

Water Quality Analysis
North Carolina Zoo Groundwater Research Station
MW-1 Cluster

Sample ID	Sampling Date	Sampling Depth (feet*)	Dissolved Oxygen (mg/l)	pH WH, Field (standard unit)	pH-Alkalinity Lab (mg/l asCaCO3)	Specific Cond., Field (uS/cm)	Specific Cond., Lab (uS/cm @ 25C)	Water Temp. (deg C)	Fecal Coliform (colonies/100 m)	Total OrganicCarbon (mg/l)	Turbidity (NTU)
40003000001	5/2/2007	14	1.09	6.41	6.85	264	250	17.27	<1	<2	8.5
	10/31/2007	23	0.41	6.77	7.00	277	290	16.70		<2	35
	3/4/2008	20	1.64	6.65	6.77	300	270	15.40		<2	150
	12/3/2008	23	0.39	7.04	6.80	267	260	17.04		<2	7.8
40003000002	5/2/2007	38	2.00	7.26	7.48	509	490	16.63	<1	<2	3.2
	10/31/2007	43	0.34	7.54	7.60	404	410	15.35		<2	2.9
	3/4/2008	38	2.95	7.41	7.51	531	490	16.10		<2	1.2
	12/3/2008	43	3.35	7.90	7.40	500	480	15.57		<2	4.3
40003000003	5/2/2007	36	0.91	7.27	7.66	328	450	15.59	<1	<2	<1
	5/2/2007**				7.80		450			<2	<1
	10/31/2007	56	0.13	7.50	7.70	402	410	15.47		<2	<1
	5/2/2007**				7.70		410			<2	1.4
	3/4/2008	65	0.27	7.34	7.47	485	450	15.60		<2	<1
	3/4/2008**				7.56		450			<2	<1
	12/3/2008	67	0.25	7.90	7.60	475	460	16.25		<2	<1
40003000004	5/2/2007	100	0.45	7.78	7.97	239	320	17.30	<1	<2	<1
	10/31/2007	100	0.27	7.16	8.00	370	360	16.01		<2	1.1
	3/4/2008	102	0.08	7.53	7.66	368	350	16.33		<2	7.1
	12/3/2008	102	0.20	8.13	7.70	375	350	15.85		<2	1.2
40003000011	5/2/2007	NA/SW	6.68	7.14	7.71	70	64	26.47	20.00	11.00	12
	10/31/2007	not sampled									
	3/4/2008	NA/SW	6.79	6.40	6.51	34	89	14.23		8.00	16
	12/3/2008	NA/SW	11.84	7.67	6.90	118	120	5.24		5.50	9.2
NC Groundwater Standards				6.5 - 8.5					1		

Notes: Bold data = exceed NC Groundwater Standards; NA/SW = not applicable/surface water; blank fields = not sampled; * below measure point; ** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Suspended Residue (mg/l)	Total Dissolved Solids (mg/l)	PT Color (c.u.)	Carbonate (mg/l)	Bicarbonate (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Fluoride as F (mg/l)	Silica as SiO ₂ (mg/l)
40003000001	5/2/2007	14	10	173	<5	<1	130	3.1	<2	<0.4	34
	10/31/2007	23	6.2	200	6.9	<1	140	4.2	2.9	<0.4	34
	3/4/2008	20	80	232	<5	<1	130	5.5	3.6	<0.4	30
	12/3/2008	23	16	164	<5	<1	130	3.9	2.7	<0.4	25
40003000002	5/2/2007	38	5.5	322	<5	<1	270	3.7	2.1	<0.4	30
	10/31/2007	43	6.8	246	<5	<1	210	5.3	<2	<0.4	29
	3/4/2008	38	12	328	<5	<1	260	5	<2	<0.4	27
		43	8.8	306	<5	<1	270	4.9	2.6	<0.4	30
40003000003	5/2/2007	36	<2.5	300	<5	<1	240	3.7	2.3	<0.4	29
	5/2/2007**		<2.5	294	<5	<1	240	3.7	2.1	<0.4	29
	10/31/2007	56	<6.2	235	<5	<1	210	5.1	<2	<0.4	29
	5/2/2007**		<6.2	243	<5	<1	210	5.1	<2	<0.4	29
	3/4/2008	65	<6.2	301	<5	<1	240	5.3	<2	<0.4	26
	3/4/2008**		<6.2	220	<5	<1	240	5.2	<2	<0.4	26
	12/3/2008	67	<6.2	280	<5	<1	250	5	<2	<0.4	30
40003000004	5/2/2007	100	<2.5	202	<5	<1	170	4.1	<2	<0.4	23
	10/31/2007	100	<6.2	212	<5	<1	180	5.2	<2	<0.4	26
	3/4/2008	102	6.5	238	<5	<1	180	6.2	<2	<0.4	22
	12/3/2008	102	11	222	<5	<1	180	5.4	<2	<0.4	26
40003000011	5/2/2007	NA/SW	18	63	71	<1	22	2.9	4	<0.4	<2
	10/31/2007	not sampled									
	3/4/2008	NA/SW	14	100	63	<1	28	5.6	5.5	<0.4	5.6
	12/3/2008	NA/SW	9.2	79	37	<1	33	8.5	10	<0.4	3.5
NC Groundwater Standards				500	15			250	250	2	

Notes: Bold data = exceed NC Groundwater Standards; NA/SW = not applicable/surface water; blank fields = not sampled; * below measure point; ** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Calcium as Ca (mg/l)		Magnesium as Mg (mg/l)		Potassium as K (mg/l)		Sodium as Na (mg/l)		Ammonia NH3 as N (mg/l)
			Total	Filtered	Total	Dissolved	Total	Dissolved	Total	Dissolved	
40003000001	5/2/2007	14	38	39	5.3	5.2	3.2	3.2	13	13	<0.02
	10/31/2007	23	37		6.4		4.1		17		<0.02
	3/4/2008	20	35	39	6.6	5.5	4	3.5	13	16	0.02
	12/3/2008	23	38	38	5.1	5.1	3.5	3.5	16	15	<0.02
40003000002	5/2/2007	38	78	72	11	12	5.4	5.5	28	28	<0.02
	10/31/2007	43	56		11		4.5		23		<0.02
	3/4/2008	38	80	80	12	12	5.1	4.9	27	27	<0.02
		43	130	78	13	13	6.1	6.1	27	27	<0.02
40003000003	5/2/2007	36	68	68	11	11	4.8	5	26	26	<0.02
	5/2/2007**		70		11		4.8		25		<0.02
	10/31/2007	56	54		11		4.1		22		<0.02
	5/2/2007**		54		11		4.1		22		<0.02
	3/4/2008	65	66	74	11	12	4.2	4.4	23	25	<0.02
	3/4/2008**		73		12		4.6		25		<0.02
	12/3/2008	67	72	74	12	12	4.6	4.6	26	26	<0.1
40003000004	5/2/2007	100	46	44	7.7	7.7	3.8	3.8	20	19	<0.02
	10/31/2007	100	48		9.4		3.4		18		<0.02
	3/4/2008	102	54	54	9	9	3.4	3.4	16	3.4	<0.02
		102	55	54	8.7	8.6	3.3	3.2	18	18	<0.02
40003000011	5/2/2007	NA/SW	5.6	5.4	1.2	1.2	2.2	2.3	6.6	6.6	0.04
	10/31/2007	not sampled									
	3/4/2008	NA/SW	7.8	7.5	1.7	1.7	3.6	3.4	8.4	8.1	0.1
	12/3/2008	NA/SW	8.8		1.8		4.4		13		0.03
NC Groundwater Standards											

Notes: Bold data = exceed NC Groundwater Standards; NA/SW = not applicable/surface water; blank fields = not sampled; * below measure point; ** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Nitrate&nitrite NO2+NO3 as N (mg/l)	Phosphorous Total as P (mg/l)	Cyanide (mg/l)	Silver as Ag (ug/l)		Aluminum as Al (ug/l)		Arsenic as As (ug/l)	
						Total	Dissolved	Total	Dissolved	Total	Dissolved
40003000001	5/2/2007	14	0.03	0.05	<0.02	<5	<5	400	56	<5	<5
	10/31/2007	23	0.02	0.12		<5		1800		<5	
	3/4/2008	20	0.04	0.14		<5	<5	5200	<50	<5	<5
	12/3/2008	23	0.09	0.06		<5	<5	250	<50	<2	<2
40003000002	5/2/2007	38	<0.02	0.02		<5	<5	120	<50	<5	<5
	10/31/2007	43	<0.02	0.02		<5		170		<5	
	3/4/2008	38	<0.02	<0.02		<5	<5	<50	<50	<5	<5
	12/3/2008	43	<0.02	0.03		<5	<5	160	<50	<2	<2
40003000003	5/2/2007	36	<0.02	0.02	<0.02	<5	<5	<50	<50	<5	<5
	5/2/2007**		<0.02	<0.02	<0.02	<5		<50		<5	
	10/31/2007	56	<0.02	<0.02		<5		54		<5	
	5/2/2007**		<0.02	<0.02		<5		<50		<5	
	3/4/2008	65	<0.02	<0.02		<5	<5	<50	<50	<5	<5
	3/4/2008**		<0.02	<0.02		<5		<50		<5	
	12/3/2008	67	<0.2	0.03		<5	<5	<50	<50	<2	<2
40003000004	5/2/2007	100	<0.02	<0.02	<0.02	<5	<5	<50	<50	<5	<5
	10/31/2007	100	<0.02	<0.02		<5		<50		<5	
	3/4/2008	102	<0.02	<0.02		<5	<5	210	<50	<5	<5
	12/3/2008	102	<0.02	0.02		<5	<5	330	<50	<2	<2
40003000011	5/2/2007	NA/SW	<0.02	0.06	<0.02	<5	<5	280	200	<5	<5
	10/31/2007	not sampled									
	3/4/2008	NA/SW	0.06	0.1		<5	<5	190	70	<5	<5
	12/3/2008	NA/SW	0.02	0.05		<5		170		<2	
NC Groundwater Standards			11***		0.07	17.5				50	

Notes: Bold data = exceed NC Groundwater Standards; NA/SW = not applicable/surface water; blank fields = not sampled; * below measure point; ** duplicate sample

*** Groundwater Standard for nitrate (as N) is 10 mg/l, for nitrite (as N) is 1 mg/l

Sample ID	Sampling Date	Sampling Depth (feet*)	Barium as Ba (ug/l)		Cadmium as Cd (ug/l)		Chromium as Cr (ug/l)		Copper as Cu (ug/l)		Iron as Fe total (ug/l)
			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	
40003000001	5/2/2007	14	32	30	<1	<1	<10	<10	<2	<2	700
	10/31/2007	23	43		<1		<10		2.4		1900
	3/4/2008	20	57	31	<1	<1	<10	<10	8.8	<2	7600
	12/3/2008	23	30	30	<1	<1	<10	<10	<2	<2	270
40003000002	5/2/2007	38	81	81	<1	<1	<10	<10	<2	<2	160
	10/31/2007	43	62		<1	<1	<10		<2		210
	3/4/2008	38	73	72	<1	<1	<10	<10	<2	<2	<50
	12/3/2008	43	130	130	<1	<1	<10	<10	<2	<2	200
40003000003	5/2/2007	36	66	68	<1	<1	<10	<10	<2	<2	<50
	5/2/2007**		66		<1		<10		<2		<50
	10/31/2007	56	53		<1		<10		<2		<50
	5/2/2007**		53		<1		<10		<2		<50
	3/4/2008	65	59	63	<1	<1	<10	<10	<2	<2	<50
	3/4/2008**		63		<2		<10		<2		<50
	12/3/2008	67	66	66	<1	<1	<10	<10	<2	<2	<50
40003000004	5/2/2007	100	24	23	<1	<1	<10	<10	<2	<2	<50
	10/31/2007	100	23		<1		<10		<2		61
	3/4/2008	102	22	<50	<1	<1	<10	<10	<2	<2	340
	12/3/2008	102	24	21						<2	460
40003000011	5/2/2007	NA/SW	16	13	<1	<1	<10	<10	2.3	<2	1600
	10/31/2007	not sampled									
	3/4/2008	NA/SW	26	23	<1	<1	<10	<10	<2	<2	4000
	12/3/2008	NA/SW	19		<1		<10		<2		1300
NC Groundwater Standards			2000		1.75		50		1000		300

Notes: Bold data = exceed NC Groundwater Standards; NA/SW = not applicable/surface water; blank fields = not sampled; * below measure point; ** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Iron as Fe Dissolved (ug/l)	Manganese as Mn		Nickel as Ni		Lead as Pb		Selenium as Se	
				Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)
40003000001	5/2/2007	14	<50	20	<10	<10	<10	<10	<10	<5	<5
	10/31/2007	23		1.2		<10		<10		<5	
	3/4/2008	20	<50	230	28	<10	<10	<10	<10	<5	<5
	12/3/2008	23	<50	25	21	<10	<10	<10	<10	<5	<5
40003000002	5/2/2007	38	<50	280	280	<10	<10	<10	<10	<5	<5
	10/31/2007	43		230		<10		<10		<5	
	3/4/2008	38	<50	280	280	<10	<10	<10	<10	<5	<5
	12/3/2008	43	<50	360	360	<10	<10	<10	<10	<5	<5
40003000003	5/2/2007	36	<50	260	270	<10	<10	<10	<10	<5	<5
	5/2/2007**			260		<10		<10		<5	
	10/31/2007	56		220		<10		<10		<5	
	5/2/2007**			220		<10		<10		<5	
	3/4/2008	65	<50	250	260	<10	<10	<10	<10	<5	<5
	3/4/2008**			260		<10		<10		<5	
	12/3/2008	67	<50	270	270	<10	<10	<10	<10	<5	<5
40003000004	5/2/2007	100	<50	440	430	<10	<10	<10	<10	<5	<5
	10/31/2007	100		270		<10		<10		<5	
	3/4/2008	102	<50	250	250	<10	<10	<10	<10	<5	<5
	12/3/2008	102	<50	240	240	<10	<10	<10	<10	<5	<5
40003000011	5/2/2007	NA/SW	1200	89	46	<10	<10	<10	<10	<5	<5
	10/31/2007	not sampled									
	3/4/2008	NA/SW	2300	380	350	<10	<10	<10	<10	<5	<5
	12/3/2008	NA/SW		160		<10		<10		<5	
NC Groundwater Standards				50		100		15		50	

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Sample ID	Sampling Date	Sampling Depth (feet*)	Zinc as Zn		Organochlorine Pesticides	Organophosphate Pesticides	Nitrogen Pesticides	Acid Herbicide	Semivolatile Organics	Volatile Organics	Radon 222 (pCi/l)
			Total	Dissolved (ug/l)							
40003000001	5/2/2007	14	<10	<10					0	0	
	10/31/2007	23	<10							0	
	3/4/2008	20		19	<10	1	0	4	0		
	12/3/2008	23	<10	<10							
40003000002	5/2/2007	38	<10	<10	0	0	0	1			0
	10/31/2007	43	<10								0
	3/4/2008	38	<10	<10					0		
	12/3/2008	43	<10	<10					1		0
40003000003	5/2/2007	36		27	<10	1	0	0	1		0
	5/2/2007**		<10								0
	10/31/2007	56	<10								0
	5/2/2007**		<10								0
	3/4/2008	65	<10	<10					0		
	3/4/2008**		<10								
	12/3/2008	67	<10	<10							
40003000004	5/2/2007	100		600	540	1	0	0	0		1
	10/31/2007	100		483.33							0
	3/4/2008	102		510	390					1	
	12/3/2008	102		79	69						
40003000011	5/2/2007	NA/SW		11	<10						
	10/31/2007	not sampled									
	3/4/2008	NA/SW		13	<10						
	12/3/2008	NA/SW	<10								
NC Groundwater Standards			1050								

Notes: Bold data = exceed NC Groundwater Standards; NA/SW = not applicable/surface water; blank fields = not sampled; * below measure point; ** duplicate sample

Water Quality Analysis
North Carolina Zoo Groundwater Research Station
MW-2 Cluster

Sample ID	Sampling Date	Sampling Depth (feet*)	Dissolved Oxygen (mg/l)	pH WH, Field (standard unit)	pH-Alkalinity Lab (mg/l asCaCO3)	Specific Cond., Field (uS/cm)	Specific Cond., Lab (uS/cm @ 25C)	Water Temp. (deg C)	Fecal Coliform (colonies/100)	Total OrganicCarbo (mg/l)	Turbidity (NTU)
40003000005	5/2/2007	33	4.15	5.43	5.57	20.9	22	17.48	<1	<2	280
	10/31/2007	Dry, not sampled									
	3/3/2008	35		5.01	5.40	26	26	16.60		<2	260
	12/4/2008	Dry, not sampled									
40003000006	5/2/2007	36	2.12	5.49	5.67	37.2	37	16.92	<1	<2	28
	10/31/2007	60	6.92	5.46	5.50	26	27	15.38		<2	3.4
	3/3/2008	50		4.93	4.44	31		15.51		<2	2.2
	12/4/2008	50	5.82	5.48	5.40	30	30	15.58		<2	3.3
40003000007	5/2/2007	198	4.37	6.07	6.15	87	88	17.25	<1	<2	<1
	10/31/2007	198	4.04	6.13	6.30	92	86	15.95		<2	<1
	3/3/2008	200	4.52	5.83	6.21	103	95	15.19		<2	<1
	12/4/2008	200	6.11	6.11	6.30	107	91	16.06		<2	<1
NC Groundwater Standards				6.5 - 8.5					1		

Sample ID	Sampling Date	Sampling Depth (feet*)	Suspended Residue (mg/l)	Total DissolvedSolids (mg/l)	PT Color (c.u.)	Carbonate (mg/l)	Bicarbonate (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Fluoride as F (mg/l)	Silica as SiO ₂ (mg/l)
40003000005	5/2/2007	33	34	65	<5	<1	13	1.5	<2	<0.4	19
	10/31/2007	Dry, not sampled									
	3/3/2008	35	306	67	12	<1	5	2.3	<2	<0.4	18
	12/4/2008	Dry, not sampled									
40003000006	5/2/2007	36	31	42	<5	<1	7.7	1.8	<2	<0.4	20
	10/31/2007	60	<6.2	28	<5	<1	7.2	2	<2	<0.4	18
	3/3/2008	50	7.8	38	<5	<1	3.3	2.6	<2	<0.4	19
	12/4/2008	50	<12	36	<5	<1	7.3	1.8	<2	<0.4	21
40003000007	5/2/2007	198	<2.5	72	<5	<1	40	2.1	<2	<0.4	29
	10/31/2007	198	<6.2	72	<5	<1	42	2.6	<2	<0.4	31
	3/3/2008	200	12	84	<5	<1	42	3.3	<2	<0.4	29
	12/4/2008	200	<6.2	82	<5	<1	43	2.4	<2	<0.4	32
NC Groundwater Standards				500				250	250		

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Calcium as Ca (mg/l)		Magnesium as Mg (mg/l)		Potassium as K (mg/l)		Sodium as Na (mg/l)		Ammonia NH3 as N (mg/l)
			Total	Filtered	Total	Dissolved	Total	Dissolved	Total	Dissolved	
40003000005	5/2/2007	33	1.3	0.86	0.85	0.24	2	1.1	2.6	2.9	0.08
	10/31/2007	Dry, not sampled									
	3/3/2008	35	0.98	0.78	0.95	0.23	2.8	1.5	3.3	3.1	<0.02
	12/4/2008	Dry, not sampled									
40003000006	5/2/2007	36	2	1.2	0.7	0.46	1.1	1.2	5.3	5.9	<0.02
	10/31/2007	60	1.2		0.44		1.1		3.2		<0.02
	3/3/2008	50	1.5	1.5	0.48	0.48	1.1	1.1	3.9	4.1	<0.02
	12/4/2008	50	1.5	1.4	0.44	0.42	1.1	1.1	3.7	3.6	<0.02
40003000007	5/2/2007	198	9.7	10	1.1	1.1	1.4	1.5	6.7	6.8	<0.02
	10/31/2007	198	6.2		0.87		1.2		6.7		<0.02
	3/3/2008	200	12	11	1.1	1	1.3	1.3	7.1	7.1	<0.02
	12/4/2008	200	11	11	1	1	1.3	1.3	7	6.9	<0.02
NC Groundwater Standards											

Sample ID	Sampling Date	Sampling Depth (feet*)	Nitrate&nitrite NO2+NO3 as N (mg/l)	Phosphorous Total as P (mg/l)	Cyanide (mg/l)	Silver as Ag (ug/l)		Aluminum as Al (ug/l)		Arsenic as As (ug/l)	
						Total	Dissolved	Total	Dissolved	Total	Dissolved
40003000005	5/2/2007	33	<0.02	0.13	<0.02	<5	<5	4800	100	<5	<5
	10/31/2007	Dry, not sampled									
	3/3/2008	35	0.1	0.14		<5	<5	7200	140	<5	<5
	12/4/2008	Dry, not sampled									
40003000006	5/2/2007	36	0.03	0.02	<0.02	<5	<5	873	150	<5	<5
	10/31/2007	60	<0.02	0.04		<5		65		<5	
	3/3/2008	50	0.02	<0.02		<5	<5	<50	<50	<5	<5
	12/4/2008	50	<0.02	0.02		<5	<5	<50	<50	<2	<2
40003000007	5/2/2007	198	<0.02	0.04	<0.02	<5	<5	<50	<50	<5	<5
	10/31/2007	198	<0.02	0.03		<5		67		<5	
	3/3/2008	200	<0.02	0.03		<5	<5	<50	<50	<5	<5
	12/4/2008	200	0.02	0.04		<5	<5	<50	<50	<2	<2
NC Groundwater Standards			11***		0.07	17.5			50		

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicate sample

*** Groundwater Standard for nitrate (as N) is 10 mg/l, for nitrite (as N) is 1 mg/l

Sample ID	Sampling Date	Sampling Depth (feet*)	Barium as Ba (ug/l)		Cadmium as Cd (ug/l)		Chromium as Cr (ug/l)		Copper as Cu (ug/l)		Iron as Fe total (ug/l)
			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	
40003000005	5/2/2007	33	44	14	<1	<1	<10	<10	<2	<2	5900
	10/31/2007	Dry, not sampled									
	3/3/2008	35	64	20	<1	<1	<10	<10	5.2	13	6100
	12/4/2008	Dry, not sampled									
40003000006	5/2/2007	36	48	31	<1	<1	<10	<10	45	<2	370
	10/31/2007	60	25		<1		<10		<2		<50
	3/3/2008	50	27	27	<1	<1	<10	<10	<2	<2	<50
	12/4/2008	50	26	25	<1	<1	<10	<10	<2	<2	<50
40003000007	5/2/2007	198	12	12	<1	<1	<10	<10	<2	<2	67
	10/31/2007	198	14		<1		<10		<2		240
	3/3/2008	200	16	16	<1	<1	<10	<10	<2	<2	53
	12/4/2008	200	16	17	<1	<1	<10	<10	<2	<2	300
NC Groundwater Standards			2000		1.75		50		1000		300

Sample ID	Sampling Date	Sampling Depth (feet*)	Iron as Fe Dissolved (ug/l)	Manganese as Mn (ug/l)		Nickel as Ni (ug/l)		Lead as Pb (ug/l)		Selenium as Se (ug/l)	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
40003000005	5/2/2007	33	<50	240	110	<10	<10	11	<10	<5	<5
	10/31/2007	Dry, not sampled									
	3/3/2008	35	<50	260	130	<10	<10	<10	<10	<5	<5
	12/4/2008	Dry, not sampled									
40003000006	5/2/2007	36	<50	44	37	<10	<10	<10	<10	<5	<5
	10/31/2007	60		28		<10		<10		<5	
	3/3/2008	50	<50	28	27	<10	<10	<10	<10	<5	<5
	12/4/2008	50	<50	27	26	<10	<10	<10	<10	<5	<5
40003000007	5/2/2007	198	<50	45	44	<10	<10	<10	<10	<5	<5
	10/31/2007	198		45		<10		<10		<5	
	3/3/2008	200	<50	120	110	<10	<10	<10	<10	<5	<5
	12/4/2008	200		300	150	156	<10	<10	<10	<10	<5
NC Groundwater Standards				50		100		15		50	

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Zinc as Zn		Organochlorine Pesticides	Organophosphate Pesticides	Nitrogen Pesticides	Acid Herbicides	Semivolatile Organics	Volatile Organics	Radon 222 (pCi/l)
			Total	Dissolved (ug/l)							
40003000005	5/2/2007	33	29	14					1	0	
	10/31/2007	Dry, not sampled									
	3/3/2008	35	26	16							
	12/4/2008	Dry, not sampled									
40003000006	5/2/2007	36	19	<10					0	0	
	10/31/2007	60	<10							0	
	3/3/2008	50	15	<10	1	0	2	0			
	12/4/2008	50	14	<10							
40003000007	5/2/2007	198	2800	2700	0	0	0	1		0	
	10/31/2007	198	2900							0	
	3/3/2008	200	3200	3000					3	4	
	12/4/2008	200	2500	2400							
NC Groundwater Standards			1050								

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicate sample

Water Quality Analysis
North Carolina Zoo Groundwater Research Station
MW-3 Cluster

Sample ID	Sampling Date	Sampling Depth (feet*)	Dissolved Oxygen (mg/l)	pH WH, Field (standard unit)	pH-Alkalinity Lab (mg/l asCaCO3)	Specific Cond., Field (uS/cm)	Specific Cond., Lab (uS/cm @ 25C)	Water Temp. (deg C)	Fecal Coliform (colonies/100)	Total OrganicCarbon (mg/l)	Turbidity (NTU)
40003000008	5/2/2007	32	3.87	5.43	5.78	20	55	18.00	<1	2	240
	10/31/2007	36	2.68		5.80		59	16.48		2.5	240
	3/3/2008	30	4.77	5.99	5.75	59	56	17.40		<2	160
	12/2/2008	35	4.22	6.22	6.00	67	62	16.49		<2	40
40003000009	5/2/2007	39.5	3.79	5.57	5.97	61	83	16.77	<1	<2	1.1
	10/31/2007	60	3.34	5.14	6.00	79	77	16.65		<2	1.7
	3/3/2008	55	3.86	5.98	5.89	75	80	16.67		<2	<1
	12/2/2008	65	3.42	6.50	6.00	78	77	16.41		<2	2.5
40003000010	5/2/2007	75	0.56	6.88	6.99	145	190	17.95	<1	<2	2.6
	10/31/2007	126	0.47	6.36	6.90	185	180	17.16		<2	1.4
	3/3/2008	125	1.60	6.93	6.77	172	190	18.08		<2	7
	12/2/2008	125	1.57	7.44	7.60	186	170	16.91		<2	3.8
NC Groundwater Standards				6.5 - 8.5					1		

Sample ID	Sampling Date	Sampling Depth (feet*)	Suspended Residue (mg/l)	Total DissolvedSolids (mg/l)	PT Color (c.u.)	Carbonate (mg/l)	Bicarbonate (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Fluoride as F (mg/l)	Silica as SiO ₂ (mg/l)
40003000008	5/2/2007	32	<2	88	7	<1	22	2.5	<2	<0.4	38
	10/31/2007	36	31	76	7	<1	23	3.4	<2	<0.4	38
	3/3/2008	30	82	81	8	<1	23	4	<2	<0.4	34
	12/2/2008	35	25	77	<5	<1	25	3.9	<2	<0.4	38
40003000009	5/2/2007	39.5	2.5	90	<5	<1	34	3.1	<2	<0.4	49
	10/31/2007	60	<6.2	82	<5	<1	31	3.6	<2	<0.4	48
	3/3/2008	55	<6.2	91	<5	<1	32	4	<2	<0.4	39
	12/2/2008	65	<6.2	76	<5	<1	33	3.2	<2	<0.4	50
40003000010	5/2/2007	75	6	136	<5	<1	90	3	3.7	<0.4	41
	10/31/2007	126	<6.2	132	<5	<1	84	3.6	<2	<0.4	41
	3/3/2008	125	26	142	<5	<1	86	4.4	3.6	<0.4	35
	12/2/2008	125	<6.2	122	<5	<1	86	3.2	<2	<0.4	41
NC Groundwater Standards				500				250	250		

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Calcium as Ca (mg/l)		Magnesium as Mg (mg/l)		Potassium as K (mg/l)		Sodium as Na (mg/l)		Ammonia NH3 as N (mg/l)
			Total	Filtered	Total	Dissolved	Total	Dissolved	Total	Dissolved	
40003000008	5/2/2007	32	4.2	3.1	1.9	0.62	2	1.1	7.8	8.1	0.14
	10/31/2007	36	4.4		1.5		1.8		8.4		0.06
	3/3/2008	30	4.4	4	0.83	0.63	1.3	1.1	8.5	8.5	0.02
	12/2/2008	35	4.3	4.2	0.73	0.63	1.8	1.7	8.5	8.4	<0.02
40003000009	5/2/2007	39.5	6.3	6.5	1.1	1.2	1.3	1.4	9.9	11	<0.02
	10/31/2007	60	6.1		1.1		1.1		10		<0.02
	3/3/2008	55	6.3	6.4	1.2	1.2	1.2	1.1	11	11	<0.02
	12/2/2008	65	6.1	6	1.1	1.1	1.2	1.1	10	10	<0.02
40003000010	5/2/2007	75	16	16	5.6	5.5	5.8	5.5	15	14	<0.02
	10/31/2007	126	16		5.5		5.5		15		<0.02
	3/3/2008	125	16	16	5.3	5.5	5.4	5.5	18	18	<0.02
	12/2/2008	125	16	16	5.3	5.3	5.3	5.3	15	15	<0.02
NC Groundwater Standards											

Sample ID	Sampling Date	Sampling Depth (feet*)	Nitrate&nitrite NO2+NO3 as N (mg/l)	Phosphorous Total as (mg/l)	Cyanide (mg/l)	Silver as Ag (ug/l)		Aluminum as Al (ug/l)		Arsenic as As (ug/l)	
						Total	Dissolved	Total	Dissolved	Total	Dissolved
40003000008	5/2/2007	32	<0.02	0.28	<0.02	<5	<5	5000	110	<5	<5
	10/31/2007	36	<0.02	0.25		<5		3600		<5	
	3/3/2008	30	0.05	0.04		<5	<5	950	<50	<5	<5
	12/2/2008	35	0.02	0.03		<5	<5	520	<50	<2	<2
40003000009	5/2/2007	39.5	0.62	0.06	<0.02	<5	<5	<50	<50	<5	<5
	10/31/2007	60	0.36	0.06		<5		<50		<5	
	3/3/2008	55	0.47	0.06		<5	<5	<50	<50	<5	<5
	12/2/2008	65	0.38	0.07		<5	<5	<50	<50	<2	<2
40003000010	5/2/2007	75	<0.02	0.03	<0.02	<5	<5	<50	<50	<5	<5
	10/31/2007	126	<0.02	0.03		<5		<50		<5	
	3/3/2008	125	<0.02	0.05		<5	<5	400	<50	<5	<5
	12/2/2008	125	0.02	0.04		<5	<5	72	<50	<2	<2
NC Groundwater Standards			11***		0.07	17.5				50	

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicate sample

*** Groundwater Standard for nitrate (as N) is 10 mg/l, for nitrite (as N) is 1 mg/l

Sample ID	Sampling Date	Sampling Depth (feet*)	Barium as Ba		Cadmium as Cd		Chromium as Cr		Copper as Cu		Iron as Fe total (ug/l)
			Total (ug/l)	Dissolved (ug/l)	Total (ug/l)	Dissolved (ug/l)	Total (ug/l)	Dissolved (ug/l)	Total (ug/l)	Dissolved (ug/l)	
40003000008	5/2/2007	32	61	23	<1	<1	<10	<10	33	<2	6900
	10/31/2007	36	67		<1		<10		3.4		5400
	3/3/2008	30	38	29	<1	<1	<10	<10	<2	<2	970
	12/2/2008	35	35	30	<1	<1	<10	<10	<2	<2	1200
40003000009	5/2/2007	39.5	28	29	<1	<1	<10	<10	44	<2	<50
	10/31/2007	60	27		<1		<10		<2		<50
	3/3/2008	55	27	28	<1	<1	<10	<10	<2	<2	64
	12/2/2008	65	27	27	<1	<1	<10	<10	<2	<2	<50
40003000010	5/2/2007	75	<10	<10	<1	<1	<10	<10	<2	<2	170
	10/31/2007	126	<10		<1		<10		<2		74
	3/3/2008	125	11	<10	<1	<1	<10	<10	<2	<2	440
	12/2/2008	125	<10	<10	<1	<1	<10	<10	<2	<2	150
NC Groundwater Standards			2000		1.75		50		1000		300

Sample ID	Sampling Date	Sampling Depth (feet*)	Iron as Fe Dissolved (ug/l)	Manganese as Mn		Nickel as Ni		Lead as Pb		Selenium as Se	
				Total (ug/l)	Dissolved (ug/l)	Total (ug/l)	Dissolved (ug/l)	Total (ug/l)	Dissolved (ug/l)	Total (ug/l)	Dissolved (ug/l)
40003000008	5/2/2007	32	74	200	100	<10	<10	<10	<10	<5	<5
	10/31/2007	36		150		<10		<10		<5	
	3/3/2008	30	<50	34	23	<10	<10	<10	<10	<5	<5
	12/2/2008	35	570	110	95	<10	<10	<10	<10	<5	<5
40003000009	5/2/2007	39.5	<50	110	110	<10	<10	<10	<10	<5	<5
	10/31/2007	60		41		<10		<10		<5	
	3/3/2008	55	<50	34	34	<10	<10	<10	<10	<5	<5
	12/2/2008	65	<50	25	23	<10	<10	<10	<10	<5	<5
40003000010	5/2/2007	75		92	170	160	<10	<10	<10	<10	<5
	10/31/2007	126			120		<10		<10		<5
	3/3/2008	125	<50		140	130	<10	<10	<10	<10	<5
	12/2/2008	125		87	140	140	<10	<10	<10	<10	<5
NC Groundwater Standards				50		100		15		50	

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Zinc as Zn		Organochlorine Pesticides	Organophosphate Pesticides	Nitrogen Pesticides	Acid Herbicide	Semivolatile Organics	Volatile Organics	Radon 222 (pCi/l)
			Total	Dissolved (ug/l)							
40003000008	5/2/2007	32		49	<10					0	0
	10/31/2007	36		110							1
	3/3/2008	30	<10		<10		0	0	0	0	
	12/2/2008	35		36	31						
40003000009	5/2/2007	39.5		18	<10					0	2
	10/31/2007	60	<10								1
	3/3/2008	55	<10		<10	2	0	3	0		
	12/2/2008	65		11	<10						
40003000010	5/2/2007	75		4200	1800	1	0	0	1		1
	10/31/2007	126		1600							1
	3/3/2008	125		3300	570				1		
	12/2/2008	125		860	550						
NC Groundwater Standards			1050								

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicate sample