APPENDIX D

WELL DEVELOPMENT LOGS

Groundwater Well Development Log

Fort McClellan , Alabama

DTA 9/25/02

ject Number:
m Completed by: R. Coins / Shaw
ll Developed by (person/firm): R. Coins / C. Wilso / Shaw

Parcel No.: ~~HR~~ DTA 207
Well No.: ~~HR~~ 207-MW01
Date started: 9/16/02

Monitoring Well Information

elopment Method: Surge + Purge
elopment Equipment: Whale Pump, Bailer, PID, Turbidity, ~~pH~~ Horiba U-10
ing Diameter: 2 in

Beginning Measurments
Depth to Water (ft): 12.52' bTOC
Total depth of Well (ft): 22.39' bTOC

· bTOC - below top of casing, gpm - gal per minutes, bTOC - below Top of pump

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
:50	ϕ	12.52	6.72	0.566	75	2.71	22.2	pt. cloudy	Bailed
:56	1.25	13.55							Stopped Bailing
-:10	1.25	13.30	7.43	0.714	272	1.56	~~23.8~~ 23.4 (RS) 9/16/02	pt. cloudy	pump - 0.5' from bottom rate - 0.1 gpm
-:20	2.75	14.65	7.31	0.622	194	1.60	~~24.4~~ 23.8	"	pump - 1.5' from bottom
-:35	4.25	15.35	7.09	0.639	195	2.70	~~23.8~~ 24.4	"	pump = 2.5' from bottom
:50	5.75	16.05	7.23	0.624	88	2.52	~~24.4~~ 23.8	"	pump = 3.5' from bottom
:05	7.25	16.98	7.17	0.591	30	1.91	~~24.2~~ 24.4	"	"

- DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

39 - 12.52 = 9.87 x 0.163 = 1.60 x 5 = 8 gal + 8 gal = 16 gal

rec'd

Parcel No.: HR-207
Well ID: HR-207-MW01
Date: 9/16/02

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
13:20	8.25	17.80	7.19	0.602	21	1.96	24.2	clear	pump 3.5' from bottom
13:35	10.25	18.80	7.33	0.630	38	1.65	24.1	"	pump - lowered 3.0'
13:50	11.75	19.86	7.31	0.653	177	1.63	23.6	pt. cloudy	pump - lowered 0.5'
14:05	13.25	20.24	7.28	0.681	92	1.15	24.4	"	rate - 0.05 gpm
14:20	14.00	20.63	7.29	0.698	79	1.58	25.0	"	"
14:30	14.50	*BTOP							D
~~09:50~~ 0845	14.50	13.40	6.75	0.231	513	9.2	21.0	cloudy	9/17/02 pump @ 12', rate-0.1 gpm
~~10:05~~ 0900	15.25	14.56	7.23	0.634	10.7	3.46	22.2	clear	pump @ 16', rate-0.05 gpm
~~10:20~~ 0905	15.50	14.70	7.20	0.637	19.0	2.98	22.8	"	rate-0.05 gpm
~~10:35~~ 0910	15.75	14.85	7.21	0.638	14.8	3.47	23.0	"	"
0915 :	16.0	15.0	7.22	0.637	8.2	3.33	23.3	clear	"
:									collected photosample in 1L poly bottle.
:									
:									

Final Entry
A. Brown 9/17/02

Groundwater Well Development Log

Fort McClellan , Alabama

9/23/02 DTA

Project Number:
Form Completed by: R. Coins / Shaw E & I
Well Developed by (person/firm): R. Coins Shaw / K. Wilson-Shaw

Parcel No.: ~~HR-2072~~ DTA-2072 9/23/02
Well No.: ~~HR-2072~~ DTA-2072 9/23/02
Date started: 9/17/02

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: Whale Pump, Horiba U-10, Orion Turbidity Meter, PID, Water Meter
Casing Diameter: 2 in

Beginning Measurments
Depth to Water (ft): 13.79 ' bTOC ☆
Total depth of Well (ft): 21.82 ' bTOC

☆ bTOC – below top of casing, gpm – gallons per minute.

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
09:50	ϕ	13.79	7.79	0.012	999+	4.86	28.6	muddy (black)	pump-21', rate-0.1gpm ☆
10:05	1.5	15.05	6.81	0.627	189	2.82	22.7	cloudy (gray)	pump-20'
10:20	3.0	16.07	6.79	0.659	172	1.37	23.3	"	pump-19'
10:32	4.5	17.05	6.69	0.668	162	3.81	23.3	"	pump-19'
10:50	6.0	18.26	6.91	0.664	103	2.83	23.1	"	pump-20'
11:05	7.5	19.26	6.74	0.668	200	3.07	23.6	"	pump-21'
11:20	9.0								well is dry

TD – DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

21.82 – 13.79 = 8.63 x 0.163 = 1.3 x 5 = 6.5 + 5 gals. = 11.5 gals

QC'd 9/23/02

Parcel No.: 207
Well ID: HR-207-MW02
Date: 9/18/02

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
10 : 25	9	15.52	6.85	.584	255	2.51	21.5	DK. Gray	PR .0625 pump @18
10 : 40	9.9	17.25	6.85	.529	149	4.04	23	Gray	" pump @ 19
10 : 55	10.8	17.97	6.86	.536	104	3.80	23.6	"	" "
11 : 10	11.7	18.74	6.95	.554	29	3.77	23.7	CLEAR	" pump @20
11 : 25	12.6	19.31	6.87	.535	397	2.59	24.5	Gray	" pump @21
11 : 40	13.5	WELL	WEAT	DRY	2nd	TIME.			
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:									

9/18/02

DTA 9/25/02

Parcel No.: HR-207
Well ID: HR-207-mw02
Date: 9/19/02

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
14:30	13.5	15.52	7.42	0.564	191	4.40	23.3	cloudy (grey)	9/19/02 pump -7ft from bottom, rate-0.0625 gpm
14:45	14.44	16.85	7.33	0.564	215	4.57	24.5	"	" "
15:00	15.38	17.56	7.25	0.583	179	4.62	25.1	cloudy (grey)	pump -3ft from bottom, rate-0.0625 gpm
15:15	16.32	18.15	6.97	0.590	280	4.26	25.8	cloudy (grey)	pump -2ft from bottom, rate-0.0625 gpm
15:30	17.25	18.87	7.10	0.576	412	4.30	26.1	cloudy (grey)	pump-0.5ft from bottom rate-0.5 gpm
15:32	18.25								Well dry 3rd time!
08:45	~~16.53~~ 19.25	16.53							Collected photo sample w/ bailer. Turb-20NTU
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Groundwater Well Development Log

Fort McClellan , Alabama

DTA @ 9/25/02

ect Number:
n Completed by: R. Gooms / Shaw
l Developed by (person/firm): R. Gooms / Shaw

Parcel No.: ~~HR~~ 207
Well No.: DTA ~~HR~~ 202-MW03
Date started: 9/16/02

Monitoring Well Information

elopment Method: Surge and Purge
elopment Equipment: Whale Pump, bailer, PID, Turbidity Meter, Horiba-20
ng Diameter: 2in

Beginning Measurments
Depth to Water (ft): 19.65' bTOC
Total depth of Well (ft): 19.95' bTOC

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
1:40	—	19.65	—	—	—	—	—	—	well is dry
:50	—	19.79	—	—	—	—	—	—	well 9/17/02 is dry
:50	—	19.67	—	—	—	—	—	—	Well is dry 9/18/02
:									
:									
:									
:									

– DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

9/19/02

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Lee FLIPPEN / Reggie Goins
Well Developed by (person/firm): L. FLIPPEN / R. Goins / The Shaw Group (Formerly The IT Group) LF 5/29/02

Parcel No.: PR 211 Station 6
Well No.: MW 01
Date started: 5-22-02

Monitoring Well Information

Development Method: surgetpurge
Development Equipment: whale pumps, Bailers, Horiba u-10, AquaTast II
Casing Diameter: 2" .163

Beginning Measurments
Depth to Water (ft): 11.65' TOC
Total depth of Well (ft): 22.95' TOC

PID 0.3 BZ 0.0 screen 10'-20'

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
									– Surged well Screen –
14:20	Ø	11.65	6.47	1.34	999+	0.89	23.8	BLACK	Depth 21 ft. PR .30 gpm
14:35	4.5	15.43	6.18	1.66	999+	1.60	20.6	charcoal	Depth 21 ft. PR .3 gpm
14:50	9.0	17.23	6.18	1.92	999+	1.95	20.0	charcoal	Depth 21 ft. PR .2 gpm
15:05	12.0 LF 5-22-02 12.0	16.60	6.17	1.95	999+	1.79	21.8	charcoal	Depth 21 ft. PR .2 gpm
15:20	15.0	16.60	6.20	1.97	342	2.38	21.2	cloudy	Depth 21 ft. PR .2 gpm
15:35	18.0	16.55	6.19	1.94	159	2.42	21.8	cloudy	Depth 21 ft. PR .2 gpm
15:50	21.0	16.3	6.21	1.93	214	2.47	21.9	cloudy	Depth 21 ft. PR .2 gpm

TD − DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

22.95 - 11.65 = 11.3 x .163 = 1.84 x 5 = 9.2 + 2 = 11.2

QC'd [illegible] 5/28/02

Parcel No.: PR211
Well ID: MW01
Date: 5-22-02

5-23-02 PID 0.4 BZ 0.0

Lee FLIPPEN

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
16:05	24.75	18.10	6.17	1.92	999+	1.80	20.2	Charcoal	Depth 21 ft. Purge Rate
16:20	28.5	18.87	6.25	1.87	999+	3.36	20.2	Charcoal	—Stopped Parameters For the Day— ~~[illegible]~~ 5-22-02 5-23-02
5-23-02 11:00	28.5	11.58	6.26	1.88	999+	2.02	22.7	Black	Depth 22 ft. Purge Rate .25gpm
11:15	32.25	15.46	6.28	1.87	439	4.71	21.0	Charcoal	Depth 20 ft. PR .2gpm
11:30	35.25	16.22	6.27	1.92	232	3.42	21.6	Blackish	Depth 18 ft. PR .2gpm
11:45	38.25	16.66	6.25	1.94	817	2.58	21.8	Blackish	Depth 18 ft. PR .1gpm
12:00	39.75	15.58	6.23	1.91	999+	1.41	25.6 ~~25.6~~ 5-23-02	Charcoal	Depth 16 ft. PR .1gpm
12:15	41.25	15.33	6.20	1.95	999+	1.82	31.2	Charcoal Black	Depth 22 ft. PR .3gpm
12:30	45.75	19.88	6.26	1.92	999+	2.12	23.2	Black	Depth 22 ft PR .1gpm
12:45	47.25	~~[illegible]~~ 18.16 5-23-02	6.35	1.81	999+	2.90	23.7	Black	Depth 22 ft PR .1gpm
4 hrs 13:00	48.75	18.73	6.21	1.93	999+	4.26	23.8	Grey	Depth 20 ft PR .1gpm
13:15	50.25	17.93	6.16	1.91	999+	2.47	22.1	Grey/Black	Depth 20 ft PR .1gpm

Parcel No.: PR 211
Well ID: MW01
Date: 5-23-02

Lee FLIPPEN

	Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
	13:30	51.75	18.68	6.13	1.91	999+	1.69	21.5	charcoal	Depth 20 ft, Purge Rate .1 gpm
	13:45	53.25	18.82	6.17	1.92	361	2.41	24.1	Grey	Depth 20 ft., PR .1 gpm
5hrs	14:00	54.75	17.23	6.23	1.94	490	3.36	25.5	Grey	Depth 20 ft., PR .1 gpm
	14:15	56.25	16.67	6.24	1.94	324	3.33	27.6	Grey	Depth 20 ft., PR .1 gpm
	14:30	57.75	16.56	6.24	1.91	69	4.51	25.7	cloudy	Depth 20 ft., PR .1 gpm
	14:45	59.25	16.42	6.25	1.91	41	4.17	26.2	cloudy	Depth 20 ft., PR .1 gpm
6hrs	15:00	60.75	16.31	6.25	1.91	84	3.55	25.7	cloudy	Depth 20 ft., PR .1 gpm
	15:15	62.25	15.97	6.22	1.90	65	2.63	26.4	cloudy	Depth 20 ft., PR .1 gpm
	15:30	63.75	15.23	6.22	1.90	65	2.51	28.2	cloudy	Depth 20 ft PR .1 gpm
	15:45	65.25	15.07	6.22	1.90	37	2.62	26.3	cloudy	Depth 20 ft PR .1 gpm
7hrs	16:00	66.75	15.01	6.21	1.90	18.3	2.45	25.1	clear	- Stopped parameters - ~~Lee Flippen~~ 5-23-02
	5-24-02 ~~08:50~~	~~66.75~~	~~15.67~~	~~5.93~~	(Wrong well - Starts on next page)			~~17.8~~		

Parcel No.: PR211
Well ID: MW01
Date: 5-24-02

5-24-02 PID 0.0 DTW 13.53', WC = 9.42' Lee FLIPPEN

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
10:45	66.75	13.53	6.24	1.85	604	4.12	22.9	charcoal	Depth 15', PR .10 gpm
11:00	68.25	14.03	6.24	1.90	487	3.55	27.9	charcoal	Depth 15' PR .10 gpm
11:15	69.75	13.99	6.24	1.91	192	2.54	30.7	cloudy	Depth 15' PR .10 gpm
11:30	71.25	13.87	6.25	1.90	153	2.26	32.8	cloudy	Depth 15' PR .10 gpm
11:45	72.75	13.96	6.25	1.90	97	2.24	33.0	cloudy	Depth 15' PR .10 gpm
8 hrs 12:00	74.25	13.99	6.25	1.91	106	2.36	33.3	cloudy	-stopped Parameters- -Took 1 l H2O Photo sample. — Well Development Completed —
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5-24-02

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number:
Form Completed by: R. Gainer
Well Developed by (person/firm): R. Gainer / Shaw-E&E

Parcel No.: PR-211
Well No.: PR-211-MW02
Date started: 5/29/02

Monitoring Well Information

Development Method: Surge & Purge
Development Equipment: Whale Pump, Horiba U-22, Orion Turbidity Meter, Water Indicator
Casing Diameter: 2 in

Beginning Measurments
Depth to Water (ft): 7.92' bTOC
Total depth of Well (ft): 19.02' bTOC

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
12:00	Ø	7.92	6.74	0.712	999+	3.12	18.2	muddy (black)	pump-18.52' bTOC, PR 0.17 gpm
12:15	2.55	9.52	7.20	0.676	999+	2.23	19.0	cloudy (gray)	pump-18.52' bTOC, PR-0.20 gpm
12:30	5.55	9.67	7.01	0.720	549	2.60	17.9	"	pump-18.52' bTOC, PR-0.25 gpm
12:45	9.45	9.59	7.07	0.709	497	2.93	19.2	"	pump-18.52' bTOC, PR 0.38 gpm
12:55	13.25	—	rate	change	—	—			PR 0.42 gpm
13:00	15.35	11.75	7.01	0.719	999	3.13	19.0	cloudy (black)	pump-18.52' bTOC, PR-0.42 gpm
13:15	21.65	12.65	6.92	0.725	394	3.14	17.7	cloudy (gray)	" " "

TD − DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

19.02 − 7.92 = 11.10 x 0.163 (2" well) = 1.8 gal x 5 = 9.0 + 5 = 14 gal

ac'd Kathy 5/29/02

Parcel No.: PR-211
Well ID: PR-211-MW02
Date: 5/23/02
RG 5/29/02 ~~LEE FLIPPEN~~

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
13:25	25.85	—	—	rate	change	—	—	—	PR-0.39 gpm
13:30	31.55	12.70	6.87	0.738	545	2.92	17.1	cloudy (grey)	pump-19.52' bTOC PR-0.39 gpm
14:00	31.55	9.10	6.89	0.728	327	3.99	19.2	"	pump-18.52' bTOC PR-0.19 gpm
14:15	34.4	10.15	6.87	0.737	215	3.20	18.3	"	pump-17.52' bTOC PR-0.19 gpm
14:30	37.25	10.30	6.91	0.746	330	2.92	18.9	"	pump-16.52' bTOC PR-0.19 gpm
14:45	40.10	10.40	6.92	0.756	223	3.58	19.2	"	pump-16.52' bTOC PR-0.19 gpm
15:00	42.95	10.46	6.90	0.747	109	3.16	18.3	pt. cloudy (grey)	pump-15.52' bTOC PR-0.19 gpm
15:15	45.80	10.60	6.89	0.752	279	3.17	18.4	"	pump-14.52' bTOC PR-0.19 gpm
15:25	47.70	—	pump	problems	—	—	—	—	pump-14.52' bTOC
:		—	5/	28	/02	—	—		~~pump-14.5' bTOC~~ ~~rate-0.23 g/min~~ RG 5/28/02
10:20	47.70	9.6	6.44	0.767	999+	4.12	19.2	grey cloudy	pump-19.5' bTOC rate-0.23 g/min
10:35	51.15	10.1	6.29	0.752	663	3.97	18.2	"	pump-18.5' bTOC rate-0.23 g/min
10:50	54.6	10.6	7.08	0.760	206	2.77	18.9	"	pump-12.5' bTOC rate-0.21 g/min
11:05	57.75	10.75	7.33	0.766	69	3.85	19.0	pt. clear	pump-12.0' bTOC rate-0.18 g/min

Parcel No.: PR-211
Well ID: PR-211-MW05
Date: 5/28/02

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
11:20	60.55	10.91	7.14	0.764	20	3.27	18.7	clear	pump - 12 bar Rate - 0.187 g/min
11:25	61.49	10.98	7.03	0.763	"	4.00	18.9	"	"
11:30	62.42	11.05	7.11	0.764	10.3	3.87	18.9	"	"
11:35	63.35	11.11	7.08	0.766	10.0	3.76	18.7	"	"
11:40	64.28	11.22	7.15	0.765	9.6	3.80	18.8	"	"
:									Collected photo sample @ 1140 in 1L HDPE
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R. Doni 5/28/02
Field Entry

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Lee FLIPPEN
Well Developed by (person/firm): Lee FLIPPEN/ The Shaw Group

Parcel No.: PR 211
Well No.: MW03
Date started: 5-28-02

Monitoring Well Information

Development Method: surge + purge
Development Equipment: whale pumps, Horiba U-10, Aquafast II, Heron water indicator
Casing Diameter: 2" .163

Beginning Measurments
Depth to Water (ft): 4.53' TOC
Total depth of Well (ft): 25.93' mvd

PID 0.3 BZ 0.0, Screen 7'-22'

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
									-Surged well screen-
10:20	Ø	4.53	6.36	.680	999+	4.86	23.3	Brown	Depth 22', PR .5gpm
10:35	7.5	12.54	6.54	.656	999+	6.26	21.2	Brown	Depth 22', PR .5gpm
10:50	15.0	16.34	6.63	.638	999+	1.13	17.4	Brown	Depth 22', PR .5gpm
11:05	22.5	18.94	6.53	.616	999+	3.57	17.1	Brown	Depth 22', PR .5gpm
									-reached target Purge Volume-
11:20	30.0	16.80	6.56	.587	233	2.17	17.1	cloudy	Depth 22', PR .3gpm
11:35	34.5	13.82	6.57	.587	137	0.77	18.1	cloudy	Depth 22', PR .3gpm
11:50	39.0	11.88	6.58	.586	108	0.06	18.5	cloudy	Depth 22', PR .3gpm

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

25.93 - 4.53 = 21.4 x .163 = 3.49 x 5 = 17.44 + 10g = 27.44g

cc'd Kathy 5/30/02

Parcel No.: PR 211
Well ID: MW03
Date: 5-28-02

Lee FLIPPEN

	Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
	12:05	43.5	11.53	6.57	.587	55	0.09	19.2	cloudy	Depth 22', Purge Rate .30gpm
2hrs	12:20	48.0	11.38	6.59	.585	46	1.08	19.4	cloudy	Depth 22', PR .30gpm
	12:35	52.5	11.33	6.58	.586	53	1.03	19.5	cloudy	Depth 22', PR .30gpm
	12:50	57.0	11.05	6.58	.584	41	1.13	19.5	cloudy	Depth 22', PR .30gpm
	13:05	61.5	11.62	6.59	.586	54	2.26	20.0	cloudy	Depth 20', PR .4gpm
3hrs	13:20	67.5	11.99	6.59	.584	175	3.02	19.7	cloudy	Depth 18', PR .4gpm
	13:35	73.5	12.10	6.60	.591	75	3.26	19.5	cloudy	Depth 16' PR .4gpm
	13:50	79.5	12.19	6.57	.596	46	2.27	19.1	cloudy	Depth 14' PR .3gpm
	14:05	84.0	11.18	6.56	.580	32	LFS 5-28-00 6.26 8.26	19.3	cloudy	Depth 12' PR .3gpm
4hrs	14:20	88.5	10.61	6.55	.596	36	4.13	19.3	cloudy	Depth 12' PR .3gpm
	14:35	93.0	10.78	6.58	.592	29	2.36	19.7	clear	Depth 12' PR .3gpm
	14:50	97.5	10.55	6.59	.591	19	1.91	19.5	clear	Depth 11' PR .3gpm
	15:05	102.0	10.24	6.58	.596	277	2.14	19.3	cloudy	Depth 11' PR .3gpm
5hrs	15:20	106.5	9.62	6.58	.554	70	2.38	18.9	cloudy	Depth 10' PR .3gpm

Parcel No.: PR 211
Well ID: MW 03
Date: 5-28-02

5-29-02 PID 0.0, DTW 4.55', wc=21.38' Lee FLIPPEN

	Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
5½hrs	15:35	111.0	9.38	6.59	.593	48	2.67	19.4	cloudy	-stopped parameters- ~~[illegible]~~ 5-28-02
	5-29-02 09:20	111.0	4.55	7.38	.663	148	1.68	17.8	cloudy	5-29-02 Depth 12', Purge Rate .2gpm
	09:35	114.0	7.45	7.60	.633	854	1.27	18.3	cloudy	Depth 12', PR .2gpm
	09:50	117.0	7.77	7.64	.630	371	1.76	17.6	cloudy	Depth 12', PR .2gpm
6hrs	10:05	120.0	7.35	7.64	.630	233	1.26	18.5	cloudy	Depth 12', PR .2gpm
	10:20	123.0	7.03	7.66	.629	90	1.38	19.1	cloudy	Depth 12', PR .2gpm
	10:35	126.0	6.87	7.63	.629	51	1.01	19.5	cloudy	Depth 12', PR .2gpm
	10:50	129.0	8.22	7.71	.628	39	1.31	18.5	cloudy	Depth 12', PR .2gpm
7hrs	11:05	132.0	7.42	7.72	.633	12.7	1.35	18.9	clear	Depth 12', PR .2gpm
	11:20	135.0	7.32	7.64	.631	14.2	1.25	18.8	clear	Depth 12', PR .2gpm
	11:35	138.0	6.97	7.64	.633	11.4	1.31	19.2	clear	Depth 12', PR .2gpm
	11:50	141.0	8.02	7.65	.636	28.0	1.16	18.3	clear	Depth 12', PR .2gpm
8hrs	12:05	144.0	7.45	7.63	.635	7.5	1.44	19.2	clear	-Took 1l. H_2O Photo Sample- Depth 12', PR .2gpm
	12:20	147.0	7.93	7.65	.634	29.0	1.49	18.4	clear	-Stopped parameters- ~~[illegible]~~ 5-29-02

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Lee FLIPPEN
Well Developed by (person/firm): Lee FLIPPEN/The Shaw Group

Parcel No.: PR 211
Well No.: MW 04
Date started: 5-29-02

Monitoring Well Information

Development Method: Surge + purge
Development Equipment: whale pumps, Horiba U-10, AquaCAST II, Horiba water indicator
Casing Diameter: 2" .163

Beginning Measurments
Depth to Water (ft): 9.33' TOC
Total depth of Well (ft): 22.98' TOC

PID 0.3 BZ 0.0 screen 11'-21'

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
									- Surged well screen -
14:40	Ø	9.33	7.38	1.06	999+	0.69	20.3	Black	Depth 22 ft., PR .6 gpm
14:55	9.0	17.38	7.57	1.74	999+	3.63	17.1	Black	Depth 22 ft., PR .2 gpm
15:10	12.0	15.92	7.49	1.75	688	5.53	17.3	charcoal	Depth 22 ft., PR .2 gpm
15:25	15.0	15.07	7.41	1.82	859	4.80	17.8	charcoal	Depth 22 ft. PR .2 gpm
15:40	18.0	14.62	7.40	1.91	442	4.56	17.7	charcoal	- Reached target Purge Volume - Depth 22 ft., PR .2 gpm
15:55	21.0	16.18	7.39	1.92	480	4.62	17.3	charcoal	- stopped parameters - ~~Lee Flippen~~ 5-29-02
5-30-02 08:50	21.0	9.40	7.34	1.95	253	1.79	17.5	cloudy	5-30-02 Depth 20', PR .2 gpm

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

22.98 - 9.33 = 13.65 x .163 = 2.23 x 5 = 11.13g + 5g Loss = 16.13g

QC'd [illegible] 5/30/02

Parcel No.: PR211
Well ID: MW04
Date: 5-30-02

5-30-02 PID 0.0 Screen 11'-21' Lee FLIPPEN

	Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments Purge Rate
	09:05	24.0	13.32	7.36	2.02	354	2.95	17.3	charcoal	Depth 18', PR .02 gpm
	09:20	27.0	13.98	7.39	1.97	263	3.32	17.3	charcoal	Depth 16', PR 0.2 gpm
2hrs	09:35	30.0	13.88	7.36	2.02	120	2.74	18.5	cloudy	Depth 14', PR .2 gpm
	09:50	33.0	14.30	7.35	1.98	71	2.75	19.0	cloudy	Depth 16', PR .2 gpm
	10:05	36.0	13.99	7.33	2.08	81	2.34	19.2	cloudy	Depth 16', PR .2 gpm
	10:20	39.0	14.49	7.35	2.03	263	2.92	18.5	cloudy	Depth 16', PR .2 gpm
	10:35	42.0	14.72	7.33	2.08	64	2.53	18.8	cloudy	Depth 16', PR .2 gpm
3hrs	10:50	45.0	14.60	7.32	2.04	47	2.26	19.4	cloudy	Depth 16', PR .2 gpm
	11:05	48.0	14.71	7.32	2.04	55	2.19	19.4	cloudy	Depth 16', PR .2 gpm
	11:20	51.0	14.51	7.32	2.05	40	2.18	19.3	cloudy	Depth 16', PR .2 gpm
	11:35	54.0	14.72	7.32	2.04	51	2.27	19.6	cloudy	Depth 16', PR .2 gpm
4hrs	11:50	57.0	14.61	7.31	2.05	46	2.03	20.6	cloudy	Depth 16', PR .2 gpm
	12:05	60.0	15.33	7.32	2.01	122	2.21	19.5	cloudy	Depth 16', PR .2 gpm

Parcel No.: PR 211
Well ID: MW 04
Date: 5-30-02

Lee FLIPPEN

	Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
	12:20	63.0	15.62	7.31	2.06	66	1.94	19.7	cloudy	Depth 20', PR .2gpm
5hrs	12:35	66.0	14.31	7.31	2.04	84	2.22	21.6	cloudy	Depth 20', PR .2gpm
	12:50	69.0	13.87	7.29	2.09	145	1.68	21.3	cloudy	Depth 20', PR .2gpm
	13:05	72.0	14.01	7.31	2.05	461	2.91	21.1	charcoal	Depth 20' PR .2gpm
	13:20	75.0	14.28	7.31	2.04	440	2.93	19.7	charcoal	Depth 20' PR .2gpm
6hrs	13:35	78.0	14.17	7.28	2.06	300	2.59	20.0	charcoal	Depth 16', PR .2gpm
	13:50	81.0	13.97	7.28	2.09	126	1.88	19.8	cloudy	Depth 16', PR .2gpm
	14:05	84.0	13.42	7.27	2.10	90	1.81	19.8	cloudy	Depth 16', PR .2gpm
	14:20	87.0	13.31	7.27	2.10	90	2.16	19.8	cloudy	Depth 16', PR .10gpm
7hrs	14:35	88.5	13.81	7.28	2.11	42	2.14	20.2	cloudy	Depth 16', PR .1gpm
	14:50	90.0	12.93	7.29	2.07	52	2.44	19.7	cloudy	Depth 16', PR .1gpm
	15:05	91.5	13.01	7.27	2.09	43	2.06	19.8	cloudy	Depth 16', PR .1gpm
	15:20	93.0	12.58	7.27	2.09	32	2.01	19.8	clear	Depth 16' PR .1gpm
	15:35	94.5	12.72	7.26	2.07	45	2.35	19.9	clear	~~stopped parameters and took~~ 1L H2O Photo Sample. well developed

Lee Flippen 5-30-02

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number:
Form Completed by: R Goins
Well Developed by (person/firm): R Goins / Shaw Eng

Parcel No.: PR-211
Well No.: PR-211-MW05
Date started: 5/28/02

Monitoring Well Information

Development Method: Surge & Purge
Development Equipment: 210 gal, whale pump, turbidity meter, PID, Horiba U10
Casing Diameter: 2in

Beginning Measurments
Depth to Water (ft): 4.1' bTOC
Total depth of Well (ft): 25.5' bTOC

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
14:45	0	4.1	7.70	0.470	999+	1.81	19.5	muddy (gray)	PR-0.38 gpm pump-25' bTOC
15:00	5.7	9.0	7.49	0.464	999+	1.58	19.2	cloudy (gray)	"
15:15	11.4	9.4	7.54	0.465	566	1.88	18.8	"	"
15:30	17.1	9.95	7.49	0.461	370	1.86	18.8	"	PR-0.6 gpm
15:45	26.1	12.90	7.81	0.463	467	1.77	18.6	"	"
15:50	32.1	14.16	7.72	0.464	500	1.80	18.9	"	"
:			5	1.29	1.02				

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

25.5 - 4.1 = 21.4 x 0.163 = 3.49 gal x 5 = 17.45 + 5 = 22.45 gal

QC'd [illegible] 5/30/02

Parcel No.: PR-211
Well ID: PR-211-MW05
Date: 5/29/02

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
09:50	32.1	7.25	6.42	0.482	999+	2.86	18.4	Strong brown cloudy	pump 25' bTOC PR-0.3gpm
10:05	36.1	7.88	7.13	0.480	650	3.04	18.4	"	"
10:20	41.1	8.21	7.33	0.482	402	4.25	18.2	pt. cloudy (gray)	pump-24' bTOC PR-0.3gpm
10:35	45.6	8.50	7.52	0.487	350	2.65	18.3	slightly cloudy	pump-23' bTOC PR-0.27gpm
10:50	49.65	8.78	7.56	0.490	175	3.08	17.2	"	pump-22' bTOC PR-0.3gpm
11:05	54.15	8.91	7.31	0.484	102	2.80	17.2	slightly cloudy	pump-21' bTOC PR-0.3gpm
11:20	60.15	10.25	7.44	0.492	71	3.02	17.2	slightly cloudy	pump-20' bTOC PR-0.25gpm
11:35	63.90	9.40	7.49	0.489	150	2.32	17.9	"	pump-19' bTOC
11:50	67.65	9.10	7.58	0.491	119	3.20	17.7	slightly clear	pump-18' bTOC
12:05	71.40	9.05	7.63	0.493	87.5	1.89	17.2	"	pump-17' bTOC
12:20	75.15	9.05	7.43	0.491	66.1	1.57	17.2	clear	pump-16' bTOC
12:35	78.90	9.04	7.42	0.491	35.5	2.38	17.4	clear	pump-15' bTOC

Parcel No.: PR-211
Well ID: PR-211-MW05
Date: 5/29/02

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
12:50	82.65	9.01	7.47	0.495	23.0	1.63	17.5	clear	pump - 14' btoc
13:05	86.40	8.91	7.49	0.496	16.0	1.61	17.5	"	pump - 13' btoc
13:20	90.15	8.85	7.39	0.491	40.6	1.43	17.7	slightly clear	pump - 12' btoc
13:35	93.9	8.83	7.49	0.494	15.8	2.08	17.3	"	"
13:50	97.65	8.79	7.40	0.493	10.1	2.15	17.4	"	"
14:00	100.15	8.78	7.45	0.493	9.8	2.39	17.2	"	"
14:05	101.40	8.76	7.44	0.496	9.8	2.20	17.0	"	pump - 12' btoc PR-0.25 gpm
:									Collected photo sample
:									in 1L poly bottle
:									
:							5/29/02		
:									

Final

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Lee FLIPPEN / John Remo
Well Developed by (person/firm): Lee F. / John R. / Shaw E+I

Parcel No.: PR 211
Well No.: MW 06
Date started: 10-8-02

Monitoring Well Information

Development Method: Surge + purge
Development Equipment: whole pumps, Horiba U-10 Turbidity meter, Heron water indicator, PID
Casing Diameter: 2" .163

Beginning Measurments
Depth to Water (ft): 10.39' TOC
Total depth of Well (ft): 15.94' TOC
Screen 9-14' PID 0.0

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
14:15	Ø	10.39	7.28	.740	~~185~~ 52.8 LF 10-8	1.85	20.4	cloudy	- Surged Well Screen - Depth 15', PR .1 gpm LF 10-8
14:30	1.5 LF 10-8	14.28	7.08	.740	46	2.03	20.8	cloudy	Depth 15', PR .1 gpm
14:45	3.0	14.78	— well RAN dry —			wait 20 min. and check for 80% recovery = TD 15.94' (WC 5.55' x .80) = 11			.50' water level
15:05	—	13.78	- well did not recover 80% - Recharge rate =						TD 15.94' - DTW 13.78 = 2.16/20min
— : —	—	2.16'/20 min. = .108/ft./min. Recharge RATE						—	- Stopped parameters - ~~[illegible]~~ 10-8-02
10/9/02 13:40	3.Ø	10.43	7.19	Ø.768	29	3.59	19.7	Cloudy Lt brown	Purge Rate 0.1 gpm Depth 15' - ~~RR~~
13:55	4.5	12.5Ø	7.16	Ø.756	22	5.91	21.3	"	" "

TD − DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove
15.94' − 10.39 = 5.55 x .163 = 0.91 x 5 = 4.5 g + 10 g loss = 14.5 g

D:\FTMC\DEVELOPMENTLOG.DOC
11/17/00

QC'd
10/25/02

Parcel No.: RR 211
Well ID: mw06
Date: 10-9-02

J. Rome / Lee FLIPPEN

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
14:10	6.0	13.04	7.22	0.764	10.4	5.66	21.8	Clear	Pump Depth 15.0' Purge Rate 0.1 gpm
14:25	7.5	13.48	7.17	0.769	11.2	5.34	21.9	clear	" "
14:40	9.0	13.84	7.22	0.763	9.9	5.88	22.2	clear	" "
14:55	10.5	14.33	7.23	0.768	10.0	5.84	22.6	clear	" "
15:10	12.0	14.81	7.19	0.775	16.3	4.89	22.8	clear	15.94' "
15:25	13.5	Below Pump	7.17	.766	74	3.81	23.0	cloudy	15.94 .10 gpm
15:30	— —	Well RAN Dry - Wait 20 min. And check for 80% Recovery = 11.50' Water Level							
15:50	—	14.58	- well did not Recharge 80%				Recharge Rate = 15.94 TD - 14.58' DTW = 1.36 / 20 min = .068 ft/m - Stopped Parameters - ~~Lee Flippen~~ 10-9-02		
10/23/02 10:00	9.85	13.5	6.94	.757	34	6.03	17.2	LT Brown	
10:15	11.85	15.0	7.18	.772	6.1	4.96	19.3	CLEAR	
10:30	12.84	16.5	7.24	.854	1.0	5.21	19.7	CLEAR	
10:45	13.66	18	7.27	.800	7.3	5.54	19.5	CLEAR	
:		PURGE	VOLUME	AND	NTU'S	SATISFIED			
:									

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Lee FLIPPEN / John Remo
Well Developed by (person/firm): Lee FLIPPEN / SHAW E+I

Parcel No.: PR 211
Well No.: MW 07
Date started: 10-7-02

Monitoring Well Information

* Final Depth = 20.45' TOC

Development Method: surge + purge
Development Equipment: whale pumps, Horiba U-10, Aquafast II, Heron water indicator
Casing Diameter: 2" .163

Beginning Measurments
Depth to Water (ft): 13.09 ft.
Total depth of Well (ft): 20.45 ft.

Screen 9'-14'

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
									- surged well screen -
11:00	Ø	13.09	6.27	.581	999+	1.03	20.5	Black	Pump Depth 19', Purge Rate .13gpm
11:15	1.95	14.95	6.60	.585	199	1.44	20.9	Grey	Depth 19', PR .13gpm
11:30	3.90	14.78	6.59	.577	999+	1.01	20.9	Black	Depth 20', PR .13gpm
11:45	5.85	15.14	6.60	.585	354	1.11	21.1	Gray	Depth 20' PR .13gpm
12:00	7.80	15.24	6.65	.601	180	0.73	20.7	Grey	Depth 20', PR .13gpm
12:15	9.75	15.28	6.74	.602	42	0.88	21.2	Slight W Cloudy Lt. Gray	Depth 20', PR .13 gpm
12:30	11.7	15.38	6.76	.600	148	1.12	21.1	Grayish	Depth 18', PR .13 gpm

1 hr

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

20.45' - 13.09' = 7.36 x .163 = 1.2 g x 5 = 6 g + 10 g = 16 g

GC's Kathy
10/8/02

Parcel No.: PR 211
Well ID: MW07
Date: 10-7-02

John Remo / Lee FLIPPEN

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
12:45	13.65	14.98	6.77	.604	43	0.66	21.6	Blackish	Depth 16', Purge Rate .13 gpm
2hrs 13:00	15.60	15.68	6.78	.594	14.0	0.77	21.9	Clear	Depth 16', Purge Rate .13 gpm
13:15	17.55	14.78	6.79	.606	15.0	0.76	21.9	Clear	-Reached target P.V.- Depth 16', Purge Rate 0.13 gpm
13:30	19.50	15.28	6.77	.601	38	0.53	22.5	cloudy	Depth 16' PR .13 gpm
13:45	21.45	15.41	6.79	.599	6.9	0.64	21.9	Clear	" "
14:00	23.40	15.09	6.76	.599	10.7	0.92	21.3	clear	" "
14:15	25.35	14.75	6.79	.604	1.9	1.19	21.3	Clear	" "
14:30	27.30	14.82	6.78	.604	1.9	1.15	23.1	Clear	" "
14:45	29.25	14.95	6.81	.600	5.5	1.15	22.3	clear	- Collected 1 L. H2O Photo Sample - Well developed - Lee Flippen 10-7-02
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Lee Flippen 10-7-02

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 774645. 25020300
Form Completed by: A. NIELSEN
Well Developed by (person/firm): GOINS / NIELSEN

Parcel No.: PR-211
Well No.: PR-211-MW08
Date started: 10/23/02

Monitoring Well Information

Development Method: SUBMERSIBLE PUMP
Development Equipment: GRUNFOS

Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 62.30
Total depth of Well (ft): 74.92

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
12:40	0 @ .50	62.3	7.23	.564	>999	5.49	17.1	BROWN	PUMP 1' FROM BOTTOM
12:55	7.5	72.95	7.08	.490	>999	5.04	17.2	BROWN	SLOWED PUMP TO .25 GPM
13:00	WELL	WENT	DRY						
10/24/02 08:55	7.5	64.82	6.27	.428	>999	6.30	16	BROWN	10/24/02 USED HAND BAILER
09:05	8.5	66.76	6.72	.439	>999	7.56	16	BROWN	
09:10	9.5	68.2	6.72	.422	>999	8.30	15.9	BROWN	
09:15	10.75	68.7	6.76	.403	>999	8.45	16	BROWN	

TD - DTW = WC x 2"/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

74.92 - 62.30 = 12.62 x .163 = 2.06 x 10.3 + 200 = 210.3 GALLONS

QC'd [illegible]
10/25/02

Parcel No.: PR - 211
Well ID: PR - 211 - MW08
Date: 10/24/02

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
09:25	11.5	78.6	6.73	.397	>999	8.53	16.0	BROWN	
09:35	12.5	73.0	6.73	.424	>999	6.21	16.0	BROWN	
09:50	13.5	73.8	6.86	.407	>999	6.08	16.1	BROWN	
09:55	WELL	WENT	DRY						
10/25/02 09:00	13.5	66.6	6.92	0.411	7999	10.80	16.3	Brown	10/25/02 well was hand bailed
09:10	14.5	68.6	6.73	0.355	7999	10.71	16.2	Brown	
09:35	15.5	72.7	7.12	0.360	7999	10.87	15.9	Brown	
09:45	15.75	73.7	6.90	0.338	7999	10.69	15.9	Brown	
09:45	well	went DRY							
:	well was purged dry three consecutive events NTU's > 999								
:									
:									

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 774645
Form Completed by: B. NIELSEN
Well Developed by (person/firm): GOINS / NIELSEN

Parcel No.: PR-211
Well No.: PR-211-MW09
Date started: 10/24/02

Monitoring Well Information

FINAL TD = 98.02' TOC Uncut

Development Method: surge + purge
Development Equipment: Grundfos pump, Horiba U-22, AquaFAST II, Heron water indicator, control Box
Casing Diameter: 2" (.163)

Beginning Measurments
Depth to Water (ft): 90.12
Total depth of Well (ft): 98.02

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
12:40	0	90.12	7.61	.363	>999	2.26	16.8	Brown	Hand Bailer
12:55	1	90.6	7.55	.353	>999	3.49	17.1	Brown	" "
13:05	2	91.0	7.48	.345	>999	3.85	17.1	Brown	" "
13:30	2	90.7	7.46	.347	>999	2.34	18.9	Brown	Submersible pump .5 GPM
13:40	7	93.0	7.54	.339	>999	2.41	18.9	Brown	Slowed pump to .25 GPM
13:45	Pump malfunction								
13:55	7	92	7.82	.318	>999	4.45	17.8	Brown	Back to bailer

TD − DTW = WC x (2)/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

98.02 − 90.12 = 7.9 x .163 = 1.29 x 5 = 6.45 + 220 = 226.45

QC'd 11/7/02

Kettles ✓

H841958

Parcel No.: ~~774645~~ PR-211
Well ID: PR-211-MW09
Date: 10/24/02

11-04-02 PID 0.0, DTW 90.14 → Lee FLIPPEN

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
14:05	8	92.5	7.50	.321	~~5.09~~ BN >999	5.09	17.8	Brown	Hand Bailer
14:45	11	92.3	7.66	.302	>999	6.14	17.3	Brown	Hand Bailer – stopped parameters –
11-04-02 10:50	11	90.14	6.84	.339	>999	4.94	16.88	Brown	11-04-02 Depth 98', PR .45 gpm
11:05	17.75	93.33	7.19	.317	>999	4.38	17.95	Brown	Depth 96', PR .4 gpm
11:20	23.75	96.00	7.32	.319	>999	3.69	19.45	Brown	Depth 97', PR .2 gpm
11:35	26.75	95.13	7.34	.305	>999	4.69	17.45	Brown	Depth 97', PR .2 gpm
3hrs 11:50	29.75	94.88	7.18	.302	>999	5.64	22.01	Brown	Depth 97', PR .20 gpm
12:05	31.75	95.01	7.28	.294	>999	6.03	22.56	Brown	Depth 97', PR .10 gpm
12:20	33.25	94.73	7.29	.301	>999	7.43	21.24	Brown	Depth 97', PR .10 gpm
12:35	34.75	95.18	7.11	.294	>999	6.95	19.99	Brown	Depth 97', PR .10 gpm
4hrs 12:50	36.25	94.78	7.18	.284	>999	7.04	21.26	Light Brown	Depth 97', PR .10 gpm
13:05	37.75	95.83	7.05	.283	518	7.81	21.49	Tan	Depth 97', PR .10 gpm

Parcel No.: PR 211
Well ID: MW09
Date: 11-4-02

Reggie Goins / Lee FLIPPEN

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
13:20	39.25	95.89	7.17	.278	394	8.09	21.66	cloudy	Depth 97', PR .10 gpm
13:35	40.75	95.88	7.14	.281	295	7.10	21.88	cloudy	Depth 97', PR .10 gpm
5hrs 13:50	42.25	95.89	7.18	.281	203	7.59	21.90	"	" "
14:05	43.75	96.32	7.17	.283	999+	7.40	20.90	Brown	" PR .10 gpm
14:20	45.25	96.51	7.18	.277	999+	8.02	21.26	Brown	" "
14:35	46.75	96.76	7.19	.276	999+	8.15	21.96	Brown	" "
6hrs 14:50	48.25	96.81	7.19	.277	900	8.11	23.09	Brown	" "
15:05	49.75	96.78	7.12	.275	103	8.54	22.88	cloudy	" "
15:20	51.25	96.75	7.11	.274	15.2	8.40	22.91	clear	" "
15:35	52.75	96.88	7.13	.273	11.8	8.86	22.87	clear	" "
15:50	54.25	96.78	7.15	.273	10.69	8.81	22.88	clear	- stopped parameters - ~~Lee Flippen~~ 11-4-02
7hrs 11-5-02 08:10	54.25	90.05	6.06	.260	454	9.15	15.81	cloudy	11-5-02 Depth 97', PR .2 gpm

Parcel No.: PR 211
Well ID: MW09
Date: 11-5-02

Reggie Goins / Lee FLIPPEN

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
08:25	57.25	92.80	6.80	.263	382	8.75	18.13	cloudy	Depth 97', Purge Rate .2gpm
0840 LF 08:~~50~~	60.25	92.90	6.85	.262	318	8.62	17.34	cloudy	Depth 97', PR .2gpm
09:55	63.25	92.90	6.78	.257	190	8.23	19.30	cloudy	Depth 97, PR .2gpm
09:10	66.25	92.84	6.82	.254	59	8.23	19.66	cloudy	- collected 1L H2O photo Sample - Stopped Parameters - 8hrs -
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Reggie Goins 11-5-02

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: R. Gobs
Well Developed by (person/firm): R. Gobs / Shaw

Parcel No.: PR-211
Well No.: PR-211-MW10
Date started: 11/4/03

Monitoring Well Information

FINAL TD = 101.50' TOC

Development Method: Surge and Purge
Development Equipment: grundfos pump, tubing, Horiba U-22, Turbidity Meter, PID
Casing Diameter: 2 in

Beginning Measurments
Depth to Water (ft): 85.15
Total depth of Well (ft): 101.50

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
11:20	—	85.15	4.74	0.086	999	9.38	15.85	cloudy (dk brown)	rate 0.5gpm pump 1' from bottom
12:35	7.5	89.70	5.64	0.050	999	8.90	16.83	cloudy (dk brown)	" " "
11:50	15.0	—	—	pump	shut	off	—	—	pump shuts off due to generator problems
14:10	15.0	85.15	4.92	0.078	999	8.76	15.23	cloudy (dk brown)	rate 0.5gpm pump 1' from bottom
14:25	22.5	—	—	pump	shut	off	—	—	pump shut off due to generator problems
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TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

101.50 - 85.15 = 16.35 x .163 = 2.67 x 5 = 13.3g + 200g = 213.3g

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Parcel No.: PR 211
Well ID: MW 10
Date: 11-5-02

TD 101.5' TOC, Min Purge = 213.3 g, PID 0.0, Reggie Goins / Lee FLIPPEN

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)	
10:05	22.5 g	85.09	6.60	.039	999+	8.49	16.05	Brown	Depth 100', Purge Rate .5 gpm	RAIN
10:20	30.0	90.10	5.72	.034	999+	7.51	17.59	Brown	" Depth 100', PR .4 gpm	RAIN
10:35	36.0	89.38	5.70	.032	999+	8.00	17.84	Brown	Depth 100', PR .4 gpm	
10:50	42.0	89.60	4.67	.029	999+	7.50	18.61	Brown	" "	
11:05	48.0	90.50	4.63	.026	430	7.62	18.28	cloudy	" "	
11:20	54.0	90.65	4.60	.026	67	8.08	18.39	cloudy	" "	
11:35	60.0	90.80	4.58	.026	47	8.12	18.33	cloudy	" "	
11:50	66.0	90.93	4.24	.026	606	7.97	18.65	cloudy	Depth 100.5', PR .4 gpm	RAIN
12:05	72.0	91.45	4.68	.025	419	8.61	18.53	cloudy	Depth 100.5', PR .5 gpm	
12:20	79.5	91.60	4.52	.025	168	8.34	18.63	cloudy	" "	
12:35	87.0	91.40	4.50	.025	397	7.49	18.67	cloudy	" "	
12:50	94.5	91.60	4.51	.025	46.1	8.17	18.68	cloudy	" "	
13:05	102.0	— Heavey	Rain	—					" "	Heavey Rain
13:20	109.5	91.52	4.43	.024	67.2	8.10	18.96	cloudy	" "	Rain

Parcel No.: PR 211
Well ID: MW 10
Date: 11-5-02

Reggie Goins / Lee FLIPPEN

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
13:35	117.0	92.0	4.42	.025	329	8.02	18.82	cloudy	Depth 101', PR 1.875
13:45	135.75	Dry —	-Stopped due to heavy RAINS — well dry - well purged Dry						-Stopped Parameters ~~Lee Flippen~~ 11-5-02
11-6-02									11-6-02
08:30	135.75	85.23	5.41	.037	999+	8.44	15.10	Brown.	Depth 100', PR .25
08:45	139.5	89.60	5.43	0.037	459	9.06	16.33	Brown	Depth 100', PR .25
09:00	143.25	89.54	5.48	.029	999+	9.02	16.69	Brown	" "
09:15	147.0	89.73	5.50	0.030	713	9.30	16.94	"	" "
09:30	150.75	92.48	4.72	.026	87	8.62	16.99	cloudy	" "
09:45	154.5	90.43	4.78	0.026	57.4	9.06	16.91	cloudy	" "
10:00	158.25	92.77	4.62	.025	67	8.42	17.32	cloudy	" "
10:15	162.0	92.90	4.61	0.025	56	8.50	17.10	cloudy	Depth 99', PR .25
10:30	165.75	92.73	4.63	.025	53	8.03	17.56	Cloudy	" "
10:45	169.5	92.85	4.59	0.025	43	8.13	17.95	cloudy	Depth 98', PR .25
11:00	173.25	92.91	4.56	.025	75	8.43	17.80	cloudy	" "
11:15	177.0	92.65	4.54	0.024	694	9.02	17.72	cloudy	Depth 97', ~~PR .8~~ PR .025

5 hrs

6 hrs

Parcel No.: PR211
Well ID: MW10
Date: 11-6-02

Lee FLIPPEN

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
7hrs 11:30	180.75	92.72	4.72	.026	38	8.32	17.36	cloudy	Depth 97', P.Rate .25gpm
11:45	184.5	92.65	4.59	0.024	43	8.96	17.63	cloudy	Depth 96', PR .25gpm
12:00	188.25	92.53	4.51	.024	676	8.88	18.06	cloudy	" "
12:15	192.0	92.35	4.57	0.024	825	7.56	18.37	brown	" "
8hrs 12:30	195.75	94.08	5.26	.027	462	8.53	18.33	Brown	Collected Fe. H2O Photo Sample - [illegible] 11-6-02
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Lee Flippen 11-6-02

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Lee Flippen / Reggie Gaines
Well Developed by (person/firm): Lee FLIPPEN / Shaw E+I

Parcel No.: PR 211
Well No.: MW11
Date started: 11-6-02

Monitoring Well Information

FINAL T.D. = 94.73' TOC

Development Method: surge + purge
Development Equipment: Grundfos pump, Horiba U-22, AquaFast II, Heron water indicator, PID
Casing Diameter: 2" .163'/ft

Beginning Measurments
Depth to Water (ft): 87.80
Total depth of Well (ft): 94.73

PID 0.0

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
13:55	Ø	87.80	5.80	.089	999+	8.70	16.16	Black Brown	Depth 93', P.Rate .4 gpm
14:10	6.0	88.40	6.55	0.060	999+	9.21	16.43	"	Depth 93', P.R -0.5 gpm
14:25	13.5	88.30	6.30	.056	999+	8.66	16.20	Brown	" "
14:40	21.0	88.45	5.32	0.049	327	9.10	17.27	cloudy	Depth 93', PR-0.5 gpm
14:55	28.5	88.52	5.10	.044	51	8.24	17.42	cloudy	" "
15:16	36.0	88.54	5.10	0.042	38	9.03	17.07	cloudy	" "
15:25	43.5	88.70	5.00	.039	29	8.71	17.21	clear	" "

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

94.73 - 87.80 = 6.93 x .163 = 1.13 x 5 = 5.65 g + 220 g = 225.65 g

QC'd 11/11/02

Parcel No.: PR211
Well ID: MW11
Date: 11-6-02

Reggie Goins / Lee FLIPPEN

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
15:40	51.0	88.38	5.00	.038	49	8.51	17.97	cloudy	—stopped Parameters— ~~Lee Flippen~~ 11-6-02
11-7-02 07:50	51.0	87.45	5.75	.077	46	9.48	14.42	cloudy	—11-7-02— Depth 93', P. Rate .25 gpm
2hrs 08:05	54.75	87.95	5.45	.052	91.6	8.57	15.61	cloudy	Depth 93, P.R. .5 gpm
08:20	62.25	88.13	5.16	.044	75.8	8.71	17.03	cloudy	Depth 92, PR. 0.5 gpm
08:35	69.75	88.24	5.06	.038	28	9.16	16.72	clear	Depth 92', PR .5 gpm
08:50	77.25	88.20	5.01	0.037	32	9.06	17.34	clear	Depth 91', PR 0.5 gpm
3hrs 09:05	84.75	88.21	4.98	.035	65	8.93	17.30	cloudy	Depth 91', PR 0.5 gpm
09:20	92.5	88.25	4.95	0.035	78	9.20	17.36	cloudy	" "
09:35	100.00	88.33	4.96	.034	50	8.89	17.32	cloudy	Depth 90', PR .5 gpm
09:50	107.5	88.27	4.95	0.033	39	9.67	17.30	cloudy	" "
4hrs 10:05	115.0	88.32	4.90	.032	27	9.03	17.28	clear	" "
10:20	122.5	88.32	4.88	.031	24	8.82	17.65	clear	" "
10:35	130.0	88.36	4.87	0.030	30	9.10	17.83	clear	" "
10:50	137.50	88.40	4.87	0.031	35	9.27	17.46	clear	" "

Parcel No.: PR211
Well ID: MW11
Date: 11-7-02

Reggie Goins / Lee Flippen

	Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
5hrs	11:05	145.0	88.42	4.83	.030	23	9.08	17.40	clear	Depth 93', P.Rate 0.6gpm
	11:20	154.0	88.48	4.85	.030	21	9.15	17.52	clear	Depth 93', P.R. .6gpm
	11:35	163.0	88.55	4.86	0.030	15.7	9.35	17.68	clear	Depth 93', PR 0.6gpm
	11:50	172.0	88.58	4.79	0.029	20.0	9.35	17.36	clear	" "
	11:55	—stopped parameters to drain tank—								
	12:35	172.0	87.74	4.97	.034	26	9.27	17.61	clear	Depth 93', PR .75gpm
6hrs	12:50	183.25	88.60	4.79	0.030	20	9.46	17.68	clear	" "
	13:05	194.5	88.68	4.82	.028	21	9.25	18.31	clear	" "
	13:20	205.75	88.80	4.79	0.028	~~18.85~~	9.85	18.09	clear	" "
	13:35	217.0	88.83	4.78	.027	19.9	9.28	17.93	clear	" "
7hrs	13:50	228.25	88.70	4.77	0.027	10.0 E 10.0	9.35	17.42	clear	—reached Target Purge Volume— Depth 73', PR 0.25gpm
	14:05	232.0	88.21	4.76	.027	9.8	9.29	17.38	"	
7½ hrs	14:20	235.75	88.01	4.76	.027	9.3	9.31	17.51	"	—collected 1l. H_2O Photo Sample— well developed ~~Lee Flippen~~ 11-7-02

D:\FTMC\DEVELOPMENTLOG.DOC
11/17/00

— Well development completed —
~~Lee L Flippen~~ 11-7-02

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Lee Flippen / Reggie Goins
Well Developed by (person/firm): Lee Flippen / SHAW I+E

Parcel No.: PR 211
Well No.: MW 12
Date started: 11-8-02

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: PID

Casing Diameter: 2" .163 g/ft.

Beginning Measurments
Depth to Water (ft): 111.56' Dry
Total depth of Well (ft): 111.56' TOC

PID 0.0 screen = 79.2'-109.2'

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
07:50	Ø	Dry		PID 0.0					Dry Well ~~Lee Flippen~~ 11-8-02
11-11-02 08:45	Ø	Dry		PID 0.0					Dry Well 11-11-02 ~~Lee Flippen~~
11-12-02 15:20	Ø	Dry		PID 0.0					11-12-02 well Dry ~~Lee Flippen~~
:									
:									
:									
:									

~~Lee Flippen 11-12-02~~

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

212 g

cc'd Kathy

11/12/02

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Lee Flippen/Reggie Boins
Well Developed by (person/firm): Lee Flippen / Shaw E+I

Parcel No.: PR 211
Well No.: MW13
Date started: 11-8-02

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: PID

Casing Diameter: 2" .163 g/ft.

Beginning Measurments
Depth to Water (ft): 64.64' Dry
Total depth of Well (ft): 64.68' TOC

PID 0.0 Screen 43'-63'

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
08:00	Ø	Dry		PID	0.0				well dry. [signature] 11-8-02
08:40	Ø	Dry		PID	0.0				Well dry 11-11-02 [signature]
11-12-02 15:35	Ø	Dry		PID	0.0				well Dry [signature] 11-12-02
:									
:									
:									
:									

[signature] 11-12-02

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

105g

rec'd. 11/21/02 [signature]

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Lee FLIPPEN / SHAW I+E
Well Developed by (person/firm): 2" .163 g/ft.

Parcel No.: PR 211
Well No.: MW 14
Date started: 11-8-02

Monitoring Well Information

FINAL TD = 65.50' TOC

Development Method: Surge + purge
Development Equipment: Grundfos pump, PID
Horiba U-22, Aqua fast II, Heron water indicator
Casing Diameter: 2" .163 g/ft.

Beginning Measurments
Depth to Water (ft): 61.08' TOC
Total depth of Well (ft): 65.53 TOC

PID 0.0 Screen 43'-63'

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
08:20	—	61.08	6.33	0.474	999+	8.66	15.10	Brown cloudy	Bailed
08:30	2.0	62.35	Putting Grundfos pump in well						Put Grundfos pump in well
08:45	2.0	61.88	7.27	.385	999+	10.66	13.98	Brown	Depth 65', PR .5 gpm
08:50	4.5	Dry	well Dry - wait 20 min. and check for 80% recovery = TD 65.53 - (WC 4.45 x .80) = 61.97' Water Level (for 80% recovery)						
09:10	4.5	63.60	well did not recover 80% TD 65.53 - 63.60 = 1.93 ft / 20 min. =			Recovery Rate = .0965 ft/min.			- stopped well development - Lee Flippen 11-8-02
11-11-02 09:00	4.5	61.46	6.76	.364	999+	8.56	16.73	Brown	11-11-02 Hand Bailing
09:15	6.5	63.21	7.13	.414	999+	7.16	16.56	Brown	Hand Bailing

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

65.53 - 61.08 = 4.45 x .163 = .73 x 5 = 3.65g + 110g = ~~115~~ 113.65g

cc'd

11/14/02

Parcel No.: PR211
Well ID: MW 14
Date: 11-11-02

11-13-02 PID 0.0 DTW 62.50' TOC

Lee FLIPPEN

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
09:30	8.0	64.52	7.19	.433	999+	9.96	16.59	Brown	Hand Bailing
09:40	8.5	Dry							-well Dry- ~~Lee Flippen~~ 11-11-02
10:00	8.5	64.52	-well did NOT recover 80%						11-11-02 ~~Lee Flippen~~
:			TD 65.53' - (WC 4.45 X .80) = 61.97' water level At 80% recovery						11-11-02
			Recharge Rate = TD 65.53' - 64.52' DTW = 1.01'/20 min. = .05 ft./min.						~~Lee Flippen~~
11-13-02 10:20	8.5	62.50	7.14	.328	999+	9.59	15.62	Brown	Hand Bailing Well
11:10	10.0	Dry 65.03	wait 20 min And check For 80% recovery = DTW 65.03' - (WC 4.45' x .80) = 61.47 ft. Water Level						wait 20 min.
11:30	10.0	64.64	well did not recover 80% - Recharge Rate = 65.03' - 64.64' = .39 ft./20 min. = .02 ft./min.						-well did not recover 80%
11:55	10.25	collected 1l. H20 Photo sample with Bailer. -well Development completed.-						NTU = 999+	~~Lee Flippen~~ 11-13-02
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~~Lee Flippen~~ 11-13-02

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Lee FLIPPEN/Reggie Gains
Well Developed by (person/firm): Lee FLIPPEN / Shaw I+E

Parcel No.: PR 211
Well No.: MW 15
Date started: 11-8-02

Monitoring Well Information

FINAL TD = 45.10' TOC

Development Method: surge + purge
Development Equipment: Bailers, PID, Horiba U-22, Aquafast II, Heron water indicator
Casing Diameter: 2" .163 ft/g

Beginning Measurments
Depth to Water (ft): 40.13 TOC
Total depth of Well (ft): 45.11 TOC

Screen 28.5-43.5', PID 1.4 BZ 0.0

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
10:00	Ø	40.13	6.74	.516	42.6	7.46	15.73	cloudy	Hand Bailing well
10:08	1.5	42.5	6.62	.536	999+	7.14	15.96	Brown	Hand Bailing well
10:22	3.0	Dry	—Stopped parameters—						~~Lee Flippen~~ 11-8-02
11-11-02 11:00	3.0	42.11	6.63	.559	24	7.43	17.05	clear	11-11-02 PID 0.2 BZ 0.0 Hand Bailing well
11:20	4.0	42.68	6.75	.539	627	7.86	16.92	cloudy	Hand Bailing well
11:40	5.0	Dry							Well Dry
12:00	5.0		80% = TD 45.11' − (WC 4.98 × .80) = 41.13 ft. water level						
			Recharge Rate = TD 45.11' − DTW 44.50' = .61 ft/min =						.031 ft./min.

TD − DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

45.11 − 40.13 = 4.98 × .163 = .81g × 5 4.05g + 10g = 14.05 g

DC's 11/14/02

Needs A Lock

Parcel No.: PR 211
Well ID: MW15
Date: 11-13-02

Lee FLIPPEN

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
11-13-02 08:15	5.0	39.90	6.39	.449	132	7.64	14.44	cloudy	HAND BAILING 11-13-02
08:45	7.5	Dry 44.78	WAIT	20 MIN. And check	For 80%	recovery =			check For 80% recovery
			DTW, 44.78' - (WC 4.98' x .80) = 40.8' water level.						
09:05	7.5	43.78	well did not recover 80%						
			Recharge Rate = DTW, 44.78' - DTW2 43.78 = 1.0 ft/20min = .067 ft./min.						
09:25	7.75	collected 1 liter H2O Photo Sample							well development completed.
		NTU = 240							
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11-13-02