Barton Springs
Edwards Aquifer
CONSERVATION DISTRICT

GROUNDWATER CHEMISTRY IN SOUTHERN TRAVIS AND NORTHERN HAYS COUNTIES, TEXAS, 1998 THROUGH 2008

BSEACD Data Series Report 2009-0401

Barton Springs/Edwards Aquifer Conservation District
1124 Regal Row
Austin, Texas

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All of the information provided in this report is believed to be accurate and reliable; however, the Barton Springs/Edwards Aquifer Conservation District (District) assumes no responsibility for any errors or for the use of the information provided. While this report has attempted to provide a comprehensive database of water chemistry data over there may be unintended errors and omissions of data.

Cover. Clockwise from top left: Stefanie Campbell and Beckie Morris (formerly with the BSEACD) sample upper Barton Springs; City of Kyle public water supply well; Bryce Reed (summer intern) performing field titrations for alkalinity; and Guy Rials recording field parameters during sampling. In the center of the cover is a Piper diagram.

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CONTENTS

FIGURES

TABLES

APPENDICES

GROUNDWATER CHEMISTRY IN SOUTHERN TRAVIS AND NORTHERN HAYS COUNTIES, TEXAS, 1998 THROUGH 2008

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INTRODUCTION

Groundwater is the most effective solvent for inorganic geologic materials (rocks and soil) and therefore contains dissolved natural elements (Kresic, 2007). Additionally, the chemical composition of natural groundwater influenced by the atmosphere, sub-surface reactions, and human activities (Hem, 1985). The District collects water samples to assess ambient groundwater conditions. The District conducted aquifer-wide sampling of groundwater sites annually since 1998, as part of an ongoing partnership with the Texas Water Development Board (TWDB). The TWDB funded laboratory analyses of these samples which included major constituents, dissolved trace metals, and nutrients. This report compiles 284 analyses of samples from 126 wells and springs in the freshwater Edwards, saline Edwards, Edwards-Trinity, and Trinity aquifers from the period 1998 through 2008. A simple Microsoft® Excel database was constructed and accompanies this report. In addition to the chemical data, the database contains well completion information and hydrologic data important to future analysis and interpretation of the chemical data.

Purpose and Scope

The purpose of this report is to provide a foundation for future hydrogeologic investigations and evaluations of water resources in central Texas. Most of the data is currently available in the Texas Water Development Board (TWDB) well database. However, this document provides additional data (18 sites) not included in the TWDB database, and important well completion and hydrologic information that is not readily available.

Acknowledgements

The TWDB, through Senate Bill 1, funded most of the analyses of groundwater samples collected. In particular, we acknowledge the support and help of the TWDB staff Janie Hopkins, Chris Muller, and Gary Franklin (formerly with the TWDB). Guy Rials assisted with collected samples. Other former District staff that collected samples, or assisted with sampling include Nico Hauwert, Ron Fieseler, Stefani Campbell, Mark Mathis, and Beckie Morris. Periodically, student interns Meredith Laird, Lindsay Reeve, Melody Cornelius, and Bryce Reed, assisted with sampling.

METHODS

Nearly all the samples in this report were collected by BSEACD staff. Six samples (from 1998) included in this report were collected by TWDB staff. Prescribed sampling protocols and methods were used to collect this data, and are described in the TWDB's Field Manual for Groundwater Sampling (TWDB, 2003). A summary of methods and procedures are provided in **Appendix A**.

All samples were submitted and analyzed at certified laboratories. The laboratories used during this study were LCRA Environmental Laboratory Services (ELS) lab in Austin (1998-2004), Energy Laboratories in Wyoming (2006-2007), and Anacon Labs in Houston (2008).

Field parameters (temp, pH, conductivity) were measured with multi-parameter probes. Instruments used by the District include Horiba U-10 Water Checker (1998-2004) and Eureka Environmental Manta (2006-2008). Those instruments were calibrated according to manufacturer specifications before use each sample day.

Sample site selection was generally guided by the goal of obtaining a broad geographic and hydrogeologic sampling of groundwater conditions. Many sites were sampled yearly in order to help characterize trends over time. In addition, the sample sites were in part determined by scientific needs, aquifer conditions, and accessibility.

RESULTS

Samples were collected between 1998 and 2008. No samples were collected in 2005. A total of 126 different sites consisting of 120 wells and 6 springs were sampled. **Figure 1** is a map of the sample sites and **Table 1** presents a summary list of all 126 sites for a total of 284 laboratory analyses.

A statistical summary of the data by aquifer source are presented in **Table 2**. Sources of the samples were 79% freshwater Edwards, 6% saline Edwards, 6% Edwards-Trinity; and 10% Trinity. Edwards-Trinity wells are open to both aquifer systems, but are generally limited to the Edwards and Upper Trinity aquifers. **Figure 2** is a Piper diagram of the average values for major ions from the various sources of groundwater sampled. Similarly, **Figure 3** is a Schoeller diagram of the average values for major ions from the various sources of groundwater sampled. **Table 3** provides a summary of samples exceeding EPA's maximum contaminant level and secondary water quality standards.

Most of the data presented in the database can be found in the TWDB well database. Constituents with values greater than 1 mg/L are generally considered the major ions. Data are divided into two general categories in the TWDB database, major ions and infrequent constituents (metals). This report contains major, infrequent, and field measurements.

Additional sources of data collected under TWDB protocols, but not found in the TWDB database, were obtained from Smith et al. (2001) and from sampling funded by BSEACD on select wells (e.g. 5858701, 58499QL). **Appendix B** contains all laboratory results included well completion information and additional hydrogeologic information such as Barton Springs discharge at the time of sampling.

EXPLANATION AND DISCUSSION

The purpose of this report is to provide a foundation for hydrogeologic investigations and evaluations of water resources in central Texas. Very little interpretation is provided in this report. **Appendix C** contains a summary document from the TWDB regarding the interpretation of water quality. The purpose of this explanation and discussion is to help clarify and address potential sources of error and confusion of the data, database fields, and analytes.

Sources of Error

Groundwater samples may not be representative of aquifer conditions for a number of reasons. Aside from analytical and human errors, sampling conditions and points are unique for each location and are a primary source of errors. A major challenge to obtaining a representative groundwater sample usually involves obtaining a raw groundwater sample before treatment and storage of the produced water. Although wells without sampling points prior to treatment or storage were avoided, sometimes this could not be avoided if the sample site was considered important. While these data are useful, they should be used with caution. Such data are identified in the Analysis Reliability Remark data field in the database (e.g. 58-58-701).

Another common source of potential error could be the arrival of samples at the lab over their prescribed preservative temperature. This was particularly a problem with the Energy Labs in Wyoming (2007) due to shipping times. However, a comparison of two sets of samples (one arriving near 20°C, the other arriving near 4°C) from two locations (58-49-940 and 58-50-417), showed little difference in the results.

Finally, it should be noted that field instruments can be inaccurate. Field parameters derived from field instruments were used to determine relative changes in values which indicate when equilibrium was achieved. In particular, the pH meters on field instruments were often difficult to maintain calibration.

Database fields and parameters

The following is a discussion and clarification of particular database fields and parameters. The discussion about individual parameters is summarized, in part, from Texas Water Development Board website containing notes on water quality data. (http://www.twdb.state.tx.us/GwRD/waterwell/groundwaterexplanation.htm)

Aquifers

The database contains a field indicating the source of groundwater by major aquifers and are a generalization of the groundwater sources. The Edwards aquifer is composed of the Georgetown Formation and Edwards Group. The saline portion of the Edwards aquifer is composed of those same geologic units, but is where the TDS of the groundwater is greater than 1,000 mg/L. The Upper Trinity aquifer is composed of the Upper Glen Rose limestone. The Middle Trinity aquifer is composed of the Lower Glen Rose limestone, Hensel Sandstone, and Cow Creek limestone. The Hammett Shale is the confining unit between the Lower and Middle Trinity aquifers and is not an aquifer. However, one well (zone) is completed solely within this unit (58-57-513_z1). The Lower Trinity aquifer is composed of the Sligo and Hosston Formations. Within the aquifer field are wells that are completed in both the Edwards and Upper Trinity aquifers. Those wells are noted as Edwards-Trinity. The completion of wells and the source of groundwater production can be difficult to determine due to the complex geology and well completion practices. The field "TWDB Aquifer Code" indicates specific aquifer units defined in UM-51 (TWDB, 2003), although these data should be used with caution.

Distance from Kgru

This field is an estimated measure of the distance (in feet) of the bottom of a borehole relative to the top of the upper Glen Rose. This field is only relevant to wells completed in the Edwards Aquifer. Negative values indicates a possible penetration of the upper Glen Rose and a potential hybrid well completion between the Edwards and upper Trinity aquifers. Positive values indicate a well may not penetrate the upper Glen Rose, and therefore solely derives water from the Edwards Aquifer. This data was generated by geophysical logs and the use of residual values comparing the surface elevation of the upper Glen Rose and the bottom elevation of wells.

Ion Balance

Ion balance is a check of the accuracy of the analyses. Only 10 samples were unbalanced. Even though balanced analyses are ideal, unbalanced analysis can be correct. Reasons for being unbalanced include: 1) The analysis is not good; 2) Major constituents were not used in the calculation; 3) The water has a very low pH and the hydrogen ion was not included; 4) A significant quantity of organic ions are present, and 5) Data entry/calculation errors. Analyses in the database without a CO_3 value are essentially unbalanced. Generally, if the pH is below 8.35, the CO_3 value is zero. In calculating the sum of constituents, the HCO_3 value is converted to CO_3 (HCO_3 x .4917) and is added to the remaining major anions/cations. Both HCO_3 and CO_3 are calculated from phenol and total alkalinity. During data entry, if the phenol and total alkalinity are known, the CO_3/HCO_3 fields are blank.

Units and detection limits (PQL)

Laboratory results are reported in concentrations (milligrams or micrograms) per liter of sample water. **Table 2** reports a practical quantitation limit (PQL) for each constituent. This is meant only as a reference since the PQL changes for each analysis. Analytical methods are reported on the laboratory result sheets and can be made available upon

request. Data from Smith et al. (2001) show some values below lab quantitation limits, but those are flagged with a "J" rather than a "<."

Nitrate

Users of these data should be aware of the difference between nitrate as NO_3 and nitrate as N. Nitrate as N and nitrate as NO_3 have primary drinking water standards of 10 and 44 mg/L, respectively. TDS is calculated using nitrate as NO_3. Nitrate as N is found in the infrequent constituent table of the TWDB database. In addition, the TWDB notes that nitrate as NO_3 values of 0.4, 0.1, or 0.04 may be missing a "less than" (<) flag. The TWDB converts nitrate as N to nitrate as NO_3 with the following conversion factor:

Atomic wt of N = 14.007
Atomic wt of O = 15.999 x 3 = 47.997
Sum = 62.004 / 14.007 = 4.427
Thus, nitrate as N mg/L x 4.427 = nitrate as NO_3 mg/L

Total Dissolved Solids

Total dissolved solids (TDS) is calculated from the sum of constituents and is calculated based upon the values in mg/L of the major anions and cations, plus silica. The calculation also uses 0.4917 of the bicarbonate value. Nothing is added into the TDS values from the minor ions (also called infrequents in the TWDB database). Periodically, some high values of minor ions are present and could be included in the TDS calculation.

TDS (mg/L) approximately equals conductivity multiplied by a factor that varies from 0.46 to 0.76 according to the TWDB. Waters high in sulfate can be as high as 0.96. The multiplication factor can be determined simply by dividing TDS by conductivity for sampled sites. For the 234 samples presented in this report the multiplication factor ranged between 0.39 and 0.99 with an average of 0.62.

The District collected duplicate TDS (residue, filterable) samples from about 37% of the sites. These data are located in a field labeled "Measured TDS (mg/L)." All TDS samples were analyzed at the ELS labs. These data are comparable to the calculated values with a correlation coefficient of R^2=0.99.

Alkalinity, Bicarbonate, and Hardness

Alkalinity values, in most cases, were determined in the lab, with field alkalinity reported in the infrequent table of the TWDB database. Using the total alkalinity and pH, a reasonable estimate of the carbonate and bicarbonate are determined. If the pH of the sample is less than 8.4 then bicarbonate can be calculated from the following equation:

Bicarbonate (mg/L) = 1.218 (Alkalinity mg/L) + 0.207

Hardness is determined from Ca, Mg, and Sr values. The hardness formula used in the TWDB database is as follows:

- 3 me/L (Ca + Mg + Sr + Ba) x 50.05 = hardness
- 3 me/L (Ca + Mg) x 50 = hardness if others are not determined

- (hardness - alkalinity) x 50 = noncarbonate hardness

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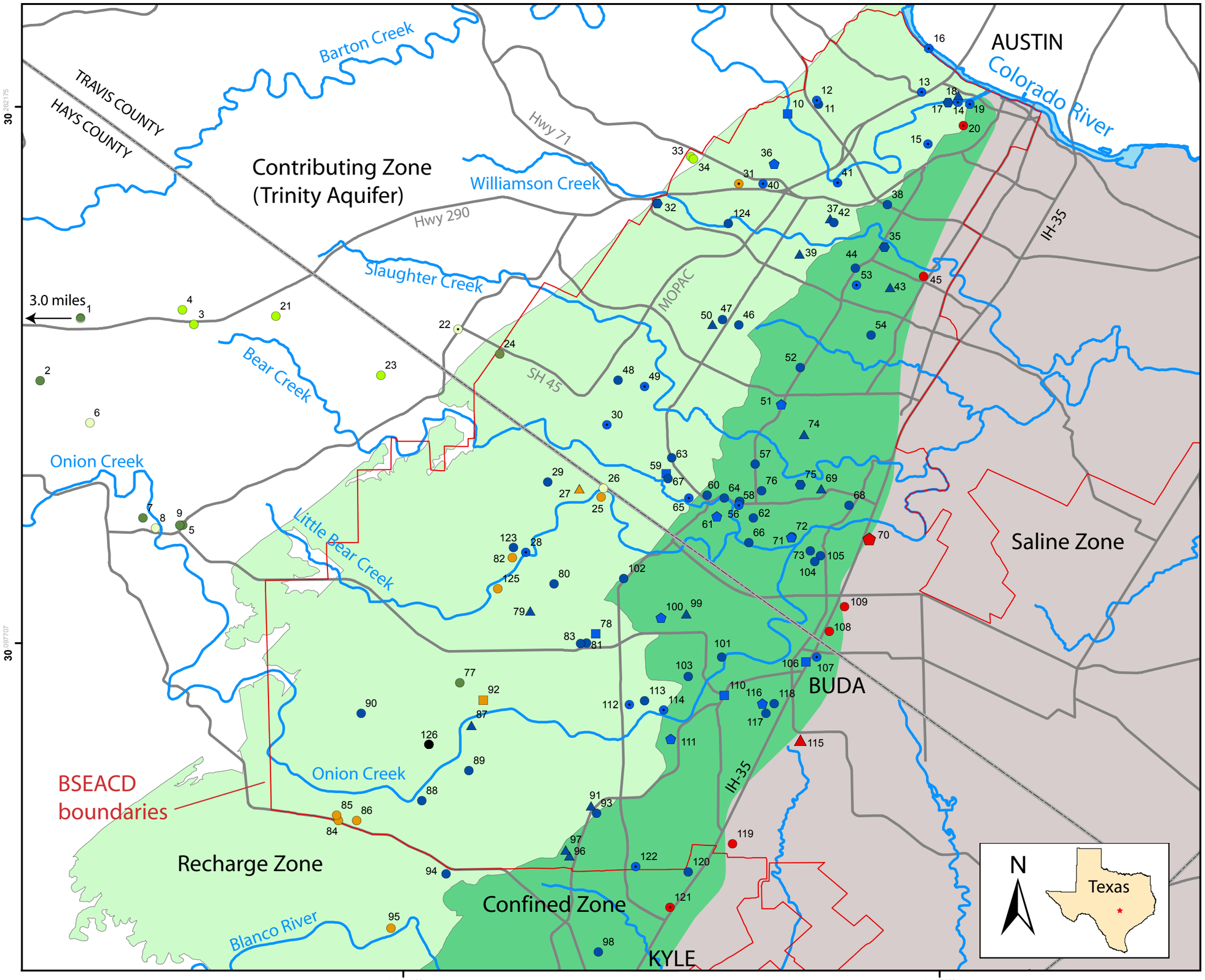
Figure 1. Map of sample sites



Explanation

Edwards Aquifer Hydrologic Zones

- Contributing Zone (upper Trinity Aquifer)
- Recharge Zone
- Confined Zone
- Saline Zone

Sample sites by aquifer

- Edwards Aquifer
- Saline Edwards Aquifer
- Edwards-Trinity Aquifer
- Upper Trinity Aquifer
- Middle Trinity Aquifer
- Lower Trinity Aquifer
- Multiport Well

Sample sites by number of samples

- one
- two
- three
- four
- five
- six
- nine

1:125,000

0 2.5 Miles

Table 1. List of sample sites

Map ID	SWN	Well or Spring	Aquifer	Primary Use	Name/Owner	latitude DD	longitude DD	Well Depth (ft)	# samples	98	99	00	01	02	03	04	06	07	08
1	5756480	Well	Middle Trinity	Irrigation	Whit Hanks	30.1960278	-98.1075000	440	1									x	
2	5756518	Well	Middle Trinity	Domestic	Foreman Well	30.1781660	-98.0525550	320	1									x	
3	5756603	Well	Lower Trinity	Domestic	Center Lake Business Park	30.1954444	-98.0054444	918	1									x	
4	5756604	Well	Lower Trinity	Domestic	Dimension Builders	30.1999166	-98.0089444	905	1									x	
5	5756903	Well	Middle Trinity	PWS	Salt Lick New PWS	30.133888	-98.008888	502	1										x
6	5756906	Well	Upper Trinity	Stock	Jackie Hatch	30.1652777	-98.0373330	195	1									x	
7	5756908	Well	Middle Trinity	Irr	Salt Lick Irr #1	30.13611	-98.02111	400	1										x
8	5756909	Well	Upper Trinity	Irr	Salt Lick, Old Pecan House	30.133054	-98.017221	81	1										x
9	5756910	Well	Middle Trinity	PWS	Salt Lick Old PWS	30.133888	-98.009722	170	1										x
10	5842811	Spring	Edwards	Recreation	Back Door Springs	30.2600000	-97.8233333	n/a	4	x			x	x	x				
11	5842821	Well	Edwards	Commercial	Georgian Leasing	30.2630556	-97.8138889	460	1	x									
12	5842825	Well	Edwards	Commercial	Rudy's Bar-B-Q	30.2641667	-97.8144444	420	2					x	x				
13	5842913	Well	Edwards	Public Supply	Park Hills Baptist	30.2666667	-97.7822222	180	2	x					x				
14	5842914	Spring	Edwards	Recreation	Barton Springs	30.2636111	-97.7711111	n/a	9	x	x	x	x	x	x		x	x	x
15	5842915	Well	Edwards	Irrigation	Genevieve Duncan	30.2508333	-97.7802778	295	2				x	x					
16	5842916	Spring	Edwards	Unused	Cold Springs	30.2800000	-97.7800000	n/a	9	x	x	x	x	x	x		x	x	x
17	5842920	Spring	Edwards	Unused	Upper Barton Springs	30.2633333	-97.7741667	n/a	6	x	x		x	x	x			x	
18	5842921	Spring	Edwards	Unused	Eliza Springs	30.2641667	-97.7711111	n/a	3	x			x						x
19	5842922	Spring	Edwards	Unused	Old Mill Springs	30.2630556	-97.7675000	n/a	9	x	x	x	x	x	x		x	x	x
20	5842928	Well	Edwards Saline	Monitor	Marshall Frech	30.2563889	-97.7694444	304	2							x	x		
21	5849413	Well	Lower Trinity	Irrigation	Belterra (Capital Pacific Homes)	30.1980000	-97.9803333	903	1									x	
22	5849511	Well	Upper Trinity	Commercial	Bubba's Country Store	30.1938889	-97.9244444	unknown	2					x	x				
23	5849513	Well	Lower Trinity	Domestic	Leo Lopez 1401 Kemp Hills	30.1798888	-97.9480833	840	1									x	
24	5849613	Well	Middle & Lower Trinity	Public Supply	Circle C Golf Club	30.1863889	-97.9116667	1030	1	x									
25	5849922	Well	Edwards-Trinity	Public Supply	Copper Hills Water	30.1425	-97.8805556	420	1								x		
26	5849928	Well	Upper Trinity	Public Supply	Southwest Territory	30.1452778	-97.8797222	820	1								x		
27	5849935	Well	Edwards-Trinity	Domestic	Bob Manning	30.1450000	-97.8872222	460	3	x				x	x				
28	5849938	Well	Edwards	Monitor	Borheim Edwards Well	30.1255556	-97.9036111	180	2							x		x	
29	5849939	Well	Edwards	Unused	Spillar	30.1472222	-97.8969444	82	1							x			
30	5849940	Well	Edwards	Stock	City of Austin/Flilnt Ridge	30.1646111	-97.8787777	324	2									x	x
31	5850122	Well	Edwards-Trinity	Commercial	AAW Oak Hill , Ltd.	30.2386111	-97.8383333	420	2	x					x				
32	5850123	Well	Edwards	Irrigation	New Forest Oaks	30.2325000	-97.8633333	295	6	x	x	x	x	x	x				
33	5850125	Well	Lower Trinity	Irrigation	St. Andrews School	30.2469444	-97.8530556	1000	1					x					
34	5850126	Well	Lower Trinity	Irrigation	St. Andrews School	30.2461111	-97.8522222	960	1						x				
35	5850201	Well	Edwards	Domestic	John Noell	30.2191667	-97.7936111	290	6	x	x	x	x	x	x				
36	5850211	Well	Edwards	Irrigation	Travis Country Estates	30.2447222	-97.8275000	282	5	x	x	x	x	x					
37	5850215	Well	Edwards	Public Supply	City of Sunset Valley Well #3	30.2277778	-97.8102778	360	3	x		x	x						
38	5850216	Well	Edwards	Monitor	U.S. Geological Survey	30.2322222	-97.7927778	582	1				x						
39	5850222	Well	Edwards	Domestic	Helen Besse	30.2169444	-97.8197222	440	3	x	x		x						
40	5850224	Well	Edwards	Commercial	Safeway Rental	30.2386111	-97.8308333	272	2	x		x							
41	5850225	Well	Edwards	Domestic	Ed Maxey	30.2388889	-97.8080556	unknown	2	x	x								
42	5850230	Well	Edwards	Domestic	Susan Durso & Tom Picard	30.2266667	-97.8091667	256	1						x				
43	5850231	Well	Edwards	Irrigation	Capital Soccer Club	30.2066667	-97.7919444	540	3						x	x	x		

Table 1. List of sample sites

Map ID	SWN	Well or Spring	Aquifer	Primary Use	Name/Owner	latitude DD	longitude DD	Well Depth (ft)	# samples	98	99	00	01	02	03	04	06	07	08
44	5850234	Well	Edwards	Irrigation	Castletop Independence, Inc.	30.2127222	-97.8025833	442	1									x	
45	5850301	Well	Edwards Saline	Unused	Texas Middle School Association	30.2102778	-97.7816667	388	1							x			
46	5850405	Well	Edwards	Unused	Adie Morrison	30.1952778	-97.8383333	365	1			x							
47	5850406	Well	Edwards	Domestic	Brian Gantt	30.1969444	-97.8433333	360	1	x									
48	5850410	Well	Edwards	Stock	WQPL (J17)	30.1783333	-97.8752778	unknown	1									x	
49	5850416	Well	Edwards	Domestic	Linda Wetzel	30.1763889	-97.8672222	unknown	2	x			x						
50	5850417	Well	Edwards	Monitor	COA Sister's (Zumwald)	30.1955556	-97.8463889	350	3				x	x				x	
51	5850511	Well	Edwards	Domestic	Rodney Johnson	30.1711111	-97.8252778	285	5	x	x	x	x				x		
52	5850513	Well	Edwards	Domestic	Arthur Eatman	30.1822222	-97.8194444	323	1					x					
53	5850520	Well	Edwards	Irrigation	Herb Mendieta	30.2075000	-97.8022222	315	2	x			x						
54	5850521	Well	Edwards	Unused	Sherwood Point Venture	30.1922222	-97.7977778	unknown	1						x				
55	5850704	Well	Edwards	Public Supply	Marbridge Foundation	30.1411111	-97.8380556	345	2	x			x						
56	5850724	Well	Edwards	Commercial	Manchaca Volunteer Fire Department	30.1411111	-97.8380556	220	1						x				
57	5850726	Well	Edwards	Commercial	Diamondscape	30.1525000	-97.8333333	300	1						x				
58	5850730	Well	Edwards	Commercial	McCoy Corporation	30.1400000	-97.8383333	360	2	x					x				
59	5850731	Well	Edwards	Public Supply	Shady Hollow Estates WSC	30.1497222	-97.8605556	438	4	x	x		x	x					
60	5850732	Well	Edwards	Public Supply	St. John's Presbyterian Church	30.1430556	-97.8480556	320	1						x				
61	5850733	Well	Edwards	Public Supply	Suburban Austin Water, Bear Crk #2/Aquasource	30.1366667	-97.8450000	312	5	x	x	x	x	x					
62	5850737	Well	Edwards	Public Supply	Manchaca Bible Fellowship Church	30.1361111	-97.8338889	400	1						x				
63	5850743	Well	Edwards	Public Supply	Shady Hollow Estates	30.1544444	-97.8588889	575	1						x				
64	5850744	Well	Edwards	Commercial	Bear Creek Office Park	30.1422222	-97.8427778	unknown	1						x				
65	5850745	Well	Edwards	Domestic	COA/Willy Conrad	30.1422222	-97.8536111	340	2							x		x	
66	5850746	Well	Edwards	Commercial	Associated Drilling	30.1286111	-97.8352778	320	1							x			
67	5850749	Well	Edwards	Dom	Stephen Bell	30.148055	-97.86	400	1										x
68	5850825	Well	Edwards	Domestic	Jarrel Thomas	30.1400000	-97.8044444	315	1	x									
69	5850836	Well	Edwards	Irrigation	Onion Creek Golf Course	30.1450000	-97.8130556	500	3						x	x	x		
70	5850840	Well	Edwards Saline	Public Supply	St. Albans Episcopal Church	30.1297222	-97.7983333	498	5	x				x	x	x		x	
71	5850846	Well	Edwards	Public Supply	Creedmoor-Maha WSC	30.1302778	-97.8219444	535	1						x				
72	5850847	Well	Edwards	Public Supply	Creedmoor-Maha WSC	30.1302778	-97.8222222	450	5	x	x	x	x	x					
73	5850849	Well	Edwards	Public Supply	Creedmoor-Maha WSC	30.12611	-97.816388	493	1								x		
74	5850852	Well	Edwards	Public Supply	J. D. Malone	30.1616667	-97.8183333	420	3	x			x		x				
75	5850855	Well	Edwards	Public Supply	Village of San Leanna #1	30.1461111	-97.8194444	500	6	x	x	x	x	x	x				
76	5850861	Well	Edwards	Unused	Earl Hunt	30.1444444	-97.8313889	unknown	1						x				
77	5857211	Well	Middle Trinity	Ind	KBDJ Quarry	30.085555	-97.923888	1085	1										x
78	5857307	Well	Edwards	Public Supply	Dahlstrom Middle School	30.1005556	-97.8822222	470	4	x	x	x	x						
79	5857312	Well	Edwards	Public Supply	Rocket WSC	30.1075000	-97.9022222	425	3	x	x								x
80	5857314	Well	Edwards	Public Supply	Elliot Ranch Well #1	30.1158333	-97.8950000	655	1					x					
81	5857315	Well	Edwards	Public Supply	Southern Hills Church of Christ	30.0977778	-97.8850000	400	1						x				
82	5857318	Well	Edwards-Trinity	Domestic	Rick Castillo	30.123888	-97.907777	420	1								x		
83	5857320	Well	Edwards	Domestic	Gary Callon	30.0975861	-97.8868500	unknown	1									x	

Table 1. List of sample sites

Map ID	SWN	Well or Spring	Aquifer	Primary Use	Name/Owner	latitude DD	longitude DD	Well Depth (ft)	# samples	98	99	00	01	02	03	04	06	07	08
84	5857405	Well	Edwards-Trinity	Domestic	Arturo Ruiz	30.0433333	-97.9611111	405	1						x				
85	5857506	Well	Edwards-Trinity	Domestic	Leroy Grote	30.0450000	-97.9616667	450	1	x									
86	5857508	Well	Edwards-Trinity	Domestic	Michael Pettit	30.0433333	-97.9555556	510	1					x					
87	5857509	Well	Edwards	Domestic	Onion Creek Lodge	30.0725000	-97.9202778	257	3				x		x			x	
88	5857511	Well	Edwards	Commercial	Inn above Onion Creek	30.049444	-97.935555	450	1								x		
89	5857512	Well	Edwards	Public Supply	Ruby Ranch South	30.058611	-97.92111	405	1								x		
90	5857514	Well	Edwards	Dom	COA, Rutherford Dog House	30.07611	-97.954166	400	1										x
91	5857606	Well	Edwards	Domestic	Cindy and Jeff Barton	30.0477778	-97.8836111	360	3						x	x	x		
92	5857608	Well	Edwards-Trinity	Public Supply	Ruby Ranch Phase II Eco Resources PWS	30.0802778	-97.9166667	403	4	x	x			x			x		
93	5857610	Well	Edwards	Domestic	Ray Holt	30.0455556	-97.8819444	300	1						x				
94	5857802	Well	Edwards	Dom	Halifax Ranch Office	30.026943	-97.928054	242	1										x
95	5857809	Well	Edwards-Trinity	Dom	Halifax Ranch Horse Pen	30.010277	-97.944999	240	1										x
96	5857901	Well	Edwards	Public Supply	Hays Consolidated ISD	30.0325000	-97.8902778	575	3	x	x	x							
97	5857913	Well	Edwards	Public Supply	Hays ISD Well #2	30.0341667	-97.8913889	610	3				x	x	x				
98	5857914	Well	Edwards	Public Supply	County Line PWS	30.00305556	-97.88138889	600	1	x									
99	5858102	Well	Edwards	Public Supply	Cimarron Park Water Co Inc.	30.1066667	-97.8544444	400	3	x	x		x						
100	5858121	Well	Edwards	Public Supply	Leisurewoods Water Co. Well #5 / Aquasource	30.1055556	-97.8622222	410	5			x	x	x	x		x		
101	5858122	Well	Edwards	Public Supply	Twin Oaks Ranch Church Camp	30.0933333	-97.8436111	450	1						x				
102	5858127	Well	Edwards	Public Supply	Hays Hill Baptist Church	30.1175000	-97.8736111	430	1						x				
103	5858128	Well	Edwards	Domestic	Ben Wright	30.0875000	-97.8538889	220	1			x							
104	5858202	Well	Edwards	Public Supply	Mystic Oaks W.S.C. Well #1	30.1244444	-97.8133333	405	1	x									
105	5858216	Well	Edwards	Public Supply	Mystic Oaks W.S.C.	30.1227778	-97.8150000	400	1				x						
106	5858219	Well	Edwards	Industrial	Pool & Rogers Materials	30.0919444	-97.8177778	550	4	x				x	x		x		
107	5858220	Well	Edwards	Industrial	Hunter Industries	30.0933333	-97.8144444	700	2						x		x		
108	5858222	Well	Edwards Saline	Irr	Adkins well #4	30.101388	-97.810555	520	1										x
109	5858223	Well	Edwards Saline	Irr	Adkins Well #1	30.108888	-97.805833	600	1										x
110	5858403	Well	Edwards	Public Supply	City of Buda #1	30.0816667	-97.8427778	390	4	x		x	x	x					
111	5858423	Well	Edwards	Industrial	Comal Tackle	30.0683333	-97.8591667	245	5	x	x		x	x	x				
112	5858424	Well	Edwards	Domestic	Lee Ortivez	30.0788889	-97.8719444	350	2			x	x						
113	5858426	Well	Edwards	Public Supply	Bob Lowden	30.0800000	-97.8672222	280	1						x				
114	5858427	Well	Edwards	Domestic	David Dement	30.0772222	-97.8613889	uknown	2						x	x			
115	5858505	Well	Edwards Saline	Irrigation	George Bowen	30.0680556	-97.8194444	600	3						x	x	x		
116	5858508	Well	Edwards	Public Supply	Goforth W.S.C. Well #4	30.0791667	-97.8311111	740	5	x	x	x	x				x		
117	5858509	Well	Edwards	Industrial	Chatleff Controls	30.0761111	-97.8300000	500	1						x				
118	5858510	Well	Edwards	Public Supply	Crestview RV Center	30.0791667	-97.8275000	605	1						x				
119	5858701	Well	Edwards Saline	Irrigation	Dacy	30.0361111	-97.8402778	492	1									x	
120	5858704	Well	Edwards	Domestic	Cullen	30.0275	-97.8538888	532	1	x									
121	5858711	Well	Edwards Saline	Commercial	Titan Custom Homes	30.0166667	-97.8594444	unknown	2						x	x			
122	5858712	Well	Edwards	Domestic	April Lowe	30.0291667	-97.8700000	uknown	2						x	x			
123	58499QL	Quarry	Edwards	Monitor	Borheim Quarry Lake	30.12697222	-97.90738889	n/a	1									x	
124	58501W2	Well	Edwards	Monitor	Brush Country Monitor Well	30.22639806	-97.84146975	187	1									x	
125	58573DB	Well	Edwards-Trinity	Domestic	Dave Boone	30.11445	-97.91221	400	1				x						

Table 1. List of sample sites

Map ID	SWN	Well or Spring	Aquifer	Primary Use	Name/Owner	latitude DD	longitude DD	Well Depth (ft)	# samples	98	99	00	01	02	03	04	06	07	08
126	5857513_z1	Well	Zone 1 Hammett Shale	Monitor	Barton Springs EACD Westbay Well	30.066666	-97.933333	1120	1										x
126	5857513_z2	Well	Zone 2 Cow Creek	Monitor	Barton Springs EACD Westbay Well	30.066666	-97.933333	1120	1										x
126	5857513_z3	Well	Zone 3 Cow Creek	Monitor	Barton Springs EACD Westbay Well	30.066666	-97.933333	1120	1										x
126	5857513_z4	Well	Zone 4 Hensel	Monitor	Barton Springs EACD Westbay Well	30.066666	-97.933333	1120	1										x
126	5857513_z5	Well	Zone 5 Lower Glenn Rose D	Monitor	Barton Springs EACD Westbay Well	30.066666	-97.933333	1120	1										x
126	5857513_z6	Well	Zone 6 Lower Glenn Rose C	Monitor	Barton Springs EACD Westbay Well	30.066666	-97.933333	1120	1										x
126	5857513_z7	Well	Zone 7 Lower Glenn Rose B	Monitor	Barton Springs EACD Westbay Well	30.066666	-97.933333	1120	1										x
126	5857513_z8	Well	Zone 8 Lower Glenn Rose A	Monitor	Barton Springs EACD Westbay Well	30.066666	-97.933333	1120	1										x
126	5857513_z9	Well	Zone 9 Upper Glenn Rose C	Monitor	Barton Springs EACD Westbay Well	30.066666	-97.933333	1120	1										x
126	5857513_z10	Well	Zone 10 Upper Glenn Rose B	Monitor	Barton Springs EACD Westbay Well	30.066666	-97.933333	1120	1										x
126	5857513_z11	Well	Zone 11 Upper Glenn Rose A	Monitor	Barton Springs EACD Westbay Well	30.066666	-97.933333	1120	1										x
126	5857513_z12	Well	Zone 12 Edwards Basal Nodular	Monitor	Barton Springs EACD Westbay Well	30.066666	-97.933333	1120	1										x
126	5857513_z13	Well	Zone 13 Edwards BFZ	Monitor	Barton Springs EACD Westbay Well	30.066666	-97.933333	1120	1										x

Table 2. Statistical summary of data

Parameters	LCRA Measured TDS	Silica (Si, mg/L)	Calcium (Ca, mg/L)	Magnesium (Mg, mg/L)	Sodium (Na, mg/L)	Potassium (K, mg/L)	Bicarbonate (HCO3, mg/L)	Sulfate (SO4, mg/L)	Chloride (Cl, mg/L)
PQL	**5**	**0.80**	**0.20**	**0.20**	**0.70**	**0.20**		**1**	**1.00**
All Data									
min	235	0.50	28.00	6	1.12	0.50	164	1	4
max	3550	26.00	670.00	296	1810.00	37.80	522	2480	2690
avg	1132	13.15	95.18	38	35.01	3.40	313	148	45
median	795	12.30	78.90	26	9.86	1.33	311	36	16
25th	426	11.40	66.48	23	7.02	1.11	282	21	11
75th	1413	13.53	91.75	35	17.70	2.64	332	89	28
n (count)	18	268	284	284	284	284	265	284	284
Edwards Springs									
min	315	9.00	66.50	16.40	6.95	0.50	249	16	12.00
max	486	25.00	121.00	35.10	65.40	2.45	432	84	109.00
avg	376	13.29	91.83	23.22	19.84	1.33	326	36	36.53
median	369	12.10	88.20	23.20	15.10	1.28	320	31	27.70
25th	357	11.10	85.65	21.35	12.65	1.13	311	28	22.80
75th	396	13.10	100.50	24.25	23.40	1.52	328	41	43.60
n (count)	18	37	39	39	39	39	37	39	39
Edwards Wells									
min	177	8.49	28.00	14.90	4.16	0.60	229	1	6.00
max	692	21.00	142.00	52.00	130.00	10.60	442	331	85.40
avg	358	12.33	74.35	27.07	13.33	1.77	309	48	17.94
median	331	12.10	71.40	25.80	8.04	1.24	301	27	13.30
25th	304	11.30	62.88	23.38	6.90	1.10	278	19	11.00
75th	379	13.00	82.13	29.83	11.93	1.53	328	61	19.73
n (count)	55	172	184	184	184	184	169	184	184
Edwards-Trinity									
min	235	9.40	53.40	18.40	2.70	0.50	271	6	4.00
max	506	22.00	104.00	51.50	29.40	5.33	389	142	46.20
avg	337	14.61	72.92	35.14	8.72	2.40	327	66	13.49
median	306	13.60	69.10	36.65	6.48	2.21	337	59	9.55
25th	264	13.30	62.60	28.73	5.34	0.90	292	10	8.38
75th	372	15.50	80.33	39.78	6.94	3.50	357	113	10.65
n (count)	5	15	16	16	16	16	15	16	16
Edwards Saline									
min	1070	0.50	29.70	6.10	30.20	3.00	164	1	31.00
max	6330	16.90	501.00	158.00	1810.00	37.80	522	1560	2690.00
avg	2030	11.98	144.74	59.96	346.39	14.80	299	506	446.55
median	1490	13.10	115.50	56.30	295.50	14.15	275	474	375.50
25th	1398	12.30	88.38	43.38	190.25	10.93	263	352	191.25
75th	1563	14.55	126.50	73.73	345.25	15.45	296	567	423.50
n (count)	8	15	16	16	16	16	15	16	16
Trinity									
min	389	9.00	72.20	31.90	1.12	1.93	254	82	8.69
max	3550	26.00	670.00	296.00	148.00	23.40	393	2480	53.00
avg	1298	17.71	216.79	115.43	35.72	10.80	325	783	25.40
median	926	19.00	134.00	91.10	29.90	11.30	321	467	26.00
25th	657	12.60	103.00	66.00	13.20	5.00	312	288	13.90
75th	1825	22.00	243.00	161.00	36.80	14.50	334	1080	33.00
n (count)	15	29	29	29	29	29	29	29	29
EPA MCL Standard	NR	NR	NR	NR	NR	NR	NR	NR	NR
2nd EPA Standards (NSDWR)	500mg/L	NR	NR	NR	NR	NR	NR	250 mg/L	250 mg/L
TCEQ Surface Water Standards	NR	NR	NR	NR	NR	NR	NR	NR	NR

EPA MCL- Maximum Contaminant Level standard

2nd EPA Standards (NSDWR)- non-enforceable guideline regulating contaminants that might cause cosmetic or aesthetic effects in drinking water

AL=Action Level

NR - Not regulated

Table 2. Statistical summary of data

Parameters	Fluoride (Fl, mg/L)	Nitrate (NO3, mg/L)	pH (su)	Calculated TDS (mg/L)	total alkalinity (CaCO3, mg/L)	total hardness	Specific Conductance (mS/cm)	Alkalinity, Field, Dissolved as CaCO3	Aluminum, Dissolved (µg/L as Al)
PQL	**0.01**	**0.02**			**2**				**4.00**
All Data									
min	0.04	0.06	6	239.00	134	100	336.00	155	1
max	4.70	43.92	8	6762.00	428	2901	3584.00	368	980
avg	0.89	4.67	7	556.59	256	410	784.32	259	13
median	0.35	4.34	7	363.50	255	314	598.50	255	4
25th	0.17	0.89	7	324.25	231	288	519.25	234	4
75th	1.06	6.24	7	463.25	272	373	723.25	277	4
n (count)	284	265	266	266	284	265	266	213	254
Edwards Springs									
min	0.05	2.66	6.49	303	204	254	416	205	1.00
max	0.50	10.63	7.73	570	354	417	955	368	10.40
avg	0.22	6.61	6.93	391	267	326	630	271	3.93
median	0.18	6.24	6.94	384	262	314	627	264	4.00
25th	0.15	5.67	6.68	352	255	305	562	256	4.00
75th	0.27	7.56	7.09	417	272	347	695	273	4.00
n (count)	39	37	37	37	39	37	37	30	35
Edwards Wells									
min	0.04	0.06	5.98	239	151	213	336	182	1.00
max	3.91	23.07	7.75	839	362	563	1080	350	980.00
avg	0.72	4.95	7.08	362	253	307	576	254	9.53
median	0.30	4.43	7.14	341	247	298	562	250	4.00
25th	0.17	2.36	6.91	312	228	278	495	232	4.00
75th	0.85	6.38	7.30	383	268	324	620	274	4.00
n (count)	184	169		170	184	169	170	145	177
Edwards-Trinity									
min	0.11	0.09	6.69	280	209	267	500	155	1.00
max	0.91	23.38	7.40	511	319	447	840	330	4.00
avg	0.44	4.35	7.06	400	265	349	646	274	3.47
median	0.41	0.44	7.04	398	276	345	640	289	4.00
25th	0.20	0.20	6.92	346	231	336	568	245	4.00
75th	0.59	5.31	7.25	459	293	353	703	306	4.00
n (count)	16	15	15	15	16	15	15	14	15
Edwards Saline									
min	0.27	0.09	6.54	426	134	100	740	218	1.00
max	4.70	43.92	7.48	6762	428	1444	2810	346	947.00
avg	2.94	4.14	7.02	1732	244	635	2060	255	91.29
median	3.41	0.43	7.08	1525	226	578	2430	235	4.00
25th	2.41	0.19	6.85	1295	216	445	1453	227	4.00
75th	3.73	1.44	7.24	1705	237	669	2585	263	4.06
n (count)	16	15		15	16	15	15	10	14
Trinity									
min	0.30	0.09	6.43	412.00	210	327	576.00	202	1.00
max	3.70	9.74	7.83	3693.00	323	2901	3584.00	330	17.00
avg	1.95	1.01	6.95	1379.24	266	1030	1617.66	277	4.08
median	1.73	0.44	6.99	981.00	263	733	1315.00	271	4.00
25th	0.93	0.15	6.83	681.00	256	564	1026.00	262	2.00
75th	2.80	1.19	7.08	1780.00	274	1394	2060.00	299	4.00
n (count)	29	29	29	29	29	29	29	14	13
EPA MCL Standard	4 mg/L	44.27			NR				NR
2nd EPA Standards (NSDWR)	2 mg/L		6.5-8.5		NR	1000		20	50-200 ug/L
TCEQ Surface Water Standards	0.5mg/L				NR				30ug/L

EPA MCL- Maximum Contaminant Level sta

2nd EPA Standards (NSDWR)- non-enforcea

AL=Action Level

NR - Not regulated

Table 2. Statistical summary of data

Parameters	Antimony, Dissolved (µg/L as Sb)	Arsenic, Dissolved (µg/L as As)	Barium, Dissolved (µg/L as Ba)	Beryllium, Dissolved (µg/L as Be)	Boron, Dissolved (µg/L as B)	Bromide, Dissolved (mg/L as Br)	Cadmium, Dissolved (µg/L as Cd)	Chromium, Dissolved (µg/L as Cr)	Cobalt, Dissolved (µg/L as Co)
PQL	**1.00**	**2.00**	**1.00**	**1.00**	**50**	**0.02**	**1.00**	**1.00**	**1.00**
All Data									
min	0.20	0.27	4.63	0.02	0	0.02	0.43	0.40	0.07
max	6.00	20.00	322.00	10.00	3980	6.00	4.00	60.00	15.80
avg	1.01	2.04	61.57	1.03	196	0.31	1.01	4.90	1.08
median	1.00	2.00	49.55	1.00	78	0.10	1.00	2.09	1.00
25th	1.00	2.00	33.23	1.00	51	0.06	1.00	1.00	1.00
75th	1.00	2.00	78.80	1.00	126	0.30	1.00	4.98	1.00
n (count)	254	254	254	254	254	254	254	254	254
Edwards Springs									
min	0.36	1.00	37.90	1.00	0	0.05	0.43	1.00	1.00
max	1.00	2.00	119.00	1.00	157	0.72	2.05	54.10	1.00
avg	0.98	1.80	73.11	1.00	79	0.25	1.01	8.71	1.00
median	1.00	2.00	62.90	1.00	72	0.16	1.00	4.00	1.00
25th	1.00	2.00	56.25	1.00	51	0.12	1.00	1.10	1.00
75th	1.00	2.00	93.90	1.00	100	0.39	1.00	6.01	1.00
n (count)	35	35	35	35	35	35	35	35	35
Edwards Wells									
min	0.20	0.37	16.60	0.02	12	0.02	1.00	0.40	0.07
max	1.02	20.00	322.00	10.00	1030	0.67	1.03	45.50	10.50
avg	0.99	1.95	66.11	1.04	110	0.15	1.00	4.18	1.03
median	1.00	2.00	50.70	1.00	65	0.08	1.00	1.86	1.00
25th	1.00	2.00	34.20	1.00	51	0.05	1.00	1.00	1.00
75th	1.00	2.00	83.00	1.00	100	0.15	1.00	4.77	1.00
n (count)	177	177	177	177	177	177	177	177	177
Edwards-Trinity									
min	1.00	0.27	26.00	1.00	50	0.02	1.00	1.00	1.00
max	1.00	2.00	204.00	1.00	196	0.50	1.00	16.20	1.00
avg	1.00	1.68	58.77	1.00	113	0.16	1.00	4.31	1.00
median	1.00	2.00	42.00	1.00	109	0.05	1.00	2.55	1.00
25th	1.00	1.50	38.90	1.00	96	0.03	1.00	1.00	1.00
75th	1.00	2.00	51.85	1.00	132	0.27	1.00	6.05	1.00
n (count)	15	15	15	15	15	15	15	15	15
Edwards Saline									
min	1.00	1.00	4.63	1.00	1	0.50	1.00	1.00	1.00
max	6.00	20.00	94.80	1.02	3980	6.00	4.00	60.00	15.80
avg	1.36	4.41	17.86	1.00	1282	2.71	1.22	7.73	2.06
median	1.00	2.36	8.00	1.00	1140	2.87	1.00	1.97	1.00
25th	1.00	2.01	6.53	1.00	882	1.62	1.00	1.00	1.00
75th	1.00	3.31	22.57	1.00	1438	3.47	1.00	3.06	1.00
n (count)	14	14	14	14	14	14	14	14	14
Trinity									
min	1.00	1.00	7.00	1.00	100	0.02	1.00	1.00	1.00
max	1.00	3.00	39.00	1.00	2120	0.50	1.00	12.50	1.00
avg	1.00	1.75	18.92	1.00	606	0.36	1.00	2.08	1.00
median	1.00	2.00	17.00	1.00	515	0.50	1.00	1.00	1.00
25th	1.00	1.00	12.00	1.00	295	0.20	1.00	1.00	1.00
75th	1.00	2.00	25.00	1.00	692	0.50	1.00	1.14	1.00
n (count)	13	13	13	13	13	13	13	13	13
EPA MCL Standard	6ug/L	10ug/L	2000ug/L	4ug/L	NR	NR	5ug/L	100ug/L	NR
2nd EPA Standards (NSDWR)	NR	NR	NR		NR	NR	NR	NR	NR
TCEQ Surface Water Standards	NR	10ug/L	10ug/L		NR	NR	1ug/L	10ug/L	NR

EPA MCL- Maximum Contaminant Level sta

2nd EPA Standards (NSDWR)- non-enforcea

AL=Action Level

NR - Not regulated

Table 2. Statistical summary of data

Parameters	Copper, Dissolved (µg/L as Cu)	Iron, Dissolved (µg/L as Fe)	Lead, Dissolved (µg/L as Pb)	Lithium, Dissolved (µg/L as Lil)	Manganese, Dissolved (µg/L as Mn)	Molybdenum, Dissolved (µg/L as Mo)	Nickel, Dissolved (µg/L as N)	Nitrite plus Nitrate, dissolved (mg/L as N)	Selenium, Dissolved (µg/L as Se)
PQL	**2.00**	**50**	**1.00**	**2.00**	**1.00**	**1.00**	**1.00**	**0.02**	**4.00**
All Data									
min	0.43	3	0.82	1.00	0.48	0.26	0.32	0.01	0.67
max	1310.00	129000	145.00	1320.00	1350.00	63.00	229.00	208.00	51.80
avg	11.20	622	3.05	32.39	9.85	3.01	6.43	1.94	4.54
median	2.00	50	1.00	5.88	1.00	1.00	2.73	1.01	4.00
25th	1.44	30	1.00	3.52	1.00	1.00	1.80	0.28	4.00
75th	3.00	51	1.00	14.48	1.02	1.96	7.20	1.46	4.00
n (count)	254	254	254	254	254	254	209	254	254
Edwards Springs									
min	1.00	8	1.00	2.00	1.00	0.65	1.01	0.60	0.85
max	1310.00	690	145.00	38.40	6.00	10.00	229.00	2.45	4.00
avg	50.50	63	10.23	9.79	1.29	2.02	15.76	1.52	3.24
median	2.00	50	1.00	6.67	1.00	1.00	3.78	1.42	4.00
25th	1.00	30	1.00	3.60	1.00	1.00	2.23	1.28	2.70
75th	2.00	50	1.00	14.95	1.00	1.00	12.13	1.75	4.00
n (count)	35	35	35	35	35	35	28	35	35
Edwards Wells									
min	0.43	3	0.82	1.00	0.48	0.26	0.32	0.01	0.67
max	351.00	7660	107.00	150.00	429.00	63.00	45.40	208.00	40.00
avg	4.77	101	1.81	11.77	3.89	3.26	4.57	2.30	3.77
median	2.00	50	1.00	4.71	1.00	1.00	2.38	1.00	4.00
25th	1.51	30	1.00	3.24	1.00	1.00	1.76	0.53	4.00
75th	3.00	50	1.00	8.51	1.00	2.00	6.20	1.44	4.00
n (count)	177	177	177	177	177	177	153	177	177
Edwards-Trinity									
min	1.00	10	1.00	1.30	1.00	0.37	1.00	0.02	1.00
max	13.30	99	2.10	30.00	11.20	20.70	12.60	5.28	5.00
avg	4.74	44	1.10	11.55	2.02	4.63	4.78	0.98	3.73
median	3.00	30	1.00	13.00	1.00	1.00	2.54	0.10	4.00
25th	2.23	27	1.00	5.18	1.00	1.00	1.73	0.04	4.00
75th	5.55	50	1.00	15.55	1.31	4.50	7.65	1.20	4.00
n (count)	15	15	15	15	15	15	12	15	15
Edwards Saline									
min	1.00	27	1.00	107.00	1.00	1.00	1.49	0.02	4.00
max	83.60	129000	46.20	1320.00	1350.00	3.76	55.20	9.92	51.80
avg	9.14	9507	4.52	329.57	117.98	1.52	9.40	1.04	20.56
median	2.10	51	1.00	256.00	2.01	1.00	3.18	0.10	13.20
25th	1.43	43	1.00	236.50	1.00	1.00	2.46	0.05	6.06
75th	3.70	60	1.02	294.25	20.63	1.73	8.27	0.70	36.70
n (count)	14	14	14	14	14	14	11	14	14
Trinity									
min	1.00	30	1.00	9.00	1.00	1.00	3.17	0.02	1.00
max	6.00	3010	4.00	223.00	50.00	9.00	20.00	2.20	4.00
avg	2.58	315	1.23	78.04	6.69	1.92	8.37	0.29	2.15
median	2.00	50	1.00	65.00	2.00	1.00	7.59	0.10	1.00
25th	1.00	33	1.00	34.00	1.00	1.00	3.46	0.10	1.00
75th	4.00	124	1.00	95.00	4.81	1.59	7.64	0.10	4.00
n (count)	13	13	13	13	13	13	5	13	13
EPA MCL Standard	AL=1300ug/L	NR	AL=15ug/L	NR	NR	NR	NR	10mg/L	500ug/L
2nd EPA Standards (NSDWR)	1,000ug/L	0.3 mg/l	NR	NR	50ug/L	NR	NR	NR	NR
TCEQ Surface Water Standards	100ug/l	NR	5ug/L	NR	NR	NR	NR	1mg/L	10ug/L

EPA MCL- Maximum Contaminant Level sta

2nd EPA Standards (NSDWR)- non-enforcea

AL=Action Level

NR - Not regulated

Table 2. Statistical summary of data

Parameters	Strontium, Dissolved (µg/L as Sr)	Temperature, Water (Celcius)	Thallium, Dissolved (µg/L as Tl)	Vanadium, Dissolved (µg/L as V)	Zinc, Dissolved (µg/L as Zn)
PQL	**100**	**1.00**	**1.00**	**1.00**	**4.00**
All Data					
min	42	19.90	0.06	0.84	1.00
max	74100	28.50	5.00	48.40	2820.00
avg	8901	23.03	1.00	2.80	81.96
median	1495	22.80	1.00	2.06	6.85
25th	359	21.70	1.00	1.25	4.00
75th	16450	24.10	1.00	3.00	23.08
n (count)	254	234	254	254	254
Edwards Springs					
min	150	20.10	1.00	1.15	2.00
max	2770	24.10	1.00	9.60	2350.00
avg	758	21.26	1.00	3.35	134.21
median	527	21.30	1.00	2.81	4.00
25th	271	20.90	1.00	2.00	4.00
75th	979	21.50	1.00	3.39	15.25
n (count)	35	33	35	35	35
Edwards Wells					
min	42	19.90	0.06	0.84	2.00
max	74100	28.50	1.02	14.00	1960.00
avg	9117	23.07	0.98	2.68	50.83
median	1600	22.80	1.00	2.11	7.00
25th	340	21.90	1.00	1.54	4.00
75th	12700	24.00	1.00	3.00	24.80
n (count)	177	160	177	177	177
Edwards-Trinity					
min	121	22.40	1.00	1.00	1.80
max	43600	24.60	1.00	5.30	855.00
avg	15369	23.47	1.00	2.48	67.81
median	13100	23.40	1.00	2.40	5.90
25th	1115	23.13	1.00	1.00	4.00
75th	27650	23.85	1.00	3.16	10.44
n (count)	15	14	15	15	15
Edwards Saline					
min	443	22.60	1.00	1.00	1.00
max	23000	25.70	5.00	48.40	2820.00
avg	14433	24.29	1.36	4.72	239.63
median	17100	24.20	1.00	1.00	6.90
25th	6633	23.80	1.00	1.00	4.02
75th	20700	25.20	1.02	1.02	45.13
n (count)	14	13	14	14	14
Trinity					
min	2200	21.84	1.00	1.00	5.98
max	20000	28.13	1.00	3.10	1800.00
avg	14474	25.21	1.00	1.24	211.68
median	17300	25.29	1.00	1.00	8.72
25th	12400	23.65	1.00	1.00	6.71
75th	17700	27.00	1.00	1.00	34.00
n (count)	13	14	13	13	13
EPA MCL Standard	NR	NR	2ug/L	NR	NR
2nd EPA Standards (NSDWR)	NR	NR	NR	NR	5000ug/L
TCEQ Surface Water Standards	NR	NR	NR	NR	5ug/L

EPA MCL- Maximum Contaminant Level sta

2nd EPA Standards (NSDWR)- non-enforcea

AL=Action Level

NR - Not regulated

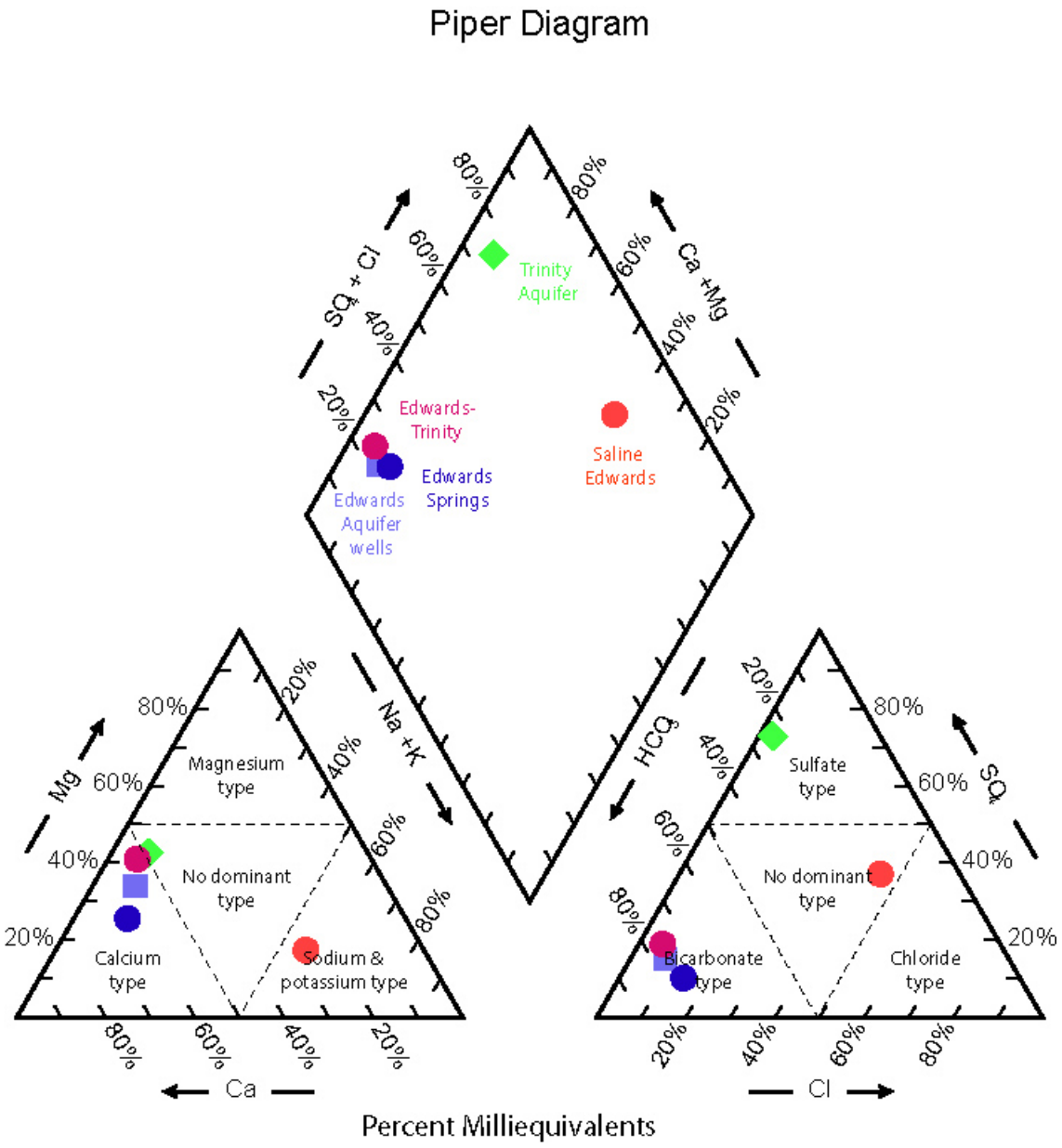


Figure 2. Piper diagram of average values of major ions from the various groundwater sources in the District. Average values derived from Table 2.

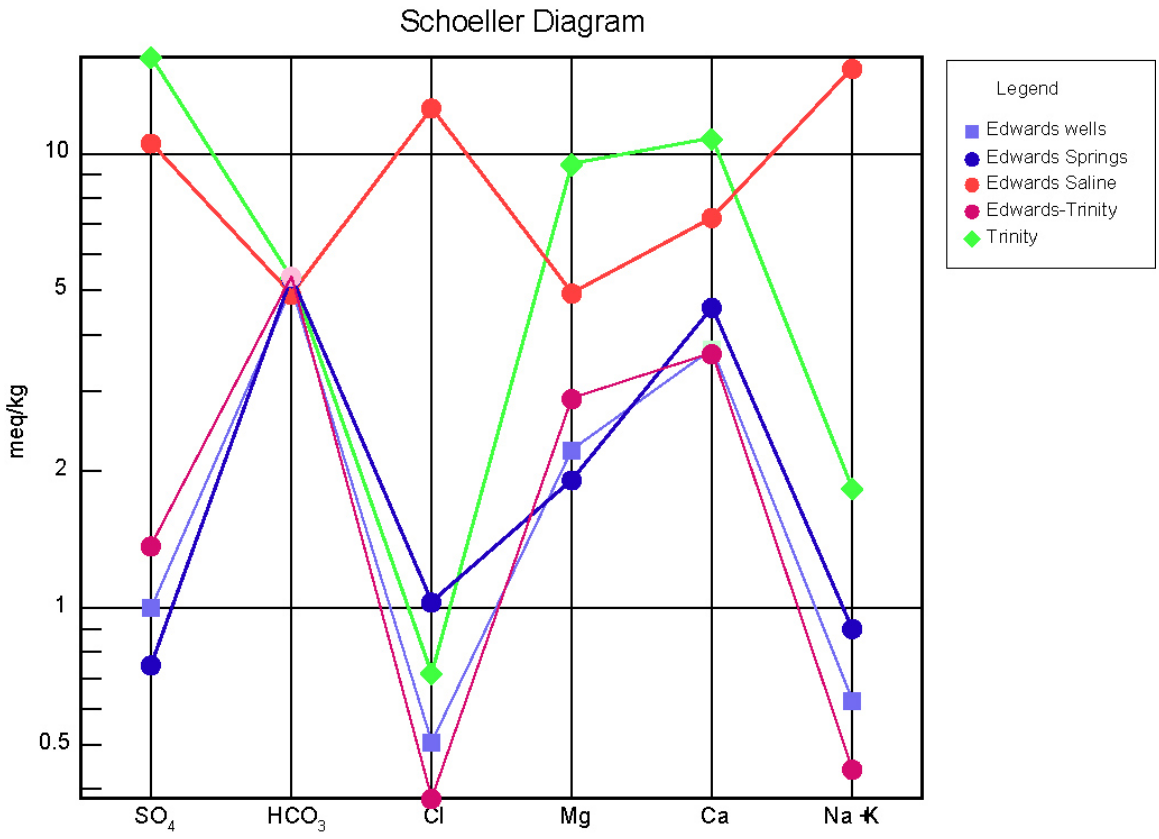


Figure 3. Schoeller diagram of average values of major ions from the various groundwater sources in the District. Average values derived from Table 2.

Table 3. Summary of samples exceeding EPA's maximum contaminant level (MCL) and EPA's secondary water quality standards (NSDWR).

Parameters	EPA MCL	No. Samples	Well ID	Comments	2nd EPA	No. Samples	Comments
Aluminum, Dissolved (µg/L as Al)	NR				50-200 ug/L	3	Wells proximal or within saline zone
TDS (mg/L)	NR				500	36	Wells within or proximal to saline zone or within Trinity aquifer; some localized Edwards Aquifer wells and one spring (Old Mill)
Chloride (Cl, mg/L)	NR				250 mg/L	10	Wells proximal or within saline zone
Copper, Dissolved (µg/L as Cu)	AL=1300ug/L	1	5842921	Anomolous data from Eliza Spring. No subsequent high level.	1,000ug/L	1	Anomolous data from Eliza Spring. No subsequent high level.
Fluoride (Fl, mg/L)	4 mg/L	2	5850840; 5858505	Saline Zone wells	2 mg/L	47	Generally wells proximal to saline zone, plus some Trinity and Edwards aquifer wells
Iron, Dissolved (µg/L as Fe)	NR				0.3 mg/l	0*	Lab quantitation limit is equal to the standard
Manganese, Dissolved (µg/L as Mn)	NR				50ug/L	5	Wells proximal to saline zone or within Trinity aquifer
Sulfate (SO4, mg/L)	NR				250 mg/L	26	Wells within or proximal to saline zone or within Trinity aquifer
total hardness	NR				1000	7	Primarily Trinity wells, with some saline zone wells

EPA MCL= Maximum Contaminant Level
2nd EPA (NSDWR)- non-enforceable guideline regulating contaminants that might cause cosmetic or aesthetic effects in drinking water
AL=Action Level
NR - Not regulated

Appendix A: Summary of TWDB Water Quality Sampling Procedures

The following groundwater sampling procedures generally follows the guidelines of the TWDB manual: UM-51: A Field Manual for Ground Water Sampling (Nordstrom and Ozment, 1996) and communications (April 2003) with Gary Franklin, Program Administrator of the Ground Water Section of the TWDB. Certain aspects, such as the decontamination procedures, follow basic guidelines discussed in the USGS Open-File Report 00-213: Interagency Field Manual for the Collection of Water-Quality Data (compiled by Lurry and Kolbe, 2000).

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1. PRE-SAMPLING PREPARATION

a. Calibrate Multiparameter probe– Eureka/Horiba (pH, Conductivity), record on BSEACD lab calibration and TWDB field sheet.

b. Gather equipment (see checklist below)

Equipment Checklist

Alkalinity test (in-house)

___ titration stand
___ Hach pH meter (with standards)
___ volumetric pipette, with disposable tips
___ burette,
___ 250 ml beaker
___ stir box and magnetic stir bar
___ 0.02N Sulfuric Acid

Decontamination

___ Hydrochloric acid, ACS (reagent-grade) trace-element grade (5% by volume)
___ Alcanox (or Liquinox)
___ Wash bottles (500 ml Nalgene)
___ Deionized water
___ Decon wash basins

Filtration equipment

___ package of cellulose membrane filters @ 0.45 µm pore size
___ Passive filter
___ Teflon tubing (connects spigot to filter)
___ Filter equipment
___ Manual air pump

General Tools/Supplies

___ Batteries - 9 volt & AA
___ Notebook (fieldbook)
___ Tool box (wrenches etc.)
___ Paper towels
___ Pens and markers
___ Digital Camera
___ GPS and battery pack, for non-located sites
___ Scissors

Purging/Specific Capacity

___ Bucket(s)- 2
___ Calculator
___ E-line
___ Multiprobe meter (pH, Temp, Cond.)
___ pH, turbidity, and conductivity standards

Samples

___ Sample hoses with "spliter"
___ Gloves- Powderless, noncolored vinyl,
___ Preservatives
___ Sample containers/bottles
___ Sample coolers
___ Ice
a. ___ Nitrate
b. ___ Cations
c. ___ Anions
d. ___Alkalinity

Forms

___ Well folders with field maps
___ TWDB Fieldsheet
___ COC forms
___ TWDB well schedule

c. **Prepare sample bottles-** Depending on the lab, bottle preparation varies. Labs may provide vials of acid within each sample bottle. Other labs requires more preparation for preserving samples as follows:

Lab bottles

1. *500ml, Cations, HNO_3 ~2.0 ml fixed*
2. *500ml, Anions, no acid, ice only*
3. *250ml, Nitrates, H_2SO_4 ~1.0 ml fixed*

Other lab bottles (Optional)

4. *500 ml TDS sample, ice only*

BS/EACD bottles

5. *250 ml unpreserved "field" Alkalinity (to be analyzed back at BS/EACD in-house lab)*

d. **Pre-sampling Equipment Decontamination** (from USGS Open-File Report 00-213): Thoroughly clean and rinse equipment (including filtering apparatus, cellulose filters, and Teflon sample tube). Use gloves between each step.

- Soak equipment (filter and tubing) in detergent (liquinox) for 30 minutes, scrub with a nonmetallic, noncolored brush.
- Rinse thoroughly with DI water
- Soak for 30 minutes in 5% HCL (reagent-grade) solution
- Rinse 3x in DI water
- Air Dry

---

2. FIELD PROCEDURES

Measure water level (*record w/time*) before turning pump on, and before any sampling is conducted. If available, read water meter (*record w/time*).

Inspect well site using fieldsheet

i. TOC stick up
ii. Well casing diameter
iii. Sample spigot (before treatment?)
iv. Well use, meter # etc.

Purging *(May not be necessary for public water supply wells that pump regularly and are in effect already purged).*

Multiparameter Water Quality Probe

i. Re-calibrate pH, Cond., Turbidity (OPTIONAL)
ii. Record temp, pH, Cond, Turbidity (*record w/time*) until stabilized reading and/or pump over 3-5 well volumes. Record values over time and final stable values.
iii. Post-calibrate with standards.

Table of stabilizing criteria following 5 minutes measurements

Parameter	Range	Accuracy Limits
Conductivity	0-1999 S/cm	±0.5% of measured reading
pH	0-14 standard units (su)	±0.03 su
Temperature	-5° to 105 °C	±0.1°C

Use the following formula for determining the quantity of water (in gallons) in one well casing:

$0.0408 (D^2) (PS-WL)$= gallons per casing volume

D= inside diameter of the well casing in inches;

PS= pump setting, bottom of completion interval, or depth of well in feet;

WL= static water level in feet.

iv. **Specific Capacity (OPTIONAL)**: Measure WL every ten minutes (or less) until sampling is complete (*record w/time*). If a water meter is not available, then measure well output with a 5.0 gallon bucket in gpm (*record w/time*). Record total purging time.

Set up filter system for sampling

ii. **Attach sample hose to spigot at well head** (be sure spigot is located before treatment)

iii. **Rinse appropriate equipment with sample water**

iv. **Allow sample to purge through filter system**

- Minimum of about 500 ml

v. **Label bottles** with site number, collection date and time, personnel, and be sure that type of parameter type of preservative, type of analyses, and type of preservation used (if any) is correctly labeled.

vi. **Collect <u>FILTERED</u> TWDB samples** in 4 marked containers, two being acid-fixed. Fill sample containers to the brim, careful not to overfill, but also not to entrap gases.

TWDB bottles

1. 500ml, Cations, HNO_3 ~2ml fixed
2. 500ml, Anions, no acid
3. 250ml, Nitrates, H_2SO_4 ~1ml fixed

*Verify the pH is less than 2.0 for fixed samples using pH strips

BS/EACD bottles

4. Bacteria bottles (optional)

5. *250 ml unpreserved "field" Alkalinity (to be analyzed back at BS/EACD in-house lab*

vii. **ICE ALL SAMPLES** (Place samples back into zip lock)

- Be sure samples are iced to 4°C

viii. ***Bacteria samples (Optional)***
Disinfect water sampling spigot with chlorine (Clorox). Allow Clorox sit on faucet for 1 minute, then let water run for 1 minute to remove Clorox from spigot, and take BS/EACD unfiltered samples in marked sterile sample containers and place in the cooler that contains ice. Prior to sampling, mark sample containers as follows: well number, date, time of day, BS/EACD, initials of samplers.

ix. **Make final WL measurement (if possible)**. Record water level and final rate (*record with date & time*).

x. **Post sampling Equipment Decontamination** (perform before next sample location): Thoroughly clean and rinse equipment (including filtering apparatus, cellulose filters, and Teflon sample tube). Use gloves.

- Soak and spray equipment (filter and tubing) in detergent (liquinox), scrub with a nonmetallic, noncolored brush;
- Rinse thoroughly with DI water;
- Soak and sparay with 5% HCL solution;
- Rinse 3x in DI water;
- Air Dry

---

3. POST-SAMPLING PROCEDURES

- ***Store and re-ice samples*** *in coolers;* ***Check the pH*** *of the preserved samples with pH strips. Pour sample from bottle over pH strip; < 2 su for all preserved samples (add more acid if not <2 su)*

Add ***Pathoscreen*** *pillows to samples and put into incubator, record date and time on lab sheet.*

Process Bacteria samples*: filter samples, add food, incubate and record date and time.*

Complete COC forms for samples

Perform Total Alkalinity test as $CaCO_3$ (Bicarbonate): *Note that the Colorimetric methods (eg using bromcresol green, methyl red reagent) are back-up methods only and the preferred method is titration of sample directly with acid and a pH meter.*

- Set burette in clamp on ring stand, place stir box at base of stand;
- "Zero" burette with 0.0200 N (molar) sulfuric acid (H_2SO_4), be sure to get all air bubbles out;

- Clean the equipment with DI water and rinse with sample water before titiration;
- Using graduated cylinder and a 1 ml pipette, place 50 ml of sample water in 250 ml pyrex beaker;
- Put magnetic stir bar in the beaker and place on stir box; make magnetic stir bar spin at a medium pace then commence stirring;
- Place pH probe into sample with magnetic stir bar, be careful not to interfere with spin rate of the magnetic stir bar;
- Record initial pH;
- Commence dropping H_2SO_4 acid from burette into sample beaker in 2.0 - 0.5 ml portions until reaching the **4.5** su endpoint;
- Record final pH and amount (in ml) of acid added to sample.

Total Alkalinity= ml acid added x 20

TWDB Water Quality Field Data Sheet

New Well: yes / no **Send Results To:** Owner / Lessee / DO NOT SEND **Type of Sample:** LCRA / HACH

State Well Number: _____ Owner's Name: _____ Sample Number: _____

County: _____ Lessee's Name: _____ Date: _____

County Code: _____ Attention: _____ Sampler(s): _____

Aquifer Code: _____ Mailing Address: _____

Aquifer Id: _____ _____

Well Number: _____

Add enough of the proper acid to each bottle that is preserved to drop the pH to 2.

1 (on ice)	2	3 (on ice)	4 (on ice)	5
500ml (filtered)	500ml (filtered)	250ml (filtered)	40 ml (not filtered)	1 gallon (filtered)
Anions / Total Alkalinity	Cations	Nitrate/Nitrite	Atrazine	Radioactivity
no preservative	1ml Nitric (HNO3)	0.5 ml Sulfuric (H2SO4)	**no preservative**	10 ml Nitric (HNO3)

Daily Meter Calibration:

pH	7	
	4 or 10	
Conductivity	500	
	1000	
	2000	
	5000	

Time In: _____ Time Out: _____

W. L. depth from LSD (ft.): _____ W.L. remark: _____

Pumping Since: _____ Sampling Point: _____

Well Use: _____ Latitude: _____ N

Lift: _____ Longitude: _____ W

Power: _____ Elevation: _____ ft.

Field Alkalinity Titration:

_____ Start pH _____ End pH

50 **ml. Sample Size**

_____ ml. Acid added for Total

_____ ml. Acid added for Phenol

Items below calculated from ml. acid added data:

Field Total Alkalinity: **0.0** **mg/L**

Field Phenol Alkalinity: **0.0** **mg/L**

Notes: _____

Sample Time: _____ Filter pressure: hand / line

W. Q. Stabilization Parameters Table ***Final Readings:***

Time:				
pH:				
Temperature:				
Conductivity:				
Conductivity Temperature:				

Items Below Calculated Later From Results:

Total Hardness: _____

Calculated TDS (mg/L):

Data Entered By Sampler Into Database: yes / no

Texas Water Development Board
Well Schedule

State Well Number _____ Previous Well Number _____ County _____

River Basin _____ Zone ___ Latitude _____ Longitude _____ Coordinates Accuracy ___

Owner's well No. _____ Location: _____ 1/4 , _____ 1/4 , Section _____ Block _____ Survey _____

Owner _____ Driller _____

Address _____ Tenant/Oper. _____

Date Drilled _____ Depth _____ Source of Depth ___ Altitude _____ Source of Alt. Data ___

Aquifer _____ Aquifer ID _____ _____ Well Type ___ User _____

Well Construction

Const Method _____ ___ Casing Material _____ ___

Completion Method _____ ___ Screen Material _____ ___

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S)
Open Hole (O)
Cemented from ___ to _____

	Diam. (in.)	Interval of C,S, or O. From	To
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			

Lift Data

Pump Mfr. _____ Type of Lift _____ ___ Pump Depth Setting (ft) _____ ft.

Motor Mfg _____ Power _____ ___ H.P. _____

Yield

Flow Rate _____ Pump Rate _____ GPM Circle how rate was determined: Meas Rept Est Date of Test _____

Performance Test

Length of test _____ hr Production Rate _____ GPM Circle how rate was determined: Meas Rept Est Date of Test _____

Static Level _____ ft. Pumping Level _____ ft. Amount of Drawdown _____ ft. Specific Capacity _____ GPM / ft.

Water Use

Primary _____ ___ Secondary _____ ___ Tertiary _____ ___

Water Quality

(Remarks: _____

Other Data Available

Water Level ___ Water Quality ___ Logs _____ Other Data _____

Water Levels

Date _____ Meas. _____ Remarks ___ M.P. + - ___

Date _____ Meas. _____ Remarks ___

Date _____ Meas. _____ Remarks ___

Recorded by _____ Date Record Collected or Information Updated _____ Reporting Agency ___

Remarks

1
2
3
4
5
6

Aquifer

- -

Well Number

Excel format by Gary Franklin 06/2001

V:/SurfaceWaterResources/Groundwater/WaterQuality/WellSchedule

Appendix B. Tabulation of water chemistry and site data

State Well Number	County	latitude DD	longitude DD	Well or Spring	Name/Owner	Well Depth (ft)	Distance from Kgru	Edwards Confined or Unconfined
5842811	Travis	30.2600000	-97.8233333	Spring	Back Door Springs	n/a	n/a	n/a
5842914	Travis	30.2636111	-97.7711111	Spring	Barton Springs	n/a	n/a	n/a
5842916	Travis	30.2800000	-97.7800000	Spring	Cold Springs	n/a	n/a	n/a
5842920	Travis	30.2633333	-97.7741667	Spring	Upper Barton Springs	n/a	n/a	n/a
5842921	Travis	30.2641667	-97.7711111	Spring	Eliza Springs	n/a	n/a	n/a
5842922	Travis	30.2630556	-97.7675000	Spring	Old Mill Springs	n/a	n/a	n/a
5842821	Travis	30.2630556	-97.8138889	Well	Georgian Leasing	460	54	unconfined
5842913	Travis	30.2666667	-97.7822222	Well	Park Hills Baptist	180	359	unconfined
5850123	Travis	30.2325000	-97.8633333	Well	New Forest Oaks	295	-54	unconfined
5850201	Travis	30.2191667	-97.7936111	Well	John Noell	290	302	confined
5850211	Travis	30.2447222	-97.8275000	Well	Travis Country Estates	282	74	unconfined
5850215	Travis	30.2277778	-97.8102778	Well	City of Sunset Valley Well #3	360	115	confined
5850222	Travis	30.2169444	-97.8197222	Well	Helen Besse	440	10	unconfined
5850224	Travis	30.2386111	-97.8308333	Well	Safeway Rental	272	118	unconfined
5850225	Travis	30.2388889	-97.8080556	Well	Ed Maxey	unknown	uknown	unconfined
5850406	Travis	30.1969444	-97.8433333	Well	Brian Gantt	360	114	confined
5850416	Travis	30.1763889	-97.8672222	Well	Linda Wetzel	unknown	unknown	unconfined
5850511	Travis	30.1711111	-97.8252778	Well	Rodney Johnson	285	299	confined
5850520	Travis	30.2075000	-97.8022222	Well	Herb Mendieta	315	355	confined
5850704	Travis	30.1411111	-97.8380556	Well	Marbridge Foundation	345	162	confined
5850730	Travis	30.1400000	-97.8383333	Well	McCoy Corporation	360	292	confined
5850731	Travis	30.1497222	-97.8605556	Well	Shady Hollow Estates WSC	438	75	confined
5850733	Travis	30.1366667	-97.8450000	Well	Suburban Austin Water, Bear Crk #2/Aquasource	312	270	confined
5850825	Travis	30.1400000	-97.8044444	Well	Jarrel Thomas	315	340	confined
5850847	Travis	30.1302778	-97.8222222	Well	Creedmoor-Maha WSC	450	145	confined
5850852	Travis	30.1616667	-97.8183333	Well	J. D. Malone	420	247	confined
5850855	Travis	30.1461111	-97.8194444	Well	Village of San Leanna #1	500	144	confined
5857307	Hays	30.1005556	-97.8822222	Well	Dahlstrom Middle School	470	6	unconfined
5857312	Hays	30.1075000	-97.9022222	Well	Rocket WSC	425	-29	unconfined
5857901	Hays	30.0325000	-97.8902778	Well	Hays Consolidated ISD	575	101	confined
5857914	Hays	30.00305556	-97.88138889	Well	County Line PWS	600	100	confined
5858102	Hays	30.1066667	-97.8544444	Well	Cimarron Park Water Co Inc.	400	215	confined
5858202	Travis	30.1244444	-97.8133333	Well	Mystic Oaks W.S.C. Well #1	405	268	confined
5858219	Hays	30.0919444	-97.8177778	Well	Pool & Rogers Materials	550	384	confined
5858403	Hays	30.0816667	-97.8427778	Well	City of Buda #1	390	268	confined
5858423	Hays	30.0683333	-97.8591667	Well	Comal Tackle	245	492	confined
5858508	Hays	30.0791667	-97.8311111	Well	Goforth W.S.C. Well #4	740	161	confined
5858704	Hays	30.0275	-97.8538888	Well	Cullen	532		confined
5850840	Travis	30.1297222	-97.7983333	Well	St. Albans Episcopal Church	498	257	confined
5849935	Hays	30.1450000	-97.8872222	Well	Bob Manning	460	-281	unconfined
5850122	Travis	30.2386111	-97.8383333	Well	AAW Oak Hill , Ltd.	420	-142	unconfined
5857506	Hays	30.0450000	-97.9616667	Well	Leroy Grote	450	-177	unconfined
5857608	Hays	30.0802778	-97.9166667	Well	Ruby Ranch Phase II Eco Resources PWS	403	-107	unconfined
5849613	Travis	30.1863889	-97.9116667	Well	Circle C Golf Club	1030	n/a	n/a
5842914	Travis	30.2636111	-97.7711111	Spring	Barton Springs	n/a	n/a	n/a
5842916	Travis	30.2800000	-97.7800000	Spring	Cold Springs	n/a	n/a	n/a

State Well Number	Yield or Specific Capacity	top sample interval	bottom sample interval	Casing	Year Drilled	Aquifer	TWDB Aquifer Code	Year Plugged	Primary Use	Mo	Day	Year
5842811					n/a	Edwards	218EDRDA		Recreation	9	3	1998
5842914					n/a	Edwards	218EBFZA		Recreation	8	24	1998
5842916					n/a	Edwards	218EBFZA		Unused	8	24	1998
5842920					n/a	Edwards	218EBFZA		Unused	8	24	1998
5842921					n/a	Edwards	218EDRDA		Unused	8	24	1998
5842922					n/a	Edwards	218EDRDA		Unused	8	24	1998
5842821	1.54	350	460	Steel	1981	Edwards	218EDRDA		Commercial	8	28	1998
5842913	20	165	180	Steel	1969	Edwards	218EDRDA		Public Supply	8	27	1998
5850123		147	295	Steel	1998	Edwards	218EBFZA		Irrigation	8	27	1998
5850201					1917	Edwards	218EDRDA		Domestic	8	31	1998
5850211		265	282	Steel	1973	Edwards	218EDRDA		Irrigation	8	28	1998
5850215		200	360	Steel	1976	Edwards	218EDRDA		Public Supply	8	28	1998
5850222	1.73	340	440	pvc	1980	Edwards	218EBFZA		Domestic	8	25	1998
5850224	5.5				unknown	Edwards	218EBFZA		Commercial	8	26	1998
5850225					1951	Edwards	218EBFZA		Domestic	8	25	1998
5850406		100	360	Steel	1946	Edwards	218EDRDA	2000	Domestic	9	4	1998
5850416					unknown	Edwards	218EBFZA		Domestic	8	31	1998
5850511		119	285	Steel	1956	Edwards	218EDRDA		Domestic	8	19	1998
5850520	1.1				unknown	Edwards	218EDRDA		Irrigation	8	18	1998
5850704	37.1	140	345	Steel	1968	Edwards	218EDRDA		PWS	7	15	1998
5850730	2.05			pvc	1985	Edwards	218EDRDA		Commercial	7	15	1998
5850731	21			Steel	1983	Edwards	218EDRDA		Public Supply	8	26	1998
5850733		150	250		1972	Edwards	218EDRDA		Public Supply	9	3	1998
5850825	0.25				1968	Edwards	218EDRDA		Domestic	9	4	1998
5850847	13	158	450	steel	1980	Edwards	218EDRDA		Public Supply	8	21	1998
5850852	0.5	260	420	steel	1974	Edwards	218EDRDA		Public Supply	8	20	1998
5850855	1.4	300	500	steel	1979	Edwards	218EDRDA		Public Supply	8	20	1998
5857307	15				1985	Edwards	218EDRDA		Public Supply	8	18	1998
5857312		170	425		1996	Edwards	218EBFZA		Public Supply	8	31	1998
5857901	30.5	235	575		1994	Edwards	218EBFZA		Public Supply	8	18	1998
5857914		315	600		1995	Edwards	218EBFZA		Public Supply	7	6	1998
5858102	20.3	300	400		1957	Edwards	218EDRDA		Public Supply	8	20	1998
5858202	0.23	310	405		1969	Edwards	218EDRDA		Public Supply	8	25	1998
5858219	0.26	479	550		1980	Edwards	218EDRDA		Industrial	8	20	1998
5858403		222	390		1954	Edwards	218EBFZA		Public Supply	8	19	1998
5858423	3.1	224	245		1997	Edwards	218EDRDA		Industrial	8	14	1998
5858508	14	460	740		1985	Edwards	218EDRDA		Public Supply	8	13	1998
5858704					1973	Edwards	218EDRDA		Domestic	7	6	1998
5850840		345	499	pvc	1985	Edwards Saline	218EDRDA		Public Supply	8	21	1998
5849935		360	460	pvc	1992	Edwards-Trinity	218EDGRU		Domestic	8	17	1998
5850122	0.34				unknown	Edwards-Trinity	218EDGRU	2007	Commercial	8	27	1998
5857506	1.3			pvc	1990	Edwards-Trinity	218EDGRU		Domestic	8	14	1998
5857608	0.22				1997	Edwards-Trinity	218EDGRU		Public Supply	8	26	1998
5849613		367	1030	steel	1986	Middle & Lower Trinity	218HCSH		Public Supply	9	3	1998
5842914					n/a	Edwards	218EBFZA		Recreation	7	21	1999
5842916					n/a	Edwards	218EBFZA		Unused	7	21	1999

Appendix B. Tabulation of water chemistry and site data

State Well Number	sample time	Date	Avg. Barton Springs Flow (cfs)	temp ©	Collection Remarks	Analysis Reliability Remark	Collecting Agency	Lab
5842811	1500	9/3/1998	58	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842914	1330	8/24/1998	58	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842916	1700	8/24/1998	58	20		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842920	1500	8/24/1998	58	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842921	1145	8/24/1998	58	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842922	1550	8/24/1998	58	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842821	1608	8/28/1998	58	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842913	1530	8/27/1998	58	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850123	1330	8/27/1998	58	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850201	1040	8/31/1998	58	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850211	1255	8/28/1998	58	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850215	1051	8/28/1998	58	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850222	1200	8/25/1998	58	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850224	1230	8/26/1998	58	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850225	1700	8/25/1998	58	20		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850406	1030	9/4/1998	58	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850416	1255	8/31/1998	58	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850511	1030	8/19/1998	58	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850520	1530	8/18/1998	58	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850704	1243	7/15/1998	76	21		Good, in accordance with UM-51	TWDB	LCRA, TX
5850730	1045	7/15/1998	76	21		Good, in accordance with UM-51	TWDB	LCRA, TX
5850731	1015	8/26/1998	58	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850733	0918	9/3/1998	58	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850825	1430	9/4/1998	58	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850847	1500	8/21/1998	58	26		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850852	1600	8/20/1998	58	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850855	1230	8/20/1998	58	25		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857307	1200	8/18/1998	58	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857312	1620	8/31/1998	58	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857901	1100	8/18/1998	58	26		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857914	1113	7/6/1998	80	23		Good, in accordance with UM-51	TWDB	LCRA, TX
5858102	1000	8/20/1998	58	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858202	1440	8/25/1998	58	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858219	1400	8/20/1998	58	25		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858403	1350	8/19/1998	58	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858423	1430	8/14/1998	58	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858508	1030	8/13/1998	58	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858704	1243	7/6/1998	80	23		Good, in accordance with UM-51	TWDB	LCRA, TX
5850840	1200	8/21/1998	58	25		Good, in accordance with UM-51	BSEACD	LCRA, TX
5849935	1530	8/17/1998	58	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850122	1130	8/27/1998	58	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857506	1200	8/14/1998	58	20		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857608	1514	8/26/1998	58	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5849613	1130	9/3/1998	58	27		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842914	1500	7/21/1999	65	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842916	1330	7/21/1999	65	24		Good, in accordance with UM-51	BSEACD	LCRA, TX

State Well Number	Ion Balance	Measured TDS (mg/L)	Si flag	Silica (Si, mg/L)	Ca flag	Calcium (Ca, mg/L)	Mg flag	Magnesium (Mg, mg/L)	Na flag	Sodium (Na, mg/L)	K flag
5842811	Balanced			15.9		109		24.7		13	<
5842914	Balanced			11.6		86.8		20.8		14.6	
5842916	Balanced			10.7		66.5		35.1		13.5	
5842920	Balanced			10.8		87.1		16.4		6.95	
5842921	Balanced			11.6		86.6		21.2		15.1	
5842922	Balanced			11.8		88.9		23.4		30.5	
5842821	Balanced			10.6		78		21.4		14.4	
5842913	Balanced			10.4		105		18.3		10.4	
5850123	Balanced			10.6		124		25.5		18.9	
5850201	Balanced			11.7		69.3		24.8		13	
5850211	Balanced			12.4		90.5		24		10.6	<
5850215	Balanced			15.4		75.6		28.9		9.56	
5850222	Balanced			12.9		74.1		30.4		6.95	
5850224	Balanced			12.3		66.4		29.5		10	<
5850225	Balanced			9.22		69.8		18.8		12	
5850406	Balanced			13.4		92.1		24.7		16.5	<
5850416	Balanced			13.2		64.1		29.2		7.97	<
5850511	Balanced			11.8		81.2		26		7.77	
5850520	Balanced			11.5		75.9		24.3		6.76	
5850704	Balanced			12.5		77.4		18.7		6.34	
5850730	Balanced			13		47		31.5		8.54	
5850731	Balanced			11		88.1		24.7		7.44	<
5850733	Balanced			11.4		80.4		20.9		8.1	
5850825	Balanced			11.7		70.3		44.4		130	
5850847	Balanced			11.3		69.7		25.7		6.78	
5850852	Balanced			12.1		56.9		30.9		17.7	
5850855	Balanced			12.1		62.8		29.7		9.33	
5857307	Balanced			11		75.2		24.4		6.86	
5857312	Balanced			13.1		70.6		36.7		5.71	
5857901	Balanced			11.6		58		27.6		5.33	
5857914	Balanced			14.4		62.9		38.1		7.36	
5858102	Balanced			11		62.4		23.7		6	
5858202	Balanced			13.2		68.7		47.1		97	
5858219	Balanced			13		51.3		34.1		59.7	
5858403	Balanced			11.4		78.1		25.2		6.26	
5858423	Balanced			11.6		82.5		21.7		7.68	
5858508	Balanced			12		79.4		31.5		7.36	
5858704	Balanced			14.4		58.5		39.3		97.6	
5850840	Balanced			14.9		134		80.9		352	
5849935	Balanced			13.5		74.6		51.5		5.49	
5850122	Balanced			17.2		78.2		36.5		29.4	
5857506	Balanced			13.6		53.4		32.3		6.88	
5857608	Balanced			13.2		63.7		39.1		6.53	
5849613	Balanced			15		243		161		35.6	
5842914	Balanced			11.7		80.9		20.6		15.7	
5842916	Balanced			10.3		70.1		19.2		14.8	

State Well Number	Potassium (K, mg/L)	Carbonate (CO3, mg/L)	Bicarbonate (HCO3, mg/L)	SO4 flag	Sulfate (SO4, mg/L)	Cl flag	Chloride (Cl, mg/L)	Fl flag	Fluoride (Fl, mg/L)	NO3 flag	Nitrate (NO3, mg/L)	pH flag	pH (su)
5842811	1	0	311.19		16.2		89.5		0.05		7.75		7.44
5842914	1.34	0	311.19		28.2		25.2		0.17		5.67		7.29
5842916	1.72	0	323.39		27.8		20		0.12		6.60		7.35
5842920	1.63	0	297.76		18.7		12		0.12		7.44		7.33
5842921	1.31	0	308.75		28.6		28		0.17		5.67		7.22
5842922	1.63	0	322.17		46		53.3		0.26		5.89		7.34
5842821	1.07	0	278.24		44.3		29.9		0.11		2.45		7.37
5842913	1.02	0	350.24		25.8		21.7		0.08		6.91		7.24
5850123	1.84	0	421.02		65.8		33.3		0.09		8.10		6.89
5850201	1.47	0	301.43		32.3		22.7		0.31		3.89		7.46
5850211	1	0	350.24		19.8		23.3		0.09		8.72		7.06
5850215	1.12	0	352.67		8.3		12.6		0.14		11.95		7.2
5850222	2.94	0	300.21		69.8		10.1		0.84		4.41		7.33
5850224	1	0	311.19		13.7		18.7		0.15		8.94		7.3
5850225	1.33	0	240.41		38.9		24		0.14		3.71		7.54
5850406	1	0	316.07		46.7		24		0.3		23.07		7.16
5850416	1	0	316.07		7.2		16.6		0.14		4.19		7.41
5850511	1.13	0	335.60		18		14.2		0.2		5.31		7.22
5850520	1.04	0	314.85		18.2		12.5		0.21		5.31		7.22
5850704	1.29	0	302.65		16		10.8		0.11		3.23		6.71
5850730	2.8	0	266.04		41.7		12.1		2.55	<	0.22		6.89
5850731	1	0	338.04		19.2		15.1		0.11		3.83		7.2
5850733	1.03	0	312.41		20.3		14		0.14		5.58		7.53
5850825	8.4	0	285.56		331		78.4		2.24	<	0.22		7.39
5850847	1.38	0	295.32		51		12.5		0.75		4.11		7.5
5850852	2.51	0	269.70		82.6		18.4		2.01		1.08		7.3
5850855	1.44	0	273.36		81.5		12.6		1.87	<	0.22		7.37
5857307	1.08	0	303.87		23.2		12.3		0.13		6.38		7.26
5857312	2.38	0	334.37		79.6		8.76		0.43		1.46		7.3
5857901	1	0	285.56		15.7		8.9		0.36		2.36		7.58
5857914	1.56	0	269.70		118		8.04		2.79	<	0.22		6.93
5858102	1.25	0	270.92		23.1		10.1		0.38		4.56		7.41
5858202	10.1	0	285.56		284		61.8		3.91	<	0.22		7.45
5858219	5.41	0	262.37		144		40.9		3.29	<	0.22		7.47
5858403	1.14	0	327.05		16.9		11.3		0.36		4.52		7.3
5858423	2.32	0	341.70		18.2		12.4		0.1		4.52		7.14
5858508	2.41	0	265.00		86		11		1.37		0.82		7.6
5858704	7.59	0	278.24		175		85.4		3.09	<	0.22		7.02
5850840	13.9	0	262.37		574		492		3.21	<	0.22		7.31
5849935	5.33	0	336.82		142		9.01		0.89	<	0.22		7.21
5850122	1.11	0	342.92		78		46.2		0.29		17.62		7.27
5857506	3.11	0	300.21		39.3		9.09		0.3		1.57		7
5857608	3.47	0	270.92		117		10.4		0.52	<	0.22		7.4
5849613	15.6	0	331.93		1061		22		1.5	<	0.22		7.19
5842914	1.24	0	300.21		30		25.5		0.15		5.05		7.02
5842916	1.27	0	248.95		33.4		27.7		0.12		4.12		6.49

Appendix B. Tabulation of water chemistry and site data

State Well Number	Calculated TDS (mg/L)	phen Alk flag	Phen Alk (mg/L)	total alkalinity (CaCO3, mg/L)	total hardness	Percent Sodium (Na, %)	q00931_sar	q71860_rsc	Specific Conductance (mS/cm)
5842811	430	<	1	255	373	7	0.29	0	718
5842914	348	<	1	255	303	9	0.37	0	468
5842916	341	<	1	265	310	8	0.33	0	448
5842920	307	<	1	244	285	5	0.18	0	416
5842921	351	<	1	253	304	9	0.38	0	473
5842922	421	<	1	264	319	17	0.74	0	551
5842821	339	<	1	228	283	9	0.37	0	557
5842913	372	<	1	287	337	6	0.25	0	600
5850123	496	<	1	345	415	9	0.4	0	772
5850201	332	<	1	247	280	9	0.34	0	531
5850211	362	<	1	287	324	6	0.26	0	602
5850215	338	<	1	289	309	6	0.24	0	564
5850222	375	<	1	246	327	4	0.17	0	645
5850224	314	<	1	255	288	7	0.26	0	580
5850225	296	<	1	197	251	9	0.33	0	532
5850406	397	<	1	259	331	9	0.39	0	639
5850416	299	<	1	259	280	5	0.21	0	520
5850511	332	<	1	275	312	5	0.19	0	531
5850520	313	<	1	258	292	4	0.17	0	515
5850704	295	<	1	248	270	4	0.17	0	534
5850730	302	<	1	218	260	6	0.24	0	532
5850731	337	<	1	277	321	4	0.18	0	611
5850733	316	<	1	256	287	5	0.21	0	556
5850825	839	<	1	234	383	44	2.99	0	1080
5850847	352	<	1	242	307	5	0.18	0	519
5850852	384	<	1	221	300	12	0.47	0	581
5850855	388	<	1	224	327	6	0.24	0	567
5857307	310	<	1	249	288	4	0.18	0	506
5857312	383	<	1	274	327	3	0.14	0	604
5857901	273	<	1	234	261	4	0.14	0	453
5857914	386	<	1	221	314	4	0.18	0	683
5858102	281	<	1	222	259	4	0.16	0	464
5858202	750	<	1	234	392	36	2.21	0	970
5858219	508	<	1	215	299	32	1.59	0	763
5858403	327	<	1	268	311	4	0.16	0	517
5858423	329	<	1	280	295	5	0.19	0	609
5858508	410	<	1	217.15	383	4	0.18	0	644
5858704	618	<	1	228	307	40	2.42	0	1066
5850840	1817	<	1	215	693	53	5.93	0	2430
5849935	511	<	1	276	447	2	0.12	0	840
5850122	473	<	1	281	345	15	0.69	0	777
5857506	308	<	1	246	267	5	0.18	0	500
5857608	414	<	1	222	350	4	0.16	0	676
5849613	1735	<	1	272	1289	5	0.43	0	1750
5842914	339	<	1	246	287	10	0.4	0	562
5842916	303	<	1	204	254	11	0.4	0	461

State Well Number	Alkalinity, Field, Dissolved as CaCO3	Al flag	Aluminum, Dissolved (µg/L as Al)	Sb flag	Antimony, Dissolved (µg/L as Sb)	As flag	Arsenic, Dissolved (µg/L as As)	Ba flag	Barium, Dissolved (µg/L as Ba)	Be flag	Beryllium, Dissolved (µg/L as Be)	B flag
5842811	351	<	4	<	1	<	2		65.4	<	1	
5842914	262	<	4	<	1	<	2		58.4	<	1	
5842916	264	<	4	<	1	<	2		102	<	1	
5842920	264	<	4	<	1	<	2		109	<	1	
5842921	268	<	4	<	1	<	2		54.4	<	1	
5842922	272	<	4	<	1	<	2		60.8	<	1	
5842821	242	<	4	<	1	<	2		37	<	1	
5842913	299	<	4	<	1	<	2		66.2	<	1	
5850123	340	<	4	<	1	<	2		58.6	<	1	
5850201	253	<	4	<	1	<	2		119	<	1	
5850211	294	<	4	<	1	<	2		80.5	<	1	
5850215	304	<	4	<	1	<	2		322	<	1	
5850222	232	<	4	<	1	<	2		67.2	<	1	
5850224	266	<	4	<	1	<	2		100	<	1	
5850225	201	<	4	<	1	<	2		35.1	<	1	
5850406	261	<	4	<	1	<	2		98.9	<	1	
5850416	276	<	4	<	1	<	2		42.4	<	1	
5850511	287	<	4	<	1	<	2		44.2	<	1	
5850520	276	<	4	<	1	<	2		133	<	1	
5850704	230		4.9	<	1	<	2		34.2	<	1	
5850730	210		5.9	<	1	<	2		75.2	<	1	
5850731	285	<	4	<	1	<	2		35.6	<	1	
5850733	259	<	4	<	1	<	2		37.6	<	1	
5850825	246	<	4	<	1	<	2		28.1	<	1	
5850847	252	<	4	<	1	<	2		131	<	1	
5850852	236	<	4	<	1	<	2		56.6	<	1	
5850855	232	<	4	<	1	<	2		78.8	<	1	
5857307	262	<	4	<	1	<	2		32.6	<	1	
5857312	286		5.5	<	1	<	2		52.1	<	1	
5857901	249	<	4	<	1	<	2		38.8	<	1	
5857914	218		5.2	<	1	<	2		76.6	<	1	
5858102	252	<	4	<	1	<	2		61.4	<	1	
5858202	262	<	4	<	1	<	2		20.9	<	1	
5858219	238	<	4	<	1	<	2		34.9	<	1	
5858403	286	<	4	<	1	<	2		144	<	1	
5858423	285	<	4	<	1	<	2		32.4	<	1	
5858508	271	<	4	<	1	<	2		156	<	1	
5858704	224		6.1	<	1	<	2		16.6	<	1	
5850840	232	<	4	<	1	<	2		6.9	<	1	
5849935	309	<	4	<	1	<	2		51.5	<	1	
5850122	307	<	4	<	1	<	2		204	<	1	
5857506	266	<	4	<	1	<	2		67.5	<	1	
5857608	237	<	4	<	1	<	2		39.5	<	1	
5849613	285		4.1	<	1	<	2		14.8	<	1	
5842914	255	<	4	<	1	<	2		57.5	<	1	
5842916	205	<	4	<	1	<	2		61.6	<	1	

State Well Number	Boron, Dissolved (µg/L as B)	Br flag	Bromide, Dissolved (mg/L as Br)	Cd flag	Cadmium, Dissolved (µg/L as Cd)	Cr flag	Chromium, Dissolved (µg/L as Cr)	Co flag	Cobalt, Dissolved (µg/L as Co)	Cu flag	Copper, Dissolved (µg/L as Cu)	Fe flag
5842811	29		0.15	<	1		54.1	<	1	<	2	
5842914	50		0.15	<	1		20.3	<	1	<	2	
5842916	66		0.08	<	1		27.5	<	1	<	2	
5842920	28		0.05	<	1		18	<	1	<	2	
5842921	48		0.14	<	1		19.7	<	1		2.3	
5842922	75		0.42	<	1		17.7	<	1	<	2	
5842821	49		0.18	<	1		7.2	<	1	<	2	
5842913	33		0.07	<	1		8.9	<	1	<	2	<
5850123	75		0.14	<	1		12.1	<	1		3.8	
5850201	46		0.12	<	1		8.4	<	1		3.9	<
5850211	36		0.12	<	1		10.2	<	1		2.8	<
5850215	52		0.07	<	1		9.3	<	1	<	2	<
5850222	126	<	0.02	<	1		17	<	1		2.6	
5850224	55		0.1	<	1		19.4	<	1		2.5	
5850225	82		0.04	<	1		13.4	<	1	<	2	
5850406	59		0.08	<	1		13.7	<	1		3	
5850416	30	<	0.02	<	1		8	<	1	<	2	<
5850511	25		0.05	<	1	<	1	<	1		2.4	
5850520	26		0.04	<	1	<	1	<	1		3.1	
5850704	42		0.1	<	1	<	1	<	1	<	2	
5850730	129	<	0.02	<	1	<	1	<	1	<	2	
5850731	50		0.05	<	1		18.4	<	1	<	2	
5850733	31		0.05	<	1		8.5	<	1		4.8	<
5850825	1030		0.4	<	1		13.2	<	1		2.8	
5850847	42	<	0.02	<	1	<	1	<	1		10.4	
5850852	131		0.05	<	1	<	1	<	1	<	2	
5850855	78		0.04	<	1	<	1	<	1	<	2	
5857307	27		0.04	<	1	<	1	<	1		3	
5857312	47	<	0.02	<	1		7.8	<	1	<	2	
5857901	30	<	0.02	<	1	<	1	<	1		4.8	
5857914	66.9	<	0.02	<	1		3.1	<	1	<	2	
5858102	25		0.05	<	1	<	1	<	1	<	2	
5858202	928		0.67	<	1		13.6	<	1		2.3	
5858219	362		0.3	<	1	<	1	<	1	<	2	
5858403	25		0.02	<	1	<	1	<	1	<	2	<
5858423	61		0.03	<	1		7.6	<	1		2.7	<
5858508	69		0.03	<	1		5.7	<	1	<	2	
5858704	580		0.2	<	1	<	1	<	1		2.4	
5850840	1.23		3.98	<	1	<	1	<	1		9.9	
5849935	134	<	0.02	<	1	<	1	<	1		6.2	
5850122	106		0.23	<	1		7	<	1		4.7	
5857506	84	<	0.02	<	1		5.1	<	1		4.9	<
5857608	119	<	0.02	<	1		9.6	<	1	<	2	
5849613	515	<	0.02	<	1		12.5	<	1	<	2	
5842914	94		0.2	<	1		2.9	<	1	<	2	<
5842916	97		0.12	<	1		2.6	<	1	<	2	<

State Well Number	Iron, Dissolved (µg/L as Fe)	Pb flag	Lead, Dissolved (µg/L as Pb)	Li flag	Lithium, Dissolved (µg/L as LiI)	Mn flag	Manganese, Dissolved (µg/L as Mn)	Mo flag	Molybdenum, Dissolved (µg/L as Mo)	Ni Flag
5842811	123	<	1	<	2		2.8	<	1	
5842914	13	<	1		9	<	1	<	1	
5842916	11	<	1		3	<	1	<	1	
5842920	13	<	1		3	<	1	<	1	
5842921	17	<	1		9.4	<	1	<	1	
5842922	13	<	1		22	<	1	<	1	
5842821	12	<	1		3.5	<	1	<	1	
5842913	10	<	1		2.9	<	1	<	1	
5850123	13	<	1		5.2	<	1		1.2	
5850201	10	<	1		9.5	<	1		2.2	
5850211	10	<	1		2.2	<	1	<	1	
5850215	10	<	1		4	<	1	<	1	
5850222	14	<	1		13.2	<	1	<	1	
5850224	14		5		2.9	<	1	<	1	
5850225	22	<	1		2.6	<	1	<	1	
5850406	16	<	1		10	<	1	<	1	
5850416	10	<	1		2.1	<	1	<	1	
5850511	12	<	1		2.8	<	1	<	1	
5850520	13	<	1		2.7	<	1	<	1	
5850704	16	<	1		2.5	<	1	<	1	
5850730	36	<	1		19.1	<	1		2.6	
5850731	14	<	1	<	2	<	1	<	1	
5850733	10	<	1		2.4	<	1	<	1	
5850825	60	<	1		150		2.6		1.9	
5850847	14		2.6		3.8	<	1		4.3	
5850852	26	<	1		20.9	<	1		2.4	
5850855	37	<	1		7.7	<	1		6.2	
5857307	13	<	1		2.5	<	1	<	1	
5857312	18		1		8.6		3.4		6.1	
5857901	12	<	1		2.3	<	1		1.4	
5857914	92	<	1		8.2	<	1	<	1	
5858102	10	<	1		2.3	<	1		1.5	
5858202	26	<	1		136	<	1	<	1	
5858219	118	<	1		62.4		1	<	1	
5858403	10	<	1		2	<	1		2.1	
5858423	10		1.6		2.9	<	1	<	1	
5858508	14	<	1		5.6	<	1		52.9	
5858704	425	<	1		106		3.7	<	1	
5850840	27	<	1		337	<	1	<	1	
5849935	17		2.1		19.8		1.1	<	1	
5850122	24	<	1		9.2		11.2		2.3	
5857506	10	<	1		7.2	<	1		5	
5857608	29	<	1		13.3		2		17.9	
5849613	124	<	1		78.6		5.6	<	1	
5842914	50	<	1		13.9	<	1	<	1	
5842916	50	<	1		8.3	<	1	<	1	

State Well Number	Nickel, Dissolved (µg/L as Ni)	N flag	Nitrite plus Nitrate, dissolved (mg/L as N)	Se flag	Selenium, Dissolved (µg/L as Se)	Sr flag	Strontium, Dissolved (µg/L as Sr)	Temperature, Water (Celcius)	Tl flag	Thallium, Dissolved (µg/L as Tl)
5842811	25.6		1.75	<	4		189	21.1	<	1
5842914	12.5		1.28	<	4		1280	21.3	<	1
5842916	7.9		1.49	<	4		305	20.2	<	1
5842920	8.1		1.68	<	4		334	21.6	<	1
5842921	229		1.28	<	4		1310	21.4	<	1
5842922	8.5		1.33	<	4		1390	21.4	<	1
5842821	8		0.554	<	4		403	21.5	<	1
5842913	10.5		1.56	<	4		200	20.6	<	1
5850123	13.8		1.83	<	4		877	24.4	<	1
5850201	7.3		0.879	<	4		4610	23.1	<	1
5850211	9.4		2.3	<	4		339	22.1	<	1
5850215	7.2		3.57	<	4		804	23.2	<	1
5850222	7		0.997	<	4		15600	23	<	1
5850224	6.6		2.02	<	4		945	23	<	1
5850225	6.6		0.839	<	4		236	19.9	<	1
5850406	5.9		5.87	<	4		306	23.3	<	1
5850416	7.2		0.947	<	4		449	22.6	<	1
5850511	7.3		1.2	<	4		2210	21.5	<	1
5850520	3.09		1.43	<	4		2760	22.8	<	1
5850704	2		3.97	<	4		281	20.7	<	1
5850730	1.37	<	0.05	<	4		12300	21.3	<	1
5850731	10.8		0.864	<	4		439	21.6	<	1
5850733	10.8		1.26	<	4		858	21.2	<	1
5850825	5.1	<	0.05	<	4		22200	23.7	<	1
5850847	7		0.928	<	4		24200	26.1	<	1
5850852	5.3		0.243	<	4		27500	24.3	<	1
5850855	6	<	0.05	<	4		42300	24.6	<	1
5857307	6.6		1.44	<	4		233	21.8	<	1
5857312	8.9		0.33	<	4		23300	23.8	<	1
5857901	5.2		0.532	<	4		2500	26.2	<	1
5857914	4.9	<	0.05	<	4		443	23.3	<	1
5858102	5.7		1.03	<	4		5390	22.4	<	1
5858202	6.2	<	0.05		4.7		23600	24.2	<	1
5858219	4.5	<	0.05	<	4		27700	24.9	<	1
5858403	7.3		1.02	<	4		11100	23.2	<	1
5858423	18.8		1.02	<	4		243	22.3	<	1
5858508	20.6		0.184	<	4		48800	24.1	<	1
5858704	Not analyzed	<	0.05	<	4		211	22.9	<	1
5850840	12.7	<	0.05		14.9		23000	24.5	<	1
5849935	7.2	<	0.05	<	4		43600	23.2	<	1
5850122	9		3.98	<	4		16200	23.7	<	1
5857506	12.6		0.355	<	4		1110	23.7	<	1
5857608	6	<	0.05	<	4		27300	23.4	<	1
5849613	20	<	0.05	<	4		17800	26.5	<	1
5842914	12		1.14	<	4		1040	22	<	1
5842916	11.3		0.931	<	4		248	24.1	<	1

Appendix B. Tabulation of water chemistry and site data

State Well Number	V flag	Vanadium, Dissolved (µg/L as V)	Zn Flag	Zinc, Dissolved (µg/L as Zn)
5842811		6.8		155
5842914		7.6	<	4
5842916		9.6	<	4
5842920		7.7	<	4
5842921		7.3		11.9
5842922		6.7	<	4
5842821		3.3		117
5842913		4.5		6.7
5850123		4.2		20.5
5850201		4.2		40.7
5850211		5.3		36.1
5850215		5.8		4.8
5850222		6.4		10.7
5850224		8.2		288
5850225		5.1		11.9
5850406		6.2		15.6
5850416		5.2	<	4
5850511		1.9		5
5850520		2.4		4.1
5850704		1.5		21.6
5850730	<	1	<	4
5850731		7.2		6.3
5850733		3.9		5.2
5850825		3.5		14.8
5850847		1.7		6.8
5850852	<	1		7
5850855		1.1		9.4
5857307		1.9		16.5
5857312		3.3		279
5857901		2.8		92.9
5857914	<	1	<	4
5858102		2.1		4.6
5858202		3.7	<	4
5858219	<	1	<	4
5858403		1.9		11.5
5858423		3.5	<	4
5858508		1.9		153
5858704	<	1	<	4
5850840	<	1		6.9
5849935	<	1		7.8
5850122		5.3		82.1
5857506		2.6	<	4
5857608		2.6		5.9
5849613		3.1		189
5842914		2.9	<	2
5842916		2.6		4.9

Appendix B. Tabulation of water chemistry and site data

State Well Number	County	latitude DD	longitude DD	Well or Spring	Name/Owner	Well Depth (ft)	Distance from Kgru	Edwards Confined or Unconfined
5842920	Travis	30.2633333	-97.7741667	Spring	Upper Barton Springs	n/a	n/a	n/a
5850123	Travis	30.2325000	-97.8633333	Well	New Forest Oaks	295	-54	unconfined
5850201	Travis	30.2191667	-97.7936111	Well	John Noell	290	302	confined
5850211	Travis	30.2447222	-97.8275000	Well	Travis Country Estates	282	74	unconfined
5850222	Travis	30.2169444	-97.8197222	Well	Helen Besse	440	10	unconfined
5850225	Travis	30.2388889	-97.8080556	Well	Ed Maxey	unknown	unknown	unconfined
5850511	Travis	30.1711111	-97.8252778	Well	Rodney Johnson	285	299	confined
5850731	Travis	30.1497222	-97.8605556	Well	Shady Hollow Estates WSC	438	75	confined
5850733	Travis	30.1366667	-97.8450000	Well	Suburban Austin Water, Bear Crk #2/Aquasource	312	270	confined
5850847	Travis	30.1302778	-97.8222222	Well	Creedmoor-Maha WSC	450	145	confined
5850855	Travis	30.1461111	-97.8194444	Well	Village of San Leanna #1	500	144	confined
5857307	Hays	30.1005556	-97.8822222	Well	Dahlstrom Middle School	470	6	unconfined
5857312	Hays	30.1075000	-97.9022222	Well	Rocket WSC	425	-29	unconfined
5857901	Hays	30.0325000	-97.8902778	Well	Hays Consolidated ISD	575	101	confined
5858102	Hays	30.1066667	-97.8544444	Well	Cimarron Park Water Co Inc.	400	215	confined
5858423	Hays	30.0683333	-97.8591667	Well	Comal Tackle	245	492	confined
5858508	Hays	30.0791667	-97.8311111	Well	Goforth W.S.C. Well #4	740	161	confined
5857608	Hays	30.0802778	-97.9166667	Well	Ruby Ranch Phase II Eco Resources PWS	403	-107	unconfined
5842914	Travis	30.2636111	-97.7711111	Spring	Barton Springs	n/a	n/a	n/a
5842916	Travis	30.2800000	-97.7800000	Spring	Cold Springs	n/a	n/a	n/a
5842922	Travis	30.2630556	-97.7675000	Spring	Old Mill Springs	n/a	n/a	n/a
5850123	Travis	30.2325000	-97.8633333	Well	New Forest Oaks	295	-54	unconfined
5850201	Travis	30.2191667	-97.7936111	Well	John Noell	290	302	confined
5850211	Travis	30.2447222	-97.8275000	Well	Travis Country Estates	282	74	unconfined
5850215	Travis	30.2277778	-97.8102778	Well	City of Sunset Valley Well #3	360	115	confined
5850224	Travis	30.2386111	-97.8308333	Well	Safeway Rental	272	118	unconfined
5850405	Travis	30.1952778	-97.8383333	Well	Adie Morrison	365	235	confined
5850511	Travis	30.1711111	-97.8252778	Well	Rodney Johnson	285	299	confined
5850733	Travis	30.1366667	-97.8450000	Well	Suburban Austin Water, Bear Crk #2/Aquasource	312	270	confined
5850847	Travis	30.1302778	-97.8222222	Well	Creedmoor-Maha WSC	450	145	confined
5850855	Travis	30.1461111	-97.8194444	Well	Village of San Leanna #1	500	144	confined
5857307	Hays	30.1005556	-97.8822222	Well	Dahlstrom Middle School	470	6	unconfined
5857901	Hays	30.0325000	-97.8902778	Well	Hays Consolidated ISD	575	101	confined
5858121	Hays	30.1055556	-97.8622222	Well	Leisurewoods Water Co. Well #5 / Aquasource	410	185	confined
5858128	Hays	30.0875000	-97.8538889	Well	Ben Wright	220	357	confined
5858403	Hays	30.0816667	-97.8427778	Well	City of Buda #1	390	268	confined
5858424	Hays	30.0788889	-97.8719444	Well	Lee Ortivez	350	163	unconfined
5858508	Hays	30.0791667	-97.8311111	Well	Goforth W.S.C. Well #4	740	161	confined
5842811	Travis	30.2600000	-97.8233333	Spring	Back Door Springs	n/a	n/a	n/a
5842914	Travis	30.2636111	-97.7711111	Spring	Barton Springs	n/a	n/a	n/a
5842916	Travis	30.2800000	-97.7800000	Spring	Cold Springs	n/a	n/a	n/a
5842920	Travis	30.2633333	-97.7741667	Spring	Upper Barton Springs	n/a	n/a	n/a
5842921	Travis	30.2641667	-97.7711111	Spring	Eliza Springs	n/a	n/a	n/a
5842922	Travis	30.2630556	-97.7675000	Spring	Old Mill Springs	n/a	n/a	n/a
5842915	Travis	30.2508333	-97.7802778	Well	Genevieve Duncan	295	308	confined
5850123	Travis	30.2325000	-97.8633333	Well	New Forest Oaks	295	-54	unconfined

Appendix B. Tabulation of water chemistry and site data

State Well Number	Yield or Specific Capacity	top sample interval	bottom sample interval	Casing	Year Drilled	Aquifer	TWDB Aquifer Code	Year Plugged	Primary Use	Mo	Day	Year
5842920					n/a	Edwards	218EBFZA		Unused	7	21	1999
5850123		147	295	Steel	1998	Edwards	218EBFZA		Irrigation	7	29	1999
5850201					1917	Edwards	218EDRDA		Domestic	8	3	1999
5850211		265	282	Steel	1973	Edwards	218EDRDA		Irrigation	7	21	1999
5850222	1.73	340	440	pvc	1980	Edwards	218EBFZA		Domestic	8	4	1999
5850225					1951	Edwards	218EBFZA		Domestic	8	3	1999
5850511		119	285	Steel	1956	Edwards	218EDRDA		Domestic	8	6	1999
5850731	21			Steel	1983	Edwards	218EDRDA		Public Supply	8	5	1999
5850733		150	250		1972	Edwards	218EDRDA		Public Supply	8	5	1999
5850847	13	158	450	steel	1980	Edwards	218EDRDA		Public Supply	7	29	1999
5850855	1.4	300	500	steel	1979	Edwards	218EDRDA		Public Supply	7	14	1999
5857307	15				1985	Edwards	218EDRDA		Public Supply	7	21	1999
5857312		170	425		1996	Edwards	218EBFZA		Public Supply	8	4	1999
5857901	30.5	235	575		1994	Edwards	218EBFZA		Public Supply	7	21	1999
5858102	20.3	300	400		1957	Edwards	218EDRDA		Public Supply	7	14	1999
5858423	3.1	224	245		1997	Edwards	218EDRDA		Industrial	7	15	1999
5858508	14	460	740		1985	Edwards	218EDRDA		Public Supply	7	19	1999
5857608	0.22				1997	Edwards-Trinity	218EDGRU		Public Supply	7	30	1999
5842914					n/a	Edwards	218EBFZA		Recreation	8	18	2000
5842916					n/a	Edwards	218EBFZA		Unused	8	17	2000
5842922					n/a	Edwards	218EDRDA		Unused	8	18	2000
5850123		147	295	Steel	1998	Edwards	218EBFZA		Irrigation	8	18	2000
5850201					1917	Edwards	218EDRDA		Domestic	8	30	2000
5850211		265	282	Steel	1973	Edwards	218EDRDA		Irrigation	8	29	2000
5850215		200	360	Steel	1976	Edwards	218EDRDA		Public Supply	8	30	2000
5850224	5.5				unknown	Edwards	218EBFZA		Commercial	8	29	2000
5850405				Steel	1941	Edwards	218EDRDA	2004 ?	Unused	8	30	2000
5850511		119	285	Steel	1956	Edwards	218EDRDA		Domestic	8	29	2000
5850733		150	250		1972	Edwards	218EDRDA		Public Supply	9	13	2000
5850847	13	158	450	steel	1980	Edwards	218EDRDA		Public Supply	9	12	2000
5850855	1.4	300	500	steel	1979	Edwards	218EDRDA		Public Supply	9	12	2000
5857307	15				1985	Edwards	218EDRDA		Public Supply	8	31	2000
5857901	30.5	235	575		1994	Edwards	218EBFZA		Public Supply	8	31	2000
5858121		224	410		1978	Edwards	218EDRDA		Public Supply	9	12	2000
5858128					1975	Edwards	218EDRDA		Domestic	8	30	2000
5858403		222	390		1954	Edwards	218EBFZA		Public Supply	8	31	2000
5858424		250	350		2000	Edwards	218EDRDA		Domestic	8	30	2000
5858508	14	460	740		1985	Edwards	218EDRDA		Public Supply	9	12	2000
5842811					n/a	Edwards	218EDRDA		Recreation	6	21	2001
5842914					n/a	Edwards	218EBFZA		Recreation	6	19	2001
5842916					n/a	Edwards	218EBFZA		Unused	6	21	2001
5842920					n/a	Edwards	218EBFZA		Unused	6	19	2001
5842921					n/a	Edwards	218EDRDA		Unused	6	20	2001
5842922					n/a	Edwards	218EDRDA		Unused	6	19	2001
5842915		108	295	Steel	1942	Edwards	218EDRDA		Irrigation	6	19	2001
5850123		147	295	Steel	1998	Edwards	218EBFZA		Irrigation	6	25	2001

Appendix B. Tabulation of water chemistry and site data

State Well Number	sample time	Date	Avg. Barton Springs Flow (cfs)	temp ©	Collection Remarks	Analysis Reliability Remark	Collecting Agency	Lab
5842920	1545	7/21/1999	65	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850123	1545	7/29/1999	65	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850201	1250	8/3/1999	65	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850211	1340	7/21/1999	65	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850222	1535	8/4/1999	65	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850225	1630	8/3/1999	65	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850511	1140	8/6/1999	65	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850731	1500	8/5/1999	65	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850733	1415	8/5/1999	65	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850847	1124	7/29/1999	65	25		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850855	1250	7/14/1999	65	25		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857307	1045	7/21/1999	65	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857312	1040	8/4/1999	65	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857901	1150	7/21/1999	65	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858102	1000	7/14/1999	65	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858423	1450	7/15/1999	65	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858508	1105	7/19/1999	65	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857608	1210	7/30/1999	65	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842914	1055	8/18/2000	23	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842916	1340	8/17/2000	23	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842922	0935	8/18/2000	23	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850123	1620	8/18/2000	23	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850201	1242	8/30/2000	23	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850211	1120	8/29/2000	23	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850215	1100	8/30/2000	23	25		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850224	1712	8/29/2000	23	28		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850405	0957	8/30/2000	23	28		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850511	1426	8/29/2000	23	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850733	0950	9/13/2000	23	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850847	0946	9/12/2000	23	26		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850855	1610	9/12/2000	23	26		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857307	1020	8/31/2000	23	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857901	1155	8/31/2000	23	27		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858121	1050	9/12/2000	23	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858128	1605	8/30/2000	23	26		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858403	1455	8/31/2000	23	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858424	1731	8/30/2000	23	27		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858508	1420	9/12/2000	23	25		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842811	1111	6/21/2001	93	21	Grab sample from spring	Good, in accordance with UM-51	BSEACD	LCRA, TX
5842914	1320	6/19/2001	93	21	Grab sample from spring	Good, in accordance with UM-51	BSEACD	LCRA, TX
5842916	1430	6/21/2001	93	20	Grab sample from spring	Good, in accordance with UM-51	BSEACD	LCRA, TX
5842920	1125	6/19/2001	93			Good, in accordance with UM-51	BSEACD	LCRA, TX
5842921	1200	6/20/2001	93			Good, in accordance with UM-51	BSEACD	LCRA, TX
5842922	1000	6/19/2001	93	21	Grab from spring upwelling	Good, in accordance with UM-51	BSEACD	LCRA, TX
5842915	1330	6/19/2001	93			Good, in accordance with UM-51	BSEACD	LCRA, TX
5850123	1330	6/25/2001	93	23		Good, in accordance with UM-51	BSEACD	LCRA, TX

State Well Number	Ion Balance	Measured TDS (mg/L)	Si flag	Silica (Si, mg/L)	Ca flag	Calcium (Ca, mg/L)	Mg flag	Magnesium (Mg, mg/L)	Na flag	Sodium (Na, mg/L)	K flag
5842920	Balanced			12.1		88.2		22		10.2	
5850123	Balanced			10.8		133		27.8		15.3	
5850201	Balanced			11.6		71.5		26.2		13.4	
5850211	Balanced			11.4		75		24.1		9.94	
5850222	Balanced			13		70		33.2		7.27	
5850225	Balanced			9.08		66		18.2		12.3	
5850511	Balanced			12.8		85.5		32.2		7.81	
5850731	Balanced			11		83.4		24.3		7.37	
5850733	Balanced			12.1		82.7		20.5		8.38	
5850847	Balanced			11.7		69		26.7		8.36	
5850855	Balanced			12.1		60		28.9		10	
5857307	Balanced			10.7		72		24.1		7.69	
5857312	Balanced			13.2		70.4		35.4		5.29	
5857901	Balanced			11.5		58.7		28.5		6.26	
5858102	Balanced			11.1		63		24.9		6.85	
5858423	Balanced			11.9		77.4		23.4		8.22	
5858508	Balanced			11.3		82.8		30.1		14	
5857608	Balanced			13.4		62		38.2		7.05	
5842914	Balanced			12.8		83		25.2		26.3	
5842916	Balanced			12.3		82.9		23.1		10.5	
5842922	Balanced			12.6		89.5		28.7		65.4	
5850123	Balanced			11.6		133		25.4		16.7	
5850201	Balanced			12.3		70.7		26.7		13.2	
5850211	Balanced			13.3		96.4		26.2		12.2	
5850215	Balanced			16.4		75.8		31.1		9.73	
5850224	Balanced			14.5		66.2		31.2		10.5	
5850405	Balanced			14.9		91.9		38.5		18.6	
5850511	Unbalanced			13		77.7		28.6		7.75	
5850733	Balanced			14.4		69		25.3		7.2	
5850847	Balanced			14.7		67.2		26.3		7.43	
5850855	Balanced			15.2		61.4		29.2		9.3	
5857307	Balanced			12		74.9		24.9		7.13	
5857901	Balanced			12.7		65.6		27.7		6.16	
5858121	Balanced			14.2		61.7		23.7		6.36	
5858128	Balanced			12.1		56.7		29.2		5.82	
5858403	Balanced			12.4		80.3		26.6		6.85	
5858424	Balanced			11.7		68.7		25.6		6.27	
5858508	Balanced			14.7		70.1		30.9		6.79	
5842811	Balanced	446		17.4		121		28.1		17.8	
5842914	Balanced	357		12.6		87.1		20.6		12.8	
5842916	Balanced	358		10.8		90.8		23.4		15.3	
5842920	Balanced	371				90		23.2		11	
5842921	Balanced	366				85.3		20.6		13.3	
5842922	Balanced	401		12.3		87.9		22.5		27.9	
5842915	Balanced	311				66.6		20.7		11.3	
5850123	Balanced	479		10.6		119		24.9		16.9	

State Well Number	Potassium (K, mg/L)	Carbonate (CO3, mg/L)	Bicarbonate (HCO3, mg/L)	SO4 flag	Sulfate (SO4, mg/L)	Cl flag	Chloride (Cl, mg/L)	Fl flag	Fluoride (Fl, mg/L)	NO3 flag	Nitrate (NO3, mg/L)	pH flag	pH (su)
5842920	1.14	0	334.37		25.8		16.5		0.14		7.97		6.99
5850123	2.37	0	413.70		76		24.5		0.18		10.98		6.81
5850201	1.91	0	298.98		34		24.4		0.42		4.09		7.24
5850211	0.79	0	303.87		12.1		22.1		0.1		7.88		7.04
5850222	3.17	0	297.76		79.4		10.4		1.05		3.67		7.03
5850225	1.25	0	229.43		38.8		24.4		0.14		4.52		7.55
5850511	1.19	0	370.99		18.3		15.4		0.27		5.09		6.77
5850731	0.95	0	331.93		20		15.4		0.11		3.87		7.05
5850733	1.24	0	311.19		21.2		15		0.18		5.62		6.95
5850847	1.97	0	291.66		54.6		16.8		0.93		3.91		7.31
5850855	10	0	269.70		88.5		12		1.83		0.06		7.14
5857307	1.1	0	295.32		22.7		11.8		0.14		6.73		7.18
5857312	2.02	0	327.05		61.5		8.92		0.46		1.90		6.9
5857901	0.99	0	289.22		14.6		8.58		0.31		920.82		7.18
5858102	1.27	0	266.04		22.4		9.85		0.37		5.00		7.08
5858423	1.11	0	344.14		15.5		12.6		0.13		5.62		6.99
5858508	0.92	0	320.95		77.3		10.6		0.93		1.10		7.22
5857608	3.6	0	272.14		99.5		11.1		0.59	<	0.09		7.32
5842914	1.61	0	319.73		41.2		45.7		0.28		6.46		7.31
5842916	1.12	0	312.41		25.1		20.1		0.15		6.24		6.57
5842922	2.45	0	303.87		78.6		105		0.31		6.15		6.94
5850123	1.97	0	441.77		61		29.4		0.14		9.03		6.71
5850201	1.36	0	298.98		29.1		20.5		0.36		4.16		6.99
5850211	1.1	0	357.56		22.7		25		0.12		10.01		6.81
5850215	1.25	0	349.01		8.7		12.4		0.17		13.28		6.92
5850224	0.9	0	314.85		11.7		18.2		0.17		11.25		7.12
5850405	1.09	0	314.85		98.4		21.7		0.35		17.97		7.21
5850511	1.2	0	313.63		18		13.6		0.27		5.27		6.97
5850733	1.11	0	303.87		18.2		13.2		0.18		4.11		7.13
5850847	1.38	0	290.44		51.7		16.4		0.86		3.21		7.4
5850855	1.44	0	269.70		88.6		12		1.83		0.12		7.28
5857307	1.1	0	301.43		20.8		11.8		0.16		6.55		6.89
5857901	1.04	0	297.76		14.4		10.4		0.42		3.86		6.98
5858121	1.24	0	277.02		17.4		10.2		0.27		4.87		7.1
5858128	1.47	0	262.37		30.6		8.95		0.93		0.38		7.21
5858403	1.21	0	328.27		26.6		11.8		0.39		5.36		7.17
5858424	1.14	0	288.00		17.7		11		0.16		6.86		7
5858508	1.29	0	318.51		78.4		11.1		1.35		0.52		6.99
5842811	1.1	0	421.02		19.8		35.6		0.1		8.99		6.75
5842914	1.2	0	320.95		29.7		24.4		0.18		5.45		7.09
5842916	1.43	0	303.87		40.2		30.9		0.14		6.46		6.95
5842920	1.22		342.47		33		21.2		0.15		10.85		
5842921	1.3		318.11		29.3		24.9		0.181		5.22		
5842922	1.54	0	314.85		47.9		50		0.21		5.58		6.49
5842915	1.3		248.68		47.3		21.1		0.24		2.81		
5850123	1.64	0	411.26		55.2		33		0.17		9.74		6.59

State Well Number	Calculated TDS (mg/L)	phen Alk flag	Phen Alk (mg/L)	total alkalinity (CaCO3, mg/L)	total hardness	Percent Sodium (Na, %)	q00931_sar	q71860_rsc	Specific Conductance (mS/cm)
5842920	348	<	1	274	311	6	0.25	0	578
5850123	505	<	1	339	447	6	0.32	0	851
5850201	338	<	1	245	291	9	0.34	0	631
5850211	313	<	1	249	286	7	0.26	0	531
5850222	383	<	1	244	329	4	0.18	0	566
5850225	287	<	1	188	239	10	0.35	0	493
5850511	362	<	1	304	347	4	0.18	0	641
5850731	330	<	1	272	308	4	0.18	0	595
5850733	320	<	1	255	291	5	0.21	0	571
5850847	361	<	1	239	310	6	0.22	0	599
5850855	356	<	1	221	268	7	0.27	0	620
5857307	302	<	1	242	279	5	0.2	0	508
5857312	376	<	1	268	340	3	0.13	0	573
5857901	274	<	1	237	266	4	0.17	0	468
5858102	281	<	1	218	265	5	0.18	0	496
5858423	325	<	1	282	289	5	0.21	0	599
5858508	386	<	1	263	330	8	0.34	0	638
5857608	394	<	1	223	340	4	0.17	0	624
5842914	402	<	1	262	313	15	0.65	0	584
5842916	335	<	1	256	302	7	0.26	0	524
5842922	540	<	1	249	344	29	1.54	0	792
5850123	506	<	1	362	437	7	0.35	0	785
5850201	329	<	1	245	291	9	0.34	0	519
5850211	383	<	1	293	348	7	0.28	0	604
5850215	341	<	1	286	318	6	0.24	0	534
5850224	320	<	1	258	294	7	0.27	0	511
5850405	458	<	1	258	388	9	0.41	0	681
5850511	321	<	1	257	313	5	0.19	0	564
5850733	303	<	1	249	277	5	0.19	0	492
5850847	355	<	1	238	302	5	0.19	0	543
5850855	393	<	1	221	320	6	0.24	0	571
5857307	307	<	1	247	289	5	0.18	0	494
5857901	290	<	1	244	279	4	0.16	0	491
5858121	277	<	1	227	253	5	0.17	0	457
5858128	275	<	1	215	261	4	0.16	0	437
5858403	343	<	1	269	321	4	0.17	0	537
5858424	290	<	1	236	276	4	0.16	0	462
5858508	419	<	1	261	356	4	0.17	0	616
5842811	457	<	1	345	417	8	0.38	0	695
5842914	352	<	1	263	302	8	0.32	0	620
5842916	369	<	1	249	323	9	0.37	0	566
5842920	359			281					
5842921	337			261					
5842922	411	<	1	258	312	16	0.69	0	700
5842915	294			204					
5850123	474	<	1	337	400	8	0.37	0	704

State Well Number	Alkalinity, Field, Dissolved as CaCO3	Al flag	Aluminum, Dissolved (µg/L as Al)	Sb flag	Antimony, Dissolved (µg/L as Sb)	As flag	Arsenic, Dissolved (µg/L as As)	Ba flag	Barium, Dissolved (µg/L as Ba)	Be flag	Beryllium, Dissolved (µg/L as Be)	B flag
5842920	273	<	4	<	1	<	2		117.9	<	1	
5850123	345	<	4	<	1	<	2		63.4	<	1	
5850201	258	<	4	<	1	<	2		130	<	1	
5850211	247	<	4	<	1	<	2		92.9	<	1	
5850222	244	<	4	<	1	<	2		82.4	<	1	
5850225	192	<	4	<	1	<	2		35.9	<	1	
5850511	299	<	4	<	1	<	2		43.7	<	1	
5850731	262	<	4	<	1	<	2		36.9	<	1	
5850733	251	<	4	<	1	<	2		42.1	<	1	
5850847	232	<	4	<	1	<	2		130	<	1	
5850855	232	<	4	<	1		2.2		78.8	<	1	
5857307	231	<	4	<	1	<	2		32.8	<	1	
5857312	270	<	4	<	1	<	2		55.4	<	1	
5857901	244	<	4	<	1	<	2		41.8	<	1	
5858102	234	<	4	<	1	<	2		58.8	<	1	
5858423	298	<	4	<	1	<	2		35.1	<	1	
5858508	276	<	4	<	1	<	2		205	<	1	
5857608	155	<	4	<	1	<	2		40.3	<	1	
5842914	245	<	4	<	1	<	2		62.2	<	1	
5842916	245		4.7	<	1	<	2		105	<	1	
5842922	235		8.05	<	1	<	2		61.2	<	1	
5850123	310	<	4	<	1	<	2		58.8	<	1	<
5850201	240	<	4	<	1	<	2		111	<	1	
5850211	290	<	4	<	1	<	2		72.6	<	1	
5850215	290	<	4	<	1	<	2		290	<	1	
5850224	265	<	4	<	1	<	2		90.8	<	1	
5850405	255	<	4	<	1	<	2		74.1	<	1	
5850511	284	<	4	<	1	<	2		39.6	<	1	
5850733	255	<	4	<	1	<	2		36.9	<	1	
5850847	240	<	4	<	1	<	2		123	<	1	
5850855	220	<	4	<	1	<	2		75.6	<	1	
5857307	245	<	4	<	1	<	2		27.1	<	1	
5857901	225	<	4	<	1	<	2		34.2	<	1	
5858121	225	<	4	<	1	<	2		34.4	<	1	
5858128	220	<	4	<	1	<	2		18.1	<	1	<
5858403	274	<	4	<	1	<	2		122	<	1	
5858424	240		8.82	<	1	<	2		26.5	<	1	<
5858508	255	<	4	<	1	<	2		167	<	1	
5842811		<	4	<	1	<	2		65.5	<	1	<
5842914	240	<	4	<	1	<	2		40.9	<	1	<
5842916		<	4	<	1	<	2		74.8	<	1	<
5842920		<	4	<	1	<	2		103	<	1	J
5842921		J	2.3	J	0.36	<	2		37.9	<	1	J
5842922	235	<	4	<	1	<	2		43.8	<	1	<
5842915		<	4	<	1	<	2		28.7	<	1	<
5850123		<	4	<	1	<	2		57	<	1	<

State Well Number	Boron, Dissolved (µg/L as B)	Br flag	Bromide, Dissolved (mg/L as Br)	Cd flag	Cadmium, Dissolved (µg/L as Cd)	Cr flag	Chromium, Dissolved (µg/L as Cr)	Co flag	Cobalt, Dissolved (µg/L as Co)	Cu flag	Copper, Dissolved (µg/L as Cu)	Fe flag
5842920	72		0.11	<	1		3.2	<	1	<	2	<
5850123	126		0.34	<	1		34.3	<	1	<	2	
5850201	77		0.14	<	1		3.94	<	1		3.3	<
5850211	78		0.1	<	1		3.2	<	1	<	2	<
5850222	44		0.05	<	1		3.67	<	1	<	2	<
5850225	65		0.09	<	1		4.59	<	1	<	2	<
5850511	57		0.08	<	1		6.73	<	1	<	2	<
5850731	59		0.07	<	1		6.61	<	1	<	2	<
5850733	70		0.07	<	1		1.81	<	1	<	2	<
5850847	109	<	0.02	<	1		21.1	<	1		6.76	<
5850855	147		0.06	<	1		35	<	1	<	2	
5857307	86		0.08	<	1		2.8	<	1	<	2	<
5857312	90		0.04	<	1		7.35	<	1	<	2	<
5857901	87		0.05	<	1		2.6	<	1		10	<
5858102	105		0.06	<	1		35	<	1	<	2	<
5858423	85		0.05	<	1		45.5	<	1	<	2	<
5858508	97		0.05	<	1		3.6	<	1	<	2	<
5857608	196		0.05	<	1		16.2	<	1	<	2	
5842914	71.4		0.28	<	1		5.13	<	1	<	2	<
5842916	71.6		0.09	<	1		25.6	<	1	<	2	
5842922	157		0.72	<	1		6.75	<	1	<	2	<
5850123	50		0.22	<	1		8.83	<	1		7.08	<
5850201	61.2		0.13	<	1		5.37	<	1		2	<
5850211	60.8		0.11	<	1		7.27	<	1		3.07	<
5850215	60.5		0.06	<	1		7.43	<	1		7.71	<
5850224	61.5		0.14	<	1		6.32	<	1		4.69	<
5850405	77		0.1	<	1		5.99	<	1		18.9	<
5850511	51.7		0.05	<	1		7.32	<	1		4.48	<
5850733	52.5		0.14	<	1		5.96	<	1		3.77	<
5850847	73.8		0.02	<	1		4.88	<	1		10.9	<
5850855	79.2		0.07	<	1		5.91	<	1	<	2	
5857307	75.4		0.07	<	1		4.77	<	1	<	2	<
5857901	61.5		0.04	<	1		5.25	<	1		6.05	<
5858121	89.4		0.06	<	1		5.34	<	1		2.19	<
5858128	50		0.03	<	1		4.66	<	1		2.46	<
5858403	55.5		0.03	<	1		4.01	<	1	<	2	<
5858424	50		0.04	<	1		4.18	<	1		2.49	<
5858508	69.7		0.04	<	1		6.1	<	1	<	2	<
5842811	51		0.218	<	1		3.08	<	1		269	
5842914	51		0.132	<	1	<	1	<	1	<	2	<
5842916	51		0.155	<	1		5.17	<	1	<	2	<
5842920	0.011		0.112	<	1		1.2	<	1		3.45	J
5842921	19		0.171	J	0.43		38.7	<	1		1310	
5842922	51		0.361		2.05	<	1	<	1	<	2	<
5842915	51		0.0918	<	1	J	0.46	<	1		4.19	<
5850123	51		0.2	<	1		3.51	<	1		2.29	<

State Well Number	Iron, Dissolved (µg/L as Fe)	Pb flag	Lead, Dissolved (µg/L as Pb)	Li flag	Lithium, Dissolved (µg/L as Lil)	Mn flag	Manganese, Dissolved (µg/L as Mn)	Mo flag	Molybdenum, Dissolved (µg/L as Mo)	Ni Flag
5842920	50	<	1		8.9	<	1	<	1	
5850123	78	<	1		6.03		6.87		1.11	
5850201	50	<	1		11		1.02		2.88	
5850211	50	<	1		6.8	<	1	<	1	
5850222	50	<	1		16	<	1	<	1	
5850225	50	<	1		3.24	<	1		1	
5850511	50	<	1		4.71	<	1		2.03	
5850731	50	<	1		2.94	<	1	<	1	
5850733	50	<	1		4.19	<	1	<	1	
5850847	50		2.52		6.16	<	1		7.08	
5850855	86	<	1		10.2	<	1		6.3	
5857307	50	<	1		7.5	<	1	<	1	
5857312	50	<	1		7.76	<	1		2.35	
5857901	50	<	1		8.2	<	1		1.4	
5858102	50	<	1		4.3	<	1		1.8	
5858423	50	<	1		3.8	<	1	<	1	
5858508	50	<	1		9.1	<	1		63	
5857608	79		1.38		14.4		1.41		20.7	
5842914	50	<	1		16.3	<	1	<	1	
5842916	114	<	1		2.92		3.11	<	1	
5842922	50	<	1		38.4		1.23	<	1	
5850123	50	<	1		4.56	<	1	<	1	
5850201	50		1.84		12.3		1.35		1.27	
5850211	50		5.11		4.3	<	1	<	1	
5850215	50		1.75		6.59	<	1	<	1	
5850224	50		6.04		5.99		1.03	<	1	
5850405	50	<	1		19.6	<	1	<	1	
5850511	50	<	1		6.42	<	1		1.53	
5850733	50	<	1		7.35	<	1	<	1	
5850847	50		7.49		8.08	<	1		3.17	
5850855	72	<	1		11.9		2.82		5.15	
5857307	50	<	1		5.12	<	1	<	1	
5857901	50	<	1		5.77	<	1		1.08	
5858121	50	<	1		6.75	<	1		1.22	
5858128	50	<	1		8.29		1.55		13.3	
5858403	50	<	1		6.02	<	1		2	
5858424	50	<	1		4.92	<	1	<	1	
5858508	50	<	1		8.45	<	1		55.9	
5842811	73.1		139	<	2	<	1	<	1	
5842914	51	<	1		6.65	<	1	<	1	
5842916	51	<	1		3.42	<	1	<	1	
5842920	8.1	<	1		4.74	<	1	<	1	
5842921	690		145		6.67		2	J	0.65	
5842922	51	<	1		18.6	<	1	<	1	
5842915	50		2.25		10.6	<	1	J	0.85	J
5850123	51	<	1		4.31		1.35	<	1	

State Well Number	Nickel, Dissolved (µg/L as Ni)	N flag	Nitrite plus Nitrate, dissolved (mg/L as N)	Se flag	Selenium, Dissolved (µg/L as Se)	Sr flag	Strontium, Dissolved (µg/L as Sr)	Temperature, Water (Celcius)	Tl flag	Thallium, Dissolved (µg/L as Tl)
5842920	13.2		1.8	<	4		445	21.7	<	1
5850123	22.7		2.48	<	4		869	24	<	1
5850201	10.2		0.924	<	4		4270	23.9	<	1
5850211	10.9		1.78	<	4		207	21.9	<	1
5850222	9.34		0.829	<	4		16300	23.4	<	1
5850225	9.49		1.02	<	4		207	22.1	<	1
5850511	11.8		1.15	<	4		1200	22.1	<	1
5850731	1.55		0.875	<	4		419	21.6	<	1
5850733	3.63		1.27	<	4		636	22.2	<	1
5850847	11.6		0.884	<	4		24600	25.4	<	1
5850855	9.4		0.013	<	4		45	24.9	<	1
5857307	10.5		1.52	<	4		235	21.7	<	1
5857312	10.2		0.429	<	4		16800	23.5	<	1
5857901	8.7		208	<	4		2560	23.4	<	1
5858102	8.8		1.13	<	4		5470	22.2	<	1
5858423	12.7		1.27	<	4		249	21.9	<	1
5858508	13		0.248	<	4		49.5	24.3	<	1
5857608	9.81	<	0.02	<	4		25400	23.2	<	1
5842914	1.42		1.46	<	4		2770	21.8	<	1
5842916	21.4		1.41	<	4		311	20.6	<	1
5842922	3.51		1.39	<	4		2380	21.4	<	1
5850123	3.33		2.04	<	4		733	23.9	<	1
5850201	1.72		0.94	<	4		4570	24.2	<	1
5850211	2.38		2.26	<	4		355	22.2	<	1
5850215	1.97		3	<	4		874	24.7	<	1
5850224	1.98		2.54	<	4		856	28	<	1
5850405	2.24		4.06	<	4		457	27.7	<	1
5850511	2.09		1.19	<	4		2140	28.5	<	1
5850733	1.74		0.929	<	4		1460	22.5	<	1
5850847	2.84		0.724	<	4		23700	26	<	1
5850855	2.71		0.0263	<	4		41300	25.9	<	1
5857307	1.76		1.48	<	4		216	22.8	<	1
5857901	1.8		0.871	<	4		1710	26.7	<	1
5858121	2.13		1.1	<	4		1620	22.7	<	1
5858128	2.24		0.0862	<	4		269	26.3	<	1
5858403	2.16		1.21	<	4		10100	23.5	<	1
5858424	1.84		1.55	<	4		195	26.6	<	1
5858508	4.84		0.118	<	4		47800	24.8	<	1
5842811	14.2		2.03	<	4		150	21	<	1
5842914	1.01		1.23	<	4		721	21.3	<	1
5842916	4.05		1.46	<	4		249	20.3	<	1
5842920	2.72		2.45	J	0.85		453		<	1
5842921	32.9		1.18	J	1.4		768		<	1
5842922	1.22		1.26	<	4		850	21.2	<	1
5842915	0.92		0.634	J	1.3		334		<	1
5850123	3.22		2.2	<	4		787	22.8	<	1

Appendix B. Tabulation of water chemistry and site data

State Well Number	V flag	Vanadium, Dissolved (µg/L as V)	Zn Flag	Zinc, Dissolved (µg/L as Zn)
5842920		3.4	<	2
5850123		10.4		16
5850201		3.07		58.3
5850211		3.5		32.7
5850222		2.75	<	4
5850225		2.64		22.7
5850511		3.51		6.4
5850731		4.02	<	4
5850733		2.21		5.96
5850847		7.54		4.4
5850855		10.5		2.9
5857307		2.7		16.8
5857312		3.72		94
5857901		3.7		19.3
5858102		11.6	<	2
5858423		14	<	2
5858508		1.6	<	2
5857608		4.57	<	4
5842914		3.26	<	4
5842916		2.7		14.4
5842922		3.38		16.1
5850123		3.21		12.7
5850201		3.18		163
5850211		4.24		148
5850215		5.13		10.3
5850224		4.03		370
5850405		4.73	<	4
5850511		3.34		28.9
5850733		3.55		66.9
5850847		2.97		4.95
5850855		2.39		27.3
5857307		2.96		16
5857901		3.71		67.7
5858121		3.6	<	4
5858128		1.75		12.8
5858403		2.74		6.11
5858424		2.54		39.4
5858508		2.17	<	4
5842811		1.3		1230
5842914		1.81	<	4
5842916		1.15	<	4
5842920		2.5		11
5842921		1.25		2350
5842922		1.76		4.63
5842915		1.35		8.12
5850123		1.24		6.05

Appendix B. Tabulation of water chemistry and site data

State Well Number	County	latitude DD	longitude DD	Well or Spring	Name/Owner	Well Depth (ft)	Distance from Kgru	Edwards Confined or Unconfined
5850201	Travis	30.2191667	-97.7936111	Well	John Noell	290	302	confined
5850211	Travis	30.2447222	-97.8275000	Well	Travis Country Estates	282	74	unconfined
5850215	Travis	30.2277778	-97.8102778	Well	City of Sunset Valley Well #3	360	115	confined
5850216	Travis	30.2322222	-97.7927778	Well	U.S. Geological Survey	582	-22	unconfined
5850222	Travis	30.2169444	-97.8197222	Well	Helen Besse	440	10	unconfined
5850416	Travis	30.1763889	-97.8672222	Well	Linda Wetzel	unknown	unknown	unconfined
5850417	Travis	30.1955556	-97.8463889	Well	COA Sister's (Zumwald)	350	53	confined
5850511	Travis	30.1711111	-97.8252778	Well	Rodney Johnson	285	299	confined
5850520	Travis	30.2075000	-97.8022222	Well	Herb Mendieta	315	355	confined
5850704	Travis	30.1411111	-97.8380556	Well	Marbridge Foundation	345	162	confined
5850731	Travis	30.1497222	-97.8605556	Well	Shady Hollow Estates WSC	438	75	confined
5850733	Travis	30.1366667	-97.8450000	Well	Suburban Austin Water, Bear Crk #2/Aquasource	312	270	confined
5850847	Travis	30.1302778	-97.8222222	Well	Creedmoor-Maha WSC	450	145	confined
5850852	Travis	30.1616667	-97.8183333	Well	J. D. Malone	420	247	confined
5850855	Travis	30.1461111	-97.8194444	Well	Village of San Leanna #1	500	144	confined
5857307	Hays	30.1005556	-97.8822222	Well	Dahlstrom Middle School	470	6	unconfined
5857509	Hays	30.0725000	-97.9202778	Well	Onion Creek Lodge	257	20	unconfined
5857913	Hays	30.0341667	-97.8913889	Well	Hays ISD Well #2	610	101	confined
5858102	Hays	30.1066667	-97.8544444	Well	Cimarron Park Water Co Inc.	400	215	confined
5858121	Hays	30.1055556	-97.8622222	Well	Leisurewoods Water Co. Well #5 / Aquasource	410	185	confined
5858216	Travis	30.1227778	-97.8150000	Well	Mystic Oaks W.S.C.	400	309	confined
5858403	Hays	30.0816667	-97.8427778	Well	City of Buda #1	390	268	confined
5858423	Hays	30.0683333	-97.8591667	Well	Comal Tackle	245	492	confined
5858424	Hays	30.0788889	-97.8719444	Well	Lee Ortivez	350	163	unconfined
5858508	Hays	30.0791667	-97.8311111	Well	Goforth W.S.C. Well #4	740	161	confined
58573DB	Hays	30.11445	-97.91221	Well	Dave Boone	400	-195	unconfined
5842811	Travis	30.2600000	-97.8233333	Spring	Back Door Springs	n/a	n/a	n/a
5842914	Travis	30.2636111	-97.7711111	Spring	Barton Springs	n/a	n/a	n/a
5842916	Travis	30.2800000	-97.7800000	Spring	Cold Springs	n/a	n/a	n/a
5842920	Travis	30.2633333	-97.7741667	Spring	Upper Barton Springs	n/a	n/a	n/a
5842922	Travis	30.2630556	-97.7675000	Spring	Old Mill Springs	n/a	n/a	n/a
5842825	Travis	30.2641667	-97.8144444	Well	Rudy's Bar-B-Q	420	46	unconfined
5842915	Travis	30.2508333	-97.7802778	Well	Genevieve Duncan	295	308	confined
5850123	Travis	30.2325000	-97.8633333	Well	New Forest Oaks	295	-54	unconfined
5850201	Travis	30.2191667	-97.7936111	Well	John Noell	290	302	confined
5850211	Travis	30.2447222	-97.8275000	Well	Travis Country Estates	282	74	unconfined
5850417	Travis	30.1955556	-97.8463889	Well	COA Sister's (Zumwald)	350	53	confined
5850513	Travis	30.1822222	-97.8194444	Well	Arthur Eatman	323	402	confined
5850731	Travis	30.1497222	-97.8605556	Well	Shady Hollow Estates WSC	438	75	confined
5850733	Travis	30.1366667	-97.8450000	Well	Suburban Austin Water, Bear Crk #2/Aquasource	312	270	confined
5850847	Travis	30.1302778	-97.8222222	Well	Creedmoor-Maha WSC	450	145	confined
5850855	Travis	30.1461111	-97.8194444	Well	Village of San Leanna #1	500	144	confined
5857314	Hays	30.1158333	-97.8950000	Well	Elliot Ranch Well #1	655	-82	unconfined
5857913	Hays	30.0341667	-97.8913889	Well	Hays ISD Well #2	610	101	confined

Appendix B. Tabulation of water chemistry and site data

State Well Number	Yield or Specific Capacity	top sample interval	bottom sample interval	Casing	Year Drilled	Aquifer	TWDB Aquifer Code	Year Plugged	Primary Use	Mo	Day	Year
5850201					1917	Edwards	218EDRDA		Domestic	6	20	2001
5850211		265	282	Steel	1973	Edwards	218EDRDA		Irrigation	6	22	2001
5850215		200	360	Steel	1976	Edwards	218EDRDA		Public Supply	6	20	2001
5850216		180	480		1978	Edwards	218EDRDA		Monitor	7	5	2001
5850222	1.73	340	440	pvc	1980	Edwards	218EBFZA		Domestic	6	22	2001
5850416					unknown	Edwards	218EBFZA		Domestic	7	10	2001
5850417				Steel	1938	Edwards	218EDRDA		Monitor	6	18	2001
5850511		119	285	Steel	1956	Edwards	218EDRDA		Domestic	6	20	2001
5850520	1.1				unknown	Edwards	218EDRDA		Irrigation	6	20	2001
5850704	37.1	140	345	Steel	1968	Edwards	218EDRDA		PWS	6	26	2001
5850731	21			Steel	1983	Edwards	218EDRDA		Public Supply	6	26	2001
5850733		150	250		1972	Edwards	218EDRDA		Public Supply	6	26	2001
5850847	13	158	450	steel	1980	Edwards	218EDRDA		Public Supply	6	26	2001
5850852	0.5	260	420	steel	1974	Edwards	218EDRDA		Public Supply	6	29	2001
5850855	1.4	300	500	steel	1979	Edwards	218EDRDA		Public Supply	6	27	2001
5857307	15				1985	Edwards	218EDRDA		Public Supply	6	21	2001
5857509	5.15			pvc	1988	Edwards	218EDRDA		Domestic	7	10	2001
5857913	67	320	610		1994	Edwards	218EBFZA		Public Supply	6	21	2001
5858102	20.3	300	400		1957	Edwards	218EDRDA		Public Supply	6	27	2001
5858121		224	410		1978	Edwards	218EDRDA		Public Supply	6	26	2001
5858216					unknown	Edwards	218EDRDA		Public Supply	6	22	2001
5858403		222	390		1954	Edwards	218EBFZA		Public Supply	6	27	2001
5858423	3.1	224	245		1997	Edwards	218EDRDA		Industrial	6	22	2001
5858424		250	350		2000	Edwards	218EDRDA		Domestic	6	27	2001
5858508	14	460	740		1985	Edwards	218EDRDA		Public Supply	6	25	2001
58573DB	1.5				unknown	Edwards-Trinity	218EDGRU		Domestic	6	27	2001
5842811					n/a	Edwards	218EDRDA		Recreation	5	7	2002
5842914					n/a	Edwards	218EBFZA		Recreation	5	9	2002
5842916					n/a	Edwards	218EBFZA		Unused	6	13	2002
5842920					n/a	Edwards	218EBFZA		Unused	5	9	2002
5842922					n/a	Edwards	218EDRDA		Unused	5	9	2002
5842825	0.49				unknown	Edwards	218EDRDA		Commercial	5	14	2002
5842915		108	295	Steel	1942	Edwards	218EDRDA		Irrigation	5	14	2002
5850123		147	295	Steel	1998	Edwards	218EBFZA		Irrigation	5	13	2002
5850201					1917	Edwards	218EDRDA		Domestic	5	13	2002
5850211		265	282	Steel	1973	Edwards	218EDRDA		Irrigation	5	14	2002
5850417				Steel	1938	Edwards	218EDRDA		Monitor	5	7	2002
5850513					1940	Edwards	218EDRDA		Domestic	5	14	2002
5850731	21			Steel	1983	Edwards	218EDRDA		Public Supply	5	16	2002
5850733		150	250		1972	Edwards	218EDRDA		Public Supply	5	16	2002
5850847	13	158	450	steel	1980	Edwards	218EDRDA		Public Supply	5	15	2002
5850855	1.4	300	500	steel	1979	Edwards	218EDRDA		Public Supply	5	15	2002
5857314					1999	Edwards	218EBFZA		Public Supply	5	15	2002
5857913	67	320	610		1994	Edwards	218EBFZA		Public Supply	5	8	2002

Appendix B. Tabulation of water chemistry and site data

State Well Number	sample time	Date	Avg. Barton Springs Flow (cfs)	temp ©	Collection Remarks	Analysis Reliability Remark	Collecting Agency	Lab
5850201	1210	6/20/2001	93	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850211	1220	6/22/2001	93	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850215	0940	6/20/2001	93	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850216	1525	7/5/2001	93	23	Bailed by Well Service	Good, in accordance with UM-51	BSEACD	LCRA, TX
5850222	1135	6/22/2001	93			Good, in accordance with UM-51	BSEACD	LCRA, TX
5850416	1340	7/10/2001	93			Good, in accordance with UM-51	BSEACD	LCRA, TX
5850417	1410	6/18/2001	93	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850511	0955	6/20/2001	93	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850520	1400	6/20/2001	93			Good, in accordance with UM-51	BSEACD	LCRA, TX
5850704	1145	6/26/2001	93			Good, in accordance with UM-51	BSEACD	LCRA, TX
5850731	1145	6/26/2001	93			Good, in accordance with UM-51	BSEACD	LCRA, TX
5850733	1050	6/26/2001	93	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850847	1027	6/26/2001	93	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850852	945	6/29/2001	93			Good, in accordance with UM-51	BSEACD	LCRA, TX
5850855	1010	6/27/2001	93	25		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857307	1100	6/21/2001	93	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857509	15:30	7/10/2001	93			Good, in accordance with UM-51	BSEACD	LCRA, TX
5857913	1230	6/21/2001	93	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858102	915	6/27/2001	93			Good, in accordance with UM-51	BSEACD	LCRA, TX
5858121	1535	6/26/2001	93	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858216	1025	6/22/2001	93	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858403	1155	6/27/2001	93	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858423	930	6/22/2001	93			Good, in accordance with UM-51	BSEACD	LCRA, TX
5858424	1530	6/27/2001	93			Good, in accordance with UM-51	BSEACD	LCRA, TX
5858508	0945	6/25/2001	93	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
58573DB	1415	6/27/2001	93			Good, in accordance with UM-51	BSEACD	LCRA, TX
5842811	1500	5/7/2002	87	21	Grab sample from spring	Good, in accordance with UM-51	BSEACD	LCRA, TX
5842914	0841	5/9/2002	87	21	Grab sample from spring	Good, in accordance with UM-51	BSEACD	LCRA, TX
5842916	1015	6/13/2002	87	20	Grab sample from spring	Good, in accordance with UM-51	BSEACD	LCRA, TX
5842920	0930	5/9/2002	87	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842922	1044	5/9/2002	87	21	Grab from spring upwelling	Good, in accordance with UM-51	BSEACD	LCRA, TX
5842825	0900	5/14/2002	87	20		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842915	1015	5/14/2002	87	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850123	1012	5/13/2002	87	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850201	1108	5/13/2002	87	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850211	0935	5/14/2002	87	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850417	1242	5/7/2002	87	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850513	1050	5/14/2002	87	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850731	1050	5/16/2002	87	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850733	1007	5/16/2002	87	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850847	0907	5/15/2002	87	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850855	1020	5/15/2002	87	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857314	1123	5/15/2002	87	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857913	1135	5/8/2002	87	22		Good, in accordance with UM-51	BSEACD	LCRA, TX

State Well Number	Ion Balance	Measured TDS (mg/L)	Si flag	Silica (Si, mg/L)	Ca flag	Calcium (Ca, mg/L)	Mg flag	Magnesium (Mg, mg/L)	Na flag	Sodium (Na, mg/L)	K flag
5850201	Balanced	339		12.3		65.5		24.6		13	
5850211	Balanced	376		12.7		101		27.3		14.7	
5850215	Balanced	356		16.8		81.3		28.4		9.49	
5850216	Balanced	413		12.3		90.2		33.5		23	
5850222	Balanced	528				66.6		45		9.91	
5850416	Balanced	309				61.6		29.9		8.58	
5850417	Balanced	249		13.1		43.1		24.9		5.73	
5850511	Balanced	311				81.5		17		8.38	
5850520	Balanced	331				71.7		24.1		7.33	
5850704	Balanced	313				79.5		18.2		7.3	
5850731	Balanced	310				81.4		24		7.8	
5850733	Balanced	311		10.8		74.1		19.8		8.93	
5850847	Balanced	330		11.2		63.7		25.3		10.5	
5850852	Balanced	363				57.6		31.5		18.1	
5850855	Balanced	401		12.2		59.7		28.8		9.41	
5857307	Balanced	290		11.9		76.7		25		7.76	
5857509	Balanced	303				72.5		23		7.09	
5857913	Balanced	328		8.49		91.5		22		9.26	
5858102	Balanced	277				59.9		23.4		6.16	
5858121	Balanced	283		10.7		64.9		21.6		7.46	
5858216	Balanced	670		13		72.2		52		81.2	
5858403	Balanced	345		11.2		80.7		26.1		7.1	
5858423	Balanced	354				85.3		20.4		7.95	
5858424	Balanced	275				73.5		21.3		7.66	
5858508	Balanced	420		11.3		69.1		30		6.97	
58573DB	Balanced	235				56.9		22.1		5.38	
5842811	Balanced			19.2		109		26.6		17.7	
5842914	Balanced			12.1		83		21.5		14.4	
5842916	Balanced			11.9		88.2		22.8		12.5	
5842920	Balanced			13.8		86.5		23.8		11.2	
5842922	Balanced			12		84.4		23.6		30.3	
5842825	Balanced			11.3		83.6		20.1		18.5	
5842915	Balanced			10.7		78.3		25.9		14.8	
5850123	Balanced			11.8		122		24.2		15.6	
5850201	Balanced			13.3		67.9		25.3		12.9	
5850211	Unbalanced			14.1		83.9		25.3		11.5	
5850417	Balanced			13.6		44.1		25.5		5.9	
5850513	Balanced			13		83.5		21		8.83	
5850731	Balanced			12.3		82		24.8		7.74	
5850733	Balanced			12.2		76.7		20.6		9.12	
5850847	Balanced			12.3		67.7		25.7		7.44	
5850855	Balanced			13.5		59		29		9.45	
5857314	Balanced			13.8		92.5		21.7		6.63	
5857913	Balanced			11.9		85.6		21.2		8.9	

Appendix B. Tabulation of water chemistry and site data

State Well Number	Potassium (K, mg/L)	Carbonate (CO3, mg/L)	Bicarbonate (HCO3, mg/L)	SO4 flag	Sulfate (SO4, mg/L)	Cl flag	Chloride (Cl, mg/L)	Fl flag	Fluoride (Fl, mg/L)	NO3 flag	Nitrate (NO3, mg/L)	pH flag	pH (su)
5850201	1.53	0	297.76		30.1		21.6		0.37		4.38		6.7
5850211	1.21	0	361.22		31.2		28.9		0.04		9.08		6.83
5850215	1.15	0	346.57		11.9		14.3		0.17		14.03		6.57
5850216	3.21	0	292.88		79		61		0.64		6.60		7.17
5850222	5.55		275.48		132		10.9		2.12		0.03		
5850416	1.09		316.89		6.88		15		0.188		4.25		
5850417	1.29	0	259.93		10.6		8.36		0.37		1.14		6.54
5850511	1.17	0	306.31		23.5		15.5		0.16		3.49		6.8
5850520	1.15		319.32		19.4		13.4		0.261		6.24		
5850704	1.05		315.67		20.1		13.8		0.134		3.28		
5850731	0.96		342.47		21		15.6		0.136		4.17		
5850733	1.16	0	288.00		26.6		16.9		0.19		5.27		6.99
5850847	1.34	0	297.76		46.2		16.4		0.8		4.83		7.15
5850852	2.64		271.82		80.4		18.2		2.09		1.40		
5850855	1.53	0	268.48		88		14.4		1.88		0.32		7.23
5857307	1.29	0	302.65		23.4		15.1		0.17		6.73		6.8
5857509	1.27		294.96		22.8		12.5		0.142		3.59		
5857913	1.35	0	329.49		25		16.4		0.17		5.14		6.59
5858102	1.32		277.91		23.8		10.5		0.409		5.58		
5858121	1.27	0	277.02		23.1		13.1		0.23		8.19		7.24
5858216	10.6	0	274.58		251		60.4		3.87	<	0.09		7.08
5858403	1.44	0	330.71		26.6		12.1		0.4		5.53		7.07
5858423	1.18		321.76		25.6		15.2		0.0617		4.65		
5858424	1.38		281.57		24		13.2		0.157		5.62		
5858508	1.32	0	327.05		81.1		11.4		1.37		1.11		6.94
58573DB	1.31		254.77		5.87		11.9		0.111		4.60		
5842811	0.9	0	432.00		19.9		32.5		0.11		9.47		6.68
5842914	1.13	0	333.15		28.5		24.8		0.18		6.38		6.72
5842916	1.23	0	325.83		34.3		24.9		0.16		7.75		6.95
5842920	1.11	0	340.48		29.5		19.8		0.18		10.63		6.72
5842922	1.48	0	319.73		44.4		48.8		0.21		6.33		6.81
5842825	1.12	0	281.90		45.1		39.3		0.15		2.74		6.97
5842915	1.57	0	250.17		87.9		26		0.29		2.76		7.15
5850123	1.59	0	419.80		49.3		28.7		0.17		8.54		6.62
5850201	1.4	0	298.98		28.6		20.9		0.4		4.34		6.73
5850211	0.93		333.94		21		25		0.13		8.81		6.78
5850417	1.25	0	255.05		10.6		8.18		0.35		1.66		6.9
5850513	1.06	0	324.61		21.7		16		0.19		6.91		6.89
5850731	0.9	0	340.48		20.4		15.4		0.15		4.22		6.99
5850733	1.09	0	296.54		25.1		16.6		0.2		6.64		7.06
5850847	1.36	0	298.98		43.4		11.2		0.75		5.76		7.01
5850855	1.43	0	267.26		85.5		12		1.98		0.29		7.07
5857314	0.71	0	370.99		9.74		11.6		0.13		9.39		6.48
5857913	1.14	0	345.36		21.2		15		0.17		6.46		6.76

Appendix B. Tabulation of water chemistry and site data

State Well Number	Calculated TDS (mg/L)	phen Alk flag	Phen Alk (mg/L)	total alkalinity (CaCO3, mg/L)	total hardness	Percent Sodium (Na, %)	q00931_sar	q71860_rsc	Specific Conductance (mS/cm)
5850201	323	<	1	244	269	9	0.35	0	477
5850211	404	<	1	296	364	8	0.34	0	641
5850215	348	<	1	284	321	6	0.23	0	491
5850216	455	<	1	240	364	12	0.53	0	656
5850222	408			226					
5850416	283			260					
5850417	239	<	1	213	213	5	0.17	0.06	430
5850511	301	<	1	251	273	6	0.22	0	540
5850520	301			262					
5850704	299			259					
5850731	323			281					
5850733	306	<	1	236	267	6	0.24	0	450
5850847	347	<	1	244	287	7	0.28	0	471
5850852	346			223					
5850855	390	<	1	220	315	7	0.25	0	520
5857307	317	<	1	248	294	5	0.2	0	450
5857509	288			242					
5857913	341	<	1	270	319	5	0.23	0	485
5858102	268			228					
5858121	287	<	1	227	252	6	0.2	0	430
5858216	703	<	1	225	421	30	1.78	0	970
5858403	342	<	1	271	319	4	0.18	0	490
5858423	319			264					
5858424	285			231					
5858508	424	<	1	268	352	4	0.18	0	584
58573DB	233			209					
5842811	447	<	1	354	381	9	0.39	0	715
5842914	356	<	1	273	296	9	0.36	0	582
5842916	364	<	1	267	314	7	0.31	0	479
5842920	364	<	1	279	314	7	0.28	0	598
5842922	409	<	1	262	308	17	0.75	0	669
5842825	360	<	1	231	291	12	0.47	0	510
5842915	371	<	1	205	302	9	0.37	0	518
5850123	469	<	1	344	404	7	0.34	0	708
5850201	326	<	1	245	278	9	0.34	0	502
5850211	355	<	1	274			0.28		442
5850417	239	<	1	209	218	5	0.18	0	404
5850513	332	<	1	266	295	6	0.22	0	426
5850731	335	<	1	279	307	5	0.19	0	398
5850733	314	<	1	243	276	6	0.24	0	379
5850847	341	<	1	245	295	5	0.2	0	452
5850855	380	<	1	219	308	7	0.25	0	487
5857314	348	<	1	304	320	4	0.16	0	410
5857913	341	<	1	283	301	6	0.22	0	588

Appendix B. Tabulation of water chemistry and site data

State Well Number	Alkalinity, Field, Dissolved as CaCO3	Al flag	Aluminum, Dissolved (µg/L as Al)	Sb flag	Antimony, Dissolved (µg/L as Sb)	As flag	Arsenic, Dissolved (µg/L as As)	Ba flag	Barium, Dissolved (µg/L as Ba)	Be flag	Beryllium, Dissolved (µg/L as Be)	B flag
5850201		<	4	<	1	<	2		100	<	1	<
5850211		<	4	<	1	<	2		68	<	1	<
5850215		<	4	<	1	<	2		256	<	1	<
5850216			980	<	1	<	20		96.3	<	10	
5850222		<	4	<	1	<	2		38	<	1	
5850416		<	4	<	1	J	0.38		39	<	1	<
5850417	182	<	4	<	1	<	2		83.5	<	1	<
5850511		<	4	<	1	<	2		28.9	<	1	<
5850520		<	4	<	1	<	2		93.9	<	1	<
5850704		<	4	<	1	<	2		33.6	<	1	<
5850731		<	4	<	1	<	2		34.8	<	1	<
5850733		<	4	<	1	<	2		34.2	<	1	<
5850847		<	4	<	1	<	2		103	<	1	<
5850852		<	4	<	1	<	2		48.9	<	1	
5850855		<	4	<	1	<	2		69.9	<	1	<
5857307		<	4	<	1	<	2		29.5	<	1	<
5857509		<	4	<	1	J	0.37		29.6	<	1	<
5857913		<	4	<	1	<	2		32.2	<	1	<
5858102		<	4	<	1	<	2		54.2	<	1	<
5858121		<	4	<	1	<	2		33.8	<	1	<
5858216		<	4	<	1	<	2		20.4	<	1	
5858403		<	4	<	1	<	2		126	<	1	<
5858423			5.56	<	1	<	2		32.5	<	1	<
5858424			5.14	<	1	<	2		29.9	<	1	J
5858508		<	4	<	1	<	2		149	<	1	<
58573DB		<	4	<	1	J	0.27		38.8	<	1	<
5842811	364	<	4	<	1	<	2		62.9	<	1	
5842914	268	<	4	<	1	<	2		51.7	<	1	
5842916		<	4	<	1	<	2		85.8	<	1	
5842920	292	<	4	<	1	<	2		119	<	1	
5842922	274	<	4	<	1	<	2		54.3	<	1	
5842825	240	<	4	<	1	<	2		37.7	<	1	
5842915	214	<	4	<	1	<	2		33.2	<	1	
5850123	350	<	4	<	1	<	2		56.3	<	1	
5850201	254	<	4	<	1	<	2		123	<	1	
5850211	286		5.93	<	1	<	2		83.9	<	1	
5850417	222	<	4	<	1	<	2		92.6	<	1	<
5850513	274	<	4	<	1	<	2		38.6	<	1	
5850731	283	<	4	<	1	<	2		33.8	<	1	
5850733	252	<	4	<	1	<	2		33.9	<	1	
5850847		<	4	<	1	<	2		122	<	1	
5850855	228		20.8	<	1	<	2		80.1	<	1	
5857314	318	<	4	<	1	<	2		39	<	1	
5857913	271.4	<	4	<	1	<	2		34	<	1	

State Well Number	Boron, Dissolved (µg/L as B)	Br flag	Bromide, Dissolved (mg/L as Br)	Cd flag	Cadmium, Dissolved (µg/L as Cd)	Cr flag	Chromium, Dissolved (µg/L as Cr)	Co flag	Cobalt, Dissolved (µg/L as Co)	Cu flag	Copper, Dissolved (µg/L as Cu)	Fe flag
5850201	51		0.162	<	1	<	1	<	1	<	2	<
5850211	51		0.146	<	1	<	1	<	1	<	2	<
5850215	51		0.135	<	1	<	1	<	1		3.93	<
5850216	72.5		0.484	<	1	<	10		10.5		351	
5850222	339		0.0505	<	1		1.86	J	0.068	<	2	J
5850416	51		0.036	<	1	J	0.4	<	1	J	1.3	J
5850417	51		0.0622	<	1	<	1	<	1	<	2	<
5850511	51		0.105	<	1	<	1	<	1	<	2	<
5850520	50		0.0856	<	1	J	0.75	<	1	<	2	J
5850704	50		0.0919	<	1	<	1	<	1	J	1	J
5850731	50		0.122	<	1		1.83	<	1	J	0.93	<
5850733	51		0.0915	<	1		1.89	<	1	<	2	<
5850847	51	<	0.02	<	1	<	1	<	1		5.84	<
5850852	124		0.104	<	1	<	1	<	1	J	1.5	J
5850855	51		0.0624	<	1	<	1	<	1	<	2	
5857307	51		0.146	<	1	<	1	<	1	<	2	<
5857509	50		0.0969	<	1	J	0.45	<	1	J	1.2	J
5857913	51		0.0798	<	1	<	1	<	1	<	2	<
5858102	51		0.0711	<	1	J	0.92	<	1	J	0.44	<
5858121	51		0.0658	<	1		2.05	<	1	<	2	<
5858216	1020		0.343	<	1	<	1	<	1	<	2	
5858403	51		0.101	<	1	<	1	<	1	<	2	<
5858423	51		0.075	<	1		2.58	J	0.095	J	1.8	
5858424	12		0.133	<	1	<	1	<	1		2.14	J
5858508	51		0.0672	<	1		2.23	<	1	<	2	<
58573DB	51		0.0445	<	1	<	1	<	1		9.42	J
5842811	50.1		0.137	<	1		4.67	<	1	<	1	<
5842914	133		0.116		1.02		3.78	<	1	<	1	<
5842916	133		0.0869	<	1		4.93	<	1	<	1	<
5842920	138		0.091		1.01		3.9	<	1	<	1	<
5842922	146		0.269	<	1		3.81	<	1	<	1	<
5842825	141		0.134	<	1		2.02	<	1		1.04	<
5842915	100		0.0731	<	1		1.08	<	1		3.7	<
5850123	115		0.151	<	1		4.35	<	1		1.35	<
5850201	143		0.116	<	1		2.37	<	1		1.22	<
5850211	123		0.0981	<	1		3.08	<	1		2.39	<
5850417	50		0.0306	<	1		2.73	<	1		4.57	<
5850513	129		0.0719	<	1		2.44	<	1		1.66	<
5850731	138		0.078	<	1		2.46	<	1	<	1	<
5850733	135		0.0879	<	1		1.83	<	1		5.02	<
5850847	148		0.0497	<	1		2.28	<	1		5.59	<
5850855	123		0.0518	<	1		2.16	<	1	<	1	
5857314	121		0.06	<	1		2.54	<	1		1.83	<
5857913	126		0.069		1.01		4.14	<	1		1.83	<

State Well Number	Iron, Dissolved (µg/L as Fe)	Pb flag	Lead, Dissolved (µg/L as Pb)	Li flag	Lithium, Dissolved (µg/L as Lil)	Mn flag	Manganese, Dissolved (µg/L as Mn)	Mo flag	Molybdenum, Dissolved (µg/L as Mo)	Ni Flag
5850201	51	<	1		9.39	<	1	<	1	<
5850211	51	<	1		2.64	<	1	<	1	
5850215	51	<	1		4.13	<	1	<	1	
5850216	7660		107		21.1		429	<	1	
5850222	40	<	1		29.4		1.54	<	1	
5850416	19	<	1		3.11	<	1	J	0.33	
5850417	51	<	1		4.52		6.75		1.48	<
5850511	51	<	1		2.74	<	1	<	1	<
5850520	8	<	1		3.94	<	1	J	0.31	J
5850704	7.9	<	1		2.38	<	1	J	0.26	
5850731	50	<	1		2.47	<	1	<	1	
5850733	51	<	1		3.33		1.29	<	1	
5850847	51		1.66		4.59	<	1		4.21	
5850852	18	J	0.82		19.1	<	1		1.49	<
5850855	89.8	<	1		8.03		1.97		3.64	
5857307	51	<	1		3.95	<	1	<	1	<
5857509	14	<	1		3.54	<	1	J	0.63	J
5857913	51	<	1		3.35	<	1	<	1	
5858102	50	<	1		3.39	<	1	J	0.71	
5858121	51	<	1		3.14	<	1	<	1	
5858216	52.8	<	1		129		1.81	<	1	<
5858403	51	<	1		3.35	<	1		1.75	<
5858423	51	<	1		2.75		1.95	<	1	
5858424	22	<	1		2.59	<	1	J	0.64	J
5858508	51	<	1		4.5	<	1		49.1	
58573DB	17	<	1.02	J	1.3	<	1	J	0.37	<
5842811	50		1.01	<	2	<	1	<	1	
5842914	50	<	1		7.47	<	1	<	1	
5842916	50	<	1		3.53	<	1	<	1	
5842920	50	<	1		5.38	<	1	<	1	
5842922	50	<	1		18.8	<	1	<	1	
5842825	50	<	1		3.59	<	1	<	1	
5842915	50	<	1		36.8	<	1		1.55	
5850123	50	<	1		4.21	<	1	<	1	
5850201	50	<	1		9.67	<	1		1.13	
5850211	50		1.44	<	2	<	1	<	1	
5850417	50	<	1		4.93		4.58		1.87	
5850513	50	<	1		3.61	<	1		1.16	
5850731	50	<	1		2.98	<	1	<	1	
5850733	50	<	1		4.21	<	1	<	1	
5850847	50	<	1		4.3	<	1		3.4	
5850855	62.8	<	1		9.05		2.01		4.08	
5857314	50		1.14		2.43	<	1	<	1	
5857913	50		1.05		3.79	<	1	<	1	

State Well Number	Nickel, Dissolved (µg/L as Ni)	N flag	Nitrite plus Nitrate, dissolved (mg/L as N)	Se flag	Selenium, Dissolved (µg/L as Se)	Sr flag	Strontium, Dissolved (µg/L as Sr)	Temperature, Water (Celcius)	Tl flag	Thallium, Dissolved (µg/L as Tl)
5850201	1		0.99	<	4		4190	23.3	<	1
5850211	1.28		2.05	<	4		340	21.9	<	1
5850215	1.12		3.17	<	4		468	22.8	<	1
5850216	45.4		1.49	<	40		1600	22.8	<	1
5850222	1.45	J	0.0079	<	4		39100		<	1
5850416	1.01		0.96	<	4		467		J	0.099
5850417	1		0.257	<	4		2790	22.9	<	1
5850511	1		0.788	<	4		395	21.5	<	1
5850520	0.7		1.41	J	1		2480		<	1
5850704	2.17		0.741	<	4		253		<	1
5850731	1.9		0.942	<	4		440		<	1
5850733	3.21		1.19	<	4		657	21.7	<	1
5850847	2.05		1.09	<	4		21300	24	<	1
5850852	1		0.316	<	4		22700		<	1
5850855	1.81		0.0719	<	4		42200	24.6	<	1
5857307	1		1.52	<	4		222	22.2	<	1
5857509	0.97		0.812	J	0.67		287		J	0.059
5857913	1.13		1.16	<	4		369		<	1
5858102	1.43		1.26	<	4		4880		<	1
5858121	1.65		1.85	<	4		1080	22.5	<	1
5858216	1	<	0.02	<	4		23800	23.4	<	1
5858403	1		1.25	<	4		9100	22.5	<	1
5858423	1.97		1.05	<	4		235		<	1
5858424	0.32		1.27	<	4		233		<	1
5858508	3.65		0.25	<	4		50000	23.6	<	1
58573DB	1		1.04	<	4		393		<	1
5842811	2.38		2.14	<	4		167	20.9	<	1
5842914	1.66		1.44	<	4		917	21	<	1
5842916	1.99		1.75	<	4		265	20.1	<	1
5842920	1.64		2.4	<	4		527	21.4	<	1
5842922	1.65		1.43	<	4		1060	20.8	<	1
5842825	1.99		0.618	<	4		309	20.2	<	1
5842915	1.77		0.624	<	4		530	20.6	<	1
5850123	2.91		1.93	<	4		779	22.9	<	1
5850201	1.32		0.98	<	4		4490	23.2	<	1
5850211	1.6		1.99	<	4		275	21.8	<	1
5850417	1.51		0.374	<	4		3340	22.7	<	1
5850513	7.1		1.56	<	4		703	22.7	<	1
5850731	1.46		0.952	<	4		480	21.1	<	1
5850733	2.89		1.5	<	4		669	21	<	1
5850847	1.83		1.3	<	4		18700		<	1
5850855	1.89		0.0665	<	4		37200	24.3	<	1
5857314	5.05		2.12	<	4		383	22.7	<	1
5857913	1.64		1.46	<	4		278	21.5	<	1

Appendix B. Tabulation of water chemistry and site data

State Well Number	V flag	Vanadium, Dissolved (µg/L as V)	Zn Flag	Zinc, Dissolved (µg/L as Zn)
5850201		2.11		34.5
5850211		1.76		105
5850215		3.48		5.91
5850216	<	10		1850
5850222	<	1	J	3.6
5850416		2.97		5.48
5850417		1.64		16.7
5850511		1.62	<	4
5850520		2.16	J	2
5850704	J	0.84		14.7
5850731		2.02		4.6
5850733		1.68		18.5
5850847		1.36		12.2
5850852	<	1		6
5850855	<	1		33.8
5857307		1.26		6.27
5857509		1.69		6.23
5857913		1.1	<	4
5858102		1.61	J	3.2
5858121		1.89		121
5858216	<	1	<	4
5858403		1.19		5.58
5858423		1.89	J	2.9
5858424		1.14		6.16
5858508	<	1	<	4
58573DB		2.34	J	1.8
5842811		2.58		23.2
5842914		2.84	<	4
5842916		3.12	<	4
5842920		3.42		4.01
5842922		2.78	<	4
5842825		1.71		19.2
5842915		1.41		18.3
5850123		2.05		7.01
5850201		2.71		30.3
5850211		3.27		94.5
5850417		2.29		34.6
5850513		1.77		67
5850731		2.8	<	4
5850733		1.94		80
5850847		2.19		8.89
5850855		1.27		33.9
5857314		2.86		134
5857913		2.79		7.98

Appendix B. Tabulation of water chemistry and site data

State Well Number	County	latitude DD	longitude DD	Well or Spring	Name/Owner	Well Depth (ft)	Distance from Kgru	Edwards Confined or Unconfined
5858121	Hays	30.1055556	-97.8622222	Well	Leisurewoods Water Co. Well #5 / Aquasource	410	185	confined
5858219	Hays	30.0919444	-97.8177778	Well	Pool & Rogers Materials	550	384	confined
5858403	Hays	30.0816667	-97.8427778	Well	City of Buda #1	390	268	confined
5858423	Hays	30.0683333	-97.8591667	Well	Comal Tackle	245	492	confined
5850840	Travis	30.1297222	-97.7983333	Well	St. Albans Episcopal Church	498	257	confined
5849935	Hays	30.1450000	-97.8872222	Well	Bob Manning	460	-281	unconfined
5857508	Hays	30.0433333	-97.9555556	Well	Michael Pettit	510	-230	unconfined
5857608	Hays	30.0802778	-97.9166667	Well	Ruby Ranch Phase II Eco Resources PWS	403	-107	unconfined
5850125	Travis	30.2469444	-97.8530556	Well	St. Andrews School	1000	n/a	n/a
5849511	Travis	30.1938889	-97.9244444	Well	Bubba's Country Store	unknown	n/a	n/a
5842811	Travis	30.2600000	-97.8233333	Spring	Back Door Springs	n/a	n/a	n/a
5842914	Travis	30.2636111	-97.7711111	Spring	Barton Springs	n/a	n/a	n/a
5842916	Travis	30.2800000	-97.7800000	Spring	Cold Springs	n/a	n/a	n/a
5842920	Travis	30.2633333	-97.7741667	Spring	Upper Barton Springs	n/a	n/a	n/a
5842922	Travis	30.2630556	-97.7675000	Spring	Old Mill Springs	n/a	n/a	n/a
5842825	Travis	30.2641667	-97.8144444	Well	Rudy's Bar-B-Q	420	46	unconfined
5842913	Travis	30.2666667	-97.7822222	Well	Park Hills Baptist	180	359	unconfined
5850123	Travis	30.2325000	-97.8633333	Well	New Forest Oaks	295	-54	unconfined
5850201	Travis	30.2191667	-97.7936111	Well	John Noell	290	302	confined
5850230	Travis	30.2266667	-97.8091667	Well	Susan Durso & Tom Picard	256	219	confined
5850231	Travis	30.2066667	-97.7919444	Well	Capital Soccer Club	540	115	confined
5850521	Travis	30.1922222	-97.7977778	Well	Sherwood Point Venture	unknown	unknown	confined
5850724	Travis	30.1411111	-97.8380556	Well	Manchaca Volunteer Fire Department	220	440	confined
5850726	Travis	30.1525000	-97.8333333	Well	Diamondscape	300	355	confined
5850730	Travis	30.1400000	-97.8383333	Well	McCoy Corporation	360	292	confined
5850732	Travis	30.1430556	-97.8480556	Well	St. John's Presbyterian Church	320	228	confined
5850737	Travis	30.1361111	-97.8338889	Well	Manchaca Bible Fellowship Church	400	293	confined
5850743	Travis	30.1544444	-97.8588889	Well	Shady Hollow Estates	575	28	unconfined
5850744	Travis	30.1422222	-97.8427778	Well	Bear Creek Office Park	unknown	unknown	confined
5850836	Travis	30.1450000	-97.8130556	Well	Onion Creek Golf Course	500	177	confined
5850846	Travis	30.1302778	-97.8219444	Well	Creedmoor-Maha WSC	535	54	confined
5850852	Travis	30.1616667	-97.8183333	Well	J. D. Malone	420	247	confined
5850855	Travis	30.1461111	-97.8194444	Well	Village of San Leanna #1	500	144	confined
5850861	Travis	30.1444444	-97.8313889	Well	Earl Hunt	unknown	unknown	confined
5857315	Hays	30.0977778	-97.8850000	Well	Southern Hills Church of Christ	400	25	unconfined
5857509	Hays	30.0725000	-97.9202778	Well	Onion Creek Lodge	258	20	unconfined
5857606	Hays	30.0477778	-97.8836111	Well	Cindy and Jeff Barton	360	391	confined
5857610	Hays	30.0455556	-97.8819444	Well	Ray Holt	300	270	confined
5857913	Hays	30.0341667	-97.8913889	Well	Hays ISD Well #2	610	101	confined
5858121	Hays	30.1055556	-97.8622222	Well	Leisurewoods Water Co. Well #5 / Aquasource	410	185	confined

State Well Number	Yield or Specific Capacity	top sample interval	bottom sample interval	Casing	Year Drilled	Aquifer	TWDB Aquifer Code	Year Plugged	Primary Use	Mo	Day	Year
5858121		224	410		1978	Edwards	218EDRDA		Public Supply	5	16	2002
5858219	0.26	479	550		1980	Edwards	218EDRDA		Industrial	5	9	2002
5858403		222	390		1954	Edwards	218EBFZA		Public Supply	5	9	2002
5858423	3.1	224	245		1997	Edwards	218EDRDA		Industrial	5	8	2002
5850840		345	499	pvc	1985	Edwards Saline	218EDRDA		Public Supply	5	15	2002
5849935		360	460	pvc	1992	Edwards-Trinity	218EDGRU		Domestic	5	14	2002
5857508					unknown	Edwards-Trinity	218EDGRU		Domestic	5	9	2002
5857608	0.22				1997	Edwards-Trinity	218EDGRU		Public Supply	5	8	2002
5850125					2000	Lower Trinity	219SLGH		Irrigation	6	13	2002
5849511					1993	Upper Trinity	218GLRS		Commercial	5	15	2002
5842811					n/a	Edwards	218EDRDA		Recreation	5	7	2003
5842914					n/a	Edwards	218EBFZA		Recreation	5	20	2003
5842916					n/a	Edwards	218EBFZA		Unused	5	20	2003
5842920					n/a	Edwards	218EBFZA		Unused	5	20	2003
5842922					n/a	Edwards	218EDRDA		Unused	5	20	2003
5842825	0.49				unknown	Edwards	218EDRDA		Commercial	5	7	2003
5842913	20	165	180	Steel	1969	Edwards	218EDRDA		Public Supply	7	31	2003
5850123		147	295	Steel	1998	Edwards	218EBFZA		Irrigation	5	19	2003
5850201					1917	Edwards	218EDRDA		Domestic	5	19	2003
5850230	10				1971	Edwards	218EBFZA		Domestic	5	7	2003
5850231					2003	Edwards	218EBFZA		Irrigation	8	13	2003
5850521					unknown	Edwards	218EDRDA		Unused	5	8	2003
5850724					1976	Edwards	218EDRDA		Commercial	8	19	2003
5850726		220	280	Steel	1983	Edwards	218EDRDA		Commercial	7	31	2003
5850730	2.05			pvc	1985	Edwards	218EDRDA		Commercial	8	20	2003
5850732					2002	Edwards	218EBFZA		Public Supply	7	30	2003
5850737				pvc	1985	Edwards	218EDRDA		Public Supply	8	26	2003
5850743	3.3				1998	Edwards	218EDRDA		Public Supply	5	14	2003
5850744					unknown	Edwards	218EBFZA		Commercial	8	11	2003
5850836		222	500	pvc	1973	Edwards	218EDRDA		Irrigation	8	13	2003
5850846		158	535	steel	1983	Edwards	218EDRDA		Public Supply	5	12	2003
5850852	0.5	260	420	steel	1974	Edwards	218EDRDA		Public Supply	8	11	2003
5850855	1.4	300	500	steel	1979	Edwards	218EDRDA		Public Supply	5	12	2003
5850861					1973	Edwards	218EDRDA		Unused	8	20	2003
5857315		280	380	pvc	2002	Edwards	218EBFZA		Public Supply	8	19	2003
5857509	5.15			pvc	1988	Edwards	218EDRDA		Domestic	5	21	2003
5857606	2			steel	1955	Edwards	218EDRDA		Domestic	8	19	2003
5857610	1.83				1996	Edwards	218EBFZA		Domestic	8	12	2003
5857913	67	320	610		1994	Edwards	218EBFZA		Public Supply	5	21	2003
5858121		224	410		1978	Edwards	218EDRDA		Public Supply	5	14	2003

Appendix B. Tabulation of water chemistry and site data

State Well Number	sample time	Date	Avg. Barton Springs Flow (cfs)	temp ©	Collection Remarks	Analysis Reliability Remark	Collecting Agency	Lab
5858121	0927	5/16/2002	87	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858219	1025	5/9/2002	87	25		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858403	0853	5/9/2002	87	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858423	1240	5/8/2002	87	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850840	0955	5/15/2002	87	25		Good, in accordance with UM-51	BSEACD	LCRA, TX
5849935	1225	5/14/2002	87	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857508	1157	5/9/2002	87	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857608	1015	5/8/2002	87	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850125	0900	6/13/2002	87	27		Good, in accordance with UM-51	BSEACD	LCRA, TX
5849511	1316	5/15/2002	87	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842811	1235	5/7/2003	101	21	Grab sample from spring	Good, in accordance with UM-51	BSEACD	LCRA, TX
5842914	1015	5/20/2003	101	22	Grab sample from spring	Good, in accordance with UM-51	BSEACD	LCRA, TX
5842916	1043	5/20/2003	101	20	Grab sample from spring	Good, in accordance with UM-51	BSEACD	LCRA, TX
5842920	1100	5/20/2003	101	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842922	1145	5/20/2003	101	21	Grab from spring upwelling	Good, in accordance with UM-51	BSEACD	LCRA, TX
5842825	1407	5/7/2003	101	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842913	1126	7/31/2003	84	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850123	1010	5/19/2003	101	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850201	1102	5/19/2003	101	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850230	1050	5/7/2003	101	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850231	1033	8/13/2003	84	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850521	1528	5/8/2003	101	25		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850724	1002	8/19/2003	84	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850726	1415	7/31/2003	84	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850730	1422	8/20/2003	84	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850732	1255	7/30/2003	84	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850737	1455	8/26/2003	84	25		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850743	0845	5/14/2003	101	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850744	1517	8/11/2003	84	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850836	1202	8/13/2003	84	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850846	0858	5/12/2003	101	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850852	1028	8/11/2003	84	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850855	0937	5/12/2003	101	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850861	1525	8/20/2003	84	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857315	1058	8/19/2003	84	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857509	1240	5/21/2003	101	20		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857606	1302	8/19/2003	84	27		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857610	1652	8/12/2003	84	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857913	1335	5/21/2003	101	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858121	0923	5/14/2003	101	22		Good, in accordance with UM-51	BSEACD	LCRA, TX

State Well Number	Ion Balance	Measured TDS (mg/L)	Si flag	Silica (Si, mg/L)	Ca flag	Calcium (Ca, mg/L)	Mg flag	Magnesium (Mg, mg/L)	Na flag	Sodium (Na, mg/L)	K flag
5858121	Balanced			13.1		60.5		23.3		6.55	
5858219	Balanced			13.4		42.5		30		52.5	
5858403	Balanced			12.2		74.1		25.2		7.03	
5858423	Balanced			11.8		85.3		21.8		8	
5850840	Balanced			16.9		121		75		323	
5849935	Balanced			15.3		70.5		48.7		5.23	
5857508	Balanced			15.7		86.7		23.8		6.73	
5857608	Balanced			13.5		60		38.6		6.92	
5850125	Balanced			18.5		151		114		148	
5849511	Balanced			12.6		89.9		77.7		14.5	
5842811	Balanced	447		17.9		106		26.4		16	
5842914	Balanced	315		13.1		86.7		21.2		13.9	
5842916	Balanced	330		12		86		22.1		14	
5842920	Balanced	333		13.6		90.1		23.6		10.8	
5842922	Balanced	377		12.9		86.9		23.6		28.3	
5842825	Balanced			11.1		81.1		19.1		17.7	
5842913	Balanced			11.4		108		19		9.41	
5850123	Balanced	476		12.6		116		28		14.8	
5850201	Balanced	337		12.6		67.9		25.5		13.4	
5850230	Balanced			13		79.4		22.4		10	
5850231	Balanced			11.8		64.8		24.3		10.8	
5850521	Balanced			12.1		68.2		26.5		10.3	
5850724	Balanced			12.1		64.9		25.2		8.35	
5850726	Balanced			12.1		69.4		24.4		6.94	
5850730	Balanced			12.7		46.7		30.7		8.08	
5850732	Balanced			11.4		76.5		22.4		7.83	
5850737	Balanced			12.1		58		26.1		6.18	
5850743	Balanced			13.8		111		18.3		10.6	
5850744	Balanced			12.8		86		16.6		11.9	
5850836	Balanced			12.1		59.1		26.6		9.12	
5850846	Balanced			11.2		57.4		22.8		6.26	
5850852	Balanced			12.9		52.6		29.9		19.3	
5850855	Balanced			11.8		57		27.7		8.8	
5850861	Balanced			12.8		56.7		32.1		10.1	
5857315	Balanced			12.4		73.2		25		6.65	
5857509	Balanced			11.8		75.1		21		7.16	
5857606	Balanced			12.1		46.3		27.1		5.08	
5857610	Balanced			12.7		65.1		26.3		6.38	
5857913	Balanced			12.5		87.3		20.8		8.64	
5858121	Balanced			10.8		59.9		22.3		6.53	

State Well Number	Potassium (K, mg/L)	Carbonate (CO3, mg/L)	Bicarbonate (HCO3, mg/L)	SO4 flag	Sulfate (SO4, mg/L)	Cl flag	Chloride (Cl, mg/L)	Fl flag	Fluoride (Fl, mg/L)	NO3 flag	Nitrate (NO3, mg/L)	pH flag	pH (su)
5858121	1.17	0	274.58		19.2		11.1		0.31		7.00		7.18
5858219	4.65	0	259.93		144		37.1		3.15	<	0.09		7.22
5858403	1.14	0	331.93		25.4		11.5		0.39		5.67		6.9
5858423	1.12	0	345.36		21		13.6		0.16		5.84		6.69
5850840	12.6	0	267.26		520		421		3.64	<	0.09		6.54
5849935	4.79	0	338.04		139		8.5		0.91	<	0.09		7.04
5857508	0.72	0	368.54		11.1		10.5		0.14		5.31		6.72
5857608	3.19	0	279.46		100		10.5		0.54		0.10		6.9
5850125	14.5	0	279.46		856		39.6		0.85	<	0.09		6.44
5849511	8.35	0	392.95		234		28.9		3.46		1.26		6.43
5842811	0.88	0	432.00		18.3		29.2		0.1		8.46		7.73
5842914	1.17	0	318.51		27.6		26.2		0.17		5.98		6.78
5842916	1.17	0	311.19		36.2		24.8		0.15		6.11		6.59
5842920	1.12	0	338.04		28.2		19.3		0.19		9.30		6.69
5842922	1.48	0	319.73		42.9		46.2		0.22		6.29		6.68
5842825	1.11	0	296.54		40.2		34.7		0.16		3.61		7.6
5842913	1.1	0	373.43		25		20.1		0.13		8.19		7.13
5850123	1.39	0	414.92		45.4		26.6		0.17		7.57		6.53
5850201	1.38	0	295.32		28.4		21		0.37		4.43		6.87
5850230	1.03	0	311.19		36.2		17.5		0.2		8.46		6.61
5850231	1.19	0	303.87		30.7		17.8		0.41		4.52		7.33
5850521	1.49	0	303.87		59.2		13.9		1.46		1.55		6.79
5850724	1.27	0	297.76		27.3		13.4		0.63		4.42		7.45
5850726	1.14	0	305.09		17.8		12.1		0.26		5.31		7.22
5850730	2.59	0	263.59		40.4		12.1		2.59		0.46		7.31
5850732	1.02	0	311.19		18.1		16.7		0.17		6.02		6.07
5850737	1.18	0	281.90		43.3		8.75		0.99		2.80		7.32
5850743	1.17	0	397.83		26.5		20.5		0.23		11.55		5.98
5850744	1.23	0	328.27		24.8		18.3		0.2		18.86		6.99
5850836	1.29	0	286.78		72.4		11.9		1.34		3.08		7.42
5850846	1.11	0	283.12		46.3		10.5		0.86		4.17		6.74
5850852	2.64	0	231.87		79.6		44.5		2.19		1.24		7.37
5850855	1.34	0	266.04		84.2		12.3		1.82		0.31		6.82
5850861	1.91	0	263.59		89.9		12		2.31		0.43		7.34
5857315	1.08	0	309.97		18		11.1		0.24		17.58		7.27
5857509	1.11	0	301.43		21.7		12.6		0.15		3.00		7.01
5857606	1.03	0	266.04		11.2		7.59		0.4		5.31		7.38
5857610	1.01	0	327.05		11.2		10.5		0.16		8.15		7.08
5857913	1.18	0	327.05		24.1		14.7		0.18		5.36		6.83
5858121	1.1	0	272.14		19.7		13.1		0.29		6.95		6.43

Appendix B. Tabulation of water chemistry and site data

State Well Number	Calculated TDS (mg/L)	phen Alk flag	Phen Alk (mg/L)	total alkalinity (CaCO3, mg/L)	total hardness	Percent Sodium (Na, %)	q00931_sar	q71860_rsc	Specific Conductance (mS/cm)
5858121	278	<	1	225	248	5	0.18	0	336
5858219	485	<	1	213	263	33	1.51	0	730
5858403	336	<	1	272	301	5	0.18	0	537
5858423	338	<	1	283	302	5	0.2	0	582
5850840	1645	<	1	219	634	53	5.69	0	2810
5849935	497	<	1	277	420	2	0.12	0	570
5857508	342	<	1	302	314	4	0.17	0	565
5857608	398	<	1	229	340	4	0.17	0	619
5850125	1497	<	1	229	865	27	2.21	0	2060
5849511	681	<	1	322	564	5	0.27	0	713
5842811	435	<	1	354	373	8	0.36	0	802
5842914	353	<	1	261	304	9	0.35	0	639
5842916	355	<	1	255	305	9	0.35	0	620
5842920	362	<	1	277	322	6	0.26	0	653
5842922	406	<	1	262	314	16	0.69	0	725
5842825	354	<	1	243	281	12	0.46	0	656
5842913	386	<	1	306	347	5	0.22	0	669
5850123	457	<	1	340	405	7	0.32	0	803
5850201	324	<	1	242	279	9	0.35	0	583
5850230	341	<	1	255	290	6	0.26	0	624
5850231	322	<	1	249	269	8	0.29	0	542
5850521	359	<	1	249	296	7	0.27	0	560
5850724	314	<	1	244	277	6	0.22	0	469
5850726	301	<	1	250	276	5	0.18	0	519
5850730	298	<	1	216	257	6	0.23	0	459
5850732	313	<	1	255	283	5	0.2	0	433
5850737	321	<	1	231	278	5	0.17	0	471
5850743	409	<	1	326	352	6	0.25	0	772
5850744	352	<	1	269	283	8	0.31	0	580
5850836	412	<	1	235	341	7	0.25	0	583
5850846	320	<	1	232	260	5	0.18	0	521
5850852	381	<	1	190	280	14	0.53	0	560
5850855	373	<	1	218	299	6	0.24	0	573
5850861	383	<	1	216	314	7	0.27	0	551
5857315	317	<	1	254	285	4	0.17	0	481
5857509	302	<	1	247	274	5	0.19	0	540
5857606	250	<	1	218	231	4	0.15	0	389
5857610	302	<	1	268	271	4	0.17	0	519
5857913	336	<	1	268	303	5	0.22	0	604
5858121	276	<	1	223	243	5	0.18	0	530

State Well Number	Alkalinity, Field, Dissolved as CaCO3	Al flag	Aluminum, Dissolved (µg/L as Al)	Sb flag	Antimony, Dissolved (µg/L as Sb)	As flag	Arsenic, Dissolved (µg/L as As)	Ba flag	Barium, Dissolved (µg/L as Ba)	Be flag	Beryllium, Dissolved (µg/L as Be)	B flag
5858121	228	<	4	<	1	<	2		34.2	<	1	
5858219	224	<	4	<	1	<	2		35.2	<	1	
5858403	280	<	4	<	1	<	2		138	<	1	
5858423	298	<	4	<	1	<	2		32.6	<	1	
5850840	226	<	4	<	1		3.29		8	<	1	
5849935	286	<	4	<	1	<	2		52.2	<	1	
5857508	320	<	4	<	1	<	2		33.2	<	1	
5857608	238	<	4	<	1	<	2		44.7	<	1	
5850125	260	<	4	<	1		2.76		10.6	<	1	
5849511	330	<	4	<	1	<	2		27.9	<	1	
5842811	368	<	4	<	1	<	2		66.8	<	1	
5842914	262		10.4	<	1	<	2		48	<	1	
5842916	259	<	4	<	1	<	2		74.4	<	1	
5842920	288	<	4	<	1	<	2		114	<	1	
5842922	264	<	4	<	1	<	2		53.8	<	1	
5842825	256	<	4	<	1	<	2		40.5	<	1	
5842913	304	<	4	<	1	<	2		59.9	<	1	<
5850123	349	<	4	<	1	<	2		58.1	<	1	
5850201	248	<	4	<	1	<	2		120	<	1	
5850230	262	<	4	<	1	<	2		97.6	<	1	<
5850231	250	<	4	<	1	<	2		56.1	<	1	<
5850521	254	<	4	<	1	<	2		79.2	<	1	
5850724	241	<	4	<	1	<	2		84.2	<	1	<
5850726	256	<	4	<	1	<	2		34	<	1	<
5850730	223	<	4	<	1	<	2		74.3	<	1	
5850732	262	<	4	<	1	<	2		31.4	<	1	<
5850737	232	<	4	<	1	<	2		157	<	1	<
5850743	326	<	4	<	1	<	2		50.2	<	1	<
5850744	269	<	4	<	1	<	2		41	<	1	<
5850836	238	<	4	<	1	<	2		107	<	1	<
5850846	240	<	4	<	1	<	2		115	<	1	<
5850852	226	<	4	<	1	<	2		50.7	<	1	
5850855	222	<	4	<	1	<	2		79.9	<	1	<
5850861	220	<	4	<	1	<	2		54	<	1	
5857315	257	<	4	<	1	<	2		31	<	1	<
5857509	250	<	4	<	1	<	2		28.8	<	1	
5857606	216	<	4	<	1	<	2		35.6	<	1	<
5857610	264	<	4	<	1	<	2		27.8	<	1	<
5857913	288	<	4	<	1	<	2		32.8	<	1	
5858121	228	<	4	<	1	<	2		34.7	<	1	<

State Well Number	Boron, Dissolved (µg/L as B)	Br flag	Bromide, Dissolved (mg/L as Br)	Cd flag	Cadmium, Dissolved (µg/L as Cd)	Cr flag	Chromium, Dissolved (µg/L as Cr)	Co flag	Cobalt, Dissolved (µg/L as Co)	Cu flag	Copper, Dissolved (µg/L as Cu)	Fe flag
5858121	119		0.0633	<	1		2.34	<	1	<	1	<
5858219	386		0.199		1.03		3.05	<	1	<	1	
5858403	102		0.0509		1.01		3.96	<	1		1.58	<
5858423	116		0.0634	<	1		4.25	<	1	<	1	<
5850840	1020		3.56	<	1		2.26	<	1		1.43	<
5849935	158		0.0393	<	1		2.55	<	1		2.45	
5857508	141		0.0533	<	1		4.18	<	1		12.1	<
5857608	124		0.0374	<	1		2.35	<	1		2.48	<
5850125	2120		0.201	<	1		2.31	<	1	<	1	<
5849511	295		0.0781	<	1		2.1	<	1		1.26	<
5842811	64		0.161	<	1	<	1	<	1	<	1	<
5842914	66.8		0.146	<	1		4.74	<	1		68.9	<
5842916	56.9		0.104	<	1		4.88	<	1		14.7	<
5842920	67.9		0.121	<	1		5.26	<	1		3.19	<
5842922	88.5		0.33	<	1		4.27	<	1	<	1	<
5842825	67.1		0.13	<	1	<	1	<	1		1.51	<
5842913	50		0.0835	<	1	<	1	<	1		2.06	<
5850123	51.9		0.179	<	1		5.87	<	1		1.51	<
5850201	71.7		0.133	<	1		3.76	<	1		9.65	<
5850230	50		0.0917	<	1	<	1	<	1	<	1	<
5850231	50		0.12	<	1	<	1	<	1		1.09	<
5850521	64.9		0.0724	<	1	<	1	<	1		4.97	<
5850724	50	<	0.02	<	1		1.08	<	1		8.89	<
5850726	50		0.0647	<	1	<	1	<	1		1.5	<
5850730	134	<	0.02	<	1	<	1	<	1	<	1	<
5850732	50		0.0645	<	1	<	1	<	1		2.58	<
5850737	50	<	0.02	<	1		3.56	<	1		31.7	<
5850743	51		0.134	<	1		1.31	<	1		2.53	<
5850744	50		0.108	<	1		1.07	<	1		2.96	<
5850836	50		0.0659	<	1	<	1	<	1		2.23	<
5850846	51		0.0404	<	1	<	1	<	1		2.04	<
5850852	155		0.109	<	1	<	1	<	1		1.87	<
5850855	51		0.0475	<	1	<	1	<	1	<	1	
5850861	93.7		0.0452	<	1	<	1	<	1	<	1	
5857315	50		0.0831	<	1		1.26	<	1		3.04	<
5857509	60.2		0.0618	<	1		3.24	<	1		1.52	<
5857606	50	<	0.02	<	1		1.13	<	1		1.16	<
5857610	50		0.0609	<	1	<	1	<	1		3.21	<
5857913	56.2		0.0705	<	1		4.07	<	1		1.19	<
5858121	51		0.0598	<	1	<	1	<	1	<	1	<

State Well Number	Iron, Dissolved (µg/L as Fe)	Pb flag	Lead, Dissolved (µg/L as Pb)	Li flag	Lithium, Dissolved (µg/L as Lil)	Mn flag	Manganese, Dissolved (µg/L as Mn)	Mo flag	Molybdenum, Dissolved (µg/L as Mo)	Ni Flag
5858121	50	<	1		3.98	<	1		1.19	
5858219	247	<	1		58.1		2.4	<	1	<
5858403	50	<	1		3.98	<	1		1.93	
5858423	50	<	1		3.78	<	1	<	1	
5850840	50	<	5		332	<	1	<	1	
5849935	98.7	<	1		18.8		1.21	<	1	
5857508	50	<	1		3.15	<	1	<	1	
5857608	50	<	1		14.5	<	1		11.2	
5850125	50	<	1		223		4.81	<	1	
5849511	50	<	1		34	<	1		1.59	
5842811	50	<	1	<	2	<	1	<	1	
5842914	50		15.7		7.24	<	1	<	1	
5842916	50		5.48		3.66	<	1	<	1	
5842920	50	<	1		5.24	<	1	<	1	
5842922	50		7.73		19	<	1	<	1	
5842825	50	<	1		4.25	<	1	<	1	
5842913	50	<	1		3.46	<	1	<	1	
5850123	50		1.49		4.46		6.57	<	1	
5850201	50		4.25		10	<	1	<	1	
5850230	50	<	1		6.44	<	1	<	1	
5850231	50		1.02		8.27	<	1		1.46	
5850521	50	<	1		8.18	<	1		15.7	
5850724	50	<	1		4.91	<	1		1.39	
5850726	50	<	1		5.26	<	1	<	1	
5850730	50	<	1		16.5	<	1		2.13	
5850732	50	<	1		3.04		2.94	<	1	
5850737	50	<	1		5.05	<	1		2.98	
5850743	51		1.82		4.15	<	1	<	1	
5850744	50	<	1		4.76	<	1	<	1	
5850836	50	<	1		8.51	<	1		4.52	
5850846	51	<	1		5.15	<	1		4.21	
5850852	50	<	1		30.3	<	1		2.05	
5850855	51.3	<	1		9.28		1.9		4.28	
5850861	56.6	<	1		11.6	<	1		3.04	
5857315	50	<	1		3.91	<	1	<	1	
5857509	50	<	1		2.8	<	1	<	1	
5857606	50	<	1		2.99	<	1		2.18	
5857610	50	<	1		2.6	<	1	<	1	
5857913	50	<	1		3.52	<	1	<	1	
5858121	51	<	1		4.06	<	1		1.04	

State Well Number	Nickel, Dissolved (µg/L as Ni)	N flag	Nitrite plus Nitrate, dissolved (mg/L as N)	Se flag	Selenium, Dissolved (µg/L as Se)	Sr flag	Strontium, Dissolved (µg/L as Sr)	Temperature, Water (Celcius)	Tl flag	Thallium, Dissolved (µg/L as Tl)
5858121	1.2		1.58	<	4		1680	21.6	<	1
5858219	1	<	0.02	<	4		29900	25.3	<	1
5858403	1.68		1.28	<	4		11100	22.6	<	1
5858423	1.63		1.32	<	4		253	21.2	<	1
5850840	2.32	<	0.02		51.8		21300	24.6	<	5
5849935	1.52	<	0.02	<	4		38400	24.2	<	1
5857508	1.8		1.2	<	4		262	23.4	<	1
5857608	1.14		0.0216	<	4		28000	22.9	<	1
5850125	3.17	<	0.02	<	4		17400	27	<	1
5849511	3.46		0.285	<	4		17900	24.2	<	1
5842811	3.51		1.91	<	4		156	20.5	<	1
5842914	9.44		1.35	<	4		741	21.5	<	1
5842916	3.27		1.38	<	4		247	20.1	<	1
5842920	2.79		2.1	<	4		507	21.5	<	1
5842922	2.31		1.42	<	4		906	20.9	<	1
5842825	3.13		0.816	<	4		301	20.5	<	1
5842913	2.04		1.85	<	4		192	21	<	1
5850123	3.48		1.71	<	4		948	22.6	<	1
5850201	2.08		1	<	4		4630	22.7	<	1
5850230	2.49		1.91	<	4		502	22	<	1
5850231	1.97		1.02	<	4		6500	22.7	<	1
5850521	7.6		0.349	<	4		15500	24.7	<	1
5850724	1.32		0.999	<	4		10200	22.5	<	1
5850726	5		1.2	<	4		2490	22.4	<	1
5850730	8.3		0.104	<	4		12700	23.1	<	1
5850732	14		1.36	<	4		750	22	<	1
5850737	4		0.633	<	4		23300	25.2	<	1
5850743	2.92		2.61	<	4		233	21.6	<	1
5850744	3.11		4.26	<	4		614	21.2	<	1
5850836	2.42		0.695	<	4		74100	24.2	<	1
5850846	2.14		0.942	<	4		20900	22.8	<	1
5850852	1.68		0.28	<	4		22700	23.9	<	1
5850855	2.16		0.0694	<	4		37900	24.1	<	1
5850861	1.76		0.0965	<	4		35500	23.7	<	1
5857315	2.21		3.97	<	4		174	22.1	<	1
5857509	1.98		0.677	<	4		339	20.1	<	1
5857606	1.58		1.2	<	4		3530	27.2	<	1
5857610	1.89		1.84	<	4		342	22.1	<	1
5857913	2.32		1.21	<	4		443	21.5	<	1
5858121	1.56		1.57	<	4		1600	21.8	<	1

Appendix B. Tabulation of water chemistry and site data

State Well Number	V flag	Vanadium, Dissolved (µg/L as V)	Zn Flag	Zinc, Dissolved (µg/L as Zn)
5858121		2.51		34.9
5858219	<	1	<	4
5858403		2.85		9.54
5858423		2.77	<	4
5850840	<	1	<	4
5849935	<	1		7.87
5857508		3.45		15.4
5857608	<	1		7.25
5850125	<	1		8.72
5849511	<	1		6.71
5842811		1.68	<	4
5842914		2.87		442
5842916		2.86		67.7
5842920		3.61		29.6
5842922		2.81	<	4
5842825		1.18		10.3
5842913		1.93	<	4
5850123		2.63		9.06
5850201		3.02		36.7
5850230		1.95	<	4
5850231		1.95		220
5850521	<	1		6.1
5850724		1.71	<	4
5850726		1.5	<	4
5850730	<	1		5.79
5850732		1.42	<	4
5850737		2.24		17.7
5850743		2.76		188
5850744		1.82	<	4
5850836		2.59		6.72
5850846		1.66	<	4
5850852	<	1		10.9
5850855	<	1		30.7
5850861	<	1	<	4
5857315		2.33	<	4
5857509		2.25	<	4
5857606		2.99	<	4
5857610		2.58		8.56
5857913		2.62		4.49
5858121		2.08		20.9

Appendix B. Tabulation of water chemistry and site data

State Well Number	County	latitude DD	longitude DD	Well or Spring	Name/Owner	Well Depth (ft)	Distance from Kgru	Edwards Confined or Unconfined
5858122	Hays	30.0933333	-97.8436111	Well	Twin Oaks Ranch Church Camp	450	142	confined
5858127	Hays	30.1175000	-97.8736111	Well	Hays Hill Baptist Church	430	155	confined
5858219	Hays	30.0919444	-97.8177778	Well	Pool & Rogers Materials	550	384	confined
5858220	Hays	30.0933333	-97.8144444	Well	Hunter Industries	700	193	confined
5858423	Hays	30.0683333	-97.8591667	Well	Comal Tackle	245	492	confined
5858426	Hays	30.0800000	-97.8672222	Well	Bob Lowden	280	254	unconfined
5858427	Hays	30.0772222	-97.8613889	Well	David Dement	uknown	uknown	unconfined
5858509	Hays	30.0761111	-97.8300000	Well	Chatleff Controls	500	404	confined
5858510	Hays	30.0791667	-97.8275000	Well	Crestview RV Center	605	345	confined
5858712	Hays	30.0291667	-97.8700000	Well	April Lowe	uknown	uknown	confined
5850840	Travis	30.1297222	-97.7983333	Well	St. Albans Episcopal Church	498	257	confined
5858505	Hays	30.0680556	-97.8194444	Well	George Bowen	600	419	confined
5858711	Hays	30.0166667	-97.8594444	Well	Titan Custom Homes	unknown	unknown	confined
5849935	Hays	30.1450000	-97.8872222	Well	Bob Manning	460	-281	unconfined
5850122	Travis	30.2386111	-97.8383333	Well	AAW Oak Hill , Ltd.	420	-142	unconfined
5857405	Hays	30.0433333	-97.9611111	Well	Arturo Ruiz	405	-111	unconfined
5850126	Travis	30.2461111	-97.8522222	Well	St. Andrews School	960	n/a	n/a
5849511	Travis	30.1938889	-97.9244444	Well	Bubba's Country Store	unknown	n/a	n/a
5849938	Hays	30.1255556	-97.9036111	Well	Borheim Edwards Well	180	-20	unconfined
5849939	Hays	30.1472222	-97.8969444	Well	Spillar	82	unknown	unconfined
5850231	Travis	30.2066667	-97.7919444	Well	Capital Soccer Club	540	115	confined
5850745	Travis	30.1422222	-97.8536111	Well	COA/Willy Conrad	340	140	unconfined
5850746	Travis	30.1286111	-97.8352778	Well	Associated Drilling	320	294	confined
5850836	Travis	30.1450000	-97.8130556	Well	Onion Creek Golf Course	500	177	confined
5857606	Hays	30.0477778	-97.8836111	Well	Cindy and Jeff Barton	360	391	confined
5858427	Hays	30.0772222	-97.8613889	Well	David Dement	uknown	uknown	unconfined
5858712	Hays	30.0291667	-97.8700000	Well	April Lowe	uknown	uknown	confined
5842928	Travis	30.2563889	-97.7694444	Well	Marshall Frech	304	300	confined
5850301	Travis	30.2102778	-97.7816667	Well	Texas Middle School Association	388	266	confined
5850840	Travis	30.1297222	-97.7983333	Well	St. Albans Episcopal Church	498	257	confined
5858505	Hays	30.0680556	-97.8194444	Well	George Bowen	600	419	confined
5858711	Hays	30.0166667	-97.8594444	Well	Titan Custom Homes	unknown	unknown	confined
5842914	Travis	30.2636111	-97.7711111	Spring	Barton Springs	n/a	n/a	n/a
5842916	Travis	30.2800000	-97.7800000	Spring	Cold Springs	n/a	n/a	n/a
5842922	Travis	30.2630556	-97.7675000	Spring	Old Mill Springs	n/a	n/a	n/a
5850231	Travis	30.2066667	-97.7919444	Well	Capital Soccer Club	540	115	confined

Appendix B. Tabulation of water chemistry and site data

State Well Number	Yield or Specific Capacity	top sample interval	bottom sample interval	Casing	Year Drilled	Aquifer	TWDB Aquifer Code	Year Plugged	Primary Use	Mo	Day	Year
5858122					unknown	Edwards	218EDRDA		Public Supply	8	7	2003
5858127	10.1	130	430		1990	Edwards	218EDRDA		Public Supply	8	20	2003
5858219	0.26	479	550		1980	Edwards	218EDRDA		Industrial	5	12	2003
5858220	1.8	460	700		1989	Edwards	218EDRDA		Industrial	8	27	2003
5858423	3.1	224	245		1997	Edwards	218EDRDA		Industrial	5	14	2003
5858426					1982	Edwards	218EBFZA		Public Supply	7	30	2003
5858427	2.93				unknown	Edwards	218EBFZA		Domestic	8	11	2003
5858509		419	500		1986	Edwards	218EDRDA		Industrial	8	27	2003
5858510					unknown	Edwards	218EDRDA		Public Supply	8	27	2003
5858712					unknown	Edwards	218EBFZA		Domestic	8	12	2003
5850840		345	499	pvc	1985	Edwards Saline	218EDRDA		Public Supply	5	15	2003
5858505		525	600		1982	Edwards Saline	218EDRDA		Irrigation	5	15	2003
5858711					unknown	Edwards Saline	218EBFZA		Commercial	5	15	2003
5849935		360	460	pvc	1992	Edwards-Trinity	218EDGRU		Domestic	5	8	2003
5850122	0.34				unknown	Edwards-Trinity	218EDGRU	2007	Commercial	7	31	2003
5857405					2002	Edwards-Trinity	218EDGRU		Domestic	5	21	2003
5850126	0.15				1998	Lower Trinity	219SLGH		Irrigation	5	8	2003
5849511					1993	Upper Trinity	218GLRS		Commercial	5	6	2003
5849938				Steel	2004	Edwards	218EDRDA		Monitor	6	24	2004
5849939					unknown	Edwards	218EDRDA		Unused	8	16	2004
5850231					2003	Edwards	218EBFZA		Irrigation	6	24	2004
5850745		188	340	pvc	1986	Edwards	218EDRDA		Domestic	7	26	2004
5850746					1986	Edwards	218EDRDA		Commercial	8	11	2004
5850836		222	500	pvc	1973	Edwards	218EDRDA		Irrigation	8	11	2004
5857606	2				1955	Edwards	218EDRDA		Domestic	7	26	2004
5858427	2.93				unknown	Edwards	218EBFZA		Domestic	7	26	2004
5858712					unknown	Edwards	218EBFZA		Domestic	7	26	2004
5842928	2	163	304	pvc	1979	Edwards Saline	218EBFZA		Monitor	6	24	2004
5850301				steel	1948	Edwards Saline	218EDRDA		Unused	6	24	2004
5850840		345	499	pvc	1985	Edwards Saline	218EDRDA		Public Supply	8	16	2004
5858505		525	600		1982	Edwards Saline	218EDRDA		Irrigation	6	24	2004
5858711					unknown	Edwards Saline	218EBFZA		Commercial	8	16	2004
5842914					n/a	Edwards	218EBFZA		Recreation	6	29	2006
5842916					n/a	Edwards	218EBFZA		Unused	6	29	2006
5842922					n/a	Edwards	218EDRDA		Unused	6	29	2006
5850231					2003	Edwards	218EBFZA		Irrigation	6	21	2006

Appendix B. Tabulation of water chemistry and site data

State Well Number	sample time	Date	Avg. Barton Springs Flow (cfs)	temp ©	Collection Remarks	Analysis Reliability Remark	Collecting Agency	Lab
5858122	1100	8/7/2003	84	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858127	1242	8/20/2003	84	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858219	1044	5/12/2003	101	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858220	1150	8/27/2003	84			Good, in accordance with UM-51	BSEACD	LCRA, TX
5858423	1033	5/14/2003	101	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858426	1405	7/30/2003	84	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858427	1414	8/11/2003	84	21		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858509	1437	8/27/2003	84	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858510	1312	8/27/2003	84	25		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858712	1605	8/12/2003	84	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850840	1000	5/15/2003	101	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858505	1225	5/15/2003	101	25		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858711	1117	5/15/2003	101	24	Very turbid - filter failure	Use data carefully, sampled from tank, distribution, or bailed.	BSEACD	LCRA, TX
5849935	1135	5/8/2003	101	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850122	1257	7/31/2003	84	25		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857405	1415	5/21/2003	101	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850126	0940	5/8/2003	101	27		Good, in accordance with UM-51	BSEACD	LCRA, TX
5849511	1115	5/6/2003	101	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5849938	1418	6/24/2004	91	23		Use data carefully, sampled from tank, distribution, or bailed.	BSEACD	LCRA, TX
5849939	1503	8/16/2004	91	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850231	1026	6/24/2004	91			Good, in accordance with UM-51	BSEACD	LCRA, TX
5850745	1407	7/26/2004	91	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850746	1557	8/11/2004	91	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5850836	1457	8/11/2004	91	25		Good, in accordance with UM-51	BSEACD	LCRA, TX
5857606	1535	7/26/2004	91	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858427	1830	7/26/2004	91	23		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858712	1650	7/26/2004	91	22		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842928	0910	6/24/2004	91	23	Sample Bailed from well	Use data carefully, sampled from tank, distribution, or bailed.	BSEACD	LCRA, TX
5850301	1125	6/24/2004	91	23		Use data carefully, sampled from tank, distribution, or bailed.	BSEACD	LCRA, TX
5850840	1210	8/16/2004	91	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858505	1541	6/24/2004	91	26		Good, in accordance with UM-51	BSEACD	LCRA, TX
5858711	1342	8/16/2004	91	24		Good, in accordance with UM-51	BSEACD	LCRA, TX
5842914	1125	6/29/2006	28	22	Hand filtered grab sample	Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5842916	1010	6/29/2006	28	21	Hand filtered grab sample.	Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5842922	1245	6/29/2006	28	23	Hand pump filtered sample	Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5850231	1005	6/21/2006	28	22		Good, in accordance with UM-51	BSEACD	Energy Lab, WY

Appendix B. Tabulation of water chemistry and site data

State Well Number	Ion Balance	Measured TDS (mg/L)	Si flag	Silica (Si, mg/L)	Ca flag	Calcium (Ca, mg/L)	Mg flag	Magnesium (Mg, mg/L)	Na flag	Sodium (Na, mg/L)	K flag
5858122	Balanced			11.2		62.2		23.6		7.15	
5858127	Balanced			11.4		79		21.2		6.3	
5858219	Balanced	486		12.1		45.9		31.9		54.7	
5858220	Balanced			14.3		63.2		36.5		15.7	
5858423	Balanced			10.7		85.2		19.2		7.32	
5858426	Balanced			10.8		71.3		20.1		7.62	
5858427	Balanced			11.1		67.6		19.1		7.21	
5858509	Balanced			13.3		54.2		34.8		63.7	
5858510	Balanced			14.1		51.2		33		58.4	
5858712	Balanced			13.2		47.8		33.4		65.1	
5850840	Balanced	1540		14.4		110		67.7		277	
5858505	Balanced	1470		12.8		81.1		50.7		343	
5858711	Balanced	1630		6.45		501		46.3		122	
5849935	Balanced	506		14.2		66.6		47.1		5.16	
5850122	Balanced			19.3		77.8		36.8		28.4	
5857405	Balanced			14.9		104		18.4		6.42	
5850126	Balanced	2230		18.7		243		187		115	
5849511	Balanced			12.4		217		120		21.1	
5849938	Balanced	649		10.6		142		50.2		12.4	
5849939	Balanced			8.92		78.8		14.9		4.16	
5850231	Balanced	311		11.7		70.9		26.3		8.81	
5850745	Balanced			12.1		81.7		22.4		7.81	
5850746	Balanced			12		57.4		25.1		5.98	
5850836	Balanced			11.8		62.6		27.2		8.79	
5857606	Balanced			12.4		61.7		28.5		6.14	
5858427	Balanced			14.3		93.2		19.2		7.44	
5858712	Balanced			13.6		52.7		35.5		61	
5842928	Balanced	1070		13.1		124		34.6		203	
5850301	Balanced		<	0.5		29.7		6.1		115	
5850840	Balanced			15.2		121		73.3		314	
5858505	Balanced	1510		13.5		90.8		56.7		360	
5858711	Balanced			6.67		279		55.6		203	
5842914	Balanced	372		10.5		84.3		24.9		22.8	<
5842916	Balanced	486		9		102		17.4		49.7	
5842922	Balanced	315		10		84.9		23.5		11.1	<
5850231	Balanced	337		10.8		72.7		26.8		12.2	

Appendix B. Tabulation of water chemistry and site data

State Well Number	Potassium (K, mg/L)	Carbonate (CO3, mg/L)	Bicarbonate (HCO3, mg/L)	SO4 flag	Sulfate (SO4, mg/L)	Cl flag	Chloride (Cl, mg/L)	Fl flag	Fluoride (Fl, mg/L)	NO3 flag	Nitrate (NO3, mg/L)	pH flag	pH (su)
5858122	1.46	0	274.58		35.1		11.9		0.62		3.48		7.57
5858127	0.92	0	320.95		15.9		11.3		0.15		3.89		7.2
5858219	5	0	258.71		137		37.4		3.01	<	0.09		7.25
5858220	2.09	0	270.92		123		19.6		2.55		0.49		7.23
5858423	1.05	0	334.37		24.1		13.5		0.17		5.40		6.36
5858426	1.15	0	283.12		23.6		12.4		0.16		5.84		6
5858427	1.32	0	275.80		30.7		10.1		0.22		11.91		7.23
5858509	5.68	0	236.75		149		63		2.93		0.44		7.34
5858510	4.52	0	267.26		102		62.6		3.1		0.87		7.75
5858712	5.94	0	273.36		113		50.7		3.02		5.27		7.34
5850840	11	0	263.59		490		385		3.66	<	0.09		6.84
5858505	15.3	0	274.58		452		414		3.89	<	0.09		7.08
5858711	8.15	0	522.31		826		199		0.82		43.92		6.62
5849935	4.74	0	335.60		133		8.66		0.84		0.17		6.93
5850122	0.96	0	360.00		38.1		42.3		0.32		23.38		6.98
5857405	0.55	0	389.29		7.08		10		0.11		5.67		6.69
5850126	17.8	0	301.43		1290		32.5		0.39	<	0.09		6.58
5849511	11.3	0	366.10		728		31.6		3.53		2.05		6.69
5849938	1.45	0	375.86		207		16.4		0.16		8.85		6.56
5849939	1.53	0	290.44		9.96		9.12		0.09		3.11		7.32
5850231	1.3	0	301.42		30.8		13.6		0.54		4.78		6.9
5850745	1.06	0	313.62		15.1		15.7		0.17		12.71		7.26
5850746	1.1	0	279.45		39.4		9.21		1		4.21		7.22
5850836	1.36	0	285.56		77.6		12.9		1.56		4.91		7.14
5857606	1.35	0	296.54		14.2		10.2		0.69		3.42		7.18
5858427	1.64	0	312.40		38.6		12.9		0.22		6.24		7.25
5858712	6.01	0	258.71		117		56.7		3.82		0.12		7.32
5842928	14.8	0	436.88		314		146		1.52		9.16		6.86
5850301	14.8	0	163.52		1.48		177		0.27		0.65		7.26
5850840	12.3	0	237.96		536		452		3.68		0.29		7.21
5858505	15.9	0	274.57		430		390		4.18		0.23		6.93
5858711	10.7	0	309.96		728		196		1.08		0.43		7.1
5842914	0.5	0	324.61		35		38		0.3		6.20		6.87
5842916	1.7	0	307.52		70		79		0.3		2.66		6.72
5842922	0.5	0	322.17		26		19		0.2		6.64		6.98
5850231	1.2	1.2	316.06		36		17		0.4		4.43		7.05

Appendix B. Tabulation of water chemistry and site data

State Well Number	Calculated TDS (mg/L)	phen Alk flag	Phen Alk (mg/L)	total alkalinity (CaCO3, mg/L)	total hardness	Percent Sodium (Na, %)	q00931_sar	q71860_rsc	Specific Conductance (mS/cm)
5858122	294	<	1	225	255	5	0.2	0	493
5858127	308	<	1	263	284	4	0.16	0	488
5858219	479	<	1	212	274	32	1.52	0	734
5858220	451	<	1	222	354	9	0.39	0	607
5858423	331	<	1	274	291	5	0.19	0	640
5858426	292	<	1	232	260	5	0.21	0	405
5858427	295	<	1	226	247	5	0.2	0	487
5858509	532	<	1	194	311	33	1.66	0	761
5858510	488	<	1	219	294	32	1.56	0	685
5858712	493	<	1	224	281	35	1.77	0	743
5850840	1510	<	1	216	578	52	5.12	0	2610
5858505	1525	<	1	225	431	64	7.36	0	2720
5858711	2014	<	1	428	1444	15	1.4	0	2410
5849935	478	<	1	275	397	3	0.12	0	728
5850122	445	<	1	295	347	15	0.66	0	775
5857405	358	<	1	319	335	3	0.15	0	647
5850126	2069	<	1	247	1394	15	1.35	0	2700
5849511	1344	<	1	300	1055	4	0.29	0	1810
5849938	635	<	1	308	563	5	0.22	0	983
5849939	273	<	1	238	258	3	0.11	0	466
5850231	324	<	1	247	294	6	0.22	0	568
5850745	323	<	1	257	297	5	0.19	0	575
5850746	311	<	1	229	267	5	0.16	0	533
5850836	389	<	1	234	314	7	0.23	0	618
5857606	286	<	1	243	273	5	0.16	0	517
5858427	348	<	1	256	312	5	0.18	0	525
5858712	485	<	1	212	291	32	1.59	0	576
5842928	1080	<	1	358	458	49	4.15	0	1860
5850301	426	<	1	134	100	72	5.02	0.69	804
5850840	1667	<	1	195	630	53	5.56	0	2480
5858505	1513	<	1	225	480	63	7.3	0	2560
5858711	1637	<	1	254	930	32	2.9	0	2330
5842914	384	<	1	266	316	14	0.56	0	699
5842916	484	<	1	252	328	25	1.19	0	618
5842922	341	<	1	264	309	7	0.27	0	879
5850231	344	<	1	261	299	8	0.31	0	610

State Well Number	Alkalinity, Field, Dissolved as CaCO3	Al flag	Aluminum, Dissolved (µg/L as Al)	Sb flag	Antimony, Dissolved (µg/L as Sb)	As flag	Arsenic, Dissolved (µg/L as As)	Ba flag	Barium, Dissolved (µg/L as Ba)	Be flag	Beryllium, Dissolved (µg/L as Be)	B flag
5858122	221	<	4	<	1	<	2		41.6	<	1	
5858127			5.74	<	1	<	2		32.4	<	1	<
5858219	222	<	4	<	1	<	2		34.4	<	1	
5858220	224	<	4	<	1	<	2		60.9	<	1	
5858423	281	<	4	<	1	<	2		33.3	<	1	<
5858426	232	<	4	<	1	<	2		26.3	<	1	<
5858427	218	<	4	<	1	<	2		27.8	<	1	<
5858509	220	<	4	<	1	<	2		19.5	<	1	
5858510	213	<	4	<	1	<	2		20.7	<	1	
5858712	230	<	4	<	1	<	2		23.6	<	1	
5850840	218	<	4	<	1		3.32		8.76	<	1	
5858505	240	<	4	<	1		2.38		4.82	<	1	
5858711	327		947	<	1	<	20		94.8	<	1	
5849935	292	<	4	<	1	<	2		46.8	<	1	
5850122	294	<	4	<	1	<	2		124	<	1	
5857405	330	<	4	<	1	<	2		42	<	1	<
5850126	258	<	4	<	1	<	2		13.2	<	1	
5849511	314	<	4	<	1	<	2		19.4	<	1	
5849938		<	4	<	1	<	2		68.3	<	1	
5849939	250	<	4.08	<	1.02	<	2.04		27.9	<	1.02	<
5850231		<	4	<	1	<	2		57.5	<	1	
5850745	276	<	4.08	<	1.02	<	2.04		33.5	<	1.02	
5850746	230	<	4.08	<	1.02	<	2.04		117	<	1.02	
5850836	224	<	4.08	<	1.02	<	2.04		86.9	<	1.02	
5857606	244	<	4.08	<	1.02	<	2.04		36	<	1.02	
5858427	264	<	4.08	<	1.02	<	2.04		36.3	<	1.02	
5858712	236	<	4.08	<	1.02	<	2.04		25.4	<	1.02	
5842928		<	4	<	1	<	2.02		29.1	<	1	
5850301		<	4	<	1		2.28		9.86	<	1	
5850840	228	<	4.08	<	1.02		3.99		7.02	<	1.02	
5858505		<	4	<	1		3.07		4.63	<	1	
5858711	270		289	<	1.02		2.34		26.8	<	1.02	
5842914	264		2	<	1	<	1		74	<	1	<
5842916	270		2	<	1	<	1		66	<	1	
5842922	248	<	1	<	1	<	1		116	<	1	<
5850231	244		2	<	1	<	1		56	<	1	<

State Well Number	Boron, Dissolved (µg/L as B)	Br flag	Bromide, Dissolved (mg/L as Br)	Cd flag	Cadmium, Dissolved (µg/L as Cd)	Cr flag	Chromium, Dissolved (µg/L as Cr)	Co flag	Cobalt, Dissolved (µg/L as Co)	Cu flag	Copper, Dissolved (µg/L as Cu)	Fe flag
5858122	53.6		0.0638	<	1	<	1	<	1		2.29	<
5858127	50		0.0595	<	1		1.09	<	1		1.2	<
5858219	320		0.201	<	1	<	1	<	1	<	1	
5858220	58.4		0.104	<	1		2.78	<	1	<	1	
5858423	51		0.0613	<	1	<	1	<	1		1.73	<
5858426	50		0.0775	<	1	<	1	<	1		6.54	<
5858427	50		0.0699	<	1	<	1	<	1	<	1	<
5858509	344		0.251	<	1		2.63	<	1		4.7	
5858510	257	<	0.02	<	1		2.07	<	1		1.28	
5858712	442		0.238	<	1	<	1	<	1	<	1	
5850840	838		3.09	<	1	<	1	<	1	<	1	<
5858505	1250		2.83	<	1	<	1	<	1		1.43	<
5858711	685		1.51	<	1		23.8		15.8		83.6	
5849935	91.1	<	0.02	<	1	<	1	<	1	<	1	
5850122	109		0.303	<	1	<	1	<	1		13.3	<
5857405	50		0.0553	<	1		4.74	<	1		3.55	<
5850126	1220		0.267	<	1	<	1	<	1	<	1	
5849511	413		0.115	<	1		1.14	<	1		2.33	<
5849938	115		0.13	<	1		3.72	<	1	<	1	<
5849939	51		0.052	<	1.02		1.85	<	1.02		1.93	<
5850231	61.4		0.093	<	1		3.59	<	1		3.51	<
5850745	62.3		0.099	<	1.02		2.37	<	1.02		1.09	<
5850746	69.5		0.055	<	1.02		1.2	<	1.02		1.48	<
5850836	87.8		0.084	<	1.02		1.13	<	1.02		2.51	<
5857606	60.9		0.206	<	1.02		2.4	<	1.02		4.27	<
5858427	87.4		0.265	<	1.02		1.7	<	1.02		1.22	<
5858712	465		0.278	<	1.02		1.44	<	1.02	<	1.02	
5842928	875		1.16	<	1		5.68	<	1		2.81	
5850301	902		1.93	<	1		1.97	<	1		1.08	
5850840	1160		3.84	<	1.02		1.6	<	1.02		1.81	<
5858505	1430		2.9	<	1		3.14	<	1		2.39	<
5858711	1780		1.52	<	1.02		1.97	<	1.02		1.77	
5842914	100	<	0.5	<	1	<	1	<	1	<	1	<
5842916	128	<	0.5	<	1	<	1	<	1	<	1	<
5842922	100	<	0.5	<	1	<	1	<	1	<	1	<
5850231	100	<	0.5	<	1	<	1	<	1		5	<

State Well Number	Iron, Dissolved (µg/L as Fe)	Pb flag	Lead, Dissolved (µg/L as Pb)	Li flag	Lithium, Dissolved (µg/L as Lil)	Mn flag	Manganese, Dissolved (µg/L as Mn)	Mo flag	Molybdenum, Dissolved (µg/L as Mo)	Ni Flag
5858122	50	<	1		7.38	<	1		3.97	
5858127	50		1.12		2.08	<	1	<	1	
5858219	1330	<	1		61.9		14.7	<	1	
5858220	121	<	1		20.3		1.25		1.75	
5858423	51	<	1		3.77	<	1	<	1	
5858426	50		2.95		2.9	<	1	<	1	
5858427	50	<	1		4.01	<	1		2.01	
5858509	57.4	<	1		62.8	<	1	<	1	
5858510	103	<	1		48.8		3.9	<	1	
5858712	86.2	<	1		74.4	<	1	<	1	
5850840	51	<	1		256	<	1	<	1	
5858505	51	<	1		256	<	1	<	1	
5858711	129000		46.2		221		1350		3.76	
5849935	93.4	<	1		16.6		1.21	<	1	
5850122	50	<	1		8.06		4.11	<	1	
5857405	50	<	1	<	2	<	1	<	1	
5850126	165	<	1		220		12.2	<	1	
5849511	50	<	1		41.9		1.4		1.33	
5849938	50	<	1		4.34		3.73	<	1	
5849939	51	<	1.02	<	2.04		3.77	<	1.02	
5850231	50		1.27		7.32	<	1		1.65	
5850745	50	<	1.02		2.55	<	1.02	<	1.02	
5850746	51	<	1.02		5.43	<	1.02		3.27	
5850836	51	<	1.02		9.28	<	1.02		4.92	
5857606	50	<	1.02		5.33	<	1.02		1.83	
5858427	50	<	1.02		5.68	<	1.02	<	1.02	
5858712	164	<	1.02		71.8		1.77	<	1.02	
5842928	63.2	<	1		202		16.5		3.48	
5850301	121	<	1		107		188	<	1	
5850840	51	<	1.02		297	<	1.02	<	1.02	
5858505	50	<	1		245	<	1	<	1	
5858711	3480	<	1.02		286		58.5		1.97	
5842914	30	<	1		18	<	1	<	1	
5842916	30	<	1		36		6	<	1	
5842922	30	<	1		4	<	1	<	1	
5850231	30		2		10	<	1		1	

State Well Number	Nickel, Dissolved (µg/L as Ni)	N flag	Nitrite plus Nitrate, dissolved (mg/L as N)	Se flag	Selenium, Dissolved (µg/L as Se)	Sr flag	Strontium, Dissolved (µg/L as Sr)	Temperature, Water (Celcius)	Tl flag	Thallium, Dissolved (µg/L as Tl)
5858122	2.16		0.785	<	4		2430	22.4	<	1
5858127	2.31		0.878	<	4		246		<	1
5858219	1.23	<	0.02	<	4		25200	24.4	<	1
5858220	2.27		0.11	<	4		40500		<	1
5858423	2.26		1.22	<	4		222	21.4	<	1
5858426	1.85		1.32	<	4		224	20.5	<	1
5858427	2.48		2.69	<	4		236	20.6	<	1
5858509	4.44		0.0983	<	4		28800	24.3	<	1
5858510	1.65		0.197	<	4		27300	25.1	<	1
5858712	1.43		1.19	<	4		21700	24.2	<	1
5850840	2.91	<	0.02		28.6		22500	24.2	<	1
5858505	2.09	<	0.02		11.5		17600	25.3	<	1
5858711	55.2		9.92	<	40		3930	23.6	<	1
5849935	2.22		0.038	<	4		32800	23.9	<	1
5850122	2.35		5.28	<	4		1500	24.6	<	1
5857405	2.73		1.28	<	4		121	22.4	<	1
5850126	7.64	<	0.02	<	4		16500	27	<	1
5849511	7.59		0.462	<	4		17700	23.3	<	1
5849938	5.46		2	<	4		1190	22.8	<	1
5849939	4.23		0.702	<	4.08		61.3	21.8	<	1.02
5850231	2.65		1.08	<	4		7450	23.1	<	1
5850745	2.69		2.87	<	4.08		199	22.5	<	1.02
5850746	2.7		0.951	<	4.08		17900	24.2	<	1.02
5850836	2.99		1.11	<	4.08		39600	25.2	<	1.02
5857606	2.19		0.773	<	4.08		1490	22.5	<	1.02
5858427	3.34		1.41	<	4.08		287	22.7	<	1.02
5858712	1.82		0.0264	<	4.08		11600	22.1	<	1.02
5842928	5.04		2.07		5.38		4710	22.7	<	1
5850301	1.49		0.146		8.08		443	22.6	<	1
5850840	4.36		0.0644		20		22400	24.1	<	1.02
5858505	3.18		0.0516		39.4		17100	25.7	<	1
5858711	11.5		0.097	<	4.08		3980	23.8	<	1.02
5842914	Not analyzed		1.4		1		2310	21.62	<	1
5842916	Not analyzed		0.6		1		1210	20.5	<	1
5842922	Not analyzed		1.5	<	1		306	22.74	<	1
5850231	Not analyzed		1		1		5860	22.3	<	1

Appendix B. Tabulation of water chemistry and site data

State Well Number	V flag	Vanadium, Dissolved (µg/L as V)	Zn Flag	Zinc, Dissolved (µg/L as Zn)
5858122		1.17	<	4
5858127		1.7	<	4
5858219	<	1		4.74
5858220	<	1	<	4
5858423		1.68	<	4
5858426		1.38		28.7
5858427		2.07		31.3
5858509	<	1		5.02
5858510	<	1		8.97
5858712	<	1	<	4
5850840	<	1	<	4
5858505	<	1	<	4
5858711		48.4		2820
5849935	<	1	<	4
5850122		2.4		855
5857405		2.87	<	4
5850126	<	1		8.4
5849511	<	1		5.98
5849938		3.7		13.5
5849939		1.71		18.7
5850231		2.64		247
5850745		2.58	<	4.08
5850746		1.68	<	4.08
5850836		2.61		5.95
5857606		2.21		33.5
5858427		1.54		24.8
5858712	<	1.02	<	4.08
5842928		1.62		39.5
5850301	<	1		5.02
5850840	<	1.02	<	4.08
5858505	<	1		6.89
5858711	<	1.02		69.4
5842914		2		3
5842916		2		3
5842922		2		3
5850231		2		1960

Appendix B. Tabulation of water chemistry and site data

State Well Number	County	latitude DD	longitude DD	Well or Spring	Name/Owner	Well Depth (ft)	Distance from Kgru	Edwards Confined or Unconfined
5850511	Travis	30.1711111	-97.8252778	Well	Rodney Johnson	285	299	confined
5850836	Travis	30.1450000	-97.8130556	Well	Onion Creek Golf Course	500	177	confined
5850849	Travis	30.12611	-97.816388	Well	Creedmoor-Maha WSC	493	141	confined
5857511	Hays	30.049444	-97.935555	Well	Inn above Onion Creek	450	-42	unconfined
5857512	Hays	30.058611	-97.92111	Well	Ruby Ranch South	405	-61	unconfined
5857606	Hays	30.0477778	-97.8836111	Well	Cindy and Jeff Barton	360	391	confined
5858121	Hays	30.1055556	-97.8622222	Well	Leisurewoods Water Co. Well #5 / Aquasource	410	185	confined
5858219	Hays	30.0919444	-97.8177778	Well	Pool & Rogers Materials	550	384	confined
5858220	Hays	30.0933333	-97.8144444	Well	Hunter Industries	700	193	confined
5858508	Hays	30.0791667	-97.8311111	Well	Goforth W.S.C. Well #4	740	161	confined
5842928	Travis	30.2563889	-97.7694444	Well	Marshall Frech	304	300	confined
5858505	Hays	30.0680556	-97.8194444	Well	George Bowen	600	419	confined
5849922	Hays	30.1425	-97.8805556	Well	Copper Hills Water	420	-215	unconfined
5857318	Hays	30.123888	-97.907777	Well	Rick Castillo	420	-264	unconfined
5857608	Hays	30.0802778	-97.9166667	Well	Ruby Ranch Phase II Eco Resources PWS	403	-107	unconfined
5849928	Hays	30.1452778	-97.8797222	Well	Southwest Territory	820	-625	n/a
5842914	Travis	30.2636111	-97.7711111	Spring	Barton Springs	n/a	n/a	n/a
5842916	Travis	30.2800000	-97.7800000	Spring	Cold Springs	n/a	n/a	n/a
5842920	Travis	30.2633333	-97.7741667	Spring	Upper Barton Springs	n/a	n/a	n/a
5842922	Travis	30.2630556	-97.7675000	Spring	Old Mill Springs	n/a	n/a	n/a
58499QL	Hays	30.12697222	-97.90738889	Quary	Borheim Quarry Lake	n/a	100	unconfined
5849938	Hays	30.1258333	-97.90361111	Well	Borheim Quarry Edwards Well	180	-20	unconfined
5849940	Hays	30.1646111	-97.8787777	Well	City of Austin/Flilnt Ridge	324	1	unconfined
5849940	Hays	30.1646111	-97.8787777	Well	City of Austin/Flilnt Ridge	324	1	unconfined
5850222	Travis	30.2169444	-97.8197222	Well	Helen Besse	440	10	unconfined
5850234	Travis	30.2127222	-97.8025833	Well	Castletop Independence, Inc.	442	103	confined
5850410	Travis	30.1783333	-97.8752778	Well	WQPL (J17)	unknown	unknown	unconfined
5850417	Travis	30.1955556	-97.8463889	Well	COA Sister's (Zumwald)	350	53	confined

Appendix B. Tabulation of water chemistry and site data

State Well Number	Yield or Specific Capacity	top sample interval	bottom sample interval	Casing	Year Drilled	Aquifer	TWDB Aquifer Code	Year Plugged	Primary Use	Mo	Day	Year
5850511		119	285	Steel	1956	Edwards	218EDRDA		Domestic	6	22	2006
5850836		222	500	pvc	1973	Edwards	218EDRDA		Irrigation	6	22	2006
5850849		217	493	steel	1984	Edwards	218EDRDA		Public Supply	6	21	2006
5857511		240	450		1994	Edwards	218EBFZA		Commercial	7	21	2006
5857512	0.52	178	405		2000	Edwards	218EDGRU		Public Supply	6	28	2006
5857606	2			steel	1955	Edwards	218EDRDA		Domestic	6	28	2006
5858121		224	410		1978	Edwards	218EDRDA		Public Supply	6	26	2006
5858219	0.26	479	550		1980	Edwards	218EDRDA		Industrial	7	21	2006
5858220	1.8	460	700		1989	Edwards	218EDRDA		Industrial	6	27	2006
5858508	14	460	740		1985	Edwards	218EDRDA		Public Supply	6	21	2006
5842928	2	163	304	pvc	1979	Edwards Saline	218EBFZA		Monitor	7	19	2006
5858505		525	600		1982	Edwards Saline	218EDRDA		Irrigation	6	27	2006
5849922	0.08	200	420	steel	1984	Edwards-Trinity	218EDGRU		Public Supply	6	26	2006
5857318	0.2				1996	Edwards-Trinity	218EDGRU		Domestic	7	21	2006
5857608	0.22				1997	Edwards-Trinity	218EDGRU		Public Supply	6	28	2006
5849928				steel	1984	Upper Trinity	218GLRS		Public Supply	6	26	2006
5842914					n/a	Edwards	218EBFZA		Recreation	6	13	2007
5842916					n/a	Edwards	218EBFZA		Unused	6	13	2007
5842920					n/a	Edwards	218EBFZA		Unused	6	13	2007
5842922					n/a	Edwards	218EDRDA		Unused	6	13	2007
58499QL					n/a	Edwards	218EBFZA		Monitor	11	2	2007
5849938					unknown	Edwards	218EBFZA		Monitor	11	2	2007
5849940					unknown	Edwards	218EBFZA		Stock	7	2	2007
5849940					unknown	Edwards	218EBFZA		Stock	7	11	2007
5850222	1.73	340	440	pvc	1980	Edwards	218EBFZA		Domestic	6	6	2007
5850234					2007	Edwards	218EDRA		Irrigation	7	10	2007
5850410					1950	Edwards	218EBFZA		Stock	7	2	2007
5850417				Steel	1938	Edwards	218EDRDA		Monitor	7	3	2007

Appendix B. Tabulation of water chemistry and site data

State Well Number	sample time	Date	Avg. Barton Springs Flow (cfs)	temp ©	Collection Remarks	Analysis Reliability Remark	Collecting Agency	Lab
5850511	1040	6/22/2006	28	22		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5850836	0955	6/22/2006	28	24		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5850849	1425	6/21/2006	28	24		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5857511	1105	7/21/2006	28	22		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5857512	1115	6/28/2006	28	22		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5857606	1221	6/28/2006	28	23		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5858121	1138	6/26/2006	28	22		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5858219	0950	7/21/2006	28	26		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5858220	1125	6/27/2006	28	27		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5858508	1128	6/21/2006	28	24		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5842928	1215	7/19/2006	28	24		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5858505	1030	6/27/2006	28	25		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5849922	1053	6/26/2006	28	23		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5857318	1215	7/21/2006	28	24		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5857608	1025	6/28/2006	28	23		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5849928	1011	6/26/2006	28	28		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5842914	1120	6/13/2007	104	21	Hand filtered grab sample.	Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5842916	1337	6/13/2007	104	22	Hand filtered grab sample.	Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5842920	1205	6/13/2007	104	21	Hand filtered grab sample.	Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5842922	1019	6/13/2007	104	21	Hand filtered grab sample.	Good, in accordance with UM-51	BSEACD	Energy Lab, WY
58499QL	11:45	11/2/2007	104		Quarry lake	Good, in accordance with UM-51	BSEACD	LCRA, TX
5849938	12:40	11/2/2007	104		temporary pump installed	Good, in accordance with UM-51	BSEACD	LCRA, TX
5849940	1324	7/2/2007	104	24	Sample arrived at lab 21C.	Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5849940	1203	7/11/2007	104	23	Resample	Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5850222	1400	6/6/2007	104	23		Good, in accordance with UM-51	TWDB	Energy Lab, WY
5850234	1612	7/10/2007	104	24		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5850410	1448	7/2/2007	104	22	Sample arrived at lab 21 C.	Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5850417	1158	7/3/2007	104	23	Sampled arrived 21 C	Good, in accordance with UM-51	BSEACD	Energy Lab, WY

Appendix B. Tabulation of water chemistry and site data

State Well Number	Ion Balance	Measured TDS (mg/L)	Si flag	Silica (Si, mg/L)	Ca flag	Calcium (Ca, mg/L)	Mg flag	Magnesium (Mg, mg/L)	Na flag	Sodium (Na, mg/L)	K flag
5850511	Balanced	305		11.3		75.4		29.1		7.2	
5850836	Balanced	367		11		63.8		28.9		8.2	
5850849	Balanced	349		10.9		69		27.8		7	
5857511	Balanced	329		11		66.3		29.9		10.7	
5857512	Balanced	301		11.3		68.5		35.4		6.1	
5857606	Balanced	251		11.4		53.1		29.8		5.6	
5858121	Unbalanced	274		10.7		69.3		26.1		6.9	
5858219	Balanced	488		11.9		52.9		36.1		58.3	
5858220	Balanced	468		12.8		69.2		38.9		15.2	
5858508	Balanced	436		11		74.7		32.8		6.9	
5842928	Balanced	6330		13.4		282		158		1810	
5858505	Balanced	1450		12.1		91.7		55.9		356	
5849922	Balanced	264		11.5		62.8		32.3		2.7	
5857318	Balanced	306		9.4		88.8		29.9		5.4	<
5857608	Balanced	372		12.5		67.7		41.8		7	
5849928	Balanced	1470		13.8		197		137		31.2	
5842914	Balanced	357		11.5		105		22.5		15.4	
5842916	Balanced	380		10.8		104		24.8		18.3	
5842920	Balanced	360		12.2		103		24.1		11.6	
5842922	Balanced	404		11		101		24.4		27.7	
58499QL	Balanced	177		13.1		28		20.6		5.21	
5849938	Balanced	692		11.6		141		48.5		12.7	
5849940	Balanced	347		11.8		84.6		27.6		5.6	
5849940	Balanced	329		10.7		93.5		29.4		6.9	
5850222	Balanced			12		69.6		46.9		9.8	
5850234	Unbalanced	307		10.4		74.5		28.8		7.3	
5850410	Balanced	381		11.5		106		22.6		5.1	
5850417	Balanced	215		11.7		44.9		25.7		5.1	

Appendix B. Tabulation of water chemistry and site data

State Well Number	Potassium (K, mg/L)	Carbonate (CO3, mg/L)	Bicarbonate (HCO3, mg/L)	SO4 flag	Sulfate (SO4, mg/L)	Cl flag	Chloride (Cl, mg/L)	Fl flag	Fluoride (Fl, mg/L)	NO3 flag	Nitrate (NO3, mg/L)	pH flag	pH (su)
5850511	0.9	1.2	351.45		21		12		0.3		5.31		6.8
5850836	1.1	1.2	275.79		71		10		1.5		2.66		6.92
5850849	1.2	1.2	312.40		51		10		0.9		4.43		7.1
5857511	1	1.2	289.22		23		23		0.3		3.98		7.1
5857512	1.5	0	323.39		37		10		0.3		1.77		7.18
5857606	1.1	0	281.89		12		7		0.6		1.77		7.14
5858121	1.1	0	279.45		20		10		0.3		6.20		7.38
5858219	4.8	1.2	253.83		160		39		3.3	<	0.44		7.48
5858220	1.9	0	270.91		161		17		3	<	0.44		7.16
5858508	1.1	1.2	314.84		87		10		1.4		0.89		7.45
5842928	30.3	1.2	402.71		1560		2690		2.7		3.54		6.64
5858505	16.3	0	281.89		457		366		4.7	<	0.44		7.22
5849922	1.2	0	319.73		7		4		0.2	<	0.44		7.2
5857318	0.5	1.2	353.90		24		8		0.2		5.31		6.8
5857608	3.2	0	283.12		112		8		0.6	<	0.44		7.25
5849928	13.6	0	334.37		800		26		3	<	0.44		6.83
5842914	1.5	1.2	328.27		39		26		0.3		5.76		6.65
5842916	1.6	1.2	322.17		51		33		0.2		4.87		6.6
5842920	1.3	1.2	356.34		31		20		0.2		10.62		6.57
5842922	1.8	1.2	312.40		51		44		0.3		4.87		6.68
58499QL	0.601		184.13		7.06		8.14		0.11		0.22		
5849938	1.56		411.89		213		12.7		0.13		13.19		
5849940	0.9	0	373.42		25		9		0.2		3.98		6.9
5849940	0.7	1.2	385.62		12		10		0.2		4.43		7.02
5850222	5.2	1.2	288.00		160		10		2		0.89		7.17
5850234	1.1	1.2	307.52		19		9		0.4		4.43		7.21
5850410	0.8	0	410.03		17		6		0.2		12.40		6.84
5850417	1.4	0	258.71		14		7		0.5	<	0.44		7.26

Appendix B. Tabulation of water chemistry and site data

State Well Number	Calculated TDS (mg/L)	phen Alk flag	Phen Alk (mg/L)	total alkalinity (CaCO3, mg/L)	total hardness	Percent Sodium (Na, %)	q00931_sar	q71860_rsc	Specific Conductance (mS/cm)
5850511	339	<	1	290	311	5	0.17	0	602
5850836	371	<	1	228	319	6	0.21	0	633
5850849	359	<	1	258	312	5	0.17	0	603
5857511	318	<	1	239	295	7	0.27	0	594
5857512	342	<	1	265	329	4	0.14	0	590
5857606	263	<	1	231	258	5	0.15	0	493
5858121	289	<	1	229	282	5	0.17	0	525
5858219	518	<	1	210	309	31	1.51	0	855
5858220	497	<	1	222	384	9	0.36	0	750
5858508	427	<	1	260	374	4	0.16	0	698
5842928	6762	<	1	332	1369	74	21.39	0	1046
5858505	1516	<	1	231	479	63	7.22	0	2440
5849922	280	<	1	262	291	2	0.06	0	512
5857318	348	<	1	292	346	3	0.12	0	640
5857608	406	<	1	232	356	4	0.16	0	677
5849928	1404	<	1	274	1076	6	0.41	0	1849
5842914	390	<	1	271	356	9	0.35	0	627
5842916	408	<	1	266	362	10	0.41	0	649
5842920	391	<	1	294	357	7	0.26	0	634
5842922	422	<	1	258	354	15	0.64	0	683
58499QL	174	<	1	151					
5849938	657	<	1	338					
5849940	359	<	1	306	332	4	0.13	0	623
5849940	360	<	1	318	356	4	0.15	0	575
5850222	491	<	1	238	403	5	0.22	0	736
5850234	310	<	1	255	308	5	0.18	0	441
5850410	383	<	1	336	358	3	0.11	0	667
5850417	242	<	1	212	222	5	0.15	0	431

Appendix B. Tabulation of water chemistry and site data

State Well Number	Alkalinity, Field, Dissolved as CaCO3	Al flag	Aluminum, Dissolved (µg/L as Al)	Sb flag	Antimony, Dissolved (µg/L as Sb)	As flag	Arsenic, Dissolved (µg/L as As)	Ba flag	Barium, Dissolved (µg/L as Ba)	Be flag	Beryllium, Dissolved (µg/L as Be)	B flag
5850511			19	<	1	<	1		42	<	1	<
5850836	238		3	<	1	<	1		101	<	1	<
5850849	249		2	<	1	<	1		120	<	1	<
5857511	240	<	1	<	1	<	1		61	<	1	<
5857512	256	<	1	<	1	<	1		53	<	1	<
5857606	239	<	1	<	1	<	1		43	<	1	<
5858121	236	<	1	<	1	<	1		38	<	1	<
5858219	212		2	<	1	<	1		33	<	1	
5858220	221		1	<	1	<	1		60	<	1	
5858508	277		2	<	1	<	1		167	<	1	<
5842928	346	<	6		6		12		30	<	1	
5858505	238		2	<	1	<	1		5	<	1	
5849922	266		2	<	1		1		32	<	1	<
5857318	302	<	1	<	1	<	1		39	<	1	<
5857608	230		1	<	1	<	1		26	<	1	
5849928	274		3	<	1	<	1		7	<	1	
5842914	270	<	1	<	1	<	1		55	<	1	<
5842916	262	<	1	<	1	<	1		60	<	1	<
5842920	294	<	1	<	1	<	1		117	<	1	<
5842922	258		8	<	1	<	1		59	<	1	<
58499QL		<	4	J	0.498	J	0.889		16.9	<	1	
5849938		<	4	J	0.195	J	0.911		73.7	J	0.0216	
5849940	292	<	1	<	1	<	1		45	<	1	<
5849940	310		3	<	1	<	1		56	<	1	<
5850222	232	<	4	<	1	<	1		58	<	1	
5850234	254		3	<	1	<	1		211	<	1	<
5850410	328	<	1	<	1	<	1		55	<	1	<
5850417	209	<	1	<	1	<	1		83	<	1	<

State Well Number	Boron, Dissolved (µg/L as B)	Br flag	Bromide, Dissolved (mg/L as Br)	Cd flag	Cadmium, Dissolved (µg/L as Cd)	Cr flag	Chromium, Dissolved (µg/L as Cr)	Co flag	Cobalt, Dissolved (µg/L as Co)	Cu flag	Copper, Dissolved (µg/L as Cu)	Fe flag
5850511	100	<	0.5	<	1	<	1	<	1		2	<
5850836	100	<	0.5	<	1	<	1	<	1		2	<
5850849	100	<	0.5	<	1	<	1	<	1		2	<
5857511	100	<	0.5	<	1		6	<	1		3	<
5857512	100	<	0.5	<	1	<	1	<	1		1	<
5857606	100	<	0.5	<	1	<	1	<	1		2	<
5858121	100	<	0.5	<	1	<	1	<	1		1	<
5858219	413	<	0.5	<	1		5	<	1	<	1	
5858220	109	<	0.5	<	1	<	1	<	1	<	1	
5858508	100	<	0.5	<	1	<	1	<	1		1	<
5842928	3980	<	6	<	4		60	<	1		4	<
5858505	1440	<	0.5	<	1	<	1	<	1	<	1	<
5849922	100	<	0.5	<	1	<	1	<	1		3	<
5857318	100	<	0.5	<	1		7	<	1		3	<
5857608	129	<	0.5	<	1	<	1	<	1	<	1	<
5849928	411	<	0.5	<	1	<	1	<	1		1	
5842914	100	<	0.5	<	1	<	1	<	1		1	<
5842916	100	<	0.5	<	1	<	1	<	1		2	<
5842920	100	<	0.5	<	1	<	1	<	1		2	<
5842922	100	<	0.5	<	1		4	<	1		53	<
58499QL	77		0.08	<	1		1.75	J	0.0833	J	0.428	J
5849938	410		0.21	<	1		5.17	J	0.461	J	0.433	J
5849940	100	<	0.5	<	1	<	1	<	1		5	<
5849940	100	<	0.5	<	1	<	1	<	1		5	<
5850222	308	<	0.5	<	1	<	1	<	1		4	<
5850234	100	<	0.5	<	1	<	1	<	1	<	1	<
5850410	100	<	0.5	<	1	<	1	<	1		4	<
5850417	100	<	0.5	<	1	<	1	<	1	<	1	<

State Well Number	Iron, Dissolved (µg/L as Fe)	Pb flag	Lead, Dissolved (µg/L as Pb)	Li flag	Lithium, Dissolved (µg/L as Lil)	Mn flag	Manganese, Dissolved (µg/L as Mn)	Mo flag	Molybdenum, Dissolved (µg/L as Mo)	Ni Flag
5850511	30	<	1		4	<	1		1	
5850836	30	<	1		9	<	1		6	
5850849	30	<	1		7	<	1		3	
5857511	30	<	1		5	<	1		2	
5857512	30	<	1		5	<	1		10	
5857606	30	<	1		3	<	1		2	
5858121	30	<	1		3	<	1		1	
5858219	403	<	1		64		4	<	1	
5858220	338	<	1		18		3		2	
5858508	30	<	1		6	<	1		47	
5842928	40	<	1		1320		22		2	
5858505	30	<	1		238		1	<	1	
5849922	30	<	1		2		1		1	
5857318	30	<	1		30	<	1		1	
5857608	30	<	1		13	<	1		4	
5849928	401	<	1		65		2	<	1	
5842914	30	<	1		7	<	1	<	10	
5842916	30	<	1		4	<	1	<	10	
5842920	30	<	1		4	<	1	<	10	
5842922	30		16		16	<	1	<	10	
58499QL	10	<	1.02	J	1.4	J	0.475	J	0.372	
5849938	3	<	1.02		4.86	J	0.721	J	0.436	
5849940	30	<	1		1		1	<	1	
5849940	30		3		2	<	1		2	
5850222	30	<	1		26		1	<	1	
5850234	30	<	1		4	<	1		1	
5850410	30		1		1	<	1	<	1	
5850417	30	<	1		4		6		2	

State Well Number	Nickel, Dissolved (µg/L as Ni)	N flag	Nitrite plus Nitrate, dissolved (mg/L as N)	Se flag	Selenium, Dissolved (µg/L as Se)	Sr flag	Strontium, Dissolved (µg/L as Sr)	Temperature, Water (Celcius)	Tl flag	Thallium, Dissolved (µg/L as Tl)
5850511	1.9		1.2	<	1		2200	22.2	<	1
5850836	Not analyzed		0.6		1		35700	24.1	<	1
5850849	Not analyzed		1	<	1		22000	23.7	<	1
5857511	Not analyzed		0.9	<	1		5180	21.9	<	1
5857512	Not analyzed		0.4	<	1		11000	21.62	<	1
5857606	Not analyzed		0.4	<	1		1990	23.01	<	1
5858121	Not analyzed		1.4		1		1420	21.62	<	1
5858219	Not analyzed	<	0.1	<	1		25000	26.09	<	1
5858220	Not analyzed	<	0.1	<	2		44300	27.16	<	1
5858508	Not analyzed		0.2	<	1		45500	23.8	<	1
5842928	Not analyzed		0.8		47		12400	24.09		2
5858505	Not analyzed	<	0.1		4		17100	25.39	<	1
5849922	Not analyzed	<	0.1		5		1120	23.02	<	1
5857318	Not analyzed		1.2	<	1		1230	23.9	<	1
5857608	Not analyzed	<	0.1	<	2		13100	23.1	<	1
5849928	Not analyzed	<	0.1		1		17600	28.13	<	1
5842914	Not analyzed		1.3		1		688	21.4	<	1
5842916	Not analyzed		1.1	<	1		266	21.9	<	1
5842920	Not analyzed		2.4	<	1		275	21.2	<	1
5842922	Not analyzed		1.1	<	1		801	21.2	<	1
58499QL	Not analyzed		0.05	J	1.04		42		J	0.114
5849938	Not analyzed		2.98	J	2.61		1740		J	0.352
5849940	Not analyzed		0.9	<	1		1170	23.43	<	1
5849940	Not analyzed		1	<	1		6370	23.62	<	1
5850222	no data		0.2	<	1		31900	22.7	<	1
5850234	Not analyzed		1	<	1		2890	23.65	<	1
5850410	Not analyzed		2.8	<	1		71	22.42	<	1
5850417	Not analyzed	<	0.1	<	1		3850	22.71	<	1

Appendix B. Tabulation of water chemistry and site data

State Well Number	V flag	Vanadium, Dissolved (µg/L as V)	Zn Flag	Zinc, Dissolved (µg/L as Zn)
5850511		3		101
5850836		3		48
5850849		2		3
5857511		3		7
5857512		2		164
5857606		2		10
5858121		2		4
5858219		1		5
5858220	<	1	<	2
5858508		2		5
5842928		5		14
5858505	<	1	<	1
5849922		2		13
5857318		4		3
5857608	<	1	<	2
5849928	<	1		34
5842914		2		4
5842916		2		3
5842920		3		5
5842922		2		260
58499QL		1.58	J	2.73
5849938		4.14		4.58
5849940		3		10
5849940		3		13
5850222	<	1		8
5850234		3		2
5850410		3		138
5850417		1		12

Appendix B. Tabulation of water chemistry and site data

State Well Number	County	latitude DD	longitude DD	Well or Spring	Name/Owner	Well Depth (ft)	Distance from Kgru	Edwards Confined or Unconfined
5850417	Travis	30.1955556	-97.8463889	Well	COA Sister's (Zumwald)	350	53	confined
5850745	Travis	30.1422222	-97.8536111	Well	COA/Willy Conrad	340	140	unconfined
5857320	Hays	30.0975861	-97.8868500	Well	Gary Callon	unknown	unknown	unconfined
5857509	Hays	30.0725000	-97.9202778	Well	Onion Creek Lodge	258	20	unconfined
58501W2	Travis	30.22639806	-97.84146975	Well	Brush Country Monitor Well	187	87	unconfined
5850840	Travis	30.1297222	-97.7983333	Well	St. Albans Episcopal Church	498	257	confined
5858701	Hays	30.0361111	-97.8402778	Well	Dacy	492	391	confined
5756603	Hays	30.1954444	-98.0054444	Well	Center Lake Business Park	918	n/a	n/a
5756604	Hays	30.1999166	-98.0089444	Well	Dimension Builders	905	n/a	n/a
5849413	Hays	30.1980000	-97.9803333	Well	Belterra (Capital Pacific Homes)	903	n/a	n/a
5849513	Hays	30.1798888	-97.9480833	Well	Leo Lopez 1401 Kemp Hills	840	n/a	confined
5756480	Hays	30.1960278	-98.1075000	Well	Whit Hanks	440	n/a	n/a
5756518	Hays	30.1781660	-98.0525550	Well	Foreman Well	320	n/a	n/a
5756906	Hays	30.1652777	-98.0373330	Well	Jackie Hatch	195	n/a	n/a

Appendix B. Tabulation of water chemistry and site data

State Well Number	Yield or Specific Capacity	top sample interval	bottom sample interval	Casing	Year Drilled	Aquifer	TWDB Aquifer Code	Year Plugged	Primary Use	Mo	Day	Year
5850417				Steel	1938	Edwards	218EDRDA		Monitor	7	25	2007
5850745		188	340	pvc	1986	Edwards	218EDRDA		Domestic	7	2	2007
5857320					unknown	Edwards	218EDRA		Domestic	7	9	2007
5857509	5.15			pvc	1988	Edwards	218EDRDA		Domestic	7	9	2007
58501W2		120	187		1986	Edwards	218EBFZA		Monitor	11	5	2007
5850840		345	499	pvc	1985	Edwards Saline	218EDRDA		Public Supply	5	10	2007
5858701					1950	Edwards Saline	218EBFZA		Irrigation	2	5	2007
5756603					unknown	Lower Trinity	219SLGH		Domestic	7	25	2007
5756604					2007	Lower Trinity	219SLGH		Domestic	7	6	2007
5849413					2002	Lower Trinity	219SLGH		Irrigation	7	11	2007
5849513		608	840	steel	1996	Lower Trinity	219SLGH		Domestic	7	5	2007
5756480					2004	Middle Trinity	218GRHC		Irrigation	7	25	2007
5756518					2005	Middle Trinity	218HSCC		Domestic	7	25	2007
5756906					unknown	Upper Trinity	218GLRS		Stock	7	10	2007

Appendix B. Tabulation of water chemistry and site data

State Well Number	sample time	Date	Avg. Barton Springs Flow (cfs)	temp ©	Collection Remarks	Analysis Reliability Remark	Collecting Agency	Lab
5850417	1315	7/25/2007	104	23		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5850745	1208	7/2/2007	104	21	Sample arrived at lab 21 C.	Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5857320	1036	7/9/2007	104	22		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5857509	1111	7/9/2007	104	21		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
58501W2	10:35	11/5/2007	104		temporary pump installed	Good, in accordance with UM-51	BSEACD	LCRA, TX
5850840	1240	5/10/2007	104	25		Good, in accordance with UM-51	TWDB	Energy Lab, WY
5858701	915	2/5/2007	104		collected from storage tank	Use data carefully, sampled from tank, distribution, or bailed.	BSEACD	LCRA, TX
5756603	1050	7/25/2007	104	25		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5756604	1155	7/6/2007	104	25		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5849413	1030	7/11/2007	104	28		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5849513	0959	7/5/2007	104	24		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5756480	1140	7/25/2007	104	24		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5756518	1225	7/25/2007	104	22		Good, in accordance with UM-51	BSEACD	Energy Lab, WY
5756906	1300	7/10/2007	104	22		Good, in accordance with UM-51	BSEACD	Energy Lab, WY

Appendix B. Tabulation of water chemistry and site data

State Well Number	Ion Balance	Measured TDS (mg/L)	Si flag	Silica (Si, mg/L)	Ca flag	Calcium (Ca, mg/L)	Mg flag	Magnesium (Mg, mg/L)	Na flag	Sodium (Na, mg/L)	K flag
5850417	Balanced	229		12.4		45.9		26.3		5.3	
5850745	Balanced	338		11		85.1		20.7		8	
5857320	Balanced	290		9.6		82.6		24.8		7.9	
5857509	Balanced	285		9.5		77		24.3		7.6	
58501W2	Balanced	353		10		87.3		20.6		13.5	
5850840	Balanced			14.7		124		76.2		334	
5858701		1240				103		58.1		248	
5756603	Balanced	926		21		98.4		70.3		83.9	
5756604	Balanced	869		19		92.8		68.6		91.4	
5849413	Balanced	389		11.8		72.2		34.7		24.1	
5849513	Balanced	1240		11.6		156		125		53.8	
5756480	Balanced	2180		9		536		43.7		24	
5756518	Balanced	1010		12		134		91.1		34.5	
5756906	Unbalanced	413		10		103		31.9		12	

Appendix B. Tabulation of water chemistry and site data

State Well Number	Potassium (K, mg/L)	Carbonate (CO3, mg/L)	Bicarbonate (HCO3, mg/L)	SO4 flag	Sulfate (SO4, mg/L)	Cl flag	Chloride (Cl, mg/L)	Fl flag	Fluoride (Fl, mg/L)	NO3 flag	Nitrate (NO3, mg/L)	pH flag	pH (su)
5850417	1.4	1.2	266.03		12		8		0.4		0.44		7.34
5850745	1.2	1.2	309.96		31		18		0.2		6.20		7.02
5857320	1.1	1.2	312.40		27		11		0.2		6.20		7.18
5857509	1.2	1.2	292.88		26		11		0.2		3.54		7.43
58501W2	1.09		320.54		40.2		22.6		0.14		3.83		
5850840	37.8	1.2	273.35		564		431		4		1.77		7.48
5858701	14.4		276.69		365		276		3.61		3.54		
5756603	13	1.2	334.37		411		44		1	<	0.44		6.98
5756604	13.1	1.2	324.61		385		44		0.9	<	0.44		7.21
5849413	4.3	1.2	253.83		116		19		0.3		0.44		7.83
5849513	14.9	1.2	378.30		660		41		3.4	<	0.44		6.93
5756480	5	1.2	391.73		1210		53		1.5	<	0.44		6.58
5756518	9.7	1.2	356.34		467		33		2.8	<	0.44		6.92
5756906	4	1.2	314.84		82		18		0.8		9.74		7.07

Appendix B. Tabulation of water chemistry and site data

State Well Number	Calculated TDS (mg/L)	phen Alk flag	Phen Alk (mg/L)	total alkalinity (CaCO3, mg/L)	total hardness	Percent Sodium (Na, %)	q00931_sar	q71860_rsc	Specific Conductance (mS/cm)
5850417	248	<	1	220	227	5	0.15	0	414
5850745	335	<	1	256	298	6	0.2	0	581
5857320	325	<	1	258	309	5	0.19	0	552
5857509	306	<	1	242	293	5	0.19	0	516
58501W2	353	<	1	263					
5850840	1742	<	1	226	645	54	5.82	0	2690
5858701	1208	<	2	227					
5756603	921	<	1	276	549	25	1.57	0	1265
5756604	888	<	1	268	528	28	1.75	0	1281
5849413	412	<	1	210	327	14	0.58	0	616
5849513	1271	<	1	312	924	11	0.77	0	1679
5756480	2093	<	1	323	1537	3	0.26	0	2336
5756518	981	<	1	294	733	10	0.56	0	1315
5756906	430	<	1	260	391	6	0.26	0	576

Appendix B. Tabulation of water chemistry and site data

State Well Number	Alkalinity, Field, Dissolved as CaCO3	Al flag	Aluminum, Dissolved (µg/L as Al)	Sb flag	Antimony, Dissolved (µg/L as Sb)	As flag	Arsenic, Dissolved (µg/L as As)	Ba flag	Barium, Dissolved (µg/L as Ba)	Be flag	Beryllium, Dissolved (µg/L as Be)	B flag
5850417	210	<	1	<	1	<	1		88	<	1	<
5850745	252	<	1	<	1	<	1		37	<	1	<
5857320	252		1	<	1	<	1		33	<	1	<
5857509	232		1	<	1	<	1		31	<	1	<
58501W2		J	2.06	J	0.206	J	0.541		37.1	J	0.0257	
5850840	223	<	1	<	1	<	2		8	<	1	
5858701	not collected	<	1	<	1	<	2		6.4	<	1	
5756603	268	<	1	<	1	<	2		19	<	1	
5756604	266		1	<	1		3		17	<	1	
5849413	202		3	<	1		2		25	<	1	
5849513	304		5	<	1	<	1		12	<	1	
5756480	314	<	1	<	1	<	1		11	<	1	<
5756518	284		17	<	1	<	1		39	<	1	
5756906	266		2	<	1	<	1		30	<	1	

State Well Number	Boron, Dissolved (µg/L as B)	Br flag	Bromide, Dissolved (mg/L as Br)	Cd flag	Cadmium, Dissolved (µg/L as Cd)	Cr flag	Chromium, Dissolved (µg/L as Cr)	Co flag	Cobalt, Dissolved (µg/L as Co)	Cu flag	Copper, Dissolved (µg/L as Cu)	Fe flag
5850417	100	<	0.5	<	1	<	1	<	1		2	<
5850745	100	<	0.5	<	1	<	1	<	1		2	<
5857320	100	<	0.5	<	1	<	1	<	1		3	<
5857509	100	<	0.5	<	1	<	1	<	1		2	<
58501W2	196		0.165	<	1		2.39	J	0.356	J	0.552	<
5850840	1120		3.19	<	1	<	1	<	1		13	<
5858701	1470		1.99	<	1		2.81	<	1		2.7	<
5756603	736	<	0.5	<	1	<	1	<	1		5	
5756604	692	<	0.5	<	1	<	1	<	1		2	
5849413	164	<	0.5	<	1	<	1	<	1		5	<
5849513	581	<	0.5	<	1	<	1	<	1		6	<
5756480	100	<	0.5	<	1	<	1		1	<	1	
5756518	527	<	0.5	<	1	<	1	<	1		2	
5756906	110	<	0.5	<	1	<	1	<	1		4	<

State Well Number	Iron, Dissolved (µg/L as Fe)	Pb flag	Lead, Dissolved (µg/L as Pb)	Li flag	Lithium, Dissolved (µg/L as Lil)	Mn flag	Manganese, Dissolved (µg/L as Mn)	Mo flag	Molybdenum, Dissolved (µg/L as Mo)	Ni Flag
5850417	30		1		5		13		2	
5850745	30	<	1		2	<	1	<	1	
5857320	30	<	1		4	<	1	<	1	
5857509	30	<	1		3	<	1	<	1	
58501W2	51	<	1.02		3.12	J	0.582	J	0.756	
5850840	30	<	1		281		3	<	1	
5858701	50	<	1		236		6.7	<	1	
5756603	44		4		101		1	<	1	
5756604	33	<	1		95		2	<	1	
5849413	30	<	1		23		2	<	1	
5849513	30	<	1		65	<	1	<	1	
5756480	3010	<	1		12		50		3	
5756518	75	<	1		47		3		9	
5756906	30	<	1		9	<	1		2	

Appendix B. Tabulation of water chemistry and site data

State Well Number	Nickel, Dissolved (µg/L as Ni)	N flag	Nitrite plus Nitrate, dissolved (mg/L as N)	Se flag	Selenium, Dissolved (µg/L as Se)	Sr flag	Strontium, Dissolved (µg/L as Sr)	Temperature, Water (Celcius)	Tl flag	Thallium, Dissolved (µg/L as Tl)
5850417	Not analyzed		0.1	<	1		3880	22.79	<	1
5850745	Not analyzed		1.4	<	1		208	21.35	<	1
5857320	Not analyzed		1.4		1		212	21.76	<	1
5857509	Not analyzed		0.8	<	1		354	20.54	<	1
58501W2	Not analyzed		0.866	J	1.76		214		J	0.257
5850840	Not analyzed		0.4		9		18900	25.2	<	1
5858701	2.59		0.8	<	4.08		16700		<	1
5756603	Not analyzed	<	0.1	<	1		12000	25.3	<	1
5756604	Not analyzed	<	0.1	<	1		12400	25.27	<	1
5849413	Not analyzed		0.1	<	1		3060	27.75	<	1
5849513	Not analyzed	<	0.1	<	1		17300	24	<	1
5756480	Not analyzed	<	0.1		1		16300	23.53	<	1
5756518	Not analyzed	<	0.1	<	1		20000	22.16	<	1
5756906	Not analyzed		2.2		1		2200	21.84	<	1

Appendix B. Tabulation of water chemistry and site data

State Well Number	V flag	Vanadium, Dissolved (µg/L as V)	Zn Flag	Zinc, Dissolved (µg/L as Zn)
5850417		1		20
5850745		2		2
5857320		2		6
5857509		2		7
58501W2		2.42	J	4.02
5850840	<	1		47
5858701	<	1		329
5756603	<	1		7
5756604	<	1		10
5849413		2		6
5849513	<	1		12
5756480	<	1		1800
5756518	<	1		6
5756906		1		658

Appendix C: A Guide to Interpreting your
WATER QUALITY REPORT

The Texas Water Development Board (TWDB) appreciates your participation in the water quality monitoring program. As part of our commitment to customer service, we have prepared this guide to help you examine and understand the results of the water quality analysis of your well water. Below is a table of drinking water standards. The purpose of these standards is to assure the safety of public water supplies and to comply with the Federal "Safe Drinking Water Act" and the U.S. Environmental Protection Agency's "Primary Drinking Water Regulations" The Texas Commission on Environmental Quality (TCEQ) is the state agency authorized to administer these standards. ***Primary*** standards apply to constituents that have set maximum contaminant levels (MCLs) to protect human health. ***Secondary*** standards are recommended MCLs which are generally associated with taste, odor, appearance, and staining problems. Results that have exceeded MCLs have been highlighted on the analysis printout.

TWDB is not a regulatory agency, and provides this information as a service to the Texas citizens. Addressing any water quality problems is the responsibility of the well owner. TWDB staff is available to answer questions about well water problems and any other questions you might have about groundwater. Again, thank you for your participation, and if you have questions regarding your results, please call TWDB at (512) 936-0846.

PRIMARY STANDARDS			
Constituent	Level	Constituent	Level
Antimony	6 µg/L	Mercury	2 µg/L
Arsenic	10 µg/L	$NO_2 + NO_3$ (as N)**	10 mg/L**
Barium	2 mg/L	Nitrate (as N)	10 mg/L
Beryllium	4 µg/L	Nitrite (as N)	1 mg/L
Cadmium	5 µg/L	Radium $^{226 + 228}$	5 pCi/L
Chromium	100 µg/L	Selenium	50 µg/L
Fluoride	4 mg/L	Thallium	2 µg/L
Gross Alpha	15 pCi/L	Uranium (Natural)	30 µg/L
SECONDARY STANDARDS			
Constituent	Level	Constituent	Level
Aluminum (range)	50 - 200 µg/L	pH	< 7.0
Chloride	300 mg/L	Silver	100 µg/L
Copper	1 mg/L	Sulfate	300 mg/L
Fluoride	2 mg/L	Total Dissolved Solids	1,000 mg/L
Iron	300 µg/L	Zinc	5 mg/L
Manganese	50 µg/L		

*µg is the symbol for microgram, where 1,000 µg/L = 1 milligram/liter (mg/L); pCi/L is picocurie per liter
**On the analysis printout, nitrate in the top portion is reported as NO_3, which has a primary level of 44.3 mg/L

Descriptions of Common Ground Water Constituents

Constitutent	Sources	Significance
ALKALINITY	Alkalinity is a measure of the capacity of water to neutralize a strong acid. It is expressed in terms of an equivalent concentration of calcium carbonate and caused by the presence of bicarbonate and carbonate ions.	High alkalinity (see bicarbonate) may cause an unpleasant taste. It also is detrimental to several industrial processes and may affect irrigated crops. No standards established.
ALUMINUM (Al)	Aluminum is commonly found in minerals, rocks, and clay and is the most abundant metal on the earth's crust. It usually occurs at low levels in most waters.	Aluminum has a secondary standard range of 50-200 µg/l and levels above this pose discoloration problems. Large concentrations may cause gastrointestinal irritation. High concentrations have been found in the brains of persons who died with Alzheimer's. [7, 10, 11]**
ANTIMONY (Sb)	Antimony is relatively rare in crustal rocks, occurring most abundantly around geothermal geysers and in some ore deposits. Concentrations in water rarely exceed 3 µg/l.	Antimony is a non-essential element and has a primary standard of 6 µg/l. It is not considered to be carcinogenic but high levels can be toxic to the gastrointestinal tract, heart, respiratory tract, skin, and liver. [7, 10, 11]
ARSENIC (As)	Arsenic occurs naturally in small amounts in sulfide ore deposits. It also can be traced to industrial waste, pesticides, and smelting operations. Concentrations rarely exceed 3 µg/l.	Arsenic is an essential element, however, excessive levels are poisonous and can cause numerous health problems and even death. It has a primary standard of 10 µg/l. [1, 2, 3, 7, 10, 11]

**Method of Removal: 1. activated alumina, 2. activated carbon, 3. adsorption, 4. anion exchange, 5. cation exchange, 6. chlorination-precipitation, 7. distillation, 8. electrodialysis, 9. filtration, 10. ion exchange, 11. reverse osmosis, 12. water softener.

Descriptions of Common Ground Water Constituents		
Constitutent	Sources	Significance
BARIUM (Ba)	Barium is found in limestone, sandstone, and soils. It may be brought to the surface by mining and drilling activity.	Barium is a non-essential element for humans. It is not carcinogenic, but ingesting high levels of barium can cause organ damage and circulatory problems. It has a primary standard of 2,000 µg/l (2 mg/l). [7, 10, 11]
BERYLLIUM (Be)	Beryllium is a relatively rare element found in some minerals. Concentrations in ground water are usually small because of its low solubility and absorption by clays.	Beryllium, as a result of long term exposure to high levels, can possibly cause cancer and/or bone damage. It has a primary standard of 4 µg/l. [7, 10, 11]
BICARBONATE (HCO_3) and CARBONATE (CO_3)	Bicarbonate and carbonate are formed by the action of carbon dioxide (in water) on carbonate rocks such as limestone and dolomite.	Bicarbonate and carbonate produce alkalinity. High levels can cause scale in steam boilers and hot water facilities and release corrosive carbon dioxide gas. No standards established. [12]
BORON (B)	Boron is typically a constituent of granitic rocks and pegmetities. Boron may be liberated in volcanic gases.	Boron is necessary for good plant growth; however, excessive boron content will render water unsuitable for irrigation. Concentration as high as 1.0 mg/L is permissible for boron-sensitive crops, 2.0 mg/L for semi-tolerant crops, and as much as 3.0 mg/L for tolerant crops. No standards established. [7, 11]

**Method of Removal: 1. activated alumina, 2. activated carbon, 3. adsorption, 4. anion exchange, 5. cation exchange, 6. chlorination-precipitation, 7. distillation, 8. electrodialysis, 9. filtration, 10. ion exchange, 11. reverse osmosis, 12. water softener.

Descriptions of Common Ground Water Constituents		
Constitutent	Sources	Significance
BROMIDE (Br)	Bromine in natural water is always present as the bromide ion. Bromine is extracted commercially from seawater and from brines. Bromides are found as accompany ions in potassium and sodium deposits. In coastal areas, higher bromide concentrations in the groundwater can be attributed to the infiltration of seawater.	The presence of small amounts of the element in freshwater is not known to have any ecological significance. [11]
CADMIUM (Cd)	Cadmium is a rare mineral that occurs naturally at low levels in rocks, coal, and oil. It can also enter ground water from industrial and mining operations and landfills. Concentrations rarely exceed 10 µg/l.	Cadmium is a non-essential element in humans. It accumulates in the kidneys and liver, with toxicity causing kidney damage: renal dysfunction, hypertension, and anemia. It has a primary standard of 5 µg/l. [7, 10, 11]
CALCIUM (Ca)	Calcium is dissolved from almost all soils and rocks, especially from limestone, dolomite, and gypsum.	Calcium does not pose any health problems, but high levels (in combination with magnesium) can cause incrustations on utensils and water heaters and consume soap lather (see Hardness). [8, 10, 11, 12]
CHLORIDE (Cl)	Chloride is dissolved from rocks and soils and is usually present at levels less than 50 mg/l. High levels are caused by sewage, oil-field brine, industrial effluent, or seawater intrusion.	High levels, in combination with sodium, can give drinking water a salty taste and may increase the corrosiveness of water. It has a secondary standard of 300 mg/l. [7, 11]

**Method of Removal: 1. activated alumina, 2. activated carbon, 3. adsorption, 4. anion exchange, 5. cation exchange, 6. chlorination-precipitation, 7. distillation, 8. electrodialysis, 9. filtration, 10. ion exchange, 11. reverse osmosis, 12. water softener.

Descriptions of Common Ground Water Constituents		
Constitutent	Sources	Significance
CHROMIUM (Cr)	Chromium is a naturally occurring metal found in the earth's crust and ground water. Concentrations in water, that have not been elevated by wastes, are usually less than 10 µg/l.	Chromium is an essential element for humans. A deficiency may result in atherosclerosis. A toxicity may harm the liver, skin, kidneys, respiratory and digestive organs, and cause cancer. It has a primary standard of 100 µg/l. [2, 7, 10, 11]
COPPER (Cu)	Copper occurs in the earth's crust as sulfides and oxides. Copper may be present in high concentrations in acid drainage from metal mines, but drinking water usually contains less than 10 µg/l.	Copper is an essential element for humans. A deficiency may result in anemia, loss of pigment, and reduced growth. Toxicity may cause Wilson's disease (for susceptible persons), nausea, and intestinal problems. It has an action level of 1.3 mg/l and a secondary standard of 1,000 µg/l. [7, 10, 11]
DISSOLVED SOLIDS AND CONDUCTIVITY	Dissolved solids is composed of mainly mineral constituents (Ca, Cl, K, Mg, Na, NO_3, Alkalinity) dissolved from rocks and soils. Conductivity is based on the dissolved solids content of the water.	Dissolved solids and conductivity are general indicators of water quality. Dissolved solids has a secondary standard of 1,000 mg/l while conductivity has none. A general measure for dissolved solids is: less than 1,000 mg/l, fresh water; 1,000 - 3,000 mg/l, slightly saline; 3,000 - 10,000 mg/l, moderately saline; over 10,000 mg/l, very saline to brine. [7, 11]

**Method of Removal: 1. activated alumina, 2. activated carbon, 3. adsorption, 4. anion exchange, 5. cation exchange, 6. chlorination-precipitation, 7. distillation, 8. electrodialysis, 9. filtration, 10. ion exchange, 11. reverse osmosis, 12. water softener.

Descriptions of Common Ground Water Constituents		
Constitutent	Sources	Significance
FLUORIDE (F)	Fluoride is dissolved in small amounts from most rocks and soils. It also is added to many water supplies through fluoridation.	Fluoride in drinking water reduces the incidence of tooth decay when the water is consumed during enamel clarification. However, it may cause mottling of teeth, depending on the concentration, the person's age and susceptibility, and the amount consumed. It has a secondary standard of 2 mg/l and a primary standard of 4 mg/l. [11]
GROSS ALPHA	Alpha radiation is a type of energy released when certain radioactive elements decay or breakdown. Alpha radiation normally exists everywhere: in the soil, in the air, and in the water. The alpha radiation in drinking water can be in the form of dissolved minerals, or in the case of radon, as a gas.	There are no immediate health risks or symptoms from drinking water that contains alpha radiation. However, it may cause health problems over time. At elevated levels, radium (an alpha energy emitter) increases one's risk of bone cancer and uranium increases one's risk of kidney damage. It has a primary standard of 15 pCi/L. [4, 11]
HARDNESS as ($CaCO_3$)	Hardness is a physical/chemical measure of water mainly representing the concentration of calcium, magnesium, and strontium, reported as $CaCO_3$.	Hard water forms scales in boilers, water heaters, and pipes, consumes soap lather, and deposits soap curd on bathtubs. Hardness has no standard but has a general measure: 0-60 mg/l soft; 61-120 mg/l moderately hard; 121 to 180 mg/l hard; more than 180 mg/l very hard. [8, 10, 11, 12]

**Method of Removal: 1. activated alumina, 2. activated carbon, 3. adsorption, 4. anion exchange, 5. cation exchange, 6. chlorination-precipitation, 7. distillation, 8. electrodialysis, 9. filtration, 10. ion exchange, 11. reverse osmosis, 12. water softener.

Descriptions of Common Ground Water Constituents		
Constitutent	Sources	Significance
IRON (Fe)	Iron, dissolved from rocks and soils, usually occurs in ground water at low levels, but can occur at high levels in certain geologic formations. High levels can also be traced	Iron is an essential for humans and a deficiency may cause anemia. High levels can stain laundry and utensils, cause an unpleasant taste, and favor the growth of iron bacteria. [6, 7, 9, 10, 11]
LEAD (Pb)	Lead is a rare element and is widely dispersed in sedimentary rocks and metallic ores. When high levels are encountered, the cause is often lead plumbing and sometimes industrial wastes.	Lead is a non-essential element for humans and has an action level of 15 µg/l, for source water. If the levels is above this, TCEQ recommends conducting another lead test to confirm a problem. Lead is known to cause irreversible brain damage when blood levels exceed 100-120 µg/dl, and at lower levels also causes problems in several organ systems. [7, 11]
LITHIUM (Li)	Lithium is the lightest of all metals and is not abundant in nature. It rarely exceeds 10 mg/l in most waters, but higher levels are found in brine and thermal springs.	Lithium has no established standards. Some studies have found lithium to be helpful in the treatment of manic depression and other mental illnesses.
MAGNESIUM (Mg)	Magnesium is dissolved from many rocks and soils, especially in dolomite. It is also present in seawater.	Magnesium does not pose any health problems. But high levels (in combination with calcium) can cause incrustations on utensils and water heaters and consume soap lather (see Hardness). [8, 10, 11, 12]

**Method of Removal: 1. activated alumina, 2. activated carbon, 3. adsorption, 4. anion exchange, 5. cation exchange, 6. chlorination-precipitation, 7. distillation, 8. electrodialysis, 9. filtration, 10. ion exchange, 11. reverse osmosis, 12. water softener.

Descriptions of Common Ground Water Constituents		
Constitutent	Sources	Significance
MANGANESE (Mn)	Manganese is found in some minerals as a minor constituent and also small amounts are found in dolomite and limestone. Concentrations In ground water are usually small with higher levels occurring aound some thermal springs and in brine.	Manganese is a non-essential element. High levels can stain plumbing and laundry and cause taste problems. It has a secondary standard of 50 µg/l. [6, 7, 10, 11]
MERCURY (Hg)	Elemental mercury and mercury ore (cinnabar) are rare in crustal rocks. Concentrations in ground water are usually less than 2 µg/l with higher levels near ore zones or caused by	Mercury is a non-essential element. Toxicity may cause kidney disease and central nervous system problems. it has a primary standard of 2 µg/l. [2, 7, 11]
MOLYBODENUM (Mo)	Molybdenum is a rare element found in nature mostly as molybdenite. Most water, away from pollution sources, contains less than 10 µg/l. Pollution.	Molybdenum is an essential trace element for humans. It has no standard because of insufficient evidence of its toxicity. [7, 10, 11]
NITRATE (NO_3) plus NITRITE (NO_2)	Natural sources of nitrate include mineral deposits, soils, and the atmosphere. High levels can be attributed to fertilizers, sludge, refuse leachate, decaying organic matter, and industrial discharges. Higher values are often found in shallow aquifers easily polluted by sewage and fertilizer use. Nitrite is closely associated with nitrate because it quickly oxidizes to NO_3. Detectable levels of nitrite in water indicate bacterial contamination.	Nitrate (as NO_3) has a primary standard of 44.3 mg/l, but is often reported as nitrite plus nitrate (as nitrogen), which has a standard of 10 mg/l. Water with high levels of nitrite and nitrate can cause methemoglobinemia (Blue-baby) in infants and should not be used in feeding. It also can encourage the growth of algae and other organisms, which give water a bad taste and odor. [4, 10, 11]

**Method of Removal: 1. activated alumina, 2. activated carbon, 3. adsorption, 4. anion exchange, 5. cation exchange, 6. chlorination-precipitation, 7. distillation, 8. electrodialysis, 9. filtration, 10. ion exchange, 11. reverse osmosis, 12. water softener.

Descriptions of Common Ground Water Constituents		
Constitutent	Sources	Significance
pH	pH is the concentration of hydrogen ions and represents the acid qualities of the water. Acids and free carbon dioxide lower the pH. Carbonates, bicarbonates, hydroxides, phosphates, silicates, and borates raise the pH.	A pH of 7 or greater can cause scaling problems in pipelines.
POTASSIUM (K)	Potassium occurs in silicate rocks and is present in water usually at low levels because of its stability In silicate minerals.	Potassium's effect on drinking water is limited and no standard exists. [8, 11, 12]
SELENIUM (Se)	Selenium is a rare element that is widely distributed in sediments in very small amounts. Concentrations in ground water rarely exceed 10 µg/l.	Selenium is an essential element for humans. A deficiency may result in myopathies and possible liver damage. Toxicity may include growth inhibition, liver damage, and dermatitis. It has a primary standard of 50 µg/l. [1, 7, 10, 11]
SILICA (Si_2)	Silica (Silicon) is an abundant mineral found in many rocks and soils, as in quartz and sand.	Silica is not a health hazard and has no standard. At excessive levels it can lead to scale and deposits in pipes and boilers. [4, 10, 11]
SILVER (Ag)	Silver is a rare element in crustal rocks, but it is used extensively in several industrial processes. Therefore, it is sometimes concentrated in water around industrial sites.	Silver is a non-essential element. High levels may cause skin discoloration. It has a secondary standard of 100 µg/l. [7, 10, 11]

**Method of Removal: 1. activated alumina, 2. activated carbon, 3. adsorption, 4. anion exchange, 5. cation exchange, 6. chlorination-precipitation, 7. distillation, 8. electrodialysis, 9. filtration, 10. ion exchange, 11. reverse osmosis, 12. water softener.

Descriptions of Common Ground Water Constituents		
Constitutent	Sources	Significance
SODIUM (Na)	Sodium occurs naturally in water and levels can be increased by pollution such as oil field brine.	Sodium has no established standards, but in levels greater than 200 mg/l and combined with chloride, gives wate a salty taste. A recommended level for low sodium (diets (health reasons) is 20 mg/l. [7, 10]
STRONTIUM (Sr)	Strontium is a common element that is found in igneous rocks and sediments. It is used in television glass and is used by the nuclear industry as Strontium-90.	Strontium has no established standards. Strontium, in combination with other minerals, affects the hardness of water (See hardness). [7, 10]
SULFATE (SO_4)	Sulfates are found naturally and are dissolved from rocks and soils containing gypsum, iron sulfides, and other sulfur compounds. Sulfates are commonly present in some mining and Industrial wastes.	Sulfate has a secondary standard of 300 mg/l. High levels can give water a bitter taste and rotten-egg smell, cause diarrhea, and, in combination with calcium, form scale in boilers. [10]
THALLIUM (Tl)	Thallium occurs naturally, usually as sulfides or selenides. It is used in making electronic devices, alloys, and glass. Levels in ground water are normally low but can be increased by pollution from coal-burning, metal-smelting, or ore-processing.	High concentrations can affect the nervous system, lungs, heart, and kidney, and cause vomiting, diarrhea, and possibly death, depending on amount ingested. Thallium has a primary standard of 2 μg/l. [7, 10, 11]

**Method of Removal: 1. activated alumina, 2. activated carbon, 3. adsorption, 4. anion exchange, 5. cation exchange, 6. chlorination-precipitation, 7. distillation, 8. electrodialysis, 9. filtration, 10. ion exchange, 11. reverse osmosis, 12. water softener.

Descriptions of Common Ground Water Constituents		
Constitutent	Sources	Significance
URANIUM (U)	Uranium is a naturally occurring radioactive element commonly found in very small amounts in rocks, soil, water, plants, and animals (including humans). A common source is the erosion of natural deposits uranium can also be removed and concentrated through mining activities.	Dissolved uranium has a primary standard of 30 µg/l. [4, 5, 7, 8, 11]
VANADIUM (V)	Vanadium a relatively rare element found in certain lead and uranium ore deposits. Ordinary ground water rarely has levels exceeding 10 µgl.	Vanadium may or may not be an essential element. Deficiency results are unknown and toxicity may result in respiratory problems. It has no established standards. [7, 10, 11]
ZINC (Zn)	Zinc is a common element in the earth's crust, occurring in various metallic ore zones. It is used in the making of steel and in the manufacture	Zinc is an essential trace element for humans. It has a secondary standard of 5,000 µg/l and at high levels affects taste and appearance of drinking water. [7, 10, 11]

**Method of Removal: 1. activated alumina, 2. activated carbon, 3. adsorption, 4. anion exchange, 5. cation exchange, 6. chlorination-precipitation, 7. distillation, 8. electrodialysis, 9. filtration, 10. ion exchange, 11. reverse osmosis, 12. water softener.

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