.8-6.3	SANDY CLAY: mottled brown, grey, and yellowish-red, moist, plastic, soft, 100% recovery, no odor.
					0 ppm		6.3-8	SANDY CLAY: mottled brown, grey, yellowish-red, moist, plastic, stiff, 100% recovery, no odor.
-8	8				0 ppm	8-12	8-10.5	SANDY CLAY: mottled grey and yellowish-red, moist, plastic, soft, poor recovery, no odor.
-10	10							



# MW-63 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-63 Date Drilled 4/5/2005

Project WP Offsite Delineation Owner Whirlpool

Location Fort Smith, AR Boring T.D. 21.5' Boring Diam. 3"

N. Coord. 9692.48 E. Coord. 8826.28 Surface Elevation 464' Ft. MSL Datum

Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 0.75" Length 16' Sump Length 0.5'

Top of Casing Elevation 0' Stickup 0'

Depth to Water: 1. Ft. 5.91 ( 4-6-05 14:00; predevelopment ) 2. Ft. 2.78 ( 4-11-05 10:40; postdevelopment )

Drilling Company CCI Driller Donna R. Lewis

Drilling Method Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-10	10				0 ppm		10.5-12	SANDY CLAY: yellowish-red with minor brown mottling, damp, plastic, hard, 100% recovery, no odor.
-12	12				0 ppm	12-16	12-15.5	SANDY CLAY TO CLAYEY SAND: yellowish-red with minor light brown mottling, damp, very slightly plastic, stiff, abundant coarse-grained sand, poor recovery, no odor.
-14	14				0 ppm		15.5-16	GRAVELLY CLAY: yellowish-red with minor light brown mottling, damp, very slightly plastic, stiff, abundant iron nodules (1-2 mm), abundant quartzite (1 cm) with coarse-grained sand, 100% recovery, no odor.
-16	16				0 ppm	16-20	16-19.3	SANDY CLAY: yellowish-red, damp, very slightly plastic, stiff, occasional quartzite (1-3 cm), poor recovery, no odor.
-18	18				0 ppm		19.3-19.5	CLAYEY SAND: light brown, damp, loose, occasional quartzite (2-5 mm), 100% recovery, no odor.
-20	20				0 ppm		19.5-20	SILTY CLAY: yellowish-red, damp, very slightly plastic, hard, becoming fissile, 100% recovery, no odor.



# MW-63 DRILLING LOG

W.O. NO. 0014507 Boring/Well ID MW-63 Date Drilled 4/5/2005

Project WP Offsite Delineation Owner Whirlpool

Location Fort Smith, AR Boring T.D. 21.5' Boring Diam. 3"

N. Coord. 9692.48 E. Coord. 8826.28 Surface Elevation 464' Ft. MSL Datum

Screen: Type Stainless prepak Diam. 0.75" Length 5' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 0.75" Length 16' Sump Length 0.5'

Top of Casing Elevation 0' Stickup 0'

Depth to Water: 1. Ft. 5.91 ( 4-6-05 14:00; predevelopment ) 2. Ft. 2.78 ( 4-11-05 10:40; postdevelopment )

Drilling Company CCI Driller Donna R. Lewis

Drilling Method Geoprobe Log By Misty D. Savell

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-20	20				0 ppm	20-21.5	20-21.5	SHALE: dark grey, very slightly damp, hard, fissile, 100% recovery, no odor.
					0 ppm			T.D. = 21.5'
-22	22							
-24	24							
-26	26							
-28	28							
-30	30							