CHURCHROCK-AREA WATER SOURCES SAMPLED BY CRUMP AND DINEH PROJECT, 2003-2006

Well #	Well Name	Chapter	DMS-Lat	DMS-Long	TRS Coordinates	Formation	Well Type	TD (ft.)	Use(s)	Status on 1/1/06
WATER SOURCES SAMPLED BY CRUMP (2003-2004)										
Grey	Annie Grey	Pinedale	35,37.457	108,30.670	16.16.14.1111	Qal	dug; HP	8	LS, DOM	OP
Solar	Solar St.	Church Rk.	35,32.158	108,35.753	15.17.13.1	Qal?	drilled; HP	unk	LS	INO
14K-313	Brown Bull	Coyote Cyn.	35,39.982	108,34.113	17.16.32 or 29	Kg	drilled; WM	622	LS, DOM	OP
14T-586	Friendship I	Coyote Cyn.	35,39.432	108,30.557	17.16.35	Kmv or Kg	drilled; PWS	750	abd-CWS	INO
15K-303	Pipeline Cyn.	Nahodishgish	35,40.277	108,28.698	17.15.29.421	Kg	drilled; WM	614	LS	OP
16-4-10	Lime Ridge, Pine Tree	Church Rk.	35,34.315	108,34.633	16.16.31.33	Jmw?	dug; HP	<1	LS, DOM	OP
16K-336	Puerco No. Fork	Church Rk.	35,34.362	108,38.202	16.17.33.4223	Qal	drilled; WM	122	LS	OP
16K-340	Windmill Cluster	Church Rk.	35,35.582	108,35.890	16.17.25.1132	Qal	drilled; WM	141	LS	OP
16T-348	Lobo Valley	Pinedale	35,37.178	108,27.195	16.15.17.1431	Kd	drilled; WM	410	LS	OP
16T-510	Nose Rock	Church Rk.	35,35.48	108,38.41	16.17.15.23	Kd	drilled; WM	680	LS, DOM	INO
16T-534	Superman Cyn.	Church Rk.	35,35.818	108,38.675	16.17.21.344	Jmw	drilled; WM	410	DOM, LS	OP
16T-559	Coal Mine/ Henry's	Church Rk.	35,27.560	108,39.207	15.17.33.43	unk	drilled; WM	unk	LS	OP
16T-606	King Ranch	Church Rk.	35,36.998	108,33.237	16.16.17.411	Kd	drilled; WM	417	LS	AB
16T-608	Yazzie Family	Church Rk.	35,31.123	108,38.332	15.17.21.4	unk	drilled; WM	unk	DOM, LS	OP
WATER SOURCES SAMPLED BY DiNEH PROJECT (2005-2006)										
16T-513	Uphill Road	Pinedale	35,36.4935	108,31.0100	16.16.15.414	Jmw	drilled; WM	318	LS	OP
16T-514	Chapter House Well	Pinedale	35,36.3733	108,26.5940	16.15.17.4333	Kd?	drilled	496	DOM, LS	OP
16T-535	2nd Canyon	Pinedale	35,35.2017	108,28.5105	16.16.25.142	Je	drilled; WM	140	LS, DOM	OP

Following Pages:

General Chemistry, Field Tests
Heavy Metals, Aesthetic Parameters
Radionuclides

Abbreviations and Symbols:

TRS = Township, Range, Section
TD = Total Depth of well, in feet; unk = unknown depth
Uses: abd-CWS = abandoned community water system; DOM = domestic; LS = livestock;
Type: HP = hand pump; WM = windmill
Formation: Qal = alluvium; Kcd = Dalton Sandstone of Crevasse Canyon Fm.; Kd = Dakota SS; Kg = Gallup SS; Kmv = Mesa Verde; Jmw = Morrison/Westwater
NNEPA = Navajo Nation Environmental Protection Agency
USEPA = U.S. Environmental Protection Agency
OP = Operating; INOP = Inoperative; ABND = abandoned

General Chemistry, Field Tests

Well #	Sampling Date	Lab	Dissolved Solids (mg/L)	Calcium ($CaCO_3$) (mg/L)	Magnesium (mg/L)	Potassium (mg/l)	Sodium (mg/L)	Total Hardness (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfate (mg/L)	pH (Units)	Nitrate (mg/L)	Conductivity (uS/cm)
USEPA or NNEPA MCL			500	75-200	none	none	none	500	250	250	250 Field Test	6.5-8.5 Field Test	10 Field Test	1,000 Field Test
Annie Grey	10/28/2003	NTUA	**553.5**	**376.0**	(???) -36	6.69	24.1	240.0	4.5	**305.0**	220.0	7.72	1.1	652
Solar St.	10/29/2003	NTUA	**561.8**	38.0	120.0	4.00	27.9	148.0	4.64	**352.0**	**355.0**	**8.61**	0.0	687
14K-313	10/29/2003	NTUA	**1,095.0**	**640.0**	440.0	4.36	105.0	**1,080.0**	10.7	**1,070.0**		8.31	0.0	**1,511**
14T-586	8/5/2003	NMSLD	**2,136.0**	**251.8**	125.1	7.10	143.1	**1,143.9**	19.1	**1,097.2**		8.07		
15K-303	10/28/2003	NTUA	**3,043.0**	**980.0**	(???) -940	5.97	191.0	40.0	12.1	**1,940.0**	**1,675.0**	8.13	0.0	**2,076**
16-4-10	10/29/2003	NTUA	237.5	152.0	32.0	1.61	8.37	184.0	14.3	27.1	24.0	7.45	0.7	326
16K-336	10/29/2003	NTUA	**887.6**	200.0	88.0	2.84	207.0	288.0	20.9	122.0	95.0	8.05	0.0	**1,045**
16K-340	10/29/2003	NTUA	**1,469.0**	**420.0**	180.0	3.65	256.0	**600.0**	25.5	**419.0**	**460.0**	8.16	1.1	**1,522**
16T-348	10/29/2003	NTUA	**660.9**	4.0	8.0	0.86	222.0	12.0	3.48	155.0		**9.63**	0.0	810
16T-513	3/28/2006	DiNEH/CEMRC		1.987	91.105	3.811	82.035		31.09	**557.2**	**690.0**	7.01	6.5	**1,436**
16T-514	3/28/2006	DiNEH/CEMRC									130.0	**8.65**	4.5	757
16T-514	8/19/2005	DiNEH/CEMRC			1.92	1.72	257		10.13	134.8		**8.67**	2.6	**1,002**
16T-514	8/19/2005	Stanford		3.33	1.33	1.16	154.63							
16T-534	10/29/2003	NTUA	**811.8**	132.0	76.0	3.00	179.0	208.0	8.0	**314.0**	**310.0**	**8.67**	0.0	933
16T-535	8/19/2005	CEMRC			0.68	2.29	127.9			53.0	65.0	**8.76**	1.4	535
16T-535	8/19/2005	Stanford		2.56	0.39	0.51	64.1							
16T-559	10/28/2003	NTUA	498.4	12.0	15.0	1.71	162.0	27.0	4.59	148.0	145.0	**8.87**	0.0	661
16T-606	10/28/2003	NTUA	**3,500.0**	196.0	1,740.0	6.91	245.0	**1,940.0**	23.3	**1,130.0**	**1,075.0**	7.45	0.0	**2,178**
16T-608	10/28/2003	NTUA	**1,015.0**	24.0	36.0	0.86	390.0	60.0	**251.0**	134.0	120.0	**8.82**		**1,427**

Boldface numbers indicate values exceeding standards

Abbreviations: MCL = maximum contaminant level; mg/L = milligrams per liter; NMSLD = New Mexico Scientific Laboratory Division; NTUA = Navajo Tribal Utility Authority; ??? = data are questionable

Heavy Metals, Aesthetic Parameters

Well #	Sampling Date	Lab	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Lead (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Fluoride (mg/L)	Iron (mg/L)	Field Tests Fluoride (mg/L)	Field Tests Iron (mg/L)
USEPA or NNEPA PDWS			0.010	0.005	0.05	1.3	0.02	0.1	0.05	4		4.0	
USEPA SDWS										2	0.3		0.3
Grey	10/28/2003	NTUA	<0.005	<0.0002	<0.001	<0.02	0.001	<0.04	<0.005			0.92	0.01
Solar	10/29/2003	NTUA	<0.005	<0.0002	<0.001	0.062	<0.001	<0.04	<0.005			0.32	**4.10**
14K-313	10/29/2003	NTUA	<0.005	<0.0002	<0.001	<0.02	<0.001	<0.04	<0.005			1.34	**0.54**
14K-313	12/16/2004	Stanford	0.0031	<0.0000	0.0057	0.0010	<0.0000	0.0089	0.0935				0.0168
14K-586	8/5/2003	NMSLD	0.008	<0.001	<0.001	<0.1	<0.001	<0.1	<0.005				**5.1**
14T-586	12/16/2004	Stanford	**0.0210**	<0.0000	0.0015	<0.0000	<0.0000	0.0097	**0.0641**				0.0444
15K-303	10/28/2003	NTUA	<0.005	<0.0002	<0.001	0.026	<0.001	<0.04	<0.005			1.60	**0.68**
15K-303	12/20/2004	Stanford	**0.4824**	<0.0000	<0.0000	<0.0000	<0.0000	0.0051	**0.0875**				0.0118
16-4-10	10/29/2003	NTUA	<0.005	<0.0002	<0.001	<0.02	<0.001	<0.04	0.043			0.58	0.10
16-4-10	12/16/2004	NTUA	<0.0000	<0.0000	0.0029	0.0030	<0.0000	0.0031	<0.0000				0.0420
16K-336	10/29/2003	NTUA	0.006	<0.0002	<0.001	<0.02	<0.001	<0.04	<0.005			1.03	**2.00**
16K-340	10/29/2003	NTUA	<0.005	<0.0002	<0.001	<0.02	<0.001	<0.04	<0.005			0.71	**0.40**
16K-340	12/20/2004	Stanford	**0.027**	<0.0000	<0.0000	0.003	<0.0000	0.0042	<0.0000				0.0073
16T-348	10/29/2003	NTUA	<0.005	<0.0002	<0.001	<0.02	<0.001	<0.04	<0.005			0.47	0.02
16T-348	12/20/2004	Stanford	0.0008	0.0002	<0.0000	<0.0000	<0.0000	<0.0000	0.0233				0.0043
16T-510	12/16/2004	Stanford	**0.014**	0.000	0.0022	<0.0000	<0.0000	<0.0000	<0.0000				0.0117
16T-513	3/28/2006	CEMRC	0.00109	<0.00013	0.01304	0.00543	0.00041	0.01032	0.00198			1.14	**4.2**
16T-514	8/19/2005	CEMRC	0.0038	<MDL	0.0348	0.00453	0.00175	0.00798	0.00402	**2.45**	**1.54**		
16T-514	8/19/2005	Stanford	<0.001	<0.001	0.004	0.002	<0.001	<0.001	<0.001		0.016		
16T-534	10/29/2003	NTUA	<0.005	<0.0002	<0.001	<0.02	<0.001	<0.04	<0.005			0.44	**0.49**
16T-534	12/16/2004	Stanford	**0.039**	<0.0000	0.000	0.016	<0.0000	0.004	**0.1341**				0.004
16T-535	8/19/2005	CEMRC	0.0029	0.00017	<MDL	0.0033	0.0035	0.0028	<MDL	**2.3600**	**0.6320**		0.16
16T-535	8/19/2005	Stanford	0.001	<0.001	0.003	0.001	<0.001	<0.001	<0.001		0.0230		
16T-559	10/28/2003	NTUA	<0.005	<0.0002	<0.001	<0.02	<0.001	<0.04	<0.005			0.64	0.07
16T-559	12/16/2004	Stanford	<0.0000	<0.0000	0.0065	<0.0000	<0.0000	0.0025	**0.1051**				0.0025
16T-606	10/28/2003	NTUA	<0.005	<0.0002	<0.001	<0.02	<0.001	<0.04	<0.005			1.16	**3.28**
16T-608	10/28/2003	NTUA	<0.005	<0.0002	<0.001	<0.02	<0.001	<0.04	0.006			1.96	0.12
16T-608	12/20/2004	Stanford	<0.0000	<0.0000	<0.0000	0.001	<0.0000	<0.0000	**0.1169**				0.0241

Boldface numbers indicate values exceeding standards

Abbreviations: MCL = maximum contaminant level; mg/L = milligrams per liter; NMSLD = New Mexico Scientific Laboratory Division; NTUA = Navajo Tribal Utility Authority; WQCC = N.M. Water Quality Control Commission groundwater standard; ??? = data are questionable

Radionuclides

Well #	Sampling Date	Gr. Alpha (Am-241 Ref.) (pCi/L)	Gr. Alpha (U-Nat Ref.) (pCi/L)	Gr. Beta (Sr/Y-90 Ref.) (pCi/L)	Gr. Beta (Am-241 Ref.) (pCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	U-234 (pCi/L)	U-235 (pCi/L)	U-238 (pCi/L)	U-234/U-238 (ratio)	Total Uranium (pCi/L)	Uranium mass (ug/L)
USEPA or NNEPA MCL		15	15	4 mrem/yr	4 mrem/yr	combined 5.0							30
Lab		NMSLD	NMSLD	NMSLD	NMSLD	NMSLD	NMSLD	USEPA-LV	USEPA-LV	USEPA-LV	USEPA-LV	USEPA-LV	USEPA-LV
Annie Grey	10/28/2003	4.90	7.20	9.40	9.00	0.10	0.40	5.897	0.197	3.849	1.53	9.943	14.84
Solar	10/29/2003	nd	nd	4.40	4.20	0.08	0.20	0.1168	0.00	0.0439	2.66	0.161	0.24
14K-313	10/29/2003	nd	nd	4.40	4.20	0.04	0.50	0.02542	0.00	0.01107	2.30	0.036	0.05
14K-313	12/16/2004*												<0.1
14T-586	8/5/2003		10.80	14.90		2.60							3.00
14T-586	12/21/2004*												1.70
15K-303	10/28/2003	2.60	4.00	9.00	8.60	0.47	1.50	0.3138	0.00	0.1462	2.15	0.460	0.69
16-4-10	10/29/2003	**34.80**	**44.10**	26.00	25.50	0.33	0.70	24.00	1.067	21.41	1.12	46.477	**69.37**
16-4-10	12/20/2004*												**74.50**
16K-336	10/29/2003	4.00	5.90	4.40	4.30	0.83	0.30	0.2592	0.004685	0.1153	2.25	0.379	0.57
16K-340	10/29/2003	nd	nd	4.90	4.70	0.40	0.40	1.025	0.05498	0.8786	1.17	1.959	2.92
16K-340	12/20/2004*												2.30
16T-348	10/29/2003	nd	nd	1.60	1.60	nd	0.60	0.1678	0.001132	0.0274	6.12	0.196	0.29
16T-348	12/20/2004*												<0.1
16T-510	12/16/2004*												0.5
16T-513	3/28/2006												0.00008
16T-514	8/19/2005												0.00005
16T-514	8/19/2005												<0.001
16T-534	10/29/2003	nd	nd	2.70	2.60	0.20	0.50	0.09005	0.002002	0.009694	9.29	0.102	0.15
16T-534	12/16/2004*												<0.1
16T-535	8/19/2005												0.89
16T-535	8/19/2005*												1.00
16T-559	10/28/2003	nd	nd	1.50	1.50	0.05	nd	0.04454	0.001077	0.01478	3.01	0.060	0.09
16T-559	12/20/2004*												<0.1
16T-606	10/28/2003	**26.60**	**40.00**	20.40	19.40	**8.34**	**0.80**	3.798	0.03386	0.8518	4.46	4.684	6.99
16T-608	10/28/2003	3.80	5.40	nd	nd	0.04	1.40	3.329	0.02526	0.5035	6.61	3.858	5.76
16T-608	12/20/2004*												

*Samples analyzed at Stanford University Environmental Engineering Laboratory

Boldface numbers indicate values exceeding standards

Abbreviations: MCL = maximum contaminant level; pCi/L = picoCuries per liter; ug/L = micrograms per liter