354356078403502. County number, WK-278; DENR Lake Wheeler Research Station MW-11 (Transition zone well).

LOCATION.--Lat 35°43'55.8", long 78°40'34.5", North American Datum of 1983, Hydrologic Unit 03020201, .6 mi south of Tryon Road, .2 mi east of Lake Wheeler Road on NCSU Research Farm. Owner: DENR (North Carolina Department of Environment and Natural Resources), Division of Water Quality.

WATER-LEVEL RECORDS

AQUIFER.--Regolith (saprolitic Raleigh Gneiss).

WELL CHARACTERISTICS.--Drilled observation well, depth 41.5 ft, diameter 4 in., cased to 31.5 ft, screened interval from 31.5 to 41.5 ft, sand filter packed from 26.5 to 42 ft.

INSTRUMENTATION.--Water-level recorder collecting data at 60-minute intervals. Satellite telemetry at station.

DATUM.--Land-surface datum is 335.54 ft above NGVD of 1929. Measuring point: Top of instrument shelter floor, 1.87 ft above land-surface datum.

REMARKS.--Well is part of Piedmont/Mountains groundwater project.

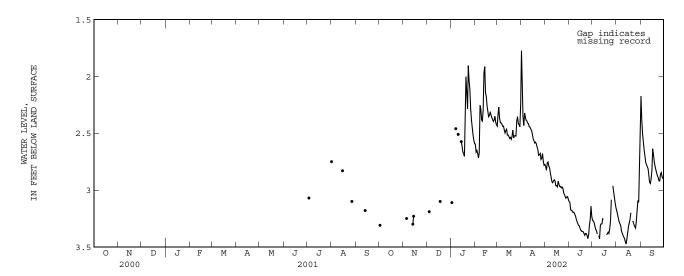
PERIOD OF RECORD.--July 2001 to current year. Continuous record began December 2001. Periodic water level measurements made by DENR, July 2001 to December 2001.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 1.31 ft below land-surface datum, Apr. 1, 2002; lowest water level recorded 3.57 ft below land-surface datum, Aug. 13, 2002.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					2.60	2.44	1.77	2.77	3.10	3.26	3.18	2.17
2					2.67	2.33	2.15	2.79	3.11	3.27	3.21	2.39
3					2.65	2.27	2.36	2.82	3.17	3.29	3.25	2.50
4					2.68	2.37	2.43	2.76	3.18	3.32	3.28	2.57
5					2.72	2.41	2.32	2.75	3.18	3.34	3.29	2.65
6					2.67	2.41	2.36	2.79	3.20	3.36	3.31	2.70
7					2.25	2.42	2.38	2.80	3.20	3.39	3.36	2.76
8					2.29	2.44	2.39	2.85	3.21		3.38	2.78
9					2.38	2.44	2.41	2.89	3.22	3.40	3.40	2.79
10					2.39	2.47	2.42	2.93	3.25	3.43	3.41	2.81
11					2.30	2.50	2.44	2.94	3.27	3.31	3.43	2.87
12					1.97	2.48	2.45	2.92	3.29	3.30	3.46	2.93
13					1.91	2.46	2.46	2.91	3.31	3.30	3.48	2.94
14				2.57	2.14	2.52	2.48	2.92	3.31	3.25	3.43	2.90
15				2.61	2.18	2.52	2.51	2.96	3.34	3.26	3.37	2.82
16				2.66	2.26	2.53	2.55	2.96	3.35		3.32	2.64
17				2.68	2.31	2.55	2.56	2.97	3.36		3.29	2.69
18				2.70	2.35	2.54	2.59	2.92	3.36		3.26	2.75
19				2.36	2.34	2.55	2.58	2.95	3.37	3.39	3.20	2.79
20				2.00	2.32	2.53	2.59	2.97	3.38	3.38		2.82
21				2.16	2.34	2.47	2.62	2.97	3.40	3.37	3.27	2.85
22				2.28	2.36	2.54	2.64	2.98	3.38	3.38	3.28	2.87
23				1.91	2.38	2.52	2.69	2.97	3.38	3.34	3.30	2.89
24				2.04	2.40	2.52	2.69	2.98	3.40	3.27	3.32	2.92
25				2.11	2.39	2.52	2.68	3.02	3.43	3.08	3.33	2.92
26				2.29	2.35	2.39	2.73	3.04	3.39		3.28	2.86
27				2.39	2.40	2.35	2.72	3.06	3.31	2.96	3.19	2.85
28				2.45	2.43	2.41	2.68	3.07	3.26	3.02	3.09	2.89
29				2.51		2.42	2.75	3.06	3.14	3.07	3.11	2.90
30				2.56		2.44	2.78	3.06	3.23	3.12	2.88	2.88
31				2.59		2.25		3.08		3.16	2.48	

WTR YR 2002 MEAN 2.82 HIGH 1.77 LOW 3.48



354356078403502 WK-278 DENR LAKE WHEELER RESEARCH STATION MW-11 (TRANSITION ZONE WELL) -- Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD. -- December 2001 to August 2002 (discontinued).

PERIOD OF DAILY RECORD. --

SPECIFIC CONDUCTANCE: December 2001 to August 2002.

pH: December 2001 to August 2002.

WATER TEMPERATURE: December 2001 to August 2002.

DISSOLVED OXYGEN: January to August 2002.

DISSOLVED OXYGEN, PERCENT SATURATION: January to August 2002.

INSTRUMENTATION.-- Water-quality monitor with satellite telemetry from December 2001 to August 2002.

REMARKS.--Station operated in cooperation with North Carolina Department of Environment and Natural Resources, Water Resources Division as part of the Piedmont/Mountains ground-water project. Dissolved oxygen, percent saturation, is computed using a barometric pressure of 760 mm Hg.

EXTREMES FOR CURRENT YEAR .--

CONSTITUENT	MAXIMUM RECORDED	MINIMUM RECORDED
SPECIFIC CONDUCTANCE, microsiemenS	145, June 12-14	118, January 17
pH, standard units	5.3, on many days during the period	5.2, on many days during the period
WATER TEMPERATURE, °C	16.1, April 17, May 9	15.9, on many days during the period
DISSOLVED OXYGEN, mg/L	3.0, January 17, 19, 20, 24-29	2.0, on several days during the period
DISSOLVED OXYGEN, PERCENT SATURATION,%	30, January 17, 19, 20, 24-29	20, on several days during the period

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), FOR PERIOD DECEMBER 2001 TO AUGUST 2002 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					122	128	131	136	142	141	134	
2					122	128	131	136	142	141	134	
3				123	123	128	132	136	142	141	134	
4				123	123	128	132	136	143	141	133	
5				123	123	129	132	136	143	141	133	
6				123	123	129	132	136	143	141	133	
7				123	123	129	132	137	144	141	133	
8				124	124	129	132	137	144		132	
9				124	124	129	131	135	144	140	132	
10				124	124	129	131	134	144	140	132	
11				124	124	130	132	134	144	140	132	
12				124	124	130	132	135	144	140	132	
13				124	124	130	132	135	144	139	131	
14				123	124	130	132	136	144	139	131	
15				121	124	130	132	136	144	139	131	
10						200	101	100		200	101	
16				122	124	130	132	136	144		131	
17				121	125	130	133	137	143		131	
18				121	125	130	133	137	143	131	131	
19				121	126	130	133	138	143	131		
20				121	126	130	133	138	142	131		
21			120	121	126	130	133	138	142	131		
22				121	126	130	134	138	142	131		
23			120	121	126	130	134	139	142	131		
24			120	121	127	130	134	139	142	131		
25			120	120	127	130	134	139	142	132		
26			120	121	127	130	134	140	142	132		
27			120	121	127	131	135	140	142	133		
28			120	121	128	131	135	140	141	134		
29			120	121		131	135	140	141	134		
30			120	122		131	136	141	141	135		
31			120	122		131	130	141	141	135		
51			120	122		131		141		132		
MEAN					125	130	133	137	143			
MAX					128	131	136	141	144			
MIN					122	128	131	134	141			

354356078403502 WK-278 DENR LAKE WHEELER RESEARCH STATION MW-11 (TRANSITION ZONE WELL) -- Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, FOR PERIOD DECEMBER 2001 TO AUGUST 2002 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					5.3	5.3	5.3	5.3	5.3	5.3	5.2	
2					5.3	5.3	5.3	5.3	5.3	5.3	5.2	
3				5.2	5.3	5.2	5.3	5.3	5.2	5.3	5.2	
4				5.2	5.3	5.2	5.3	5.3	5.2	5.3	5.2	
5				5.2	5.3	5.2	5.3	5.3	5.2	5.3	5.2	
6				5.2	5.3	5.2	5.3	5.3	5.2	5.3	5.2	
7				5.2	5.3	5.2	5.3	5.3	5.2	5.3	5.2	
8				5.2	5.3	5.2	5.3	5.3	5.2		5.2	
9				5.2	5.2	5.2	5.3	5.3	5.2	5.3	5.2	
10				5.2	5.2	5.2	5.3	5.3	5.2	5.3	5.2	
11				5.2	5.2	5.2	5.3	5.3	5.2	5.3	5.2	
12				5.2	5.2	5.2	5.3	5.3	5.2	5.3	5.2	
13				5.2	5.3	5.2	5.3	5.3	5.2	5.3	5.2	
14					5.3	5.2	5.3	5.3	5.2	5.3	5.3	
15					5.3	5.2	5.3	5.2	5.2	5.3	5.3	
10					5.5	5.2	5.5	5.2	5.2	5.5	5.5	
16					5.3	5.2	5.3	5.2	5.2		5.3	
17					5.3	5.2	5.3	5.2	5.2		5.3	
18				5.3	5.3	5.2	5.3	5.2	5.2	5.3	5.3	
19				5.3	5.3	5.2	5.3	5.2	5.3	5.3		
20			5.3	5.3	5.3	5.3	5.3	5.2	5.3	5.3		
20			0.0	0.0	5.5	5.5	5.5	5.2	5.5	5.5		
21			5.3	5.3	5.3	5.3	5.3	5.2	5.3	5.3		
22				5.3	5.3	5.3	5.3	5.2	5.3	5.3		
23			5.3	5.3	5.3	5.3	5.3	5.2	5.3	5.3		
24			5.3	5.3	5.3	5.3	5.3	5.2	5.3	5.3		
25			5.3	5.3	5.3	5.3	5.3	5.2	5.3	5.3		
26			5.3	5.3	5.3	5.3	5.2	5.2	5.3	5.3		
27			5.3	5.3	5.3	5.3	5.2	5.2	5.3	5.3		
28			5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3		
29			5.3	5.3		5.3	5.3	5.3	5.3	5.3		
30			5.3	5.3		5.3	5.3	5.3	5.3	5.2		
31			5.3	5.3		5.3		5.3		5.2		
MEAN					5.3	5.2	5.3	5.3	5.2			
MAX					5.3	5.3	5.3	5.3	5.3			
MIN					5.2	5.2	5.2	5.2	5.2			

WATER TEMPERATURE, DEGREES CELSIUS, FOR PERIOD DECEMBER 2001 TO AUGUST 2002 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					16.0	16.0	16.0	16.0	15.9	16.0	16.0	
2					16.0	16.0	16.0	16.0	15.9	16.0	16.0	
3				16.0	16.0	16.0	16.0	16.0	15.9	16.0	16.0	
4				16.0	16.0	16.0	16.0	16.0	15.9	16.0	16.0	
5				16.0	16.0	16.0	16.0	16.0	15.9		16.0	
6				16.0	16.0	16.0	16.0	16.0	15.9		16.0	
7				16.0	16.0	16.0	16.0	16.0	15.9		16.0	
8				16.0	16.0	16.0	16.0	16.0	15.9		16.0	
9				16.0	16.0	16.0	16.0	16.0	15.9	16.0	16.0	
10				16.0	16.0	16.0	16.0	16.0	15.9	16.0	16.0	
11				16.0	16.0	16.0	16.0	16.0	15.9	16.0	16.0	
12				16.0	16.0	16.0	16.0	16.0	15.9	16.0	16.0	
13				16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	
14				16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	
15				16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	
16				16.0	16.0	16.0	16.0	16.0	16.0		16.0	
17				16.0	16.0	16.0	16.0	16.0	16.0		16.0	
18				16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	
19				16.0	16.0	16.0	16.0	16.0	16.0	16.0		
20			16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0		
21			16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0		
21			16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0		
22			16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0		
23 24			16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0		
24			16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0		
25			10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		
26			16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0		
27			16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0		
28			16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0		
29			16.0	16.0		16.0	16.0	16.0	16.0	16.0		
30			16.0	16.0		16.0	16.0	15.9	16.0	16.0		
31			16.0	16.0		16.0	10.0	16.0		16.0		
1			10.0	10.0		10.0		10.0		10.0		
MEAN					16.0	16.0	16.0	16.0	16.0			
MAX					16.0	16.0	16.0	16.0	16.0			
MIN					16.0	16.0	16.0	15.9	15.9			

354356078403502 WK-278 DENR LAKE WHEELER RESEARCH STATION MW-11 (TRANSITION ZONE WELL) -- Continued

OXYGEN DISSOLVED (MG/L), FOR PERIOD JANUARY TO AUGUST 2002 DAILY MEAN VALUES $% \left({{M}_{\mathrm{S}}} \right) = 0.0175$

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					2.8	2.6	2.5	2.2	2.2	2.4	2.5	
2					2.8	2.6	2.5	2.2	2.2	2.4	2.5	
2 3					2.8	2.6	2.5	2.2	2.2	2.4	2.5	
3					2.8	2.6	2.5	2.2	2.2	2.4	2.5	
5					2.8	2.5	2.4	2.2	2.2	2.5	2.5	
6					2.8	2.5	2.5	2.2	2.2	2.5	2.5	
7					2.8	2.5	2.5	2.2	2.2	2.5	2.5	
8					2.8	2.5	2.5	2.2	2.2		2.5	
9					2.8	2.5	2.5	2.3	2.2	2.5	2.5	
10					2.8	2.5	2.5	2.4	2.2	2.5	2.5	
11					2.7	2.5	2.5	2.4	2.2	2.5	2.5	
12					2.7	2.5	2.4	2.4	2.2	2.3	2.5	
13					2.7	2.5	2.5	2.3	2.2	2.3	2.3	
14					2.7	2.5	2.4	2.3	2.2	2.4	2.4	
15					2.7	2.5	2.4	2.3	2.2	2.4	2.4	
15					2.1	2.5	2.1	2.5	2.2	2.1	2.1	
16					2.7	2.5	2.4	2.3	2.2		2.4	
17				2.9	2.6	2.5	2.4	2.3	2.2		2.4	
18				2.8	2.6	2.5	2.3	2.2	2.2	2.5	2.4	
19				2.8	2.6	2.5	2.3	2.2	2.2	2.5		
20				2.9	2.6	2.5	2.3	2.2	2.3	2.5		
21				2.8	2.6	2.5	2.2	2.2	2.3	2.5		
22				2.8	2.6	2.5	2.2	2.1	2.3	2.5		
23				2.9	2.6	2.5	2.2	2.2	2.3	2.5		
24				2.9	2.6	2.5	2.2	2.2	2.3	2.5		
25				2.9	2.6	2.5	2.2	2.2	2.4	2.5		
26				3.0	2.6	2.5	2.2	2.2	2.4	2.5		
27				2.9	2.6	2.5	2.2	2.2	2.3	2.5		
28				2.9	2.6	2.5	2.2	2.2	2.4	2.5		
29				2.9		2.5	2.2	2.2	2.4	2.5		
30				2.9		2.5	2.2	2.2	2.4	2.5		
31				2.9		2.5		2.2		2.5		
MEAN					2.7	2.5	2.4	2.2	2.3			
MAX					2.8	2.6	2.5	2.4	2.4			
MIN					2.6	2.5	2.2	2.1	2.2			

OXYGEN DISSOLVED (% OF SATURATION), FOR PERIOD JANUARY TO AUGUST 2002 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					28	26	25	22	22	23	25	
2					28	26	25	22	22	23	25	
3					28	26	25	22	22	23	25	
4					28	25	25	22	22	23	25	
5					28	25	24	22	22		25	
5					20	20					20	
6					28	25	25	22	22		25	
7					28	25	25	22	22		25	
8					28	25	25	22	22		25	
9					28	25	25	23	22	23	25	
10					28	25	25	24	22	23	25	
10					20	25	20	21	22	25	25	
11					27	25	25	24	22	23	25	
12					27	25	24	24	22	23	25	
13					27	25	25	23	22	23	24	
14					27	25	24	23	22	24	24	
15					27	25	24	23	22	24	24	
10					27	25	24	25	22	24	24	
16					27	25	24	23	22		24	
17				29	26	25	24	23	22		24	
18				28	26	25	23	22	22	25	24	
19				28	26	25	23	22	22	25		
20				20	26	25	23	22	22	25		
20				29	20	20	23	22	22	20		
21				28	26	25	22	22	22	25		
22				28	26	25	22	21	22	25		
23				29	26	25	22	22	22	25		
23				29	26	25	22	22	22	25		
24				29	26	25	22	22	22	25		
25				29	20	20	22	22	23	20		
26				30	26	25	22	22	23	25		
20				29	26	25	22	22	23	25		
28				29	26	25	22	22	22	25		
					20	25		22		25		
29				29		25 25	22 22	22	23 23	25 25		
30				29								
31				29		25		22		25		
MITTON					07	25	24	22	22			
MEAN					27	25	24	22	22			
MAX					28	26	25	24	23			
MIN					26	25	22	21	22			

354356078403502 WK-278 DENR LAKE WHEELER RESEARCH STATION MW-11 (TRANSITION ZONE WELL) -- Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD. -- October 2001 to September 2002.

REMARKS.--Station operated in cooperation with North Carolina Department of Environment and Natural Resources, Water Resources Division as part of the Piedmont/Mountains ground-water project.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	ANC WATER UNFLTRD IT FIELD MG/L AS CACO3 (00419)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
NOV													
14 MAY	1130		5.8	110	15.9	26	7.58	1.72	2.80	11.7		20	.06
09	1230	2.4	5.4	126	16.1	29	8.22	1.95	2.89	11.6	20	25	.04
Date	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	ORTHO- PHOS- PHATE, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)
NOV 14 MAY	8.75	E.1	28.6	1.6	96	<.04	<.10	6.09	<.008	.02			E1
09	9.34	E.1	28.2	1.4	115	<.04	<.10	6.46	<.008	.03	7	<.05	<2
Date	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)
NOV 14			<10					<10		71.4			
MAY													
09	59	.31	М	.07	<.8	.25	.7	<10	.20	37.1	<.01	.8	.99
							3.1.15113	apoaa					

Date	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ALPHA RADIO. WATER DISS AS TH-230 (PCI/L) (04126)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	RADON 222 TOTAL (PCI/L) (82303)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)
NOV 14							
MAY 09	<2	<1	4	1.1	6.6	10300	.06

Remark codes used in this table: < -- Less than E -- Estimated value M -- Presence verified, not quantified