

# ATTACHMENT 1 SUBSURFACE INVESTIGATION TECHNICAL PROGRESS REPORT



# SUBSURFACE INVESTIGATION TECHNICAL PROGRESS REPORT 3M AND DYNEON DECATUR, ALABAMA

#### INTRODUCTION

New groundwater monitor wells and associated soil borings were constructed in the former sludge incorporation area in accordance with the approved work plan. The procedures for installing the wells were described in the January 25, 2005 *Quarterly Status Report* (WESTON, 2005). Additional information on well and boring locations, construction details, water levels, soil boring logs, and a description of soil and groundwater sampling activities occurring between December 25, 2004 and March 25, 2005 are presented in this technical progress report. Other activities conducted during this period included the installation of soil borings and collection of soil samples in the vicinity of the existing Letter of Intent (LOI) wells and near the new monitor well clusters in the sludge incorporation area. Soil samples were collected from the LOI borings and from the former sludge incorporation area borings, for logging and analysis. Also, five surface soil samples, at two depths, were collected from each of the 4 study fields for PFOA analysis.

#### FORMER SLUDGE INCORPORATION AREA

As part of the groundwater investigation associated with the former sludge incorporation area, a total of 24 monitoring wells were constructed from December 2004 through February 2005 to characterize groundwater conditions. The wells were constructed in eight clusters of three wells designed to monitor the residuum, the weathered bedrock (epikarst zone) and the competent bedrock. The wells were located to characterize specific groundwater and soil conditions associated with Field Nos. 6, 8b, 9, and 14 of the former sludge incorporation study area. Four exploratory soil borings were also constructed (one per field) to collect surface and subsurface soil samples for analysis. In addition, one exploratory soil boring was constructed in a control area located in the northwest portion of the facility property to provide background data for the site (location



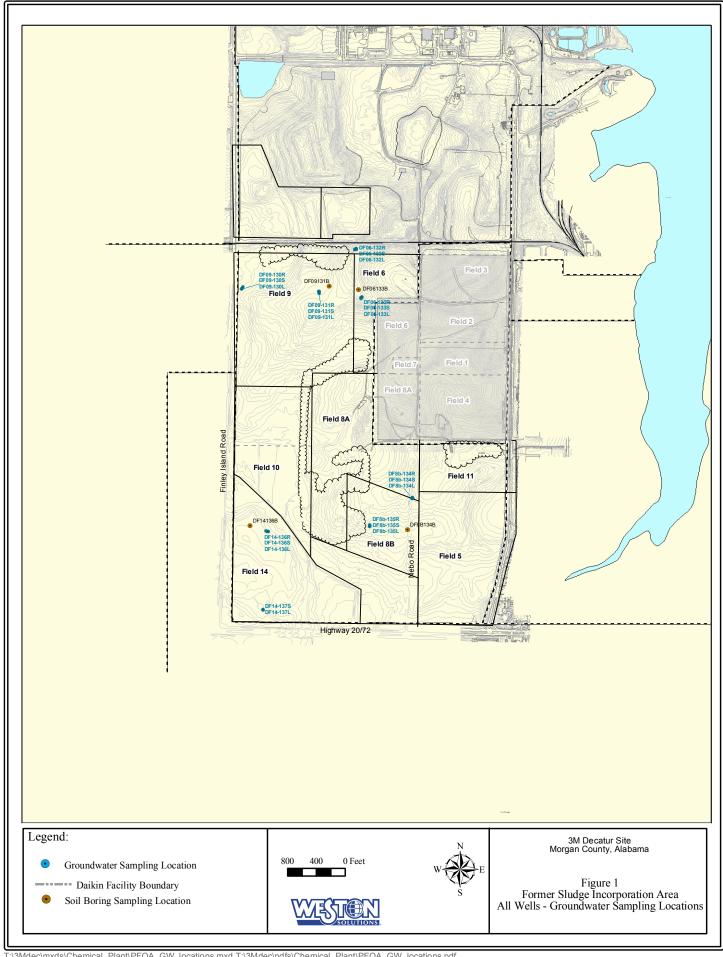
identified subsequently as DBKG). The location of the wells and borings are presented in Figure 1.

As mentioned above, each groundwater monitoring location was constructed as a well cluster consisting of three wells; a residuum well designated by a "R" designator; an epikarst well designated by an "S" designator; and a bedrock well designated by a "L" designator. Soil borings are designated with the letter "B". The epikarst and bedrock wells were constructed using air rotary drilling. The residuum wells and soil borings were constructed using hollow-stem auger drilling techniques.

Drilling began with the bedrock wells to allow for logging and for installation of casing. Initial drilling, using a hollow stem auger rig, was continued until resistance to drilling was encountered. This depth was interpreted to represent the top of epikarst. Then drilling was continued with an air-rotary rig, carefully observing drilling characteristics to identify major weathered zones and to determine when competent rock was encountered. Once competent rock was identified, a socket was constructed approximately six to ten feet into competent bedrock for insertion of the casing. The borehole was adequately cleaned, and six-inch carbon steel casing was installed and grouted in place using a cement slurry mix. After grouting was completed, the casings were left undisturbed for a minimum of 24 hours to allow for adequate curing of the grout.

The data collected during the construction of the bedrock borings were used to designate completion depths for the epikarst wells. Epikarst well borings were constructed using air rotary drilling techniques with a eight-inch diameter tri-cone rotary bit or percussion hammer bit. The borings were extended to depths within the epikarst indicating the highest potential for groundwater communication as identified in the associated bedrock well borings. Drilling conditions were noted during construction and compared to that of the associated bedrock borings to evaluate consistency of rock and fracture zones.

The borehole was adequately cleaned of cuttings and a four-inch diameter stainless steel monitoring well was constructed with ten feet of 0.01-inch slotted screen. A sandpack



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consisting of 20/40 sieve commercial grade filter sand was constructed to approximately two feet above the top of screen. This was followed by approximately two feet of bentonite chips and grout to the surface.

Residuum wells and soil borings were constructed using hollow-stem auger drilling techniques. This allowed for the collection of in-situ soil samples for logging and analysis purposes. Residuum well borings were constructed using six-inch inner diameter augers to the depth designated in the initial boring as top of epikarst or until resistance to drilling was encountered. Upon completion of the borehole, a four-inch diameter stainless steel well was inserted with ten feet of 0.01-inch slotted screen. Well construction occurred within the augers to prevent collapse of the boring during construction. A sandpack, consisting of a 20/40 sieve commercial grade filter sand, was constructed to approximately two feet above the top of screen. This was followed by approximately two feet of bentonite chips and cement grout to the surface.

Exploratory soil borings were constructed using 2.5-inch inner diameter augers. The borings were constructed to the watertable for logging purposes and to collect soil samples for analytical testing. After completion, the boreholes were abandoned by filling with cement grout using tremie pipe pumping techniques. A summary of the boring construction data is presented in Table 1.

Once completed, all of the monitoring wells were completed at the surface with lockable protective covers and four-feet by four-feet concrete pads. Boring and well construction data are presented in Tables 1 and 2. Well survey data is presented in Table 3. Boring logs are provided in Appendix A.

#### **Soil Sampling Approach**

Soil samples were collected from the auger borings to provide geologic data and for analytical testing. Sampling depths were predesignated for analytical samples to provide data regarding vertical distribution of constituents. The depths below grade selected for testing included: 0-3 inches; 6-12 inches; 1.0-1.5 feet; 2.0-2.5 feet; 5.0-5.5 feet; and from



**Table 1. Summary of Boring Construction Data** 

Field	Boring	Boring Type	Depth to	Depth to	<b>Depth to Competent</b>	<b>Total Boring</b>	Primary Water
No.	No.	boring Type	Water (ftoc)	Epikarst (fbgs)	Rock (fbgs)	Depth (fbgs)	Zones (fbgs)
DF09	130R	Residuum Well	6.83			32	
DF09	130S	Epikarst Well	40.37	32		74	67-77 (F)
DF09	130L	Bedrock Well	43.50		84	128	121-128 (V)
DF09	131R	Residuum Well	11.34			30	
DF09	131S	Epikarst Well	19.11	32		50	37-47 (F)
DF09	131L	Bedrock Well	19.31		65	91	85.5-86.5 (F)
DF09	131B	Soil Boring	20			32	
DF06	132R	Residuum Well	21.60			47	
DF06	132S	Epikarst Well	20.06	45		62	48-53, 56-66 (F)
DF06	132L	Bedrock Well	71.58**		68	202	135, 158, 165, 172 (F)
DF06	133R	Residuum Well	14.90	35		35	
DF06	133S	Epikarst Well	14.40	36	47	47	37-47 (F)
DF06	133L	Bedrock Well	123.95**		48	202	
DF06	133B	Soil Boring	30			37	
DF8b	134R	Residuum Well	15.35			32	
DF8b	134S	Epikarst Well	14.95	32.5		50	41-51 (F)
DF8b	134L	Bedrock Well	46.43		57	150	145 (F)
DF8b	134B	Soil Boring	10			32	
DF8b	135R	Residuum Well	14.50			33	
DF8b	135S	Epikarst Well	23.20	32		47	34-44, 49-58 (F)
DF8b	135L	Bedrock Well	35.55		61	120	112 (1-2 " V)
DF14	136R	Residuum Well	29.50			30	
DF14	136S	Epikarst Well	29.77	30		50	35-45 (F)
DF14	136L	Bedrock Well	29.46		45	88	
DF14	136B	Soil Boring		30		30	
DF14	137R	Residuum Well	DRY			20	
DF14	137S	Epikarst Well	27.82	20		40	27-37 (F)
DF14	137L	Bedrock Well	28.40		40	81	76-77 (V)
DBKG*	001B	Soil Boring	24	Void on weathoused gone	Et Zono of Eurottyning (muchahlah	26	

fbgs: Feet below ground surface ftoc: Feet below Top-of-Casing
\*Background location in the northwest corner of the site \*\*Grou Casing V: Void or weathered zone F: Zone of Fracturing (probable bedding fractures).

\*\*Groundwater elevations may not reflect equilibrium conditions.



**Table 2. Summary of Well Construction Data** 

Well No.	Well Type	Well Construction	TOC Elevation (fmsl)	Depth to Groundwater (ftoc)	Depth of Casing (fbgs)	Total Well Depth (ftoc)	Monitoring Interval (ftoc)
130R	Residuum Well	4-Inch Stainless Steel	597.38	6.83	, 0,	35.44	25.5-35.5
130S	Epikarst Well	4-Inch Stainless Steel	598.37	40.37		65.75	55.75-65.75
130L	Bedrock Well	6-Inch Open Bore	598.28	43.50	91	127.79	91.0-127.0
131R	Residuum Well	4-Inch Stainless Steel	623.30	11.34		31.95	21.95-31.95
131S	Epikarst Well	4-Inch Stainless Steel	623.38	19.11		49.97	39.97-49.97
131L	Bedrock Well	6-Inch Open Bore	623.03	19.31	73	90.72	73.0-90.7
131B	Soil Boring	Abandoned					
132R	Residuum Well	4-Inch Stainless Steel	631.82	21.60		49.90	39.9-49.9
132S	Epikarst Well	4-Inch Stainless Steel	632.60	20.06		60.30	50.3-60.3
132L	Bedrock Well	6-Inch Open Bore	632.58	71.58**	76	202.00	76.0-202.0
133R	Residuum Well	4-Inch Stainless Steel	631.54	14.90		37.95	27.95-37.95
133S	Epikarst Well	4-Inch Stainless Steel	631.21	14.40		50.05	40.0-50.0
133L	Bedrock Well	6-Inch Open Bore	630.53	123.95**	56	197.00	56.0-197.0
133B	Soil Boring	Abandoned					
134R	Residuum Well	4-Inch Stainless Steel	614.63	15.35		35.10	25.1-35.1
134S	Epikarst Well	4-Inch Stainless Steel	614.40	14.95		49.90	39.9-49.9
134L	Bedrock Well	6-Inch Open Bore	614.20	46.43	65	150.00	65.0-150.0
134B	Soil Boring	Abandoned					
135R	Residuum Well	4-Inch Stainless Steel	602.35	14.50		32.85	22.85-32.85
135S	Epikarst Well	4-Inch Stainless Steel	601.04	23.20		50.75	40.75-50.75
135L	Bedrock Well	6-Inch Open Bore	601.25	35.55	66	122.78	66.0-122.8
136R	Residuum Well	4-Inch Stainless Steel	588.92	29.50		33.15	23.15-33.15
136S	Epikarst Well	4-Inch Stainless Steel	588.79	29.77		49.90	39.9-49.9
136L	Bedrock Well	6-Inch Open Bore	588.36	29.46	52	87.65	52.0-87.65
137R	Residuum Well	4-Inch Stainless Steel	589.90	DRY		21.82	11.82-21.82
137S	Epikarst Well	4-Inch Stainless Steel	589.26	27.82		40.23	30.23-40.23
137L	Bedrock Well	6-Inch Open Bore	589.53	28.40	47	80.09	47.0-80.09
137B	Soil Boring	Abandoned					
001B	Soil Boring	Abandoned					
Fbgs: Feet	Below Ground Surface	ftoc: Feet below Top-of-Casing	fmsl: Feet above M	lean Sea Level ** Ground	water elevations may not i	eflect equilibrium cond	litions.



Table 3. Well and Boring Survey Data

Field No.	Location	Northing	Easting	Ground Elevation	
DF09	130R	1685604.953	634991.9	597.38	
DF09	130S	1685578.752	634970.3	598.37	
DF09	130L	1685588.637	634975.9	598.28	
DF09	131R	1685522.472	636050.8	623.3	
DF09	131S	1685545.298	636045.4	623.38	
DF09	131L	1685548.05	636054.5	623.03	
DF09	131B	1685617.217	636194.7	623.67	
DF06	132R	1686127.122	636548.1	631.82	
DF06	132S	1686130.041	636565.9	632.6	
DF06	132L	1686139.61	636565.3	632.58	
DF06	133R	1685463.903	636645.6	631.54	
DF06	133S	1685458.171	636632.8	631.21	
DF06	133L	1685446.711	636636.4	630.53	
DF06	133B	1685573.577	636602.7	633.29	
DF8b	134R	1682680.607	637345.3	614.63	
DF8b	134S	1682663.27	637353.2	614.4	
DF8b	134L	1682662.864	637340.3	614.2	
DF8b	134B	1682231.039	637280.7	598.39	
DF8b	135R	1682297.376	636753.1	602.35	
DF8b	135S	1682271.106	636751.3	601.04	
DF8b	135L	1682279.212	636753.2	601.25	
DF14	136R	1682214.148	635311.7	588.92	
DF14	136S	1682209.052	635328	588.79	
DF14	136L	1682204.793	635343.4	588.36	
DF14	137R	1682285.834	635093.1	589.78	
DF14	137S	1681089.13	635271.1	589.9	
DF14	137L	1681120.735	635270.7	589.26	
DF14	137B	1681109.589	635270.9	589.53	
DBKG	001B	1691097.701	634893.7	566.62	



the depth of the local water table. Composite samples were also collected from four locations (131R, 133R, 134R, and 137R) for every five-foot depth interval to provide continuous analytical data for the soil sequence.

Due to the high number of samples within the upper three feet of soil, it was necessary to collect the samples using a four-inch stainless steel bucket auger. This allowed for collection of an adequate volume of soil from each sample interval to satisfy the sampling requirements. Following collection of the samples for depths 0-3 inches, 6-12 inches, 1.0-1.5 feet, and 2.0-2.5 feet, the auger rig was positioned over the location and the borehole was advanced to groundwater, collecting the remaining samples. Table 4 contains a summary of the sampling strategy for the former sludge incorporation study area soil borings.

Soil from specific sampling intervals was placed immediately into laboratory-prepared sample containers, labeled, and recorded onto a Chain-of-Custody form. Composite samples from each five-foot drilling interval were placed into stainless steel containers and kept covered with polyethylene sheeting until the entire interval was collected. The collected media was blended until homogenous and appropriate volumes were collected in laboratory-prepared containers for analytical testing. Samples were submitted to the appropriate laboratories and tested for PFOA, TOC, and grain size distribution. Table 5 presents the samples collected from the former sludge incorporation study area soil borings for analytical testing.

## **Monitoring Well Development and Groundwater Sampling**

Following well completion, each well was developed to clear the wells of particulate matter and allowed to remain undisturbed for approximately one week before sampling. Prior to sampling, static water levels and well depths were recorded to calculate the volumes for each of the wells. Wells were purged of liquid using either a two-inch Grundfos pump or a four-inch Grundfos pump depending on the well diameter and anticipated volume required for removal. The purge water was contained during the purging process and transported to the facility wastewater treatment plant for disposal.



Table 4. Summary of Sample Protocol for Former Sludge Incorporation Study Area Soil Borings

					В	oring Ide	entification	on				
Discrete Sample Depths	130R	131R	131B	132R	133R	133B	134R	134B	135R	136R	136B	137R
0-3"	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
6-12"	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
1-1.5'	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
2-2.5'	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
5-5.5'	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Water Table	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х

Composite Sample Depths	130R	131R	131B	132R	133R	133B	134R	134B	135R	136R	136B	137R
0-5'		X			X		X					X
5-10'		Х			Х		X					X
10-15'		Х			Х		X					Х
15-20'		Х			Х		X					Х
20-25'		Х			Х		Х					Х
25-30'		Х			Х		X					Х
30-35'		Х			Х		Х					Х

All depths are based on feet below ground surface.



Table 5. Summary of Former Sludge Incorporation Study Area Soil Boring Samples

Clie	nt Sam	ple Ident	tifica	tion	Sample Date	Sample Time	Sample Type	Sample Depth Interval (fbgs)
DF09	SB	130R	0	0000	20-Dec-04	16:00	Discrete	0-3 inches
DF09	SB	130R	0	0005	20-Dec-04	16:10	Discrete	6-12 inches
DF09	SB	130R	0	0003	20-Dec-04	16:25	Discrete	1-1.5
DF09	SB	130R	0	0010	20-Dec-04	13:35	Discrete	2-2.5
DF09	SB	130R	0	0050	21-Dec-04	14:20	Discrete	5-6
DF09	SB	130R	0	0150	21-Dec-04	14:50	Discrete	15-16
DF09	SB	131R	0	0000	8-Dec-04	13:15	Discrete	0-3 inches
DF09	SB	131R	0	0005	8-Dec-04	13:25	Discrete	6-12 inches
DF09	SB	131R	0	0003	8-Dec-04	13:40	Discrete	1-1.5
DF09	SB	131R	0	0010	8-Dec-04	13:50	Discrete	2-2.5
DF09	SB	131R	0	0050	9-Dec-04	12:05	Discrete	5-6
DF09	SB	131R	0	0160	9-Dec-04 9-Dec-04	12:40	Discrete	16-17
DF09 DF09	SBC	131R	0	0000	9-Dec-04 9-Dec-04	11:55	Composite	0-5
DF09 DF09	SBC	131R	0	0050	9-Dec-04 9-Dec-04	12:15		5-10
			0				Composite	
DF09	SBC	131R	0	0100	9-Dec-04	12:30	Composite	10-15
DF09		131R	0	0150	9-Dec-04	13:00	Composite	15-20
DF09	SBC	131R	-	0200	9-Dec-04	13:25	Composite	20-25
DF09	SBC	131R	0	0250	9-Dec-04	13:45	Composite	25-30
DF09	SB	131B	0	0000	8-Dec-04	14:20	Discrete	0-3 inches
DF09	SB	131B	0	0005	8-Dec-04	14:35	Discrete	6-12 inches
DF09	SB	131B	0	0010	8-Dec-04	14:50	Discrete	1-1.5
DF09	SB	131B	0	0020	8-Dec-04	15:10	Discrete	2-2.5
DF09	SB	131B	0	0050	13-Dec-04	13:40	Discrete	5-6
DF09	SB	131B	0	0800	13-Dec-04	13:59	Discrete	8-9
DF06	SB	132R	0	0000	7-Dec-04	7:40	Discrete	0-3 inches
DF06	SB	132R	0	0005	7-Dec-04	7:45	Discrete	6-12 inches
DF06	SB	132R	0	0010	7-Dec-04	7:55	Discrete	1-1.5
DF06	SB	132R	0	0020	7-Dec-04	8:10	Discrete	2-2.5
DF06	SB	132R	0	0050	7-Dec-04	8:19	Discrete	5-6
DF06	SB	132R	0	0445	7-Dec-04	11:35	Discrete	44.5-46.5
DF06	SB	133R	0	0000	7-Dec-04	12:50	Discrete	0-3 inches
DF06	SB	133R	0	0005	7-Dec-04	13:10	Discrete	6-12 inches
DF06	SB	133R	0	0010	7-Dec-04	13:20	Discrete	1-1.5
DF06	SB	133R	0	0020	7-Dec-04	13:30	Discrete	2-2.5
DF06	SB	133R	0	0050	8-Dec-04	10:20	Discrete	5-6
DF06	SB	133R	0	0180	8-Dec-04	12:15	Discrete	18-19
DF06	SBC	133R	0	0000	8-Dec-04	10:10	Composite	0-5
DF06	SBC	133R	0	0055	8-Dec-04	10:30	Composite	5.5-10
DF06	SBC	133R	0	0100	8-Dec-04	10:45	Composite	10-15
DF06	SBC	133R	0	0150	8-Dec-04	12:05	Composite	15-20
DF06	SBC	133R	0	0200	8-Dec-04	12:35	Composite	20-25
DF06	SBC	133R	0	0250	8-Dec-04	13:15	Composite	25-30
DF06	SB	133B	0	0000	7-Dec-04	14:10	Discrete	0-3 inches



Table 5. Summary of Former Sludge Incorporation StudyArea Soil Boring Samples (continued)

Clie	nt Sam	ple Ident	tifica	tion	Sample Date	Sample Time	Sample Type	Sample Depth Interval (fbgs)
DF06	SB	133B	0	0005	7-Dec-04	14:15	Discrete	6-12 inches
DF06	SB	133B	0	0010	7-Dec-04	14:25	Discrete	1-1.5
DF06	SB	133B	0	0020	7-Dec-04	14:40	Discrete	2-2.5
DF06	SB	133B	0	0050	10-Dec-04	9:15	Discrete	5-6
DF06	SB	133B	0	0160	10-Dec-04	9:13	Discrete	16-17
DF8b	SB	134R	0	0000	16-Dec-04	15:05	Discrete	0-3 inches
DF8b	SB	134R	0	0005	16-Dec-04	15:15	Discrete	6-12 inches
DF8b	SB	134R	0	0010	16-Dec-04	15:20	Discrete	1-1.5
DF8b	SB	134R	0	0020	16-Dec-04	15:35	Discrete	2-2.5
DF8b	SB	134R	0	0050	17-Dec-04	8:45	Discrete	5-6
DF8b	SB	134R	0	0270	17-Dec-04	9:55	Discrete	27-28
DF8b	SBC	134R	0	0000	17-Dec-04	8:50	Composite	0-5
DF8b	SBC	134R	0	0050	17-Dec-04	9:10	Composite	5-10
DF8b	SBC	134R	0	0100	17-Dec-04	9:15	Composite	10-15
DF8b	SBC	134R	2	0100	17-Dec-04	9:05	QA/QC	na
DF8b	SBC	134R	0	0150	17-Dec-04	9:30	Composite	15-20
DF8b	SBC	134R	0	0200	17-Dec-04	9:50	Composite	20-25
DF8b	SBC	134R	0	0250	17-Dec-04	10:00	Composite	25-30
DF8b	SB	134B	0	0000	20-Dec-04	13:45	Discrete	0-3 inches
DF8b	SB	134B	0	0005	20-Dec-04	13:55	Discrete	6-12 inches
DF8b	SB	134B	0	0010	20-Dec-04	14:10	Discrete	1-1.5
DF8b	SB	134B	0	0020	20-Dec-04	14:25	Discrete	2-2.5
DF8b	SB	134B	0	0050	21-Dec-04	8:45	Discrete	5-6
DF8b	SB	134B	0	0090	21-Dec-04	9:00	Discrete	9-10
DF8b	SB	134B	2	0090	21-Dec-04	9:00	QA/QC	na
DF8b	SB	135R	0	0000	13-Dec-04	15:15	Discrete	0-3 inches
DF8b	SB	135R	0	0005	13-Dec-04	15:30	Discrete	6-12 inches
DF8b	SB	135R	0	0010	13-Dec-04	15:40	Discrete	1-1.5
DF8b	SB	135R	0	0020	13-Dec-04	15:50	Discrete	2-2.5
DF8b	SB	135R	0	0050	14-Dec-04	9:35	Discrete	5-6
DF8b	SB	135R	0	0190	14-Dec-04	10:45	Discrete	19-20
DF8b	SB	135R	2	0190	14-Dec-04	10:00	QA/QC	na
DF14	SB	136R	0	0000	14-Dec-04	14:50	Discrete	0-3 inches
DF14	SB	136R	0	0005	14-Dec-04	15:00	Discrete	6-12 inches
DF14	SB	136R	0	0010	14-Dec-04	15:10	Discrete	1-1.5
DF14	SB	136R	0	0020	14-Dec-04	15:20	Discrete	2-2.5
DF14	SB	136R	0	0050	15-Dec-05	15:05	Discrete	5-6
DF14	SB	136R	0	0290	15-Dec-05	16:30	Discrete	29-30
DF14	SB	136R	2	0290	15-Dec-05	16:30	QA/QC	na
DF14	SB	136B	0	0000	14-Dec-04	15:35	Discrete	0-3 inches
DF14	SB	136B	0	0005	14-Dec-04	15:40	Discrete	6-12 inches
DF14	SB	136B	0	0010	14-Dec-04	15:50	Discrete	1-1.5



Table 5. Summary of Former Sludge Incorporation Study Area Soil Boring Samples (continued)

Clie	nt Sam	ple Ident	tifica	tion	Sample Date	Sample Time	Sample Type	Sample Depth Interval (fbgs)
DF14	SB	136B	0	0020	14-Dec-04	16:05	Discrete	2-2.5
DF14	SB	136B	2	0020	14-Dec-04	15:55	QA/QC	na
DF14	SB	136B	0	0050	16-Dec-04	13:40	Discrete	5-6
DF14	SB	136B	0	029	16-Dec-04	14:25	Discrete	29-30
DF14	SB	137R	0	0000	14-Dec-04	14:10	Discrete	0-3 inches
DF14	SB	137R	0	0005	14-Dec-04	14:15	Discrete	6-12 inches
DF14	SB	137R	0	0010	14-Dec-04	14:25	Discrete	1-1.5
DF14	SB	137R	0	0020	14-Dec-04	14:35	Discrete	2-2.5
DF14	SB	137R	0	0050	15-Dec-04	9:05	Discrete	5-6
DF14	SB	137R	0	0180	15-Dec-04	9:50	Discrete	18-19
DF14	SBC	137R	0	0000	15-Dec-04	9:00	Composite	0-5
DF14	SBC	137R	0	0050	15-Dec-04	9:15	Composite	5-10
DF14	SBC	137R	0	0100	15-Dec-04	9:30	Composite	10-15
DF14	SBC	137R	2	0100	15-Dec-04	9:15	QA/QC	na
DF14	SBC	137R	0	0150	15-Dec-04	9:45	Composite	15-20
DBKG	SB	001B	0	0000	12-Jan-05	10:10	Discrete	0-3 inches
DBKG	SB	001B	0	0005	12-Jan-05	10:15	Discrete	6-12 inches
DBKG	SB	001B	0	0010	12-Jan-05	10:20	Discrete	1-1.5
DBKG	SB	001B	0	0020	12-Jan-05	10:30	Discrete	2-2.5
DBKG	SB	001B	0	0050	12-Jan-05	10:50	Discrete	5-6
DBKG	SB	001B	0	0230	12-Jan-05	12:35	Discrete	23-24
DBKG	SBC	001B	0	0000	12-Jan-05	10:55	Composite	0-5
DBKG	SBC	001B	2	0000	12-Jan-05	10:40	QA/QC	na
DBKG	SBC	001B	0	0050	12-Jan-05	11:15	Composite	5-10
DBKG	SBC	001B	0	0100	12-Jan-05	11:35	Composite	10-15
DBKG	SBC	001B	0	0150	12-Jan-05	12:00	Composite	15-20
DBKG	SBC	001B	0	0200	12-Jan-05	12:40	Composite	20-25

SB – Soil Boring Sample

SBC – Composite Soil Boring Sample

0 - Media Sample

2 – Rinsate Blank Sample



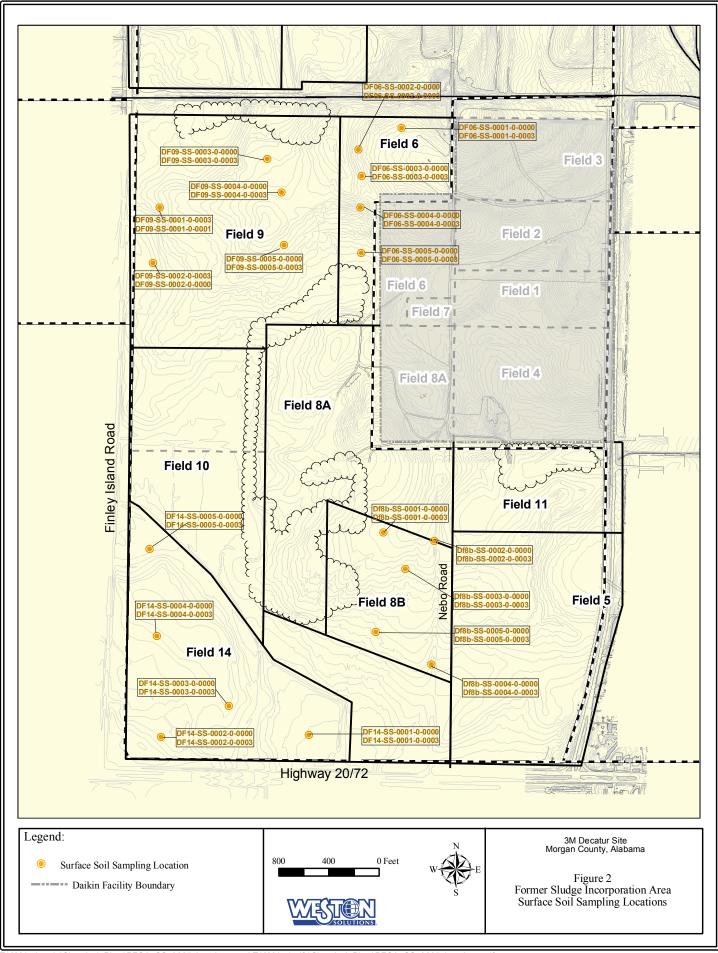
During the purging process, groundwater parameters, including pH, specific conductance, and temperature were continually monitored to ensure that the purging process was adequate. Purging continued until three well volumes were removed and the monitored parameters had stabilized, or until the well was pumped dry. A copy of the groundwater purge forms for each well is provided in Appendix B. Following purging, the wells were allowed to recharge sufficiently to allow adequate sampling of the wells. Sampling was conducted within 24 hours of the purging of each well.

# **Surface Soil Sampling**

To characterize surface soil conditions within each study field, WESTON collected surface soil samples for analytical testing. Samples were collected from five locations in each of the four fields from depths of 0 to 3-inches and 6 to 12-inches. Sample locations were selected to provide area-wide data for the fields and to provide data for comparisons with the co-located vegetation and small mammal sample data. The surface soil sampling locations are presented in Figure 2.

Samples were collected using decontaminated stainless steel scoops according to the following procedures. A sample area was cleared of surface vegetation and humus matter until mineral soils were encountered. A hole was constructed using a clean stainless steel scoop approximately six inches in diameter and three inches deep. The material was placed into a clean stainless steel mixing bowl, blended until homogenous, and appropriate samples were collected.

The hole was advanced to a depth of six inches and cleaned of all loose material. Using a clean stainless steel scoop, soil was collected from the six to twelve-inch interval and placed into a clean stainless steel bowl. Similarly, the soil was blended and appropriate samples were collected. Visual descriptions of the soil were made including color, texture, and the visible presence of sludge residue. After sampling, the holes were backfilled with the remaining soil and appropriately identified for surveying. A summary of the soil samples collected is presented in Table 6.



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**Table 6. Summary of Surface Soil Samples** 

	San	nple No.	•		Sample Date	Sample Time	Sample Type	Sample Interval Depth (bgs)	Sample Location Description
DF09	SS	0001	0	0000	1/27/2005	8:30	Discrete	0-3 inches	Collected at DF09 V01 PAP001
DF09	SS	0001	0	0003	1/27/2005	8:40	Discrete	3-6 Inches	
DF09	SS	0002	0	0000	1/27/2005	8:25	Discrete	0-3 inches	SW ¼ of Field 9
DF09	SS	0002	0	0003	1/27/2005	8:30	Discrete	3-6 Inches	
DF09	SS	0003	0	0000	1/27/2005	8:55	Discrete	0-3 inches	North central part of Field 9
DF09	SS	0003	0	0003	1/27/2005	9:00	Discrete	3-6 Inches	
DF09	SS	0004	0	0000	1/27/2005	8:00	Discrete	0-3 inches	Collected at DF09 V02 RCP001
DF09	SS	0004	0	0003	1/27/2005	8:05	Discrete	3-6 Inches	
DF09	SS	0005	0	0000	1/27/2005	8:30	Discrete	0-3 inches	SE ¼ of Field 9
DF09	SS	0005	0	0003	1/27/2005	8:35	Discrete	3-6 Inches	
DF06	SS	0001	0	0000	27-Jan-05	9:35	Discrete	0-3 inches	NE portion of Field 6
DF06	SS	0001	0	0003	27-Jan-05	9:45	Discrete	3-6 Inches	
DF06	SS	0002	0	0000	27-Jan-05	9:45	Discrete	0-3 inches	Collected at DF06 V01 RCP001
DF06	SS	0002	0	0003	27-Jan-05	9:55	Discrete	3-6 Inches	
DF06	SS	0003	0	0000	27-Jan-05	9:45	Discrete	0-3 inches	In central area in vicinity of trap line
DF06	SS	0003	0	0003	27-Jan-05	9:50	Discrete	3-6 Inches	
DF06	SS	0004	0	0000	27-Jan-05	10:10	Discrete	0-3 inches	Collected at DF06 V02 SSP001
DF06	SS	0004	0	0003	27-Jan-05	10:15	Discrete	3-6 Inches	
DF06	SS	0005	0	0000	27-Jan-05	10:25	Discrete	0-3 inches	South end of Field 6
DF06	SS	0005	0	0003	27-Jan-05	10:35	Discrete	3-6 Inches	
DF8b	SS	0001	0	0000	27-Jan-05	11:25	Discrete	0-3 inches	Collected at DF8b V01 UGP001
DF8b	SS	0001	0	0003	27-Jan-05	11:35	Discrete	3-6 Inches	
DF8b	SS	0002	0	0000	27-Jan-05	11:15	Discrete	0-3 inches	Collected at DF8b V02 PAP001
DF8b	SS	0002	0	0003	27-Jan-05	11:25	Discrete	3-6 Inches	
DF8b	SS	0003	0	0000	27-Jan-05	11:45	Discrete	0-3 inches	Center of Field 8b
DF8b	SS	0003	0	0003	27-Jan-05	11:55	Discrete	3-6 Inches	
DF8b	SS	0004	0	0000	27-Jan-05	10:20	Discrete	0-3 inches	SE ¼ of Field 8b



**Table 6. Summary of Surface Soil Samples (continued)** 

	San	nple No.	•		Sample Date	Sample Time	Sample Type	Sample Interval Depth (bgs)	Sample Location Description
DF8b	SS	0004	0	0003	27-Jan-05	11:25	Discrete	3-6 Inches	
DF8b	SS	0005	0	0000	27-Jan-05	11:35	Discrete	0-3 inches	SW ¼ of Field 8b
DF8b	SS	0005	0	0003	27-Jan-05	11:40	Discrete	3-6 Inches	
DF14	SS	0001	0	0000	27-Jan-05	13:55	Discrete	0-3 inches	SE portion of Field 14
DF14	SS	0001	0	0003	27-Jan-05	14:05	Discrete	3-6 Inches	
DF14	SS	0002	0	0000	27-Jan-05	14:30	Discrete	0-3 inches	East central portion of Field 14
DF14	SS	0002	0	0003	27-Jan-05	14:35	Discrete	3-6 Inches	
DF14	SS	0003	0	0000	27-Jan-05	14:10	Discrete	0-3 inches	Collected at DF14 V01 PAP001
DF14	SS	0003	0	0003	27-Jan-05	14:15	Discrete	3-6 Inches	
DF14	SS	0004	0	0000	27-Jan-05	14:30	Discrete	0-3 inches	Collected at DF14 V02 SSP001
DF14	SS	0004	0	0003	27-Jan-05	14:40	Discrete	3-6 Inches	
DF14	SS	0005	0	0000	27-Jan-05	14:00	Discrete	0-3 inches	Collected in NW portion of Field 14
DF14	SS	0005	0	0003	27-Jan-05	14:10	Discrete	3-6 Inches	
DBKG	SS	0001	0	0000	27-Jan-05	15:30	Discrete	0-3 inches	Collected at DBKG V01 RCP001
DBKG	SS	0001	0	0003	27-Jan-05	15:40	Discrete	3-6 Inches	
DBKG	SS	0002	0	0000	27-Jan-05	15:55	Discrete	0-3 inches	Center west portion of easement
DBKG	SS	0002	0	0003	27-Jan-05	16:05	Discrete	3-6 Inches	
DBKG	SS	0003	0	0000	27-Jan-05	15:45	Discrete	0-3 inches	Collected at DBKG V01 AVP001
DBKG	SS	0003	0	0003	27-Jan-05	15:50	Discrete	3-6 Inches	
DF09	SS	0003	2	0000	27-Jan-05	8:48	QA/QC	na	Rinsate Blank
DF8b	SS	0004	2	0000	27-Jan-05	10:50	QA/QC	na	Rinsate Blank



## **LOI Boring Investigation**

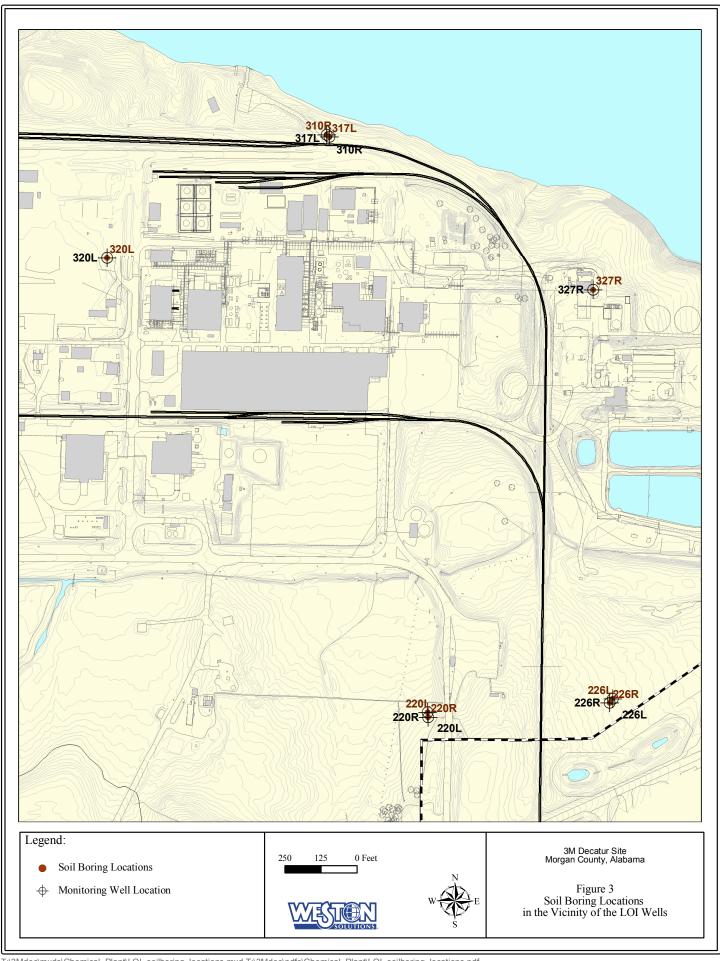
Eight existing monitoring wells at the 3M Decatur facility are designated under a Letter of Intent (LOI) for semiannual groundwater monitoring for PFOA. The wells are identified as 220R, 220L, 226R, 226L, 310R, 317L, 320L, and 327R. The well locations are indicated in Figure 3. In accordance with the approved work plan, an exploratory soil boring was constructed in the vicinity of each LOI well to collect surface and subsurface samples for logging and analysis.

The soil borings were constructed using three-inch inner diameter hollow stem augers. Soil samples were collected continuously from each boring using split-barrel soil samplers to record geologic data and to provide media for analytical testing. Soil samples were collected from the 0 to 6-inch, 6 to 12-inch, 2.0 to 2.5-foot, 5.0 to 5.5-foot intervals, and from the depth of the local water table. The soil boring construction data are presented in Table 7. A summary of the soil samples collected from the soil borings is presented in Table 8.

Following completion of the borings, the augers were removed and the borings were abandoned using a cement grout slurry and tremie pipe pumping techniques. The locations were then identified for surveying.

#### **Ancillary Parameter Analytical Data**

Analytical data on total organic carbon (TOC) concentrations in soils and total dissolved solids (TDS) and total suspended solids (TSS) concentrations in groundwater was received from the Severn Trent Laboratory (STL) during the period between December 25, 2004 and March 25, 2004. The soil TOC data is summarized in Table 9 and the STL TOC analytical data packages are provided in Appendix C. Soil sieve grain size data are summarized in Table 10 and the data package with grain size distribution figures is provided in Appendix D. The groundwater TDS and TSS data is summarized in Table 11 and the STL TDS and TSS analytical data package is provided in Appendix E.



 $\label{lem:continuous} T:\label{lem:continuous} T:\label{lem:continuous} T:\label{lem:continuous} T:\label{lem:continuous} Addec\mbox{\chemical\_Plant\LOI\_soilboring\_locations.mxd} T:\label{lem:continuous} T:\label{lem:c$ 



**Table 7. Summary of LOI Soil Boring Construction Data** 

LOI Well	Depth to	Total Boring	Sample Depth for Water
No.	Water (ftoc)	Depth (fbgs)	Table Sample (fbgs)
220R	17	18	17-18
220L	7	10	7-8
226R	19	22	18-19
226L	16	20	17-18
310R	38	40	37-38
317L	29	32	29-30
320L	30	32	29-30
327R	15	16	15-16
fbgs: feet below	ground surface fto	c: feet below top-of-casi	ng



**Table 8. Summary of LOI Boring Soil Samples** 

Clie	nt Sam	ple Ident	tifica	tion	Sample Date	Sample Time	Sample Type	Sample Depth Interval (fbgs)
DLOI	SB	220R	0	0000	11-Jan-05	12:15	Discrete	0-3 inches
DLOI	SB	220R	0	0005	11-Jan-05	12:25	Discrete	6-12 inches
DLOI	SB	220R	0	0020	11-Jan-05	13:45	Discrete	2-2.5
DLOI	SB	220R	0	0050	11-Jan-05	13:50	Discrete	5-6
DLOI	SB	220R	0	0170	11-Jan-05	14:45	Discrete	17-18
DLOI	SB	220L	0	0000	11-Jan-05	12:45	Discrete	0-3 inches
DLOI	SB	220L	0	0005	11-Jan-05	13:00	Discrete	6-12 inches
DLOI	SB	220L	0	0020	11-Jan-05	15:15	Discrete	2-2.5
DLOI	SB	220L	0	0050	11-Jan-05	15:25	Discrete	5-6
DLOI	SB	220L	0	0070	11-Jan-05	15:40	Discrete	7-8
DLOI	SB	226R	0	0000	11-Jan-05	8:00	Discrete	0-3 inches
DLOI	SB	226R	0	0005	11-Jan-05	8:10	Discrete	6-12 inches
DLOI	SB	226R	0	0020	11-Jan-05	8:15	Discrete	2-2.5
DLOI	SB	226R	0	0050	11-Jan-05	8:20	Discrete	5-6
DLOI	SB	226R	0	0180	11-Jan-05	9:10	Discrete	18-19
DLOI	SB	226L	0	0000	11-Jan-05	10:05	Discrete	0-3 inches
DLOI	SB	226L	0	0005	11-Jan-05	10:20	Discrete	6-12 inches
DLOI	SB	226L	0	0020	11-Jan-05	9:45	Discrete	2-2.5
DLOI	SB	226L	0	0050	11-Jan-05	9:50	Discrete	5-6
DLOI	SB	226L	0	0170	11-Jan-05	10:40	Discrete	17-18
DLOI	SB	310R	0	0000	12-Jan-05	13:55	Discrete	0-3 inches
DLOI	SB	310R	0	0005	12-Jan-05	14:50	Discrete	6-12 inches
DLOI	SB	310R	0	0020	12-Jan-05	8:20	Discrete	2-2.5
DLOI	SB	310R	0	0050	12-Jan-05	14:25	Discrete	5-6
DLOI	SB	310R	0	0370	12-Jan-05	16:35	Discrete	37-38
DLOI	SB	317L	0	0000	13-Jan-05	7:35	Discrete	0-3 inches
DLOI	SB	317L	0	0005	13-Jan-05	7:45	Discrete	6-12 inches
DLOI	SB	317L	0	0020	13-Jan-05	7:55	Discrete	2-2.5
DLOI	SB	317L	0	0050	13-Jan-05	10:25	Discrete	5-6
DLOI	SB	317L	2	0050	13-Jan-05	10:10	QA/QC	na
DLOI	SB	317L	0	0290	13-Jan-05	10:10	Discrete	29-30
DLOI	SB	320L	0	0000	13-Jan-05	13:40	Discrete	0-3 inches
DLOI	SB	320L	0	0005	13-Jan-05	13:45	Discrete	6-12 inches
DLOI	SB	320L	0	0020	13-Jan-05	13:50	Discrete	2-2.5
DLOI	SB	320L	0	0050	13-Jan-05	14:35	Discrete	5-6
DLOI	SB	320L	0	0170	13-Jan-05	15:30	Discrete	17-18
DLOI	SB	320L	0	0290	13-Jan-05	16:10	Discrete	29-30
DLOI	SB	320L	2	0290	13-Jan-05	13:45	QA/QC	na
DLOI	SB	327R	0	0000	14-Jan-04	8:15	Discrete	0-3 inches
DLOI	SB	327R	0	0005	14-Jan-04	8:25	Discrete	6-12 inches
DLOI	SB	327R	0	0020	14-Jan-04	8:35	Discrete	2-2.5
DLOI	SB	327R	0	0050	14-Jan-04	9:10	Discrete	5-6
DLOI	SB	327R	0	0150	14-Jan-04	10:00	Discrete	15-16



**Table 9. Soil Total Organic Carbon (TOC)** 

Sample ID	Total Organic Carbon (TOC) in mg/kg			
DBKG-SB-001B-0-0000	25000			
DBKG-SB-001B-0-0005	11000			
DBKG-SB-001B-0-0010	2500			
DBKG-SB-001B-0-0020	2100			
DBKG-SB-001B-0-0050	1400			
DBKG-SB-001B-0-0150	500			
DBKG-SB-001B-0-0200	570			
DBKG-SB-001B-0-0230	450			
DBKG-SBC-001B-0-0000	5700			
DBKG-SBC-001B-0-0050	670			
DBKG-SBC-001B-0-0100	780			
DBKG-SS-0001-0-0000	28000			
DBKG-SS-0001-0-0003	13000			
DBKG-SS-0002-0-0000	8200			
DBKG-SS-0002-0-0003	2900			
DBKG-SS-0003-0-0000	18000			
DBKG-SS-0003-0-0003	7700			
DF06-SS-0001-0-0000	4200			
DF06-SS-0001-0-0003	4100			
DF06-SS-0002-0-0000	20000			
DF06-SS-0002-0-0003	11000			
DF06-SS-0003-0-0000	10000			
DF06-SS-0003-0-0003	9100			
DF06-SS-0004-0-0000	8600			
DF06-SS-0004-0-0003	11000			
DF06-SS-0005-0-0000	9500			
DF06-SS-0005-0-0003	14000			
DF09-SS-0001-0-0000	11000			
DF09-SS-0001-0-0003	7000			
DF09-SS-0002-0-0000	7200			
DF09-SS-0002-0-0003	8000			
DF09-SS-0003-0-0000	14000			
DF09-SS-0003-0-0003	8800			
DF09-SS-0004-0-0000	20000			
DF09-SS-0004-0-0003	10000			
DF09-SS-0005-0-0000	17000			
DF09-SS-0005-0-0003	11000			
DF14-SS-0001-0-0000	9100			
DF14-SS-0001-0-0003	7100			
DF14-SS-0002-0-0000	6800			
DF14-SS-0002-0-0003	3200			
DF14-SS-0003-0-0000	6300			
DF14-SS-0003-0-0003	5500			
DF14-SS-0004-0-0000	12000			
DF14-SS-0004-0-0003	5100			
DF14-SS-0005-0-0000	6700			
DF14-SS-0005-0-0003	6800			
DF8b-SS-0001-0-0000	30000			
DF8b-SS-0001-0-0003	18000			
0000-00-0001-0-0003	10000			



**Table 9. Soil Total Organic Carbon (TOC)** 

Sample ID	Total Organic Carbon (TOC) in mg/kg
DF8b-SS-0002-0-0000	28000
DF8b-SS-0002-0-0003	29000
DF8b-SS-0003-0-0000	27000
DF8b-SS-0003-0-0003	14000
DF8b-SS-0004-0-0000	18000
DF8b-SS-0004-0-0003	9000
DF8b-SS-0005-0-0000	20000
DF8b-SS-0005-0-0003	7400
DLOI-SB-117L-0-0000	16000
DLOI-SB-117L-0-0005	3300
DLOI-SB-117L-0-0020	910
DLOI-SB-117L-0-0290	390
DLOI-SB-117L-2-0050	390
DLOI-SB-220L-0-0000	27000
DLOI-SB-220L-0-0005	4600
DLOI-SB-220L-0-0020	1800
DLOI-SB-220L-0-0050	1900
DLOI-SB-220L-0-0070	1100
DLOI-SB-220R-0-0000	24000
DLOI-SB-220R-0-0005	5800
DLOI-SB-220R-0-0020	5000
DLOI-SB-220R-0-0050	1100
DLOI-SB-220R-0-0170	600
DLOI-SB-226L-0-0000	32000
DLOI-SB-226L-0-0005	5500
DLOI-SB-226L-0-0020	4100
DLOI-SB-226L-0-0050	1500
DLOI-SB-226L-0-0170	1100
DLOI-SB-226R-0-0000	20000
DLOI-SB-226R-0-0005	5200
DLOI-SB-226R-0-0020	2000
DLOI-SB-226R-0-0050	1600
DLOI-SB-226R-0-0180	750
DLOI-SB-310R-0-0000	13000
DLOI-SB-310R-0-0005	2200
DLOI-SB-310R-0-0020	1500
DLOI-SB-310R-0-0050	660
DLOI-SB-310R-0-0370	350
DLOI-SB-320L-0-0000	27000
DLOI-SB-320L-0-0005	2700
DLOI-SB-320L-0-0020	1300
DLOI-SB-320L-0-0050	940
DLOI-SB-320L-0-0170	1600
DLOI-SB-320L-0-0290	430
DLOI-SB-327R-0-0000	17000
DLOI-SB-327R-0-0005	8300
DLOI-SB-327R-0-0020	2600
DLOI-SB-327R-0-0050	2200



**Table 10. Soil Grain Size Distribution** 

Sample ID	% Gravel	% Sand	% Silt and Clay	% Silt	% Clay
DF06-SB-133B-0-0000	0	44.1	55.9	31.9	24
DF06-SB-133B-0-0005	0	42.9	57.1	27.2	29.9
DF06-SB-133B-0-0010	0	32.2	67.8	30.8	37
DF06-SB-133B-0-0020	0	32.8	67.2	30.2	37
DF06-SB-132R-0-0000	0	45.3	54.7	26.7	28
DF06-SB-132R-0-0005	0.1	33	66.8	32.8	34
DF06-SB-132R-0-0010	0	26.8	73.2	34.2	39
DF06-SB-132R-0-0020	0	32.3	67.7	23.7	44
DF06-SB-132R-0-0050	0	33.1	66.9	22.9	44
DF06-SB-132R-0-0045	0	31.9	68.1	21.1	47
DF06-SB-133R-0-0000	0	35.1	65	35	30
DF06-SB-133R-0-0005	0.6	37.2	62.2	na	na
DF06-SB-133R-0-0010	0	37.2	62.7	23.7	39
DF06-SB-133R-0-0020	0	35.8	64.3	27.3	37

na = not analyzed due to insufficient volume



# **Table 11. Groundwater TDS and TSS Concentrations**

Sample ID	Total Dissolved Solids (TDS) in mg/L	Total Suspended Solids (TSS) in mg/L
DF09-GW-130L-0-04012	130	33
DF09-GW-131L-0-04012	450	9.0
DF06-GW-132L-0-04012	550	14
DF06-GW-133L-0-04012	210	29
DF8b-GW-134L-0-04012	220	< 5.0



#### Range Finding Study

Grab soil samples were collected by WESTON from selected former sludge incorporation area fields at the 3M Decatur property for the purpose of establishing the range of PFOA concentrations and the effectiveness of the PFOA analytical method for the sludge/soil matrix. These samples were collected on August 12, 2004 and shipped to the 3M Environmental Laboratory in St. Paul, MN. These samples were subsequently shipped to the Exygen Research laboratory (Exygen) for PFOA analyses. Figure 4 shows the five (5) grab sampling locations south of the manufacturing area in the former sludge incorporation Fields 6, 8a, 8b and 9 and in Field 14 (the control field that did not receive any sludge applications). A background location in the northwest portion of the property along a power line easement was also sampled.

Soil samples were collected from 2 depths at each of the six locations for a total of 12 samples as follows:

- Surficial soil typically 6-12" below ground surface (bgs) and
- Shallow soil typically 18-24" bgs

The surficial sample was collected using a stainless steel bucket auger after removing the top 6" of overburden material. After collecting the surficial soil sample, additional soil was removed in the bore hole and the 18"-24" shallow sample was collected using the bucket auger.

In addition to the soil samples, two samples of sludge / soil mixtures were collected from a depth of approximately 8-10" bgs from the sampling locations S-F6 and S-F8b. The actual sampling points were determined based on visual observations of the presence of sludge.

A summary of the analytical results of the range-finding samples is shown on Table 12. The detailed analytical data report from Exygen Research laboratory is included in Appendix F.

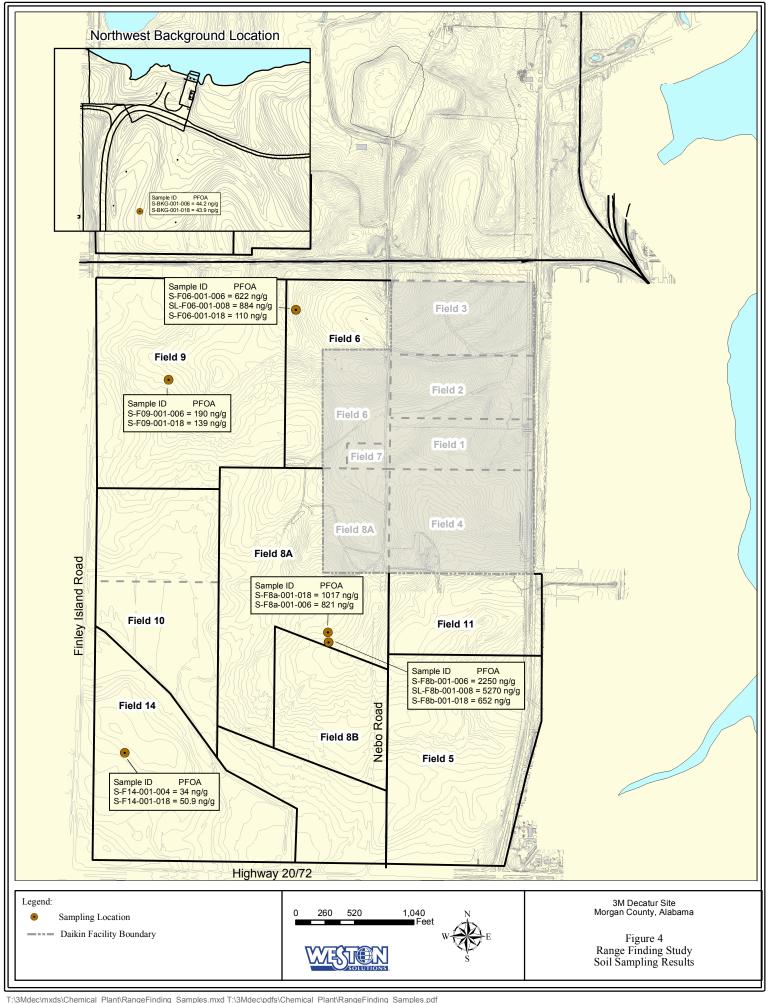




Table 12. Soil Range Finding PFOA Data

	Sampling Depth					
Field Sample ID	Location	Sample Media	(inches bgs)	Sample Date	PFOA (ng/g)	
S-F06-001-006	Field 6	Soil	6 - 12	12-Aug-04	622	
S-F06-001-018	Field 6	Soil	18 - 24	12-Aug-04	110	
SL-F06-001-008	Field 6	Soil / Sludge	8 - 10	12-Aug-04	884	
S-F8a-001-006	Field 8a	Soil	6 - 12	12-Aug-04	821	
S-F8a-001-018	Field 8a	Soil	18 - 24	12-Aug-04	1017	
S-F8b-001-006	Field 8b	Soil	6 - 12	12-Aug-04	2250	
S-F8b-001-018	Field 8b	Soil	18 - 24	12-Aug-04	652	
SL-F8b-001-008	Field 8b	Soil / Sludge	8 - 10	12-Aug-04	5270	
S-F09-001-006	Field 9	Soil	6 - 12	12-Aug-04	190	
S-F09-001-018	Field 10	Soil	18 - 24	12-Aug-04	139	
S-F14-001-004	Field 14	Soil	4 - 12	12-Aug-04	34.0	
S-F14-001-018	Field 14	Soil	18 - 24	12-Aug-04	50.9	
S-BKG-001-006	NW Corner Background Location	Soil	6 - 12	12-Aug-04	44.2	
S-BKG-001-018	NW Corner Background Location	Soil	18 - 24	12-Aug-04	43.9	