Final
Site Investigation Report
Ranges West of Iron Mountain Road
Parcels 73Q-X, 91Q-X, 115Q, 116Q-X, 117Q-X, 129Q-X, 151Q, 181(7), 194(7)/518(7), 200Q, 201Q, 228Q, 229Q-X, 231Q, 232Q-X, Washington Tank Range, and 1950 Rocket Launcher Range

Volume III of IV: Appendices C through F

Fort McClellan
Calhoun County, Alabama

Prepared for:

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Mobile, Alabama 36602

Prepared by:

Shaw Environmental, Inc.
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Task Orders CK04 and CK10
Contract No. DACA21-96-D-0018
Shaw Project Nos. 773191 and 796887

August 2005

Revision 0

List of Appendices

Volume III

Appendix C – Well Development Logs
Appendix D – Survey Data
Appendix E – Variance Reports
Appendix F – Summary of Validated Analytical Data

APPENDIX C

WELL DEVELOPMENT LOGS

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 773191
Form Completed by: James D. Cox
Well Developed by (person/firm): James D. Cox IT Corp.

Parcel No.: 73Q
Well No.: HR-73Q-MW01
Date started: 5/15/2001

Monitoring Well Information

Development Method: Surge & purge
Development Equipment: Grundfos & whale pump

Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): ~~122.31~~ ic dry
Total depth of Well (ft): 122.31

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.)
13:25	–	–	–	–	–	–	–	–	5/15/2001 – well is dry
08:45	–	–	–	–	–	–	–	–	5/16/2001 – well is dry
09:45									5.21.01 – well i dry JM PID 0.0 Backgrd 0.0
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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

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number:
Form Completed by: Mike May
Well Developed by (person/firm): Mike May IT Corp.

Parcel No.: HR730
Well No.: MW02
Date started: 3/27/01

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: Horiba, Turbidity Meter, Water level indicator, Whale Pump.
Casing Diameter: 2"

Beginning Measurments (MM)
Depth to Water (ft): ~~52'~~ 16.91'
Total depth of Well (ft): 52'

	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)
3/27	13:45	2.0	24.75	6.68	.309	1K+	10.59	15.5°	cloudy brown	pump @ 52' from toc
	14:00	4.0	23.09	6.72	.310	1K+	11.08	15.0°	cloudy brown	" "
	14:15	6.0	24.52	6.74	.256	1K+	11.09	14.8°	cloudy brown	" "
	14:30	8.0	25.96	6.81	.455	1K+	11.30	14.7°	cloudy brown	" "
	14:45	10.0	24.71	6.78	.372	1K	11.31	14.8°	cloudy brown	" "
	15:00	12.0	24.89	6.77	.389	1K+	11.27	14.9°	cloudy brown	" "
	15:15	14.0	25.06	6.80	.381	937	10.96	14.7°	cloudy brown	pump @ 50' from toc.

52' - 16.91' = 35.09 x .163 = 5.71 x 5 = 28.59 + 125 = 153.60 gallons to be purged

Parcel No.: HR 73Q
Well ID: MW02
Date: 3/27/01

	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)
3/27	15:30	16.0	25.19	6.81	.376	912	11.18	14.7°	cloudy brown	pump @ 50' from toc.
	15:45	18.0	25.37	6.81	.380	876	11.31	14.9°	cloudy brown	" "
	16:00	20.0	25.39	6.80	.381	937	11.17	14.8°	cloudy brown	" "
	16:15	22.0	25.46	6.79	.384	864	11.06	14.8°	cloudy brown	" "
3/28	09:30	24.0	29.79	6.27	.492	1K+	3.87	14.7°	cloudy brown	" "
	09:45	26.0	22.83	6.50	.433	1K+	3.79	15.1°	cloudy brown	" "
	10:00	28.0	23.07	6.54	.418	970	4.37	15.2°	cloudy brown	" "
	10:15	30.0	23.39	6.57	.410	628	4.29	15.2°	cloudy brown	" "
	10:30	32.0	24.91	6.62	.398	437	4.60	15.4°	cloudy brown	" "
	10:45	34.0	23.97	6.60	.389	224	4.58	15.5°	cloudy brown	" "
	11:00	36.0	24.09	6.64	.380	228	4.61	15.1°	cloudy brown	pump @ 48' from toc.
	11:15	38.0	23.99	6.67	.374	194	4.89	15.5°	cloudy brown	" "
	11:30	40.0	24.07	6.67	.369	152	4.71	15.4°	cloudy brown.	" "

Parcel No.: HR 73Q
Well ID: MW02
Date: 3/28/01

	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)
3/28	12:30	42.0	19.82	6.65	.362	196	4.61	15.3°	slightly cloudy	pump @ 48' from toc.
	12:45	44.0	24.37	6.63	.374	508	4.38	15.5°	slightly cloudy	" "
	13:00	46.0	25.06	6.65	.368	1K+	4.19	15.3°	very cloudy	" "
	13:15	48.0	24.60	6.69	.371	1K+	4.34	15.2°	very cloudy	pump @ 46' from toc.
	13:30	50.0	24.45	6.69	.369	576	4.04	15.3°	cloudy brown	" "
	13:45	52.0	24.38	6.71	.369	347	4.94	15.1°	cloudy brown	" "
	14:00	54.0	24.71	6.65	.375	319	4.62	15.0°	cloudy brown	" "
	14:15	56.0	24.84	6.61	.371	297	4.69	15.1°	cloudy brown	" "
	14:30	58.0	25.13	6.60	.376	271	4.61	15.0°	cloudy brown	" "
	14:45	60.0	25.37	6.62	.359	263	4.58	15.1°	cloudy brown	pump @ 44' from toc.
	15:00	62.0	25.51	6.61	.373	251	4.32	15.1°	cloudy brown	" "
	15:15	64.0	25.79	6.62	.364	238	4.46	15.2°	cloudy brown	" "
	15:30	66.0	26.09	6.62	.361	236	4.71	15.2°	cloudy brown	" "

Parcel No.: HR739
Well ID: MW02
Date: 3/28/01

	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)
3/28	15:45	68.0	26.18	6.61	.369	219	4.61	15.1°	cloudy brown	pump @ 44' from toc.
	16:00	70.0	26.32	6.60	.367	207	4.53	15.1°	cloudy brown	" "
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Justin Fisher
Well Developed by (person/firm): Justin Fisher IT

Parcel No.: 73Q
Well No.: HR-73Q-MW03
Date started: 3/27/01

Monitoring Well Information

Development Method: Purge/Surge
Development Equipment: Grundfos pump, Turbidimeter, Horiba U-10 water Quality Meter
Casing Diameter: 2" PVC

Beginning Measurments
Depth to Water (ft): 64.71' btoc
Total depth of Well (ft): 86.65' 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.)
15:35	0	64.71	—	—	—	—	—	—	
16:05	~15	78.99	5.53	0.076	off scale	2.21	17.4	opaque	Flow Rate = 0.5 gal/min
16:20	22.5	77.65	5.37	0.085	off scale	2.78	15.6	opaque	
16:35	30.0	79.35	5.12	0.056	off scale	4.77	17.2	opaque	End of day
11:45	30.0	65.11	—	—	—	—	—	—	3/28/01 Flow Rate = 0.5 gal/min
12:00	37.5	77.20	5.55	0.094	off scale	4.41	17.4	opaque	
12:15	45.0	79.54	5.13	0.086	off scale	4.88	17.5	opaque	

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

86.65 − 64.71 = 21.94 × 0.163 = 3.576 × 5 = 17.88 + 50 = 67.88 gallons

Parcel No.: 73Q
Well ID: HR-73Q-MW03
Date: 3/28/01

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
12:30	52.5	75.69	5.11	0.085	off scale	4.95	17.2	opaque	
12:45	60.0	79.91	5.01	0.075	off scale	5.11	17.2	opaque	
13:00	67.5	81.28	5.01	0.090	1341	4.58	17.4	opaque	
13:15	75.0	81.83	5.27	0.071	1283	5.34	17.9	opaque	
13:30	82.5	82.12	5.16	0.066	397	5.75	17.8	murky	
13:45	90.0	82.38	5.03	0.062	367	5.76	17.3	murky	
14:00	97.5	81.85	4.88	0.056	268	5.65	17.6	murky	
14:15	105.0	82.34	4.89	0.056	128	5.73	17.4	very cloudy	
14:30	112.5	82.66	4.90	0.054	165	5.71	17.1	very cloudy	
14:45	120.0	82.66	4.79	0.051	65.7	5.65	17.1	cloudy	
15:00	127.5	82.70	4.74	0.051	64.3	5.67	17.2	cloudy	
15:15	135.0	82.46	4.56	0.047	82	5.92	16.8	cloudy	
15:30	142.5	82.30	4.65	0.047	134	6.01	16.3	very cloudy	

Parcel No.: 73Q
Well ID: HR-73Q-MW03
Date: 3/28/01

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
15:45	150.0	81.94	4.72	0.044	173	6.34	16.5	very cloudy	
16:00	157.5	81.89	4.78	0.044	148	6.13	17.1	very cloudy	
16:15	165.0	81.64	4.96	0.042	146	6.01	17.2	very cloudy	
16:30	172.5	—	—	—	—	—	—	—	Pump clogged @ 1629, no reading
10:05	172.5	73.68	—	—	—	—	—	—	3/30/01 Flow Rate = 0.5 gal/min
10:20	180.0	74.93	5.41	0.267	off scale	8.54	17.7°	opaque	
10:35	187.5	76.15	5.31	0.218	off scale	8.34	17.9	opaque	
10:50	195.0	76.35	5.27	0.212	1247	8.30	18.0	opaque	
11:05	202.5	76.94	5.29	0.211	786	8.37	17.8	opaque	
08:40	202.5	64.87	—	—	—	—	—	—	4/2/01 Flow Rate = 0.5 gal/min
08:55	210.0	74.58	4.87	0.057	1222	4.90	17.0	opaque	
09:10	217.5	75.79	4.53	0.046	1227	4.03	16.9	opaque	moved pump up 2' @ 0915
09:25	224.0	74.10	4.58	0.047	1257	4.30	17.4	opaque	Flow Rate = 0.4 gal/min @ 0915

Parcel No.: 73Q
Well ID: HR-73Q-MW03
Date: 4/2/01

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
09:40	230.0	73.53	4.60	0.045	324	4.54	17.4°	cloudy	
09:55	236.0	72.24	4.70	0.045	96	4.67	18.2	cloudy	8 hrs reached
10:10	242.0	71.52	5.04	0.042	37	4.82	19.7	clear	
10:25	248.0	70.50	4.84	0.043	19	4.73	20.9	clear	
10:40	254.0	70.21	4.96	0.045	19	4.71	20.3	clear	Collect Turbidity Sample, Shut Down.
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Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Lee Flippen
Well Developed by (person/firm): Lee Flippen / TT Corp.

Parcel No.: HR 73 Q
Well No.: MW04
Date started: 5-17-01

SI = 34'-49'

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: whale pump, Horiba Aquatast II, Heron WLI
Casing Diameter: 2" Flush mount

Beginning Measurments
Depth to Water (ft): None
Total depth of Well (ft): 48.25 ft.

	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.)
5-17-01	13:45	Ø	None	—	—	—	well Dry		—	5-17-01 Lee Flippen
	:									
5-18-01	14:00	Ø	None	—	—	—	—	—	—	5-18-01 Lee Flippen
5-21-01	09:15	Ø	NONE	—	—	—	—	—	—	5-21-01 Matwell DRY well
	:									
	:									
	:									

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

*- Miller Needs to clean-up trash at site. - Dirt on large piece of visqueen.

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 7960887
Form Completed by: Jose Maturell Lee Flipper
Well Developed by (person/firm): SM RT 956735

Parcel No.: 91 Q
Well No.: MW01
Date started: 5-1-01

PID. 0.0 Backgrd. 0.0.

Monitoring Well Information

Development Method: Surge & purge
Development Equipment: Whale pump

Casing Diameter: 2" = .163

Beginning Measurments
Depth to Water (ft): 36.69
Total depth of Well (ft): 42.35

Sceened Int. 20-40

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.)
5-1-01 16:00	4. Gal.	36.69	5.49	.018	999+	3.97	17.5	cloudy	W.L. to low to purge hand Bailed 4 Gal.
5-4-01 12:40	4 GAL.	38.58	5.67	.048	1025	3.92	18.6	cloudy	WC = 3.77 ft WL to low for Pump - Hand Bailed 2.0 g PID 0.3 BKGrd 0.0
13:07	6 gal.	—	Hand	Bailed	2.0 gal	—	Bailed well	Dry	5-4-01
:									
5-9-01 08:45	6.0	38.92	4.99	.071	40	5.93	16.4	clear	W.C. = 3.43 ft. too Low volume For pumping (purging) Hand Bailed 1.25 g removed
09:15	7.25	—	3rd visit	and 3rd	time	hand	bailed well	to Dry	Well Development Completed ~~Lee Flipper~~ 5-9-01 PID 0.0 BKGrd 0.0
:									

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

42.35 - 36.69 = 5.66 x .163 = .922 x 5 = 4.61 + 20 = 24.61

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Jamie Cole
Well Developed by (person/firm): Jamie Cole

Parcel No.: HR 91Q
Well No.: HR91Q-MW02
Date started: 05-01-01

Monitoring Well Information

Development Method: ~~Purge/Sw~~ N/A
Development Equipment:

Casing Diameter: 2" PVC

Beginning Measurments
Depth to Water (ft): Well was dry
Total depth of Well (ft): 27.6

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.)
5-1-01 15:45	0	—	✓	—	—	—	✓	—	well was Dry
:									
5-4-01 13:50	0	NONE	—	—	—	—	—	—	5-4-01 [illegible] PID 0.0 well Completely Dry BKGrd 0.0
:									
5-7-01 15:45	0	NONE	—	—	—	—	—	—	well Completely Dry PID 0.0 3rd visit. Well Dry 3X. BKGrd 0.0 Well Development Completed. 5-7-01 [illegible]
:									
:									

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove
(NONE)

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Lee Flippen
Well Developed by (person/firm): Lee Flippen / IT Corp.

Parcel No.: HR91Q
Well No.: MW03
Date started: 5-22-01

WC = water column
SI = Screen Interval
PD = Pump Depth

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: Horiba #8019, Aquatest II 2029 Heron water level Indicator, Grundfos pump
Casing Diameter: 2" (.163)

Beginning Measurments
Depth to Water (ft): 81.82 ft TOC
Total depth of Well (ft): 89.2 ft

SI = 56.7-86.7' PID 0.0 BKGrd 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.)
5-22-01 09:10	Ø	81.82	6.03	.220	1062	1.61	16.8	Brown	WC = 7.38 ft, Hand Bailed well Dry
09:55	4.5	—	Hand	Bailed	out 4.5 g	H2O	removed		5-22-01 Lee Flippen
5-30-01 09:15	4.5	82.24	5.49	.078	999+	5.88	17.1	Light Brown	PID 1.1 BKGrd 0.0 WC = 6.96 ft Hand Bailed Well Dry
09:55	10.0	—	—	—	Hand Bailed	5.5 g		—	5-30-01 Lee Flippen
6/8/01 09:45	14.25				hand bailed	4.25 g		—	
:									
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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
89.2 − 81.82 = 7.38 x .163 = 1.2 x 5 = 6 + 100 = 106 g

QC'd by JR 06/13/01

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

1.62

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Lee Flippen
Well Developed by (person/firm): Lee Flippen / IT Corp

Parcel No.: HR91Q
Well No.: MW04
Date started: 5-22-01

SI 124' - 144'

Monitoring Well Information

PD = Pump depth
SI = Screen Interval

Development Method: Surge + Purge
Development Equipment: Grundfos pump, Horiba AquaFast IIu, Heron Water level indicator
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 110.72 TOC
Total depth of Well (ft): 147.2 TOC

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.)
13:10	Ø	110.72	5.44	.062	999+	4.70	18.4	orange	PD 143 PR 1.0 gpm surged well PID 0.0
13:25	15	127.28	5.41	.058	999+	4.23	19.2	orange	PD 143 PR 1.0 gpm
13:40	30	133.47	5.23	.060	999+	2.73	19.2	orange	" PR .7 gpm (.41 ft/min)
13:55	40.5	136.32	5.21	.053	999+	3.76	19.5	orange	" PR .7 gpm
14:10	51.0	137.95	5.40	.056	999+	3.46	20.0	orange	" PR .7
14:25	61.5	140.22	5.10	.052	999+	3.35	19.9	orange	" PR .6
14:40	70.5	137.88	5.16	.039	999+	3.42	21.3	orange	" PR .6

1 hr.

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

147.2 - 110.72 = 36.48 x .163 = 5.95 x 5 = 29.75 + 60 g = 89.75 g

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

Reviewed by 06/05/01

2.40

Parcel No.: HR 91 Q
Well ID: MW.04
Date: 5-22-01

	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	
	14:55	79.5	138.22	5.25	.039	1674	3.45	21.0	orange	Pump stopped + Restarted PD 143 PR .6 gpm	
2hrs	15:10	88.5	139.92	5.31	.038	999+	3.48	21.2	orange	PD 143 PR .6 gpm	
	15:12			Pump stopped WC too low						5-22-01 [signature]	
5-23-01	09:40	88.5	111.20	4.94	.071	377	6.45	17.5	clear	Surged well 5-23-01 PD 125.6 PR .75 gpm	PID 0. WC = 36
	09:55	99.75	122.82	5.24	.044	999+	6.23	20.2	orange	- Target PV Reached - WC too Low PD 125.6 PR .75 gpm Pump stopped	
	10:10	111.0	124.2	5.18	.042	999+	6.58	20.3	orange	*Moved Pump to 136.2 ft - Surged - PD 136.2 PR .6	
	10:25	120.0	128.26	5.26	.039	999+	6.33	20.0	orange	PD 136.2 PR .6	
3 hrs	10:40	129.0	130.44	5.25	.036	999+	6.52	19.9	orange	PD 136.2 PR .5	
	10:55	136.5	132.40	5.20	.031	999+	6.66	20.1	orange	1057 - Pump stopped working - Surged - Moved to PD 138.2 PR .25	
	11:10	139.8	128.7	5.04	.031	999+	6.36	19.8	orange	PD 138.2 PR .25	
	11:25	143.6	132.5	5.12	.029	999+	6.58	20.8	orange	Moved Pump + Surged PD 140 PR .25	
4 hrs	11:40	147.4	132.4	5.02	.029	1476	6.44	21.7	orange	PD 140 PR .25 - Pump Stopped wor	
	11:55	151.2	131.42	5.05	.028	999+	6.38	21.9	orange	Moved Pump + Surged PD 142 PR .25	
	12 10	155.0	132.01	5.17	.031	999+	6.34	22.1	orange	Loggers cutting down trees 100f Away. Had to leave site quickl	

[signature] 5-23-01

Parcel No.: HR91Q
Well ID: MW04
Date: 5-30-01

PID 0.0 BKGrd 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
5-30	09:45	155.0	110.80	4.79	.074	105	6.16	22.0	clear	Surged well PD 128 PR. 5gpm
	10:00	162.5	118.27	5.31	.031	967	5.55	22.4	orange	PD 128 PR. 5gpm
5hrs	10:15	170.0	120.63	5.37	.029	276	5.69	23.0	cloudy	Moved Pump + Surged PD 130 PR. 5gpm
	10:30	177.5	120.65	5.37	.029	213	4.99	24.9	cloudy	Moved Pump + Surged - Pump had slowed down - PD 132 PR. 6gpm
	10:45	186.5	123.45	5.39	.029	999+	6.28	24.0	orange	Moved Pump + Surged PD 134 ft. PR. 5gpm
	11:00	194.0	123.85	5.78	.023	999+	6.01	24.9	orange	Moved pump + Surged PD 140 ft PR. 5gpm
6hrs	11:15	201.5	123.99	5.38	.028	999+	5.75	24.9	orange	PD 140 ft. PR. 5gpm
	11:30	209.0	124.15	5.37	.029	999+	5.65	25.1	orange	PD 140 ft. PR. 5gpm
	11:45	216.5	124.28	5.23	.026	999+	5.41	25.6	orange	PD 140 ft. PR. 5gpm
	12:00	224.0	124.37	5.25	.033	476	5.23	25.1	orange	PD 140 ft PR. 5gpm
7hrs	12:15	231.5	124.49	5.28 5.29	.027	235	5.30	24.2	cloudy	PD 140 ft PR. 3gpm
	12:30	238.0	124.41	5.24	.024	322	4.82	24.4	cloudy	PD 140 ft PR. 3gpm
	12:45	242.5	124.25	5.19	.022	251	5.27	24.6	cloudy	PD 140 ft PR 3gpm

Parcel No.: HR91 Q
Well ID: MW04
Date: 5-30-01

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
13:00	247.0	124.18	5.10	.020	229	5.25	24.3	cloudy	PD 140 ft. PR .3 gpm
13:15	251.5	124.03	5.20	.021	258	5.14	24.6	cloudy	8 hrs Development Time Well Development Completed 5-30-01 [illegible]
:									Took 1 L. Water Sample
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Lee Flippen
Well Developed by (person/firm): Lee Flippen / IT Corp.

Parcel No.: HR91Q
Well No.: MW05
Date started: 5-31-01

Screen - 42'-62'

Monitoring Well Information

Development Method: Surge/Purge
Development Equipment: Heron water Finder

Casing Diameter: 2" (.163) Flush Mount

Beginning Measurments
Depth to Water (ft): 62.35 Flush Mount
Total depth of Well (ft): 62.50

PID 1.1 BKGrd 0.5

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.)
5-31-01 10:45	Ø	62.35							WC = .15 ft. too shallow to Hand Bail ~~Lee Flippen~~ 5-31-01
6/7/01 15:01	Ø	62.3							to shallow to bail.
6/11/01 11:30	Ø	62.39							too shallow to bail.
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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

62.5 - 62.35 = .15 x .163 = .02 x 5 = 0.1 + 5 = 5.1 g

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: * Keith Hague for Mike May
Well Developed by (person/firm): Mike May ITCorp *

Parcel No.: 91Q
Well No.: MW06
Date started: 3/29/01

* Information below transcribed from Well Development Log Book #11

Monitoring Well Information

Development Method: Surge/Purge
Development Equipment: Whale Pump

Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): ~~17.02~~ 15.7
Total depth of Well (ft): 42.75

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.)
10:30	2.0	21.49	5.99	0.063	999+	1.22	11.5	Cloudy Brown	
10:45	4.0	21.72	5.97	0.058	999+	1.05	11.6	Cloudy Brown	
11:00	6.0	21.97	5.97	0.061	999+	1.18	11.6	Cloudy Brown	
11:15	8.0	22.13	5.98	0.060	976	1.16	11.6	Cloudy Brown	
11:30	10.0	22.38	5.96	0.060	954	1.20	11.7	Cloudy Brown	
11:45	12.0	22.54	5.98	0.061	962	1.23	11.7	Cloudy Brown	
4/02/01 08:45	—	15.57	—	—	—	—	—	—	

TD - DTW = WC x 2 1/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

42.75 - 17.02 = 25.73 x 0.163 = 4.2 x 5 = 21 gallons + 100 gallons = 121 gallons minimum H_2O to remove.

K.H. 4/16/01

Parcel No.: HR 91Q
Well ID: HR 91Q-MW06
Date: 05-02-01

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
09:00	2.5	20.05	6.18	0.131	1138	0.40	18.4	milky Brown	Flow Rate .167 Pump Depth 33'
09:15	5.0	20.30	6.27	0.130	823	0.36	18.8	" " milky	
09:30	7.5	20.31	6.30	0.129	1520	0.25	18.9	milky	
09:45	10.0	19.82	6.30	0.122	712	0.52	19.2	milky	34' BTOC
10:00	12.5	19.25	6.27	0.108	819	0.51	19.5	milky	Flow Rate .2 gal/min
10:15	15.5	21.75	6.26	0.111	416	0.11	18.7	cloudy	
10:30	18.5	21.79	6.19	0.098	1346	0.61	19.0	milky	
10:45	21.50	22.14	6.15	0.089	1428	0.69	19.4	milky	
11:00	24.50	22.25	6.12	0.085	1575	0.80	19.6	milky	36' BTOC
11:15	27.50	21.90	6.06	0.076	1640	1.26	20.0	milky	Flow rate .25 gal/min
11:30	31.25	23.60	6.05	0.077	1630	0.67	19.1	milky	38' BTOC
11:45	35.00	24.30	6.02	0.073	1112	0.69	20.0	milky	
12:00	38.75	24.50	6.00	0.069	1013	0.82	19.5	milky	

Parcel No.: HR 91Q
Well ID: HR 91Q-MW06
Date: 05-02-01

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
13:40	38.75	Resume Purging							
13:45	40.00	19.97	5.83	~~0.~~ .0058	1305	1.78	20.3	milky	36' BTOC flow .25 gal/min
14:00	43.75	21.95	5.74	0.056	720	1.25	19.0	cloudy	39' BTOC
14:15	47.50	21.30	5.34	0.036	804	3.99	19.3	cloudy	
14:30	51.25	21.55	5.73	0.050	1,680	1.79	19.0	milky	41' BTOC
14:45	54.00	21.75	5.84	0.057	1,532	0.57	18.9	milky	42' BTOC
15:00	57.75	22.00	5.74	0.047	1,344	1.46	18.3	milky	41' BTOC
15:15	61.50	20.75	5.71	0.044	451	1.35	18.6	cloudy	flow .375
15:30	67.08	23.45	5.87	0.051	238	0.75	18.1	Hazy	39' BTOC
15:45	72.71	24.01	5.74	0.043	1,301	1.06	17.9	milky	~~.333 flow gal/min~~ 37' BTOC
16:00	77.71	23.40	5.69	0.046	off scale	1.04	18.1	milky	flow .333 gal/min
16:15	81.46	22.93	5.72	0.045	245	1.15	18.0	Hazy	30' BTOC .25 gal/min
16:30	85.21	22.07	5.69	0.041	858	1.38	17.9	cloudy	sand residue

Parcel No.: HR 91Q
Well ID: HR 91Q-MW06
Date: 06-22-01

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
16:45	88.96	22.25	5.63	0.038	1,609	1.55	17.9	very cloudy	
17:00	92.71	23.16	5.57	0.033	1,574	1.91	17.7	milky	
17:10	95.21	22.50	5.49	0.030	1,573	2.31	17.8	milky	Sample Collected 8 hr Reached
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Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Lee Flippen
Well Developed by (person/firm): Lee Flippen / IT Corp.

Parcel No.: HR91Q
Well No.: MW07
Date started: 5-15-01

SI 18.75 - 38.75

Monitoring Well Information

Development Method: Surge + purge
Development Equipment: whale pump, Heron WLI
Aqua-FAST II, Horiba #8019
Casing Diameter: 2" .163

Beginning Measurments
Depth to Water (ft): 14.2 ft
Total depth of Well (ft): 40.2

PID 0.0 BKGrd 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.)
09:20	Ø	14.2	5.13	.043	999+	6.11	17.0	orange	PD 38 ft. PR. 7 Surged well
09:35	10.5	29.8	5.13	.029	999+	5.58	16.3	orange	PD 38 ft. PR. 7
09:50	21.0	30.4	5.44	.041	999+	3.25	16.8	orange	PD 38 ft. PR. 18
10:05	23.7	31.0	5.50	.035	999+	2.67	17.7	orange	PD 38 ft. PR. 13
1hr 10:20	25.7	31.98	5.46	.036	999+	4.45	18.5	orange	PD 38 ft. PR. 2
10:35	28.7	32.4	5.48	.034	999+	4.60	18.6	orange	PD 38 ft PR. 2
10:50	31.7	31.25	5.56	.033	553	5.19	18.5	orange	PD 38 ft PR. 2

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

40.2 - 14.2 = 26 x .163 = 4.238 x 5 = 21.19 + 40 g = 61.2 g

HR91Q MW07

Parcel No.: HR91Q
Well ID: MW07
Date: 5-15-01

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
11:05	34.7	~~30.71~~ 31.71	5.55	.033	520	5.18	19.6	orange	Recharge Rate ≥.2gpm PD 38ft PR .25gpm
hrs 11:20	38.45	32.58	5.54	.032	265	6.17	18.6	orange	PD 38ft PR ~~.2~~ .13
11:35	40.4	31.32	5.55	.037	190	5.43	19.6	cloudy	PD 38ft PR .13
11:50	42.4	31.25	5.56	.034	42	4.82	19.5	clear	PD 38ft. PR .13
12:05	44.4	31.54	5.56	.036	35	5.01	19.3	clear	PD 38 ft. PR .13
hrs 12:20	46.4	31.10	5.55	.034	51	5.12	19.3	clear	PD 38ft. PR .13
12:35	48.4	30.70	5.52	.033	63	4.70	19.6	clear	PD 38ft. PR .20 * -Changed Battery
12:50	51.4	30.40	5.45	.031	280	4.88	19.3	orangish clear	PD 38ft PR .2
13:05	54.4	30.51	5.48	.030	265	4.71	19.2	clearing orange	-Pump Stopped Working wl. too Low
hrs 13:25	54.4	27.01	—	—	—	Well Did not recharge 80%			Recharge Rate = 3.5ft/20min 80% = 19.4ft wc level needed
13:26	54.4	27.02	5.53	.034	999+	4.85	19.3	orange	WC High enough to run pump PD 38.5ft PR .12
13:40	56.2	28.23	5.43	.031	999+	4.91	18.9	orange	PD 38.5ft. PR .12
13:55	58.0	28.72	5.37	.028	1128	5.13	19.3	orange	PD38.5ft PR .12

Parcel No.: HR 91Q
Well ID: MW07
Date: 5-15-01

	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
	14:10	59.8	29.32	5.38	.029	999+	5.53	18.8	orange	PD 38.5 PR .15
5 hrs	14:25	62.1	31.98	5.37	.028	999+	5.68	18.7	orange	— Target PV reached — PD 38.5 PR
	14:35			Pump Stopped working						5-15-01 ~~Low Oxygen~~
	08:55	62.1	14.3	4.77	.091	55	6.03	19.0	clear	PID 0.0 BKGrd 0.0 5-16-01 PD 19 ft PR .06 - Surged well
	09:10	63.0	17.84	5.38	.036	744	6.44	21.1	orange	PD 19 ft PR .06 gpm
	09:25	63.9	Below Pump	5.40	.033	599	6.11	20.5	orange	PD 19 ft PR .06 gpm
6 hrs	09:40	64.8	Below pump	5.40	.030	250	6.35	21.2	cloudy	Moved pump - Surged PD 22 ft PR .06 gpm
	09:55	65.7	Below pump	5.35	.030	1236	6.58	20.0	cloudy	Moved pump - Surged well PD 26.5 ft PR .06 gpm
	10:10	66.6	22.92	5.37	.030	999+	6.83	19.7	orange	Moved Pump + Surged well PD 36.8 PR .06 gpm
	10:25	67.5	26.20	5.33	.031	880	6.10	20.5	orange	Moved Pump + Surged PD 38 PR .06 gpm
	10:40	68.4	26.42	5.17	.021	526	6.12	18.5	orange	PD 38 ft PR .06 gpm
	10:55	69.3	26.45	5.18	.020	384	6.09	21.2	orange	PD 38 ft PR .06 gpm
	11:10	70.2	25.25	5.21	.021	323	5.90	22.6	orange	PD 38 ft. PR .06

Parcel No.: HR 91Q
Well ID: MW07
Date: 5-16-01

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
11:25	71.1	25.5	5.28	.021	358	5.63	24.3	orange	PD 38 ft PR .06 gpm
11:40	72.0	25.83	5.29	.022	193	5.30	24.3	orange	PD 38 ft PR .06 gpm
11:55	72.9	26.11	5.26	.022	155	5.08	24.6	cloudy	PD 38 ft. PR .06 gpm
12:10	73.8	26.33	5.23	.023	101	4.89	25.1	cloudy	-8hrs Development Time Took 1l. sample Well Development Completed. [illegible] 5-16-01
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number:
Form Completed by: *Keith Hogue (for Mike May)
Well Developed by (person/firm): Mike May / Nicole

Parcel No.: 91Q
Well No.: MW08
Date started: 4/5/01

*Transferred from Mike May's notes from Well Development Log Book #11

Monitoring Well Information

Development Method: Surge/purge
Development Equipment: Whale Pump

Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 2.60
Total depth of Well (ft): 45

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	2.0	6.13	4.78	0.068	1000+	4.10	18.6	Cloudy brown	
14:30	4.0	7.44	5.10	0.035	1000+	4.68	18.6	Cloudy brown	
14:45	6.0	9.02	5.27	0.037	223	4.07	17.8	Slightly Cloudy	
15:00	8.0	10.64	5.10	0.028	184	5.05	17.6	Slightly Cloudy	
15:15	10.0	11.16	5.14	0.029	161	4.68	17.6	Slightly Cloudy	
15:30	12.0	11.79	5.12	0.034	173	4.72	17.6	Slightly Cloudy	
15:45	14.0	12.11	5.16	0.031	167	4.51	17.5	Slightly Cloudy	

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

45 - 2.60 = 42.4 x 0.163 = 6.9 x 5 = 34.56 gallons + 30 gallons = 64.56 gallons minimum

Parcel No.: 91a
Well ID: MW08
Date: 4/5/01 - 4/6

*Information taken from Mike May's notes in Well Development Log - Book #11

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
16 :00	16	12.86	5.12	0.032	154	4.39	17.4	slightly Cloudy	
16 :15	18	13.17	5.11	0.034	139	4.31	17.4	Slightly Cloudy	
6/01 09:30	20	7.38	4.94	0.062	764	3.41	18.1	~~slightly~~ cloudy K.H. 4/6/01 ~~Cloudy~~ Brown	
09:45	22	7.61	5.01	0.058	671	3.79	18.1	Cloudy Brown	
10 :00	24	8.09	5.09	0.056	643	3.63	18.2	Cloudy Brown	
10 :15	26	8.63	5.00	0.051	613	3.47	18.3	Cloudy Brown	
10 :30	28	9.11	4.98	0.043	581	3.81	18.4	Cloudy Brown	
10 :45	30	9.43	4.99	0.061	547	3.47	18.4	Cloudy Brown	
11 :00	32	9.64	5.01	0.059	530	3.74	18.6	Cloudy Brown	
11 :15	34	10.04	5.04	0.057	467	3.93	18.7	Cloudy Brown	
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4/16/01

Parcel No.: 91Q
Well ID: MW08
Date: 4/12/01

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) 4/12/01
10:40	34.0	2.9	5.21	0.075	> 1000	3.82	20.5	brown	pump 6' from bottom purge rate = 0.25 gpm
10:45	35.25	5.4	5.32	0.032	> 1000	4.21	21.2	cloudy brown	
11:00	39	9.45	5.28	0.024	618	5.10	20.1	cloudy brown	
11:15	42.75	10.81	5.20	0.021	88	5.30	20.0	cloudy	
11:30	46.5	11.74	5.20	0.019	54	5.78	20.0	cloudy	
11:45	50.25	12.63	5.14	0.018	68.5	5.72	20.4	cloudy	
12:00	54.0	12.15	5.11	0.016	39.7	5.51	20.6	cloudy	
12:15	57.75	12.07	5.11	0.016	25.7	6.26	20.8	cloudy	
12:30	61.5	12.26	5.08	0.019	>1000	5.21	20.8	brown	raw pump down well, pump 7' from bottom
12:45	65.25	12.70	5.10	0.015	449	5.73	21.0	cloudy brown	
13:00	69	12.94	5.04	0.014	86.5	6.05	22.1	cloudy	
13:15	72.75	13.45	5.10	0.015	45.3	9.94	21.9	cloudy	

Parcel No.: HR-91Q
Well ID: MW08
Date: 4/12/01

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	76.5	13.7	5.03	0.015	27.0	5.79	21.8	clear	
13:45	80.25	13.28	5.02	0.014	14.7	6.33	21.3	clear	
14:00	84	13.49	5.01	0.017	482	5.40	21.9	lt. brown cloudy	Moved pump up 4 FT (11 FT from bottom)
14:15	87.75	13.38	5.00	0.013	41.8	6.00	21.9	slightly cloudy	
14:30	91.5	13.40	4.93	0.013	14.3	5.79	22.4	clear	
~~15:00~~	~~99~~	~~13.50~~	~~4.88~~	~~0.013~~ NB	4/12/01				
14:45	93.25	13.47	4.93	0.013	10.2	5.91	21.8	clear	
15:00	99	13.50	~~+3.5~~ 4/12/01 ~~0.013~~ 2ND ~~4.88~~	0.013 ~~8.0~~	8.0 ~~5.98~~ NB 4/12/01	5.98 ~~21.7~~	21.7	clear	
15:15	102.75	13.65	4.91	0.014	8.09	5.87	21.5	clear	
15:30	106.5	13.72	4.91	0.013	8.12	5.92	21.8	clear	
15:45	110.25								collected sample for photography
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Justin Fisher
Well Developed by (person/firm): Justin Fisher IT

Parcel No.: 91Q
Well No.: HR-91Q-MW09
Date started: 3/21/01

Monitoring Well Information

Development Method: Not developed; well was dry
Development Equipment: N/A
Casing Diameter: 2" PVC

Beginning Measurments
Depth to Water (ft): Well was dry
Total depth of Well (ft): 43.83 ft 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.)
09:45	0	—	—	—	—	—	—	—	well was dry
09:30	0	—	—	—	—	—	—	—	well was dry.
15:28	0	—	—	—	—	—	—	—	4/26/01 Well was dry.
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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

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Jacob Purcell
Well Developed by (person/firm): Jacob Purcell IT CORP.

Parcel No.: 115Q
Well No.: HR-115Q-MW01
Date started: 02/14/01

Monitoring Well Information

Development Method: WHALE PUMP
Development Equipment: WHALE PUMP, HORIBA, DRT

Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 7.85
Total depth of Well (ft): 30.80

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 : 20	10	12.93	5.27	.022	999+	7.18	15.4	PINK	SURGED
14 : 35	25	12.24	5.32	.021	80.1	7.25	16.1	CLEARING	SURGED
14 : 50	58	12.29	5.36	.023	77.6	7.21	15.9	CLEARING	
15 : 05	84	12.46	5.40	.025	81.9	7.29	16.7	CLEARING	PUMP @ TOP OF SCREEN
15 : 20	110	12.49	5.36	.021	80.4	7.19	16.2	CLEARING	PUMP @ MID SCREEN
15 : 35	140	12.51	5.37	.022	78.4	7.23	16.5	CLEARING	PUMP RUNNING WIDE OPEN
15 : 50	172	12.56	5.40	.025	120	7.29	17.1	CLOUDY	SURGED

TD - DTW = WC x 2"/4" well = ONE PV x 5 = MIN PV + H_2O TO INSTALL WELL = MINIMUM H_2O to REMOVE
30.80 - 7.85 = 22.95 x .163 = 3.74 x5 = 18.7 + 100 = 118.7

Parcel No.: 115Q
Well ID: MW01
Date: 02/14, 02/15/01

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	200	13.31	5.15	.019	43.6	7.23	15.9	CLEAR	2 FT. FROM BOTTOM
16:20	220	13.42	5.01	.017	32.6	7.26	15.9	CLEAR	
08:25	230	11.68	4.86	.047	588	7.13	16.1	CLOUDY	02/15/01 (From this point on) SURGED
08:40	258	11.88	4.94	.020	35.6	7.21	14.9	CLOUDY	LIFT PUMP 1 FT.
08:55	285	12.31	4.91	.019	316	7.29	14.6	CLOUDY	SURGED
09:10	317	12.52	4.95	.019	46.2	7.21	14.3	CLEARING	
09:25	340	12.59	4.98	.017	47.5	7.30	15.0	CLOUDY	SURGED
09:40	367	12.98	4.97	.017	100	7.26	15.1	CLOUDY	
09:55	395	13.41	4.98	.017	11.6	7.29	15.2	CLEAR	
10:10	420	13.62	4.96	.016	10.9	7.25	15.3	CLEAR	
10:25	450	13.98	4.94	.015	120	7.19	15.6	CLOUDY	HAVE DRAWN IN SEDIMENTS
10:40	478	14.21	4.96	.016	15.5	7.26	15.1	CLEAR	
10:45	485	14.36	4.98	.015	14.6	7.28	15.3	CLEAR	

Parcel No.: 115Q
Well ID: mw01
Date: 02/15/01

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 : 50	492	14.42	4.94	.015	9.82	7.19	15.9	CLEAR	
10 : 55	500	14.51	4.91	.016	8.71	7.23	15.1	CLEAR	
11 : 00	510	14.55	4.94	.015	8.93	7.26	15.5	CLEAR	
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FINAL ENTRY

J. Purcell

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Jacob Purcell
Well Developed by (person/firm): Jacob Purcell IT CORP.

Parcel No.: 115 Q
Well No.: HR-115Q - MW02
Date started: 02/08/01

Monitoring Well Information

Development Method: Whale Pump
Development Equipment: Whale Pump, Horiba, ORT,

Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 10.81
Total depth of Well (ft): 32.95

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)
15:35	5	23.21	5.91	.270	999+	7.35	18.5	grey	surged
15:50	8	23.65	5.48	.217	999+	7.62	18.9	grey	
16:05	11	24.21	5.67	.164	999+	7.68	18.7	grey/ clearing	
16:20	14	24.85	5.18	.154	149	7.40	19.1	Cloudy	
16:35	17	24.91	5.10	.149	46	7.54	19.1	Cloudy/ Clearing	
16:50	21	24.98	5.03	.151	48	7.61	19.2	Cloudy/ Clearing	Shut down for day
09:15 ~~09:00~~	23	16.21	4.02	.041	999+	4.20	16.5	Cloudy	02/09/01

TDI - DTW = WC × 2" well .163 = WV × 5 = 18 gal + 40 (Had used to water all well) = 58 gal To Remove

32.95 - 10.81 = 22.14

Parcel No.: 115Q
Well ID: HR-115Q-MW02
Date: 02/09/01

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	25	18.91	4.55	.037	999+	4.88	16.7	Cloudy	02/09/01
09:45	27	19.76	4.87	.029	395	5.03	17.4	Cloudy	" turb taken w/ORT
10:00	29	20.16	4.97	.025	225	9.85	17.8	Cloudy	"
10:15	31	20.96	4.92	.023	144	7.54	17.9	cloudy	"
10:30	33	21.15	4.98	.022	127	7.52	18.1	Cloudy	"
10:45	35	21.65	4.79	.021	140	7.36	19.1	Cloudy	"
11:00	39	21.68	4.88	.019	153	7.26	19.5	Cloudy	" opened valve to release sediment
11:15	42	23.76	4.80	.019	120	7.30	19.5	cloudy	"
11:30	45	23.89	4.92	.019	94.3	7.32	19.2	cloudy	"
11:45	49	23.96	4.90	.019	65.5	7.30	19.4	clearing	"
12:00	53	24.06	4.93	.019	56.0	7.33	19.7	Clearing	" opened valve to release sediment
12:15	57	25.21	4.95	.018	43.6	7.35	20.1	Clearing	"
12:30	60	25.61	4.97	.019	40	7.29	20.5	Clearing	"

Parcel No.: 115a
Well ID: MW02
Date: (02/09)(02/12)(02/10) 02/14/01

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	63	25.99	4.96	.019	39	7.33	20.6	clearing	opened valve to release sediment 02/09/01
10:10	78	26.98	4.40	.064	32	5.60	13.4	clear	02/12/01
10:25	89	N/A	5.03	.025	255	5.50	13.8	Cloudy	02/12/01 well is almost dry H2O level indicator is on pump
16:00	93	13.29	5.17	.090	359	0.10	14.4	Cloudy	02/13/01
16:15	96	13.29	5.32	.037	239	0.10	13.7	Cloudy	"
16:30	99	13.29	5.16	.027	85	5.85	13.5	Cloudy	"
16:45	102	13.29	5.08	.029	64	6.26	13.4	Cloudy	"
17:00	107	13.29	5.12	.028	66	5.68	13.0	cloudy	"
09:05	110	11.01	5.17	.068	42.1	8.15	17.0	Clearing	12/14/01 Hit patch of sediment
09:20	113	11.15	5.24	.032	90.1	8.21	17.3	Cloudy	" raised pump 1ft.
09:35	117	1432	5.22	.031	90.3	8.29	17.1	cloudy	" opened valve
09:50	121	16.13	5.29	.032	92.0	8.19	16.9	Cloudy	"
10:05	125	17.96	5.21	.032	89.1	8.22	17.2	Clearing	"

Parcel No.: 115Q
Well ID: HR-115Q-MW02
Date: 02/14/01

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 :20	129	18.25	5.26	.034	59.8	8.23	17.8	Clearing	02/14/01
10 :35	133	19.36	5.19	.027	27.6	8.19	17.9	Clear	took sample
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Final Entry
J Purcell 02/14/01

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Brian Rhodes/ Mike May
Well Developed by (person/firm): Rhodes/May / IT

Parcel No.: 115
Well No.: HR 115-Q-MW03
Date started: 2-14-01

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: Whale Pump, Horiba, DRT, water level indicator
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 20.2' TOC
Total depth of Well (ft): 37.7' TOC

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 : 20	.5	23.42	6.05	.174	1K+	10.32	18.2	Brown	pump @ 34' bgs, .10gpm
14 : 35	2.0	25.76	5.98	.162	1K+	10.61	17.5	Brown	increase flow to .30gpm
14 : 50	6.5	26.20	5.89	.154	1K+	0.52	18.1	Brown	decrease flow to .20gpm
15 : 05	9.5	26.63	5.85	.157	920	0.27	17.9	TAN	
15 : 20	12.5	26.82	5.90	.175	1K+	0.51	18.0	TAN	pump @ 32' bgs
15 : 35	15.5	26.97	5.88	.169	963	0.81	17.9	TAN	
15 : 50	18.5	27.00	5.87	.161	482	0.12	17.7	Cloudy	

WC x 2" well
17.5 .163 = 2.85 x5 = 14.26 + 80 gal. = 94.26 gal. to be purged

Parcel No.: 115
Well ID: MW03
Date: 2-14-01

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	21.5	27.15	5.84	.155	216	0.83	17.7	Cloudy	
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09 : 20	21.5	20.00	5.87	.157	1K+	0.98	15.7	Brown	pump @ 25.0' Bgs .10gpm
09 : 35	23.0	24.57	5.98	.175	1K+	1.17	15.9	Brown	increase flow to .50gpm move pump to 32' bgs
09 : 50	26.5	30.02	5.99	.176	1K+	1.71	16.1	Brown	.20 gpm
10 : 05	29.5	30.59	6.14	.180	1K+	1.75	16.0	Brown	
10 : 20	32.5	30.20	6.15	.181	1K+	1.69	16.1	Brown	pump @ 32' Bgs
10 : 35	35.5	30.05	6.07	.147	697	1.89	16.0	TAN	
10 : 50	38.5	29.94	6.14	.151	366	1.91	16.2	TAN	
11 : 05	41.5	29.17	6.25	.172	179	1.98	16.0	Cloudy	pump @ 30' Bgs
11 : 20	44.5	28.76	6.21	.149	127	1.81	15.7	Cloudy	Decrease to .10gpm
11 : 35	46.0	27.20	6.13	.181	89	1.79	16.0	Clear	
11 : 50	47.5	26.17	6.40	.197	80	1.65	16.1	Clear	pump @ 28' Bgs

Parcel No.: 115
Well ID: MW03
Date: 2-15-01

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	49.0	24.90	6.28	.167	71	.089	16.2	Clear	
12 : 20	50.5	24.45	6.34	.171	70	1.10	16.0	Clear	
12 : 35	52.0	23.98	6.47	.150	79	1.18	16.4	Clear	pump @ 25' bgs
12 : 50	53.5	23.79	6.50	.194	61	1.25	16.7	Clear	pump @ 29' bgs
13 : 05	55.0	23.64	6.51	.200	34	1.97	16.0	Clear	
13 : 20	56.5	23.47	6.47	.197	27	1.78	16.0	Clear	
13 : 35	58.0	23.15	6.53	.189	29	1.47	16.2	Clear	pump stops
15 : 00	58.0	21.97	6.79	.175	202	1.54	16.0	Cloudy	pump @ 29' bgs
15 : 15	59.5	23.40	6.79	.180	195	1.74	15.9	Cloudy	
15 : 30	61.0	23.97	6.99	.197	192	1.87	16.4	Cloudy	
15 : 45	62.5	22.98	7.05	.119	180	1.97	16.0	Cloudy	
16 : 00	64.0	22.71	7.15	.127	145	1.98	16.0	Cloudy	
16 : 15	65.5	22.65	7.08	.149	90	1.76	16.7	Cloudy	pump @ 32' bgs

Parcel No.: 115
Well ID: MW03
Date: 2-15-01

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)
16:30	67.0	22.42	7.10	.150	81	1.79	16.5	cloudy	
16:45	68.5	22.37	7.00	.147	37	1.97	16.0	clear	
17:00	70.0	22.18	6.79	.172	51	1.80	16.7	clear	
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08:00	70.0	20.0	6.45	.089	281	1.97	14.9	Cloudy	pump @ 29' bgs
08:15	71.5	21.98	6.72	.117	222	1.42	15.2	Cloudy	
08:30	73.0	22.10	7.15	.192	185	2.05	15.2	Cloudy	
08:45	74.5	22.27	7.07	.202	134	2.17	15.0	Cloudy	
09:00	76.0	22.48	7.04	.198	121	2.15	15.4	Clouds	
09:15	77.5	22.57	7.00	.202	109	2.17	15.0	Cloudy	
09:30	79.0	22.71	7.15	.197	88	2.08	15.7	Cloudy	
09:45	80.5	22.69	6.49	.186	66	2.09	15.9	Cloudy	
10:00	82.0	22.48	6.75	.192	42	2.08	16.0	Clear	

Parcel No.: 115
Well ID: MW03
Date: 2-18-01

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 :15	83.5	22.37	6.98	.179	47	2.10	16.5	Clear	TAKE Sample inc. 1 to 1.0 gp
10 :30	98.5	29.75	7.15	.197	125	2.09	16.0	Cloudy	
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NOT USE
DO:6.0

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Brian Rhodes/Mike May
Well Developed by (person/firm): Rhodes/May / IT

Parcel No.: 115 Q-X
Well No.: HR-115Q-MW04
Date started: 2-13-01

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: Whale Pump, Horiba, DRT, water level indicator
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 13.7' TOC
Total depth of Well (ft): 42.3'

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)
12:10	0	13.70	5.40	.165	1K+	4.09	12.5	Cloudy	pu @ 40', .1gpm
12:25	1.5	18.95	6.02	.122	1K+	10.28	12.6	Cloudy	
12:40	3.75	24.16	6.25	.112	1K+	4.21	14.4	Cloudy	increase flow to .15gpm
12:55	5.00	22.80	6.45	.112	961	3.42	13.5	Cloudy	increase flow to .20gpm
13:10	8.00	26.82	6.40	.079	735	4.13	14.9	Cloudy	pump @ 38'
13:25	11.00	25.95	6.40	.077	368	4.40	15.3	Cloudy	
13:40	14.00	27.69	6.05	0.59	28	4.95	15.2	Clear	pump @ 36'

WC (2") 5 Purge Vol
28.6 x .163 = 4.67 x 5 = 23.30 + 40 gal. = 63.30 to be purged

Parcel No.: 115Q-X
Well ID: MW04
Date: 2-13-01

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)
13:55	17.00	27.30	6.05	.066	172	4.45	15.4	Cloudy	pump @ 34'
14:10	20.00	25.95	6.06	.065	220	3.87	15.2	Cloudy	
14:25	23.00	25.12	6.06	.062	25	4.33	15.0	Clear	pump @ 32'
14:40	26.00	25.52	5.98	.053	115	5.36	15.2	Cloudy	
14:55	29.00	25.52	5.94	.058	34	5.00	14.9	Clear	
15:10	32.00	25.40	5.94	.060	24	4.52	15.1	Clear	
15:25	35.00	25.75	5.97	.059	18	4.67	15.1	Clear	pump @ 30'
15:40	38.00	26.05	5.97	.061	27	4.27	15.3	Clear	
15:55	41.00	26.05	6.01	.060	22	4.78	15.3	Clear	
16:10	44.00	26.07	5.98	.062	17	4.73	15.2	Clear	increase flow to .50 gpm
16:20	49.00	36.45	5.99	.064	185	4.79	15.0	Cloudy	increase flow to .5 gpm
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:				NOT USED					

Parcel No.: 115-Q-X
Well ID: MW04
Date: 2-14-01

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)
08:45	49.00	19.35	5.10	.062	1K+	4.70	16.2	Cloudy	pump @ 25' Bgs .10gpm
09:00	50.50	20.64	5.28	.040	1K+	4.50	16.7	Cloudy	
09:15	52.00	21.40	5.22	.043	578	3.23	16.8	Cloudy	pump @ 28' bgs
09:30	53.50	21.50	5.39	.039	171	3.87	16.8	Cloudy	
09:45	55.00	21.72	5.36	.040	55.4	9.70	16.8	Clear	
10:00	56.50	21.75	5.48	.055	291	2.01	16.7	Cloudy	pump @ 32' bgs
10:15	58.00	21.78	5.50	.050	172	3.13	16.8	Cloudy	
10:30	59.50	21.65	5.43	.046	33.4	3.46	16.7	Clear	pump @ 36' bgs
10:45	61.00	21.49	5.41	.049	13.9	4.64	17.1	Clear	
11:00	62.50	21.50	5.44	.049	11.2	3.89	17.4	Clear	pump @ 40' bgs
11:15	64.00	21.00	5.46	.049	9.85	3.64	17.8	Clear	
11:30	65.50	21.00	5.43	.050	8.78	4.17	18.2	Clear	
11:45	67.0	20.94	5.40	.052	9.20	4.10	18.2	Clear	

LAST ENTRY

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887 11020300
Form Completed by: Karl Kachelman
Well Developed by (person/firm): Karl Kachelman / IT

Parcel No.: ~~HR-114Q~~ 115Q
Well No.: ~~HR-114Q-MW02~~ 115Q-MW05
Date started: 3/5/01

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: Grundfos Redi-Flo Pump, Horiba Turbidimeter, Water Level Indicator
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 9.40
Total depth of Well (ft): 79.3

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.)
09:30	0	9.40	5.39	.064	628	6.69	14.0	tan	Pump @ 76' bgs Surge .6 GPM
09:45	9	18.63	5.46	.054	326	6.87	16.2	cloudy	Surge
10:00	18	28.82	5.38	.052	895	6.35	16.1	tan	Surge .5GPM 74' bgs
10:15	27	28.96	5.71	.065	634	6.08	16.2	tan	Surge
10:30	34.5	28.14	5.66	.048	489	6.01	16.7	cloudy	
10:45	42	28.40	5.45	.045	358	6.09	16.7	cloudy	72' bgs
11:00	49.5	28.51	5.39	.042	579	6.17	16.7	cloudy	

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

79.3 - 9.4 = 69.9 X .163 = 11.4 x 5 = 57 + 90 = 147 GAL

CH 3/9/01

Parcel No.: HR-~~444~~ 1150
Well ID: ~~MW02~~ MW05
Date: 3/5/01

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
11:15	57	28.03	5.39	.041	680	6.08	16.3	Cloudy	70' bgs .4 GPM
11:30	63	25.58	5.36	.042	284	6.32	16.5	Cloudy	
11:45	69	25.70	5.35	.040	205	6.16	16.7	Cloudy	68' bgs
12:00	75	25.85	5.31	.040	193	6.18	16.5	Cloudy	
12:15	81	25.88	5.28	.038	200	6.21	16.8	Cloudy	66' bgs
12:30	87	26.00	5.25	.037	129	6.29	16.7	Cloudy	Getting clearer
12:45	93	26.08	5.23	.037	109	6.10	16.7	Cloudy	64' bgs
13:00	99	26.07	5.20	.036	95	6.12	16.8	Cloudy	
13:15	105	25.90	5.18	.036	98	6.36	17.0	Cloudy	62' bgs .2 GPM
13:30	108	26.31	5.13	.037	96	6.14	16.7	Cloudy	
13:45	111	26.38	5.17	.035	72	6.33	16.7	Cloudy	60' bgs
14:00	114	26.48	5.16	.035	77	6.09	16.6	Cloudy	
14:15	117	26.55	5.17	.034	70	6.16	16.6	Cloudy	58' bgs

Parcel No.: HR-~~1144~~ 115Q CH 3/19/01
Well ID: ~~MW07~~ MW05
Date: 3/5/01

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
14:30	120	26.58	5.15	.034	61	6.18	16.5	Cloudy	
14:45	123	26.61	5.13	.033	55	6.11	16.6	Cloudy	57' bgs
15:00	126	26.66	5.19	.033	55	6.08	16.4	Cloudy	.15 GPM
15:15	128.25	26.68	5.18	.033	54	6.13	16.6	Cloudy	
15:30	130.5	26.70	5.17	.033	46	6.10	16.7	Clear	
15:45	132.75	26.76	5.20	.034	53	6.17	16.4	Cloudy	
16:00	135	26.72	5.17	.034	50	6.20	16.5	Cloudy	
16:15	137.25	26.77	5.16	.033	46	6.24	16.7	Clear	
16:30	139.5	26.80	5.15	.032	45	6.18	16.5	Clear	
09:00	139.5	9.48	Started		Purging				Pump @ 76' bgs 3/6/01 .4 GPM
09:15	145.5	23.88	5.48	.050	509	6.08	17.8	Cloudy	
09:30	151.5	24.02	5.53	.045	338	6.14	17.3	Cloudy	
09:45	157.5	25.02	5.34	.037	503	6.06	17.6	Cloudy	.2 GPM Pump @ 70' bgs

Parcel No.: HR-~~440~~ 1150 CH
Well ID: ~~MW07~~ MW05 3/19/01
Date: 3/6/01

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
10:00	160.5	25.11	5.27	.032	152	5.98	18.0	Cloudy	
10:15	163.5	25.52	5.22	.032	124	5.97	17.6	Cloudy	.15 GPM 64' bgs
10:30	165.75	25.26	5.17	.032	86	6.23	16.8	Cloudy	
10:45	168	25.33	5.16	.033	55	6.38	16.6	Clear	
11:00	170.25	25.38	5.15	.033	49	6.41	16.4	Clear	.10 GPM 58' bgs
11:15	171.75	25.32	5.17	.030	42	6.36	16.3	Clear	
11:30	173.25	25.27	5.16	.031	37	6.38	16.2	Clear	
11:45	174.75	25.15	5.17	.031	37	6.44	16.3	Clear	
12:00	176.25	25.02	5.18	.032	37	6.42	16.1	Clear	Well Developed Sample Collected
:									
:									
:									
:									

Karl Kaechelmann 3-6-01

TOTAL HRS: 10
TOTAL GAL Removed: 176.25

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Jose Maturell
Well Developed by (person/firm): JM IT 956735

Parcel No.: 116 Q
Well No.: MW01
Date started: 5-21-01

Screened Interval 50.8 - 70.8

Monitoring Well Information

Development Method: Surge & Purge
Development Equipment: Grund Fos pump

Casing Diameter: 2" = .163

Beginning Measurments
Depth to Water (ft): DRY
Total depth of Well (ft): 73.7 TOC

PID 1.2 Backgrd. 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.)
13:40	Ø								Dry well (no water)
5-22-01 JM 09:15	Ø								PID 6.6 Backgrd 0.0 Dry well (no water)
5-23-01 JM 14:45	Ø								PID 3.4 backgrd 0.0 Dry well (NO water)
:									
:									
:									
:									

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

+ 5 =

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Lee Flippen
Well Developed by (person/firm): Lee Flippen / IT Corp.

Parcel No.: HR 116 Q
Well No.: MW 02
Date started: 4-12-01

Stick-up 2" well 4-12-01 PID 5.2 Bkgrd 0.0

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: Grundfos Pump

Casing Diameter: Stick-up 2"

Beginning Measurments
Depth to Water (ft): 81.5
Total depth of Well (ft): 88.2

Screen Interval = 64'-84'

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.)
4-12 16:00	2.25	Hand	Bailed	—	Dry	—	—	orange	water level to low for pump
4-25 16:30	2.25	81.10							PID .4 Bckgrd 0.0 4-25-01
17:00	6.5	Hand Bailed			Dry	Hand	Bailed	4.25 gal	[illegible] 4-25-01
4-26 10:45	6.5	81.12	—	3rd	Visit	- Dry	well		PID 1.5 BKGrd 0.0 4-26-01 3rd visit Well Dry
11:20	8.5	Hand	Bailed	2.0 gals.	- 3rd	time well	Dry and	Hand	Bailed out well —
3x Well	Dry —	well	Development	completed	—				[illegible] 4-26-01

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove
88.2 - 81.5 = 6.7 x .163 = 1.09 x 5 = 5.45 + 95 = 100.45 g

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by:
Well Developed by (person/firm): Reginald Gains

Parcel No.: HR-116Q
Well No.: MW03
Date started: 3/29/01

Monitoring Well Information

Development Method: Surge and Purge
Development Equipment: Waterpump

Casing Diameter: 2in.

Beginning Measurments
Depth to Water (ft): 7.75
Total depth of Well (ft): 30.5

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	—	7.75	5.22	0.394	313	11.63	12.1	Cloudy (brown)	purge rate - 1.25 gal/5min pump - 1ft from bottom
10:05	3.75	14.0	5.26	0.144	237	11.86	12.0	Cloudy (brown)	purge rate - 0.75 gal/5min
10:20	6.00	15.96	5.27	0.120	126	12.14	11.7	slightly brown cloudy	purge rate - 1 gal/5min
10:35	9.00	17.55	5.16	0.108	168	11.83	12.2	slightly cloudy (brown)	
10:50	—	—	—	—	—	—	—	—	Stop purging pump malfunction
10:40	9.00	7.90	5.10	0.033	>1000	7.59	15.7	Cloudy (brown)	purge rate - 0.75 gal/5min pump - 1ft from bottom 3/30/01
10:55	11.25	12.45	5.18	0.025	350	6.32	15.1	Cloudy (brown)	purge rate - 1.5 gal/5min pump - 1ft from position

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

30.5 - 7.75 = 22.75 x 0.163 = 3.708 x 5 = 18.54 + 40 = 58.54

Parcel No.: HR-116Q
Well ID: MW03
Date: 3/29/01

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
11:10	15.75	17.34	5.14	0.027	282	7.34	14.3	Cloudy (brown)	rate- 2.25 gal/5min
11:25	22.50	22.0	5.05	0.024	>1000	6.33	15.1	Cloudy (brown)	
1.83 11:40	29.25	BTOP	4.96	0.028	509	7.00	15.3	Cloudy (brown)	
11:45	—	—	—	—	—	—	—	—	Dry well well recharging
12:00	—	—	—	—	—	—	—	—	Dry well well recharging
12:15	—	—	—	—	—	—	—	—	Dry well well recharging
12:30	—	—	—	—	—	—	—	—	Dry well well recharging
12:35	29.25	22.4	5.14	0.028	208	6.59	15.4	slightly cloudy (brown)	rate- 0.75 gal/5 min
12:50	31.50	23.1	5.18	0.024	366	6.38	15.3	slightly cloudy (brown)	
13:05	33.75	23.75	5.10	0.024	194	7.04	15.4	slightly cloudy (brown)	
13:20	36.00	23.78	5.14	0.025	180	7.57	15.8	slightly cloudy (brown)	
13:35	38.25	23.70	5.18	0.025	140	7.01	15.8	slightly cloudy (brown)	
1.25 13:50	40.50	23.62	5.19	0.024	120	6.95	15.8	slightly cloudy (brown)	Purged well dry after reading at 2.25 gal/5min.

Parcel No.: HR-116Q
Well ID: MW03
Date: 3/29/01

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
14:05	—	—	—	—	—	—	—	—	Well is dry.
14:30	—	—	—	—	—	—	—	—	4/26/01 Well is dry.
10:35	—	8.63	—	—	—	—	—	—	water level indicator must have malfunctioned on 4/26 4/27/01.
10:03	40.50	9.20	—	—	—	—	—	—	4/30/01. 0.15 gal/min
10:18	42.75	16.75	4.88	0.052	34.8	4.88	17.8	Clear	Pump @ 25.5 Ft. btoc
10:33	45.00	15.78	5.04	0.021	23.4	5.35	17.8	clear	
10:48	47.25	16.70	5.10	0.018	32.1	4.06	18.4	clear	Pump @ 23.5' @ 1040
11:03	49.50	17.55	5.12	0.015	37.5	4.98	18.3	clear	
11:18	51.75	18.70	5.05	0.013	50.9	5.04	18.0	cloudy	Pump @ 21.5' @ ~~[illegible]~~ JF 11:10
11:33	54.00	19.20	5.04	0.013	29.2	5.02	19.1	clear	
11:48	56.25	19.70	5.18	0.017	28.3	4.75	19.2	clear	Pump @ 23.5' @ 1140
12:03	58.50	21.20	5.05	0.014	145.0	4.91	18.7	cloudy	shut down. Well recharging
13:35	58.50	16.35	—	—	—	—	—	—	Pump @ 25.5' btoc. Flow Rate = 0.15 gal/min

Parcel No.: 116Q
Well ID: MW03
Date: 4/30/01

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
13:45	60.75	17.95	5.14	0.019	243	5.19	19.7	very cloudy	
14:00	63.00	19.70	4.97	0.014	287	6.17	18.5	very cloudy	
14:15	65.25	22.10	4.75	0.013	229	5.32	18.8	very cloudy	
14:30	67.50	23.40	4.90	0.014	86.8	5.29	18.4°	cloudy	Pump @ 27.5' btoc @ 1420
14:45	69.75	24.05	5.03	0.015	75.4	4.76	20.3	cloudy	
15:00	72.00	24.35	5.06	0.015	88.7	4.69	19.6	cloudy	Flow Rate = 0.134 gal/min
15:15	74.04	—	5.09	0.015	190	4.72	18.5°	very cloudy	
15:30	76.08	—	5.03	0.016	213	4.55	18.8°	very cloudy	Pump on bottom @ 1520.
15:45	77.58	—	5.04	0.015	120	4.95	19.0°	very cloudy	Flow Rate = 0.1 gal/min @ 1530
16:00	79.08	—	5.04	0.015	99.8	4.81	19.2°	cloudy	
16:15	80.58	—	5.12	0.015	63.8	4.78	18.8°	cloudy	8 hrs. reached. Collect
:									Turbidity sample + shut
:									down

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number:
Form Completed by: Nicole Badon
Well Developed by (person/firm): N. Badon / IT

Parcel No.: 116Q
Well No.: MW04
Date started: 4-10-01

Monitoring Well Information

Development Method: Surge / purge
Development Equipment: Whale pump

Casing Diameter:

Beginning Measurments
Depth to Water (ft): 32.97 TOC
Total depth of Well (ft): 48.73 TOC

Screen 29-49'

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.)
14:36	—	32.97	5.23	0.037	> 1000	6.63	22.2	cloudy orange	pump 5 FT off bottom, 0.25 gpm
14:45	2.25	37.33	pump stopped						
15:15	9.75	38.94	5.28	0.028	> 1000	7.49	21.5	brown	pump is 2 FT off bottom
15:30	13.5	below top of pump	—	Purged dry					pump is 1 FT off bottom
15:40	—	44.65							
16:00	—	42.2'							recharge: 2.45 gal/20 min
14:15	—	42.2'	pump not pulling up water						4/11/01

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

48.73' - 32.97 = 15.76 x 0.163 = 2.60 x 5 13.0 + 60 gal = 73 gallons

4/10/01

Parcel No.: HR116Q MW04
Well ID: MW04
Date: 4-26-01

PID 2.1 BKGrd 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
4-26	14:50	13.5	45.75	5.2	.085	999+	6.50	19.0	Mud-orange	PID 2.1 BKGrd 0.0 Hand Bailed 1.0 g
	15:15	14.5	—	Well Bailed to Dry			—	wait 20 mins then check W.L.		
	15:35	14.5	NO water in well							recharge rate = 0 / 20 min. ~~Lee Stapp~~ 4-26-01
	:									
4-30	10:20	14.5	46.35	5.35	.039	999+	5.50	16.8	orange	PID 1.8 BKGrd 0.0
	:	water level too low to pump - Hand Bailed well							1.5 g	
	10:30	16.0	total water remove - 3x				Well	Went Dry	—	Well Dev. completed 4-30-01 ~~Lee Stapp~~
	:									
	:									
	:									
	:									
	:									
	:									

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Justin Fisher
Well Developed by (person/firm): Justin Fisher IT

Parcel No.: 116Q
Well No.: HR-116Q-MW05
Date started: 03/09/01

Monitoring Well Information

Development Method: Purge + Surge
Development Equipment: Grundfos Pump, Horiba U-10 Turbidimeter
Casing Diameter: 2" PVC

Beginning Measurments
Depth to Water (ft): 41.67' btoc
Total depth of Well (ft): 74.65' btoc

Amount to be Purged = [(74.65 - 41.67) x 0.163] x 5 + 65 = 91.87 gallons

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.)
09:20	0	41.67	—	—	—	—	—	—	Begin Purging @ 1.25 gal/min
10:00	~10 gal	61.88	5.09	0.68	off scale	5.09	16.8°	opaque	
10:15	no reading	—	—	—	—	—	—	—	well dry, shut down, let recharge
10:45	no reading	—	—	—	—	—	—	—	resumed pumping, Flow Rate = 0.333 gal/min.
11:00	~12 gal	61.34	4.93	0.40	off scale	6.19	16.4°	opaque	Flow Rate = 0.25 gal/min
11:15	~15 gal	65.27	5.04	0.49	off scale	5.08	16.7°	opaque	
11:30	~19 gal	65.84	5.32	0.46	off scale	5.06	16.9°	opaque	~0.1 gal/min.

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

Parcel No.: 116Q
Well ID: HA-116Q-MW05
Date: 03/12/01

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	~19 gal	42.85	—	—	—	—	—	—	Begin purging 3/12/01 Flow Rate=0.333 gal/min
10:15	~22 gal	63.20	5.05	0.41	off scale	6.24	17.4°	opaque	
10:30	24 gal	59.49	4.94	0.038	off scale	6.03	16.4°	opaque	Flow Rate = 0.125 gal/min
10:45	27.75	59.99	4.87	0.033	1516	5.70	17.1°	opaque	Flow Rate = 0.25 gal/min
11:00	31.5	59.60	4.77	0.031	601	5.47	17.2°	murky	
11:15	35.25	60.15	4.69	0.030	305	5.72	17.0°	*cloudy	
11:20	36.5	—	—	—	—	—	—	—	Shut down. Inclement weather, EOD.
08:30	36.5	42.74	—	—	—	—	—	—	Begin purging 3/13/01. Flow Rate = 0.5 gal/min
08:45	42	55.22	4.71	0.058	961	5.75	17.7°	opaque	
09:00	45.75	56.44	4.82	0.034	1388	5.06	18.1°	opaque	
09:15	49.50	57.41	5.03	0.027	1533	4.87	18.5°	opaque	moved pump up 1 foot
09:30	53.25	56.93	4.90	0.026	1291	5.27	18.1°	opaque	

Parcel No.: 116Q
Well ID: HR-116Q-MW05
Date: 03/13/01

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)
09:45	57.00	57.68	5.02	0.028	1502	5.21	19.0°	opaque	
10:00	60.75	56.91	4.92	0.028	1312	5.00	19.5°	opaque	
10:15	64.50	56.14	5.00	0.026	1449	4.88	19.8°	opaque	moved pump up 1 foot
10:30	68.25	59.80	5.02	0.027	1556	4.64	20.2°	opaque	
10:45	72.00	58.92	4.91	0.028	1285	4.88	21.2°	opaque	
11:00	75.75	56.67	5.09	0.029	1114	5.21	21.6°	opaque	
11:15	79.50	56.64	5.17	0.025	1491	5.13	21.6°	opaque	moved pump up 1 foot
11:30	83.25	60.40	4.95	0.026	1479	5.30	20.8°	opaque	
11:45	87.00	57.85	4.94	0.029	off scale	5.36	22.0°	opaque	moved pump up 1 foot
12:00	90.75	59.85	5.09	0.029	1262	5.84	21.6°	opaque	
12:15	94.50	58.50	5.05	0.030	off scale	5.19	22.8°	opaque	Target purge volume (91.87 gal) reached
12:30	98.25	62.20	5.08	0.031	off scale	5.16	22.0°	opaque	moved pump up 1 foot

Parcel No.: 116Q
Well ID: HR-116Q-MW05
Date: 03/13/01

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	102.00	65.20	4.86	0.031	off scale	4.85	20.8°	opaque	
13:00	105.75	59.71	5.04	0.031	off scale	5.33	20.6°	opaque	
13:15	109.50	63.65	4.97	0.028	1006	5.42	20.5°	opaque	
13:30	113.25	66.30	5.01	0.032	off scale	4.96	21.5°	opaque	pump lowered 1 foot
13:45	no reading	—	—	—	—	—	—	—	well pumped dry @ 13:35
14:45	~115.75	58.50	5.15	0.031	1402	5.11	20.5°	opaque	
15:00	~119.50	64.75	4.72	0.025	1544	5.14	19.5°	opaque	
15:15	~123.25	59.42	4.59	0.040	off scale	3.58	19.6°	opaque	
15:30	~127	67.81	4.50	0.027	13.68	4.66	18.9°	opaque	
15:45	~130	65.05	4.61	0.030	1320	4.96	17.8°	opaque	
15:53	no reading	—	—	—	—	—	—	—	well pumped dry @ 1553. End of Day
10:30	~130	44.03	—	—	—	—	—	—	Begin purging 3/14/01 Flow Rate = 0.63 gal/min.

Parcel No.: 116Q
Well ID: HR-116Q-MW05
Date: 3/14/01

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	139.45	62.39	5.14	0.036	1895	6.00	18.4°	opaque	Flow Rate = 0.25 gal/min
11:00	143.20	58.80	5.31	0.024	1018	5.29	19.8°	opaque	
11:15	146.95	60.05	5.32	0.022	1318	5.58	19.6°	opaque	
11:30	150.70	59.60	5.34	0.024	851	5.55	19.3°	opaque	
11:45	154.45	60.79	5.29	0.022	605	5.30	19.1°	murky	
12:00	158.20	61.03	5.34	0.023	337	5.69	19.1°	cloudy	
12:15	161.95	61.19	5.32	0.021	207	5.77	19.0°	cloudy	
12:30	165.70	61.26	5.25	0.020	143	5.31	19.2°	cloudy	
12:45	169.45	61.13	5.26	0.020	184	5.79	19.2°	cloudy	
13:00	173.20	61.15	5.24	0.020	110	5.96	19.1°	clear	
13:15	176.95	61.19	5.26	0.019	115	6.06	19.2°	clear	12 hrs. resched
13:30	180.70	61.44	5.25	0.019	164	6.30	19.2°	Clear	

Parcel No.: 116Q
Well ID: HR-116Q-MW05
Date: 3/14/01

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)
13:45	184.45	61.63	5.27	0.020	90	6.35	19.1°	clear	
14:00	188.20	58.20	5.27	0.019	103	6.25	18.6°	clear	
14:15	191.95	60.73	5.26	0.022	160	5.93	18.8°	clear	
14:30	195.70	61.41	5.31	0.019	161	6.00	18.9°	clear	
14:45	199.45	61.74	5.29	0.020	111	6.02	18.7°	clear	Final reading. Turb. sample collected
:									
:									
:									
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: N. Badon
Well Developed by (person/firm): Nicole Badon

Parcel No.: 116 Q
Well No.: HR-116Q-MW06
Date started: 4/9/01

Monitoring Well Information

Development Method: Surge/purge
Development Equipment: Whale pump

Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 24.25' TOC
Total depth of Well (ft): 50.15' TOC

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.)
09:35	—	24.25	4.76	0.049	>1000	7.16	17.5	Cloudy brown	pump 1FT ~~off~~ bottom purge rate = 0.25 gpm
09:45	2.5	32.02	5.11	0.017	>1000	6.95	16.9	brown Cloudy	
10:00	6.55	35.13	5.24	0.016	>1000	5.87	17.0	Cloudy brown	
10:15	10.3	37.58	5.30	0.021	366	9.86	17.4	clearing brown	
10:~~30~~ 40 ~~4/9/01~~	14.05	39.90	5.17	0.018	>1000	4.33	17.4	brown	pump stopped @ 1030
1hr ~~10:45~~	~~15.3~~	4/9/01							
11:00	19.05	43.92	5.12	0.016	102.8	5.49	17.7	cloudy	

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

50.15 - 24.25 = 25.9 x 0.163 = 4.22 x 5 = 21.11 + 40 gal = 61.11 gallons

Parcel No.: 116Q
Well ID: MW06
Date: 4/9/01

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)
15:30	22.3	38.8	5.21	0.071	> 1000	6.77	20.8	cloudy brown	pump stopped @ 1113, purge vol = 22.3 gallons new pump 1FT ~~off~~ bottom (1530)
15:45	26.05	41.6	5.32	0.017	84.5	6.75	19.9	cloudy	
2hr 16:00	29.8	43.15	5.28	0.017	113.1	7.18	20.0	cloudy	
16:15	33.55	44.65	5.26	0.017	135	6.65	20.3	cloudy	
16:30	37.30	below top of pump	5.18	0.015	340	5.77	20.4	cloudy	1638 pump stopped
10:05	37.30	31.16	5.05	0.048	>1000	6.38	19.2	brown	4/10/01, pump 3FT ~~off~~ bottom, purge rate 0.25gpm
10:15	41.05	39.2	4.88	0.022	864	10.40	19.2	cloudy brown	
3hr 10:30		44.10' purged		dry	—	—	—	—	pump 1FT ~~off~~ bottom
10:50		43.50							screen 30'-50'
4-26-01 :	41.05	25.58	— whale Pump - Does			not work			PID 0.8 BKGrd 0.0
4-27-01 10:00	41.05	27.63	5.13	.080	551	6.56	16.6	Light orange	PID 0.0 BKGrd. 0.0 surged well P.D. 41.15 P.R. .27gpm
10:25	45.1	33.81	5.04	.021	532	5.52	14.7	Light orange	P.R. .12gpm

Feet per min .412

Parcel No.: 116Q
Well ID: MW06
Date: 4-27-01

	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
	10:40	46.9	34.57	5.14	.020	577	5.16	18.1	Light orange	P.R. .12 gpm
	10:55	~~52.5~~ 48.7	35.2	5.18	.019	160	5.48	19.3	cloudy	P.R. .12 GPM
4hr	11:10	50.5	36.6	5.23	.020	95	4.97	19.3	cloudy	P.R. .12 G.P.M
	11:25	52.3	37.34	5.26	.022	93	5.00	20.0	cloudy	P.R. .12 G.P.M.
	11:40	54.1	37.85	5.23	~~0.24~~ .024	161	~~10~~ 5.56	20.5	cloudy	P.R. ~~.150~~ .12 G.P.M
5hrs	11:55	56.08	38.61	5.29	.024	112	5.17	20.5	cloudy	P.R. .132 G.P.M
	12:00	stop	Readings							
	13:45	58.78	35.33	5.31	.025	175	6.12	19.8	cloudy	P.R. .18 GPM
	14:00	61.48	38.47	5.05	.018	107	6.28	18.7	cloudy	P.R. .18 GPM Drop whale Pump 2' and surged
	14:15	63.28	39.71	5.88	.021	185	5.32	19.7	Cloudy	P.R. .12 GPM
6hrs	14:30	65.08	41.06	5.09	.022	383	5.65	19.1	cloudy Tan	P.R. .12 GPM
	14:45	65.83	41.89	5.13	.023	123	4.52	21.3	Cloudy	P.R. .05 GPM
	13:00	66.58	42.02	5.21	.022	78	4.91	21.6	cloudy	P.R. .05 GPM

Parcel No.: 116Q
Well ID: MW06
Date: 4-27-01

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
15:15	67.33	42.16	5.20	.022	69	4.76	22.0	clear	P.R. .05 GPM
15:30	68.8	42.33	5.19	.023	76	4.40	21.9	clear	P.R. .05 GPM
15:45	69.55	42.38	5.21	.022	96	4.49	22.3	clear	P.R. .05 GPM 1550 stop taking Reading
4-30-01 08:40	70.03	28.58	4.86	.084	85	5.80	16.9	clear	P.R. .05 surged well @ 45' P.D. @ 45' PID. 0.0 Background 0.0.
08:55	70.78	33.46	5.03	.022	334	5.72	17.1	Cloudy Tan	moved pump to 49' P.R. .05 GPM because pump stopped
09:10	71.53	33.35	5.00	.018	330	5.64	17.5	Cloudy Tan	P.R. .05 GPM
09:25	72.28	33.42	5.05	.018	258	5.62	18.0	Cloudy Tan	P.R. .05 GPM stop pump @ 8:00 hours taken 1 Liter sample
:	4-30-01	well	developed	Jane Matuszel	956735				
:									
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:									
:									
:									

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Jose L Maturell
Well Developed by (person/firm): [illegible] BT 952735

Parcel No.: HR116Q
Well No.: MW07
Date started: ~~4~~ 5-1-01

PID 2.2 Backgrd. 0.0

Monitoring Well Information

Development Method: Surge & Purge
Development Equipment: whale pump

Casing Diameter: 2" T.O.C .163

Beginning Measurments
Depth to Water (ft): 49.09
Total depth of Well (ft): 50.14

Screened Interval 10-25

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.)
13:30	5.5 gal.	49.09	4.96	.008	999+	5.87	17.6	[redacted] Tan	water level to low. hand bailed till dry
:									W.C.
5-2-01 15:46	5.5 g	49.61	5.02	.017	795	5.95	19.2	white cloudy	ONLY .53 ft of water in well Hand Bailed well Dry PID 1.3 BKGrd 0.0
16:18	7.25	—	Hard	Bailed	out	1.75 g	—	—	[illegible] 5-2-01
:									
5-3-01 08:36	7.25	49.25	4.65	.031	204	5.98	16.6	cloudy	WC = .89 ft in well PID 1.3 BKGrd 0.0 3rd visit - Well Dry 3x.
9:10	11.25	— Hand Bailed well to Dry				4.0 g	—	—	Well Development Completed. [illegible] 5-3-01

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

50.14 - 49.09 1.05 x .163 = .171 x 5 = .855 + 80 = 80.85

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Jose Maturell
Well Developed by (person/firm): ~~XM~~ 956735 IT

Parcel No.: 116Q
Well No.: MW08
Date started: 5-10-01

Screened Interval 37-57

Monitoring Well Information

Development Method: Surge & Purge
Development Equipment: Whale pump.

Casing Diameter: 2" = .163

Beginning Measurments
Depth to Water (ft): 14.95
Total depth of Well (ft): 60.25

PID. 3.3 Backgrd. 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.)
10:30	Ø	~~Ø~~ 14.95	6.97	.223	999+	6.89	18.8	Tan.	P.R. .3 GPM P.D. 41.5 T.O.C. ~~18.00~~ 18.75' from bottom
10:45	4.5	20.16	7.20	.206	999+	6.49	17.9	Tan.	P.R. .3 GPM
11:00	9	20.75	7.09	.205	999+	5.76	17.8	Tan	~~P.R. .3 GPM~~ P.R. .25 GPM.
11:15	12.75	21.39	7.06	.206	328	5.28	17.6	Cloudy Tan	P.R. .25 GPM
1 hr. 11:30	16.5	21.95	7.08	.205	326	5.25	17.8	Cloudy Clear	P.R. .25 GPM
11:45	20.25	22.37	7.46	.205	188	4.95	18.0	Cloudy Clear	P.R. .25 GPM
1.5 hr 12:00	24.	22.65	7.52	.204	176	5.04	17.9	Clear	P.R. .25 GPM

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

60.25 - 14.95 = 45.3 x .163 = 7.38 x 5 = 36.9 + 5 = 41.9

Parcel No.: 116Q
Well ID: MW08
Date: 5-10-01

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
14 :15	24	below top pump.	~~7.12~~ 7.45	.213	999+	5.67	18.6	Tan	P.R. .4 GPM P.D. 4' from bottom 56.25' T.O.C
14 :30	30	20.7	7.25	.206	506	5.75	19.0	Tan	P.R. .075 GPM
14 :45	31.12	19.23	7.22	.206	235	5.60	19.1	cloudy clear	move pump up 2' more. 54.25' T.O.C. P.R. .12 GPM 6' from bottom
15 :00	32.92	below top pump	7.44	.204	168	5.37	18.2	cloudy clear	P.R. .132 GPM.
15 :15	~~34.9~~	" "	7.41	.205	133	5.53	18.1	cloudy clear	P.R. 132 G.P.M.
2.5 15 :30	36.88	" "	7.46	.206	82	4.87	18.4	clear	P.R. .132 GPM 8' from bottom P.D. 52.25' TOC MOVE 2' more up
3hr. 15 :45	38.86	" "	7.54	.205	88	5.02	18.7	clear	P.R. .132 GPM
16 :00	40.84	" "	7.52	.206	59	5.12	19.3	clear	P.R. .132 GPM
:	stop parameters.								
5-11-01 ~~08:45~~ 0900	40.84	14.66	7.01	.238	849	6.37	17.7	Cloudy Tan	P.D. 15' from bottom .45' TOC. P.R. .0666 GPM. P.D. 1.1 Backgrd. 0.0
3.5hr. 09:15	41.83	Below Top Pump	7.26	.206	860	5.53	18.7	cloudy Tan	P.R. .0666 G.P.M.
09:30	42.82	" "	7.31	.203	468	4.58	18.1	cloudy clear	P.D. moved Down 5/10' from bottom 50' toc. P.R. .07 GPM
4.0 09:45	43.87	" "	7.24	.204	390	4.92	19.9	cloudy clear	P.R. .07 GPM.

Parcel No.: HR 116 Q
Well ID: MW08
Date: 5-11-01

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
10:00	44.92	~~Below Top Pump~~ 16.63	7.26	.204	379	4.39	20.1	cloudy clear	P.D. moved pump down 5' 55' TOC. P.R. .07 GPM.
10:15	45.97	16.6	7.30	.204	92	4.59	20.6	clear	P.R. .07 GPM
10:30	47.02	16.1	7.37	.204	60	5.04	21.3	Clear	P.R. .07GPM
10:45	Pump stoped working								
:	[redacted]	Tried to surge and changed battery, still not working.							
5-hr. 10:00	47.02	15.22	7.14	.237	648	5.45	17.9	~~17.9~~ Tan	W.L. 15.22 P.R. .07 GPM P.D 7' from bottom 53.25 TOC.
10:15	48.07	17.76	7.43	~~.198~~ .216	582	5.08	18.2	Cloudy Tan.	P.D. 25.34 from bottom 34.91 TOC P.R. .07GPM
10:30	49.12	17.65	7.46	.213	586	5.62	18.9	Cloudy Tan	P.R. .07GPM P.D. 22.34 from bottom 37.91 TOC
10:45	50.17	17.75	7.48	.212	378	5.41	19.1	Cloudy Tan	P.R. .07GPM
11:00	51.22	17.94	7.49	.212	273	5.79	19.8	Clear cloudy	P.R. .07GPM
6 hr. 11:15	52.27 ~~7.0~~	17.64	7.49	.214	188	5.24	20.3	clear cloudy	P.R. .07GPM.
11:30	Pump stopped working. need to change bottom pump.								
:									

Parcel No.: 116-Q
Well ID: MW-08
Date: 5-14-01

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
15:00	52.27	20.85	7.30	.216	736	5.87	20.2	Tan cloudy	P.R. .066 GPM. P.D. 38' TOC.
15:15	53.26	18.98	7.02	.212	652	5.21	20.1	Tan cloudy	P.R. .066 GPM
15:30	54.25	18.61	7.01	.210	385	5.54	19.8	cloudy	P.R. .066 GPM.
7hR. 15:45	55.24	18.36	7.45	.212	86.9	5.49	20.2	clear	P.R. .066 GPM
16:00	56.23	18.31	7.43	.210	72.6	5.42	20.1	clear	P.R. .066 GPM
16:15	57.22	18.16	7.50	.210	46.1	4.92	20.0	clear	P.R. .066 GPM
16:30	58.21	18.07	7.49	.211	39.8	5.06	19.9	clear	P.R. .066 GPM
8 hR 16:45	59.20	18.09	7.50	.211	32.6	5.30	20.1	clear	P.R. .066 GPM
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Jose Maturell
Well Developed by (person/firm): JM IT

Parcel No.: 116 Q
Well No.: MW09
Date started: 5-15-01

Screened Interval 35.5-54.5

Monitoring Well Information

Development Method: Surge & Purge
Development Equipment: Whale pump & Bailers

Casing Diameter: 2" = .163

Beginning Measurments
Depth to Water (ft): —
Total depth of Well (ft): 56.32

PID 1.9 Backgrd. 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.)
10:15	Well is DRY NO Reading with W.L. indicator.								
5-16-01 JM 09:30	Well is DRY								
5-17-01 JM ~~11:00~~ 1110		DRY	well	3rd	visit	—			PID 1.8 Backgrd 0.0 T.D. 56.32
:									
:									
:									
:									

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

5 =

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Jose Maturell
Well Developed by (person/firm): SM IT 950735

Parcel No.: HR 116Q ~~MW10~~
Well No.: MW 10
Date started: 5-21-01

Screened Iterval 84-104

Monitoring Well Information

Development Method: Surge & Purge
Development Equipment: whale pump & Grunct Fos

Casing Diameter: 2" = .163

Beginning Measurments
Depth to Water (ft): DRY
Total depth of Well (ft): 106.7 TOC

PID 0.0 Backgrd. 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.)
	12:45	Ø								Could not get a reading with W.L. [redacted] indicator
5-22-01 JM	08:40	Ø								DRY well PID 0.0 Backgrd 0.0
5-24-01 JM	13:15	Ø								DRY well PID 4.0 Backgrd 0.0
	:									
	:									
	:									
	:									

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

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Jose Maturell & Lee Flippen
Well Developed by (person/firm): JM IT 956735

Parcel No.: HR 116 Q
Well No.: MW 11
Date started: 5-1-01

PID . 3.7 Backgrd. 0.0 Screen 12'-22'

Monitoring Well Information

Development Method: Surge & Purge
Development Equipment: whale pump

Casing Diameter: 2" @ .163

Beginning Measurments
Depth to Water (ft): 19.63
Total depth of Well (ft): 25.22

	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.)
	14 :50	3gal.	19.63	5.15	.023	999+	3.58	16.4	Tan	W.L. to low to Purge. hand bailed
	:							~~16.8~~	✗	
5-2-01	16 :35	3.0	20.61	5.64	.035	999+	3.51	16.8	TAN	PID 0.9 BKGrd 0.0 Hand Bailed Well Dry
	16 :50	4.75g								1.75g Bailed
	:									
5-3-01	09 :38	4.75	21.50	5.55	.034	999+	3.63	15.6	orange	PID 2.4 BKGrd 0.0 WC = 3.72 ft Hand Bailed well to Dry
	10:06	5.75	Hand Bailed well Dry = 1.0 g							Well Development completed - ~~[illegible]~~ 5-3-01

PID 0.9 Bckgrd 0.

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

25.22 - 19.63 = 5.59 x .163 = .927 x 5 = 4.63 + 5 = 9.63

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Jose Maturell
Well Developed by (person/firm): AMIT

Parcel No.: 116Q
Well No.: MW12
Date started: 5-15-01

Screened Interval = 21-36

Monitoring Well Information

Development Method: Surge & Purge
Development Equipment: whale pump (Bailer)

Casing Diameter: 2" = .163

Beginning Measurments
Depth to Water (ft): 37.5
Total depth of Well (ft): 37.74

PID. 0.1 Backgrd 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.)
09:15	—	37.5	cannot purge, cannot bail by hand						Dry well
5-16-01 JM 09:00	—	— Dry well no water						—	T.D. 37.74
5-17-01 JM 10:55	—	— Dry well no water.				—	—		PID. 4.2 Backgrd. 0.0 T.D. 37.74
:									
:									
:									
:									

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

37.74 - 37.5 = .24 x .163 = .039 x 5 = .195 + .5 = 5.195

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Justin Fisher
Well Developed by (person/firm): Justin Fisher IT

Parcel No.: 116Q
Well No.: HR-116Q-MW13
Date started: 03/21/01

Monitoring Well Information

Development Method: Not Developed: Well was dry
Development Equipment: N/A

Casing Diameter: 2" PVC

Beginning Measurments
Depth to Water (ft): Well was dry
Total depth of Well (ft): 81.85 ft. 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.)
	09:15	0	—	—	—	—	—	—	—	Well was dry
4/4	10:10	0	—	—	—	—	—	—	—	Well was dry.
7/28	11:30	0	—	—	—	—	—	—	—	Well was dry.
	:									
	:									
	:									
	:									

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

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Justin Fisher
Well Developed by (person/firm): Justin Fisher IT

Parcel No.: 116Q
Well No.: HR-116Q-MW14
Date started: 3/21/01

Monitoring Well Information

Development Method: Not Developed: Well was dry
Development Equipment: N/A

Casing Diameter: 2" PVC

Beginning Measurments
Depth to Water (ft): Well was dry
Total depth of Well (ft): 109.34 ft 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.)
09:30	0	—	—	—	—	—	—	—	Well was dry
4/4 10:40	0	—	—	—	—	—	—	—	Well was dry.
2/28 11:45	0	—	—	—	—	—	—	—	Well was dry.
:									
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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

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Justin Fisher
Well Developed by (person/firm): Justin Fisher IT

Parcel No.: 116Q
Well No.: HR-116Q-MW15
Date started: 4/9/01

Monitoring Well Information

Development Method: Not developed, too little water
Development Equipment: N/A

Casing Diameter: 2" PVC

Beginning Measurments
Depth to Water (ft): 73.09 ft. btoc
Total depth of Well (ft): 73.41 ft. 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.)
14:50	0	73.09	—	—	—	—	—	—	water column on 0.32
4/11/01 09:20	0	73.10	—	—	—	—	—	—	ft. high, well is considered
4/16/01 16:23	0	73.11	—	—	—	—	—	—	dry, well dry on 4/11/01.
:									well dry on 4/16/01.
:									
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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

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796867
Form Completed by: Jamie Cole IT
Well Developed by (person/firm): Jamie Cole IT

Parcel No.: 117Q
Well No.: HR-117Q-MW01
Date started: 05-01-01

Monitoring Well Information

Development Method: Purg / surg
Development Equipment: whale pump, turbidimeter
horiba u-10 water quality meter
Casing Diameter: 2" PVC

Beginning Measurments
Depth to Water (ft): 8.90
Total depth of Well (ft): 21.18

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.)
09:45	0	8.90	—	—	—	—	—		0.09 gal/min 13' BTOC
09:55	0.9	8.98	4.75	0.056	784	3.88	18.0	murky	13' BTOC .125 gal/min
10:05	1.8	9.08	4.76	0.026	1,152	3.76	17.9	very murky	.125 gal/min 13' BTOC
10:15	3.05	9.06	4.80	0.024	440	3.95	16.8	cloudy	.18 gal/min 14' BTOC
10:30	5.85	9.23	4.76	0.021	207	3.69	16.2	cloudy	.2 gal/min 15' BTOC
10:45	8.85	9.12	4.85	0.022	51.9	3.94	16.6	clear	↑C .2 gal/min 16' BTOC
11:00	11.85	9.19	4.87	0.021	39.1	3.82	16.8	clear	↑ .2 gal/min 17' BTOC

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

21.18 8.9 = 12.28 x 0.163 = 2.00 x 5 = 10 + 5 gal = 15 gal

Parcel No.: 17Q
Well ID: HR-117Q-MW01
Date: 05-01-01

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
11:15	14.85	9.15	4.88	0.020	13.0	3.65	17.2	clear	.2 gal/min 18' BTOC
11:30	17.85	9.30	4.90	0.022	597	3.87	16.7	Haze	Target ~~[illegible]~~ purg volume surpassed .2 gal/min 18' BTOC
11:45	20.85	9.30	4.87	0.021	7.92	3.70	16.2	clear	.2 gal/min 18' BTOC
12:00	23.85	9.30	4.83	0.021	3.52	3.83	16.4	clear	.2 gal/min 18' BTOC
12:15	26.85	9.31	4.85	0.020	2.25	3.87	15.8	clear	Parameter of well development met. sample collected
/ : LAST ENTRY — Well Developed -- Photo Sample Taken									
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DKA
5-1-01

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Lee Flippen
Well Developed by (person/firm): Lee Flippen / IT Corp.

Parcel No.: HR 117Q
Well No.: MW02
Date started: 5-9-01

Monitoring Well Information

Development Method: surge + purge
Development Equipment: whale pump, AquaFAST II Horiba, Heron W.L. gauge
Casing Diameter: 2" (.163) TOC

Beginning Measurments
Depth to Water (ft): 20.10 ft. TOC
Total depth of Well (ft): 28.38 ft.

SI 16'-26' PID 0.0 BKGnd 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.)
5-9-01 11:45	Ø	~~28.38~~ 20.10 5-9-01	5.35	.082	547	4.45	16.7	Red-orange	W.C. = 8.28 ft. Hand Bailed Well Dry
12:50	7.7g	—	Hand	Bailed 7.7	gal	—	—	—	7.7g removed 5-9-01
5-10-01 10:30	7.7g	20.46	5.12	.081	51	6.57	17.1	clear	WC = 7.92 FT. PID 0.0 BKGnd 0.0 DTW 20 5-10-01 Hand Bailed Well Dry
11:25	14.7	—	—	—	Hand Bailed well Dry	—	—	—	Target PV reached 5-10-01
5-11-01 11:15	14.7	20.15	5.13	.072	348	6.53	21.0	orange	WC = 8.23 ft. 5-11-01 PD 26 PR. 07 PR. 07 PID 0.0 BKGnd
11:30	15.75	Below pump Booster	4.97	.049	241	6.68	24.7	cloudy	PD 26 PR. 07
11:45	16.8	Below pump Booster	5.07	.053	239	6.39	25.3	cloudy	PD 26 PR. 07 *changed Batteries

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

28.38 − 20.10 = 8.28 ft × .163 = 1.35 × 5 = 6.75 + 5 = 11.75 g

Parcel No.: HR 117 Q
Well ID: MW02
Date: 5-11-01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C) LF 5-11-01	Clarity (color)	Comments
12:00	17.85	Below pump Booster	5.47	.059	538	6.23	~~28.3~~ 27.0	orange cloudy	PD 26 PR.07
12:07	18.3	" " "	pump	stopped	– water	level	too low	—	This is 3rd visit and 3rd time Well ran dry. Well Development completed for this Well. [illegible] 5-11-01
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 773191
Form Completed by: James D. Cox
Well Developed by (person/firm): James D. Cox IT. Corp

Parcel No.: 117Q
Well No.: HR-117Q-MW03
Date started: 5/14/2001

Monitoring Well Information

Development Method: Surge, Purge & Bail
Development Equipment: Grundfos, Rediflo, Bailer

Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 19.07
Total depth of Well (ft): 74.34

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.)
12:45	1.875	31.14	5.97	.073	102	2.48	22.8	tan	.625 gal/5 min
13:00	3.75	34.44	5.81	.070	97	2.12	23.0	↓	.5 gal/5 min
13:15	5.25	37.42	5.66	.069	59	1.63	24.0	light tan	Surged
13:30	6.75	43.85	5.61	.070	51	1.52	26.4	↓	Surged
13:45	8.25	44.82	5.65	.070	116	3.20	25.8	↓	Surged
14:00	9.75	46.7	5.65	.071	301	1.74	24.1	Brown	
14:15	11.25	47.85	5.58	.066	163	1.41	25.5	tan	

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

74.34 − 19.07 = 55.27 X .163 = 9.01 X5 = 45.05 + 25 = 70.04 gal

Parcel No.: 117Q
Well ID: HR-117Q-MW03
Date: 5/14/2001

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
14:30	12.75	49.08	5.41	.058	139	1.64	25.9	tan	.5 gal/5min
14:45	14.25	50.4	5.64	.064	124	1.69	27.1		moved the pump to 65 ft
15:00	15.75	50.83	5.72	.067	142	1.67	27.4		
15:15	17.25	52.02	5.61	.067	136	1.79	25.9		
15:30	18.75	54.07	5.56	.060	125	1.67	26.2		
15:45	20.25	56.12	5.59	.065	123	1.69	26.1		
16:00	21.75	57.83	5.61	.063	118	1.70	25.6		
08:15	21.75	53.97	5.28	.070	210	9.86	17.3	Brown	05/15/2001
08:30	23.25	54.96	5.27	.055	287	9.70	18.1		
08:45	24.75	56.7	5.19	.048	247	3.94	20.4		
09:00	26.25	56.9	5.33	.046	224	8.19	21.5		
09:15	27.75	56.93	5.31	.046	212	4.10	23.1		
09:30	29.25	57.3	5.19	.043	203	5.05	23.3		1.0 gal/5min

Parcel No.: 117 Q
Well ID: HR-117Q-MW03
Date: 5/16/2001

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
09 : 45	32.25	58.94	5.16	.052	108	2.92	22.9	Brown cloudy	1gal/5min
10 : 00	35.25	61.00	5.26	.050	92.7	1.97	23.1	tan	
10 : 15	38.25	65.17	5.16	.046	86.9	0.95	22.6	"	lowered the pump to the bottom of the well
10 : 30	41.25	67.66	5.24	.054	>1000	1.39	21.5	Brown	
10 : 45	44.25	69.5	5.16	.043	243	1.31	23.6		
11 : 00	47.25	71.63	5.24	.047	215	1.40	24.00		shuting pump down
08 : 30	47.50	67.93	6.01	.057	169	1.25	21.8	tan	Bailed 5/16/2001
:	ONLY	2" Recovery		OVER	Night				
:									
:									
:									
:									
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number:
Form Completed by: Goins, Reginald
Well Developed by (person/firm): Reginald Goins / IT Corp

Parcel No.: HR-117Q
Well No.: MW04
Date started: 3/28/01

Monitoring Well Information

Development Method: Surge and Purge
Development Equipment: water pump

Casing Diameter: 2in.

Beginning Measurments
Depth to Water (ft): 22.0
Total depth of Well (ft): 39.1

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 :25	—	22.0	4.89	0.021	528	5.80	16.0	Cloudy white	1gal/5min pump position - 29ft TOC
11 :40	3gal	22.55	4.82	0.021	71000	6.19	16.6	"	pump position - 32ft TOC .5gal/5min
11 :55	7.5gal	22.85	4.75	0.018	71000	6.88	16.6	"	rate - 2.0 gal/5min
12 :10	13.5gal	22.90	4.75	0.018	593	6.52	16.6	"	
12 :25	19.5gal	23.00	4.73	0.018	286	6.18	~~16.6~~ 16.7	slightly cloudy	
12 :40	25.5gal	23.00	4.70	0.018	399	6.32	16.7	slightly cloudy	raised pump 2ft from position.
12 :55	31.5gal	22.95	4.70	0.017	35.4	6.62	16.7	clear	raised pump 1ft from position

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

39.1 − 22.0 17.1 × 0.163 = 2.7873 × 5 = 13.9365 + 5 = 18.9365

Parcel No.: HR-117Q
Well ID: MW04
Date: 3/28/01

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
13:10	37.5gal	23.10	4.72	0.017	780	6.78	16.8	cloudy white	
13:25	43.5gal	23.10	4.73	0.017	463	6.69	16.8	cloudy white	
13:40	49.5gal	23.00	4.72	0.016	285	6.73	16.7	slightly cloudy	
13:55	55.5gal	23.00	4.60	0.018	45.2	6.85	16.6	clear	rate - 0.75gal/5min
14:10	57.75gal	22.48	4.70	0.018	21.5	6.82	16.6	clear	
14:25	60.0gal	22.25	4.68	0.019	9.4	6.87	16.6	clear	collected photo sample.
:		Well Developed -- LAST ENTRY							
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OKA

Project # TJ0DD1

Completed by: Lee Flippen

Well Developed by: Lee Flippen / IT Corp.

Method: Surge + Purge

Equipment: Grundfos Pump

Casing Diameter: 2" (.163) – Stickup

PTD 0.0

Bar. 760 mm

TD = 118.65 TOC

DTW : 52.30 TOC

Parcel No.: HR1170MW05

Well ID: MW05

Date: 4-11-01

Screen Interval 85-115 Photovac = 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	
10:30	Ø	52.3	5.96	.140	999+	.80	19.8	coffee	PD 115 PR 1.125 233 Hz	
10:45	16.9	87.28	5.89	.107	740	.65	20.1	clearing orange	PD 115 PR .7 233 Hz	.31 ft/min
11:00	27.4	91.90	5.77	.087	851	1.25	20.6	"	PD 115 PR .07 224 Hz	
11:15	28.45	93.30	5.60	.072	734	1.47	22.1	orange	PD 115 PR .07 226 Hz	.28 ft/min
1 hr. 11:30	29.5	93.68	5.62	.076	824	1.11	23.8	orange	PD 115 PR .07 226 Hz	.025 ft/min
11:45	30.05	94.18	5.65	.079	999+	.93	24.6	orange	PD 115 PR .07 228 Hz	.033 ft/min
12:00	31.10	95.01	12:01	Generator ran out of gas				—		
13:30	31.10	94.15	5.60	.082	999+	1.40	25.1	orange	Restarted – DTW 94.15 PD 115 PR .07 229 Hz	
13:45	34.10	96.55	5.55	.088	999+	.90	24.7	orange	PD 115 PR .07 229 Hz	.16 ft/min
2 hrs 14:00	35.15	96.99	5.57	.085	999+	1.17	25.3	orange	PD 115 PR .25 233 Hz	.03 ft/min
14:15	38.90	98.95	5.65	.087	999+	1.40	27.5	orange	PD 115 PR .20 233 Hz	
14:30	41.9	100.05	5.60	.092	999+	.94	27.1	orange	PD 115 PR .25 235 Hz	.07 ft/min
14:45	45.65	100.60	5.58	.092	999+	.85	27.2	orange	PD 115 PR .20 236 Hz	.04 ft/min

TD 118.65 – DTW 52.3 = 66.35 x .163 = 10.82 x 5 = 54.1 + 110 g = 164.1 g H_2O To remove

110 g

Parcel No.: HR 117Q MW05
Well ID: MW05
Date: 4-11-01

	Time 24hr	Purge Volume (gal) 45.65	Water Level (ft) (TOC) 100.6	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments	
3hrs	15:00	48.65	101.46	5.66	.101	999+	1.01	27.0	orange	PD 115 PR .25 238 Hz	.06 ft/min
	15:15	52.4	103.15	5.67	.107	888	.62	27.4	orange	PD 115 PR .25 240 Hz	.11 ft/min
	15:30	56.15	104.2	5.74	.111	861	.65	27.8	orange	PD 115 PR 1.0 280 Hz	
	15:44	70.2 Well	RAN Dry —		70g	Removed —				~~[illegible]~~ 4-11-01	
4-12-01	09:15	70.2	103.43	6.05	.186	999+	4.86	21.8	orange	4-12-01 ~~[illegible]~~ Surged-Restarted PD 113.4 PR .07 361 Hz	
4hrs	09:24	+5.5 75.7	Pump Siphon		stopped	at Max	404 Hz	Hand	Bailed	4-12-01 ~~[illegible]~~ S.Sg. - Mud AT — 113 ft	
4-25-01	09:45	~~75.70~~	68.3	5.23	.138	999+	8.09	22.3	orange	PID 0.0, surged 4-25-01 PD 86 ft PR 1.0 332 Hz	
	10:00	90.7	83.55	5.66	.113	654	8.19	23.1	clearing orange	PD 86 ft PR .25 260 Hz	1.02 ft/min
	10:15	94.5	86.13	5.72	.112	491	8.13	21.5	orange	PD 86 ft PR .25 260 Hz	
	10:30	98.25	88.91	5.80	.113	534	6.83	20.9	orange	Surged @ 96 ft PD 96 ft PR 1.25 320 Hz	.185 ft/min
5hrs	10:45	115.1	93.55	5.57	.109	745	6.75	22.6	orange	PD 96 ft PR .7 255 Hz	
	11:00	125.6	99.65	5.47	.069	1352	7.28	20.8	orange	Surged PD 107 ft PR .4 260 Hz	.41 ft/min
	11:15	131.6	103.8	5.50	.068	1529	6.64	20.8	orange	PD 107 ft PR .22 254 Hz	.28 ft/min

Parcel No.: HR 117Q MW05
Well ID: MW05
Date: 4-25-01

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
11:30	134.9	104.65	5.86	.084	999+	4.80	22.4	DK. orange	Moved Pump to 113.8 ft PD 113.8 ft PR .7 256 Hz
6hrs 11:45	145.4	107.9	5.82	.082	999+	4.71	22.6	DK. orange	PD 113.8 ft PR .20 260 Hz
11:50	146.4	109.8	—	Pump Stopped Well Dry - Pump stopped - Pump will not siphon -					
12:10	146.4	109.8	After 20 min. well did not recharge to 80% (53 ft)						Recharge Rate = 0.2 ft/20 min
:	Well Development complete for this site								[illegible] 4-25-01
:									
:									
:									
:									
:									
:									
:									
:									

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Lee Flippen
Well Developed by (person/firm): Lee Flippen / IT Corp.

Parcel No.: HR117Q
Well No.: MW06
Date started: 5-31-01

PD = Pump Depth
PR = Purge Rate
WC = Water Column

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: Horiba, Grundfos or* Whale Pump, Heron water finder, Aqua Fast II
Casing Diameter: 2" .163

Beginning Measurments
Depth to Water (ft): 21.63 TOC
Total depth of Well (ft): 32.6 TOC

20 Min - PID 3.3 BKGrd 0.2
Screen 20'-30'

Initial - PID 7.3 BKGrd 0.2

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.)
12:15	Ø	21.63	5.78	.159	999+	2.30	17.5	TAN	WC=10.97 ft Surged well PD 29 ft. PR. 4 gpm
12:30	6.0	27.20	5.34	.081	224	0.84	17.0	TAN	PD 29 ft PR ~~4~~ LF PR.10
12:45	7.5	28.00	5.41	.109	200	0.95	18.7	TAN	PD 29 ft PR.10
13:00	9.0	28.69	5.49	.124	203	1.25	19.1	cloudy	PD 29 ft PR.025
13:15	9.38	28.73	5.53	.135	218	1.22	20.9	cloudy	PD 29 ft PR.025
13:30	9.76	28.92	5.64	.137	611	1.28	21.4	TAN	PD 29 ft PR.025
13:45	10.14	29.0	5.63	.138	372	1.56	22.1	TAN	Moved pump to 29.5 ft. - Surged PD 29.5 ft PR.025

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

32.6 - 21.63 = 10.97 x .163 = 1.79 x 5 = 8.95 + 5 g = 13.95 g

QC'd by JR 06/3/01

Parcel No.: HR 117Q
Well ID: MW06
Date: 5-31-01

	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
	14:00	10.52	29.15	5.60	.135	344	2.06	23.1	TAN	PD 29.5ft PR .02
2hrs	14:15	10.82	29.19	5.60	.132	357	2.26	23.6	TAN	PD 29.5ft PR .02
	14:30	11.12	29.25	5.62	.129	317	2.57	24.1	TAN	PD 29.5ft PR .02
	14:45	11.42	29.28	5.53	.124	268	2.38	23.3	TAN	PD 29.5ft PR .02
	15:00	11.72	29.33	5.53	.124	247	1.86	24.0	TAN	PD 29.5ft PR .02
3hrs	15:15	12.02	29.37	5.57	.126	241	1.46	24.7	TAN	PD 29.5ft PR .02
	15:19	—	—	Pump stopped working	—	—	—	—	—	5-31-01 WC too Low [illegible]
6-8-01	09:30	12.02	21.93	5.55	.188	31.4	4.74	16.8	clear	PID 0.8 BKGrd 0.0 WC=10.67 Hand Bailed well Dry
	10:35	22.52	—	Hand Bailed well Dry 10.5g removed						[illegible] 6-8-01
11-01	09:00	22.52 ~~23.88~~	23.88	5.53	.168	999+	5.76	20.9	TAN	Surged Entire screen PID 0.5 BKGrd 0.0 PD 26.5ft PR .075
	09:15	23.6	24.99	5.57	.097	E-4 CAL. Error Above 100 NTU's	5.38	19.7	TAN	PD 28ft RR .075
	09:30	24.7	25.41	5.57	.090		5.18	19.5	TAN	pd 30ft PR .7 gpm 2min + .02 gpm 13min
4hrs	09:45	26.36	25.85	5.40	.055		5.08	19.6	TAN	pd 30ft PR .025 gpm

Light Rain

Heavy Rain

Parcel No.: HR 117 Q
Well ID: MW 06
Date: 6-11-01

26.36 25.85

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
10:00	26.7	25.91	5.45	.052	160	5.10	20.6	TAN	PD 30 PR .025
10:15	27.1	26.03	5.53	.056	153	6.07	20.3	TAN	* Pump stopped - changed Batteries PD 30 PR .025
10:30	27.5	26.11	5.56	.059	* 196	5.98	20.0	TAN	PD 30 PR .025
10:45	27.9	26.18	5.58	.065	236	5.45	19.9	TAN	PD 30 PR .025
11:00	28.3	26.23	5.68	.076	245	5.27	20.3	TAN	PD 30 ft RR .025
11:15	28.7	26.98	5.63	.068	163	5.03	20.3	TAN	PD 30 ft PR .025
11:30	29.1	WL Below 2nd pump	5.57	.065	158	4.68	20.3	TAN	PD 30 ft PR .025
11:33	— Pump stopped W.L. too Low —								Hand Bailed Well Dry
12:05	29.6	— Hand Bailed		.5g					3rd time well ran dry or Bailed Dry. Well Developped.
:	—			Not Used -- Last Entry					6-11-01
:									
:				OKA					
:									

RAIN
Light RAIN

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Lee Flippen
Well Developed by (person/firm): Lee Flippen / IT Corp.

Parcel No.: HR 117Q
Well No.: MW07
Date started: 4-12-01

PID 1.3 Backgrd 0.0 , Screen Interval 96.6-116.6

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: Grundfos pump
Stickup
Casing Diameter: 2" (.163)

Beginning Measurments
Depth to Water (ft): 113.91
Total depth of Well (ft): 122.4

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 14:00	well	Dry -	WL to Low to pump - hand bailed					orange	1.5 gals ~~Lee Flippen~~ 4-12-01
5 15:00	1.5	111.28							PID 15.8 BckGrd 0.0 4-25-01 * Wait 15 min. and read Again.
15:15	PID	0.0	Hand Bailed	2.25 gals					PID 0.0
16:00	3.75 gal	—					4-25-01		~~Lee Flippen~~
26 11:38	3.75	112.92	—	3rd visit - well Dry			Hand Bailed		PID 0.0 DTW 112.92 ft — 1.5 g removed
12:11	5.25	—	3x Well Bailed Dry				Well Development Completed 4-26-01		
:				LAST ENTRY					~~Lee Flippen~~

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

122.4 - 113.91 = 8.49 x .163 = 1.38 x 5 = 6.9 + 60 g 66.9 g

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 7960887
Form Completed by: N. Baden
Well Developed by (person/firm): N. Baden

Parcel No.: HR-117Q
Well No.: MW08
Date started: 2/22/01

Monitoring Well Information

Development Method: ~~teflon~~ bailer / surge/pump
Development Equipment: teflon bailer / whale pump

Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 26.54 (TOC)
Total depth of Well (ft): 36.6'

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.)
12:55	0.25	24.7	4.95	0.143	>1000	8.88	14.9	cloudy orange	
13:04	0.50	25.8	4.97	0.096	>1000	9.81	14.6	cloudy orange	
13:~~07~~ 14	0.75	24.95	4.93	0.083	>1000	9.82	14.5	cloudy orange	
13:18	1.0	24.9	4.84	0.084	>1000	10.45	14.6	cloudy orange	
13:22	1.25	25	4.93	0.078	>1000	10.02	14.5	cloudy orange	
13:31	1.50	25	4.88	0.079	>1000	10.01	14.6	cloudy orange	
13:48	2.75	25.2	5.02	0.080	>1000	10.25	14.9	cloudy orange	~~well bailed dry~~ NB 2/22/01

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

36.6' - 26.54 = 10.06 x 0.163 = 1.64 x5 8.2 + 105 = 113.2

Parcel No.: HR-117Q
Well ID: MW08
Date: 2/22/01

	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)
	14:36	3.00 ~~0.25~~ N/A	24.7'	4.89	0.081	>1000	9.90	14.2	cloudy orange	
	15:06	5.75 ~~5.00~~ N/A	25.65	5.01	0.080	>1000	9.96	14.1	cloudy orange	
	15:38	8.50	25.65	5.02	0.080	>1000	10.04	14.0	cloudy orange	
	16:23	10.75							cloudy orange	
2/23	10:15	10.75	N/A	4.99	0.047	>1000	7.77	15.2	cloudy	cannot use water level meter - water is below top of pump 2/23/01 Pump=1' off bottom Pump rate 0.5 gpm
	10:30	18.25	N/A	5.11	0.021	>1000	7.94	15.8	cloudy	2/23/01 flow rate 0.25 gpm after readings
	10:45	22	N/A	5.17	0.020	>1000	7.69	16.3	cloudy	2/23/01
	11:00	25.75	N/A	5.08	0.020	1042	7.42	16.7	cloudy	
	11:15	27.5	N/A	5.21	0.019	274	7.31	17.1	cloudy	
	11:30	31.25	N/A	5.07	0.020	439	7.73	17.3	cloudy	
	11:45	35	N/A	5.00	0.019	168	7.02	16.7	cloudy	
2/27	09:15	38.75	N/A	4.92	0.048	808	6.95	15.0	cloudy	2/27/01 flow rate: 0.25 gpm Pump 1' off bottom

Parcel No.: HR-117Q
Well ID: MW08
Date: 2/27/01

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	42.5	N/A	5.09	0.025	751	6.72	15.7	cloudy	2/27/01
09:45	46.25	N/A	5.12	0.020	397	6.75	16.7	cloudy	
10:00	50	N/A	5.15	0.021	149	7.47	17.0	cloudy	
10:15	53.75	N/A	5.13	0.020	129	7.46	16.8	cloudy	
10:30	57.5	N/A	5.13	0.020	153	6.97	16.6	cloudy	
10:45	61.25	N/A	5.12	0.021	185	7.05	16.4	cloudy	
11:00	65.0	N/A	5.06	0.020	160	7.45	16.4	cloudy	
11:15	68.75	N/A	5.12	0.021	849	6.85	16.5	cloudy brownish	
11:30	72.5	N/A	5.13	0.021	261	7.22	16.3	cloudy	
11:45	76.25	N/A	5.12	0.021	~~16~~ 139	6.82	16.2	cloudy	
12:00	80	N/A	5.14	0.021	131	7.32	16.1	cloudy	
12:15	83.75	N/A	4.98	0.020	283	7.33	15.8	cloudy	

Parcel No.: HP-117Q
Well ID: MW08
Date: 2/27/01

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)
12:30	87.50	N/A	5.01	0.020	329	7.15	15.3	cloudy	2/27/01
12:45	91.25	N/A	5.06	0.021	493	7.47	15.6	cloudy	
13:00	95.0	N/A	5.06	0.021	460	6.87	15.7	cloudy	
13:15	98.75	N/A	5.09	0.021	342	6.98	16.1	cloudy	
13:30	102.5	N/A	5.08	0.021	223	6.78	16.0	cloudy	
13:45	106.25	N/A	5.13	0.022	280	7.47	16.1	cloudy	
14:00	110.0	N/A	5.12	0.026	255	6.95	16.0	cloudy	
14:15	113.75	N/A	5.18	0.021	282	7.09	16.1	cloudy	
14:30	117.5	N/A	5.12	0.020	143	7.35	15.9	cloudy	
14:45	120.38	N/A	5.18	0.021	163	7.21	16.2	cloudy	
15:00	122.28	N/A	5.09	0.021	163	6.75	16.1	cloudy	
15:15	124.16	N/A	5.11	0.022	94	7.30	15.8	cloudy	

Parcel No.: HR-117Q
Well ID: MW08
Date: 2/27/01

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)
15:30	126.04	N/A	5.20	0.022	72	7.29	14.8	Cloudy	Sample collected for photography
:		LAST ENTRY -- Well Developed, TAW SOP Time Limit							
:									
:									
:									
:									
:					OOR				
:									
:									
:									
:									
:									

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: N. Badon
Well Developed by (person/firm): J. Purcell, N. Badon

Parcel No.: HR-151Q-
Well No.: MW01
Date started: 2/22/01

Monitoring Well Information

Development Method: ~~Surge~~/purge
Development Equipment: whale pump

Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 8.79
Total depth of Well (ft): 57.0

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.)
11:45	2.5	~~4.86~~ 30.31	~~4.86~~ 4.86	~~0.038~~ 0.038	~~>999~~ +999	6.25	17.2	Grey	0.5gpm, surged 1' from TD
12:00	10.0	~~4.91~~ 33.05	4.91	0.043	+999	6.51	16.9	Brown	0.5gpm surged 1' from TD
12:15	17.5	33.98	4.97	0.036	+999	6.64	16.7	brownish	0.5gpm raised pump 3FT.
12:30	25.0	39.52	4.83	0.030	+999	6.21	16.9	brownish	0.5gpm ran pump length of screen
12:45	32.5	43.91	5.03	0.032	+999	6.43	17.2	brownish	0.5gpm
13:00	40.0	42.79	4.23	0.013	+999	7.26	17.0	brownish	0.5gpm, well recharging
13:15	47.5	43.05	4.31	0.013	+999	6.94	17.1	brownish	0.4gpm

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

LOGGED

Parcel No.: HR-151Q
Well ID: MW01
Date: 2/22/01

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	54.0	43.09	4.40	0.014	+999	7.10	16.9	brownish	0.4 gpm pump 1ft off bottom
13:45	60	42.98	4.31	0.013	+999	6.85	16.9	brownish	~~0.5~~ .4 ~~0.4~~ gpm
14:00	66	42.94	4.36	0.012	619	7.94	17.0	clearing cloudy	"
14:15	72	42.84	4.45	0.012	540	8.08	17.0	clearing cloudy	"
14:30	78	42.61	4.26	0.012	317	8.15	16.8	clearing cloudy	"
14:45	84	42.68	4.23	0.012	400	8.17	16.5	cloudy	"
15:00	90	42.69	4.28	0.012	153	8.06	16.1	clearing	"
16:20	92	36.12	4.68	0.015	170	8.51	15.9	cloudy	~~.1~~ .01
16:35	98	40.13	4.53	0.013	215	8.25	15.9	cloudy	~~.1~~ .04
09:45	98	~~40~~ 2/28/01 6.85	4.78	0.046	>1000	4.39	15.3	brown	2/28/01 0.25 gpm pump 1ft off bottom
10:00	101.75	18.0	4.82	0.020	179	5.87	15.9	cloudy brownish	
10:15	105.50	24.26	4.68	0.018	112	6.22	15.9	cloudy	

Parcel No.: HR-151Q
Well ID: ~~MW08~~ MW01 CH 3/19/01
Date: 2/28/01

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)
10:30	109.25	26.35	4.60	0.016	>1000	7.72	16.4	~~26.35~~ 2/28/01 brown	0.25gpm pump 1' ~~8~~ bottom
10:45	113.0	27.5	4.63	0.015	261	6.27	16.6	cloudy	
11:00	116.75	27.36	4.57	0.014	144	5.87	16.7	slightly cloudy	
11:15	120.5	26.74	4.55	0.012	182	7.07	16.9	slightly cloudy	
11:30	124.25	26.80	4.49	0.013	44	5.60	17.3	clear	
11:45	128	28.87	4.48	0.013	>1000	7.45	17.1	brown	ran pump up screen pump 5ft ~~8~~ bottom
12:00	131.75	31.72	4.53	0.014	>1000	7.21	17.1	cloudy brownish	
12:15	135.5	31.26	4.57	0.013	218	5.75	17.4	cloudy	
12:30	139.25	31.63	4.54	0.012	356	6.23	17.2	cloudy	
12:45	143	33.45	4.57	0.014	130	5.87	17.1	cloudy	
13:00	146.75	31.88	4.53	0.012	92	5.91	17.3	cloudy	
13:15	150.5	31.1	4.64	0.011	42	6.68	17.0	clear	

Parcel No.: HR-151Q
Well ID: ~~MW08~~ MW01 CH 3/15/01
Date: 2/28/01

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)
13:45	154.25	31.65	4.58	0.012	26	7.05	17.0	clear	
14:00	158	31.95	4.45	0.012	26	6.57	16.8	Clear	
14:15	161.75	32.2	4.41	0.012	33	6.62	16.9	clear	
14:30	165.5	32.64	4.42	0.011	25	5.66	16.9	clear	
14:45	169.25	31.75	4.47	0.011	27	6.76	16.8	clear	
15:00	173	31.46	4.45	0.011	14.5	6.44	16.8	clear	
15:15	176.75	30.~~15~~ 47	4.42	0.010	8.6	5.88	16.8	clear	
15:30	180.5	30.15	4.47	0.010	12.7	6.73	16.8	clear	
15:35	184.25	29.75	4.36	0.010	25	5.81	16.7	clear	
15:45	188.0	28.82	4.34	0.010	34	6.40	16.7	clear	Sample collected for photography NTU's: 14.6
:									
:									

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Justin Fisher
Well Developed by (person/firm): Justin Fisher IT

Parcel No.: 181
Well No.: HR-181-MW01
Date started: 4/5/01

Monitoring Well Information

Development Method: Purge/Surge
Development Equipment: Grundfos pump, Turbidimeter Depth Gauge, Horiba U-10 water quality meter
Casing Diameter: 2" PVC

Beginning Measurments
Depth to Water (ft): 59.16 ft. btoc
Total depth of Well (ft): 74.39 ft. 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.)
11:10	0	59.16	—	—	—	—	—	—	Pump @ 70 ft. btoc. Flow Rate = 0.4
11:20	~4.5	—	—	—	—	—	—	—	gal/min. Control box overload
11:30	~4.5	—	—	—	—	—	—	—	@ 1120. Flow Restored to
12:00	16.5	61.29	5.35	0.049	1255	5.65	18.8	opaque	0.4 gal/min @ 1130. Pump moved
12:15	22.5	63.99	4.72	0.034	off scale	4.73	18.8	opaque	to 67 ft. btoc @ 1130
12:30	28.5	66.95	4.99	0.033	off scale	5.95	18.3	opaque	
12:45	34.5	63.60	5.20	0.034	305	5.09	19.3	murky	

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

74.39 − 59.16 = 15.23 x 0.163 = 2.48 x 5 = 12.41 + 80 gallons to install = 92.41 gallons to remove

Parcel No.: 181
Well ID: HR-181-MW01
Date: 4/5/01

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
13:00	40.5	63.21	5.21	0.037	267	5.60	19.9	murky	
13:15	47.5	69.00	5.09	0.029	75.6	5.44	19.2	cloudy	
13:30	55.0	69.34	—	—	off scale	—	—	opaque	Mud
13:45	62.5	69.61	5.10	0.027	150	5.48	18.30	cloudy	
14:00	~68	below pump	—	—	—	—	—	—	Stopped pump @ 1357 to
14:15	~75	63.55	5.09	0.024	621	5.45	18.1°	murky	lower it to 72 ft.
14:30	~75	—	—	—	—	—	—	—	btoc, 0.5 gal/min restored
14:45	79.5	61.73	5.24	0.028	344	5.43	19.1	murky	@ 1404, Pump overload @
15:00	85.125	61.51	5.13	0.026	71.8	6.06	19.2	cloudy	1417. Flow Restored @ 1433
15:15	90.75	61.51	5.13	0.025	38	6.01	19.6	cloudy	Flow Rate = 0.375 gal/min
15:30	96.375	61.55	5.09	0.023	73.4	6.04	19.3	cloudy	Pump @ 70 ft. btoc @
15:45	102	61.40	5.11	0.022	41.0	6.01	19.3	cloudy	1520
16:00	107.625	61.36	5.03	0.022	206	5.51	19.5	very cloudy	Pump @ 68 ft. btoc @ 1550

Parcel No.: 181
Well ID: HR-181-MW01
Date: 4/5/01

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
16:15	113.25	61.15	5.08	0.021	28.3	6.02	19.3	clear	
16:30	118.875	61.18	5.09	0.021	15.8	5.95	19.7	clear	Last Reading of day
09:10	118.875	59.35	—	—	—	—	—	—	4/6/01 0.375 gal/min
09:30	126.375	60.17	5.14	0.035	270	5.53	19.9	murky	Pump @ 66 ft. btoc
09:45	132	60.87	5.24	0.029	629	5.84	20.2	murky	
10:00	137.625	61.78	5.13	0.021	378	5.78	19.6	murky	
10:15	143.25	61.93	5.16	0.021	139	6.10	19.9	cloudy	
10:30	148.875	62.33	5.09	0.017	77	5.46	20.1	cloudy	
10:45	154.5	61.80	5.03	0.028	27.5	5.89	20.2	clear	
11:00	160.125	61.78	5.03	0.017	21.8	6.18	20.4	clear	Last Reading of day
09:20	160.125	59.22	—	—	—	—	—	—	4/9/01 Flow Rate = 0.375
09:30	163.875	59.94	5.06	0.043	233 *	5.16	19.2	murky	gal/min. Pump @ 64 ft.
09:45	169.5	60.19	5.06	0.024	78 *	5.51	19.1	cloudy	btoc

* Turbidity Reading taken using Horiba U-10. All other Turbidity Readings taken using DRT-15CE.

Parcel No.: 181
Well ID: HR-181-MW01
Date: 4/6/01

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
10:00	175.125	60.83	5.07	0.019	120 *	5.52	19.3	very cloudy	
10:15	180.75	60.96	4.99	0.018	79 *	5.22	19.5	cloudy	
10:30	186.375	61.16	4.96	0.017	79 *	5.28	19.7	cloudy	
10:45	192.0	61.39	5.02	0.016	66 *	6.04	20.1	cloudy	8 hrs. surpassed
11:00	197.625	61.60	4.96	0.015	177	5.60	19.9	very cloudy	
11:15	203.25	61.61	5.01	0.015	55	5.48	20.0	cloudy	Last Reading Collect Sample
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* Reading taken using Horiba U-10, All other Turbidity Readings taken using DRT-15CE.

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Justin Fisher
Well Developed by (person/firm): Justin Fisher IT

Parcel No.: 181
Well No.: HR-181-MW02
Date started: 3/21/01

Monitoring Well Information

Development Method: Purge + Surge
Development Equipment: Grundfos Pump, Horiba U-10 water quality meter, Turbidimeter
Casing Diameter: 2" PVC

Beginning Measurments
Depth to Water (ft): 42.16 ft. btoc
Total depth of Well (ft): 61.45 ft. 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.)
13:15	0	42.16	—	—	—	—	—	—	Begin Purging Flow Rate = 0.85 gal/min
13:30	~12	56.15	—	—	—	—	—	—	Well pumed dry
14:35	~12	47.20	—	—	—	—	—	—	Resume @ 0.25 gal/min
14:45	15.75	48.99	4.83	0.038	5.96	755	14.1°	murky	
15:00	19.5	49.55	4.24	0.037	5.81	175	15.5°	cloudy	
15:15	23.25	49.80	4.36	0.033	5.95	102	15.5°	cloudy	
15:30	27.00	—	—	—	—	—	—	—	

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

$[(61.45 - 42.16) \times 5 \times 0.163 + 15_{gal} = 30.72$ gallons to purge

Parcel No.: 181
Well ID: HR-181-MW02
Date: 3/21/01

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
15:41	29.75	—	—	—	—	—	—	—	Generator out of gas
16:00	34.50	49.92	4.40	0.031	690	5.92	15.6°	clear	Generator back online @ 1544
16:15	38.25	50.01	5.01	0.028	1076	6.07	15.9°	opaque	
16:30	41.00	49.50	5.04	0.027	236	6.03	15.6°	milky	Last Reading of day
08:20	41.00	47.08	—	—	—	—	—	—	3/22/01 Flow Rate = 0.25 gal/min
08:30	44.75	49.84	4.99	0.061	341	4.76	16.2°	milky	Pump set @ 2' off bottom
08:45	48.50	50.58	5.01	0.026	340	5.01	17.0°	milky	(59.45 ft btoc)
09:00	52.25	51.12	5.05	0.027	1403	4.51	17.0°	murky	
09:15	56.00	51.21	5.11	0.024	345	4.98	17.0°	milky	
09:30	59.75	51.35	5.00	0.023	306	4.88	17.5°	milky	
09:45	63.50	51.35	5.07	0.023	358	5.08	17.7°	milky	moved pump up 2 ft. (57.45')
10:00	67.25	51.20	5.00	0.023	884	5.22	18.2°	opaque	
10:15	71.00	51.65	5.08	0.020	56	5.33	18.8°	clear	

Parcel No.: 181
Well ID: HR-181-MW02
Date: 3/22/01

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
10:30	74.75	51.63	5.09	0.022	52	5.55	18.8°	clear	moved pump up 2 ft. (55.45' btoc)
10:45	78.50	51.43	5.00	0.019	669	5.20	18.9°	murky	
11:00	82.25	51.94	5.07	0.020	357	5.57	18.7°	milky	
11:15	86.00	52.04	5.08	0.019	113	5.68	18.4°	cloudy	
11:30	89.75	52.00	5.09	0.018	347	5.19	18.8°	milky	
11:45	93.50	52.01	4.96	0.018	34	5.82	18.3°	clear	moved pump up 2 ft. (53.45' btoc)
12:00	97.25	51.79	5.01	0.018	785	5.22	18.7°	murky	
12:15	101.00	51.79	4.96	0.018	148	5.65	18.6°	cloudy	
12:30	104.75	51.60	5.09	0.017	132	5.87	18.8°	Cloudy	moved pump up 2 ft. (51.45' btoc)
12:45	108.50	50.88	4.97	0.021	1352	6.31	19.7°	opaque	
13:00	112.25	51.90	5.08	0.018	888	5.81	19.2°	murky	
13:15	116.00	51.90	5.02	0.016	378	6.00	19.6°	cloudy	
13:30	119.75	51.84	5.03	0.016	52	5.82	19.0°	clear	

Parcel No.: 181
Well ID: HR-181-MW02
Date: 3/22/01

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
13:45	123.50	52.17	4.90	0.016	47	5.88	19.0°	clear	moved pump down 2ft. (53.45')
14:00	127.25	52.11	4.99	0.016	457	5.82	19.1°	murky	
14:15	131.00	51.95	5.08	0.015	353	5.91	18.9°	murky	8 hrs. reached
14:30	134.75	51.89	5.08	0.016	89	5.89	18.7°	cloudy	
14:45	138.50	52.44	5.15	0.015	84	6.07	18.4°	cloudy	moved pump down 2ft (55.45')
15:00	142.25	51.51	5.05	0.015	477	5.82	18.6°	murky	
15:15	146.00	52.09	5.01	0.015	340	6.20	18.4°	milky	
15:30	149.75	51.96	4.93	0.015	365	5.81	18.1°	milky	Last Reading. Collect Turb. sample
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number:
Form Completed by: Mike My
Well Developed by (person/firm): Mike My / IT Corp.

Parcel No.: HR-181
Well No.: MW03
Date started: 3/14/01

Monitoring Well Information

Development Method: Surge and Purge
Development Equipment: Whale Pump, Horiba Turbidity Meter, Poly Tank, Water level indicator.
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 33.80' from toc.
Total depth of Well (ft): 38.0' bgs.

	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)
/14/01	15:30	3	33.80	7.16	.329	1K+	7.24	17.8°	very cloudy brown	well was bailed dry. 3 gallons were recovered.
/15/01	14:30	6.5	34.00	7.14	.320	1K+	7.21	17.2°	very cloudy brown	well was bailed dry. 3.5 gallons were recovered.
/16/01	10:15	9.5	34.21	7.12	.326	1K+	7.18	17.6°	very cloudy brown.	well was bailed dry. 3 gallons were recovered.
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38.0' - 33.80' = 4.20' x .163 = .6846 x 5 = 3.423 + 20 = 23.423 gallons to be purged.

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Jose Maturell
Well Developed by (person/firm): SM 956735 IT

Parcel No.: 194~~0~~
Well No.: MW01
Date started: 5-21-01

Screened Interval 62.5-82.5

Monitoring Well Information

Development Method: Surge & Purge
Development Equipment: Whale pump - Grand Fos

Casing Diameter: 2".

Beginning Measurments
Depth to Water (ft):
Total depth of Well (ft): 84.95 TOC

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.)
3-14-01 1st visited By Jon Remo → refer to Field book #15 Ranges w. Iron Mountain Road. Page 2									
3-14-01 09:20		Jon Remo							→ PID. 0.0 Backgrd 0.0. T.D. 84.92 TOC
5-21-01 SM 10:15		DRY well 2nd visit by Jose Maturell							T.D. 84.95 → PID. 0.0 Backgrd 0.0
5-22-01 SM 09:30		DRY well 3rd visit by JOSE Maturell							→ PID 0.0 Backgrd 0.0
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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

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Jose Maturell
Well Developed by (person/firm): JM IT 956735

Parcel No.: 194 Q
Well No.: MW02
Date started: 3-14-01

Screened Interval 44-64

Monitoring Well Information

Development Method: surge & Purge
Development Equipment: whale pump/Grund Fos

Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): -Dry
Total depth of Well (ft): 66.12

	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.)
3-14-01	08 :32	Jon Remo		1st visit on		3-14-01	→		→	PID 0.0 Backgrd 0.0
5-21-01 JM	10 :35	Jose Maturell		2nd visit on		5-21-01	→		→	PID 0.0 Backgrd 0.0 T.D 66.15 TOC
5-22-01 JM	10 :10	Jose Maturell		3rd visit on		5-22-01	→		→	T.D. 66.15 TOC PID 0.0 Backgrd 0.0
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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

Note!

for Jon Remo's entry refer to field book #15 Ranges w. Iron Mountain Road.

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Jose Maturell
Well Developed by (person/firm):

Parcel No.: 194 Q
Well No.: MW03
Date started: 3.14.01

Screened Interval 71-91

Monitoring Well Information

Development Method: ~~Screened~~ Surge & Purge
Development Equipment: whale pump / Grundfos

Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): Dry
Total depth of Well (ft): 94.08 TOC

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.)
3.14.01 : Jon Remo made 1st visit								→	PID 0.0 Backgrd 0.0
5.21.01 : Jose Maturell made 2nd visit								→	PID. 0.0 Backgrd 0.0 T.D. 93.5 TOC
5.22.01 : Jose Maturell made 3rd visit								→	PID 0.0 Backgrd 0.0 TOC
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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

Note:
For Jon Remo's entry Refer to Book #15 Range's W. Iron Moutain Road.

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: N. Baden
Well Developed by (person/firm): N. Baden

Parcel No.: HP-201Q
Well No.: MW01
Date started: 2/20/01

Monitoring Well Information

Development Method: Surge/Purge
Development Equipment: whale pump

Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 23.56' (TOC)
Total depth of Well (ft): 47.1' (TOC)

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.)
10:30	1.25	24.52	4.73	0.052	>1000	5.87	16.6	murky reddish orange	0.25 gallons/minute pump in ~~80~~ bottom
10:45	5.0	25.85	4.82	0.018	~~>1000~~ 530 NB 2/20/01	6.09	16.8	cloudy orange tint	
11:00	8.75	25.81	4.81	0.017	~~530~~ >1000 NB 2/20/01	5.62	16.7	cloudy	
11:15	12.5	25.90	4.76	0.018	62	5.91	16.8	Slightly Cloudy	
11:30	16.25	26.0	4.78	0.018	15.1	6.28	16.6	Clear	Moved pump up ~~two~~ two feet after taking parameters
11:45	20	25.91	4.81	0.018	127	6.19	16.8	Cloudy	
12:00	23.75	25.95	4.74	0.020	44	5.72	17.0	clear	

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

47.1 23.56 = 23.54 x 0.163 = 3.84 x 5 = 19.19 + 85 = 104.19 gallons

3.75

Parcel No.: HR-201Q
Well ID: MW01
Date: 2/20/01

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)
12:15	27.5	26.0	4.71	0.019	8.3	6.12	17.3	clear	
12:30	31.25	26.2	4.80	0.018	229	5.65	17.4	cloudy	pump moved up 2' ~~off bottom~~ NB for a total of 5' off bottom @ 1227
12:45	35	25.5	4.93	0.018	41	5.81	17.5	clear	
13:00	38.75	26.1	4.86	0.020	21	6.04	17.3	clear	
13:15	42.5	25.95	4.87	0.017 ~~NB~~	67	5.99	17.5	clear	
13:30	46.25	25.89	4.93	0.017	6.2	6.07	17.9	clear	
13:45	50	25.9	4.93	0.017	1.6	5.67	18.1	clear	
14:00	53.75	25.88	4.90	0.017	1.4	5.83	17.8	clear	
14:15	59	28.1	4.92	0.017	103	6.25	17.2	cloudy orange first	increased flow rate to 1gal/min @ 1413
14:30	74	29.6	4.79	0.016	>1000	6.22	17.1	cloudy	
14:45	89	29.87	4.78 ~~3.92~~ NB 2/20/01	0.016	739	7.01	17.0	cloudy	
15:00 ~~14~~ NB 2/20/01	104	31.34	4.78	0.016	152	6.33	16.9	cloudy	

Parcel No.: HR-201Q
Well ID: MW01
Date: 2/20/01

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)
15:15	116.75	27.64	4.84	0.015	284	6.07	17.0	Cloudy	decreased flow rate to 0.25gpm @ 1512
15:30	120.5	26.31	4.83	0.017	36	6.33	17.2	clear	
15:45	124.25	26.31	4.79	0.016	11.9	6.01	17.1	clear	
16:00	128	26.32	4.77	0.016	7.2	6.45	17.0	clear	
16:15	131.75	26.28	4.69	0.016	3.6	6.02	17.0	clear	
16:30	135.5	26.52	4.80	0.015	4.6	6.48	17.0	clear	Sample collected for photography
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: N. Badon
Well Developed by (person/firm): N. Badon

Parcel No.: HR-201Q
Well No.: MW02
Date started: 2/21/01

Monitoring Well Information

Development Method: Surge/Purge
Development Equipment: Whale pump

Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 38.58' (TOC)
Total depth of Well (ft): 52.30' (TOC)

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.)
09:30	—	38.85	5.76	0.438	>1000	8.40	19.9	cloudy orange	pump rate 0.25 gal/min pump 1' off bottom
09:45	3.75	41.15	5.74	0.406	>1000	8.49	19.2	cloudy orange	
10:00	7.50	41.25	5.80	0.401	>1000	8.71	19.5	orange	
10:18	12.75	41.1	5.82	0.374	902	9.19	18.6	orange	pump stopped for 3 minutes 1015-1018 0.5 gpm
10:30	18.75	43.23	5.79	0.310	>1000	9.33	18.5	orange	
10:45	26.25	43.25	5.77	0.309	>1000	9.49	18.2	orange	0.25 gal/min @ 1045
11:00	~~42.75~~ 54.75	43.23	5.71	0.230	650	9.45	18.3	orange	

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

52.30 − 38.85 = 13.45 X 0.163 = 2.19 * 5 = 10.95 + 100 = ~~100~~ 110.95

Parcel No.: HR-201Q
Well ID: MW02
Date: 2/21/01

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)
11:15	58.50	42.7	5.63	0.208	59	9.03	18.3	cloudy	
11:30	62.25	42.31	5.62	0.200	9.2	9.07	18.2	clear	
11:45	66.0	42.5	5.62	0.195	589	9.34	18.4	cloudy orange	Moved pump up 3' @ 1140
12:00	69.75	42.51	5.59	0.181	14.7	8.60	18.9	clear	
12:15	75.50	42.6	5.55	0.171	4.7	8.83	18.6	clear	
12:30	77.25	42.51	5.56	0.168	4.5	8.99	18.9	clear	
12:45	81.0	42.59	5.54	0.161	1.9	8.92	18.6	clear	1257 moved pump up 2'
13:00	84.75	42.6'	5.49	0.149	373	8.82	18.7	cloudy	
13:15	88.5	42.58	5.49	0.141	90	8.94	18.5	slightly cloudy	
13:30	92.25	42.61'	5.46	0.138	7.9	9.10	18.5	clear	
13:45	96	42.62	5.46	0.136	8.9	9.34	18.4	clear	
14:00	99.75	42.53	5.47	0.132	3.3	9.04	18.5	Clear	

Parcel No.: HR-201Q
Well ID: MW02
Date: 2/21/01

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)
14:15	103.5	42.34	5.45	0.128	5.7	9.20	18.2	clear	
14:30	107.25	42.17	5.42	0.123	17.2	9.34	18.4	clear	
14:45	111.0	42.12	5.45	0.120	6.4	9.48	18.1	clear	
15:00	114.75	42.13	5.44	0.118	1.9	9.44	18.3	clear	sample collected for photography
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 773191
Form Completed by: James P. Cox
Well Developed by (person/firm): James P. Cox IT Corp

Parcel No.: 229 Q
Well No.: HR-229-MW01
Date started: 5/14/2001

Monitoring Well Information

Development Method: Surge & Purge, Bailing
Development Equipment: Bailer

Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 90.03
Total depth of Well (ft): 91.98

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.)
~~10:55~~ 0955 JC	0.3 5/22/01	90.03	7.04	.683	>1000	7.10	19.1	Brown mud	Bailed 5/14/2001
17:30	—	—	—	—	—	—	—	—	5/16/2001 Dry
09:10	—								5-21-01 Dry PID 0.0 Backgrd 0.0
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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

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Justin Fisher
Well Developed by (person/firm): Justin Fisher IT

Parcel No.: 228Q
Well No.: HR-228Q-MW02
Date started: 4/10/01

Monitoring Well Information

Development Method: Purge/Surge
Development Equipment: Grundfos pump, Depth gauge Turbidimeter, Horiba U-10 water Quality meter
Casing Diameter: 2" PVC

Beginning Measurments
Depth to Water (ft): 24.83 ft, btoc
Total depth of Well (ft): 86.37 ft, 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.)
09:10	0	24.83	—	—	—	—	—	—	~0.5 gal/min. Pump @ 73 ft, btoc.
09:30	10	38.53	5.00	0.045	off scale	5.55	20.6	opaque	
09:45	17.5	45.09	5.09	0.032	off scale	5.61	21.3	opaque	
10:00	25.0	~~OF 53.02~~ 49.50	5.02	0.030	1259	5.65	22.0	opaque	
10:15	32.5	53.02	5.03	0.029	1283	5.62	22.0	opaque	
10:30	~40	52.78	—	—	—	—	—	—	pump clogged @ 1030 while
11:00	Moving	pump up and		down	screen	to maintain	flow		taking depth reading

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

86.37 − 24.83 = 61.54 x 0.163 = 10.03 x 5 = 50.16 + 125 gallons to install = 175.16 H_2O to remove

Parcel No.: 228Q
Well ID: HR-228Q-MW02
Date: 4/10/01

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
12:00	~50	—	—	—	—	—	—	—	shut down to let well
12:45	~50	—	—	—	—	—	—	—	recharge and sediment settle out.
13:17	—	—	—	—	—	—	—	—	Resumed @ 1245. Flow Rate
14:17	—	48.05	—	—	—	—	—	—	≈ 0.5 gal/min. Threw both
14:57	~100	—	—	—	—	—	—	—	breakers on generator by
									1317. shut down to let
									equipment cool off and well
									recharge. Resumed @ 1417.
									Threw both breakers again by
									1457. Shut down for day
									≈ 100 gallons total purged.
									Total purge volume determined by
									observing water level on purge tank.

Parcel No.: 228Q
Well ID: HR-228Q-MW02
Date: 4/11/01

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
10:20	~100	27.11	—	—	—	—	—	—	Flow Rate very sporadic.
10:35		38.52	5.02	0.039	off scale	7.30	22.7	opaque	Cannot get accurate
10:50		40.91	5.11	0.024	1204	5.41	24.5	opaque	measurement because flow
11:05		42.55	5.03	0.023	1194	5.35	24.1	opaque	keep surging + slowing down.
11:20		43.56	4.95	0.023	off scale	5.87	23.7	opaque	Pump @ 63 ft, btoc
11:35		59.74	4.91	0.021	off scale	5.92	21.1	opaque	
11:50		60.36	4.99	0.021	off scale	5.72	21.1	opaque	
12:05		60.28	4.98	0.020	off scale	5.83	22.6	opaque	Pump @ 65 ft, btoc @ 1155
12:20	~150	65.01	4.99	0.022	off scale	6.22	22.5	opaque	Pump @ 66 ft, btoc @ 1215
12:35		66.05	5.06	0.020	off scale	6.27	23.4	opaque	Pump @ 68 ft, btoc @ 1225
12:50		66.59	5.06	0.021	off scale	6.92	23.5	opaque	Pump @ 69 ft, btoc @ 1245
13:05		65.50	4.84	0.018	off scale	7.15	23.5	opaque	Pump @ 70.5 ft, btoc @ 1255
13:20		67.38	5.04	0.019	off scale	6.51	22.8	opaque	

Parcel No.: 228Q
Well ID: HR-228Q-MW02
Date: 4/11/01

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
13:35		67.44	4.88	0.019	off scale	6.15	23.3	opaque	
13:50		67.95	5.10	0.019	off scale	7.11	21.9		
14:05		68.93	4.85	0.020	off scale	7.00	21.8		
14:20	~200	69.89	4.75	0.019	off scale	6.59	23.3		8 hrs. reached, collect Turbidity sample.
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 773191
Form Completed by: James D. Cox
Well Developed by (person/firm): James D. Cox IT Corp

Parcel No.: 231Q
Well No.: HR-231Q-MW01
Date started: 5/14/2001

Monitoring Well Information

Development Method: Surge & Purge
Development Equipment: Grundfos pump, Rel. flo

Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): dry
Total depth of Well (ft): 88.11

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.)
09:20	–	–	–	–	–	–	–	–	5/14/01 – well is dry
17:15	–	–	–	–	–	–	–	–	5/16/01 – well is dry
13:10									5-21-01 PID. 0.0 Backgrd 0.0
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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

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number:
Form Completed by: Jewel J. Cunningham
Well Developed by (person/firm): [illegible] I.T. Corp.

Parcel No.: 232 QX
Well No.: MW01
Date started: 03/26/01

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: Horiba, DRT, DTW meter, Whaler Pump, PID
Casing Diameter: 2" PVC

Beginning Measurments
Depth to Water (ft): ~~68.06~~ 53.88
Total depth of Well (ft): 68.06

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.)
13:15	—	41.01	5.24	.044	228	8.52	16.2	Gray	1.25 gal/5m : Surged well Pump set 10' from bottom
13:30	3.75	41.21	5.13	.041	156	6.43	16.6	"	
13:45	7.5	41.62	5.29	.021	80	6.65	16.1	Clearing.	Surge well: set rate at 2 gal/5m
14:00	13.5	47.10	5.29	.020	787	8.03	16.1	Cloudy Gray	
14:15	19.5	BTOP	5.29	.017	124	6.90	16.2	Gray	
14:30	25.5	BTOP	5.14	.015	10.5	7.53	16.3	Clear	Surged well; Set pump near bottom of well
14:45	31.5	51.25	5.20	.014	>1000	8.10	15.9	Cloudy Gray	

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

~~64.50 - 50.80 = 13.70 x .163 = 2.2331 x 5 = 11.1655 + 68.[illegible]~~

68.06 − 53.88 = 14.18 x .163 = 2.31134 x 5 = 11.5567 + 30 = 41.5567

Parcel No.: 232-QX
Well ID: MW01
Date: 03/26/01

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)
15:00	37.5	52.71	5.25	.015	54	7.88	16.1	Slightly Gray	
15:15	43.5	53.15	5.09	.015	14	8.45	~~16.9~~ 15.9	Clear	Surged well and returned pump to bottom of well.
15:30	49.5	53.24	5.13	.014	>1000	9.04	15.5	Reddish	
15:45	55.5	53.60	5.09	.014	55	7.62	15.4	Clearish	
16:00	61.5	53.81	5.14	.014	20	8.18	15.2	Clear	
16:15	67.5	54.01	5.09	.013	9	8.40	15.1	Clear	Taking Photo Sample
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Dr. Susan Carey

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Jewel A. Cunningham
Well Developed by (person/firm): [illegible] ET Corp

Parcel No.: 232 QX
Well No.: MW02
Date started: 03/27/01

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: Whaler pump, Horiba, DRT, DTW meter, Bailer
Casing Diameter: 2" pvc

Beginning Measurments
Depth to Water (ft): 50.80
Total depth of Well (ft): 64.50

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.)
09:15	—	50.80	6.22	.343	>1000	-6.42	13.9	Reddish	Surged well: 2gal/5 min Pump Set near bottom
09:30	6	55.92	6.43	.291	>1000	-9.66	15.5	Dark Red Muddy	
09:45	12	BTOP	6.49	.288	>1000	-9.91	15.9	" " "	
09:50	14								(Well Dry)
10:15	14	54.40	5.94	.225	>1000	-7.29	14.5	Dk Red	Pump near bottom .5gal/5min
10:30	15.5	57.25	6.12	.217	>1000	-8.39	14.8	" "	
10:45	17	BTOP	6.07	.212	>1000	-9.10	14.5	" "	

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

64.50 - 50.80 = 13.70 x .163 = 2.2331 x 5 = 11.1655 + 65 = 76.1655

Parcel No.: 232 BX
Well ID: MW02
Date: 03/27/01

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)
10:55	18								(Well Dry)
13:00	18	52.44	6.04	.165	>1000	-8.14	17.2	Dk Red	Pump near bottom .5gal/5 min
13:15	19.5	56.75	6.22	.175	>1000	-7.00	17.6	" "	
13:30	21	BTOP	6.20	.193	>1000	-6.11	17.4	" "	
13:40	22								(Well DRY)
15:30	22.5	51.42	6.10	.147	163	-8.33	16.1	Cloudy	Bailed well for Photo Sample
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number:
Form Completed by: Mike May
Well Developed by (person/firm): Mike May / IT Corp.

Parcel No.: HR232QX-
Well No.: MW03
Date started: 3/19/01

Monitoring Well Information

Development Method: Surge and Purge
Development Equipment: Horiba Turbidity Meter, Whale Pump, Water level Indicator.
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 11.65'
Total depth of Well (ft): 37' from toc.

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)
3/19 09:45	2	14.09	6.79	.568	695	1.85	15.2°	cloudy black	pump @ 36' from toc.
10:00	4.5	14.16	6.92	.545	417	2.45	14.7°	cloudy grey	" "
10:15	7.0	14.05	6.95	.544	265	3.76	14.2°	cloudy grey	" "
10:30	9.5	14.85	6.92	.539	260	2.83	14.5°	cloudy grey	" "
10:45	12.0	14.91	6.96	.544	207	2.80	14.6°	cloudy grey	" "
11:00	14.5	15.02	6.96	.542	187	2.84	14.5°	cloudy grey	" "
11:15	17.0	15.16	6.94	.541	162	2.78	14.6°	cloudy grey	pump @ 34' from toc.

37.0' - 11.65 = 25.35' x .163 = 4.13 x 5 = 20.66 + 45 = 65.66 gallons to be purged.

Parcel No.: HR 232 QX
Well ID: MW03
Date: 3/19/01

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)
11:30	19.5	15.21	6.96	.542	151	2.81	14.5°	cloudy grey	pump @ 34' from toc.
11:45	22.0	15.27	6.95	.540	143	2.76	14.5°	cloudy grey	" "
12:45	24.5	15.02	6.97	.544	161	2.87	14.4°	cloudy grey	" "
13:00	27.0	15.16	6.96	.540	156	2.71	14.6°	cloudy grey	" "
13:15	29.5	15.24	6.96	.538	142	2.69	14.5°	cloudy grey	" "
13:30	32.0	15.31	6.95	.537	137	2.73	14.4°	cloudy brown	" "
13:45	34.5	15.46	6.96	.532	118	2.71	14.5°	cloudy brown	" "
14:00	37.0	15.58	6.96	.537	112	2.67	14.5°	cloudy brown	" "
14:15	39.5	15.71	6.94	.538	104	2.62	14.6°	cloudy brown.	" "
14:30	42.0	15.89	6.96	.536	94	2.61	14.5°	slightly cloudy	pump @ 34' from toc
14:45	44.5	16.03	6.97	.534	90	2.57	14.4°	clear	" "
15:00	47.0	16.13	6.95	.534	86	2.58	14.4°	clear	pump @ 32' from toc.
15:15	49.5	16.22	6.98	.535	85	2.61	14.5°	clear	" "

Parcel No.: HR 232 QX
Well ID: MW03
Date: 3/19/01

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)
15:30	52.0	16.29	6.96	.536	62	2.59	14.6°	clear	pump @ 32' from toc.
15:45	54.5	16.37	6.92	.537	57	2.60	14.7°	clear	" "
16:00	57.0	16.43	6.93	.539	51	2.62	14.6°	clear	" "
16:15	59.5	16.51	6.95	.539	47	2.61	14.6°	clear	" "
12/6/01 10:15	62.0	21.72	6.48	.479	1k+	2.11	15.2°	very cloudy grey	pump @ 34' from toc.
10:30	64.5	Not Accessible	6.92	.436	1k+	2.47	15.1°	cloudy grey	" "
10:45	67.0	Not Accessible	7.04	.443	1k+	2.26	15.0°	cloudy grey	" "
11:00	69.5	Not Accessible	7.07	.434	871	2.36	15.1°	cloudy grey	" "
11:15	72.0	Not Accessible	7.01	.437	734	2.27	15.2°	cloudy grey	" "
13:00	74.5	Not Accessible	7.33	.438	824	2.83	16.4°	cloudy grey	" "
13:15	77.0	Not. Accessible	7.24	.421	720	2.61	16.3°	cloudy grey	pump @ 33' from toc.
13:30	79.5	Not Accessible	7.28	.432	718	2.84	16.3°	cloudy grey	" "
13:45	82.0	Not Accessible	7.27	.419	704	2.62	16.2°	cloudy grey	" "

Parcel No.: HR 232 OX
Well ID: MW03
Date: 3/26/01

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)
26/01 14:00	84.5	Not Accessible	7.24	.430	716	2.47	16.1°	cloudy grey	pump @ 33' from toc
14:15	87.0	Not Accessible	7.26	.424	649	2.60	16.1°	cloudy grey	" "
14:30	89.5	Not Accessible	7.27	.436	612	2.48	16.3°	cloudy grey	" "
14:45	92.0	Not Accessible	7.27	.430	637	2.37	16.3°	cloudy grey	pump @ 32' from toc.
15:00	94.5	Not Accessible	7.28	.421	644	2.24	16.2°	cloudy grey	" "
15:10	97.0	Not Accessible	7.24	.436	336	2.28	16.4°	cloudy grey	" "
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number:
Form Completed by: Mike May
Well Developed by (person/firm): Mike May IT Corp.

Parcel No.: HR 232QX
Well No.: MW04
Date started: 3/21/01

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: Horiba Turbidity Meter, Whale Pump, Poly Tank, Water level indicator.
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 4.82' from toc.
Total depth of Well (ft): ~~67'~~ 70.35

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)
'21 09:30	2.5	10.73	6.25	.348	751	1.73	12.6°	cloudy brown	pump @ 65' from toc
09:45	5.0	12.64	6.54	.327	340	2.11	12.8°	cloudy brown	" "
10:00	7.5	14.81	6.68	.331	212	1.43	12.8°	cloudy brown	" "
10:15	10.0	17.16	6.81	.327	166	1.63	12.9°	cloudy brown	" "
10:30	12.5	18.06	6.86	.325	125	1.31	13.1°	slightly brown	" "
10:45	15.0	18.75	6.93	.329	113	1.24	13.3°	slightly brown	" "
11:00	17.5	21.67	6.94	.328	127	.92	13.3°	slightly brown.	pump @ 63' from toc

67' - 4.82' = 62.18' × .163 = 10.13 × 5 = 50.67 + 50 gallons = 100.67 gallons to be pump

Parcel No.: HR232QX ~~MW04~~ RMA
Well ID: MW04
Date: 3/21/01

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)
11:15	20.0	22.91	6.94	.319	118	1.18	13.4°	slightly cloudy	pump @ 63' from toc.
11:30	22.5	24.18	6.95	.323	112	1.23	13.4°	slightly cloudy	" "
12:45	25.0	10.24	6.93	.321	143	1.34	13.6°	slightly cloudy	" "
13:00	27.5	12.49	7.03	.331	286	1.10	13.4°	slightly cloudy	" "
13:15	30.0	17.70	7.06	.325	268	1.29	13.3°	slightly cloudy.	" "
13:30	32.5	20.44	7.06	.328	187	1.22	13.6°	slightly cloudy.	pump @ 61' from toc.
13:45	35.0	21.72	7.05	.323	161	1.29	13.5°	slightly cloudy.	" "
14:00	37.5	22.84	7.02	.320	154	1.17	13.6°	slightly cloudy	" "
14:15	40.0	24.12	7.03	.321	140	1.24	13.6°	slightly cloudy.	" "
14:30	42.5	25.68	7.05	.320	142	1.36	13.5°	slightly clear.	" "
14:45	45.0	26.92	7.02	.322	136	1.29	13.6°	slightly clear.	" "
15:00	47.5	27.68	7.04	.322	129	1.31	13.6°	slightly clear.	pump @ 59' from toc.

Parcel No.: HR 232 QX
Well ID: MW04
Date: 3/21/01

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)
15:15	50.0	29.12	7.04	.323	116	1.36	13.5°	slightly clear.	pump @ 59' from toc.
15:30	52.5	30.40	7.06	.321	109	1.28	13.7°	slightly clear.	" "
15:45	55.0	31.67	7.04	.321	116	1.31	13.6°	slightly clear	" "
16:00	57.5	32.79	7.05	.324	124	1.35	13.6°	slightly clear.	" "
16:15	60.0	33.96	7.05	.321	114	1.29	13.5°	slightly clear.	" "
3/22 09:30	62.5	4.19	6.99	.322	168	1.23	17.4°	cloudy brown	pump @ 57' from toc.
09:45	65.0	8.72	7.02	.320	161	1.19	17.5°	cloudy brown	" "
10:00	67.5	10.92	7.02	.319	172	1.20	17.5°	cloudy brown	" "
10:15	70.0	12.48	7.03	.321	142	1.22	17.5°	slightly cloudy	" "
10:30	72.5	14.17	7.04	.321	136	1.27	17.6°	slightly cloudy	" "
10:45	75.0	17.04	7.04	.320	131	1.21	17.5°	slightly cloudy	" "
11:00	77.5	19.16	7.05	.321	134	1.32	17.6°	slightly cloudy	" "
11:15	80.0	21.09	7.05	.320	128	1.36	17.7°	slightly cloudy.	pump @ 55' from toc.

Parcel No.: HR 232 OX
Well ID: MW04
Date: 3/22/01

	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)
3/22	11:30	82.5	23.47	7.06	.320	131	1.29	17.7°	slightly cloudy.	pump @ 55' from toc
	13:00	85.0	3.77	7.04	.319	146	1.32	17.8°	slightly cloudy.	" "
	13:15	87.5	5.12	7.04	.321	135	1.30	17.7°	slightly cloudy	" "
	13:30	90.0	7.36	7.05	.320	117	1.29	17.7°	slightly cloudy	" "
	13:45	92.5	9.18	7.06	.320	111	1.27	17.6°	slightly cloudy	" "
	14:00	95.0	11.31	7.05	.321	107	1.31	17.6°	slightly cloudy.	pump @ 53' from toc.
	14:15	97.5	12.79	7.05	.319	103	1.30	17.5°	slightly cloudy	" "
	14:30	100.0	13.86	7.04	.320	142	1.27	17.5°	slightly cloudy.	" "
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: NICK MULOSHI
Well Developed by (person/firm): NICK MULOSHI

Parcel No.: 232 QX
Well No.: HR-232QX-MW05
Date started: 02/15/01

Monitoring Well Information

Development Method: Surge and Purge
Development Equipment: BAILER, TURBIDITY METER, HORIBA U-10
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 59.01
Total depth of Well (ft): 62.02

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.)
15:00	0	59.01	—	—	—	—	—	—	started purging water out with a bailer
15:45	0.5	62.0	6.80	0.157	758	9.89	20.5	Reddish brown	well dry.
16:45	1.0	59.21	6.20	0.164	740	8.22	18.9	"	Purged well dry again. Will recharge over-night.
—	—	— 02/16/01	—	—	—	—	—	—	
08:40	1.0	58.86	—	—	—	—	—	—	Started purging well with bailer
09:00	2.0	62.0	6.81	0.151	620	8.51	19.2	Brown	well dry.
09:50	3.0	59.2	6.22	0.202	429	3.84	17.6	"	Started purging well with bailer

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

~~59.01~~ NC

62.02 - 59.01 = 3.01 x 0.163 = 0.45 x 5 = 2.45

Parcel No.: 232 QX
Well ID: HR - 232 QX - MW05
Date: 02/16/01

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 : 00	4.0	59.4	6.25	0.204	402	3.89	17.0	light brown	
11 : 20	4.0	—	—	—	402	—	—	"	collected sample
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number:
Form Completed by: Mike May
Well Developed by (person/firm): Mike May IT Corp.

Parcel No.: HR232 QX
Well No.: MW06
Date started: 3/30/01

Monitoring Well Information

Development Method: Surge and Purge
Development Equipment: Horiba Turbidity Meter, Whale Pump, Water level indicator.
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 9.14' from toc.
Total depth of Well (ft): 33.0' bgs.

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)
09:45	2.0	9.91'	6.36	.463	1Kt	2.27	15.1°	Dark Grey	pump @ 30' from toc.
10:00	4.0	10.03	6.4~~63~~ (MM)	.505	1Kt	2.09	15.3°	Dark Gray	" "
10:15	6.0	10.18	6.55	.559	643	2.52	17.0°	Dark Grey	" "
10:30	8.0	10.84	6.59	.568	520	1.34	16.8°	Cloudy Grey	" "
10:45	10.0	10.39	6.69	.578	402	1.92	17.1°	Cloudy Gray	" "
11:00	12.0	10.71	6.68	.573	326	2.06	16.7°	Cloudy Grey	" "
11:15	14.0	10.89	6.67	.568	317	2.16	16.9°	Cloudy Grey	" "

33.0' − 9.14' = 23.86' x .163 = 3.89 x 5 = 19.44 + 55 gallons = 74.44 gallons lost.

Parcel No.: HR 232 QX
Well ID: MW06
Date: 4/2/01

	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	09:15	16.0	10.36	6.57	.675	720	2.39	14.8°	cloudy grey	pump @ 30' from toc.
	09:30	18.0	10.30	6.80	.694	473	1.42	15.6°	cloudy grey	" "
	09:45	20.0	10.32	6.85	.697	239	1.59	15.2°	cloudy grey	" "
	10:00	22.0	10.47	6.85	.694	207	5.17	15.9°	slightly cloudy	" "
	10:15	24.0	10.51	6.85	.693	151	1.72	17.0°	slightly cloudy	" "
	10:30	26.0	10.67	6.87	.696	133	2.01	17.9°	slightly cloudy	" "
	10:45	28.0	10.71	6.94	.701	83	2.46	17.9°	slightly cloudy	pump @ 28' from toc.
	11:00	30.0	10.74	6.90	.700	57	2.74	17.4°	clear	" "
	11:15	32.0	10.79	6.90	.699	36	2.66	17.4°	clear	" "
	11:30	34.0	10.84	6.91	.701	31	2.27	17.5°	clear	" "
	11:45	36.0	10.93	6.90	.700	31	2.13	17.5°	clear	" "
	13:00	38.0	11.07	6.89	.701	39	2.19	17.9°	clear	" "
	13:15	40.0	11.14	6.91	.700	34	2.23	18.6°	clear.	" "

Parcel No.: HR 232 QX
Well ID: MW06
Date: 4/2/01

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)
1200 13:30	42.0	11.21	6.91	.699	30	2.41	19.4°	clear	pump @ 26' from toc.
13:45	44.0	11.36	6.91	.710	213	1.24	20.7°	slightly cloudy	" "
14:00	46.0	11.19	6.90	.711	227	2.09	22.1°	slightly cloudy	" "
14:15	48.0	11.19	6.90	.710	83	2.09	22.0°	clear	" "
14:30	50.0	11.24	6.89	.711	76	2.07	21.7°	clear	" "
14:45	52.0	11.21	6.90	.709	68	2.03	21.6°	clear	" "
15:00	54.0	11.29	6.91	.711	61	2.11	21.8°	clear	" "
15:15	56.0	11.27	6.91	.710	54	2.09	21.9°	clear	pump @ 24' from toc.
15:30	58.0	11.26	6.90	.710	37	1.97	21.7°	clear	" "
15:45	60.0	11.32	6.90	.709	24	2.03	21.7°	clear	" "
16:00	62.0	11.37	6.91	.710	19	2.07	21.6°	clear	" "
16:15	64.0	11.31	6.90	.710	8	2.09	21.6°	clear	" "
16:30	66.0	11.27	6.91	.709	12	2.08	21.4°	clear.	" "

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: ~~796887~~ 3/23/01 NB 773191
Form Completed by: N. Badon
Well Developed by (person/firm): N. Badon

Parcel No.: HP-232Q-X
Well No.: MW07
Date started: 3/22/01

Monitoring Well Information

Development Method: Surge/Purge
Development Equipment: Whale Pump

Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 4.75 TOC
Total depth of Well (ft): 28.45 TOC

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.)
13:35	—	4.75	5.27	0.062	> 1000	6.38	16.8°	brown	Pump is 5 ft off bottom due to high sediment
13:45	2.5	8.96	5.07	0.041	184	1.56	16.2	cloudy brown	
14:00	6.25	13.1	4.88	0.036	> 1000	2.47	15.4	brown	1353: pump is 1 ft off bottom 1400: increased purge rate: 1.5 gpm
14:15	16.25	6.6	4.78	0.026	196	3.34	16.0	cloudy brown	1405 Decreased purge rate to 0.25 gpm
14:30	20.0	6.35	4.79	0.032	81	4.54	16.3	cloudy	
14:45	23.75	6.40	4.74	0.031	84	2.71	16.0	cloudy	
15:00	27.50	6.40	4.67	0.032	78	3.56	15.8	cloudy	

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

28.45 - 4.75 = 23.7 x 0.163 = 3.86 x 5 = 19.32 + 75 gal = 94.32 gallons

Parcel No.: 232Q-X
Well ID: MW07
Date: 3/22/01

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)
15:15	31.25	6.37	4.66	0.031	53	5.44	15.9	cloudy	
15:30	35.0	6.35	4.63	0.032	49	5.44	15.5	cloudy	
15:45	38.75	6.40	4.62	0.033	26	2.17	15.5	clear	
16:00	42.50	6.42	4.60	0.030	19	4.88	15.3	clear	
09:15	42.50	5.22	~~4.77~~ 4.79 NB 3/23/01	~~0.077~~ 0.077	~~169~~ 169	0.23	15.2	cloudy	3/23/01 purge rate 0.25 gpm
09:30	46.25	6.25	4.99	0.032	44	2.92	15.1	clear	
09:45	4 NB 3/23/01 50	6.27	4.99	0.025	89	2.73	15.8	cloudy	0940: moved pump up 3 ft
10:00	53.75	6.27	4.97	0.026	12.8	3.18	15.5	clear	
10:15	57.50	6.29	4.94	0.027	8.9	2.53	15.5	clear	
10:30	61.25	6.28	4.91	0.028	7.7	2.05	16.2	clear	
10:45	65.0	6.25	4.91	0.027	6.2	2.83	16.7	clear	
11:00	68.75	6.28	4.94	0.026	4.3	3.36	16.5	clear	

Parcel No.: 232Q-X
Well ID: MW07
Date: 3/23/01

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)
11:15	72.50	6.28	4.88	0.025	4.6	3.84	16.2	clear	
14:40	72.50	7.32	—	—	—	—	—	—	3/26/01 Flow Rate = 0.25 gal/min
15:00	77.50	9.19	4.79	0.076	41	5.91	13.8	clear	
15:15	81.25	9.33	4.03	0.038	32	6.17	13.1	clear	
15:30	85.00	9.40	3.92	0.035	14.2	6.26	12.8	clear	
15:45	88.75	9.32	3.79	0.031	16.1	6.29	12.7	clear	
16:00	92.50	9.27	3.66	0.034	38	6.28	12.7	clear	
16:15	96.25	9.24	3.67	0.037	36	6.53	12.4	clear	Target volume reached
16:30	100.00	9.16	3.65	0.036	12.4	6.67	12.8	clear	
08:49	100.00	7.65	—	—	—	—	—	—	3/27/01: Flow Rate = 0.25 gal/min
09:00	103.75	10.04	4.47	0.063	22.7	5.47	13.0	clear	
09:15	107.50	10.00	4.46	0.039	10.72	5.81	13.2	clear	

Parcel No.: 232QX
Well ID: HR-232QX-MW07
Date: 3/27/01

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
09:30	111.25	10.10	4.72	0.041	8.41	5.82	13.5	clear	
09:45	115.00	9.99	4.80	0.031	4.92	5.99	13.2	clear	
10:00	118.75	9.96	4.73	0.033	2.62	5.71	13.3	clear	
10:15	122.50	10.17	4.74	0.031	2.82	5.72	13.6	clear	Collect Sample
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Justin Fisher
Well Developed by (person/firm): Justin Fisher , IT

Parcel No.: 232Qx
Well No.: HR-232Qx-MW08
Date started: 4/2/01

Monitoring Well Information

Development Method: Purge/Surge
Development Equipment: Grundfos Pump, Turbidimeter, Horiba U-10 water quality meter
Casing Diameter: 2 inch PVC

Beginning Measurments
Depth to Water (ft): 21.00 ft. btoc
Total depth of Well (ft): 99.79 ft. 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.)
14:20	0	21.00	—	—	—	—	—	—	Flow Rate = 1 gal/min. Pump @
14:30	10	55.98	5.14	0.117	off scale	1.98	19.3	opaque	94.79 ft. btoc.
14:45	25	63.14	4.57	0.080	off scale	3.71	18.3	opaque	
15:00	40	65.41	4.48	0.065	off scale	4.72	18.4	opaque	
15:15	55	66.52	4.42	0.052	1229	4.56	18.3	opaque	
15:30	70	66.97	4.42	0.048	613	4.79	18.4	murky	
15:45	85	67.31	4.68	0.047	303	5.13	18.4	very cloudy	Pump @ 96.79 ft. btoc @ 1550

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

99.79 - 21.00 = 78.79 x 0.163 = 12.84 x 5 = 64.21 + 100 gallons = 164.21 gallons

Parcel No.: 232QX
Well ID: HR-232QX-MW08
Date: 4/2/01

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
16:00	100	68.25	4.72	0.044	523	5.09	18.5°	murky	
16:15	~120	no reading	—	—	—	—	—	—	Pump clogged @ 1614.
16:30	127.5	68.45	4.77	0.059	off scale	4.60	20.5	opaque	Flow restored @ 1625 (1.5 gal/min)
16:45	150.0	72.71	4.55	0.054	off scale	4.88	19.7	opaque	Moved pump up 13 ft. to 83.79
17:00	172.5	78.95	4.53	0.048	1487	4.92	19.2	opaque	ft. btoc @ 1625. Target
17:15	195.0	81.11	4.79	0.044	605	5.09	18.9	murky	volume reached with 1700 reading.
17:30	212.5	77.93	4.60	0.042	451	5.11	19.0	very cloudy	Pump lowered to 88.79 ft. btoc @ 1705
09:10	212.5	20.08	—	—	—	—	—	—	4/4/01 Flow Rate = 0.75 gal/min
09:45	238.75	69.15	5.06	0.066	120.2	6.09	18.3	Cloudy	Pump @ 93.79 ft. btoc
10:00	250.00	66.95	5.23	0.050	149	6.74	19.2	cloudy	
10:15	261.25	70.55	5.20	0.046	80.1	7.15	18.4	cloudy	Pump @ 95.79 ft. btoc
10:30	272.50	67.08	5.17	0.047	146	7.18	20.0	cloudy	
10:45	283.75	69.44	5.13	0.045	125	7.34	19.4	cloudy	Pump @ 97.79 ft. btoc

Parcel No.: 232Qx
Well ID: HR-232Qx-MW08
Date: 4/4/01

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
11:00	295.00	71.02	5.09	0.041	190	7.20	19.5	very cloudy	
11:15	306.25	72.64	5.10	0.042	72.6	7.45	18.8	cloudy	
11:30	317.50	72.98	5.09	0.040	73.3	7.56	18.9	cloudy	
11:45	no reading	–	–	–	–	–	–		Pump on bottom 99.79 ft btoc
12:00	no reading	–	–	–	–	–	–		Pump clogged. Down 10 min, moved up 8'
12:15	343.75	61.15	5.17	0.046	179	6.39	20.5	cloudy	to 91.79 ft btoc
12:30	355.00	63.41	5.12	0.041	138	7.16	20.9	cloudy	
12:45	366.25	68.38	5.13	0.043	179	7.37	21.7	cloudy	
13:00	377.50	83.90	5.10	0.041	135	7.46	18.8	cloudy	
13:15	388.75	79.64	5.03	0.037	172	7.68	19.0	cloudy	Pump @ 89.79 ft btoc
13:30	400.00	81.06	5.01	0.038	44.1	7.50	18.9	clear	
13:45	408.75	71.17	4.98	0.035	29.6	7.69	18.8	clear	Flow Rate = 0.5 gal/min @ 1335
14:00	416.25	71.79	4.99	0.036	25.2	7.84	18.4	clear	

Parcel No.: 232QX
Well ID: HR-232QX-MW08
Date: 4/4/01

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
14:15	423.75	72.32	4.97	0.035	18.5	7.92	18.3	Clear	
14:30	428.50	68.71	4.97	0.034	16.1	7.60	18.1	clear	Flow Rate = 0.25 gal/min @ 1420
14:45	432.25	61.32	4.97	0.034	16.0	7.12	18.6	clear	
15:00	436.00	—	4.99	0.035	14.7	7.15	18.0	Clear	Last Reading, Collect Turbidity
:									Sample. Total Purge Time = 8hrs.
:									50min.
:									
:									
:									
:									
:									
:									
:									

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Lee Flippen
Well Developed by (person/firm): Lee Flippen \ IT Corp.

Parcel No.: HR 232 QX
Well No.: MW09
Date started: 5-3-01

SI = 20.5' – 30.5'

Monitoring Well Information

P.D. = pump depth
P.R. = purge Rate

Development Method: Surge + purge
Development Equipment: whale pump

Casing Diameter: 2" (.163) TOC

Beginning Measurments
Depth to Water (ft): ~~37.2~~ 6.2
Total depth of Well (ft): 37.2

PID 0.0 BKGrd 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.)
	14:00	Ø	6.2	5.30	.030	999+	3.50	18.6	cloudy white	Road unaccessable – Needs leveling + Gravel before pad.
-4-01	15:00	Ø	6.01	5.12	.032	999+	4.65	18.6	orange	5-4-01 – Surged well – PD 30 PR. 35 PID 0.0 BKGrd 0.0
	15:15	5.25	16.08	4.42	.018	999+	4.66	17.8	orange	PD 30 PR. 30
	15:30	9.75	17.0	4.09	.020	999+	4.54	17.9	orange	PD 30 PR. 30
	15:45	14.25	18.6	4.15	.019	874	4.51	17.5	orange	PD 30 PR. 7 –
1hr	15:51	18.45	stopped pump							5-4-01 ~~[illegible]~~
-7-01	09:40	18.45	6.03	4.95	.036	797	4.22	16.7	orange	5-7-01 – PID 0.0 BKGrd 0.0 PD 21 ft PR. 75 – Surged Well

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

37.2 – 6.2 = 31.0 x .163 = 5.053 x 5 = 25.265 + 50 = 75.3 g

Parcel No.: HR 232 QX
Well ID: MW09
Date: 5-7-01

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
09:55	29.7	17.10	4.73	.022	280	4.34	16.8	orange	PD 21 ft PR .75
10:10	40.95	17.18	4.83	.018	76	4.34	16.8	clearing cloudy	5-7-01 PD 21 ft RR .7
10:25	51.5	18.63	4.85	.018	16.1	4.31	16.8	clear	Moved pump + Surged PD 23 ft PR .7
2hrs 10:40	62.0	19.11	4.88	.017	264	4.68	16.7	cloudy clearing	PD 23 ft PR .65
10:55	71.75	19.35	4.87	.017	59	4.61	16.8	clear	PD 23 ft PR .65
11:10	81.5	19.62	4.93	.017	37	4.70	16.8	clear	– Target PV reached – PD 23 ft PR .65 gpm
11:25	91.25	19.69	4.91	.017	31	4.81	16.8	clear	Moved pump + Surged well PD 25 ft PR .65 gpm
11:40	101.0	19.75	4.90	.016	66	4.85	16.8	clear	PD 25 ft PR .65 gpm
3hrs 11:55	110.75	19.65	4.85	.016	9.1	4.77	16.8	clear	PD 25 ft PR .65 gpm
12:10	120.5	19.60	4.86	.017	4.9	4.69	16.8	clear	PD 27 ft PR .6 gpm – surged Well –
12:25	129.5	19.72	4.86	.016	67	4.78	16.8	clear	PD 27 ft PR .6 gpm
12:40	138.5	19.73	4.83	.016	11.7	4.75	16.8	clear	PD 27 ft PR .6 gpm
4hrs 12:55	147.5	19.55	4.81	.016	5.5	4.71	16.8	clear	PD 27 ft PR .3

Recharge Rate ≈ .6 gpm

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number:
Form Completed by:
Well Developed by (person/firm): CONTINUATION

Parcel No.: HR 232 QA MW09
Well No.: MW09
Date started: 5-3-01

Monitoring Well Information

Development Method:
Development Equipment: CONTINUATION

Casing Diameter:

Beginning Measurments
Depth to Water (ft): 6.2
Total depth of Well (ft): 37.2

PTD 0.0 BKGrd 0.0 SI 20.5-30.5

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.)
13:10	152.0	11.2	4.81	.016	2.2	4.63	16.7	clear	PD 27 ft PR .3
13:25	156.5	10.2	4.86	.016	2.1	4.59	16.9	clear	Well Developed - 5-7-01 156.5 g H2O removed, NTU's < 10
:									Variables ALL less than 10% Lee Stephen 5-7-01
:									collected 1 l. H2O sample
:									
:									
:									

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

See page 1

Recharge Rate = .6 gpm

Parcel 232

Groundwater Well Development Log

Fort McClellan , Alabama

PROJECT: **774645** COST CODE: **01020300** DELIVERY ORDER **CK05**

SITE ID: **LOCATION ID:** HR-232 OX-MW10 (Well Number) **Static Water Level:** 27.20 ft

Target Purge Volume: 36 gal WELL DEPTH: 46.89 (ft from TOC) Well Casing Diameter: (opt) 2" **Recovery Depth:** _____

Purge Start: 1005

Date 1999	Time 24hr	Purge Rate (gal/min)	Dynamic H2O Level (ft)	Volume Purged (gl)	Temp C°	pH	Cond. mMhos/cm	Turbidity (NTU)	Dissolved oxygen (mg/L)	Redox (mV)	Prepared By:	Water Description
2/14/01	10:20	0.660	31.81	9.9	16.9	5.57	0.238	72.7	9.64	200	KAH.	Dark Gray
	10:35	0.780	31.91	21.6	16.6	5.29	0.201	26.1	10.00	225		Gray
	10:50	0.720	31.91	32.4	16.7	5.44	0.195	18.6	10.16	225		Cloudy Gray
	11:05	0.720	31.94	43.2	16.9	5.44	0.192	21.1	9.92	225		Slightly Cloudy
	11:20	0.260	29.45	47.1	17.5	5.43	0.190	2.34	9.56	230		Clear
	11:25	0.110	29.42	48.75	17.6	5.44	0.190	3.23	9.58	225		Clear
	11:30	0.110	29.45	50.4	17.5	5.43	0.190	2.34	9.57	230		Clear
	:											
	:						2/14/01					
	:											
	:											

$$\frac{TD}{46.89} - \frac{DTW}{27.2} = 19.69 \times .163 = \frac{1\,WV}{3.2} \times \frac{5}{} = 16 + \overset{Loss}{20} = 36 \text{ min}$$

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Lee Flippen
Well Developed by (person/firm): Lee Flippen / IT Corp.

Parcel No.: HR232QX
Well No.: MW11
Date started: 5-14-01

SI = 45'-60' PID 0.0 BKGrd 0.0

Monitoring Well Information

Development Method: Surge + purge
Development Equipment: Whale Pump, Heron WLT, Aquafast II, horiba #8019
Casing Diameter: 2" .163

Beginning Measurments
Depth to Water (ft): ~~60.6 ft~~ 47.10 ft
Total depth of Well (ft): 60.6 ft

PID 0.0 BKGrd 0.0 DtW 47.10 ft TD 60.6 ft

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.)
5-14-01 09:15	Ø	47.10	5.98	.101	999+	2.80	16.9	orange	pump 1ft. off bottom - surged - surged well screen PD 59.6 ft PR .6 5-14-01
09:30	9.0	49.10	5.97	.089	999+	2.94	16.8	orange	PD 59.6 ft. PR .6
09:45	18.0	49.40	6.02	.081	633	3.38	16.9	orange	PD 59.6 ft PR .6
10:00	27.0	49.40	5.96	.072	424	4.36	16.7	cloudy	PD 59.6 PR .6 * Recharge Rate = .6 gpm
1hr 10:15	36.0	49.50	5.93	.066	493	4.24	16.9	cloudy	Moved pump to 57.6 ft - Surged PD 57.6 PR .5 * Target P.V. reached
10:30	43.5	49.0	5.98	.078	999+	4.14	16.9	orange	PD 57.6 PR .5
10:31	— Pump stopped — one of the 2 whale pumps broke down							—	5-14-01 [signature]

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

60.6 - 47.10 = 13.5 x .163 = 2.2 x 5 = 11 + 20 g = 31 g

Parcel No.: HA 232 QX
Well ID: MW11
Date: 5-18-01

DTW 47.15 PID 0.0 SI 45'-60' PD 55ft

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 5-18-01
10:00	43.5	47.95	5.77	.088	999+	0.44	19.1	dark orange	P.D. 58' TOC P.R. .3 GPM
10:15	48.	48.34	5.58	.053	999+	0.21	18.5	cloudy Tan	P.D. 58' TOC P.R. .3 GPM
10:30	52.5	48.3	5.54	.047	512	0.12	19.2	cloudy Tan	P.D. 58' TOC P.R. .5 GPM
10:45	60.	48.48	5.51	.042	71	0.65	19.8	cloudy clear	P.R. .5 GPM P.D. 58' TOC
11:00	67.5	48.5	5.50	.042	50	.48	20.2	clear	P.R. .5 GPM P.D. 58' TOC
11:15	75	48.54	5.46	.039	33	1.71	20.0	clear	" "
11:30	82.5	48.57	5.44	.038	30	0.84 ~~1.71~~	20.0	clear	" "
11:45	90.	48.58	5.41	.035	16.5	1.53	19.9	clear	" "
12:00	97.5	48.6	5.38	.033	15.9	.98	20.1	clear	" "
12:15	102.0	48.69	5.35	.032	5.8	1.34	20.0	clear	" "
12:30	106.5	48.63	5.37	.033	4.5	1.45	19.9	clear	" "
12:45	111.0	48.67	5.33	.031	4.0	1.44	19.9	clear	Took 1L. sample w.c. 11.97ft - Unable to Surge At different Level Well Development Complete
13:00	118.5	48.65	5.33	.031	4.7	1.46	20.2	clear	P.R. .5 GPM P.D. 58' TOC

Stopped the pump and photosample has been taken at 12:45 / Ntu = 4.0

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number:
Form Completed by: Justin Fisher
Well Developed by (person/firm): —

Parcel No.: 232QX
Well No.: MW13
Date started: 04/27/01 @ 1105

Monitoring Well Information

Development Method: N/A
Development Equipment: DTW-PID

Casing Diameter: 2" PVC

Beginning Measurments
Depth to Water (ft): well dry
Total depth of Well (ft): 72.01

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.)
:									
:				No Entry, Well Dry					
:									
:									
:									
:									
:									

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

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number:
Form Completed by: Justin Fisher
Well Developed by (person/firm): Justin Fisher IT

Parcel No.: 232Qx
Well No.: MW13
Date started: 04/30/01 @ 0913

Monitoring Well Information

Development Method: N/A
Development Equipment: Water level Indicator, PID

Casing Diameter: 2" PVC

Beginning Measurments
Depth to Water (ft): Well dry
Total depth of Well (ft): 72.81

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.)
:									
:									
:									
:									
:									
:									
:									

No Entry, Well Dry. Bailer Dry

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

Well Dry!

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number:
Form Completed by: Jewel H. Cunningham
Well Developed by (person/firm): [illegible] FTC Corp

Parcel No.: 232 QX
Well No.: MW13
Date started: 03/27/01

Monitoring Well Information

Development Method: N/A
Development Equipment: DTW - PID

Casing Diameter: 2" pvc

Beginning Measurments
Depth to Water (ft): 72.81
Total depth of Well (ft): 72.81

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.)
:									
:									
:									
:									
:									
:									
:									

No Entry Well Dry

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

72.81 - 72.81 = 0 x .163 = 0 x 5 = 0 + 5 = 5 : Well Dry No volume purged!

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Lee Flippen
Well Developed by (person/firm): Lee Flippen / IT Corp.

Parcel No.: HR 232QX
Well No.: MW14
Date started: 5-4-01

Screen Interval 28'-43'

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: Whale Pump

Casing Diameter: 2" (.163)

Beginning Measurments
Depth to Water (ft): 16.98'
Total depth of Well (ft): 45.10

PID 0.0 BKGnd 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.)
5-4-01 09:20	Ø	16.98	5.22	.065	999+	1.85	18.7	orange	PD 42 PR 0.8 Surged well 5-4-01
09:35	12.0	33.4	5.23	.043	999+	1.90	18.8	orange	PD 42 PR .7 Changed Battery
09:50	22.5	Below 37' Pump Boost	5.18	.039	999+	1.74	18.2	orange	PD 42 PR .7
09:51	23.2	Pump	stopped - wl - too Low			- wait	20min.		
10:11	23.2	34.78	—	Well Did not recharge 80%					Recharge Rate ≃ 2.2 ft/20 min
5-10-01 14:15	23.2	27.72	5.34	.042	999+	3.77	21.4	orange	WC=17.38 PD 35.6 PR .75 - Surged well 5-10-01 - Surged well
14:30	34.45	Below Pump	4.88	.036	999+	5.65	19.6	orange	PD 35.6 PR .125 PR= .125

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

45.10 - 16.98 = 28.12 x .163 = 4.58 x 5 = 22.9 + .75 = 97.9g

Parcel No.: HR 232 QX
Well ID: MW 14
Date: 5-10-01

SI 28-43' PID 0.0 BKGrd 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
14:45	36.3	Below Pump	4.86	.038	999+	4.40	20.9	orange	Moved Pump + Surged Well PD 37.5 PR .125
15:00	38.2	Below pump	5.10	.037	858	4.16	21.0	orange	PD 37.5 PR .125 - changed Batteries
15:15	40.1	Below Pump	5.21	.037	999+	3.51	21.8	orange	Moved Pump + Surged PD 39 ft. PR .25 gpm
15:30	43.85	Below Pump	5.27	.037	999+	3.42	21.9	orange	PD 39 ft PR .75 gpm
15:45	55.1	Pump stopped - Would not siphon water							~~[illegible]~~ 5-10-01 - Stopped For the DAY
5-11-01 08:50	55.1	27.05	5.29	.054	999+	4.65	17.4	orange	PID 0.0 BKGrd 0.0 WC = 18.05 PD 40.5 PR .7 - Surged Well - 5-11-01
09:05	65.6	Below Pump (38 ft.+)	5.29	.041	999+	4.32	17.3	orange	PD 40.5 PR .7 changed Batteries
09:20	76.1	Below Pump Boost	5.23	.037	999+	3.74	18.8	orange	PD 40.5 PR .6
09:25	85.1			Pump stopped - Pump would not pump any longer - W.L. too low.					
:									This is 3rd visit to well And 3rd time well ran Dry.
:									Well Development Completed For this well. ~~[illegible]~~ 5-11-01
:									Target P.V. of 97.9 g not reached. Turbidity remains High.
:									

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Justin Fisher
Well Developed by (person/firm): Justin Fisher IT

Parcel No.: 232QX
Well No.: HR-232QX-MW15
Date started: 05/21/01

Monitoring Well Information

Development Method: Purge Surge
Development Equipment: Grunflos Pump, Water level indicator, Turbidimeter, Horiba U-10 Water Quality Meter
Casing Diameter: 2" PVC

Beginning Measurments
Depth to Water (ft): 84.18 ft. btoc
Total depth of Well (ft): 111.96 ft. 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.)
10:20	0	84.18	–	–	–	–	–	brown mud	1 gal/min. Pump @ 109' btoc
10:25	5	88.22	–	–	–	–	–	brown mud	Pump overload "UC1", shut down
10:45	5	85.40	–	–	–	–	–	brown mud	Surge wel 1 gal/min. Pump @ 109' btoc.
10:50	10	91.61	–	–	–	–	–	brown mud	Pump overload "UC1". Shut down
11:12	10	86.17	–	–	–	–	–	brown mud	Surge well 0.75 gal/min. Pump @ 109' btoc
11:19	15.25	91.95	–	–	–	–	–	brown mud	Pump overload "UC1". Shut down
11:45	15.25	86.94	–	–	–	–	–	brown mud	Surge well 0.5 gal/min. Pump @ 110' btoc.

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

111.96 - 84.18 = 27.78 x 0.163 = 4.53 x 5 = 22.64 + 100 gallons = 122.64 gallons

Parcel No.: 232QX
Well ID: HR-232QX-MW15
Date:

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
11:53	19.25	92.05	–	–	–	–	–	brown mud	Pump overload "UC1". Shut down
12:18	19.25	88.02	–	–	–	–	–	brown mud	Surge well 0.25 gal/min. Pump @ 110' btoc
12:28	21.75	91.42	–	–	–	–	–	brown mud	Pump overload "UC1". Shut down
13:42	21.75	86.78	–	–	–	–	–	brown mud	Surge well 0.167 gal/min. Pump @ 110' btoc
14:30	28.76	92.46	6.07	0.372	off scale	5.01	23.9	brown mud	
14:45	31.27	93.55	6.27	0.323	off scale	4.48	23.5	brown	
15:00	33.78	94.72	6.38	0.330	off scale	4.60	23.3	brown	Must keep increasing power to maintain 0.167 gal/min
15:15	36.29	95.67	6.37	0.324	off scale	4.58	24.4	brown	Flow Rate = 0.25 gal/min @ 1520
15:30	39.63	98.72	6.16	0.318	off scale	4.92	22.8	brown	
15:45	43.38	101.46	6.27	0.309	off scale	6.11	22.2	brown	
15:57	46.38	104.55	–	–	–	–	–	brown	Flow stopped. No overload. Could not restore by surging or increasing power.
12:05	46.38	84.40	–	–	–	–	–	mud	5/22/01 Pump @ 110' btoc
12:16	49.13	89.10	–	–	–	–	–	mud	Pump overload "UC1". Shut down. Flow Rate = 0.25 gal/min

Parcel No.: 232QX
Well ID: HR-232QX-MW15
Date: 5/22/01

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
12:33	49.13	85.69	–	–	–	–	–	mud	Resume @ 0.25gal/min
12:45	52.13	91.20	8.84	0.485	off scale	5.52	19.2	mud	Pump overload "UC1" shut down
13:12	52.13	86.54	–	–	–	–	–	mud	Resume @ 0.25gal/min
13:25	55.38	91.47	–	–	–	–	–	mud	Pump overload "UC1" shut down
13:50	55.38	86.90	–	–	–	–	–	mud	Resume @ 0.25gal/min
14:20	62.88	92.52	7.54	0.399	427	5.40	23.0	murky	
14:30	65.38	92.96	7.03	0.388	1080	4.98	22.7	opaque	
14:45	75.51	93.81	6.73	0.372	1410	5.16	23.7	opaque	
15:00	79.26	94.52	6.71	0.371	off scale	5.62	23.8	opaque	
15:15	83.01	95.11	6.74	0.366	off scale	5.54	23.4	opaque	
15:30	86.76	96.03	6.58	0.360	1277	5.14	23.7	opaque	
15:45	90.51	96.85	6.47	0.352	off scale	5.20	23.6	opaque	
16:00	94.26	97.96	6.46	0.338	off scale	5.20	23.1	opaque	

Parcel No.: 232Qx
Well ID: HR-232Qx-mw15
Date: 05/22/01

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
16:15	98.01	98.74	6.40	0.334	off scale	5.25	23.4	opaque	
16:22	101.76	—	—	—	—	—	—	—	Generator out of gas
10:20	101.76	84.92	—	—	—	—	—	mud	5/23/01. Pump @ 108' btoc
10:26	103.26	—	—	—	—	—	—	mud	~~"UC1"~~ JF "9F". Put wire in shade. Flow Rate = 0.25 gal/min
10:28	103.26	—	—	—	—	—	—	mud	Resume @ 0.25 gal/min
11:00	111.26	92.20	6.37	0.282	272	4.72	22.9	murky	Pump @ 107' @ 1105
11:15	115.01	93.06	6.47	0.274	639	4.47	23.1	murky	Pump @ 106' @ 1120
11:30	118.76	93.71	6.45	0.277	1111	4.65	23.5	murky	Pump @ 105' @ 1135
11:45	122.51	94.84	6.40	0.279	1013	4.42	24.5	murky	Pump @ 104' @ 1150 Purge volume reached.
12:00	126.26	95.31	6.39	0.274	1316	4.42	23.9	opaque	
12:15	130.01	96.36	6.38	0.272	1334	4.49	24.7	opaque	Pump moved to 106' btoc.
12:30	133.76	97.17	6.28	0.272	off scale	4.25	24.7	opaque	12 hrs. surpassed, collect sample.
:									

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Jewel H. Cunningham
Well Developed by (person/firm): [illegible] I.T. Corp

Parcel No.: 232 QX
Well No.: MW11
Date started: 03/21/01

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: Horiba, DRT, DTW meter, Whaler Pump
Casing Diameter: 2" pvc

Beginning Measurments
Depth to Water (ft): 12.90
Total depth of Well (ft): 42.90

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.)
13:45	—	12.90	7.06	.157	>1000	7.61	13.8	Dark Reddish	2gal/min: Surged well + set pump near bottom
14:00	6	30.01	6.96	.124	478	7.69	13.6	Lt Red	1gal/5min
14:15	9	32.24	6.78	.276	600	7.16	13.2	~~Dusty~~ Red	
14:30	12	33.21	7.13	.301	408	6.85	12.4	Dusty Red	
14:45	15	33.98	7.31	.292	282	6.03	12.1	" "	
15:00	18	34.80	7.37	.311	239	7.14	11.9	" "	
15:15	21	BTOP	7.40	.314	212	6.89	12.0	" "	Well Dry ~~15.25~~ 15.25

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

42.90 - 12.90 = 30.00 x .163 = 4.89 x 5 = 24.45 + 25 = 49.45

BTOP - Beneath top of pump.

Parcel No.: 232-QX
Well ID: MW16
Date: 03/22/01
03/23/01

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
09 :15	21	16.47	6.00	.168	533	7.04	16.0	Dusty Red	Surged well: Set pump 10' from bottom: 1gal/5 min
09 :30	24	19.98	6.04	.130	501	7.17	16.3	" "	
09 :45	27	24.01	6.09	.118	465	7.29	16.5	" "	
10 :00	30	25.11	6.00	.124	509	7.38	16.5	" "	
10 :15	33	26.29	5.93	.129	689	7.49	16.3	"	Surged well and dropped pump near bottom; 2gal/5m
10 :30	36	27.41	5.89	.134	851	7.63	16.2	Cloudy Gray	
10 :45	42	33.25	6.44	.235	214	7.70	15.7	Gray	
11 :00	48	BTop	6.71	.317	>1000	5.29	15.7	Dark Red	
11 :05									Well Dry
08 :45	48	21.60	5.99	.177	62	6.67	15.1	Grayish	03/23/01 Pump set mid screen .5gal/5 min
09 :00	49.5	22.69	6.22	.158	40	6.35	15.6	"	
09 :15	51	24.01	6.58	.178	36	6.30	16.5	Clearing	
09 :30	52.5	24.52	6.99	.221	32	6.41	17.1	Clearish	

* BTop – Beneath top of pump

Parcel No.: 232 QX
Well ID: MW16
Date: 03/23/01

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 :45	54	25.16	7.12	.250	60	6.15	17.8	Grayish	Turning Dirty. Dropped Pump To Bottom; 1.5gal/5min.
10 :00	58.5	BTOP	7.23	.249	64	6.39	17.1	"	Taking Photo Samples
10 :02									Well Dry
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Final Entry
Jeff Cunningham

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number:
Form Completed by: Reginald Grains
Well Developed by (person/firm): Reginald Grains / JT

Parcel No.: HR-2320X
Well No.: MW17
Date started: 3/23/01

Monitoring Well Information

Development Method: Surge and Purge
Development Equipment: Waller pump, water detector, Horiba U-10, Turbidimeter
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 7.25
Total depth of Well (ft): 36.77

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.)
10:35	—	7.25	5.29	0.160	71000	3.04	16.0	dark grey	Purge rate - 1.5 gal/5 min pump pos. - 1ft from bottom
10:50	4.5 gal	11.72	5.55	0.255	97	2.94	16.2	clear	Purge rate - 2 gal/5 min pump pos - 3ft from bottom
11:05	10.5 gal	15.24	5.78	0.268	170	2.96	16.3	light grey	
11:20	16.5 gal	15.65	5.82	0.279	89	2.56	16.3	light grey	pump pos - 5ft from bottom
11:35	22.5 gal	16.75	5.87	0.272	143	3.00	16.3	light grey	
11:50	28.5 gal	16.75	6.00	0.280	48.2	3.05	16.5	clear	purge rate - 3 gal/5 min
12:05	37.5 gal	17.55	6.07	0.281	37.7	2.81	16.4	clear	

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

36.77 − 7.25 = 29.52 x 0.163 = 4.8 x 5 = 24 gal + 30 = 54 gal

Parcel No.: HR-232OX
Well ID: MW17
Date: 3/23/01

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	46.5gal	18.05	6.10	0.281	63.3	2.95	16.4	clear	
12:35	55.5gal	18.15	6.11	0.284	25.6	3.14	16.5	clear	
12:50	64.5gal	18.45	6.18	0.285	14.3	2.76	16.6	clear	
13:05	73.5gal	18.60	6.15	0.287	9.2	2.98	16.7	clear	Final parameter reading
13:10									Collected photo sample.
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Groundwater Well Development Log

Fort McClellan , Alabama

Project Number:
Form Completed by: Jewel H. Cunningham
Well Developed by (person/firm): Jewel Cunningham IT Corp.

Parcel No.: 232 QX
Well No.: MW18 – HR232 QX
Date started: 03/19/01

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: Whaler pump; Horiba; DRT Meter DTW meter;
Casing Diameter: 2" pvc

Beginning Measurments
Depth to Water (ft): 14.50
Total depth of Well (ft): 33.55
38.3

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	—	14.50	5.45	.016	100	11.02	9.7	Gray	Surged well: Installed pump at 1' from bottom. 1.75 gal/5 min
13 :45	5.25	17.34	5.49	.111	>1000	1.84	14.5	Dark Grayish	
14 :00	10.5	17.55	5.89	.100	289	2.58	14.1	Slightly Gray	
14 :15	15.75	17.74	5.98	.094	113	3.94	13.8	Light Gray	Surged Well. Set pump 5' from bottom
14 :30	21	18.05	6.00	.087	170	3.06	14.1	"	
14 :45	26.25	18.10	6.09	.088	53	2.48	14.3	Clearing	Raised F.R. 2.75 gal/5 min
15 :00	31.5	18.21	6.07	.089	31	2.35	15	"	Surged well with pump and set pump near bottom

TD – 33.55
DTW – 14.50
19.05 X .163 = 3.105 X 5 = 15.5275 + 25 = 40.5275 – Total amount of water to be purged.

one volume
Five well volumes
Installation Amount of H2O used.

D:\FTMC\DEVELOPMENTLOG.DOC
09/15/00

Parcel No.: 232 QX
Well ID: HR-232 OX-MW18
Date: 03/19/01 - 03/22/01

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 :15	39	20.19	6.24	.089	>1000	3.41	15.8	Dark Gray	Lowered rate back to 1.75 gal/5 minutes
15 :30	44.25	19.89	6.26	.089	472	2.56	14.6	Dark Gray	Shut pump down for the Day
12 :30	44.25	11.90	6.30	.167	430	3.61	17.2	Gray in Color	03/22/01 1gal/5 min
12 :45	47.25	13.00	5.96	.157	303	3.29	17.3	Lt. Gray	Pump set Mid-Screen
13 :00	50.25	13.25	5.90	.142	169	3.63	17.4	"	
13 :15	53.25	13.56	5.93	.126	70	4.55	16.9	Clearing	
13 :30	56.25	13.64	5.85	.117	42	4.70	16.9	Clearish	
13 :45	59.25	13.69	5.72	.111	25	4.71	17.0	Clear	
14 :00	62.25	13.71	5.53	.118	16	3.80	16.9	"	
14 :15	65.25	13.77	5.57	.123	10	4.00	16.7	"	3hrs + 45 min.
:									Began Photo sample
:									

Final Entry

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: NICK MULOSHI
Well Developed by (person/firm): NICK MULOSHI

Parcel No.: 232QX
Well No.: HR - 232QX - MW 19
Date started: 02/15/01

Monitoring Well Information

Development Method: PURGE AND SURGE
Development Equipment: HORIBA U-10, ORION TURBIDITY METER, GRUNDFOS PUMP, POWER BACK GENERATOR
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 57.32
Total depth of Well (ft): 65.60

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.)
11:30	0	57.32	—	—	—	—	—	—	Started purging water
11:45	5	61.50	6.12	.241	>1000	5.59	18.0	Brown	Pump is @ 1' from bottom surged well with pump
12:00	10	60.23	6.08	.235	>1000	5.61	18.1	"	
12:15	15	61.02	6.58	.233	220	6.25	18.8	Clear Brownish	Turbidity taken with Horiba
12:30	18	59.76	6.20	.248	205	6.18	18.5	"	
12:45	21	59.51	6.32	.245	191	6.01	18.6	"	
13:00	27	58.82	6.68	.242	180	5.38	18.8	Milky	

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

65.60 - 57.32 = 8.28 x .163 = 1.35 x 5 = 6.75 + 40 = 46.75 gallons

Parcel No.: 232QX
Well ID: HR-232QX-MW19
Date: 02/15/01

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)
13:15	33	58.93	6.70	.243	143	5.45	18.6	Milky	Increased purge rate slightly.
13:30	39	58.98	6.75	.245	101	5.56	18.7	Clear	Turbidity taken with ORION Turbidity meter
13:45	50	59.01	6.73	.246	60	5.87	18.8	"	"
14:00	65	59.12	6.72	.247	25	5.91	18.9	"	"
14:15	87	59.42	6.72	.246	9	5.90	18.9	"	"
14:20	89	59.42	6.73	.247	8	5.91	18.9	"	"
14:25	92	59.41	6.73	.248	8	5.92	18.8	"	Collected Sample
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