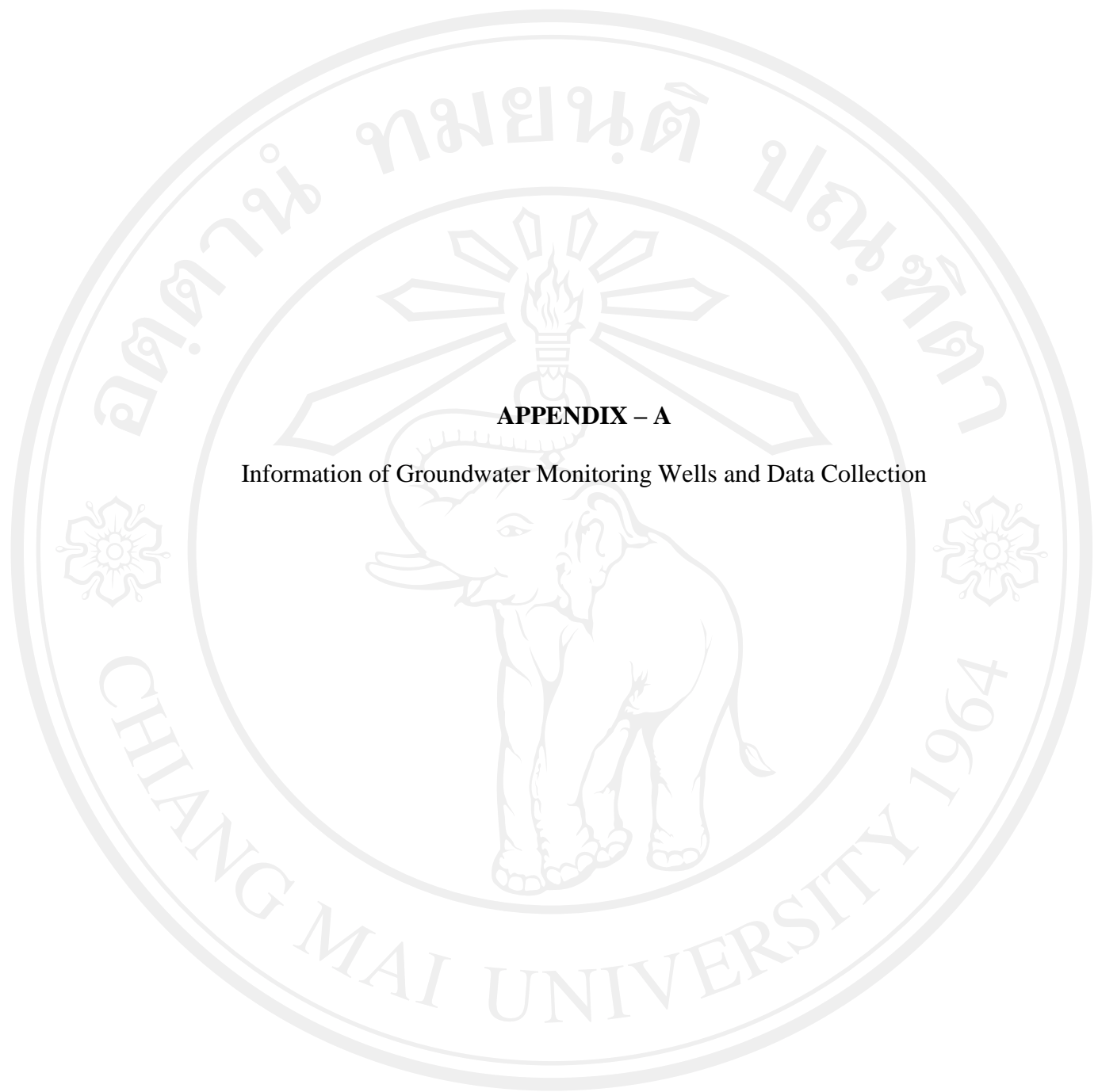




**APPENDICES**

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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**APPENDIX – A**

Information of Groundwater Monitoring Wells and Data Collection

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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**Table A-1 Selected observation wells, initial heads, and transient heads used in flow model.**

Well No.	Well Name	X-Coordinate (m.)	Y-Coordinate (m.)	Depth (m.)	Aquifer Unit	Initial head (m., msl)	Monitoring 1 <sup>st</sup> Head (m., msl)	Monitoring 2 <sup>nd</sup> Head (m., msl)	Monitoring 3 <sup>rd</sup> Head (m., msl)
1	TV253	707702	1587612	84.00	Vc	-3.69	-4.17	-3.71	n/a <sup>1</sup>
2	UNK166	709566	1573736	120.00	Qfd	-21.71	-20.89	-22.14	n/a <sup>2</sup>
3	TW160	710950	1589567	80.00	Vc	44.72	44.95	44.90	Discontinued
4	PW14313	711710	1583264	80.00	Vc	-7.56	-8.84	-6.88	
5	C1111	713080	1588632	80.00	Qt	38.65	38.49	39.35	38.20
6	TD413	715386	1592255	67.00	Qt	57.15	55.17	56.89	n/a <sup>1</sup>
7	UNK167	716183	1566370	120.00	Qfd	-25.20	-12.34	-12.49	n/a <sup>2</sup>
8	TW70	717029	1571353	96.00	Qfd	-9.00	-9.30	-9.07	-5.98
9	480847D020	717659	1545400	132.00	Qfd	-7.76	Discontinued		
10	480847D021	717639	1545379	180.00	Qfd	-5.93	Discontinued		
11	TW71	717684	1571829	69.00	Qfd	-7.58	-6.97	-6.75	-6.95
12	Q260	718890	1590207	30.00	Qt	57.23	54.86	56.96	
13	X437	719418	1582177	69.00	Qt	-3.07	Discontinued		
14	PW5047	719803	1584382	54.40	Qt	-8.16	-7.84	-8.12	-7.60
15	DCD7967	720300	1584219	62.00	Qt	0.17	0.62	2.92	-1.56
16	NYK16001	720340	1576614	62.00	Qot	-2.06	-2.18	-1.68	-2.28
17	MR9	721480	1589907	52.50	Qt	13.09	11.99	14.14	10.91
18	UNK158	721767	1582374	62.00	Qot	-1.41	-6.86	3.60	-7.84

**Table A-1 (Continued)**

Well No.	Well Name	X-Coordinate (m.)	Y-Coordinate (m.)	Depth (m.)	Aquifer Unit	Initial head (m.,msl)	Monitoring 1 <sup>st</sup> Head (m., msl)	Monitoring 2 <sup>nd</sup> Head (m., msl)	Monitoring 3 <sup>rd</sup> Head (m., msl)
19	PW2775	721768	1586311	35.50	Qt	13.43	n/a <sup>3</sup>		
20	CB37	722469	1580121	114.00	Gr	2.27	1.80	1.75	3.17
21	DCD7965	722470	1580121	62.00	Qot	-13.35	-12.28	-15.42	-15.75
22	NN27	722692	1568682	66.00	Vc	-4.06	-5.07	-7.66	-2.32
23	PW17714	722693	1568682	238.00	Qfd	-13.76	-15.48	-15.71	-15.89
24	UNK083	722857	1576802	60.00	Qfd	-15.76	-20.12	-19.31	n/a <sup>1</sup>
25	X1444	722858	1576802	69.00	Vc	-16.15	-15.59	-16.50	-15.76
26	480848D009	722896	1589714	194.00	Qfd	15.27	15.47	15.69	15.73
27	MF43	722897	1589714	30.00	Vc	14.15	10.20	11.19	n/a <sup>1</sup>
28	DJ97	722913	1506452	165.00	Qfd	-9.40	-9.72	-9.66	-9.14
29	DH497	723174	1580448	60.00	Qot	-10.30	-13.08	-12.55	-11.32
30	DH319	723231	1580405	42.00	Qot	-0.31	-2.17	-0.46	n/a <sup>1</sup>
31	DCD7902	723497	1575695	47.00	Qot	-1.44	-1.90	-1.39	-1.26
32	DH198	723544	1580210	48.00	Qot	-4.22	-5.79	-4.19	-5.66
33	DH320	723575	1584633	42.00	Qot	3.37	3.50	4.44	2.32
34	UNK159	723864	1580391	53.00	Vc	-1.98	-4.11	-1.44	-3.81
35	UNK174	724067	1552225	139.00	Qfd	-2.64	-2.77	-2.72	-2.19
36	TW229	724354	1587144	180.00	Vc	11.78	10.29	13.45	10.94

**Table A-1 (Continued)**

Well No.	Well Name	X-Coordinate (m.)	Y-Coordinate (m.)	Depth (m.)	Aquifer Unit	Initial head (m.,msl)	Monitoring 1 <sup>st</sup> Head (m., msl)	Monitoring 2 <sup>nd</sup> Head (m., msl)	Monitoring 3 <sup>rd</sup> Head (m., msl)
37	UNK150	707702	1587612	75.00	Vc	23.09	19.35374	22.74374	-
38	UNK087	709566	1573736	33.00	Gr	36.93	36.51	36.87	37.08
39	DH18	710950	1589567	39.00	Qyt	63.06	62.73	63.05	61.71
40	UNK160	711710	1583264	61.00	Qot	2.50	1.68	1.73	n/a <sup>3</sup>
41	TH25047	713080	1588632	30.00	Vc	11.91	11.04	11.87	n/a <sup>2</sup>
42	DH206	715386	1592255	31.00	Vc	14.89	13.84	15.93	14.31
43	DJ244	716183	1566370	66.00	SDmm	-9.22	-8.40	-9.58	-9.60
44	NYK37021	717029	1571353	55.00	Qot	0.96	0.24	1.24	-0.16
45	NYK41116	717659	1545400	56.00	Vc	26.13	24.59	26.01	26.11
46	DJ203	717639	1545379	24.00	Gr	1.43	1.25	1.44	0.52
47	NYK41318	717684	1571829	67.00	Qot	-23.61	-24.22	-22.99	n/a <sup>1</sup>
48	TN319	718890	1590207	62.00	Qyt	17.04	15.95	16.38	16.68
49	DE461	719418	1582177	114.00	Vc	15.12	13.87	13.87	n/a <sup>2</sup>
50	DH141	719803	1584382	62.00	SDmm	-14.74	-17.10	-17.95	n/a <sup>1</sup>
51	TH25288	720300	1584219	35.00	Gr	-14.72	n/a <sup>1</sup>		
52	DJ502	720340	1576614	129.00	Qfd	-19.17	-17.09	-16.54	n/a <sup>1</sup>
53	TW227	721480	1589907	90.00	SDmm	18.89	17.37	20.04	18.08
54	DJ271	721767	1582374	105.00	Qfd	-1.33	-0.57	-0.61	-0.15

**Table A-1 (Continued)**

Well No.	Well Name	X-Coordinate (m.)	Y-Coordinate (m.)	Depth (m.)	Aquifer Unit	Initial head (m.,msl)	Monitoring 1 <sup>st</sup> Head (m., msl)	Monitoring 2 <sup>nd</sup> Head (m., msl)	Monitoring 3 <sup>rd</sup> Head (m., msl)
55	TW224	707702	1587612	54.00	Vc	64.44	63.08	64.06	64.21
56	DCD3689	709566	1573736	24.00	SDmm	-3.12	-3.43	-3.74	n/a <sup>1</sup>
57	DCD7955	710950	1589567	57.00	Qot	1.49	n/a <sup>3</sup>		
58	C867	711710	1583264	72.00	Qfd	1.08	n/a <sup>3</sup>		
59	DE309	713080	1588632	36.00	Vc	51.68	n/a <sup>3</sup>		
60	DJ492	715386	1592255	120.00	SDmm	-8.09	n/a <sup>3</sup>		
61	TH25137	716183	1566370	24.00	Qfd	-9.01	-8.84	-8.50	-9.69
62	MF499	717029	1571353	108.00	Qfd	-2.61	-2.17	-2.76	Discontinued
63	NN18	717659	1545400	56.00	Qfd	1.13	n/a <sup>1</sup>		
64	PW1255	717639	1545379	84.00	Qfd	-1.23	Discontinued		
65	DCD3844	717684	1571829	99.00	SDmm	-18.45	-19.10	-18.98	n/a <sup>1</sup>
66	DJ480	718890	1590207	66.00	SDmm	21.28	21.21	21.40	21.86
67	UNK082	719418	1582177	25.00	Gr	-4.86	-3.68	-4.84	n/a <sup>1</sup>
68	DCD7805	719803	1584382	42.00	Vc	5.82	4.65	5.63	5.68
69	X568	720300	1584219	33	Qfd	-3.04	Discontinued		
70	NN20	720340	1576614	56	Vc	-7.82	Discontinued		
71	DCD7924	721480	1589907	35	Vc	3.86	2.79	3.63	3.60
72	DMR167	721767	1582374	94.5	SDmm	0.43	0.18	0.06	0.34

**Table A-1 (Continued)**

Well No.	Well Name	X-Coordinate (m.)	Y-Coordinate (m.)	Depth (m.)	Aquifer Unit	Initial head (m.,msl)	Monitoring 1 <sup>st</sup> Head (m., msl)	Monitoring 2 <sup>nd</sup> Head (m., msl)	Monitoring 3 <sup>rd</sup> Head (m., msl)
73	TE73	707702	1587612	120.00	Vc	7.66	6.58	7.91	7.92
74	PW6568	709566	1573736	25.00	Qot	3.32	1.94	3.88	3.42
75	DMR99	710950	1589567	33.00	Qfd	6.79	6.45	7.46	3.86
76	X1507	711710	1583264	84.00	Qot	-2.28	-2.24	-2.23	n/a <sup>1</sup>
77	DE312	713080	1588632	27.00	Vc	7.02	6.12	8.03	6.14
78	PW727	715386	1592255	101.30	Qfd	-9.68	Discontinued		
79	NN32	716183	1566370	85.00	Vc	11.95	9.06	9.68	10.31
80	UNK136	717029	1571353	42.00	Gr	10.87	9.89	11.56	n/a <sup>1</sup>
81	DJ204	717659	1545400	30.00	Gr	27.97	27.84	27.65	27.50
82	EGP06-20110101-1	717639	1545379	90.00	Pemm	54.77	54.05	54.61	54.40
83	CBI55727	717684	1571829	92.00	Gr	34.51	33.27	34.35	35.88
84	MF91	718890	1590207	36.00	Vc	14.10	Discontinued		
85	X483	719418	1582177	27.00	Vc	8.27	4.60	11.44	5.45
86	X644	719803	1584382	20.00	Gr	31.30	30.76	31.44	31.29
87	DJ227	720300	1584219	93.00	Qfd	-25.31	-24.07	-24.46	-25.89
88	DJ478	720340	1576614	45.00	Gr	2.65	3.11	3.37	3.27
89	MF472	721480	1589907	18.00	SDmm	15.68	n/a <sup>1</sup>	n/a <sup>1</sup>	16.36
90	DH404	721767	1582374	120.00	Vc	14.37	11.92	15.21	n/a <sup>1</sup>

**Table A-1 (Continued)**

Well No.	Well Name	X-Coordinate (m.)	Y-Coordinate (m.)	Depth (m.)	Aquifer Unit	Initial head (m.,msl)	Monitoring 1 <sup>st</sup> Head (m., msl)	Monitoring 2 <sup>nd</sup> Head (m., msl)	Monitoring 3 <sup>rd</sup> Head (m., msl)
91	NN31	707702	1587612	56.00	Vc	8.63	4.03	9.42	10.85
92	TH25186	709566	1573736	35.00	Qfd	-0.61	-0.70	0.28	n/a <sup>1</sup>
93	DE313	710950	1589567	60.00	Vc	5.77	2.85	6.56	5.91
94	DMR85	711710	1583264	40.50	Qfd	5.96	5.40	5.46	5.66
95	NN17	713080	1588632	56.00	Vc	7.38	6.71	7.34	6.33
96	DMR160	715386	1592255	18.00	Gr	72.35	72.76	71.29	72.03
97	DCD7974	716183	1566370	28.00	Vc	7.13	6.44	7.17	7.07
98	DJ275	717029	1571353	36.00	SDmm	5.73	6.13	4.72	n/a <sup>1</sup>
99	NN30	717659	1545400	56.00	Vc	5.72	5.10	5.85	5.26
100	DE463	717639	1545379	48.00	Vc	4.54	3.28	5.34	3.75
101	PW4249	717684	1571829	18.50	Qfd	5.90	Discontinued		
102	DCD3687	718890	1590207	48.00	Qfd	15.71	15.49	15.75	15.52
103	DCD7852	719418	1582177	29.00	Vc	17.10	15.87	16.48	16.62
104	UNK113	719803	1584382	32.00	Gr	24.47	24.28	23.85	23.46
105	PW14156	720300	1584219	38.00	Gr	45.49	Discontinued		
106	X1506	720340	1576614	68.00	Vc	5.06	4.60	5.15	5.08
107	DJ435	721480	1589907			5.84	4.95	6.12	n/a <sup>1</sup>
108	X720	721767	1582374	48.00	Qfd	-0.57	-0.09	-0.18	-0.16



**Table A-1 (Continued)**

Well No.	Well Name	X-Coordinate (m.)	Y-Coordinate (m.)	Depth (m.)	Aquifer Unit	Initial head (m.,msl)	Monitoring 1 <sup>st</sup> Head (m., msl)	Monitoring 2 <sup>nd</sup> Head (m., msl)	Monitoring 3 <sup>rd</sup> Head (m., msl)
109	DJ595	707702	1587612	66.00	Qyt	-0.74	-0.55	-0.92	n/a <sup>1</sup>
110	DJ473	709566	1573736	45.00	Gr	5.26	4.79	4.67	4.65
111	DCD7885	710950	1589567	29.00	Vc	7.52	6.00	6.55	6.21
112	DCD7966	711710	1583264	54.00	Vc	35.24	31.36	34.82	34.87
113	Q564	713080	1588632	18.00	Qyt	11.64	Discontinued		
114	DCD3770	715386	1592255	29.00	SDmm	26.91	26.29	26.49	26.19
115	UNK137	716183	1566370	24.00	Qfd	22.90	22.59	23.15	22.97
116	DCD7972	717029	1571353	57.00	Vc	11.69	11.42	11.71	11.90
117	X430	717659	1545400	12.00	Qfd	7.98	6.29	8.31	6.68
118	MD560	717639	1545379	105.00	Qyt	28.27	Discontinued		
119	UNK118	717684	1571829	47.00	Gr	38.46	38.55	38.36	38.00
120	DJ497	718890	1590207	76.00	Qfd	-10.18	-9.69	-9.39	-9.88
121	DJ20	719418	1582177	30.00	Gr	5.83	5.52	5.60	5.95
122	C782	719803	1584382	18.00	Gr	7.92	6.92	7.50	7.98
123	TS25151	720300	1584219	42.00	SDmm	36.19	Discontinued		
124	DJ332	720340	1576614	42.00	Gr	18.19	17.92	18.12	18.19
125	DCD7942	721480	1589907	67.00	Vc	15.87	15.15	15.41	n/a <sup>1</sup>
126	DJ447	721767	1582374	70.00	SDmm	76.40	75.62	76.05	76.03

**Table A-1 (Continued)**

Well No.	Well Name	X-Coordinate (m.)	Y-Coordinate (m.)	Depth (m.)	Aquifer Unit	Initial head (m.,msl)	Monitoring 1 <sup>st</sup> Head (m., msl)	Monitoring 2 <sup>nd</sup> Head (m., msl)	Monitoring 3 <sup>rd</sup> Head (m., msl)
127	DJ267	707702	1587612	72.00	Qfd	-8.80	-7.39	Discontinued	
128	DJ486	709566	1573736	33.00	Gr	14.51	13.49	13.51	14.71
129	PW11210	710950	1589567	24.50	Vc	12.72	12.39	12.70	11.08
130	PW1483	711710	1583264	33.00	Qyt	2.47	Discontinued		
131	X425	713080	1588632	18.00	Vc	7.93	6.85	8.55	7.28
132	DJ154	715386	1592255	48.00	Vc	7.81	6.57	6.89	-
133	P479	716183	1566370	21.00	Qot	9.53	33.64	33.56	33.54
134	CBI50408	717029	1571353	50.00	Pemm	33.77	33.64	33.56	33.54
135	MF534	717659	1545400	27.00	Vc	34.57	32.54	34.87	n/a <sup>1</sup>
136	DJ69	717639	1545379	39.00	Qfd	-8.22	-8.58	-8.70	-8.49
137	DJ200	717684	1571829	36.00	Qfd	93.02	96.30	92.39	92.66
138	PW23331	718890	1590207	37.50	PEmm	92.11	91.84	92.82	91.80
139	SW02	719418	1582177	26.00	Qfd	4.98	4.24	4.82	5.09
140	DJ353	719803	1584382	42.00	SDmm	-7.82	0.58	1.13	0.24
141	PW17521	720300	1584219	12.00	Qfd	1.87	4.58	4.80	4.78
142	DJ17	720340	1576614	60.00	SDmm	4.74	Discontinued		
143	DJ366	721480	1589907	86.00	SDmm	5.62	7.54	8.37	8.82
144	UNK158	721767	1582374	62.00	Qot	7.86	-6.86	3.60	-7.84

**Table A-1 (Continued)**

Well No.	Well Name	X-Coordinate (m.)	Y-Coordinate (m.)	Depth (m.)	Aquifer Unit	Initial head (m.,msl)	Monitoring 1 <sup>st</sup> Head (m., msl)	Monitoring 2 <sup>nd</sup> Head (m., msl)	Monitoring 3 <sup>rd</sup> Head (m., msl)
145	DCD3758	707702	1587612	35.00	SDmm	33.90	33.66	33.82	33.50
146	DJ552	709566	1573736	48.00	Qyt	4.91	4.64	4.94	5.19
147	DJ45	710950	1589567	63.00	SDmm	9.02	8.73	10.19	8.14
148	DJ198	711710	1583264	42.00	Qfd	34.88	33.93	34.04	34.51
149	DJ380	713080	1588632	42.00	Qyt	5.48	5.24	5.53	6.15
150	MF578	715386	1592255	45.00	SDmm	35.88	35.54	36.09	35.24
151	DJ173	716183	1566370	48.00	SDmm	32.44	30.24	30.54	n/a <sup>2</sup>
152	DJ44	717029	1571353	48.00	Qfd	45.81	45.00	45.62	45.82
153	DJ196	717659	1545400	24.00	SDmm	46.31	46.48	46.12	46.11
154	DJ351	717639	1545379	21.00	Qfd	54.33	53.88	54.55	54.46
155	DJ331	717684	1571829	48.00	Gr	2.99	2.87	2.97	3.28
156	PW10933	718890	1590207	30.00	Qfd	7.96	7.25	7.71	7.79
157	PW2198	719418	1582177	25.50	Qfd	16.50	15.48	16.01	16.16
158	MF585	719803	1584382	30.00	SDmm	56.62	57.25	56.43	56.44
159	PW7833	720300	1584219	22.00	PEmm	35.97	35.63	35.53	35.31
160	DJ184	720340	1576614	42.00	Qfd	6.63	6.20	7.34	6.55
161	DJ174	721480	1589907	48.00	SDmm	34.56	33.61	33.87	33.53
162	DJ367	721767	1582374	60.00	SDmm	30.17	29.15	29.13	28.88

**Table A-1 (Continued)**

Well No.	Well Name	X-Coordinate (m.)	Y-Coordinate (m.)	Depth (m.)	Aquifer Unit	Initial head (m.,msl)	Monitoring 1 <sup>st</sup> Head (m., msl)	Monitoring 2 <sup>nd</sup> Head (m., msl)	Monitoring 3 <sup>rd</sup> Head (m., msl)
163	EGP06-20110103-1	707702	1587612	60.00	PEmm	67.06	67.34	66.96	67.77
164	PW18657	709566	1573736	77.50	Qyt	1.60	1.43	2.88	2.46
165	DJ597	710950	1589567	150.00	SDmm	11.17	Discontinued		
166	DJ503	711710	1583264	180.00	Qfd	10.86	10.63	10.94	11.20
167	MF541	713080	1588632	27.00	Qfd	54.48	54.03	53.91	54.54
168	DJ340	715386	1592255	54.00	SDmm	51.73	49.27	51.52	50.13
169	DJ36	716183	1566370	39.00	Qyt	9.92	29.15	29.13	28.88
170	DJ472	717029	1571353	110.00	Gr	37.62	37.72	37.94	38.26
171	DJ483	717659	1545400	96.00	SDmm	78.36	77.40	78.13	78.04
172	DJ372	717639	1545379	36.00	SDmm	75.21	74.33	74.82	74.94
173	DJ355	717684	1571829	57.00	SDmm	67.27	66.74	67.23	66.72
174	DJ191	718890	1590207	96.00	SDmm	38.74	39.95	37.57	36.72
175	DJ390	719418	1582177	33.00	SDmm	56.77	39.95	37.57	36.72
176	DJ525	719803	1584382	60.00	Gr	21.68	20.65	20.69	20.25
177	DJ530	720300	1584219	44.00	Gr	21.42	21.90	21.82	22.20
178	DMR131	720340	1576614	76.50	Qfd	34.07	33.80	33.24	34.02
179	MF485	721480	1589907	30.00	Cms	17.81	17.31	18.09	17.46
180	PRI25257	721767	1582374	32.00	Jmk	26.29	25.93	27.07	n/a <sup>1</sup>

**Table A-1 (Continued)**

Well No.	Well Name	X-Coordinate (m.)	Y-Coordinate (m.)	Depth (m.)	Aquifer Unit	Initial head (m.,msl)	Monitoring 1 <sup>st</sup> Head (m., msl)	Monitoring 2 <sup>nd</sup> Head (m., msl)	Monitoring 3 <sup>rd</sup> Head (m., msl)
181	C820	707702	1587612	30.00	Qyt	46.45	45.54	46.47	46.25
182	MF752	709566	1573736	18.00	Uknow	27.79	45.54	46.47	46.25
183	DJ246	710950	1589567	60.00	Cms	26.69	25.4	25.6	26.12
184	DJ76	711710	1583264	33.00	Qyt	61.67	61.82	61.64	61.68
185	DJ43	713080	1588632	21.20	Qfd	46.29	45.38	45.63	45.98
186	DJ476	715386	1592255	45.00	SDmm	56.44	55.78	55.83	55.49
187	TN23	716183	1566370	90.00	Cms	57.41	57.05	57.87	56.09
188	DJ529	717029	1571353	45.00	Gr	75.72	75.46	75.55	75.94
189	DJ417	717659	1545400	45.00	Gr	45.42	45.17	45.55	45.89
190	DJ217	717639	1545379	18.00	Qfd	41.13	40.61	41.71	41.17
191	PW15709	717684	1571829	36.50	SDmm	72.43	72.00	72.04	n/a <sup>1</sup>
192	DJ375	718890	1590207	36.00	Cms	77.47	77.36	77.29	77.45
193	MF574	719418	1582177	18.00	Gr	58.19	57.84	57.83	57.78
194	MF547	719803	1584382	48.00	Qyt	99.41	99.20	99.39	98.48
195	DJ218	720300	1584219	21.00	Cms	75.51	Discontinued		
196	NYK16001	720340	1576614	62.00	Cms	-2.18	-2.18	-1.68	-2.28
197	MR9	721480	1589907	52.50	Qt	11.99	11.99	14.14	10.91

**Note:** n/a<sup>1</sup> = Unable to make measurement; well abandoned.

n/a<sup>2</sup> = Well is in use ; no measurement.