APPENDIX C

WELL DEVELOPMENT LOGS

Groundwater Well Development Log

Fort McClellan, Alabama

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

Parcel No.: HR 143Q
Well No.: MW 01
Date started: 8-22-02

Monitoring Well Information

FINAL T.D. = 60.45' TOC

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

Beginning Measurments
Depth to Water (ft): 36.33 TOC
Total depth of Well (ft): 60.40 TOC

PID 4.5, BZ 0.0, screen 38'-58'

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 –
09:55	Ø	36.33	6.46	.100	999+	4.05	19.9	Reddish Brown	Depth 59', Purge Rate .2gpm
10:10	3.0	42.88	5.56	.053	822	5.12	20.0	Reddish Brown	Depth 59', PR .2gpm
10:25	6.0	45.73	5.21	.058	999+	3.58	19.1	Reddish Brown	" "
10:40	9.0	46.48	5.18	.059	999+	3.82	20.6	"	" "
10:55	12.0	48.98	5.06	.049	477	2.27	20.9	cloudy	" "
11:10	15.0	49.59	5.09	.049	381	2.32	21.1	cloudy	" "
11:25	18.0	50.72	5.40	.049	508	1.94	23.3	cloudy	" "

1hr

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

60.40 − 36.33 = 24.07 x .163 = 3.92 x 5 = 19.62 + 100 g = 119.62 g

QC'd [illegible] 9/19/02

Parcel No.: HR143Q
Well ID: MW01
Date: 8-22-02

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)
	11:40	21.0	51.52	5.44	.049	240	2.53	25.3	cloudy	Depth 59', Purge Rate .10 gpm
2hrs	11:55	22.5	52.11	5.39	.047	212	1.95	27.7	cloudy	Depth 59', PR .10gpm
	12:10	24.0	53.48	5.43	.050	999+	1.92	24.8	Reddish Brown	" "
	12:25	25.5	53.99	5.43	.051	999+	1.93	22.9	" "	" "
	12:40	27.0	54.09	5.43	.051	715	2.21	23.9	" "	" "
3hrs	12:55	28.5	54.95	5.43	.055	598	3.15	24.8	"	" "
	13:10	30.0	55.28	5.43	.051	999+	3.85	25.1	" "	
	13:11	—	Pumps	stopped-working-		stopped	parameters-			[signature] 8-22-02
8/26/02	13:00	30.0	40.60	5.42	0.072	999+	5.02	24.5	reddish brown	Depth 59', PR 0.13gpm
	13:15	31.95	41.37	5.49	0.041	168	5.75	23.1	cloudy	" "
	13:30	33.90	43.00	5.54	0.039	198	6.83	22.0	cloudy	Depth 58', PR 0.13gpm
	13:45	35.85	44.63	5.49	0.039	295	5.10	24.0	cloudy	" "
4hrs	14:00	~~37.80~~ 37.35	45.50	5.93	0.046	249	5.39	25.5	cloudy	Depth 57', PR 0.10gpm
	14:15	~~39.75~~ 38.85	47.00	5.51	0.041	245	4.60	24.6	cloudy	Depth 56', PR 0.10gpm

Parcel No.: HR-143Q
Well ID: MW01
Date: 8-26-02

Cindy Levaas/Reginald Goins

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	40.35 ~~41.70~~	47.68	5.56	0.043	59	7.53	24.0	cloudy	Depth 56', PR 0.10gpm
14 :45	41.85 ~~43.65~~	48.38	5.53	0.044	234	5.51	23.6	cloudy	Depth 55', "
15 :00	43.35 ~~45.60~~	50.45	5.55	0.044	247	6.13	24.8	cloudy	Depth 55', 0.08gpm
15 :15	44.55	51.53	5.45	0.046	295 ~~307~~	4.60	26.2	cloudy	Depth 55', "
15 :30	45.75 ~~49.50~~	53.10	- Pump stopped working, bailing well					dry as	per sample coordinators instructions.
15 :55	45.75	53.20	5.50	0.047	999+	5.68	20.0	reddish brown ~~cloudy~~	Bailing
16 :05	46.75	53.90	5.27	0.048	999+	5.60	18.1	reddish brown	Bailing
16 :15	48.75	56.30	5.29	0.062	999+	2.31	18.0	reddish brown	Bailing
16 :35	50.75	58.40	5.46	0.063	999+	1.74	18.0	reddish brown	Bailing
16 :50	51.75	59.45	5.47	0.060	999+	2.26	18.4	reddish brown	Bailing
16 :58	52.25	60.20							well is dry
8-27-02 10 :15	52.25	53.66	5.78	.063	569	8.39	19.76	reddish Brown	8-27-02 Depth 59', PR .10 gpm
10:30	53.75	55.72	5.55	.050	346	9.13	20.17	Reddish Brown	Depth 59', PR .10 gpm
10:45	55.25	56.51	5.63	.055	897	8.78	21.03	Reddish Brown	Depth 59', PR .10 gpm

5 hrs
6 hrs
7 hrs

FINAL TD = 60.45' TOC

Parcel No.: HR143Q
Well ID: MW01
Date: 8-27-02

Jewel Cunningham / 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)
3 hrs → 11:00	56.75	57.33	5.63	.055	253	8.93	21.55	Reddish Brown	Depth 59, — Collect 1 l. H2O Photo Sample — Well Development Completed — ~~Lee Flippen~~ 8-27-02
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: ADAM DAY / LEE FUPPEN
Well Developed by (person/firm): SHAW E&I

Parcel No.: 143Q
Well No.: HR-143Q-MW02
Date started: 8/7/02

Monitoring Well Information

FINAL TD = 41.53' TOC

Development Method: SURGE & PURGE
Development Equipment: WHALE PUMP, PID # 845006
HORIBA U-10, WATER LEVEL INDICATOR
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 27.15' TOC
Total depth of Well (ft): 41.97' TOC

Screen 25'-40' PID 4.6 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.)
09:55	0	27.15'	6.65	0.101	999+	1.22	23.2	reddish brown	PUMP @ 41.97', PR = 0.2 gpm
10:10	3	27.68'	6.11	0.111	999+	1.03	23.3	reddish brown	PUMP @ 41.97', PR = 0.35 gpm
10:25	8.25	30.03'	6.19	0.138	999+	1.73	20.8	reddish brown	PUMP @ 41.97', PR = 0.3 gpm
10:40	12.75	31.57'	5.53	0.077	999+	1.34	19.8	reddish brown	PUMP @ 41.97', PR = 0.2 gpm
10:55	15.75	32.36'	5.50	0.098	999+	1.25	20.1	reddish brown	" , PR = 0.15 gpm
11:10	18.0	33.95'	5.46	0.091	999+	0.94	20.8	reddish brown	" , "
11:25	20.25	34.24'	5.57	0.109	999+	1.03	22.2	reddish brown	" , "

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

41.97' - 27.15' = 14.82' x 0.163 gal/ft = 2.41566 gal x 5 = 12.0783 gal + 100 gal = 112.0783 gal

QC'd [illegible] 8/12/02

Parcel No.: 143Q
Well ID: HR-143Q-MW502
Date: 8/08/7/02

L. FLIPPEN/ADAM DAY.

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
11:40	22.5	34.80	5.66	0.107	999+	1.16	22.5	reddish brown	Pump @ 41.97', PR = 0.15gpm
2hrs 11:55	24.75	35.62	5.89	.113	999+	2.03	21.8	" "	Depth 42', PR .10 gpm
12:10	26.25	35.15	6.08	0.117	999+	1.51	26.0	"	" "
12:25	27.75	35.28	6.10	.119	999+	1.14	26.4	"	Depth 42', PR .10 gpm
12:40	29.25	36.01	6.18	0.110	999+	1.15	26.1	"	" "
3hrs 12:55	30.75	35.30	6.12	.106	999+	1.66	25.0	"	" "
13:10	32.25	36.33	6.09	.095	999+	1.79	24.0	"	" "
13:25	33.75	36.68	5.95	.092	999+	2.75	22.6	"	" "
13:40	35.25	36.48	5.77	.087	999+	3.24	24.8	"	" "
4hrs 13:55	36.75	36.36	5.79	.087	999+	3.05	25.0	"	" "
14:10	38.25	36.89	5.84	.084	999+	3.61	23.2	"	" "
14:25	39.75	37.14	5.83	.084	999+	3.75	23.3	"	" "
14:40	39.75	36.58	Pumps stopped working - stopped parameters - ~~L. Flippen~~ 8-7-02						

Parcel No.: ~~143Q~~ 143
Well ID: ~~HR-143Q-MW02~~
Date: 8/8/02

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) 8/8/02
8-8-02 09:30	39.75	28.68	6.07 ~~6.097~~	0.097 ~~999+~~	999+	2.62	22.1	reddish brown	Pump @ 42' TOC, PR = 0.15 gpm
09:45	42	29.92	6.16	0.080	999+	3.85	20.9	"	" "
5 hrs 10:00	44.25	31.33	5.86	.066	999+	3.60	21.1	"	Depth 32', 34', PR .15 gpm
10:15	46.5	31.70	5.83	0.070	999+	3.96	24.9	"	Depth 36', 38' PR .15 gpm
10:30	48.75	32.97	6.05	.070	999+	4.12	23.0	"	Depth 40', 42' PR .10 gpm
10:45	50.25	32.68	6.07	.069	999+	4.49	26.6	"	Depth 40', 42', "
6 hrs 11:00	*51.75 ~~53.25~~ 8-8-02	33.28	6.07	.064	891	4.23	25.1	"	Depth 42', PR .10 gpm
11:15	*53.25 ~~55.5~~ 8-8-02	33.41	6.04	.064	693	4.55	25.6	"	" "
11:30	*54.75 ~~57.75~~ 8-8-02	33.58	6.00	.063	516	4.28	26.4	"	Depth 42', PR .10 gpm
11:45	56.25	33.38	6.01	0.065	490	4.25	27.4	"	" "
7 hrs *Purge Rate .10 gpm 12:00	57.75	33.33	6.00	.064	405	4.45	29.2	cloudy	Depth 42', PR .10 gpm
12:15	59.25	33.47	5.99	.064	407	4.30	28.7	cloudy	" "
12:30	60.75	33.68	5.95	.065	290	4.43	29.6	cloudy	" "
12:45	62.25	33.62	5.94	.061	355	4.44	31.3	cloudy	" "

* - Actual Purge Rate was .10 gpm Not .15 gpm

Parcel No.: HR143Q
Well ID: MW02
Date: 8-8-02

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)
8hrs 13:00	63.75	33.88	5.93	0.059	231	5.87	32.0	cloudy	Pump@42' PR = 0.10gpm
:									Stopped parameters - 8 hrs Development Time Completed - [illegible] 8-8-02
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