STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

FLORIDA GEOLOGICAL SURVEY
Guy H. Means, Acting *State Geologist and Director*

BULLETIN No. 70

CHANGES IN GROUNDWATER LEVELS, SPRING DISCHARGE, AND CONCENTRATIONS OF SALINE AND ROCK-MATRIX INDICATORS OF THE FLORIDAN AQUIFER SYSTEM, FLORIDA (1991–2011)

By

Rick Copeland and Andy Woeber

Published for the
FLORIDA GEOLOGICAL SURVEY
Tallahassee, Florida
2021

Printed for the
Florida Geological Survey

Tallahassee
2021

ISSN 0271-7832

PREFACE

FLORIDA GEOLOGICAL SURVEY

Tallahassee, Florida
2021

The Florida Geological Survey, Florida Department of Environmental Protection, is publishing its Bulletin No. 70, *Changes in Groundwater Levels, Spring Discharge, and Concentrations of Saline and Rock-Matrix Indicators of the Floridan Aquifer System, Florida (1991-2011).* Data obtained from 55 of Florida's large springs in terms of discharge and 200 wells indicate that, from 1991 through 2011, spring flow and water levels in wells declined, while concentrations of sodium, chloride, and other dissolved solids increased in the Floridan aquifer system throughout most of Florida. The change was one to eight percent per decade. The primary cause was a decrease in annual precipitation and a consequential reduction in recharge. Projected rising sea levels, and possible increases in groundwater extraction in the future also have the potential to result in increased indicator concentrations like those observed in this investigation. Studies such as this are beneficial to identifying processes that may adversely affect Florida's water resources. State, regional, county, and local governmental agencies, as well as the public, will find this information useful in support of natural resource management decisions.

Guy H. Means

Guy H. Means. P.G.
Acting State Geologist and Director
Office of the Florida Geological Survey
Florida Department of Environmental Protection

TABLE OF CONTENTS

List of Figures

List of Tables

ABBREVIATIONS AND ACRONYMS (Aa – Se)

Aa	Alachua	AC	Autocorrelation	ACFB	Apalachicola-Chattahoochee-Flint Basin
Alk	Alkalinity	Bk	Baker	By	Bay
BN	Background Network	Bf	Bradford	Bv	Brevard
Bw	Broward	Ca	Calhoun	Ca	Calcium (Ca^{+2})
Ch	Charlotte	Ci	Citrus	Cl	Chloride (Cl^{-1})
Cy	Clay	CSMN	Coastal Salinity Monitoring Network	Cr	Collier
Co	Columbia	Dd	Miami-Dade	Ds	DeSoto
D	Down	Dx	Dixie	Du	Duval
Es	Escambia	FAS	Floridan aquifer system	FDEP	Florida Department of Environ Protect
FWRMC	Florida Water Resources Monitoring Council	Fg	Flagler	Fk	Franklin
Ga	Gadsden	Gr	Gilchrist	GWLs	groundwater levels
GIS	geographic information system	Gl	Glades	GRTS	generalized random tessellation stratified
Gf	Gulf	Hm	Hamilton	Hd	Hardee
Hy	Hendry	Hr	Hernando	Hi	Highlands
Hl	Hillsborough	Ho	Holmes	IAS	intermediate aquifer system
ICU	Intermediate confining unit	Ir	Indian River	Ja	Jackson
Jf	Jefferson	K	Potassium (K^{+1})	Lf	Lafayette
Lk	Lake	Le	Lee	Ln	Leon
Lv	Levy	Lb	Liberty	Md	Madison
Mg	Magnesium (Mg^{+2})	Mn	Manatee	Mr	Marion
Mt	Martin	Mo	Monroe	MW	Mann-Whitney
Na	Nassau	Na	Sodium (Na^{+1})	NADP	National Atmospheric Deposition Program
NWFWMD	Northwest Florida Water Management District	Oa	Okaloosa	Oe	Okeechobee
Or	Orange	Os	Osceola	Pb	Palm Beach
Ps	Pasco	Pu	Putnam	RK	regional-Kendall
Sj	St. Johns	Sl	St. Lucie	Sr	Santa Rosa
Sa	Sarasota	SAS	surficial aquifer system	SC	specific conductance
Se	Seminole	SEGS	Southeastern Geological Society	SERCC	Southeast Regional Climate Center

ABBREVIATIONS AND ACRONYMS (Sf – Ws)

SFCU	Sub-Floridan confining unit	SFWMD	South Florida Water Management District	SJRWMD	St. Johns River Water Management District
SK	seasonal-Kendall	SO4	sulfate (SO_4^{-2})	Su	Suwannee
Sm	Sumter	SRWMD	Suwannee River Water Management District	SWFWMD	Southwest Florida Water Management District
SWUCA	Southern Water Use Conservation Area	Pi	Pinellas	Po	Polk
TDS	total dissolved solids	TN	Trend Network	Ty	Taylor
U	Up	UFA	Upper Floridan aquifer	Un	Union
USGS	U.S. Geological Survey	Vo	Volusia	Wk	Wakulla
Wl	Walton	Ws	Washington	WIN	Water Information Network
WSR	Wilcoxon-signed Rank				

CONVERSIONS

Multiply	By	To Obtain
cubic feet (ft^3)	7.48	gallons (gal)
foot (ft)	0.305	meter (m)
Ft	12.0	inches (in)
gallon (gal)	0.004	cubic meters (m^3)
Gal	0.134	cubic meters (m^3)
inch (in)	2.54	centimeter (cm)
mile (mi)	1.609	kilometer (km)

EXECUTIVE SUMMARY

Since the late 1980s, decadal changes in concentrations of chloride and total dissolved solids in groundwater have been observed in several large groundwater basins across the United States (Lindsey and Rupert, 2012). In Florida, concentration increases in the same indicators, along with other major ion indicators, have also been observed (Copeland et al., 2011). This study examines changes in saline indicators such as sodium and chloride in the Floridan aquifer system. The sources of these indicators are from salt water along Florida's coasts and from deep, saline rich, groundwater that exists below Florida's freshwater aquifers.

For the period from 1991 through 2003, Copeland et al. (2011) presented evidence that: (1) spring discharges and groundwater levels declined, and (2) concentrations of many analytes such as sodium, chloride, sulfate, and total dissolved solids increased in groundwater over most of Florida. After presenting these findings to Florida Department of Environmental Protection (DEP) leadership, a follow-up investigation was conducted for a longer period of record.

The current investigation was restricted to the Floridan aquifer system, the largest and deepest of Florida's freshwater aquifer systems. The study covered a 21-year period of record (January 1991 through December 2011). It represents a time of below average rainfall, which may assist in explaining the observed findings.

The goals of the study were to:

(1) Evaluate the Floridan aquifer system for changes in spring discharge, groundwater levels, and changes in major ion concentrations of saline indicators (sodium and chloride), rock-matrix indicators (bicarbonate in the form of alkalinity, calcium, magnesium, potassium and sulfate), and total dissolved solids.

(2) If changes were observed, estimate the extent (areal scale) and rates of those changes.

The investigation used data from 55 springs and 200 wells. At the 90 percent confidence level, the study looked for the presence of regional statistical trends using the regional-Kendall test (Helsel and Frans, 2006) and the Wilcoxon signed-rank test (Conover, 1999). Results of the two tests are likely to be different, but similar. The two tests were used on different sets of monitoring sites (springs and wells). For this reason, medians of the test results were used to reflect the changes.

Observed groundwater condition changes included decreases in spring discharge and groundwater levels (together referred to as aquifer potentials), along with increases in the concentrations of saline indicators (sodium and chloride). Examples of changes include the following: median spring discharges changed by -2.9 cubic feet per second (ft^3/sec) (-0.8 m^3/sec) per decade. Median groundwater levels changed by -0.8 ft (-0.2 m) per decade. Median concentrations of sodium increased by 0.6 mg/L per decade in springs and 0.4 mg/L per decade in wells. Median concentrations of chloride increased by 1.3 mg/L per decade in springs and 0.5 mg/L per decade in wells. Median concentrations of total dissolved solids increased by 18.9 mg/L and 0.7 mg/L per decade for springs and wells, respectively. Concentrations of alkalinity, calcium, magnesium, potassium, and sulfate each increased. The rates of increase for these rock-matrix indicators are included in the rates for total dissolved solids.

Four high-level drivers of the observed changes during the period were: (1) below-normal rainfall and subsequent declines in recharge, (2) groundwater withdrawals (extraction), (3) sea-level rise, and (4) alteration of surface water drainage patterns and reductions of recharge areas. Evidence suggests that below-normal rainfall, and correspondent decline in recharge, was the most dominant driver of the observed changes, followed by groundwater extraction. There were insufficient data to confidently assess the relative importance of sea-level rise and the alteration of surface water drainage relative to the other major drivers.

In addition to insufficient data to address some of the concerns of the investigation, other difficulties were encountered. Environmental cycles, such as seasonality and tides, affected the ability to detect change. As a result, methods were adopted to eliminate or significantly reduce these adverse cyclicity effects prior to statistical analyses. In addition, differences in regional and local characteristics presented challenges to statistical analyses due to spatial correlation.

Dissimilarities in groundwater basins, topography, geology, aquifer confinement, climate, precipitation patterns, land-use patterns, and groundwater extraction reduced the ability to make cause and effect interpretations. Dissimilarities also reduced the ability of statistical tests to detect changes or draw definitive conclusions from the analyses. Nevertheless, statistically significant changes at the 90 percent confidence level were observed.

The Ghyben-Herzberg principle (Freeze and Cherry, 1979; Fetter, 2001) was used as a conceptual model that helps explain the observed changes. In the model, all of Florida's freshwater aquifers, which include those in the Floridan aquifer system, along with confining beds, are conceptually considered a single freshwater lens. Freshwater floats on the denser saline water present in the deeper portions of the aquifer systems. During long periods of below-normal rainfall, if the rate of aquifer recharge is less than discharge, the lens shrinks in size. With less recharge, aquifer potentials decline, and during periods of drought, relative increases in groundwater extraction can also result in a decrease in aquifer potentials.

In the Floridan aquifer system, as this process continues, the deeper and more mineralized groundwater replaces the shallower and fresher groundwater. Concentrations of saline and rock-matrix indicators increase. Along Florida's coasts, saline water tends to migrate inward and upward into the formerly freshwater portion of the aquifers. In the interior of the state, as aquifer potentials decrease, the likelihood of more saline groundwater migrating upward increases. During extended periods of above-normal rainfall, given enough time and adequate recharge, the situation reverses. With enough increased recharge, the corresponding rise in aquifer potentials on the freshwater lens forces the more saline groundwater to move downward and outward. In this case, concentrations of saline and rock-matrix indicators would eventually decline, and the extent of the freshwater lens would increase. Of note, following this investigation annual mean rainfall has increased. This suggests a reversal of the changes found in Florida may be observed in the future.

Rising sea-levels can also cause the observed changes. The amount of sea-level rise that occurred during the study is not fully known, although data from the National Oceanographic and Atmospheric Administration suggests historic trends of approximately 0.08 ft (0.02 m) per decade over the last 30 years along Florida’s coasts. Globally, the same organization (NOAA, 2019a) stated that between 1993 and 2014 sea level rose by about 0.23 ft (0.07 m). Projections by the U.S. Environmental Protection Agency (EPA) (2017) and Karl et al. (2009) suggest that, globally, sea level may rise between 1.0 and 4.0 ft (0.3 and 1.2 m) by the end of the 21st century. The National Oceanographic and Atmospheric Administration (2019a) projects that, as an extreme, sea levels could rise as much as 8.2 ft (2.5 m). For the Miami-Dade County region of Florida (Figure 1), Bloetcher et al. (2011) predict sea-level rise to be from 2.0 to 3.0 ft (0.5 to 1.0 m) by the end of the 21st century.

As defined by Neuendorf et al. (2005), saltwater encroachment is the displacement of fresh groundwater by the advancement of saltwater due to its greater density. A similar term, saltwater intrusion, is defined by Freeze and Cherry (1979, p. 375) as the, “migration of saltwater into freshwater aquifers under the influence of groundwater development”. Fetter (2001) refers to human induced intrusion that can be readily observed as active intrusion. Active intrusion has been an issue in Florida since the early 20th century (Prinos, 2016). It should be noted that whenever intrusion is discovered, local agencies, and water management districts, along with state and federal agencies, have made efforts to minimize the adverse effects of the intrusion. For this report, the term intrusion is used to indicate a human-induced process. The term encroachment is used to make no distinction between natural and human-made causes.

Most encroachment has been observed along Florida's coastal regions. However, inland encroachment has also occurred. An example in northeast Florida was described by Krause and Randolph (1989) and Spechler (1994). Those authors suggested a source of the saltwater is from upward movement of saline groundwater from the deeper portions of the Upper Floridan aquifer (Southeastern Geological Society, 1986), and that it may be caused by the lowering of groundwater levels (Spechler, 1994).

Unlike the readily observed active encroachment, Fetter (2001, p. 330) used the term passive encroachment to describe a slow encroachment process. Fetter stated that, "…it may take hundreds of years for the (freshwater/saltwater) boundary to move a significant distance". Evidence in this investigation suggests that passive encroachment occurred across most of Florida over the period of the investigation.

Copeland et al. (2011) made several monitoring recommendations, and some are now being, or have been, implemented. For example, the Florida Water Resources Monitoring Council formed a Salinity Network Workgroup in 2011. Key workgroup members include the Florida Department of Environmental Protection, the five water management districts, the U.S. Geological Survey, and several counties (Florida Water Resource Monitoring Council, 2019a). One workgroup objective is to improve Florida's ability to monitor for potential saltwater encroachment into major aquifer systems north of the South Florida Water Management District. To this end, the workgroup has established a statewide Coastal Salinity Monitoring Network (Florida Water Resource Monitoring Council, 2019b). The workgroup also has developed a groundwater level index and has identified the development of a saline groundwater quality index as a high priority. The purpose of the indices is to relay information on the conditions of Florida's groundwater to the public in a simple-to-understand manner.

Despite progress, there is still room for many improvements in monitoring and future research, including the following:

(1) Use as many springs as practical to monitor saltwater encroachment. Springs can be potentially superior to wells in detecting the early stages of encroachment. Long-term monitoring of more springs should be added to this effort.

(2) Encourage the continued operation and monitoring of the Coastal Salinity Monitoring Network, a cooperative effort organized by the Florida Water Resource Monitoring Council (FWRMC). The network was established to monitor potential saltwater encroachment into Florida's major aquifer systems north of the South Florida Water Management District. Note, a separate cooperative network already exists in south Florida.

(3) Encourage continued cooperation of governmental agencies in Florida with the U.S. Geological Survey (USGS) in the operation of the National Groundwater Monitoring Network. A goal of the national network is to develop portals to enhance the exchange of groundwater level and chemical data which can potentially be useful for addressing a variety of important groundwater related issues, including future saltwater encroachment. Department staff, managing the Water Information Network (WIN) currently coordinate efforts to maintain Florida's portal with the USGS. Potentially, the same staff, or possibly the FWRMC, could coordinate the effort of the inclusion of additional monitoring sites into the National Groundwater Monitoring Network.

(4) Encourage the development and operation of a statewide, multi-agency, water quality monitoring network to track changes of common indicators of concern for both groundwater and surface water. Numerous governmental and non-governmental entities across Florida have water monitoring networks designed to address concerns of the respective entities. Recently, these entities have begun loading water data from their monitoring networks into the WIN database. WIN provides a centralized environmental data management platform for non-regulatory data, that includes both groundwater and surface water data. Once sufficient data resides in WIN, the data could be used to address monitoring issues of mutual concern, or of statewide interest. Possible entities that could organize the effort include the FWRMC or DEP. If a statewide network is established, the Coastal Salinity Monitoring Network would become a subset of the statewide network.

(5) Continue water management district collection of groundwater extraction data for each of Florida's aquifer systems. Support statewide efforts to obtain, and tabulate extraction data that were collected using different methodologies. Consistent and frequent reporting of these continuously improving data is crucial. Without such data, managing Florida's groundwater resources will be difficult.

(6) Encourage research and fund efforts to improve knowledge about groundwater recharge and discharge at both regional and statewide scales. These data will assist in determining water budgets that are essential to managing groundwater resources.

(7) Encourage the improvement and use of groundwater models. Well-calibrated numerical models are essential to managing the state's water resources. Water budgets can be complimentary to model results, but they lack the specificity to fully account for all the changes in groundwater systems associated with groundwater withdrawals.

(8) Encourage research and fund efforts to improve understanding of how sea-level changes can affect both the quantity and quality of Florida's water resources.

(9) Encourage research and fund efforts to improve understanding of the processes that govern changes in both saline and rock-matrix indicators in our aquifers.

(10) Encourage research and fund efforts to improve understanding of groundwater and surface water interactions. Changing concentrations of saline indicators in groundwater can potentially influence those in surface water, and vice versa.

BULLETIN NO. 70

CHANGES IN GROUNDWATER LEVELS, SPRING DISCHARGE, AND CONCENTRATIONS OF SALINE AND ROCK-MATRIX INDICATORS OF THE FLORIDAN AQUIFER SYSTEM, FLORIDA (1991–2011)

by
Rick Copeland (PG #126) and Andy Woeber

INTRODUCTION

Florida has over 700 documented springs (Scott et al., 2004). For generations springs have represented recreational resources for the citizens of the state. As Florida's population grows, spring-water quality and quantity changes may occur due to changes in water-use and land-use. Beginning in the early 1990s, the Florida Department of Environmental Protection (FDEP), Florida's water management districts (WMDs), and the United States Geological Survey (USGS) standardized efforts to monitor spring water and increased the number of springs being monitored. Although increasing nutrient concentrations was the initial focus of spring water-quality studies, later studies expanded the indicator lists to include other major ions and field analytes, as well as spring discharge.

In a trend study of groundwater by the FDEP for the period 1991–2003, Copeland et al. (2011) discovered that nitrate (NO_3^{-1} as N) concentrations in most of the monitored springs increased. The study included 56 springs and 44 wells. The authors also observed that spring discharge decreased, and concentrations of the following indicators increased: calcium (Ca^{+2}), magnesium (Mg^{+2}), sodium (Na^{+1}), potassium (K^{+1}), bicarbonate (HCO_3^{-1}) (reported as alkalinity [Alk]), sulfate (SO_4^{-2}), chloride (Cl^{-1}), and total dissolved solids. Upon completion of the report, FDEP leadership recommended conducting a follow-up study to investigate changes in discharge and major ion concentrations in springs, along with the groundwater levels (GWLs) and major ion concentrations in the Floridan aquifer system (FAS), the major aquifer system of the state.

The current study covers January 1991–December 2011 (21 years). It includes 55 springs, that account for over half of the cumulative onshore spring discharge in the state (to be discussed later), and 200 wells. Table 1 lists the indicators studied. Note, GWLs and spring discharge are both indicative of aquifer (fluid) potentials (Hubbert, 1940; Toth, 1971). The study area (Figure 1) is restricted to the upper portion of the Floridan aquifer system (FAS; Figure 2), the largest and deepest of the state's freshwater systems.

The investigation faced several limitations. The most important are:

(1) There was a lack of monitoring sites in eight of Florida's counties, reducing the study area to 59 counties (Figure 1). In addition, there were only a few sites within the Northwest Florida Water Management District that had sufficient data for analyses.

(2) Serial and spatial autocorrelation can potentially affect trend analysis results. Both are discussed in the statistical methods section. Adjustments were made to address the problem for both types of correlation. However, in doing so, the number of monitoring sites for some evaluation procedures were reduced.

(3) Regional and local characteristics, such as differences in groundwater basins, topography, geology, FAS confinement, climate, precipitation patterns, land-use patterns, and groundwater extraction each can affect the statistical results of this investigation. While this study investigated potential relationships of these variables, adjusting for each of them was beyond the scope of this investigation.

(4) Conclusions or statistical inferences presented in this investigation are relevant to 1991-2011 and to the 59 counties included in the study. Conclusions from similar FAS investigations that deviate significantly from the time and area scales of this study should be considered independent from this report. Observed changes did not occur everywhere in the study area. Observed rates of change were not uniform and should be considered averages over the study area.

(5) The data used in this investigation were obtained from FDEP, USGS, and WMD monitoring sites. These monitoring sites came from networks using different designs, and with different purposes, ultimately adding uncertainty to the results. Whenever possible, steps were taken to adjust for the uncertainty.

The two major goals of this study are to:

(1) Evaluate the FAS for changes in aquifer potentials and in concentrations in major ions

(2) If changes are observed, estimate both the areal extent and rates of the changes.

Table 1. Indicators.

Indicator	Abbreviation used in this report	Unit of Measure
Alkalinity	Alk	milligrams per liter (mg/L)
Calcium (Ca^{+2})	Ca	mg/L
Chloride (Cl^{-1})	Cl	mg/L
[1]Groundwater Levels	GWLs	feet (ft)
Magnesium (Mg^{+2})	Mg	mg/L
Potassium (K^{+1})	K	mg/L
Sodium (Na^{+1})	Na	mg/L
[1]Spring Discharge	None	cubic feet per sec (ft^3/sec)
Sulfate (SO_4^{-2})	SO_4	mg/L
[2]Total Dissolved Solids	TDS	mg/L

*[1]Aquifer potentials [2]Calculated value (see text for details)

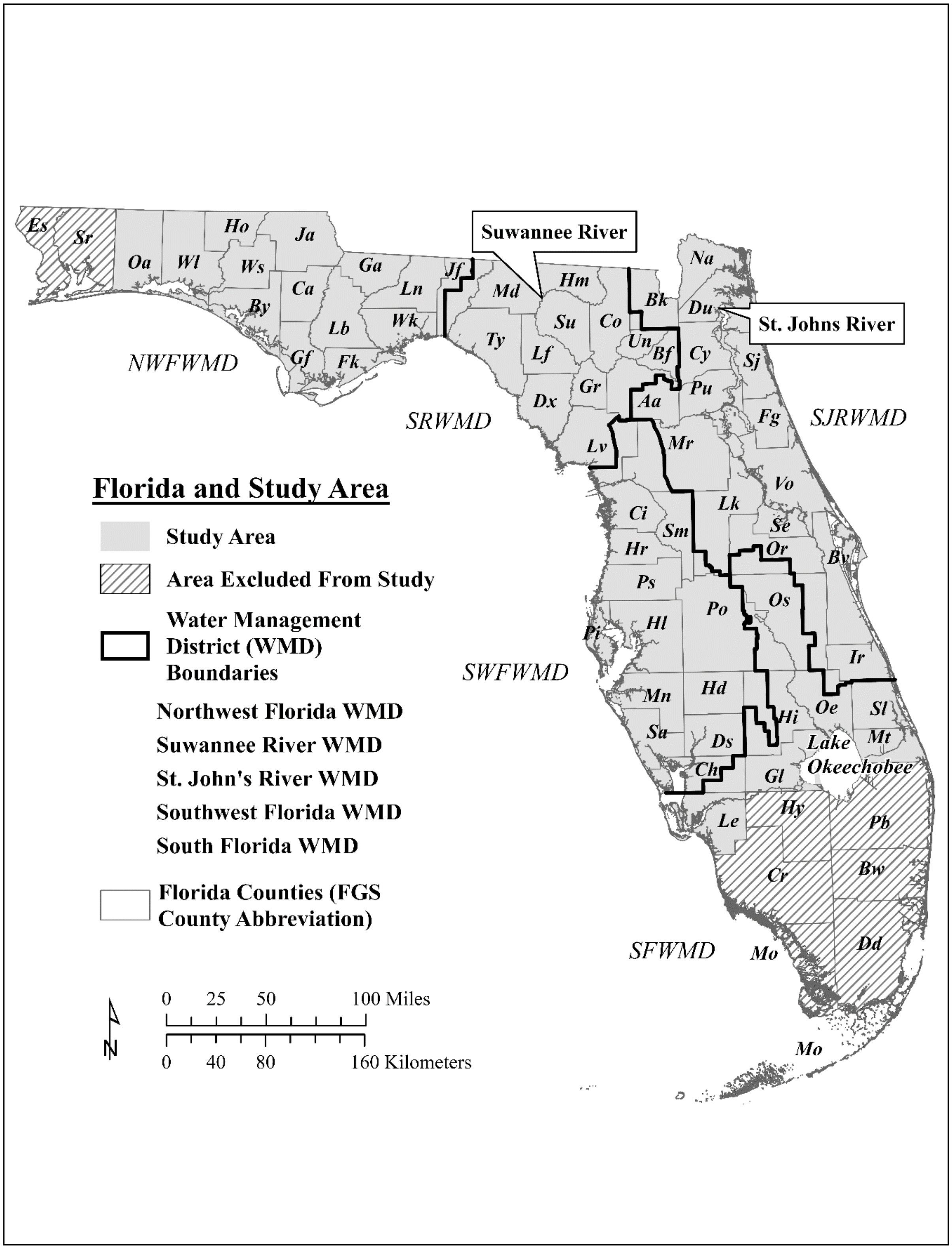


Figure 1. Florida, study area, water management districts, counties, and selected water bodies.

ACKNOWLEDGEMENTS

The authors would like to acknowledge many individuals for supplying numerous types of assistance. Without them, this project could not have been completed. From the Florida Department of Environmental Protection's Division of Environmental Assessment and Restoration, the authors would like to thank Lori Balinsky, Gregory DeAngelo, Brain Katz, Gary Maddox, Liz Miller, Indira Pindi, Tommy Seal, Lina Sengupta, Jay Silvanima, Gail Sloane, Stephanie Sunderman-Barnes, Chris Sedlacek, and Carolyn Voyles, plus Linda Lord of the Department's Central District. We are most grateful to the numerous individuals from the five water management districts who diligently reviewed the various drafts of the document. They include Christine Coates and Tony Countryman of the Northwest Florida Water Management District; Tom Mirti, Darlene Valdez, John Woods, and Warren Zwanka of the Suwannee River Water Management District; Trey Grubbs from the perspective of both the Northwest Florida and the Suwannee River Water Management Districts; Richard Burklew and Nathan Johnson of the St. Johns River Water Management District; Ron Basso, Eric DeHaven, Courtney Cameron, Steve Desmith, Dave DeWitt, and Jason La Roach of the Southwest Florida Water Management District; and Elizabeth Geddes and Linda Lindstrom of the South Florida Water Management District. We would also like to thank staff from Florida Geological Survey who assisted in many aspects of the project including editorial reviews of the document. They include Jon Arthur, Katy Etheridge, Rick Green, Mitra Khadka, Clint Kromhout, Amanda Kubes, and Harley Means.

AQUIFER SYSTEMS IN FLORIDA

Florida has three freshwater aquifer systems (Southeastern Geological Society [SEGS] 1986). From deep to shallow, the systems are: (a) the FAS, (b) the intermediate aquifer system (IAS) or intermediate confining unit (ICU), and (c) the surficial aquifer system (SAS). In most places, the IAS/ICU behaves as a confining unit. In northwestern Florida, the SAS is referred to as the sand and gravel aquifer. In southeastern Florida, it is referred to as the Biscayne aquifer. The areal distribution of Florida's major aquifer systems and aquifers is depicted in Figure 2. The areal extent of the FAS across the southeastern United States is in Figure 3.

According to the SEGS (1986): the FAS is a thick carbonate sequence which includes all or parts of the Paleocene to early Miocene rocks. The FAS functions regionally as a water-yielding hydraulic unit. The FAS can be under confined or unconfined conditions, depending on the extent of low permeability sediments lying above it.

Miller (1986) and Williams and Kuniansky (2015) identified the FAS as one of the most productive aquifer systems in the world. It underlies all of Florida and portions of South Carolina, Georgia, and Alabama (Figure 3). The FAS is a thick carbonate sequence and can be over 2,950 ft (900 m) thick in places. Where it contains freshwater, it is a principal source of water supply. In most places, the FAS can be divided into the Upper Floridan aquifer (UFA) and the Lower Floridan aquifer (LFA) and separated by several middle semi-confining units (Miller, 1986). However, in some places the two aquifers cannot be differentiated. For this reason, in this report, no attempt is made to differentiate the aquifer system and the undifferentiated term, FAS, is used.

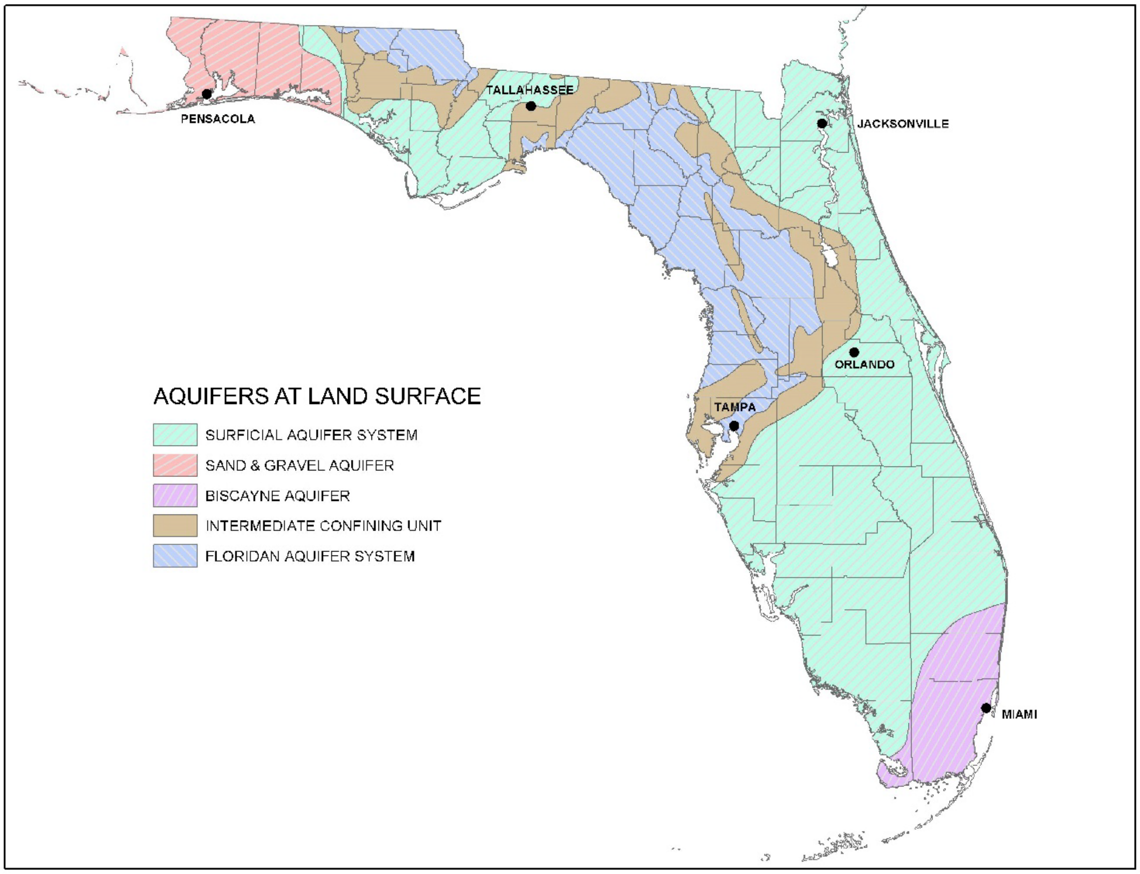


Figure 2. Major aquifer systems and aquifers in Florida.
(Modified from Miller [1997] and available at https://fldep.dep.state.fl.us/swapp/Aquifer.asp#.)

Scott (2016), expanding on the work of Budd and Vacher (2004), mentioned that the FAS is a multi-porosity aquifer: fractured and porous where it is confined, and karstic, fractured, and porous where it is unconfined. Scott et al. (2004) mentioned that many of Florida's springs are in areas of the state where the FAS is unconfined or thinly confined (Figure 3).

The SEGS (1986) indicated the base of the FAS is the Sub-Floridan confining unit. Upchurch et al. (2019) and Scott (2016) refer to this as undifferentiated aquifer systems and confining units. The latter units occur in lower Paleogene and older rocks with significantly lower permeability. The top occurs where the FAS is overlain by impermeable sediments of the IAS/ICU (mostly ICU), or by surface sands.

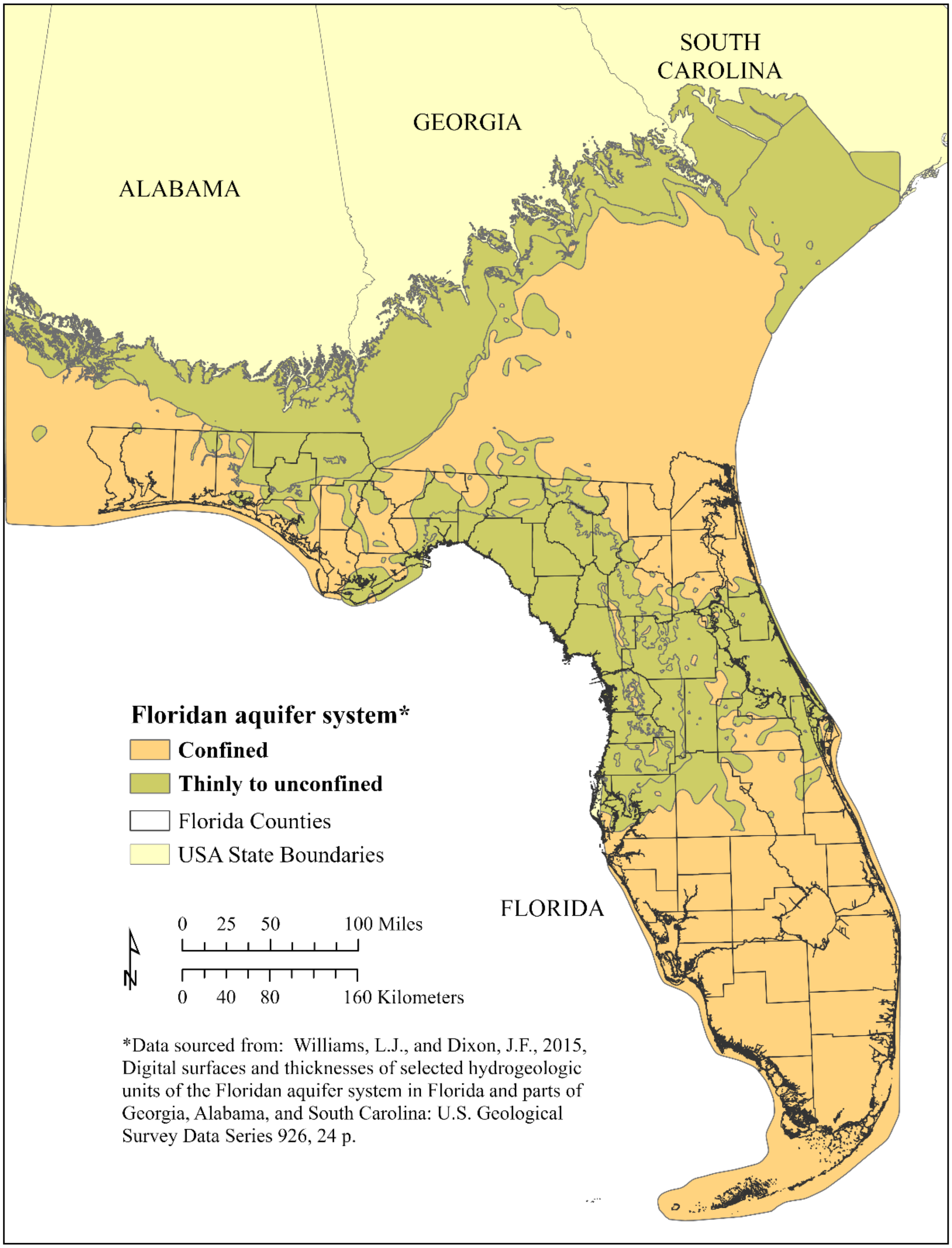


Figure 3. Floridan aquifer system confinement conditions.
(From Williams and Dixon, 2015.)

Scott (2016) mentioned that IAS and ICU sediments are composed of mostly impermeable Neogene sediments. Taken from the SEGS (1986), Scott said the top of the IAS/ICU occurs at the laterally extensive and vertically persistent lower permeability beds of the unit. The base of the IAS/ICU occurs at the top of the permeable carbonates of the FAS. Miller (1997) mentioned that permeable carbonates and siliciclastic sediments in some areas are interbedded with impermeable units. The latter units occasionally exist as regionally limited water-bearing zones. The SEGS (1986) referred to the permeable zones as aquifers. Where interbedded permeable beds dominate, the term IAS is used. Otherwise, the term ICU prevails.

Berndt et al. (1998) stated that the SAS is composed mostly of late Pliocene through Pleistocene-Holocene, permeable siliciclastic and carbonate sediments, with occasional zones of clayey, less-permeable sediments. In general, sands predominate in northern Florida, while carbonates predominate in the southern portion of the state. In northwest Florida, the sand and gravel aquifer of the SAS is a major source of fresh groundwater. In southeast Florida, the Biscayne aquifer of the SAS is the major fresh groundwater source. It is the state's second most productive aquifer (Figure 2).

Figure 4 is a chart of Florida's hydrostratigraphic units, along with corresponding formations making up the units. See Scott et al. (2001) and Scott (2001) for formational descriptions.

Regarding the chemical indicators studied in this report, a brief description of FAS geochemistry is in order. Sprinkle (1989) stated that the indicators with the greatest concentrations in groundwater in the FAS are Ca, Mg, Na, K, Alk, Cl, SO_4, and TDS. Regarding TDS, dissolved solid concentrations are related to: (1) groundwater residence time and (2) proximity to saltwater. Upchurch (1992) and Upchurch et al. (2019) described residence time as the length of time water has been in contact with aquifer rock. It can range from days to thousands of years. If groundwater passes through rock rapidly, there is minimal time for the rock to interact with the water and dissolved solid concentrations are therefore low. However, if rock permeability is low or the flow path is long (on the order of tens of kilometers), reaction time between rock and groundwater increases and dissolved concentrations are high.

Upchurch (1992, p. 15) discussed two situations in the FAS where fresh groundwater mixes with saline water. The first is the mixing of freshwater/saltwater along Florida's coasts. The second is the mixing of fresh and saline water near the base of the Upper Floridan aquifer, or in analogous portions of the FAS where middle confining units are absent.

During the Pleistocene Epoch, glaciers advanced and retreated across much of North America. When glaciers retreated, sea level increased, and it is speculated that saline water intruded into the FAS (Upchurch et al., 2019). Sprinkle (1989) mentioned that the saline water currently found in the FAS is likely to be residual (relict) seawater left unflushed from the FAS.

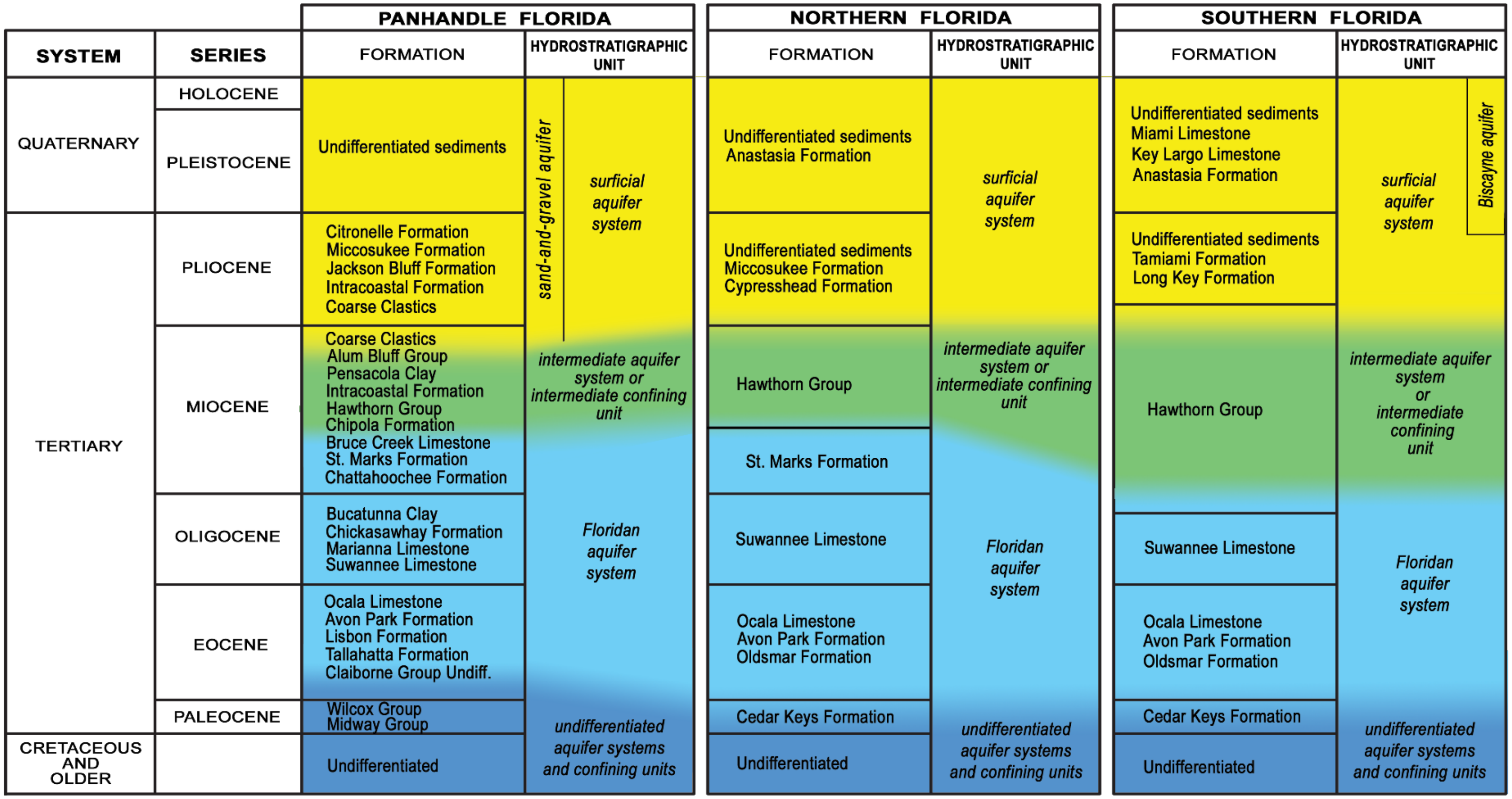


Figure 4. Florida hydrostratigraphic nomenclature chart.
(Modified from SEGS [1986]; Upchurch et al. [2019]; and Scott [2016]. See Scott (2001) for formational descriptions.)

MATERIALS AND METHODS

Indicators

Specific conductance (SC) was obtained from almost all spring and well samples. It is known that SC correlates highly with TDS (Hem, 1985). Freeze and Cherry (1979) stated that the correlation is explained by the equation, TDS = $\mathbf{a} \cdot$ SC. They mentioned that the term **a** is a constant, generally ranging from 0.55 – 0.75, depending on local groundwater conditions. For this study, TDS values were calculated. They represent the sum of the mass concentrations of the major ions (Table 1). Regarding SC or TDS, the authors decided to use only TDS, except for one set of evaluation tests (discussed later).

Regarding ions, over the duration of the study, laboratories varied between reporting the total and the dissolved species (obtained after water sample passes through a 0.45-micron filter [USGS 1978]). Total was the most frequently obtained of the two species, and for this reason, the authors selected the total species to use whenever possible. However, to make the time series as complete as possible, the dissolved species was used whenever the total species was missing and dissolved was available.

Monitoring Sites

The current study included 184 Background Network (BN) wells, 16 Trend Network (TN) wells, and 55 springs. The locations of the BN wells are displayed in Figure 5. The locations of TN wells and springs are found in Figure 6.

FDEP's BN has more than 900 wells. Its establishment was a joint effort among FDEP, the USGS, and the five WMDs (Maddox and Lloyd, 1991). It was designed to establish baseline conditions during the 1990s and to monitor regional groundwater quality conditions in multiple aquifer systems (Maddox and Lloyd, 1991). Generally, the wells are in areas believed to be minimally impacted by land use activities. Each year, WMDs sampled BN wells in one-third of their corresponding districts. In this manner, for the period 1991–1999, BN wells covering the state, were sampled three times (cycles). Individual BN wells were generally sampled one to three times during this time period. In 2000 the BN wells were incorporated into a revised statewide monitoring network. It is referred to as the Status Network (FDEP, 2016). As a requirement to be included in this investigation, BN wells needed to be sampled at least once in two periods (1991–1997 and 2005–2011). The reason is discussed later. As a result, 184 BN wells were selected.

In 1991 FDEP established the TN. Most TN wells originally were included in the BN. TN wells were selected for their areal distribution among large groundwater basins and for their degree of aquifer confinement. The network's purpose is to evaluate temporal variability and time-series trends for the monitored indicators. Of the 51 TN wells, 16 are completed into the FAS and were used for this study (Figure 6). Note, one TN well (well number 67) is also sampled from a spring vent (Wakulla Springs, the second western-most triangle in Figure 6). It has been treated as both a spring and a well since the 1990s. TN wells are sampled either monthly (unconfined aquifers) or quarterly (confined aquifers).

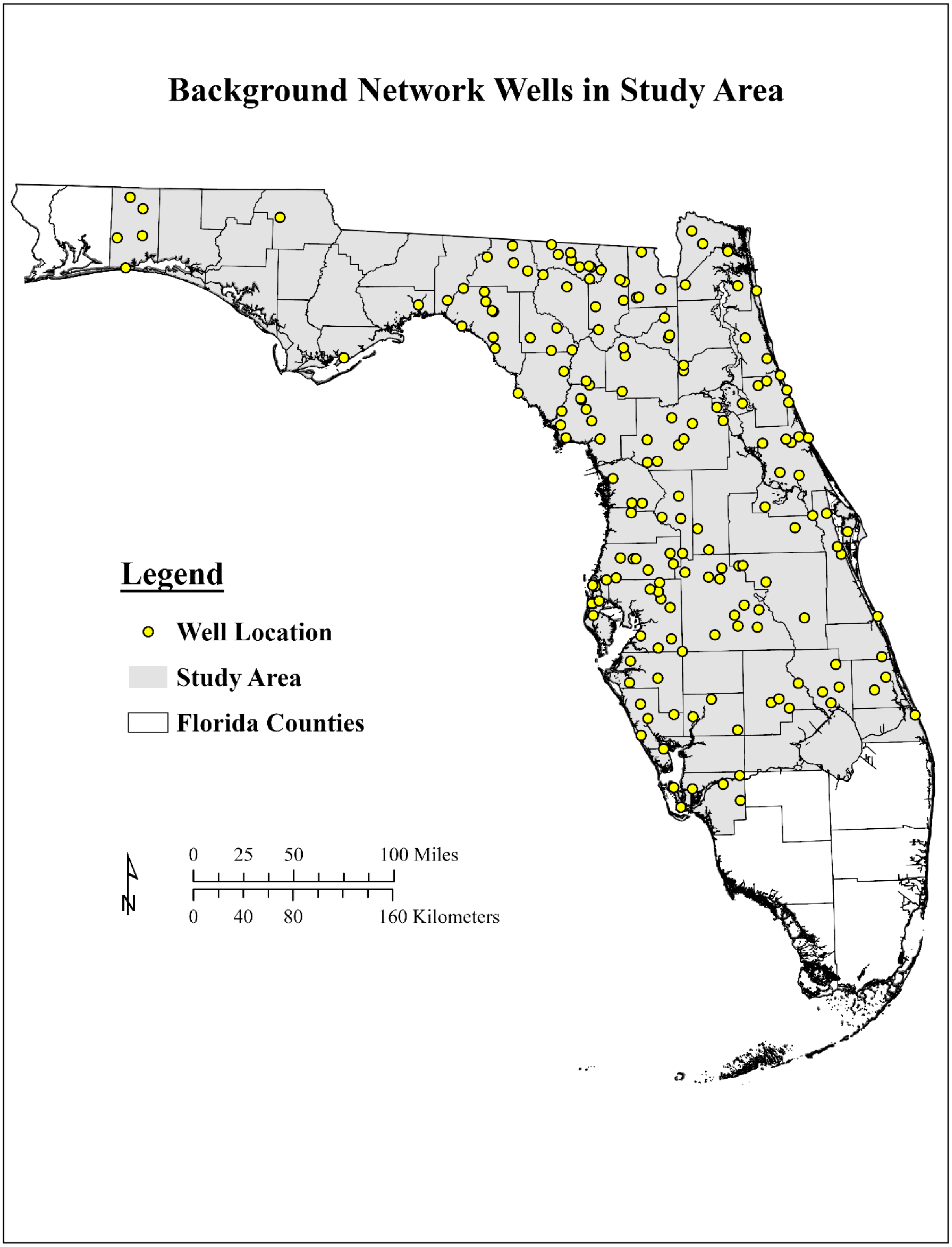


Figure 5. Location of Background Network wells used in study.

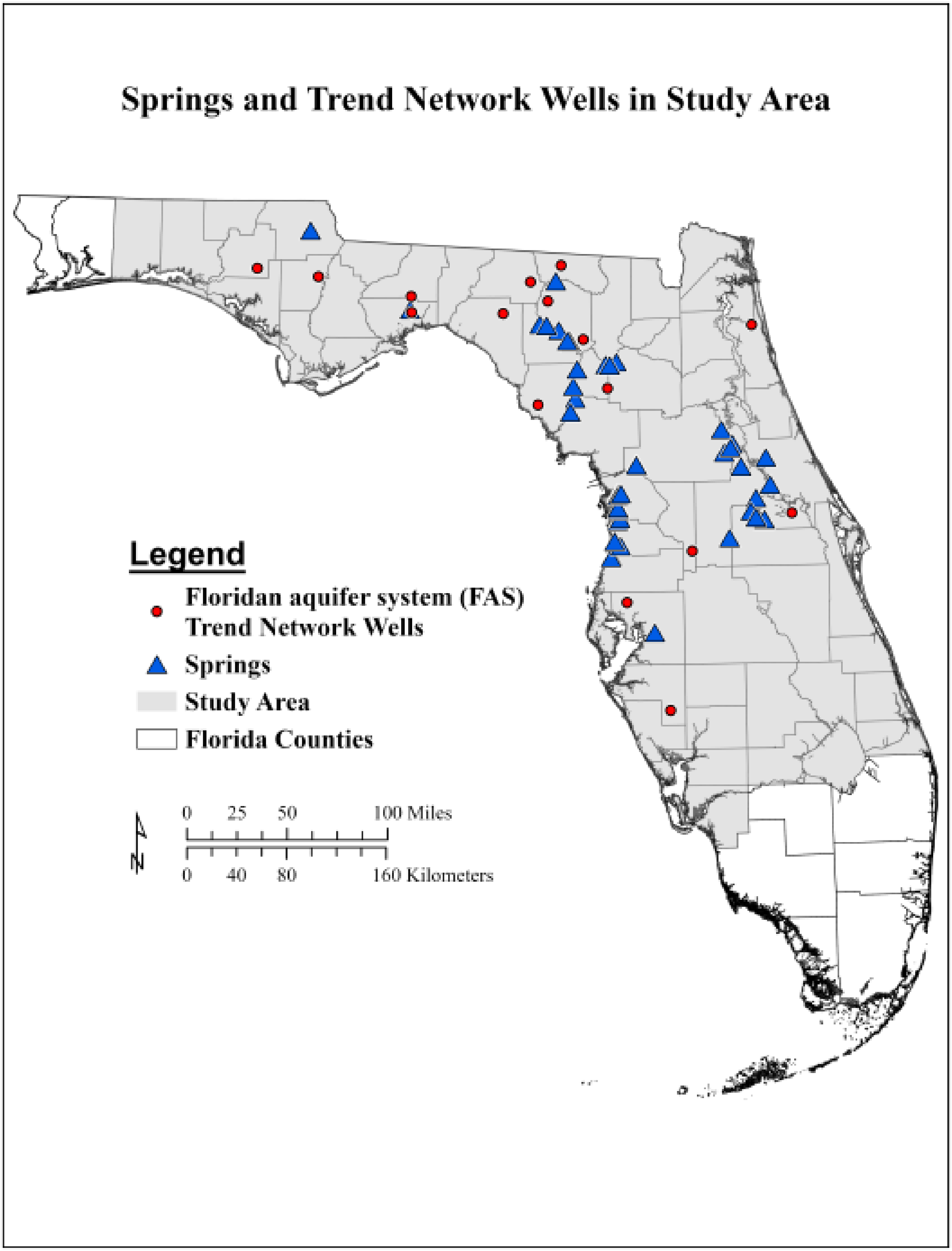


Figure 6. Springs and Trend Network wells utilized in the study.

In the far western portion of the panhandle (Escambia and Santa Rosa counties) and in southern Florida (Hendry, Palm Beach, Collier, Broward, Monroe, and Miami-Dade counties) (Figure 1), the FAS strata are relatively deep (Miller, 1986; Williams and Kuniansky, 2015) and contain highly mineralized groundwater (Sprinkle, 1989). Few FAS wells exist here. For these reasons, the authors eliminated these eight counties, resulting in 59 counties included in this study (Figure 1).

Based on data availability, 55 springs were selected for the investigation (Figure 6). With three exceptions, the springs are the ones used in the 1991-2003 study (Copeland et al., 2011). Jackson Blue Spring (western-most triangle in Figure 6) was added. Both Poe Spring and Royal Spring (Scott et al., 2004), located in Alachua County and Suwannee County respectively (Figure 1), did not have enough data after 2003 for analyses and were not used.

Scott et al. (2004) reported on the chemical analyses and discharge of Florida's springs. On page 3, the authors, reiterating comments from an earlier and similar report (Ferguson et al. 1947), indicated the springs in the report represent the "major" and "most important" springs in the state. The terms "major" and "most important" have been historically based on discharge. For the springs with available discharge data from the Scott et al. report, the current authors calculated median discharge for each spring and then summed the total median discharge of the 92 onshore springs which equals 8,122 ft^3/sec (230 m^3/sec). The estimated discharge from the 55 springs used in this report equal 4,534 ft^3/sec (129 m^3/sec), or about 56% of the 92 onshore springs.

Although sampling frequencies varied among the springs, over time the frequencies for most indicators became quarterly. Spring data obtained from the four northern WMDs (Figure 1) were converted into a data structure consistent for FDEP data analyses.

Groundwater monitoring networks are maintained by many governmental agencies in Florida. Using data from these networks for this investigation was desirable but were rejected. Sampling designs and monitoring-well locations are important in trend detection (Agee, 2012). Using data from networks from different WMDs and monitoring designs can add uncertainty to subsequent analyses and must be used with caution. In addition, the labor needed to obtain and convert data structure from other agency databases would be extensive, particularly for potentially hundreds of wells. For these reasons, only wells from the FDEP's BN were used in this study. The BN was used to established baseline conditions by using wells that were presumed to be minimally impacted by human land use activities. In 1991 the network became fully operational.

In the future, using data from wells from multiple agencies will be more attractive. Chapter 62-40.540(3), Florida Administrative Code (F.A.C.) now requires all agencies to upload their water quality data to FDEP's Watershed Information Network (WIN) database (formerly FLASTORET). Presently, mostly surface water data are being uploaded, and only limited groundwater data are available. Eventually, more groundwater data will be available, reducing the labor needed to analyze data from multiple agencies. Nevertheless, issues related to multiple sampling designs still will need to be addressed.

Locational and additional information regarding each spring and well is found in Appendix A. Statistical summaries of total depth and casing depth data for the BN and TN wells are found in Table 2. Total and casing depths generally are deeper for BN wells than for TN wells.

The most common frequency of sampling springs and TN wells was quarterly. BN wells were sampled infrequently, often less than once per year. Regarding data from each group of wells, indicator data were divided into three distinct, seven-year periods: 1991–1997, 1998–2004, and 2005–2011. The reason for the divisions will be discussed shortly.

Table 2. Descriptive statistics of the depths of Background and Trend Network wells.

	n	[2]Q1	[2]Median	[2]Q3
BN Total Depth ([1]ft)	184	133.9	267.0	605.0
BN Casing Depth (ft)	184	65.9	133.9	289.1
TN Total Depth (ft)	15	60.0	90.0	174.9
TN Casing Depth (ft)	15	40.0	56.1	109.9

[1]one ft = 0.3048 m [2]Q1, Med, and Q3 = 25th, 50th, and 75th percentiles respectively

In the late 1990s, the BN went through a major re-design. By 2000, the BN was fully merged into FDEP's Status Network (FDEP, 2016). Annually, FEDP requests well construction and location information from the WMDs, the USGS, and other monitoring agencies. Currently, the Status Network has pertinent information from more than 37,000 wells. Status wells are not restricted to portions of aquifers minimally impacted by human activity. However, wells that extract groundwater directly within or beneath a permitted facility's (FDEP, 2019a) zone of discharge (Florida Administrative Code Rule 62-522.300(2)(c)), or water influenced by well injection (Class I and II wells) (FDEP, 2019b) are excluded.

Each year approximately 240 Status Network wells, split among the SAS, IAS, and FAS, are randomly selected for sampling. The selection process is based on the Generalized Randomized Tessellation Stratified (GRTS) survey design (Olson et al., 2012). A GRTS design randomly selects wells that are spatially balanced in accordance with the actual geographical distribution of the wells. Several thousand wells have been sampled since the beginning of Status Network operation.

The first sampling cycle of the Status Network was 2000-2003. The second cycle was 2004-2008. Since a re-design in 2009, the Status Network has been sampled in one-year cycles. During the 1990s, sampling of the BN wells was not a result of random site selection but was random over time. However, since 2000, all sampled wells in the Status Network, including the 184 BN wells, were selected randomly.

Data Acquisition, Preparation, and Quality Assurance

Spring data were obtained: (1) directly from Florida's WMDs, or (2) from online databases available at the WMDs and the USGS. Well data were obtained from a FDEP database. Both spring and well data were converted into a common format for analyses. Spring location information, along with well location and construction data are found in Appendix A. Where applicable, data were converted to annual medians to reduce the effect of serial correlation (to be discussed later). Spring and well data, used for statistical analyses, are found in Appendix B. In addition to spring and well indicator data, precipitation (rainfall), and groundwater extraction (withdrawal) data also were used in this study. Precipitation data were obtained from the Southeast Regional Climate Center (SERCC, 2014; SERCC, 2019) and are found in Appendix C. Annual means of precipitation, annual medians of spring discharge, and median GWLs (from the TN) are found in Appendix D (Hydrologic Conditions). Groundwater extraction data from the FAS were obtained from several USGS reports (Marella, 1992; Marella 2014, and Marella, 2015; and Marella and Berndt, 2005).

All sample collection and all field and laboratory analyses were conducted in accordance with Chapter 62-160, F.A.C. All agencies supplying analytical information did so under FDEP-approved quality assurance project plans. Data editing procedures and associated data qualifiers are available in Appendix E.

Uncertainty

For any investigation there is a certain amount of uncertainty. Paraphrased from Salsburg (2001), the first statistician to describe uncertainty as a measure of data variability was K. Pearson in late 1800s. Prior to Pearson, scientists realized their measurements incorporated variability, but they assumed that this variability was due to error in measurements or in technology. Pearson proposed that uncertainty was not simply due to the limits of technology; it was inherent in nature. Any type of scientific investigation cannot yield an exact measurement. Rather, repeating an investigation yields a scatter of measurements that are distributed around some central value. The scatter is not only caused by error, but also by natural variability. In other words, measurements themselves, independent of any human or instrument inaccuracies, exhibit scatter. Measurements do not have exact values, but instead, always exhibit a range of values, and that range can be quantified as uncertainty. The uncertainty can be expressed as probabilities distributed about some central value. The central value used in this investigation is generally the median or the slope of the estimated observed changes. Except for one situation (to be discussed later), the 90% confidence interval is used to describe uncertainty.

For an investigation covering most of Florida, regional and local characteristics, such as differences in groundwater basins, topography, geology, FAS confinement, climate, precipitation patterns, land-use patterns, and groundwater extraction each can increase the variability of associated measurement of change. While this study investigated potential relationships of many of these variables, adjusting for each of them was beyond the scope of this investigation.

Statistical Methods

Most data distributions were positively skewed; mean values were greater than corresponding median values. Most statistical methods used in this study were nonparametric. As such, outliers were not excluded from analyses. The magnitude of the analyte concentrations was almost always above detection levels and addressing variable detection levels was unnecessary. The statistical methods accounted for missing data. However, each statistical software program had its own allowable minimum number of missing data.

Most analyses used the regional-Kendall (RK) and the Wilcoxon signed-rank (WSR) tests (Conover 1999). A brief description of each is presented below. Several miscellaneous statistical methods were also used, including the: (1) Mann-Whitney (MW) test, a test of differences in the medians of two independent populations, and (2) regression analysis; an evaluation of how a variable(s) responds to a change in a predictor variable (Triola, 1998).

Most statistical evaluations used Minitab Release 16 (Minitab, 2011). The seasonal-Kendall (SK) and the RK tests were conducted using the "rkt" package in the R programing language (R Core Team, 2014).

Hypothesis test results were based on a probability value (p-value). A p-value is the probability of the sample test statistic being at least as extreme as the observed sample data value, assuming the null hypothesis is true (Triola, 1998). As the p-value gets smaller, there is stronger and stronger evidence the null hypothesis should be rejected. The authors of this report used the p-value as a dichotomous tool. For trend analyses, the null hypothesis is no change in the slope or median, depending on the test. The alternate hypothesis is that of change. If the p-value is equal to, or less than alpha, it is inferred that a change occurred. If the resulting p-value is greater than alpha, there is insufficient evidence of change. For this study, all tests are two sided. With one exception, the p-value of each test is compared to a pre-set alpha level equal to 0.10. The exception is for a default procedure by Minitab; discussed later.

Gilbert (1987) refers to a trend as a change in levels of the variable of interest over time. This study uses a modification of Gilbert's definition. If the resulting p-value of the corresponding trend test is at or below alpha, the authors infer at a 90% confidence that a trend has occurred for the period of record (1991–2011). No transformations of data were conducted. Regarding regression analyses, the y-variable and the residuals for each regression were checked for normality using the Anderson-Darling test (Stephens, 1974) in Minitab. If either was not normally distributed, regression results were not used.

Regional-Kendall Test

To better understand how the RK test works, a brief description of the seasonal-Kendall (SK) test (Hirsch and Slack, 1984) is in order. The SK procedure tests for a change in slope at a site. During the evaluation process, the SK procedure substantially reduces, or eliminates, the effect of serial correlation. The authors indicated that seasonality is generally the most significant cause of serial correlation. The user must identify the seasons prior to analysis. For this study, for sites sampled monthly, seasons were defined as the month of sampling. Quarterly seasons were defined as: (1) March–May, (2) June–August, (3) September–November, and (4) December–February.

Each site needs a minimum number of four values. However, if a minimum of 10 years of data are available, adjustments for spatial autocorrelation can be made. The RK test works best if the product of the number of sites times the number of years is greater than 25 (Helsel and Frans, 2006). For this study, the RK test was used on a set of 55 springs and a set of 16 wells. For each set of sites, data were spread over 21 years. Thus, the product of 25 was surpassed. In addition to adjusting for seasonality, the "rkt" package of R has an option to adjust for the effects of spatial autocorrelation. This option was used for each RK tests performed.

To conduct a regional analysis, the RK test first computes a Sen slope estimate (Sen, 1968) at each site in the region. The RK test combines the results from each site. It then determines an overall p-value of no regional trend and determines an overall Sen slope for the region. The regional Sen slope should not be used unless RK test indicates a regional trend. Computations of both the SK test and Sen Slope are embedded in the “rkt” package of the R version of the RK test. If site-specific SK results or Sen slopes are desired, SK tests and the resulting slopes must be conducted separately at each site. See Helsel and Frans (2006) for details. For the RK test for this study, the annual median value for each indicator at each site was used. Using median values minimized potential adverse effects caused by seasonality.

Wilcoxon Signed-rank Test

Because BN wells were sampled infrequently, there were insufficient data to conduct trend analyses using the RK test. Kincaid and Olsen (2012) mentioned that trend detection can be conducted by estimating changes in summary measures between two time periods, such as medians and means. Helsel and Hirsch (2002) stated if a sufficiently long time exists in the data series, but not necessarily on a regular sampling frequency, trend analysis can be conducted with the two-sample step-trend test.

Large variability in the indicator values may lower the capacity of the test to identify a significant trend if one exists. To assist in reducing natural variability, Helsel and Hirsch (2002) recommend the time series be divided into three non-overlapping periods: early (E), middle (M), and late (L). They mentioned that observed changes between the E and L periods are more easily determined if noise associated with the M period is eliminated. McHugh et al. (2011) stated that for periods greater than three years, long-term groundwater changes often become the dominant source of variability. Citing multiple groundwater studies across the United States, Lindsey and Rupert (2012) mentioned that samples collected over a period of decades are more likely to reflect long-term groundwater changes than short-term changes from other sources of variability.

For this study the E, M, and L periods were defined as: (E) 1991–1997, (M) 1998–2004, and (L) 2005–2011. Data from the M period were not used for the WSR tests. Many sites were sampled multiple times during the E and/or the L periods. For this reason, at each site, the median value of each indicator was calculated for each of the periods. This resulted in all sites being equally weighted. For the paired-sample WSR tests, the medians from each site in the E period were compared to the same sites in the L period.

Conover (1999) stated that if data from the same individuals (e.g. monitoring sites) are compared, the data are dependent. In such situations the WSR test can be used as a before-after, paired test. Lindsey and Rupert (2012) stated if a significant number of tied (equal) differences are observed, it is better to use the Pratt (1959) version of the WSR test. For this study tied differences were less than 3% and the Pratt version was not used.

During the L period, 184 wells were sampled as part of the SN that were previously sampled as part of the BN during the E period. The sampling episodes of these BN wells can be considered two simple random samples of a before-after paired test. In two dimensions, the sampling field is represented by the study area (59 Florida Counties), or about 41,961 square miles (sq mi) (Appendix F). This is equivalent to 108,679 square kilometers (sq km). Results of the WSR tests for BN wells represent trend analyses results over the study area.

Thompson (2002) indicated that simple random samples over an area often result in the clustering of sampling points in some portions of the sampling field and a deficiency of sampling points in other portions. This holds true for the BN wells (Figure 5).

Several miscellaneous issues should be mentioned. Data from the M period are important, just not for the WSR test. To examine indicator changes in detail over the entire period of a study, time-series plots covering all three periods (E, M, and L) can be constructed if data are available. For example, Figure 7 is a plot of annual median GWLs from the TN wells for the duration of the study. The levels are reported as feet above the North American Vertical Datum 1988 [NAVD 88 (National Oceanographic and Atmospheric Administration, 2019a)]. The grand median (median of all medians) GWL in the E period is 42.42 ft (12.93 m) and for the L period, it declined to 37.67 ft (11.48 m). The grand median for the M period was 37.34 ft (11.38 m), but the M period data are not used in the WSR test. The graph displays how median GWLs varied per year. For this study, the middle year of the E period is 1994, while the middle year of the L period is 2008; a difference of 14 years.

For the study, the RK test evaluates many observations from a few sites. The WSR tests evaluates few observations from many sites. For each indicator, if the results of both the RK and WSR tests reveal a regional trend, two lines of evidence support the inference of a trend.

Adjustments for Serial and Spatial Correlation

For this investigation, serial correlation is the correlation between variable measurements at a site over time. Spatial correlation is considered the correlation between variable measurements at sites over the study area. Both types of correlation can adversely affect hypothesis test results by incorrectly lowering the p-value of the results (Yue et al., 2002; Dale and Fortin, 2002). To address serial correlation in the RK test, Hirsch and Slack (1984) said that seasonal variation must be removed, or at least minimized, to better discern if a trend exists. For this investigation, using annual median values for each indicator at each site, greatly reduced or eliminated the effect of serial of correlation.

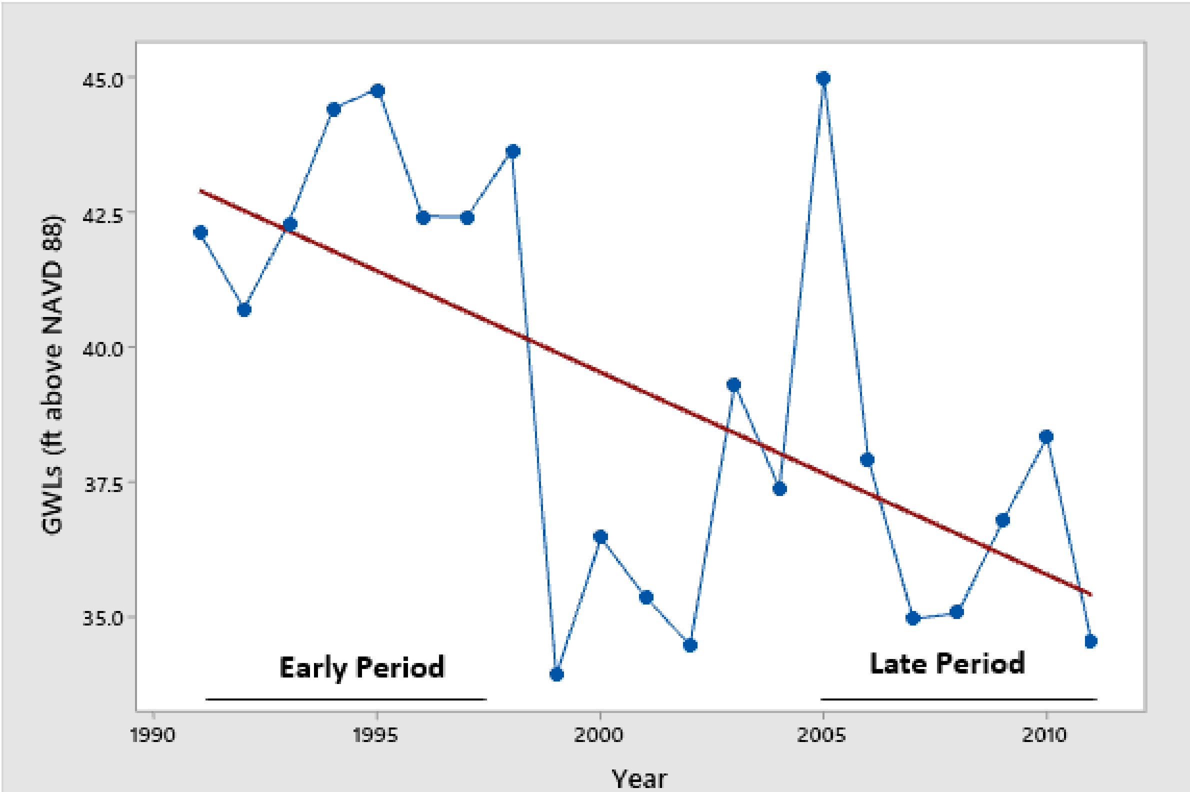


Figure 7. Annual median groundwater levels for Trend Network wells.
Diagonal line represents the best-fit line as defined by Triola (1998).

Unfortunately, the WSR test does not adjust for either serial or spatial correlation. However, by first using median indicator values at each site for each of the two seven-year periods, serial correlation was not a significant issue. In addition, to better address areal and spatial autocorrelation (AC), a modification of Boniol's 2002 work was used. Boniol conducted a kriging (Bras and Rodrigues-Iturbe, 1993) exercise using the conservative chemical chloride to determine the distance at which AC is reduced sufficiently in the St. Johns River WMD (SJRWMD). The author determined the optimal distance was 50,000 ft (15,240 m). Using a geographical information system tool, Boniol (2002) overlaid a hexagon grid over a map of the district. Each hexagon had a diameter of 50,000 ft (15,240 m). The SJRWMD then used the hexagons to aid in the placement monitoring wells in a districtwide network.

For the present investigation, an ArcGIS script tool for creating Thiessen hexagons was obtained from the Center for Research in Water Resources, University of Texas at Austin (Whiteaker, 2015). A coverage of 1,173 equal area hexagons, each with a diameter of 50,000 ft was generated for the entire state of Florida upon which spring and well locations were plotted. Note, the size of the hexagons used in this study are the same as those in the Boniol (2000) study. However, they are not the ones used by Boniol.

Table 3 shows how these procedures reduced the effect of spatial autocorrelation. Comparisons were made between chloride (Cl) (a conservative indicator) concentrations at all paired stations for both springs and for BN wells. Pearson correlations (Triola, 1998) were determined for the paired stations at three distance groupings (Table 3): (a) ≤ 50,000 ft, (b) >50,000 ft (15,240 m) to ≤ 100,000 ft (30,480 m) and (c) > 100,000 ft (30,480 m), and for both periods (E and L). Regarding springs, for the E period, correlations for the (a), (b), and (c) distances were 0.209, 0.116, and -0.031, respectively. For the L period, correlations were 0.273, 0.118, and -0.006. The same exercise was conducted for wells. For the E period, correlations were 0.119, 0.009, and -0.007, respectively. For the L period, correlations were 0.195, 0.011, and -0.007. The results indicate that for the study area, AC effects were reduced considerably at a distance greater than 50,000 ft.

Table 3. Pearson correlations of chloride concentration by distance for 31 Springs and 156 Background Network wells.

Period	n-pairs (≤ 50,000 ft)	Correlation (≤ 50,000 ft)	n-pairs (> 50,000 to ≤ 100,000 ft)	Correlation (> 50,000 to ≤ 100,000 ft)	n-pairs (>100,000 ft)	Correlation (>100,000 ft)
Springs						
(E) 1991–97	117	0.209	79	0.116	1,289	-0.031
(L) 2005–11	117	0.273	79	0.118	1,289	-0.006
Background Network Wells						
(E) 1991–97	125	0.119	320	0.009	16,047	-0.007
(L) 2005–11	125	0.195	320	0.011	16,047	-0.007

For WSR analyses, if a hexagon contained multiple springs (or wells), one spring (or one well) was randomly selected for analysis. Each site within a hexagon with multiple sites was assigned a unique integer from 1 to the total number of sites (n) within the hexagon. A Texas Instrument hand-held calculator (TI-84) was used to randomly select one integer, corresponding to one of the sites within the hexagon. Using the “math/probability/random integer function”, the calculator selected one of the n number of sites for further analyses. As a result, 156 BN wells, 15 TN wells, and 31 springs were selected for WSR analyses (Figure 8).

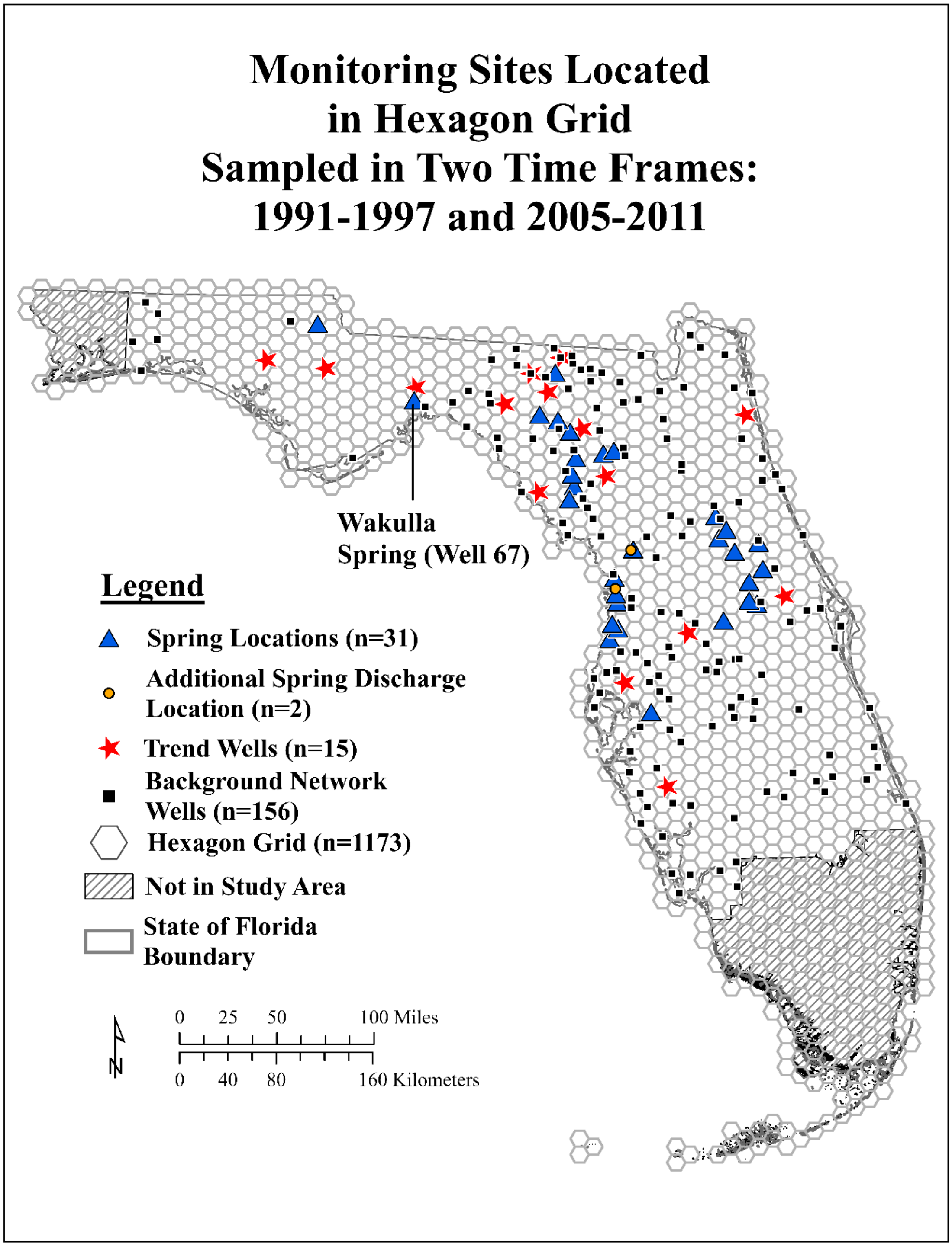


Figure 8. Location of monitoring sites in separate hexagons.
The sites comprise 31 springs, 156 Background Network wells, and 15 Trend Network wells. Well 67 is considered both a well and a spring. In this figure, it is labeled as a spring. The sites were used for WSR test analyses.

Note, there are two additional spring discharge locations in the figure. They represent USGS discharge sites located downstream from the spring sampling location for chemical indicators. The BN used more sites for WSR analyses than either the TN or springs (Figure 6). For this reason, the BN wells used for WSR analyses are displayed separately in Figure 9.

Tidal Fluctuations

Tidal fluctuations can potentially influence trend analyses of groundwater in springs or wells located near the coast. The fluctuations are a form of seasonality. As such, the serial correlation should be minimized. Recall, seasonal variations generally represent the greatest amount of variance and cause the greatest amount of serial correlation (Hirsch and Slack, 1984). Also recall, annual median values were used for each indicator at each site. Thus, although the adverse effects of serial correlation caused by tidal fluctuation may not be totally eliminated by the RK test, effects are reduced considerably.

Regarding the WSR tests, remember, the indicator values used for the E and the L periods represent the median of all measurements for each seven-year period. Also remember, there is a seven-year middle period between the E and L periods. For these reasons, any effect of serial correlation caused by tidal fluctuations on the results of the WSR tests is considered minimal.

RESULTS

Miscellaneous Issues

To recap, the null hypothesis is that of no change, while the alternate hypothesis is that change has occurred. For the WSR and MW tests, change refers to medians. For the RK test, change refers to slopes (e.g. rates of change over time). RK tests were not performed on BN well data because of an insufficiency of regular sampling frequencies. However, RK tests were performed on TN well and spring site data. Table 4 helps visualize the process.

Table 4. Monitoring site groups and corresponding hypothesis test.

Monitoring Site Groups	Sample Frequency	WSR Test for Trends	RK Test for Trends
Background Network	Sporadically	Evaluation of medians	[1]ISD
Trend Network	Regularly	Evaluation of medians	Evaluation of slopes
Springs	Regularly	Evaluation of medians	Evaluation of slopes

[1]ISD =: insufficient data

As discussed previously, the number of sites in each monitoring group was reduced to address the effects spatial autocorrelation in WSR tests. Table 5 displays the number of wells and springs available for the WSR and RK tests. For the WSR test, well 67 was treated as a spring (Wakulla Spring). For the WSR tests, the number of BN wells was reduced to 156, the number of TN wells was reduced to 15, and the number of springs was reduced to 31. Note, two additional sites are found in Figure 8, and will be discussed later.

Recall, BN well sampling (Figure 9) represents a simple random sample of wells located in areas believed to be minimally impacted by land use activities. The wells cover a large portion of the study area. Springs and TN wells (Figure 6) cover a sub-region of that covered by the BN wells. From Table 5, the 156 BN wells represent 77% of the 202 monitoring sites (156 BN wells, 15 TN wells, and the 31 springs) used for the WSR tests.

Table 5. Monitoring site groups, hypothesis test, and sample size.

Monitoring Group	Test and corresponding sample size n (sites)			
Background Network wells	[1]NA	NA	WSR test	n = 156
Trend Network wells	RK test	n = 16	WSR test	n = 15
Springs	RK test	n = 55	WSR test	n = 31

[1]NA = not applicable

For both the springs and TN wells, trend analyses were conducted using the WSR and RK tests. McDonald (2015) indicated that if the same statistical test is used for multiple indicators, resulting p-values may be lowered adversely. To adjust for the effects of multiple analyses, a procedure developed by the Benjamini and Hochberg (1995) was used for each set of WSR and RK tests. For each indicator, the Benjamini-Hochberg procedure addresses the multiple comparison effect by controlling the false discovery rate (results lower than alpha), that are truly false positives. The analyst pre-determines an acceptable false discovery rate. McDonald (2015) mentioned that it is possible for an individual test to be significant, even though its corresponding p-value is greater than the preset alpha level. McDonald also stated it is probably best to have a discovery rate in the 0.10 to 0.25 range. For this investigation, the false discovery rate was pre-set at 0.20. A freeware spreadsheet developed by McDonald (2015) was used to address multiple comparison effects (http://www.biostathandbook.com/multiplecomparisons.html). Once at the link, scroll down to “How to do the tests, Spreadsheet”. By using the 0.20 false discovery rate, none of the tests were adversely affected by multiple comparisons.

Results of Hypothesis Tests

Recall, the pre-set alpha level is 0.10, and a resulting p-value less than alpha from the WSR or the RK test is evidence that a trend occurred. Table 6 displays the results of conducting WSR tests on data from 156 BN wells. The table lists the indicator, number of samples, median of the E and L periods, the 90% confidence interval (CI) of the difference in the two medians, the Wilcoxon statistic, the resulting p-value of the test, and the direction of change. Note, if the reader is unfamiliar with the term confidence interval, it is, "…a range (or an interval) of values that is likely to contain the true value of the population parameter (Triola, 1998, p. 190). Table 6 indicates that GWLs decreased (Down), while concentrations of Alk, Ca, Cl, and Mg increased (Up). Note, GWLs are measured as the distance downward from the measuring point elevations of the wells. As such, if GWL increased between the two periods, it is an indication that aquifer potentials decreased.

Next, consider the TN wells and spring sites. Observed trends from these sites might not provide enough evidence of trends over the entire study area, but they may shed light on the WSR and RK trend test results from the BN. Table 7 displays WSR test results for TN wells. GWLs decreased. Alk, Mg, and K concentrations increased. Table 8 displays RK test results for the same well group. Concentrations of Alk, Ca, Mg, Na, and TDS increased.

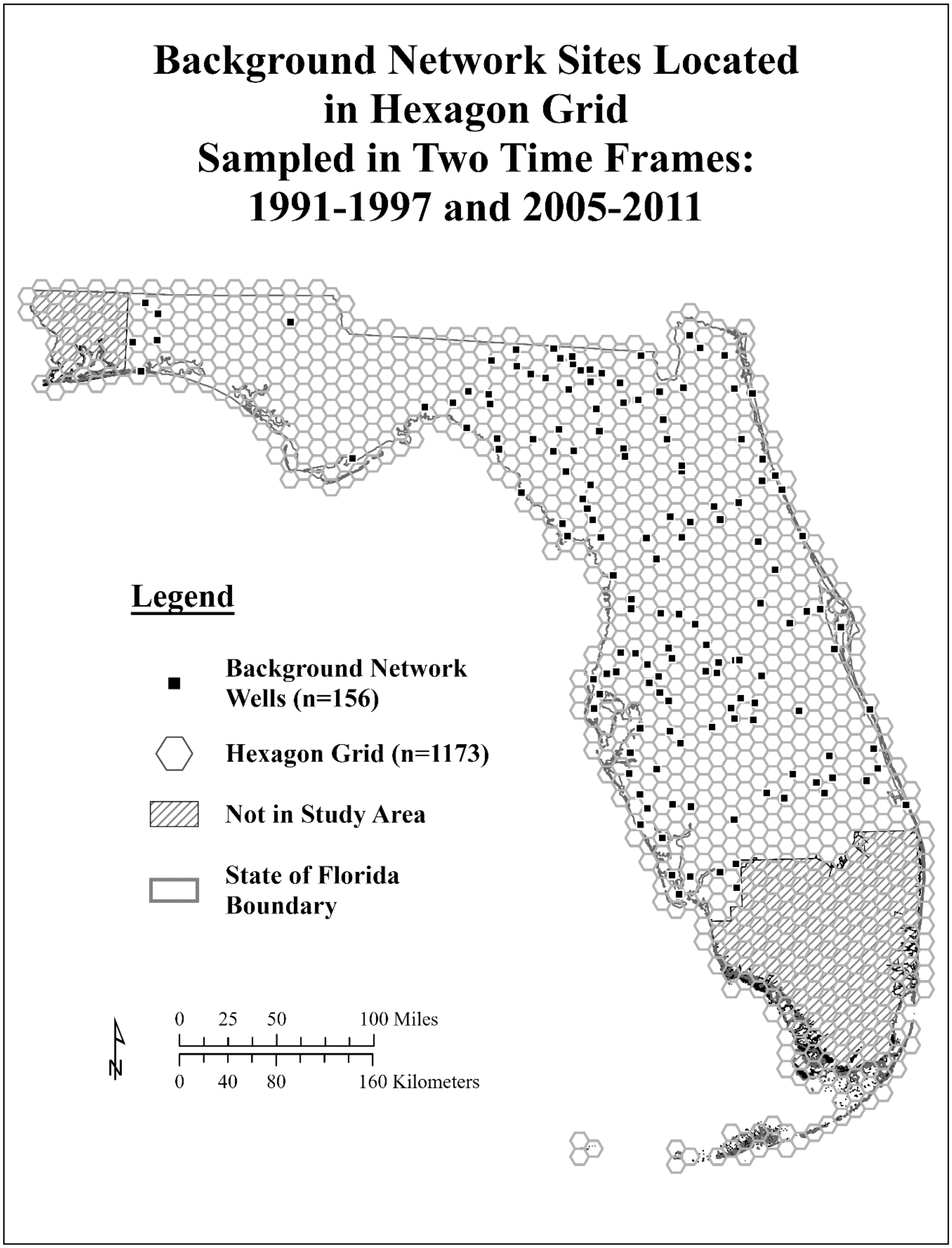


Figure 9. Location of 156 Background Network wells located in separate hexagons.

Table 6. WSR test results for 156 Background Network wells, each in separate hexagons.

Indicator	n	[1]Med E	Med L	Est. Med [2]Diff	90% [3]CI of Diff	Wilcoxon Statistic	p-value	Direction
GWLs	97	16.76	17.14	-0.81	-0.16, -1.53	2933.0	0.045	Down
Alk	154	152.00	156.50	4.50	2.50, 6.00	7695.5	<0.001	Up
Ca	152	58.80	64.20	2.70	1.37, 3.83	7962.5	<0.001	Up
Cl	138	11.00	12.00	0.75	0.37, 1.45	5066.0	0.001	Up
K	80	1.00	0.05	0.01	-0.07, 0.05	14285.0	0.722	[4]NC
Mg	148	14.30	4.35	0.75	0.00, 1.06	8183.5	<0.001	Up
Na	152	9.20	9.20	0.84	-0.05, 1.90	6705.5	0.098	Up
SO_4	139	12.50	12.50	0.33	-0.05, 0.98	5467.5	0.170	NC
TDS	65	367.00	371.00	4.70	3.25, 15.97	1210.5	0.369	NC

[1]Med = median [2]Diff = difference [3]CI = confidence interval [4]NC = no evidence of change

Table 7. WSR test results for 15 Trend Network wells, each in separate hexagons.

Indicator	n	[1]Med E	Med L	Est Med [2]Diff	90% [3]CI of Diff	Wilcoxon Statistic	p-value	Direction
GWLs	13	37.08	44.20	-1.27	-3.69, 0.14	18.0	0.059	Down
Alk	15	150.00	163.50	6.31	0.75, 11.25	90.0	0.094	Up
Ca	15	68.00	68.70	1.46	-1.75, 4.03	74.5	0.427	[4]NC
Cl	15	5.80	7.20	0.08	-0.08, 0.05	48.0	0.802	NC
K	14	5.98	6.96	0.59	0.15, 3.08	85.5	0.006	Up
Mg	15	3.35	3.95	0.90	0.54, 1.85	120.0	0.001	Up
Na	15	3.80	4.40	0.16	-2.00, 0.54	74.0	0.443	NC
SO_4	15	6.20	7.40	-0.77	-2.53, 0.22	41.0	0.293	NC
TDS	15	270.00	279.00	7.10	-1.70, 16.55	82.0	0.222	NC

[1]Med = median [2]Diff = difference [3]CI = confidence interval [4]NC = no evidence of change

Table 8. RK test results for 16 Trend Network wells.

Indicator	n	RK co-variance Score	Sen Slope (units per decade)	p-value	Direction
GWLs	13	50786.0	-0.06	0.203	[1]NC
Alk	16	21566.7	0.35	0.009	Up
Ca	16	11220.0	0.13	0.012	Up
Cl	16	80303.0	0.00	0.409	NC
K	16	28454.7	0.01	0.565	NC
Mg	16	41890.7	0.04	<0.001	Up
Na	16	14125.3	0.01	0.007	Up
SO_4	16	11174.7	0.00	0.835	NC
TDS	16	12856.3	0.68	<0.001	Up

[1]NC = no evidence of change

Tables 9 and 10 show WSR and RK test results for springs. The WSR test showed spring discharge decreased, but the RK test did not. Results from both the WSR and RK tests indicate Alk, Ca, Cl, K, Na, SO4, and TDS concentrations increased. For Mg, the RK test showed increased concentrations, while the WSR test did not.

Table 9. WSR test results for 31 FAS springs, each in separate hexagons.

Indicator	n	Median (E)	Median (L)	Est Med [1]Diff	90% [2]CI of Diff	Wilcoxon statistic	p-value	Direct
Discharge	18	77.20	68.10	-4.08	-10.83, -0.65	40.0	0.050	Down
Alk	28	119.90	130.00	7.51	5.53, 9.60	353.0	<0.001	Up
Ca	29	50.15	55.45	4.43	2.58, 6.80	356.5	<0.001	Up
Cl	31	12.00	13.00	1.33	0.35, 3.55	329.0	0.048	Up
K	29	4.90	6.22	0.15	0.05, 3.20	283.5	0.024	Up
Mg	25	13.30	17.50	0.48	-0.81 3.75	193.0	0.420	[3]NC
Na	29	6.90	8.00	0.65	0.05, 2.01	259.0	0.093	Up
SO_4	29	55.80	67.80	7.55	2.15, 13.75	353.0	0.004	Up
TDS	27	290.00	313.00	27.43	19.24, 49.75	320.0	0.002	Up

[1]Diff = difference [2]CI = confidence interval [3]NC = no evidence of change

Table 10. RK test results for 55 springs.

Indicator	n	RK co-variance score	Sen Slope (units per decade)	p-value	Direction
Discharge	30	258805.7	-0.75	0.476	[1]NC
Alk	55	730894.7	5.00	<0.001	Up
Ca	55	680617.7	3.00	<0.001	Up
Cl	55	449529.7	1.50	<0.001	Up
K	55	457001.7	0.20	<0.001	Up
Mg	55	536903.3	0.57	0.001	Up
Na	55	539690.3	0.57	<0.001	Up
SO_4	55	412972.3	1.67	<0.001	Up
TDS	55	602460.7	18.07	<0.001	Up

[1]NC = no evidence of change

Overall, the results of Tables 6-10 show some indicators display trends using one procedure but not the other. There are several possibilities why this might occur. First, part of differences among the two sets of tests can be attributed to varying statistical procedures. The calculations differ and there is no reason to believe the resulting p-values from the WSR and RK tests should be identical. Second, if a strong trend truly exists for a given indicator, the direction of change will be the same using both procedures even if the corresponding p-values are different. Third, consider sample size. Triola (1998) pointed out that for calculations of p-values, the sample size (n) is in the denominator. Thus, if all p-value equation variables remain constant except sample size, as n increases, the resulting p-value decreases, as do sampling error and the corresponding confidence interval. Given this observation and ordering the sample sizes (see Tables 6-10) from highest to lowest, the relative weighting of results from the three sets of monitoring sites are: (1) Background Network, (2) springs, and (3) TN.

Sample collection depth could be another explanation for the result differences. This possibility was investigated using a series of Mann-Whitney and WSR tests. Recall the median depth of TN wells is 90 ft (27.4 m) and the median depth of BN wells is 267 ft (81 m) (Table 2). For the BN, total depth data are only available for 146 of the 156 wells. Wells shallower than or equal to 267 ft were categorized as shallow (S), and wells deeper than 267 ft were categorized as deep (D). The MW test used data from the L period to compare each indicator for the 146 wells. The results (Table 11) indicate that GWLs and indicator concentrations tend to be greater in D groundwater (i.e., deeper groundwater tends to be more mineralized than shallow groundwater). There are two exceptions. For an unknown reason Alk concentrations tend to be greater in the shallow wells, while there is insufficient evidence to make an inference regarding Ca.

Groundwater levels (GWLs) and indicator concentrations in shallow groundwater tends to be different from those in deep groundwater, leading to a question about trend differences in shallow versus deep BN wells. A series of WSR tests were conducted to address this question. Shallow well results are in Table 12 and deep well results are in Table 13. For the 74 shallow wells there was no evidence of change for GWL and K. However, concentrations of Alk, Ca, Cl, Mg, Na, SO4, and TDS increased. Regarding the 72 deep wells, GWLs decreased, while concentrations of Alk, Ca, Cl, Mg, and TDS increased. The reason for greater GWLs in deeper wells is not satisfactorily understood. However, a potential explanation for chemical indicators is that in the FAS, deep groundwater is more mineralized than shallow groundwater. This hypothesis will be discussed in more detail later.

Table 11. Mann-Whitney test results comparing data from shallow to deep Background Network wells using L period data.

Indicator	n (S, D)	Med S	Med D	Est Med [1]Diff	90% [2]CI of Diff	W Statistic	p-value	Comment
GWL	55, 42	4.63	6.84	1.82	4.05, 1.65	2446.0	0.070	D > S
Alk	74, 71	169.50	148.00	-22.00	-5.00, -14.00	5556.0	0.029	S > D
Ca	74, 72	67.05	63.58	-5.45	-16.20, 4.00	5683.5	0.340	[3]NC
Cl	74, 72	8.00	27.00	7.30	3.00, 18.00	4654.0	0.002	D > S
K	46, 29	0.75	1.33	6.00	0.20, 1.00	1503.0	0.008	D > S
Mg	74, 72	6.72	18.90	10.60	6.50, 14.15	4346.0	<0.001	D > S
Na	74, 71	4.90	45.00	7.50	3.70, 13.60	4428.0	<0.001	D > S
SO_4	74, 71	5.50	45.00	22.22	7.00, 62.50	4372.5	<0.001	D > S
SC	74, 72	444.00	600.00	125.00	40.00, 239.00	4815.0	0.015	D > S

[1]Diff = difference [2]CI = confidence interval [3]NC = no evidence of change

For springs, discharge water can be representative of shallow or deep aquifer discharges (Berndt et al., 2005). Berndt et al. compared concentrations of inorganic constituents in spring and well water from seven major carbonate aquifers across the United States. They found that a majority of spring water was from the shallow parts of aquifers. They justified this conclusion based on the relatively high nitrate concentrations found in the spring water. The nitrate source likely came from of local land-use practices. For springs with relatively high TDS concentrations, the authors speculated that the water first may have circulated with deeper groundwater and had a relatively long residence time prior to discharge from springs.

As with Berndt et al. (2005), Copeland et al. (2011) noted increasing nitrate concentrations in spring water (1991–2003) and suggested that the origin of spring water typically is from the shallow portions of the FAS. Regarding relatively high concentrations of total dissolved solids, Copeland et al. (2011) also speculated that at least some of the spring water may have had a relatively deep source.

Table 12. Results of WSR tests for 74 shallow Background Network wells.

Indicator	n	Med E	Med L	Est Med [1]Diff	90% [2]CI of Diff	Wilcoxon Statistic	p-value	Direction
GWL	52	4.66	6.27	-0.20	-0.40, 0.39	717.0	0.802	[3]NC
Alk	74	157.75	169.50	9.22	6.10, 12.53	2130.5	<0.001	Up
Ca	74	58.80	67.05	4.99	3.36, 7.23	2214.5	<0.001	Up
Cl	74	8.00	8.00	0.60	0.30, 1.13	1649.0	0.001	Up
K	46	0.79	0.75	0.03	-0.04, 0.11	622.0	0.376	NC
Mg	74	5.72	6.72	0.86	0.56, 12.89	2325.0	<0.001	Up
Na	74	4.90	5.20	0.48	0.24, 1.11	2037.0	<0.001	Up
SO_4	74	5.50	5.50	1.67	0.53, 3.11	1855.5	0.002	Up
TDS	74	405.00	444.00	29.25	18.25, 44.50	2309.5	<0.001	Up

[1]Diff = difference [2]CI = confidence interval [3]NC = no evidence of change

Table 13. Results of WSR tests for 72 deep Background Network wells.

Indicator	n	Med E	Med L	Est Med [1]Diff	90% [2]CI of Diff	Wilcoxon statistic	p-value	Direction
GWL	33	4.47	5.84	-1.80	-0.15, -1.34	-398.0	0.037	Down
Alk	69	148.00	149.75	3.00	0.50, 5.25	1526.0	0.057	Up
Ca	72	60.48	63.58	1.95	1.30, 3.53	1904.0	0.001	Up
Cl	72	23.50	27.00	0.45	0.01, 2.14	1291.5	0.053	Up
K	27	2.32	1.33	-0.06	-0.24, 0.05	142.0	0.264	[3]NC
Mg	71	17.10	18.90	0.80	0.35, 1.35	1864.0	<0.001	Up
Na	72	17.80	18.00	0.20	-0.16, 1.35	1373.0	0.324	NC
SO_4	71	41.00	45.00	-0.18	-1.39, 0.63	989.5	0.590	NC
TDS	70	560.00	600.00	11.23	2.00, 28.25	1599.0	0.037	Up

[1]Diff = difference [2]CI = confidence interval [3]NC = no evidence of change

Magnitude of Changes

To assist in understanding the magnitude of the changes, compare the E and L boxplots (Figure 10). Also included is a boxplot of the differences of the E and L medians from the Background Network wells (for Cl, n = 138) located in separate hexagons (Figure 9). In Figure 10, the upper edge of the boxes corresponds to the 75th percentile (Q3), the lower edge corresponds to the 25th percentile (Q1), and the ends of vertical lines represent the 5th to 95th percentiles. The horizontal line in each box represents the median Cl concentrations value. For display purposes, outliers were removed. The importance of the box plots is twofold. First, the variance of the L distribution is larger than the E distribution (left and middle plots). Second, the differences between the medians for the E and L periods is relatively small (right plot). For the study, the authors observed this relationship to be typical for each of the indicators.

Direction of Changes

For this discussion, the terms up, upward, positive, or "Up" indicate that statistical evidence exists for an increasing change in the indicator unit of measurement during the time period of the study. The terms down, downward, negative, or "Down" indicate that statistical evidence for a decreasing change in the indicator unit of measurement. The term no change, NC, indicates that no statistical evidence of change was observed.

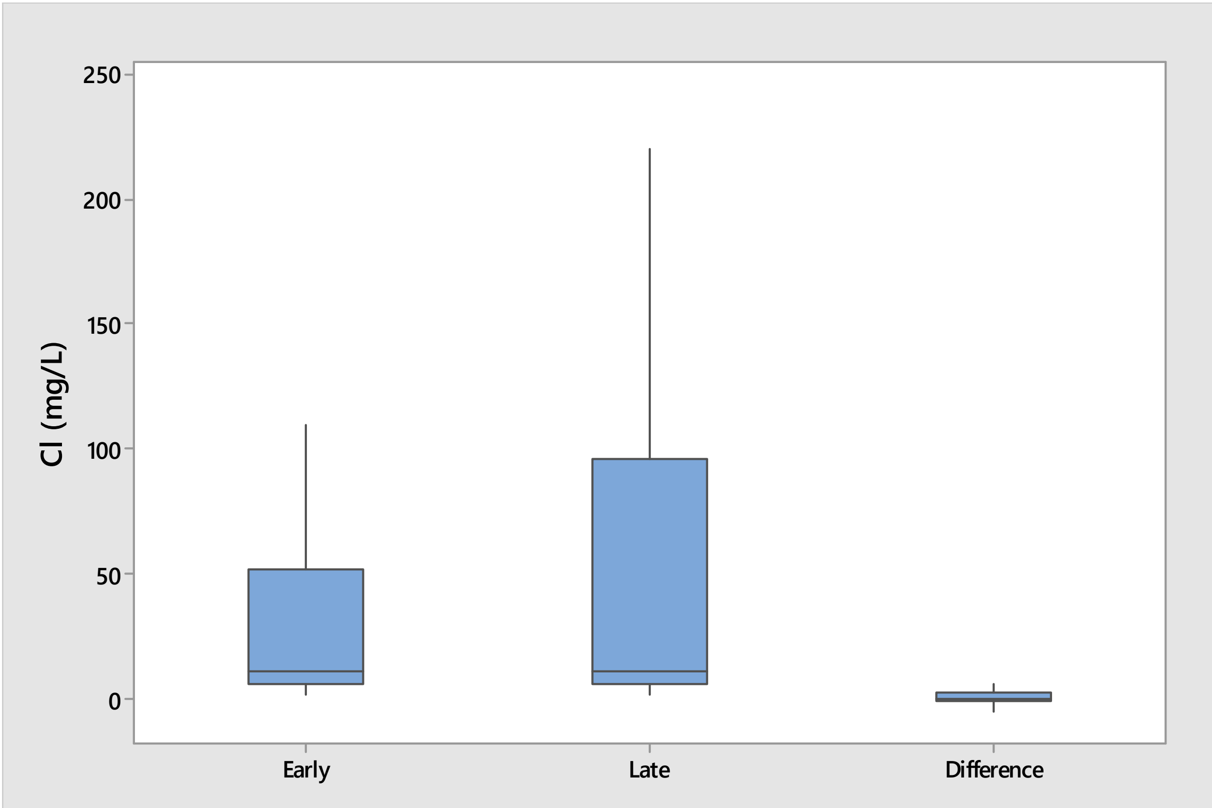


Figure 10. Comparison of the differences of chloride (Cl) medians (E to L) for 138 Background Network wells.

For the WSR tests, the directions of change are obtained from the estimated median of the differences between the E and L periods (column 5 in Tables 6, 7, and 9). For the RK tests, change directions are obtained from the corresponding Sen slopes (column 4 in Tables 8 and 10).

Recall, Helsel and Hirsch (2002) indicated that unless a trend is determined to exist, the magnitude (or its corresponding direction) of the change should not be used for further analyses. For this reason, Table 14 displays trends that are upward (U) and trends that are downward (D) for each set of monitoring sites for both the WSR and RK tests. If a trend was not observed the term NC is used.

Note for Alk, each test indicates a statistical upward (U) trend. For discharge and GWL, test results indicate either a downward (D) trend or NC. For the remaining indicators, test results indicate either an upward (U) trend or NC.

For a given indicator, if one (or more) tests indicate a trend, but one (or more) of the remaining tests indicate NC, does the NC contradict the results of the test(s) displaying trend(s)? No! A contradiction is evident if at least one test indicates an upward change while another indicates a downward trend. The NC simply means there is insufficient evidence of a trend. Recall, the WSR and the RK tests are using different methodologies in the evaluation of trends. There is no reason to believe the two tests will produce identical results.

Table 14. Comparison of trends in three groups of monitoring sites.
Direction of change for indicators with trends are based on WSR and RK tests.

Monitoring Sites	Background Network Shallow and Deep	Background Network Shallow	Background Network Deep	Springs		TN	
N	156	74	72	31	55	15	16
Test	**WSR**	**WSR**	**WSR**	**WSR**	**RK**	**WSR**	**RK**
Indicator	**Direction**	**Direction**	**Direction**	**Direction**		**Direction**	
Discharge	[1]NA	NA	NA	Down	[2]NC	NA	NA
GWL	Down	NC	Down	NA	NA	Down	NC
Alk	Up	Up	Up	Up	Up	Up	Up
Ca	Up	Up	Up	Up	Up	NC	Up
Cl	Up	Up	Up	Up	Up	NC	NC
K	NC	NC	NC	Up	Up	Up	NC
Mg	Up	UP	Up	NC	Up	Up	Up
Na	NC	NC	NC	Up	Up	NC	Up
SO_4	NC	NC	NC	Up	Up	NC	NC
TDS	Up	Up	Up	Up	Up	NC	Up

[1] NA = not applicable [2]NC = No evidence of change

In Table 14 for the various test scenarios, if for a given indicator, all tests result in an upward (or downward) trend, it is stronger evidence of change, as compared to an indicator that has at least one NC recorded in the table. For example, all tests in Table 14 resulted in a trend for Alk. The direction is up. Now, consider aquifer potentials (measured as either discharge or GWLs). Of the seven tests (two for spring water and five for well water), four indicate a trend, while three do not. The direction of the four tests resulting in trends is down. The remaining test resulted in no evidence of change. Thus, there is stronger evidence of a trend for Alk than for aquifer potentials.

Table 15 is identical to Table 14, with one major exception. In Table 15, the direction of change has been substituted for each NC in Table 14. Thus, Table 15 displays qualitative change directions for all test results, independent of an observed statistical trend. For spring discharge, the change direction for the WSR and RK tests are down. For GWLs, the change directions for the four WSR tests and the one RK test is down. For the seven aquifer potentials tests, the directions of all tests are down. In contrast, the change directions for Alk, Ca, K, Mg, Na, and TDS concentrations of all tests are up. From a qualitative perspective, the magnitude of the changes is not important. Rather, the importance is with the consistency of the direction of the changes among the various tests. In Table 15 there are two anomalies. Concentrations of Cl and SO_4 in TN wells (columns 7 and 8) are highlighted in gray. For both indicators, based on the WSR tests, the best qualitative estimate of the direction of change is down (see column 5, Table 7). However, based on the RK tests, the best qualitative estimate of the direction of change for both indicators are no change (see column 4, Table 8). The reasons for the anomalies are not known.

Table 15. Comparison of direction of changes in three groups of monitoring sites.
Direction for indicators without statistical trends are qualitative statements, based on differences in the medians for the WSR tests, and the estimated slopes for the RK tests.

Monitoring Sites	Background Network Shallow and Deep	Background Network Shallow	Background Network Deep	Springs		TN	
N	156	74	72	31	55	15	16
Test	**WSR**	**WSR**	**WSR**	**WSR**	**RK**	**WSR**	**RK**
Indicator	**Direction**	**Direction**	**Direction**	**Direction**		**Direction**	
Discharge	[1]NA	NA	NA	Down	Down	NA	NA
GWL	Down	Down	Down	NA	NA	Down	Down
Alk	Up	Up	Up	Up	Up	Up	Up
Ca	Up	Up	Up	Up	Up	U	Up
Cl	Up	Up	Up	Up	Up	Down	[2]NC
K	Up	Up	Up	Up	Up	Up	Up
Mg	Up	Up	Up	Up	Up	Up	Up
Na	Up	Up	Up	Up	Up	Up	Up
SO_4	Up	Up	Up	Up	Up	Down	NC
TDS	Up	Up	Up	Up	Up	Up	Up

[1]NA= not applicable [2]NC = no evidence of change Gray represent anomalies (See text for explanation.)

Estimated Rates of Change

The RK test calculates an annual rate of change (Sen slope). The rates were multiplied by 10 to obtain rates per decade. The decadal rates of change are displayed in Tables 8 and 10. Regarding WSR tests, the rates were estimated by taking the estimated median of the differences between the E and L periods (column 5 of Tables 6, 7, 9, 12, and 13) and dividing it by the corresponding median of the E period. The resulting quotient was divided by 14 (number of years between the middle of the L period and the middle of the E period), and then multiplied by 10 to obtain estimates rates of change per decade.

To one significant figure, Table 16 displays the rates of change from RK and WSR tests for selected indicators for the corresponding tests. For spring water, the fourth row in Table 16 displays the median of the estimated decadal rates of change for discharge, Na, Cl, and TDS for the two tests. In determining the medians, tests without statistical significance were not included. Spring discharge declined at an estimated rate of -2.9 ft^3/sec (0.1 m^3/sec) per decade. The estimated rates of increase for Na, Cl, and TDS were 0.6, 1.3, and 18.9 mg/L per decade, respectively.

The second to the bottom row in Table 16 displays the median estimated rates of change for GWLs, Na, Cl, and TDS in well water. GWLs decreased by about -0.8 ft (-0.2 meters) per decade. For Na, Cl, and TDS, concentration medians increased by 0.4, 0.5 and 0.7 mg/L per decade respectively.

Using the results of the WSR tests, percentages of change were also estimated. Estimates were conducted by using data from Tables 6, 7, 9, 12, and 13. For each selected indicator, the estimated values of the median of the differences (column 5) was divided by the median of the E period (column 3). The resultant quotient was divided by 14 and then multiplied by 10 to obtain a proportion. The resulting proportion was then multiplied by 100 to obtain a percentage of change. As an example, refer to Table 9. In mg/L, the estimated median difference of Na between the E and L periods is 0.65 and the median of the E period (6.90). By dividing the median of the difference by the median of the E period, the resultant quotient (0.0942) was divided by 14 and then multiplied by 10 to obtain a proportion. The proportion was then multiplied by 100 to obtain a percent. Rounded to one significant figure, the value was 6.7%.

Row 5 in Table 16 displays changes for spring discharge, and concentrations of Na, Cl, and TDS. In absolute value terms, the changes ranged from 1.0 to 7.9 percent. Row 12 displays changes for GWLs, plus Na, Cl, and TDS. The percent changes ranges from 0.9 to 6.5 percent.

Table 16. Estimated median rates of decadal change for selected indicators (1991–2011).
Changes are in units of measurement per decade.

Springs	**Discharge (ft^3/sec) per decade**	**Na (mg/L) per decade**	**Cl (mg/L) per decade**	**TDS (mg/L) per decade**
RK Test	No trend	0.6 (n=55)	1.5 (n=55)	18.1 (n=55)
WSR Test	-2.9 (n=18)	0.5 (n=29)	1.0 (n=31)	19.6 (n=29)
Median of Estimates	-2.9	0.6	1.3	18.9
Percent Change	-3.5%	6.7%	7.9%	1.0%
Wells	**GWL (ft) per decade**	**Na (mg/L) per decade**	**Cl (mg/L) per decade**	**TDS (mg/L) per decade**
RK Test	No trend	0.1 (n=16)	No trend	0.7 (n=16)
WSR Test (TN)	-0.9 (n=13)	No trend	No trend	No trend
WSR Test (Background Network)	-0.6 (n=97)	0.6 (n=152)	0.5 (n=138)	No trend
Median of Estimates	-0.8	0.4	0.5	0.7
Percent Change	-3.5%	6.5%	4.9%	0.9%

Visual Distribution of Changes for Chloride

Figures 11 and 12 assists in visually displaying the extent of change for Cl. Figure 11 displays the locations of 31 springs and 15 TN wells (46 total sites), each located in separate hexagons. Well 67 (Wakulla Spring) is treated as a spring. In the figure, sites are assigned upward, no change, or downward symbols. Directions are based on the results of seasonal-Kendall test Sen slope directions for each individual site, but they are not necessarily statistically significant. Thus, the directions should be treated qualitatively.

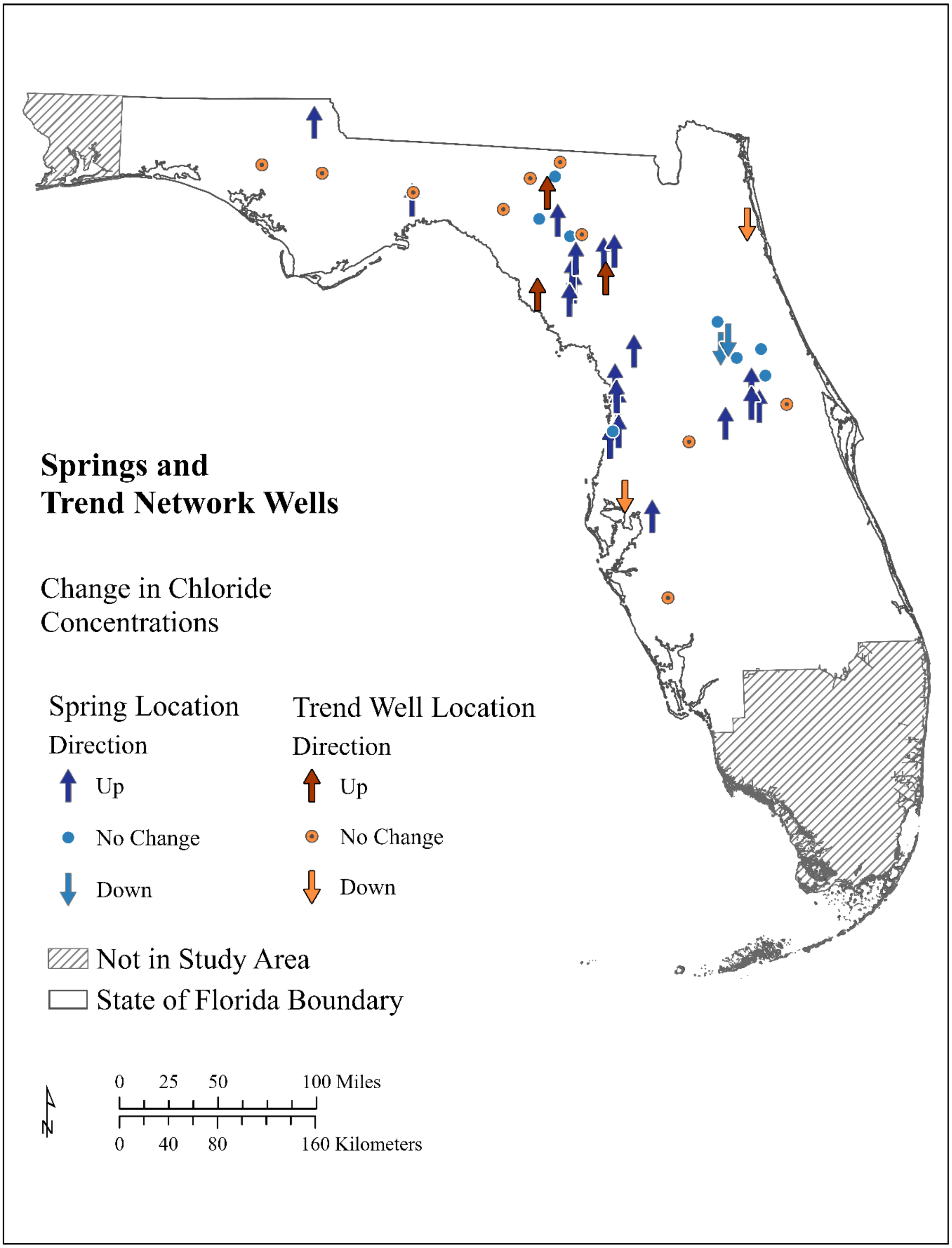


Figure 11. Direction of chloride concentration changes in springs and TN wells based on seasonal-Kendall tests.

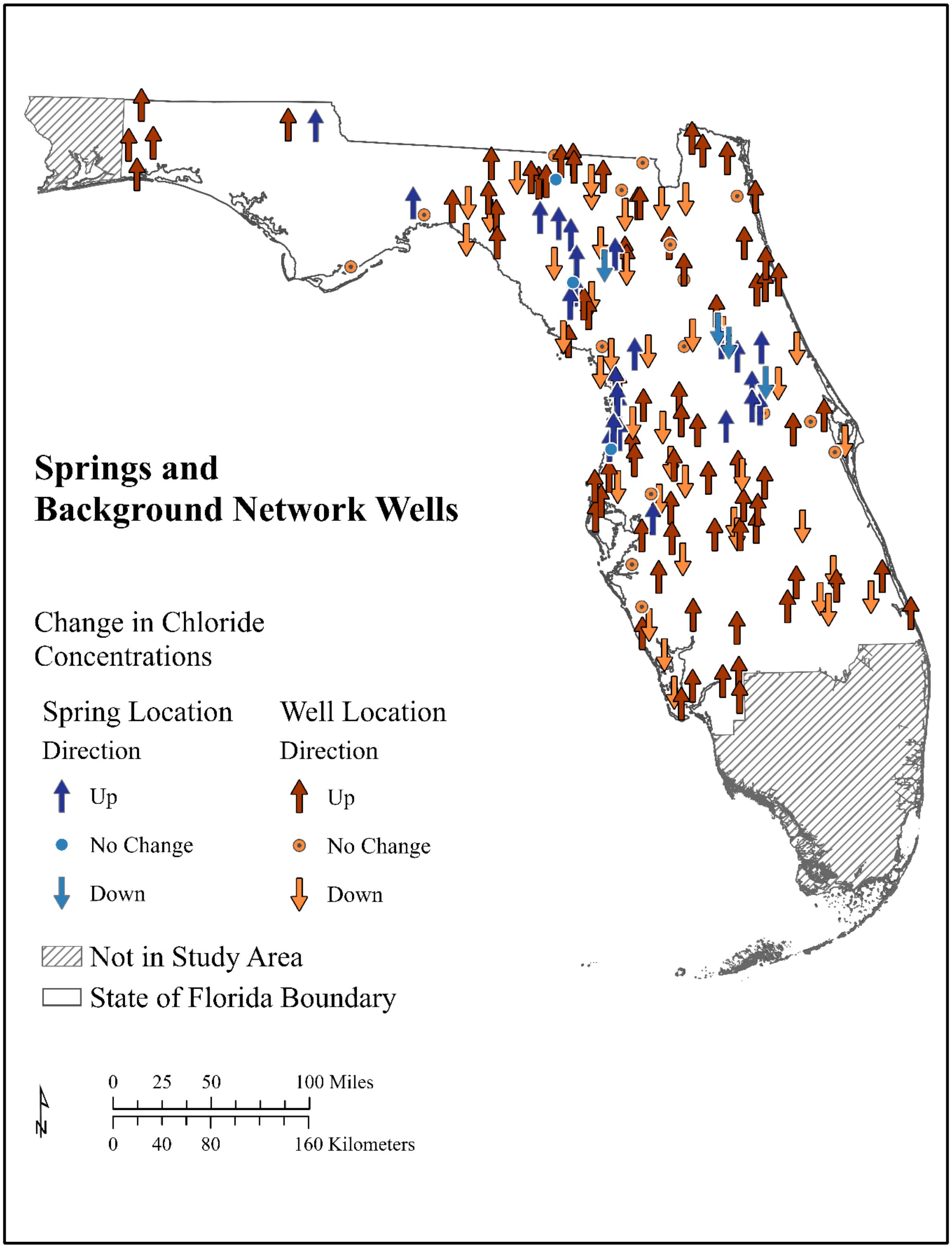


Figure 12. Direction of chloride concentration changes in springs and Background Network wells based on Wilcoxon signed-rank tests.

Of the 156 Background Network wells, 138 had Cl data for the E and L periods. Figure 12 displays locations of the 138 wells and 31 springs used for WSR tests. Recall, Tables 6 and 9 indicate that Cl concentrations trended upward across the study area. It is important to note that WSR test trends were based on all sites collectively, rather than a trend at each site. For wells and springs, the 169 sites are assigned upward, no change, and downward symbols, based on their respective difference in the median concentrations between the periods.

Table 17 lists the number of decreasing trends, no evidence of trends, and increasing trends for both springs and wells. Chloride concentrations increased in 52% of all sites. For only those sites displaying trends, Cl increased in 86% of the sites.

Table 17. Sites with increasing and decreasing trends for chloride concentrations between E and L periods for springs and TN wells based on the seasonal-Kendall test results.

Direction	Springs	TN Wells	Total
Increasing	21	3	24
No Change	8	10	18
Decreasing	2	2	4
Total	31	15	46

Table 18 lists the number of wells and springs for which the medians increased, medians displayed no change, and decreased, Cl concentrations increased in 60% of all sites. However, for only the sites with a measurable difference, Cl concentrations increased in 67% of the sites.

Table 18. Sites with increases, no change, and decreases in differences of the medians for chloride concentrations between E and L periods for springs and Background Network wells, associated with WSR tests.

Direction	Springs	Background Network Wells	Total
Increasing	22	79	101
No Change	1	17	18
Decreasing	8	42	50
Total	31	138	169

Overall, the observed changes were generally small. Percent change ranged from about one to eight percent (Table 16). In addition, changes were not uniform across Florida (Figures 11 and 12). However, it is also important to understand that most of the observed changes were upward, they occurred over most of Florida, and occurred at the decadal time scale.

Brief Review of Study Goals and Results

Recall, the goals of this investigation are to: (1) evaluate the FAS for trends in groundwater quality and aquifer potentials, and (2) if changes are observed, estimate the areal scale of the changes and the rates of change. Regarding (1), results are found in Tables 6–10, and 12–13. Aquifer potentials declined, while concentrations of the indicator chemicals increased.

Regarding study goal number two, the BN wells were selected based on the generalized random tessellation stratified sampling design. Sampling the 156 wells in individual hexagons represent two simple random samples of the study area. Comparing E to L data with the WSR tests, changes occurred across the study area, or about l41,961 square miles (108,937km^2). The total area of Florida's is about 57,481 square miles (148,818 square kilometers) (Appendix F). Thus, the changes occurred across approximately 73% of Florida. During the investigation, aquifer potentials and chemical indicator concentrations changed between one to eight percent decade.

Apalachicola-Chattahoochee-Flint River Basin

Figure 13 displays the monitoring sites used in this investigation lying within the NWFWMD. Compared to Figures 5 and 6, the relative density of monitoring sites within the NWFWMD is considerably lower than the remaining portion of the study area. Fortunately, a study conducted by the USGS (Lindsey and Rupert, 2012) can be used to supplement the findings of this investigation. The authors reported on the results of a series of USGS studies involving 56 major groundwater basins across the contiguous United States. The studies included the Apalachicola–Chattahoochee–Flint River basin (ACFB) which extends across portions of north Florida, Georgia, and Alabama. The Florida segment is represented as the Apalachicola, Chipola, Lower Chattahoochee, and Lower Flint Hydrologic Units (Figure 13). The groundwater studies evaluated potential groundwater quality changes in the basins relative to: (a) agricultural or urban land use, or (b) non-land use related (i.e., major aquifer studies). The authors reported on changes in several indicator concentrations, including Cl and TDS, for the 1988 – 2010 period.

Using Wilcoxon-signed ranks tests, Lindsey and Rupert (2012) concluded that for the ACFB major aquifer study, concentrations of Cl in the FAS increased as a trend at a rate of 0.50 mg/L per decade, and TDS increased as a trend at a rate of 14.0 mg/L per decade. Their study supports the current investigation (Cl and TDS are two of the indicators in Table 1). In addition, their study period (1988-2010) is similar to the current one (1991-2011). These findings are potentially important because the ACFB (Figure 13) covers an area in the NWFWMD that only has a few monitoring sites.

Conceptual Model

In groundwater, Na correlates highly with Cl (Freeze and Cherry, 1979). For this study, the two indicators are grouped together and referred to as saline indicators. In this study, the term saline only implies that source water has greater concentrations of Na and Cl than the receiving groundwater. A second group of indicators, related to the carbonate-rock matrix of the FAS, includes Alk, Ca, Mg, K, SO_4, and TDS. Some of the indicators in the former two groups can overlap. Spring discharge and GWLs (aquifer potentials) are a third indicator group.

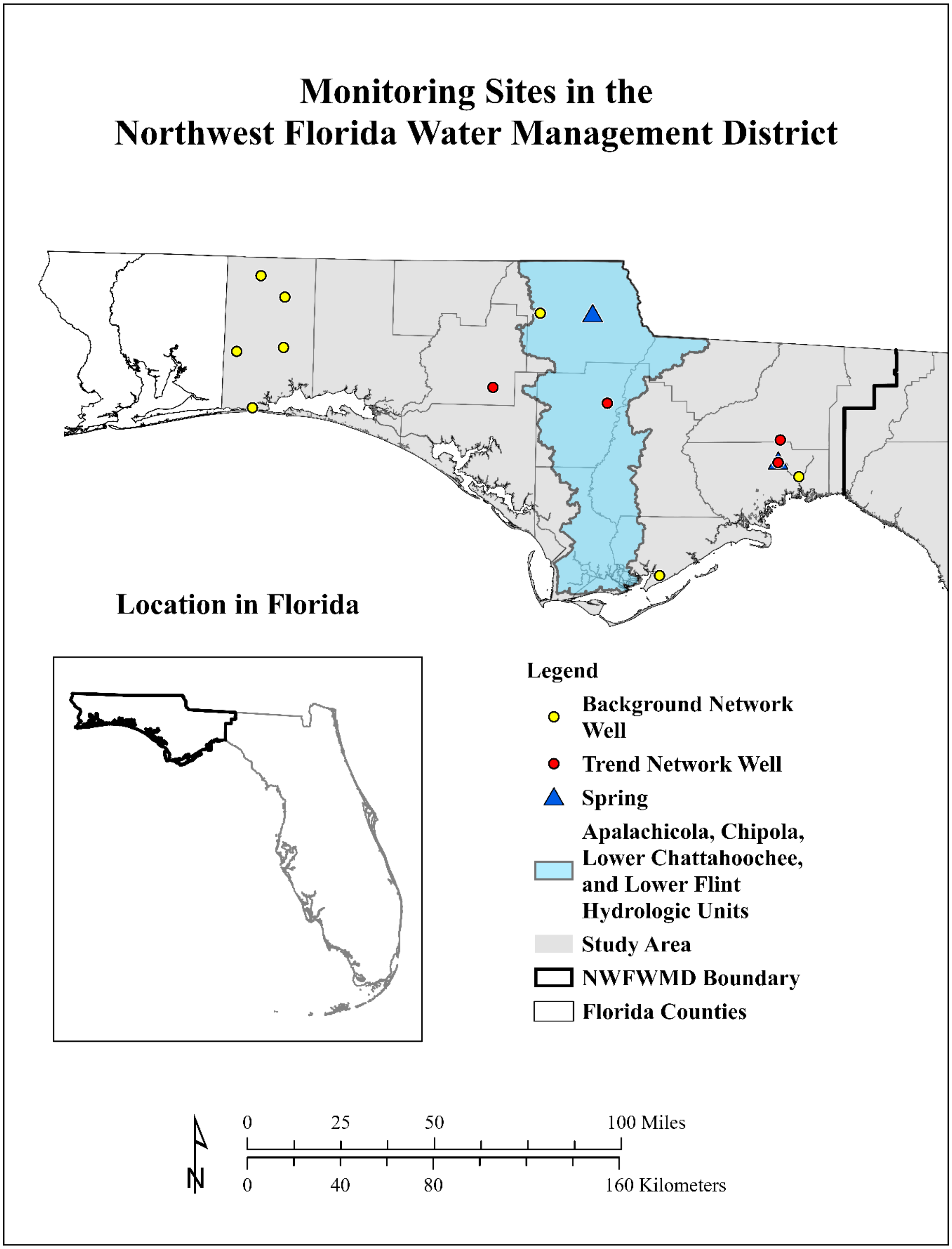


Figure 13. Location of monitoring sites in the NWFWMD used in study, plus the Apalachicola, Chipola, Lower Chattahoochee, and Lower Flint Hydrologic Units.

To assist in understanding the observed changes in this investigation, a hypothetical, broad-brush conceptual model is presented. The model discusses connections among indicator groups. The model is an extension of the Ghyben-Herzberg relationship (Fetter, 2001; Freeze and Cherry, 1979). Figure 14 shows how increases in concentrations of saline indicators in Florida's groundwater, such as Na and Cl, can occur. To the left a freshwater, unconfined aquifer is represented. The saltwater/freshwater interface is displayed as a transitional zone. During periods of low rainfall, when recharge rates are less than discharges, the water table is lowered. With less downward and outward pressure on the saltwater from overlying freshwater, horizontal and/or upward migration of saltwater takes place in the aquifer.

In the ideal Ghyben-Herzberg relationship (Freeze and Cherry, 1979), for each foot of drawdown the saltwater/ freshwater interface rises by 40 ft (12 m), a 1 to 40 ratio as a sharp line. However, changing tides, and extended periods of surplus and deficit rainfall, cause the line to become a transition zone (Figure 14) that can thicken and move inland until it intersects an impermeable bed such as the intermediate confining unit as displayed in the top of Figure 15.

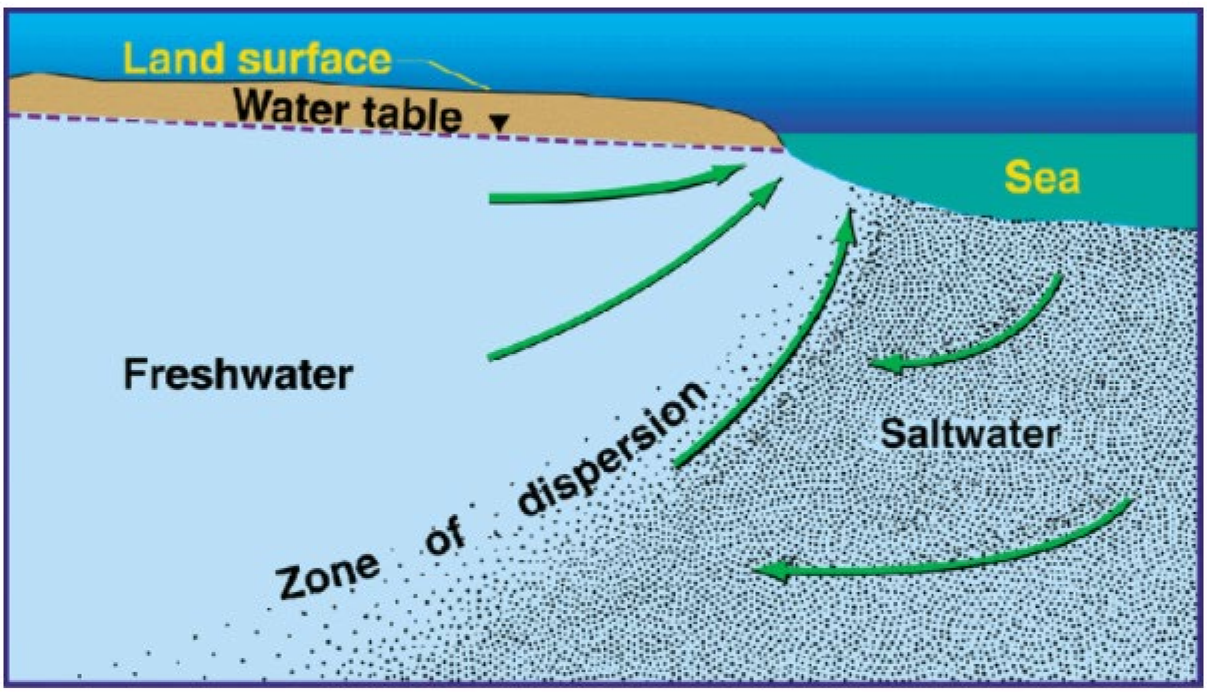


Figure 14. Surficial aquifer system with the transition zone separating saltwater and freshwater. (Modified from Cooper, 1964.)

Figure 15 shows a generalized cross-section of Florida's aquifer systems in northeastern Florida. White represents fresh groundwater, light stippled gray represents brackish water, and dark gray represents saltwater. Think of the white hydrogeologic units as a freshwater lens. The Fernandina permeable zone, existing only in northeast Florida and southeast Georgia, lies below the FAS. It contains brackish water and saltwater.

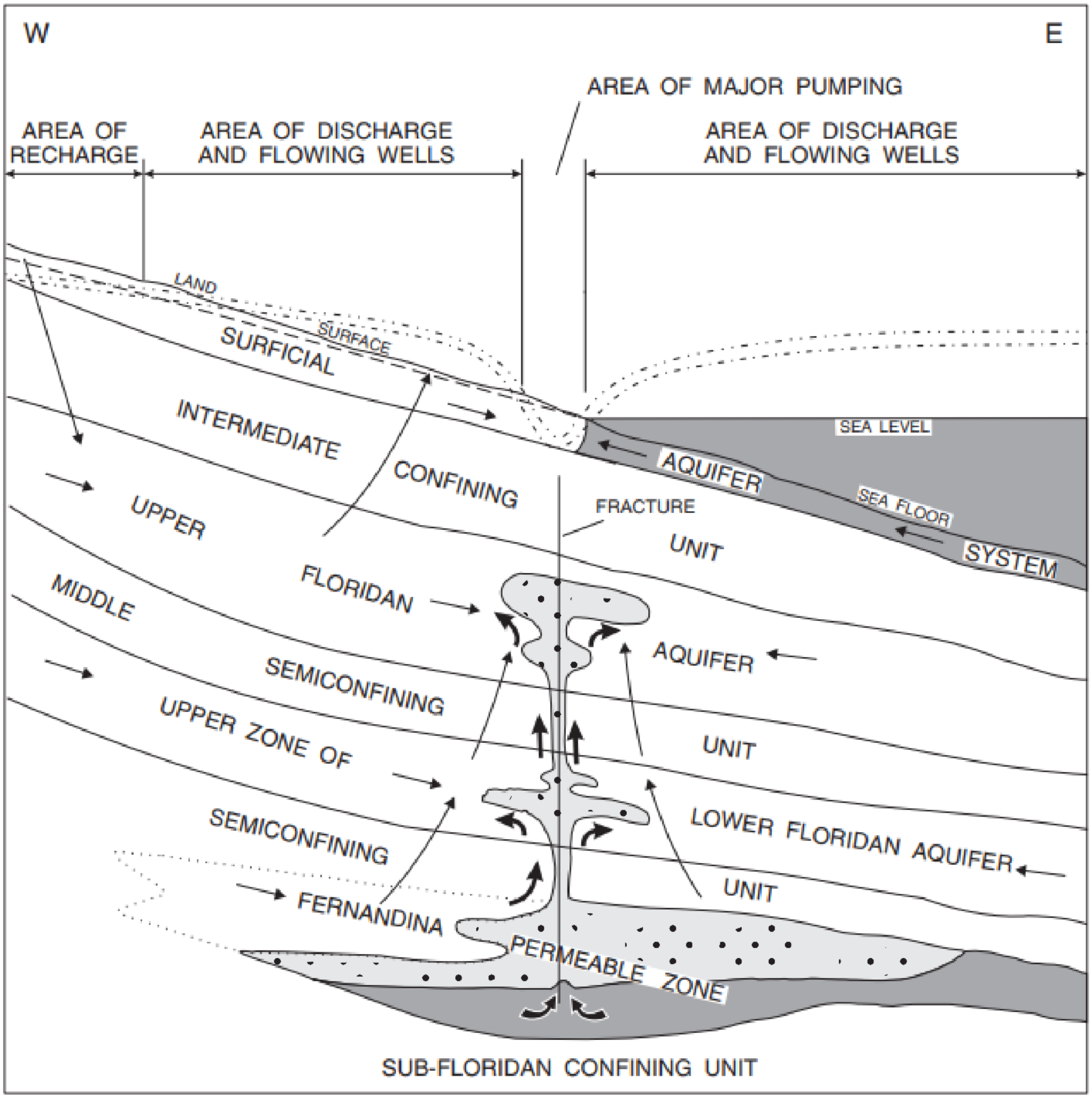


Figure 15. Florida's major aquifer systems with several possible pathways of encroachment. Dark gray is salt water and light stippled gray is brackish water. (Modified from Spechler, 1994.)

Krause and Randolph (1989) and Spechler (1994) describe several possible mechanisms that can drive saltwater encroachment in Florida. Potential mechanisms are presented in Figure 15. They include: (1) the upward movement of unflushed pockets of relict seawater in the FAS, (2) the landward movement of the freshwater/saltwater interface, (3) the regional upconing of saltwater below pumped wells, and (4) the upward leakage of saltwater from deeper, saline water–bearing zones through confining units. The latter can occur where the units are thin or breached by joints, fractures, collapse features, or other structural anomalies. Movement can also occur because of failed, damaged, or improperly installed well casings. Regarding (3) and of note, the term upconing is used because of updrawn interface mirrors drawdown cones around pumped wells (Schmorak and Mercado, 1969).

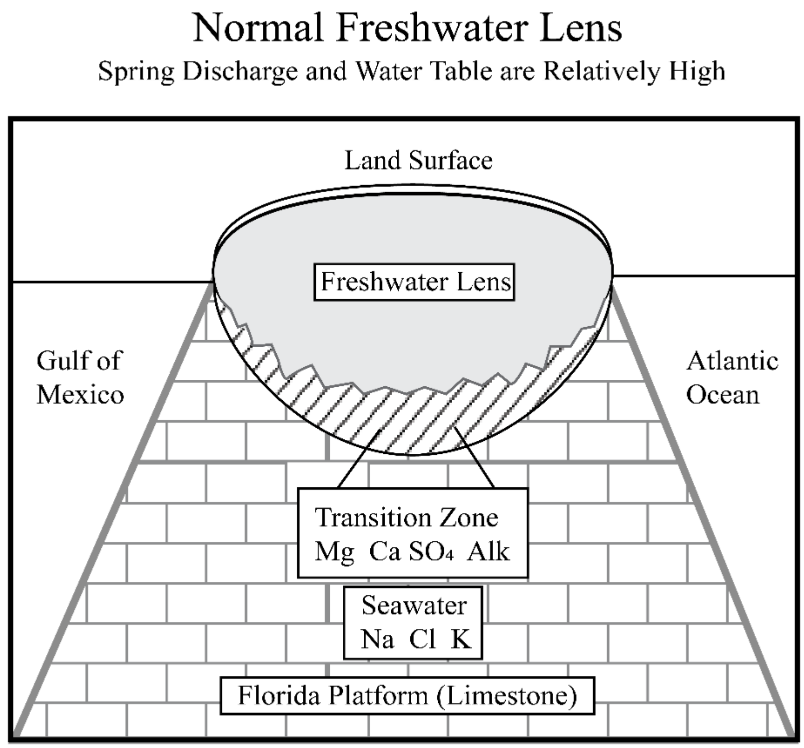
For unconfined portions of the FAS, during periods of abundant rainfall, FAS recharge exceeds discharge and the freshwater zone increases in size. However, during the state's periodic dry periods, when aquifer recharge is reduced, and groundwater extraction continues, the freshwater zone shrinks. The same process can potentially also occur where the FAS is confined. With less recharge, both GWLs and spring discharge decline. As they decline, groundwater with less residence time in the FAS and fresher spring groundwater are eventually replaced by groundwater with a longer residence time and greater rock-matrix and saline indicator concentrations. This conclusion is supported by Upchurch (1992) and Katz (2004).

Sprinkle (1989) stated that, in parts of Florida, increasing concentrations of saline indicators originate from either the LFA or possibly from relict seawater in the deeper portions of the UFA. In both situations, declining FAS aquifer potentials potentially cause more saline groundwater to migrate inland and upward into the freshwater zone.

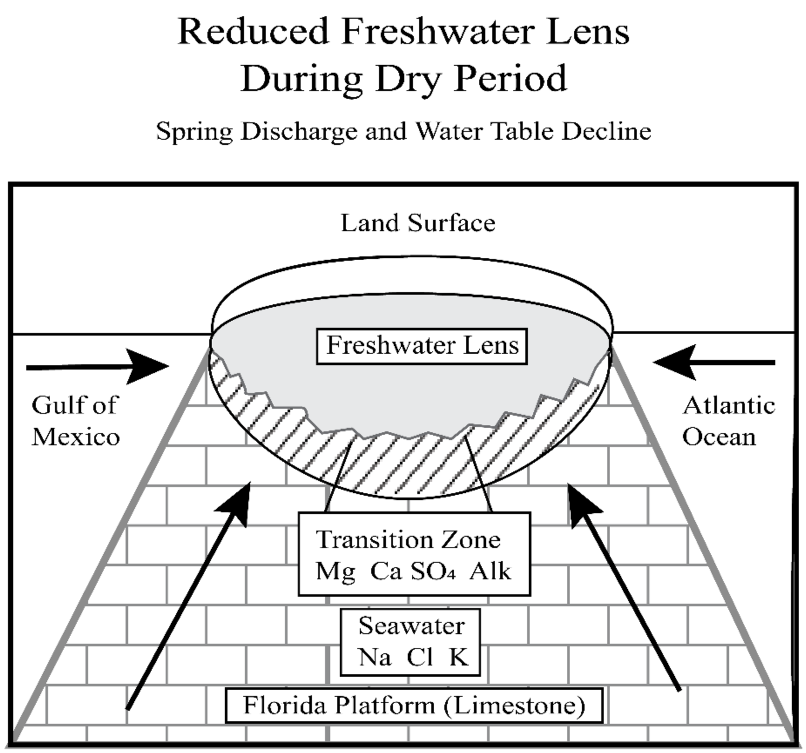
Sacks and Tihansky (1996) mentioned that in the southern portion of the Southwest Florida WMD, minerals such as dolomite, gypsum, and anhydrite (enriched in Mg and SO_4) are found in or at the base of the UFA. When present these minerals can react chemically with FAS groundwater, causing dissolution and/or the precipitation of gypsum, dolomite, and calcite. In addition, during long, lower-than-normal periods of rainfall, these minerals can be a source of increased concentrations of Ca, Mg, and SO_4 in groundwater.

Figure 16 presents a simplified version of the conceptual model. All freshwater aquifers and confining units are conceptually lumped together into a freshwater lens. The irregularly shaped lens is generally thickest in the central portion of the state and narrows toward Florida's coastlines. The top part of Figure 16 (A) represents the lens during normal times. The bottom part of Figure 16 (B) represents long periods of below-normal rainfall. After a lag, aquifer potentials decline, and the lens decreases in size (exaggerated). With the declining potentials, groundwater from deeper in the carbonate FAS enriched in rock-matrix and saline indicators, can migrate upward and inward from the edges of the lens. Although not displayed in Figure 16, it is implied that if a period of above-normal rainfall prevails, and if recharge exceeds discharge for a long enough time, after a lag, the lens will increase in size, and concentration of saline and rock matrix indicators will eventually decline. However, some saline water may not be totally flushed (Sprinkle 1989).

Upchurch et al. (2019, p. 102-106) described the freshwater lens, as it applies to unconfined and confined conditions. Paraphrased from the authors, below the water table of a coastal aquifer, the volume of freshwater generally occupies a lens-shaped body overlying the saltwater portion of the aquifer. Within the lens, water generally discharges seaward under the influence of gravity. The surface between the freshwater and saltwater is typically a transition or mixing zone, rather than a distinct line (Figure 17). Dispersive processes affecting transition zone configuration include: (1) migration of water masses due to tidal oscillations, (2) seasonal fluctuations in recharge or discharge, and (3) perturbations caused by groundwater extraction.



(A)



(B)

Figure 16. Fresh groundwater lens changes over a long dry period. (A). Lens after a long period of average or above average rainfall. (B). Lens after a long period of below-average rainfall.

Regarding a freshwater lens, Upchurch et al. (2019) also discussed several processes describing saltwater encroachment, and subtle additional information, not previously mentioned. The shape of the freshwater lens and the position of the freshwater/saltwater boundary are a result of a balance of the flux of freshwater towards the sea and variables such as hydraulic conductivity, tidal oscillations, variations in recharge and discharge, and groundwater extraction. Changing any of the variables can substantially change the configuration of the freshwater lens. At the aquifer scale, decreased net recharge causes the volume of the freshwater lens to decline, allowing the freshwater/saltwater boundary to intrude upward and/or inland. The authors also mentioned that where freshwater vertically overlies saltwater, drawdown of the water table or potentiometric surface by pumping, can cause upconing in general accordance with the Ghyben-Herzberg principle.

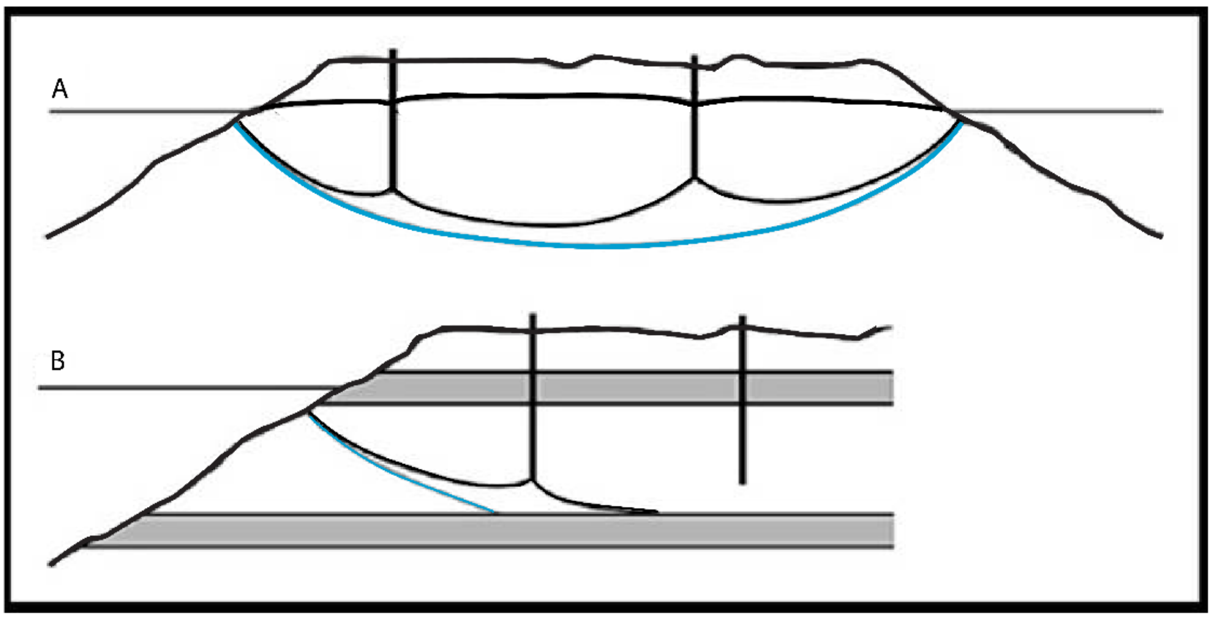


Figure 17. Cross section of unconfined and confined freshwater lenses.
(A) Unconfined lens as commonly found on a small island. (B). Confined lens in a configuration commonly seen along Florida's coasts. Both lenses are distorted by pumping from wells. Vertical lines represent wells. Blue curved lines represent saltwater/freshwater interface prior to pumping. Dark curved lines by wells represent interface after pumping. Horizontal bands represent confining units. (Modified from Fratesi, 2013; and Upchurch et al., 2019.)

Former Changes in Freshwater Thickness in the FAS

Scott et al. (2004) mentioned that during the Pleistocene Epoch, beginning 2.6 million years ago, continental glaciers waxed and waned in the Earth's northern latitudes. In Florida, the potentiometric surfaces and water tables of the aquifers are theorized to have dropped with the advancing continental glaciers and then to have risen when the glaciers retreated. Upchurch et al. (2019) mentioned that this action would result in saltwater encroachment into the aquifers when sea level rose, and a flushing out of the saltwater when sea level dropped. It is possible that not all saltwater was flushed during the last glacial period. Some highly saline groundwater may still be present in the pore spaces in the deeper portions of the UFA and equivalent units where the

FAS is undifferentiated. This relict sea water may be a major source for the increased saline indicator concentrations discussed earlier. Recall, Krause and Randolph (1989) and Spechler (1994) presented a similar interpretation for northeastern Florida.

Klein (1976) indicated that the freshwater portion of the FAS can be over 2,950 ft (900 m) thick. The range of sea-level changes may have been up to 460 ft (140 m) (Florea et al., 2007; Florea et al., 2009). Florea et al. (2009) mentioned that caverns in the FAS are often highly correlated with water tables associated with former sea-level stands (Figure 18).

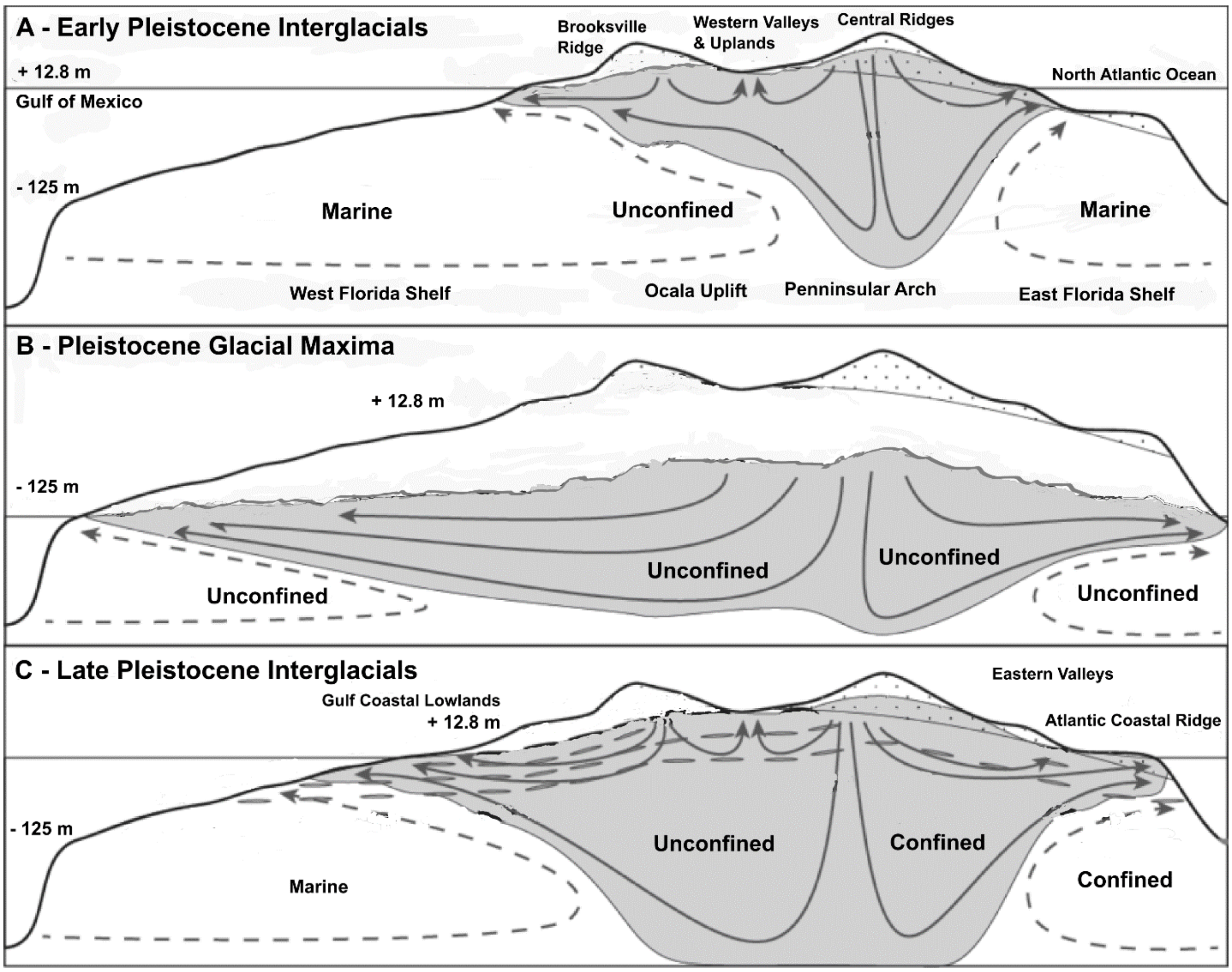


Figure 18. Florida Platform during Pleistocene sea level changes.
Top (A): High sea-level showing that freshwater portion of FAS (gray) has shrunk. Middle (B): Maximum glaciation and subsequent lowering of freshwater portion of FAS. Bottom (C): Period when configuration of FAS was similar to the present. (Modified from Gulley and Florea, 2016.)

Based on the discussions above, it is reasonable to assume that rising sea levels result in the shrinking of the freshwater portion of the lens. Conversely, with declining sea levels, the freshwater portion will expand in size.

Encroachment

As modified from Neuendorf et al. (2005), saltwater encroachment is the displacement of fresh groundwater by the advance of saltwater caused by its greater density. Note there is no distinction as to whether the encroachment was due to human activity. Freeze and Cherry (1979) used the term, intrusion, to infer the process is human induced (e.g., SJRWMD, 2017). For this report, the term intrusion is used to indicate a human-induced process. The term encroachment is used in this report to make no distinction between natural and human-made causes.

Encroachment has been an issue in Florida for decades. Black et al. (1953) mentioned that from the early 1900s through the early 1950s, saltwater had intruded into municipal systems in at least 19 of Florida's coastal counties. Purdhum et al. (1998) indicated that from the 1940s, through the early 1970s, when Florida's five WMDs were established, a portion of their responsibilities was to address saltwater intrusion. Their efforts are presented after a review of some of the most common methods of encroachment.

Prinos (2013), Prinos et al. (2014), and Prinos (2016) provide overviews of pathways for saltwater encroachment occurring in south Florida aquifers. One of the pathways mentioned by Prinos (2016), and of interest to this investigation, is the flow of saltwater inland though canals, rivers, boat basins, and coastal marshes and the subsequent leakage of the saltwater into groundwater. This type of encroachment has been observed in the south Florida aquifers, such as the Biscayne Aquifer, but it can also occur in other areas of Florida where this situation occurs. Prinos (2016) also mentioned that encroachment can occur laterally from the coast, moving inland along the base of the aquifer and then upward.

Recall, Krause and Randolph (1989) and Spechler (1994) mentioned several possible mechanisms of saltwater encroachment in an area where the FAS is fully confined (Figure 15). They include:

(1) the upward movement of unflushed pockets of relict seawater in the FAS,
(2) the landward movement of the freshwater/saltwater interface,
(3) regional upconing of saltwater below pumped wells,
(4) the upward leakage of saltwater from deeper, saline water–bearing zones through confining units, and
(5) the movement of saline groundwater from one aquifer to another because of failed, damaged, or improperly installed well casings.

Using conductivity and potentiometric head measurements, Xu et al. (2016) found strong evidence that periodically, sea water has moved inland through cave conduits in the FAS as much as 11 miles in Wakulla County (Figure 1). Under normal and high-rainfall conditions, aquifer potentials groundwater flow from Wakulla Spring toward the coast (Figure 19). However, under low-rainfall conditions, when aquifer potentials are low, sea water reverses flow and moves inland.

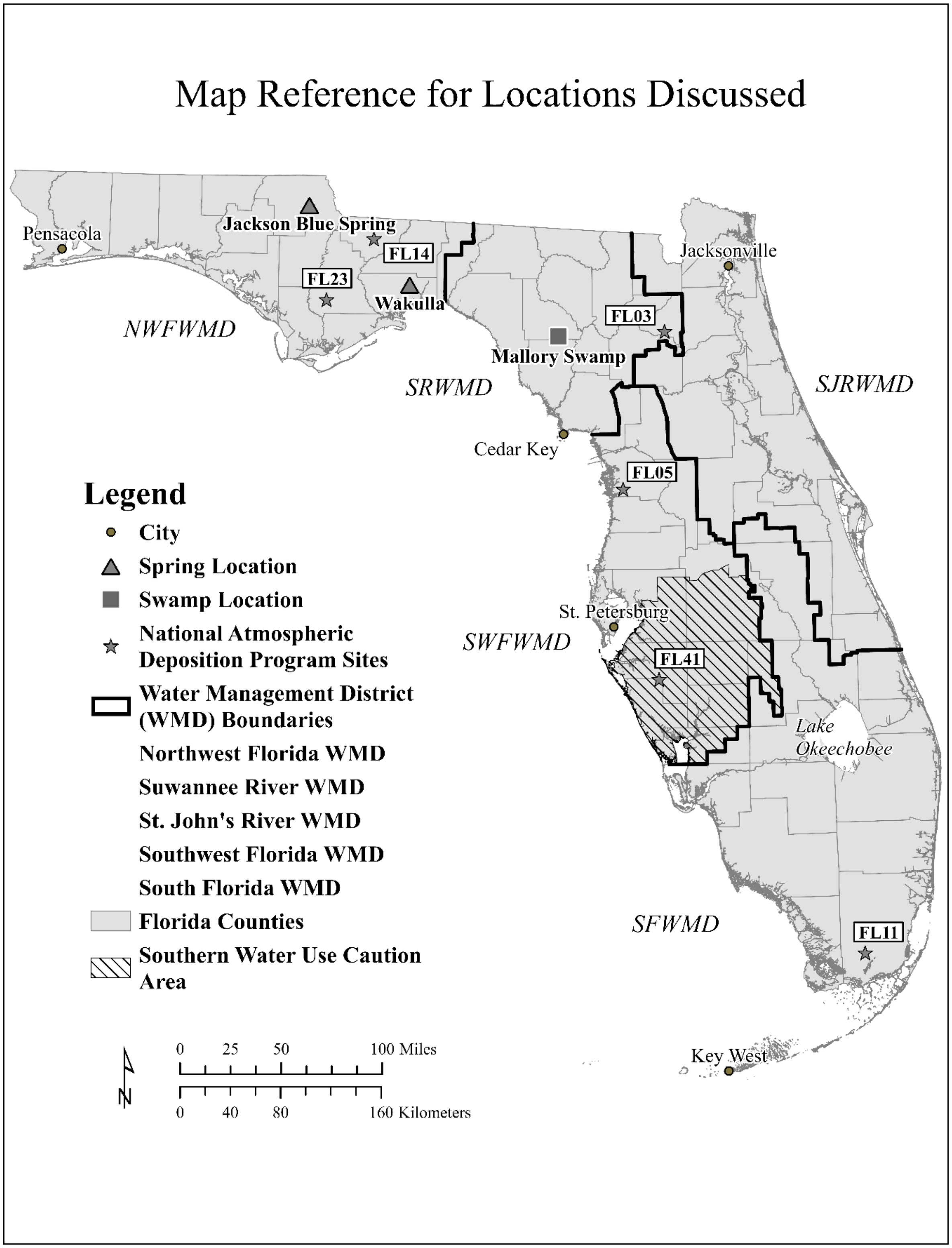


Figure 19. Miscellaneous locations.
Map incudes Jackson Blue Spring, Wakulla Spring, the Southern Water Use Caution Area, and cities with sea-level rise monitoring sites, and National Deposition Trend Network sites in Florida.

Water managers have developed a series of tools to address salt-water encroachment problems when they occur. The Southern Water Use Caution Area (SWUCA), located in the southern portion of the SWFWMD (Figure 19), is an example.

Prior to the initiation of the current investigation, saltwater encroachment had occurred within the FAS over a large portion of this area (SWFWMD, 2006). Similar to a process mentioned by Prinos (2016), the SWFWMD report stated that saline groundwater slowly entered the FAS from the coast, moved inland and upward within the lower portions of the FAS. Two approaches used by the district to address the problem are to: (1) reduce groundwater extraction from the FAS and (2) establish saltwater intrusion minimum aquifer levels (SWFWMD, 2013). The goal of establishing minimum levels is to slow down and eventually halt the rate of landward encroachment. The district (SWFWMD, 2006) also is using groundwater monitoring data, along with geographic information system analyses. and groundwater models, to define, track and project the freshwater/saltwater interface location along the SWUCA's coastal regions.

The SJRWMD and the SRWMD (Figure 19) together developed the "North Florida Southeast Georgia Groundwater Model (NFSEG v1.1), discussed by Durden et al. (2019). The model can simulate regional effects of pumping on groundwater levels, stream baseflows, and spring flows, in the three aquifer systems, including the FAS. Although not specifically stated, this model can assist in addressing potential saltwater encroachment issues. A similar synopsis can be said of the East-Central Florida Transient (ECFT) model (Central Florida Water Initiative, 2014) in the region of Orange, Osceola, Polk, Seminole, and Lake Counties. The model was developed from a joint effort of the USGS and the SWFWMD, the SJRWMD, and the SFWMD.

Encroachment has occurred in Santa Rosa, Okaloosa, and Walton counties in the NWFWMD (Figure 1). The district (NWFWMD, 2009) established a groundwater solute-transport model to assist in managing the encroachment. The report indicated the encroachment rate is very slow. Regarding encroachment into the FAS, two mentioned pathways are: (1) laterally from the Gulf of Mexico into the Upper Floridan aquifer, and (2) upward from the Lower into the Upper Floridan aquifer. Of note, in places, encroachment was downward from the surficial to the intermediate aquifer system.

Many of the same tools are used in the South Florida WMD area. In Miami-Dade County, (Figure 2) transient electromagnetic soundings also are used to map saltwater encroachment into the Biscayne Aquifer (Fitterman, 2014).

Figure 20 is a figure depicting active intrusion. The figure displays two shallow wells in an unconfined coastal aquifer. Over pumping in both wells has induced intrusion. The inland well has caused active vertical intrusion. The seaward well has caused active lateral intrusion. The slopes of the water table near both wells have been altered.

Fetter (2001) stated that passive encroachment occurs when some fresh groundwater has been diverted from the aquifer, yet the hydraulic gradient is still sloping toward the saltwater–freshwater boundary. In this situation, the boundary will slowly shift landward until it reaches an equilibrium position based on the new discharge conditions. Fetter stated, "Movement is slow. It may take hundreds of years for the boundary to shift a significant distance." Passive encroachment is displayed in Figure 21. The mechanisms controlling passive encroachment are the same as active encroachment. However, the rate of encroachment is much slower.

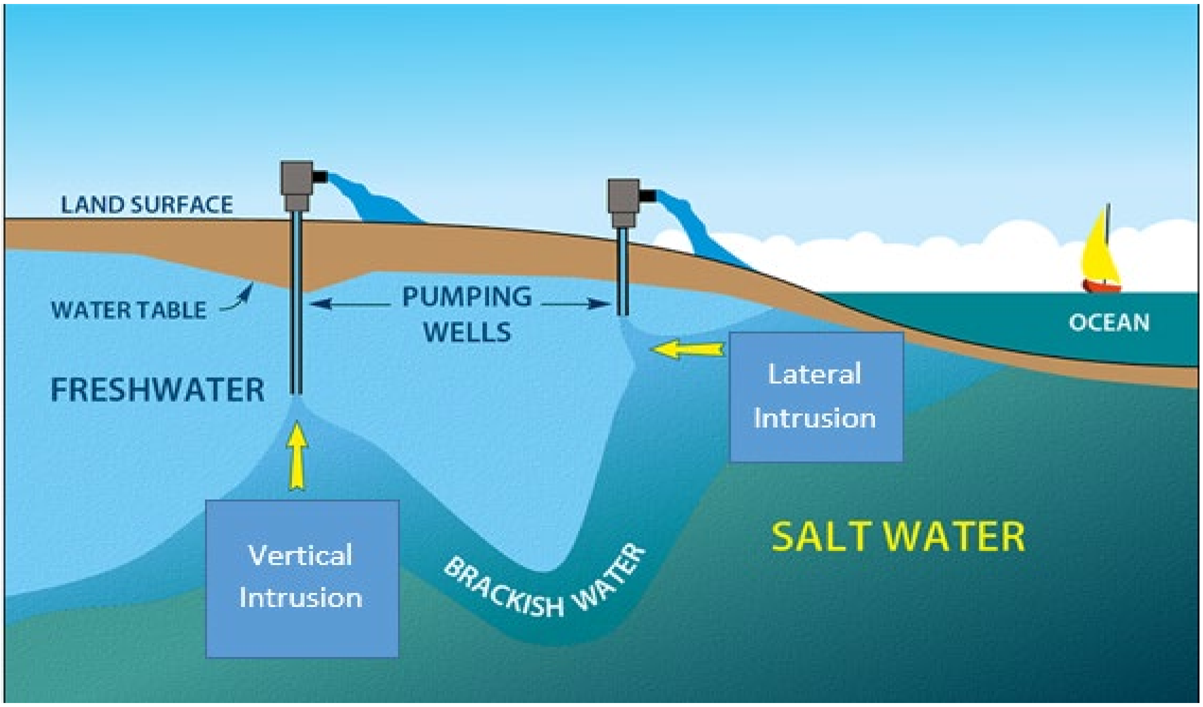


Figure 20. Unconfined coastal aquifer depicting active intrusion induced by pumping.
(Modified from SJRWMD, 2017.)

Figure 21 (A) depicts the water table in an unconfined, coastal aquifer. Figure 21 (B) shows that lowering the water table results in a landward and upward migration of the freshwater–saltwater interface. The groundwater flow lines continue toward the freshwater/saltwater interface along the coast, even after passive encroachment has occurred. Fetter mentioned that passive encroachment can occur inland, as well as in coastal areas. Werner (2017) stated that encroachment can be active, passive, or a combination of the two. For this study, the observed changes fit the passive encroachment definition for a large portion of the state. However, as stated previously, active encroachment also occurred.

Comparison of Changes in Coastal Versus Inland Groundwater

In Florida, are changes in Na and Cl concentrations more likely to occur along the coast or inland? The springs in Figure 22 and the wells in Figure 23 were used to address this question.

Comparisons in concentrations of Cl were made between: (1) coastal and inland spring water and (2) coastal and inland well water. Regarding springs, efforts were made to differentiate coastal and inland springs. Springs in the SJRWMD are mostly located near the St. Johns River. The river flows parallel to the northeast coast of Florida (Figure 1). For this reason, it was difficult to classify these springs as coastal or inland and the 15 SJRWMD springs were not used in this analysis.

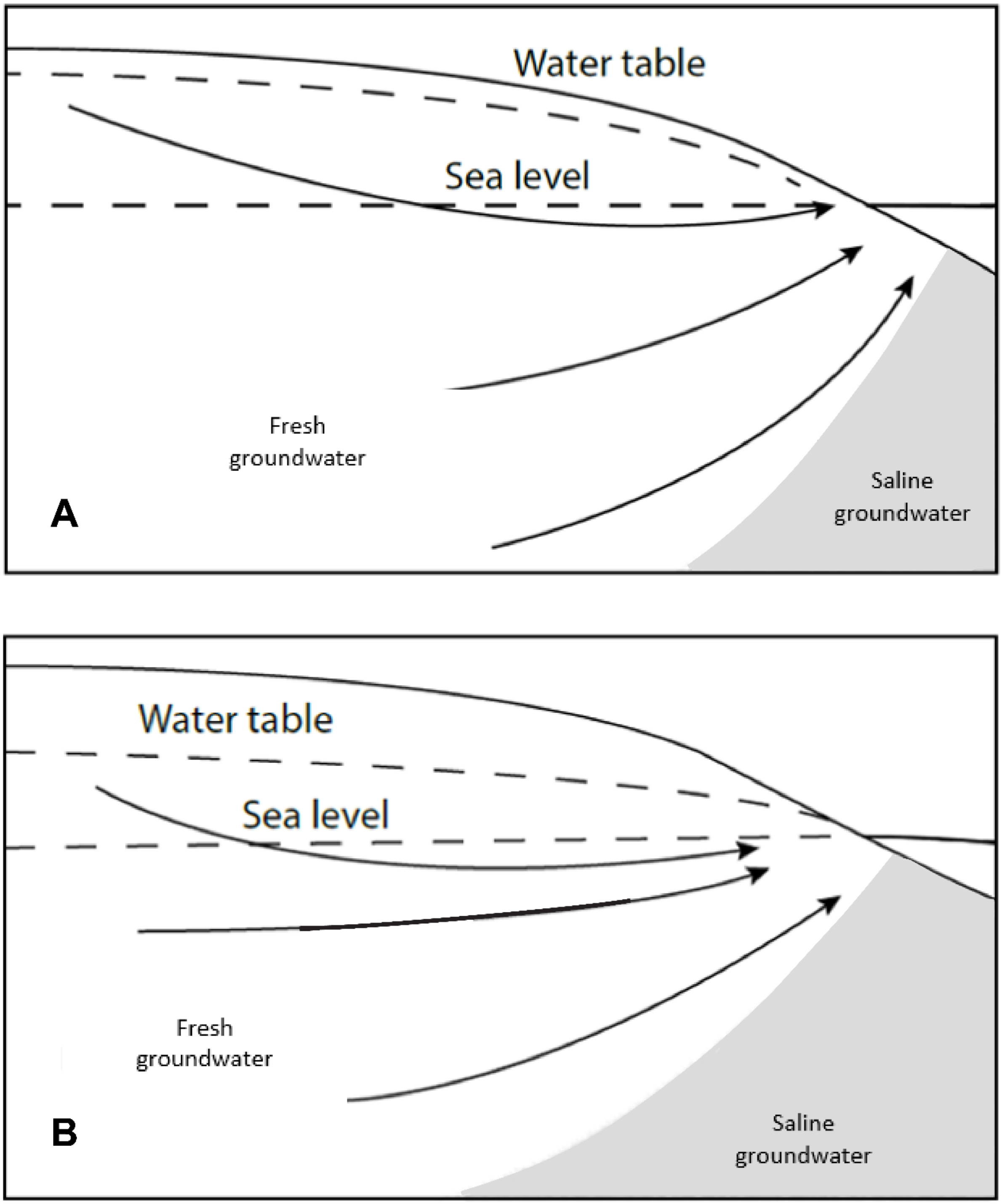


Figure 21. Unconfined coastal aquifer depicting before (A) and after (B) passive encroachment. (Modified from Fetter, 2001).

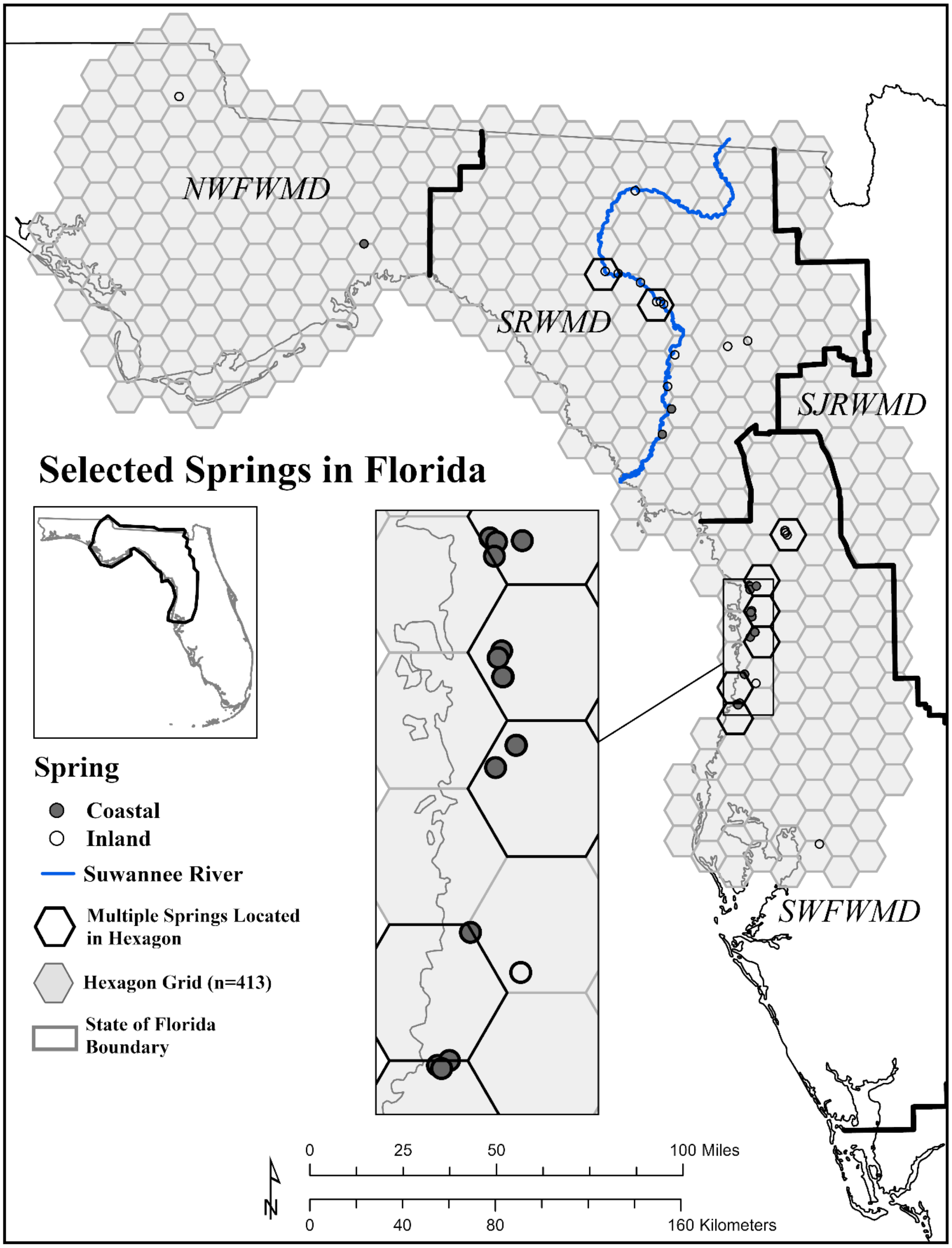


Figure 22. Location of coastal and inland springs, each in separate hexagons.

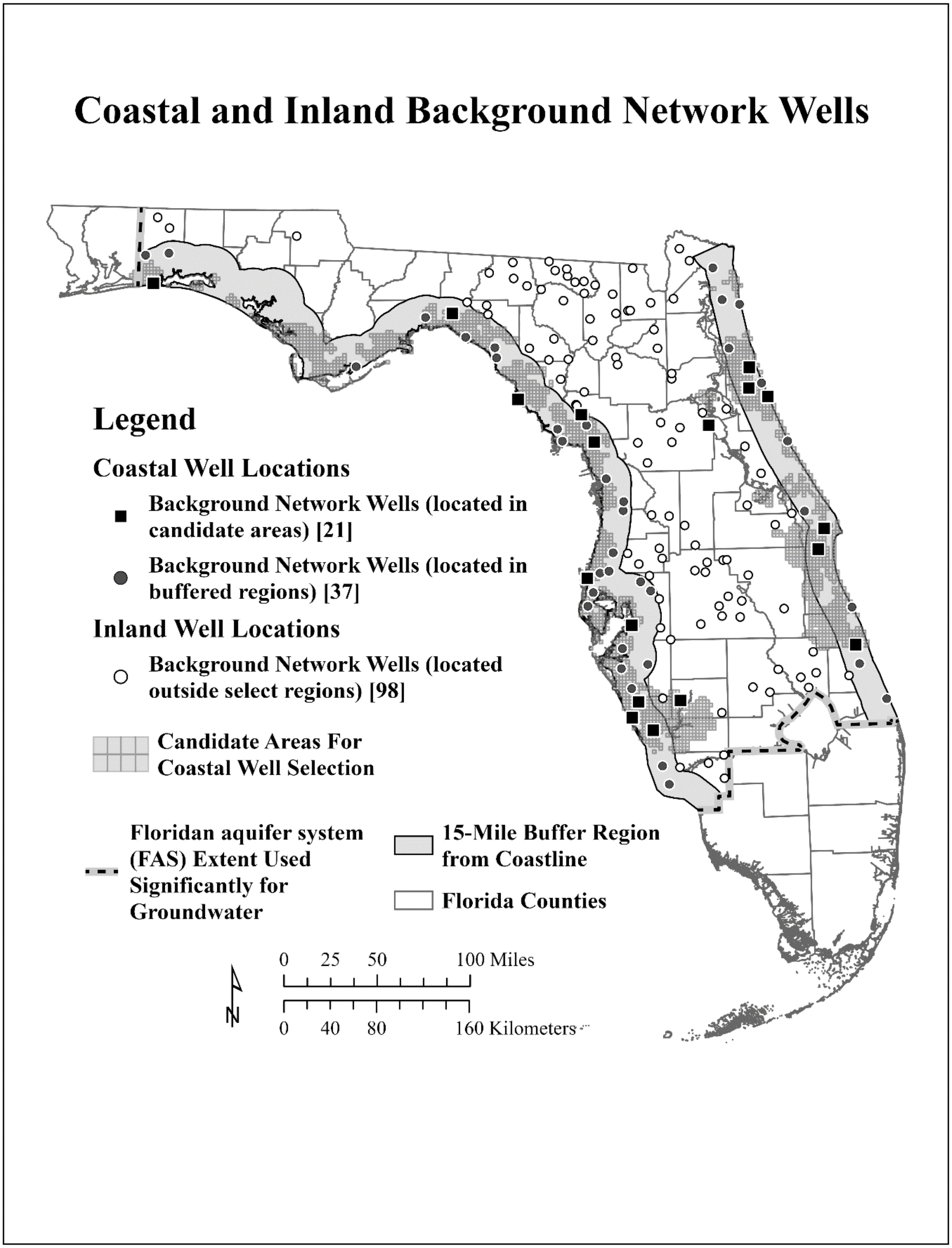


Figure 23. Location of coastal and inland Background Network wells, each in separate hexagons.

The remaining 40 springs in the study are located in the NWFWMD, SRWMD, and SWFWMD; on the Gulf coast side of Florida. Of these 40 springs, Wakulla and Jackson Blue (Figure 19) are the only two springs used that are in the NWFWMD (Figure 19). Wakulla is located near the coast (Figures 19) and was categorized as a coastal spring. Jackson (County) Blue is located near the Georgia-Alabama-Florida border and was classified as an inland spring. For the SRWMD (Figure 19), the Suwannee River (Figures 1 and 22) flows roughly perpendicular to the coast, from its mouth to about one-third to one-half of its distance within the district. This stretch contains four springs (Figure 22). In consultation with SRWMD staff, this study's authors classified the two springs located closest to the coast as coastal and all others as inland. Based on consultation with staff at the Southwest Florida WMD (Figure 1), springs in that district were categorized as coastal or inland.

Recall, to account for autocorrelation, only 31 springs were used for the WSR tests. Each is in a separate hexagon. Of the 40 non-SJRWMD springs, 21 are included in the group of 31 used for WSR tests. These 21 springs were used for the comparisons below. Ten springs were coastal and 11 were inland. Table 19 lists the individual coastal and inland springs used for the comparisons. Corresponding data are found in Appendix B. Figure 22 shows the spring locations in their respective hexagons.

Table 19. Coastal and inland springs used to compare chloride data.

Coastal Springs		Inland Springs	
NWFWMD	Wakulla	NWFWMD	Jackson County Blue
SRWMD	Manatee	SRWMD	Alapaha
SRWMD	Fanning	SRWMD	Hart
SWFWMD	Betty Jay	SRWMD	Hornsby
SWFWMD	Boat	SRWMD	Lafayette County Blue
SWFWMD	Bobhill	SRWMD	Rock Bluff
SWFWMD	Catfish	SRWMD	Suwannee County Blue
SWFWMD	Chassahowitzka Main	SRWMD	Troy
SWFWMD	Homosassa No. 2	SWFMWD	Buckhorn
SWFWMD	(Hernando) Salt	SWFWMD	Rainbow No. 6
		SWFWMD	Weeki Wachee

The Florida Water Resource Monitoring Council's (2019a) Salinity Network Workgroup assisted in selecting coastal and inland wells. One workgroup objective was to develop a Coastal Salinity Monitoring Network (CSMN) in areas most susceptible to coastal saline encroachment in the four northern WMDs (Figure 18) (Florida Water Resource Monitoring Council, 2019b). A similar coastal monitoring network already existed in south Florida (Prinos, 2016). Because the FAS is highly mineralized in this region, the south Florida network emphasizes the monitoring of the IAS and the SAS.

To locate CSMN wells, FDEP staff used data from its own groundwater monitoring networks. During a GIS map-overlay analysis, FDEP staff plotted groundwater areas having the greatest concentrations of Cl, SO_4, specific conductance, and TDS. Staff from the four northern WMDs reviewed maps of the candidate areas (vulnerable areas) and selected wells for inclusion. CSMN monitoring commenced in 2018.

If any of the 156 Background Network wells used for WSR analyses were located within the CSMN candidate areas (dark gray areas in Figure 22), they were classified as a coastal well. Only 21 coastal wells were selected with this method. To increase this number, a second GIS analysis was conducted. A 15 mi (24.1 km) arbitrary buffer area (light gray areas in Figure 23), derived from the coastal boundary of the Florida counties layer, was overlaid onto a map of Florida with the candidate areas. If any of the 156 Background Network wells were located within the candidate CSMN areas or within the buffer, they were classified as a coastal well. If not, it was considered an inland well. Note that two coastal wells are located inland of the buffer area. They were selected because they are located in candidate areas. A total of 58 wells were classified as coastal and 98 were classified as inland. Of these wells, 55 of the 58 coastal and 83 of the 98 inland wells had Cl data for both the E and L periods and are in separate hexagons. Note, unlike springs, the 138 BN wells that had Cl data for both the E an dL periods are located across the entire study area (Figures 1 and 23).

Median Cl values in the E and L periods at each site were determined for the four groups (Table 20). The sites and data in each category are in Appendix B. WSR tests were conducted, comparing concentrations of Cl in the E to the L periods in: (1) coastal springs, (2) inland springs, (3) coastal wells, and (4) inland wells. Based on corresponding p-values, all comparisons indicated differences. The p-values were 0.009, 0.045, 0.001, and 0.075, respectively.

Table 20 supplies evidence that concentrations of Cl tend to be greater in coastal springs and coastal wells relative to their inland counterparts across the study area. In addition, concentrations of Cl increased in spring water and in well water, in both coastal and inland areas.

Table 20. WSR test results comparing median concentration of Cl (E to L periods) for: (1) coastal springs, (2) inland springs, (3) coastal wells, and (4) inland wells, accounting for autocorrelation.

Sites	n	[1]Med E	Med L	Est Med [2]Diff	90% [3]CI of Diff	Wilcoxon Statistic	p-value	Direction
Coastal Springs	10	44.00	133.00	83.85	27.98, 262.98	45.0	0.009	Up
Inland Springs	11	6.50	7.50	0.83	0.23, 1.84	56.0	0.045	Up
Coastal Wells	55	21.00	36.00	3.00	0.58, 14.35	807.5	0.001	Up
Inland Wells	83	8.40	8.50	0.40	0.02, 0.78	1718.0	0.075	Up

[1]Med = median [2]Diff = difference [3]CI = confidence interval

Potential Drivers of Changes in Aquifer Potentials and Indicator Concentrations

Tables 6–10 and 12–13 show evidence of aquifer potential and groundwater quality changes. Although others will be presented, four potential drivers that are possibly the most significant are: (1) below-normal rainfall and subsequent declines in recharge, (2) groundwater extraction, (3) changes in sea-level, and (4) alteration of surface water drainage patterns.

Below-Normal Rainfall and Consequent Decreases in Recharge

The Southeast Regional Climate Center (SERCC) supplies Florida's annual mean precipitation data (Appendices C and D). Figure 24 shows a plot of Florida's mean annual rainfall for the period from 1931 to 1990 (Southeast Regional Climate Center, 2014). The moving average, smoothed, Lowess curve (solid line) increases from 1931 through the mid-1960s and then decreases through 1990. The grand mean for this period is 53.54 in (135.99 cm), and for this study is considered to represent baseline conditions (dashed line). Table 21 shows that the 1991–1998 mean rainfall was 57.90 in (147.07 cm), but only 50.97 in (129.46 cm) for 1999–2011. The break corresponds to a severe drought from 1999-2002 (Verdi et al., 2006). The drought could be a potentially significant driver of the observed changes.

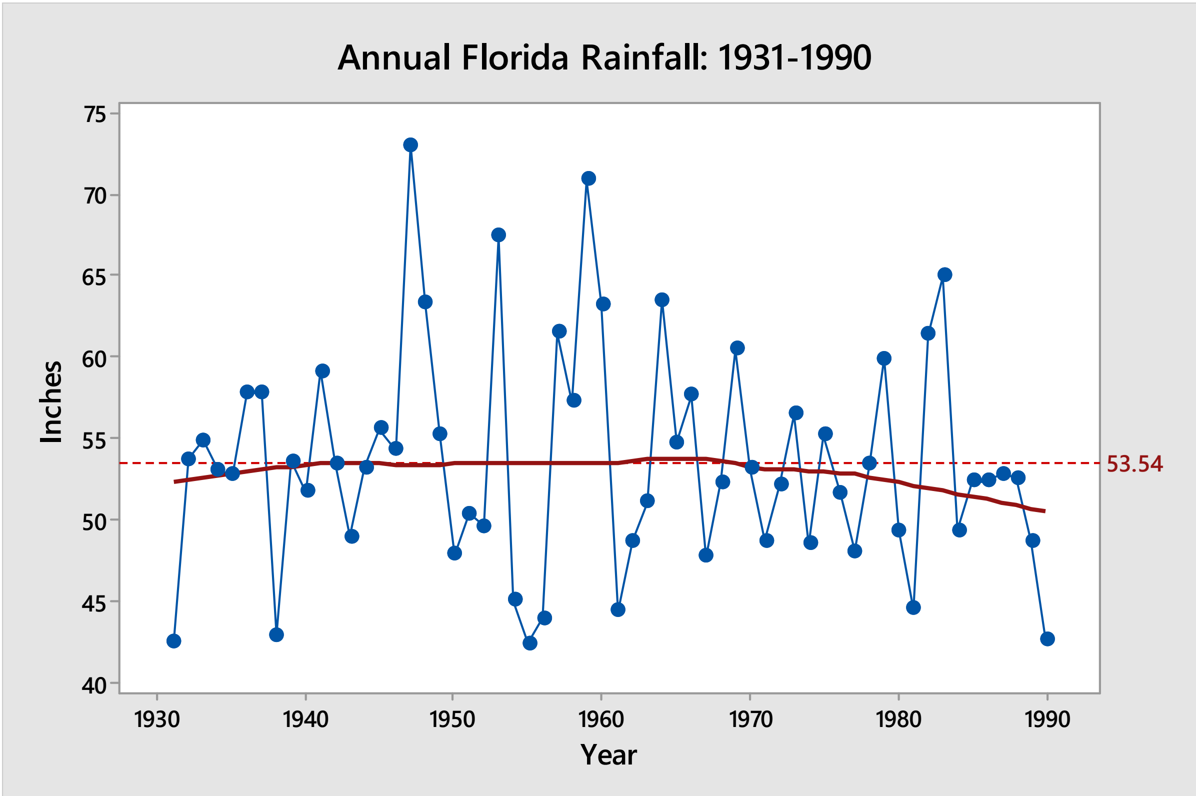


Figure 24. Mean statewide rainfall in Florida (1931–1990).
Dashed line is mean annual precipitation. Solid line is Lowess smoothing curve (Minitab 2017).

Table 21. Annual Florida rainfall for selected years.

Years	Annual Mean
1931–1990	53.54 in/yr (139.99 cm/yr)
1991-1998	57.90 in/yr (147.07 cm/yr)
1999–2011	50.97 in/yr (129.46 cm/yr)

Is there evidence of a trend in rainfall between 1991 and 2011? Merritt (2001) and Gordu et al. (2014) found that monthly precipitation data can be serially correlated in Florida. However, for the current investigation, annual mean statewide precipitation data were used instead of monthly values. An autocorrelation function graph (Figure 25) shows correlation between year and precipitation per lag, (Bras and Rodrigues-Iturbe, 1985). For the graph, the Minitab default p-value of 0.05 was used. The spikes correspond to lag correlations. Spikes above (upper) or below (lower) the solid 95% confidence interval lines indicate significant correlations (Figure 25). The figure indicates that, at a confidence of 95%, serial correlation was not an issue.

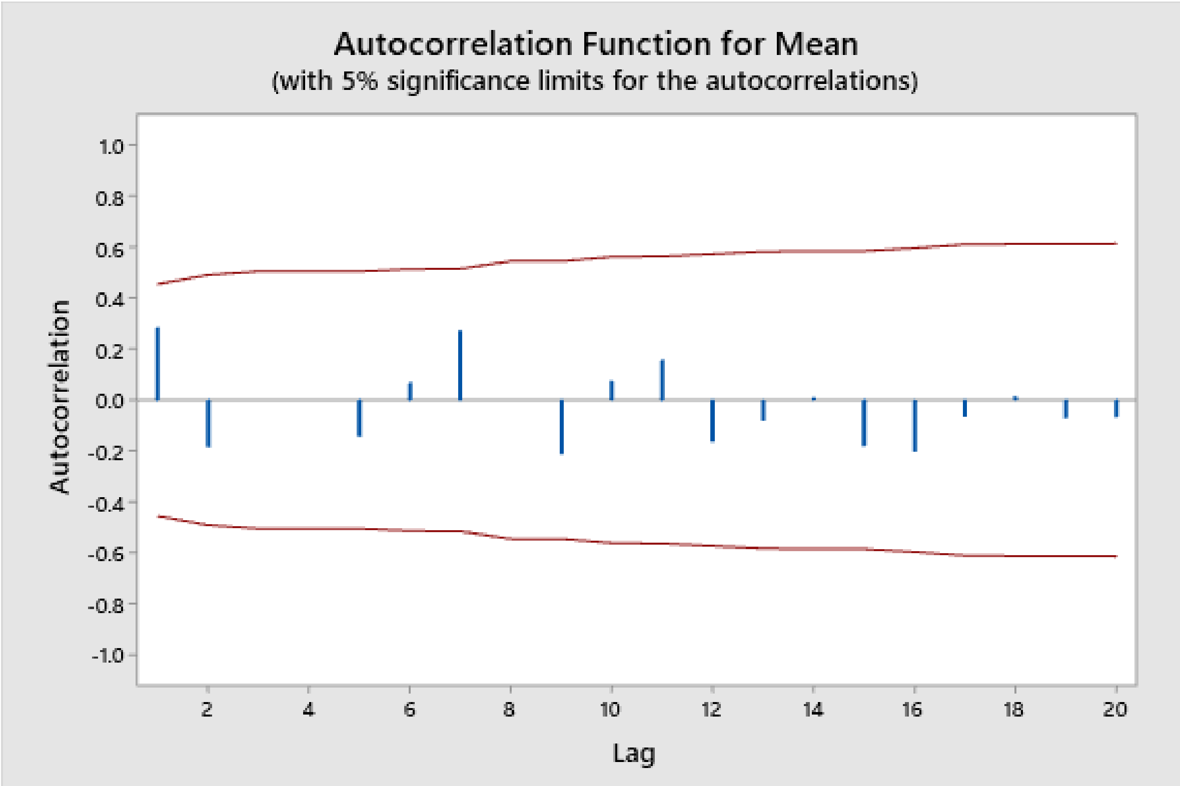


Figure 25. Autocorrelation between Florida's annual mean precipitation and lag (1991-2011). Solid horizontal line represents 0.0 autocorrelation. Solid red lines represent 95% confidence interval.

A regression was conducted using year as the predictor and annual mean precipitation as the response variables. The solid diagonal line in Figure 26 represents the best-fit regression line (Triola, 1998). The resulting p-value is 0.025, while the r^2 value is 0.20. From the model, a downward trend in rainfall occurred and about 20% of the variance can be explained. The Lowess curve (dashed line) in the figure indicates that rainfall declined throughout the 1990s, increased in the early to mid-2000s, and then declined for the remainder of the study period.

Could the downward rainfall trend have affected GWLs? For this investigation, only GWL data from the relatively shallow TN wells were used (Appendix B). Data from Background Network wells did not have enough data for analysis. A regression analysis was conducted using mean annual rainfall as the predictor and annual median GWLs from the TN wells as the response variable. Even with the small number of TN wells (16), the results (p-value = 0.017 and r^2 = 0.22) suggest that decreasing GWLs were affected by decreasing rainfall (Figure 27).

The relationship between below-normal rainfall and recharge can be complex. For example, based on work by Theis (1940), Ponce (2007) stated that, under equilibrium conditions in a pristine aquifer, discharge is equal to recharge. Groundwater extraction results in an increase in discharge from the aquifer. To maintain steady-state conditions, the increased discharge must be balanced by (1) an increase in recharge to the aquifer from another source (e.g., from an overlying aquifer), (2) a decrease in natural discharge from the aquifer, (3) a loss of storage in the aquifer, or (4) a combination of all three.

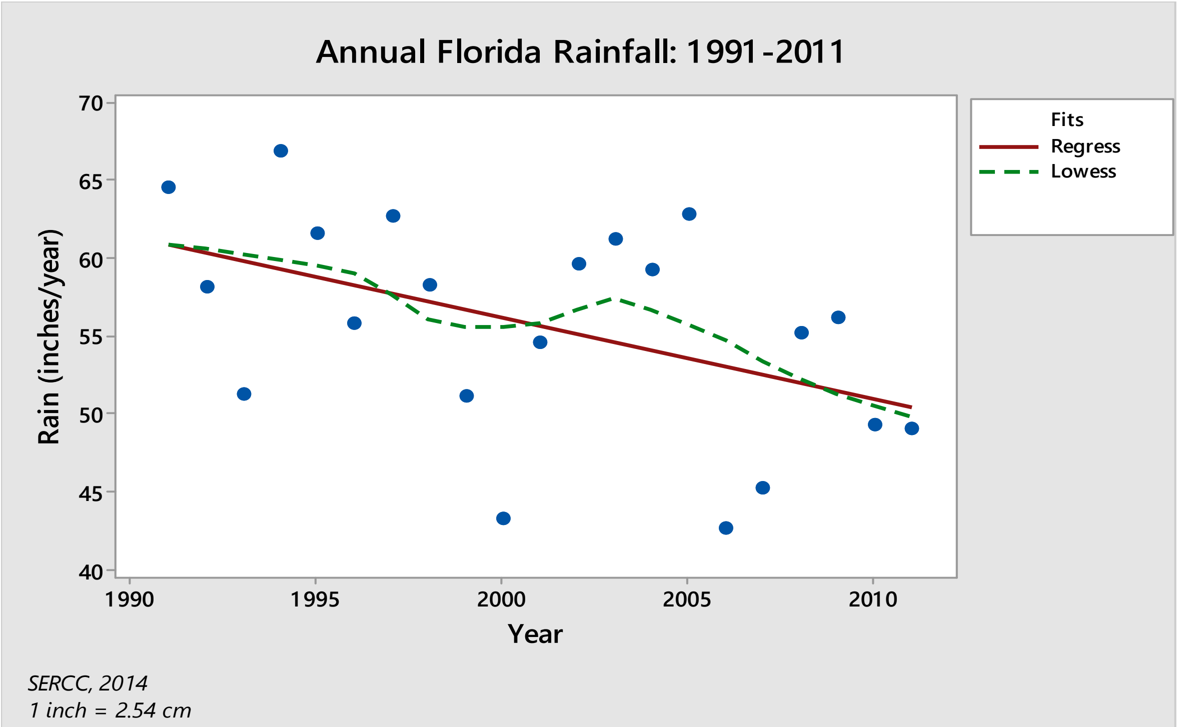


Figure 26. Mean statewide rainfall in Florida by year (1991–2011).
For regression line, p-value = 0.025, $r^2 = 0.20$.

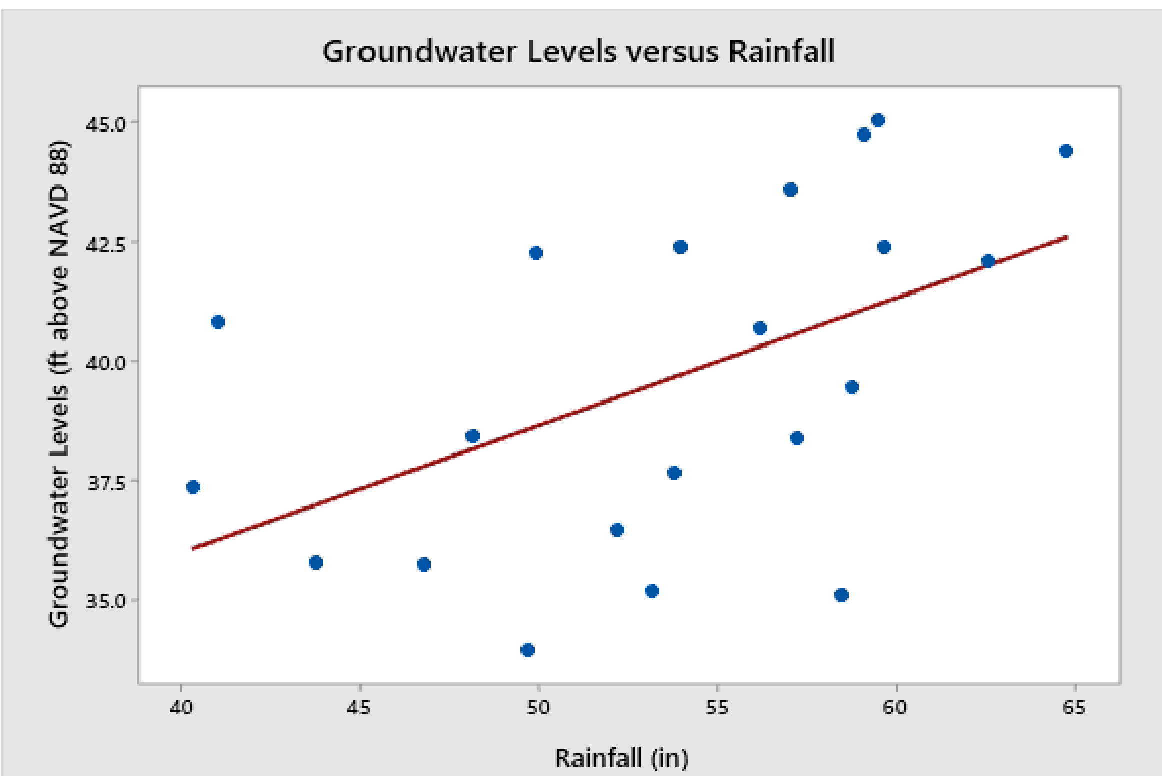


Figure 27. Median annual GWLs of TN versus mean annual Florida rainfall. (1991 – 2011). GWLs represent the annual grand median levels in TN wells. Rainfall reported as annual means for Florida. For regression line, p-value = 0.017. The $r^2 = 0.22$.

Ponce (2007) mentioned that where and aquifer is unconfined, extended periods of below-normal rainfall result in water table decline. Where it is confined, these conditions can lower the potentiometric surface and groundwater storage. However, below-normal rainfall still can result in additional recharge where the aquifer is thinly confined. Still, the recharge rate will be less than it would be under normal or above-normal rainfall conditions, leading to an overall decrease in storage. Similarly, groundwater withdrawals can induce some additional downward leakage in confined and thinly confined conditions, but only after storage has been reduced.

Based on the complexities presented above, estimating rates of recharge to the FAS can be difficult. Nevertheless, in a groundwater modeling investigation, Bellino et al. (2018) estimated the mean annual recharge to the FAS to be 7.5 in/yr (19.0 cm/yr). For the exercise that follows, assume the recharge is spread evenly across Florida.

Groundwater Withdrawals

Marella (2014) stated that the statewide freshwater withdrawal from all aquifers was 4.167 billion gallons per day (bgd; 15.76 million m^3/day) in 2010, and the reported extraction has decreased since 1990 (Marella, 2014). Marella mentioned that 2.57 bgd (9.73 million m^3/day) of the 2010 withdrawal volume was from the FAS; about 61.7% of the total.

How does the 2010 FAS volume compare to the mean annual rainfall and estimated mean annual recharge to the FAS averaged across the entire state? To address these questions, suppose the estimated 2.571 bgd in groundwater withdrawals (GWWs) was spread evenly across the state (water height). To compare GWWs to either rainfall deficit or to recharge, a conversion is made from bgd to a flux in inches for one year. For equation (1), the area of Florida (Appendix F) is 57,481 square miles (mi^2), and conversion factors (CFs) in equation (1) are labeled CF1 – CF3, where: English units of measurement are used.

CF1 = (1.00 ft^2) / (7.48 gal) = 0.1337 $\frac{ft^3}{gal}$
CF2 = 1.00 mi^2 = 27,878,400 $\frac{ft^2}{mi^2}$, or in exponents = 2.79 $E7$ $\frac{ft^2}{mi^2}$, and
CF3 = 12.00 $\frac{in}{ft}$.

Regarding GWWs, multiply the 2.571 bgd figure by 365 to get 0.938 trillion gallons per year. In exponents, this sum equals 9.38 $E12\frac{ft^3}{gal}$. Insert the latter figure and CFs into equation (1):

$$\text{water height} = \frac{(GWWs\ x\ CF1)}{(Area\ of\ Florida\ x\ CF2)}\ \text{ x CF3 = annual flux (in) over Florida} \quad (1)$$

$$= \frac{\left(9.38\ E11\ x\ 0.1337\frac{ft^3}{Gal}\right)}{(57481\ mi^2 x\ 2.788\ E7\frac{ft^2}{mi^2})}\ \text{x}\ 12\frac{in}{ft} = \frac{(1.255\ E11\ ft^3)}{(1.602\ E12\ ft^2)}\ \text{x}\ 12\frac{in}{ft}$$

= 0.94 in $(2.39\ cm)$

The estimated volume of GWWs across Florida in terms of flux is about 0.9 in per year (2.4 cm per year). Recall, the mean estimate of recharge to the FAS per year is 7.5 in (19.0 cm). Based on this estimate, GWWs represent about 13% of the mean recharge estimate.

In terms of volume, several years of GWWs is equal one year of recharge. Thus, for the period 1991–2011, below-normal rainfall and subsequent recharge declines have a greater probability of affecting aquifer potentials and changing saline and rock-matrix indicator concentrations than do GWWs. Also, it should be reiterated that the net annual GWWs were derived from three summarized years; 1990, 2000, and 2010. There was a net decrease between 1990 to 2010.

Sea-Level Rise

Gully and Florea (2016) mentioned that rising sea-levels eventually result in rising aquifer potentials. This will result in an increase in discharge and a reduction in aquifer storage (of fresh water). As discharge increases, concentrations of saline and rock-matrix indicators can increase. Thus, sea-level rise might be a driver of the observed changes in this study. Based on five monitoring stations in Florida (Fernandina, Key West, St. Petersburg, Cedar Key, and Pensacola (Figure 19), Walton (2007) stated that between 1950 and 1999, sea level rose between 3 and 9 in (8 and 23 cm). Based on Walton's data and using linear extraction, the estimated sea level increase is between 0.06 and 0.18 in (0.15 and 0.46 cm) per year from 1991 through 2011. Walton predicts sea level in Florida could rise another 10 in (25 cm) between 2006 and 2080. By 2100, Wigley and Raper (1992), the US Environmental Protection Agency (2017), and Lindsey (2019) predict that globally, sea level could rise as much as 4.0 ft (1.2 m), while, National Oceanographic and Atmospheric Administration (NOAA) (2019) projects that as an extreme estimate, sea levels could rise as much as 8.2 ft (2.5 m). Projections for Florida are rare. For the Miami-Dade County region (Figure 1), Bloetcher et al. (2011) predict sea level rise to be between 2 and 3 ft (0.5 to 1.0 m) by the end of the 21st century.

Using Walton's (2007) higher annual estimate of sea-level rise 0.18 in (0.46 cm) per year for the duration of the current study, rising sea levels represent about 2% of the recharge estimates presented earlier [0.18 in (rise) / 7.5 in (recharge)]. Using Walton's lower estimate, rising sea levels represent less than 1% of recharge. With a limited sea-level data set, it is unknown whether the rise in sea level played a significant role in changing the observed indicator concentrations. However, from a relative perspective, the preceding exercises suggests that rising sea levels played a minor role, relative to below-normal rainfall and groundwater extraction.

Alteration of Surface-Water Drainage

Often, for various reasons, landowners alter surface water drainage patterns. If alterations are made in recharge areas, they can result in unexpected, adverse consequences. As an example, in the 1980s tens of thousands of acres of Mallory Swamp in southern Lafayette County in north-central Florida (Figure 18) were partially drained to increase the productivity of pine plantations (Kaufman, 2005). In this area, a surficial aquifer overlies a semi-confining thin clay bed, which in turn overlies the FAS (Copeland, 1982). The area provides natural recharge to the FAS. Partially draining the swamps reduced water levels. Less groundwater in the surficial aquifer reduced recharge to the underlying FAS, causing GWLs to decline. The lowering of the GWLs increased the potential for rock-matrix and saline indicator concentrations to increase in the FAS, beneath the swamp.

In urban areas, the construction of stormwater management systems often alters surface drainage and can reduce recharge (Bjerklie et al., 2010; Tremayne, 2010). Urban and suburban land uses constitute 15% of Florida's land area (Appendix F).

Miller (1997) mentioned that saltwater encroachment can occur by altering drainage patterns. As examples, Miller mentioned that canals in south Florida's coastal areas lowered water table levels and allowed saltwater levels to rise, causing saltwater to migrate inland. Although Miller's examples occur in the Biscayne Aquifer. In areas where the FAS is under unconfined conditions, and where canals have altered drainage patterns, encroachment into the FAS can occur.

From a qualitative perspective, altering surface water drainage and its effects on FAS recharge is important across Florida. However, for surface water drainage changes to have influenced this study's trend results, the most significant changes must have begun near or after the initiation of this study. Since the drainage canals existed prior to beginning this study, their effect is unknown.

Potential Origins of Temporal Trends in Florida's Groundwater

From 1991 through 2011, significant changes occurred in groundwater conditions of the FAS. Tables 6-10 and 12-13 indicate that concentrations of both rock-matrix and saline indicators increased. Upchurch (1992) reviewed the major origins of temporal change in Florida's groundwater. Tables 22 and 23 represent a modified version of Upchurch's work. The two tables emphasize source origins of changes in the unconfined and thinly confined portions of the FAS (Figure 3). However, many of these potentially can apply to the confined portions of the FAS. Note the term swallet. Modified from Scott et al. (2004), it is a sinkhole where surface water disappears below ground in a limestone region.

Table 22 lists several probable causes of change not associated with changing aquifer potentials (heads) for both saline and rock-matrix indicators. The table indicates that various products, including fertilizers and waste products, often originating locally at land surface, are potential causes for increased Alk, Ca, Cl, K, Mg, Na, SO_4, and TDS concentrations. If statewide changes in these analyte concentrations are observed, then significant concentration increases for these substances must have occurred over most of Florida's groundwater basins and spring sheds. Recall that Background Network wells are in areas with a low probability of being contaminated from land use activities (Scott et al., 1991). For this reason, it is unlikely the sources mentioned above are major sources of increased concentrations for these indicators in most BN wells.

Table 23 lists several probable causes potentially associated with declining aquifer potentials. The table reveals that declining potentials can cause increased concentrations of saline and rock-matrix indicators and reduce the size of freshwater portions of the FAS.

Table 22. Potential origins of temporal trends in Florida's groundwater not associated with declining aquifer potentials.
(Modified from Upchurch, 1992).

Indicator	Direction	Interpretation when there is a pattern
Alk	Up	1. A connection with the surface that allows for less efficient recharge (e.g. a swallet becomes closed or blocked). 2. A new, more alkaline water source has been added to the discharge system.
Ca	Up	1. A connection with the surface that allows for less efficient recharge (e.g., a swallet has become closed or blocked). 2. A new, more calcium-rich water source added to the discharge system.
Cl	Up	1. A new source of chloride has been added to the discharge system.
K	Up	1. Increased use of potassium-rich fertilizers.
Mg	Up	1. Increased use of magnesium-rich soil supplements.
Na	Up	1. Increased waste disposal in the discharge system
SO_4	Up	1. Increase in the use of gypsum as an amendment for alkaline soils. 2. Increased waste sources in the discharge system. 3. Increased industrial sources in the discharge system.
TDS	Up	1. New sources of waste added to the discharge system.

Table 23. Potential origins of temporal trends in Florida's groundwater associated with declining aquifer potentials.
(Modified from Upchurch, 1992).

Indicator	Direction	Interpretation when there is a pattern
Aquifer Potentials: Discharge and GWLs	Down	1. Decreased recharge rates (less rainfall) and resulting declines in levels of potentiometric surface. 2. Increased pumping stress on the aquifer (groundwater withdrawals).
Alk	Up	1. Decreased proportion of conduit discharge; increased proportion of diffuse discharge. 2. Relative contribution of water held in storage increasing because of longer residence time and more opportunity to react with the host aquifer.
Ca	Up	1. Decreased proportion of conduit discharge; increased proportion of diffuse discharge. 2. Relative contribution of water held in storage increasing because of longer residence time and more opportunity to react with the host aquifer. 3. Encroachment of saline water.
Cl	Up	1. Saline water encroachment by the lateral movement of seawater, by the upward movement of highly mineralized water, and/or by the upconing of water from below.
K	Up	1. Saline water encroachment, either a result of increased pumping and/or a reduction in aquifer potentials.
Mg	Up	1. Increased proportion of diffuse discharge relative to conduit discharge. 2. Upward movement of mineralized water and/or lateral migration of saline water.
Na	Up	1. Saline water encroachment, either a result of increased pumping and/or a reduction in aquifer potentials.
SO_4	Up	1. Increased proportion of diffuse discharge relative to conduit discharge. 2. Upward movement of saline water from the bottom of the UFA, and/or saline and/or connate water encroachment.
TDS	Up	1. Decreased proportion of conduit discharge; increased proportion of diffuse discharge relative contribution of water held in storage increasing because of longer residence time and more opportunity to react with the host aquifer). 2. Saline water encroachment.

The work of Upchurch (1992) is not a complete list of potential sources of saline and rock-matrix indicators. At least three additional factors are:

(1) contribution of increased amounts of carbon dioxide in the atmosphere,
(2) contributions of precipitation deposition chemistry, and
(3) effects of evapotranspiration on groundwater chemistry in unconfined portions of the FAS.

Upchurch (1992) mentioned that as precipitation percolates into Florida's soils and aquifers, weak acids react with soil minerals or rocks having organic material to produce CO_2 gas. Increased CO_2 concentrations ultimately can affect the pH in underlying aquifers. In carbonate aquifers, this can result in increased Ca, Mg, and bicarbonate (reported as Alk) concentrations. Lindsey (2018) reported that CO_2 concentrations in the Earth's atmosphere has increased from about 355 to 389 parts per million during the time span of this study. Thus, it is possible that increased atmospheric CO_2 concentrations could affect the observed results for Ca, Mg, and Alk, in Tables 6-10. Nevertheless, it is unlikely that increased atmospheric CO_2 concentrations would result in increased saline indicator concentrations in aquifers over the study area.

To address the potential effects of rainfall deposition chemistry, data were available from six National Trend Network sites of the National Atmospheric Deposition Program (NADP) (2020) in Florida. (Figure 19). For the study, grand mean concentrations were determined for Ca, Mg, K, Na, Cl, and SO_4 for the available years during the study (Appendix G). These means were compared to the median concentrations of like indicators from the 156 BN wells (Table 24) for the E period. For each indicator, the ratio of its concentration in rainfall to its concentration in BN groundwater was determined. Ratios are all 0.09 or less, suggesting rainfall diluted (lowered), rather than increased, rock-matrix and saline indicator concentrations.

Table 24. Indicator concentrations in rainfall compared with FAS groundwater.

[1]Indicator	[2]Mean (Rainfall) (n = 6)	Med (156 BN Wells)	Ratio (Rain/FAS)
Ca	0.28	59.20	0.005
Cl	0.59	11.50	0.051
K	0.09	1.00	0.090
Mg	0.15	12.75	0.012
Na	0.33	9.00	0.037
SO_4	0.74	11.10	0.067

[1]Concentrations in mg/L [2]From National Atmospheric Deposition Program Trend Network

Sienko and Plane (1971) mentioned that heated water can evaporate from an open surface. In studying the water quality of two lakes during an extended drought, Franz et al. (2013) stated that major ions in the lakes became more concentrated as the drought continued (as evaporation occurred). This suggests during extended droughts when recharge is low, concentration increases in the unconfined FAS may occur. Conversely, when recharge is high, major ion concentrations may become diluted.

A Review of Changes in Chloride Concentrations in Inland Wells

Krause and Randolph (1989), Spechler (1994), and Spechler (2001) theorized that relict sea water may be a major source for increased saline indicator concentrations in portions of the FAS in northeastern Florida. The authors of the current study presented a conceptual model that increasing Cl concentrations across Florida could be from saline groundwater moving upward from deeper portions of the Upper Floridan aquifer, or its equivalent where the FAS is undifferentiated, due to a decrease in the potentiometric surface. In an investigation of spring water chemistry in the SRWMD, Moore et al. (2009) observed that upward movement of groundwater from deep within the Upper Floridan aquifer may, at times, deliver up to 50% of spring discharge. The proportion of deep water is dependent on head gradients within the aquifer. The authors stated that the deep water provides the major source of Na, Cl, K, Mg, and SO_4.

Consider the 83 inland BN wells (Figure 23). They are spread across the entire study area. An FDEP database retains information regarding the FAS confinement conditions of the wells. Table 25 displays FDEP data regarding the relationship of Cl concentration and confinement conditions using three well subdivisions: (1) combined (confined and unconfined), (2) confined, and (3) unconfined conditions. First, consider all wells (combined). In units of mg/L, Cl concentrations decreased in 28 and increased in 46 wells. From Table 20, this represents an upward trend (p-value = 0.075). Trend analyses were not conducted separately for the confined or the unconfined wells. However, Table 25 shows Cl concentrations decreased in 23 and increased in 37 wells under confined conditions. Concentrations decreased in 5 wells under unconfined conditions and increased in nine. In mg/L, for combine wells, the median change in Cl concentration was 0.40 mg/L. For wells under confined conditions the change was 0.49 mg/L, and for unconfined conditions, it was 0.22 mg/L.

Table 25. Changes in Cl concentrations in 83 inland Background Network wells between the early and late periods.

83 Inland Wells (Study Area)	Direction of Change (L – E)			Median of the Differences		90% Confidence Interval
	Decrease (n)	No Change (n)	Increase (n)	n	(mg/L)	(mg/L)
[1]Combined	28	9	46	83	0.40	0.02, 0.78
Confined	23	9	37	69	0.49	0.00, 1.00
Unconfined	5	0	9	14	0.22	-0.33, 0.73

[1]Combined = confined and unconfined wells

Table 25 suggests an upward change in Cl concentrations, between the E and L periods, for each confinement division of BN wells. Recall, BN wells are in areas minimally impacted by humans. As suggested earlier, where the FAS is under unconfined conditions, evaporation could cause major ion concentrations to increase during dry periods. However, for confined conditions, increased Cl concentrations support the concept that this Cl originates from deeper, more saline groundwater, including unflushed relict sea water.

Post-Study Observations

An inspection of Florida’s annual mean rainfall (2012-2019) can assist in understanding how groundwater conditions might have changed since 2011. First, Figure 28 depicts Florida's mean annual rainfall from 1991 through 2019 (SERCC, 2019). Note how the best-fit line (solid) line decreased through 2019. On the other hand, the Lowess curve (dashed line) reached a minimum in 2008 and then increased through 2019. Second, it was mentioned that 1931–1990 was considered baseline for Florida's rainfall (Figure 24). Rainfall increased from the late 1930s to the mid-1960s. From that time until 1990, rainfall (Lowess curve) decreased. Finally, Figure 26 shows annual mean Florida rainfall during the study period (solid diagonal) declined. Comparing Figure 28 to Figures 24 and 26 suggests that the current investigation occurred at the tail end of long period of declining rainfall over Florida, and that rainfall has been increasing since about 2008.

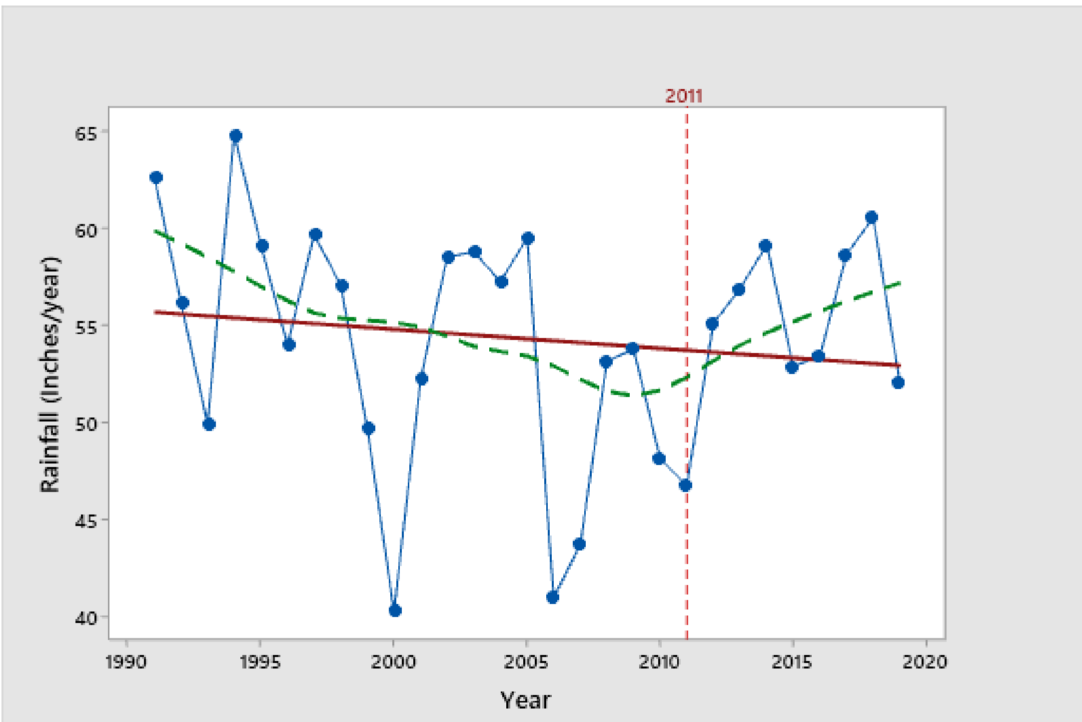


Figure 28. Mean annual statewide rainfall in Florida (1991–2019).
Solid line represents best-fit line. Vertical dashed line represents end of study. Larger dashed line represents Lowess curve.

If rainfall reduction is the primary driver of the trends observed in this report, with time and continued rainfall increases, the trends observed in this study could eventually reverse. However, rising sea levels potentially can offset the reversal. In addition, as sea level rise increases, passive encroachment will become an ever more important issue in managing Florida’s water resources. Another possible driver of passive encroachment in the future is an increase in groundwater withdrawals.

SUMMARY

Copeland et al. (2011) presented evidence that for the period from 1991 through 2003, spring discharges and groundwater levels declined. In addition, concentrations of many indicators such as sodium, chloride, sulfate, and total dissolved solids increased in groundwater across Florida. The current investigation is a follow-up study. It is restricted to the FAS and covers the period from January 1991 through December 2011 (21 years). The goals of the study were to: (1) evaluate the FAS for changes in spring discharge, groundwater levels, plus changes in concentrations of saline and rock-matrix indicators, and (2) if changes were observed, estimate the areal scale and rates of those changes.

Data were obtained from 184 BN wells, 16 TN wells, and 55 springs. Indicators are found in Table 1. The BN wells were selected randomly. Statistical analyses were used to test for indicator trends. The WSR test was used on data from the BN and TN wells and from the springs. To address serial correlation effects on each indicator, medians were determined at each well for two non-overlapping, seven-year periods, early (E) and late (L). Areal/spatial autocorrelation effects were addressed by using a GIS layer containing hexagons with a diameter of 50,000 ft (15,240 m) to select the wells. By allowing no more than one monitoring site per hexagon, this effort reduced the number of monitoring sites to 156 BN wells, 15 TN wells, and 31 springs.

The BN wells are only sampled sporadically, whereas the TN well and spring sites generally are sampled on a monthly or quarterly frequency. As such, for each indicator, the RK test could be used for trend analyses at each site, and then combined for an analysis over the area covered by the two sets of Trend sites (Figure 6). It should be noted that the RK test can account for serial and areal autocorrelation. Table 4 displays the three groups of monitoring sites and corresponding trend tests used.

Groundwater condition changes were observed in the FAS over most of Florida. Changes included decreases in spring discharge and groundwater levels (together referred to as aquifer potentials), along with increases in the concentrations of saline indicators (sodium and chloride) and rock-matrix indicators (alkalinity, calcium, magnesium, potassium, sulfate, and total dissolved solids). Tables 14 and 15 summarize the observed trends.

For selected indicators, estimated rates of change were calculated. Spring discharge decreased by an estimated -2.9 ft^3/sec per decade (-0.8 m^3/sec). Groundwater levels decreased by about -0.6 ft (-0.8 m) per decade. Also, at a per decade rate, concentrations of sodium and chloride for each water source increased by less than 2.0 milligrams per liter (mg/L), while total dissolved solids increased at an estimated rate of less than 20.0 mg/L.

To assist in explaining the observed changes, a conceptual model is presented, based on the Ghyben-Herzberg principle (Freeze and Cherry, 1979; Fetter, 2001). In the model, all of Florida's freshwater aquifers and confining units are conceptually combined into a freshwater lens. Freshwater floats on the denser saline water present in the deeper portions of the aquifer systems. During long periods of below-normal rainfall, if the rate of recharge is less than discharge, the lens shrinks in size. With less recharge, aquifer potentials decline. In the FAS, as this process continues, the deeper and more mineralized groundwater replaces the shallower and fresher groundwater. Concentrations of saline and rock-matrix indicators increase. Along Florida's

coasts, saline water tends to migrate inward and upward into the formerly freshwater portion of the aquifers. In Florida's interior, as aquifer potentials decrease, the probability of saline groundwater migrating upward increases. During extended periods of above-normal rainfall, given enough time and adequate recharge, the situation reverses. With enough increased recharge, the increase in the aquifer potentials on the freshwater lens forces the saline groundwater to move downward and outward. The lens increases in size and concentrations of saline and rock-matrix indicators eventually decline.

As sea level rises, the model becomes more complex. Rising sea-levels also may cause the observed changes. Globally, the National Oceanic and Atmospheric Administration (NOAA, 2019b) stated that between 1993 and 2014 sea level rose by about 0.22 ft (0.07 m). Projections by Walton (2007), the U.S. Environmental Protection Agency (2017), and Karl et al. (2009) suggest that sea level may rise by 0.46 ft (0.14 m) by the end of the 21st century. The NOAA (2019b) projects that by the end of the century, global mean sea level is likely to rise at least 1.0 ft (0.3 meters) above 2000 levels. It also projects that as an extreme estimate, sea levels could rise as much as 8.2 ft (2.5 m).

Four high-level drivers of the observed changes are: (1) below-normal rainfall and subsequent declines in recharge, (2) groundwater withdrawals (extraction), (3) sea-level rise, and (4) alteration of surface water drainage patterns and reductions of recharge areas. Evidence suggests that below-normal rainfall and correspondent declines in recharge are the most predominant cause of the observed changes, followed by groundwater extraction, There is not enough evidence to make a relative comparison of drivers (3) and (4), relative to (1) and (2).

As defined by Neuendorf et al. (2005) saltwater encroachment is the displacement of fresh groundwater by the advancement of saltwater due to its greater density. Encroachment has been an issue in Florida since the early 20th century (Prinos, 2016) and usually occurs along Florida's coasts. Inland encroachment has been observed in northeast Florida (Krause and Randolph,1989; Spechler, 1994; and Spechler, 2001). These authors suggested the saltwater comes from upward movement of saline groundwater from the deeper portions of the Upper Floridan aquifer, and this movement may be caused by the lowering of groundwater levels. In an investigation of spring water chemistry in north-central Florida, Moore et al. (2009) observed the movement of groundwater from deep within the Upper Floridan aquifer, due to pressure gradient, may, at times, deliver up to 50% of spring discharge, depending on head gradients within the aquifer. The deep water is a source of major ions, including sodium and chloride.

Fetter (2001, p. 330) used the term passive encroachment to describe a slow encroachment process. He stated that, "…it may take hundreds of years for the (freshwater/saltwater) boundary to move a significant distance". Evidence suggests that passive encroachment occurred across much of the interior of Florida during this investigation.

Key Findings

(1) At a 90% confidence level, from 1991 through 2011, aquifer potentials declined, while concentrations of saline and rock-matrix indicators increased, over most of Florida.

(2) Using randomly selected BN wells, WSR analyses indicated the areal scale of change represents a majority of Florida.

(3) Observed changes were not uniform. For example, Cl concentrations increased in 60% of the BN wells, but had no observable change in 10% and decreased in 30% of these wells.

(4) For selected indicators, the rates of change across the study area were 1% to 8% per decade.

(5) Evidence suggests the primary driver of the changes observed in this study was below-normal rainfall and consequent reduced recharge to the FAS. The second most important driver was groundwater withdrawals. Sea-level rise and alterations in surface water flow patterns may also have been significant drivers. Unfortunately, there were insufficient data to compare the importance of these drivers, relative to the first two.

(6) Evidence suggests that an important origin of the saline indicators was from saltwater along Florida's coasts and from saline water located at depths within the FAS. An important origin of the rock-matrix indicators is from groundwater that had a long residence time within the FAS. The lowering of aquifer potentials during the study allowed the older and deeper groundwater to migrate upward towards the wells and springs used in this investigation.

(7) Upward changes in Cl concentrations were observed in costal springs, inland springs, coastal wells, and inland wells.

(8) Regarding inland BN wells, Cl concentrations increased in both confined and unconfined areas of interior Florida. This is supporting evidence that a source of Cl is saline groundwater moving upwards from deep portions of the FAS, possibly from unflushed relict sea water due to changes in aquifer potentials.

(9) Some of the observed changes for the saline indicators fit the definition of passive encroachment. However, both active and passive encroachment occurred during the study.

(10) Since the end of this investigation, statewide rainfall increased. Based on the conceptual model, the observed changes in the conditions of the FAS potentially can be reversed if rainfall increases continue. However, sea levels also rose during this investigation and are predicted to rise at an accelerated rate in the foreseeable future.

RECOMMENDATIONS

(1) Use as many springs as practical to monitor saltwater encroachment. Springs can be potentially superior to wells in detecting the early stages of encroachment. Long-term monitoring of more springs should be added to this effort.

(2) Encourage the continued operation and monitoring of the Coastal Salinity Monitoring Network, a cooperative effort organized by the Florida Water Resource Monitoring Council (FWRMC). The network was established to monitor potential saltwater encroachment into Florida's major aquifer systems north of the South Florida Water Management District. Note, a separate cooperative network already exists in south Florida.

(3) Encourage cooperation of governmental agencies in Florida with the U.S. Geological Survey (USGS) in the operation of the National Groundwater Monitoring Network. A goal of the national network is to develop portals to enhance the exchange of groundwater level and chemical data which can potentially be useful for addressing a variety of important groundwater related issues, including future saltwater encroachment. Department staff, managing the Water Information Network (WIN) currently coordinate efforts to maintain Florida's portal with the USGS. Potentially, the same staff, or possibly the FWRMC, could coordinate the effort of the inclusion of additional monitoring sites into the National Groundwater Monitoring Network

(4) Encourage the development and operation of a statewide, multi-agency, water quality monitoring network to track changes of common indicators of concern for both groundwater and surface water. Numerous governmental and non-governmental entities across Florida have water monitoring networks designed to address concerns of the respective entities. Recently, these entities have begun loading water data from their monitoring networks into the WIN database. WIN provides a centralized environmental data management platform for non-regulatory data, that includes both groundwater and surface water data. Once sufficient data reside in WIN, the data could be used to address monitoring issues of mutual concern, or of statewide interest. A possible entity that could organize the effort is the FWRMC. Another is the Department. If a statewide network is established, the Coastal Salinity Monitoring Network would become a subset of the statewide network.

(5) Continue water management district collection of groundwater extraction data for each of Florida's aquifer systems. Support statewide efforts to obtain, and tabulate extraction data that were collected using different methodologies. Consistent and frequent reporting of these continuously improving data is crucial. Without such data, managing Florida's groundwater resources will be difficult.

(6) Encourage research and fund efforts to improve knowledge about groundwater recharge and discharge at both regional and statewide scales. These data will assist in determining water budgets that are essential to managing groundwater resources.

(7) Encourage the improvement and use of groundwater models. Well-calibrated numerical models are essential to managing the state's water resources. Water budgets can be complimentary to model results, but they lack the specificity to fully account for all the changes in groundwater systems associated with groundwater withdrawals.

(8) Encourage research and fund efforts to improve understanding of how sea-level changes can affect both the quantity and quality of Florida's water resources.

(9) Encourage research and fund efforts to improve understanding of the processes that govern changes in both saline and rock-matrix indicators in our aquifers.

(10) Encourage research and fund efforts to improve understanding of groundwater and surface water interactions. Changing concentrations of saline indicators in groundwater can potentially influence those in surface water, and vice versa.

REFERENCES CITED

Agee, J.K, 2012, Ecology, management, and monitoring, *in* Gitzen, R.R., Millspaugh, J.J., Cooper, A.B., and Licht, D.S., eds., Design and analysis of long-term ecological monitoring studies: Cambridge, United Kingdom, Cambridge University Press, 560 p.

Bellino, J.C., Kuniansky E.L, O'Reilly, A.M., and Dixon, J.F., 2018, Hydrogeologic setting, conceptual groundwater discharge system, and hydrologic conditions 1995–2010 in Florida and parts of Georgia, Alabama, and South Carolina: U.S. Geological Survey Scientific Investigations Report 2018-5030, 115 p.

Benjamini, Y., and Hochberg, Y., 1995, Controlling the false discovery rate, a practical and powerful approach to multiple testing: Journal of the Royal Statistical Society, Series B (Methodological), v. 57, no. 1, p. 289-300.

Berndt, M.P., Oaksford, E.T., Mahon, G.L., and Schmidt, W., 1998, Groundwater, *in* Fernald, E.A., and Purdumn, E.D., eds., Water resources atlas of Florida: Tallahassee, FL: Florida State University, Florida Institute of Science and Public Affairs, p. 38–63.

Berndt, M.P., Katz, B.G., Lindsey, B.D., Ardis, A.F., and Skach, K.A., 2005, Comparison of water chemistry in spring and well samples from selected carbonate aquifers in the United States, *in* Kuniasky, E., ed., U.S. Geological Scientific Investigations Report 2005-5160, p. 74-81.

Boniol, D., 2002, Evaluation of Upper Floridan aquifer water quality to design a monitoring network in the St. Johns River Water Management District: St. Johns River Water Management District Technical Publication SJ2002-1, 71 p.

Black, A.P., Brown, E., and Pearce, J.M., 1953, Salt water intrusion in Florida-1953: Florid State Board of Conservation, Division of Water Survey ad Research, Water Survey and Research Paper no. 9, 38 p.

Bloetscher, F., Heimlich, B.N., and Romah, T., 2011, Counteracting the effects of sea level rise in southeast Florida, 2011: Journal of Environmental Science and Engineering, v. 5, p 1507-1525.

Bras, R.L., and Rodriguez-Iturbe, I., 1985, Random functions and hydrology: Reading, Massachusetts, Addison-Wesley, 559 p.

Budd, D.A., and Vacher, H.L., 2004, Matrix permeability of the confined Floridan aquifer, Florida, USA: Hydrogeology Journal, v. 12, no. 5, p. 531–549.

Central Florida Water Initiative Hydrologic Analysis Team, 2014, East-Central Florida transient (ECFT) model documentation, in support of the 2014 draft CFWI regional supply plan: https://cfwiwater.com/pdfs/East-Central_Florida_Transient_Model_Documentation.pdf

Conover, W.J., 1999, Practical nonparametric statistics: New York, John Wiley and Sons, 367 p.

Cooper, W.J., 1964, A hypothesis concerning the dynamic balance of fresh water and salt water in a coastal aquifer: U.S. Geological Survey Water Supply Paper 1613-C, 12 p.

Copeland, R.E., Doran, N.A., White, A.J., and Upchurch, S.B., 2011, Regional and statewide trends in Florida's spring and well groundwater quality (1991–2003): Florida Geological Survey Bulletin 69 (Revised), 203 p.

Dale, R.T., and Fortin, M.J., 2002, Spatial autocorrelation and statistical tests in ecology: Ecoscience, v. 9, no 2, p. 162-167.

Durden, D., Gordu, F., Hearn, D., Cera, T., Desmarais, T., Sisco, L., Angel, A., Leahy, C., Oseguera, J., and Grubbs, J.W., 2019, North Florida southeast Georgia ground water model (NFSEG, V1.1): St. Johns River Water Management District Technical Publication, SJ2019-01, 513 p.

Ferguson, G.E., Lingham, C.W., Love, S.K., and Vernon, R.O., 1947, Springs of Florida: Florida Geological Survey Bulletin 31, 196 p.

Fetter, C.W., 2001, Applied hydrogeology: Upper Saddle River, New Jersey, Prentice-Hall, 598 p.

Fitterman, D., 2014, Mapping saltwater intrusion in the Biscayne aquifer, Miami-Dade, County, Florida using transient electromagnetic sounding: Journal of Environmental Engineering Geophysics, v. 19, no. 1, p 33-43.

Florea, L.J., Vacher, H.L., Donahue, B., and Naar, D., 2007, Quaternary cave levels in peninsular Florida: Quaternary Science Reviews, v. 26, issues 9–10, p. 1344–1361.

Florea, L.J., Budd, D.A., and Brinkman, R.B., 2009, Caves and karst of west-central Florida: Caves and karst of the USA, National Speleological Society, v. 2009, p. 189–196.

Florida Department of Environmental Protection, 2016, Florida Watershed Monitoring Statutes and Trend Program Design Document: http://publicfiles.dep.state.fl.us/dear/DEARweb/WMS/Reports_Docs_SOPs/Design_Docs/WMS-MonitoringDesignDocument2016.pdf (accessed July 18, 2019)

Florida Department of Environmental Protection, 2019a: https://floridadep.gov/waste/permitting-compliance-assistance/content/solid-waste-section#:~:text=These%20facilities%20can%20include%20landfills,by%20the%20DEP%20district%20offices (accessed July 18, 2019).

Florida Department of Environmental Protection, 2019b: https://floridadep.gov/water/aquifer-protection/content/uic-wells-classification#:~:text=Class%20II,Protection%2C%20Oil%20and%20Gas%20Program (accessed July 18, 2019).

Florida Department of Environmental Protection, 2019c, Geographical Information System (GIS) layers, "Florida Counties and Shorelines - Areas" and the "Statewide Land Use and Land Cover (2004 to 2017). https://geodata.dep.state.fl.us/datasets/FDEP::statewide-land-use-land-cover/about. (Accessed July 20, 2019).

Florida Springs Task Force, 2000, Florida springs: Strategies for protection and restoration: Tallahassee, Florida Department of Environmental Protection, 63 p.

Florida Water Resources Monitoring Council, 2019a, home page: https://floridadep.gov/dear/watershed-monitoring-section/content/fwrmc (accessed July 25, 2019).

Florida Water Resources Monitoring Council, 2019b, Salinity Network Workgroup, Coastal Salinity Monitoring Network: http://publicfiles.dep.state.fl.us/DEAR/DEARweb/FWRMC/SalinityNet/2018-11-14%20Mtg_Copeland%20Presentation-General.pdf (accessed July 25, 2019)

Franz, J., Grubr, M., Stojanovic, A., Omondi, S.O., Mader, D., Korner, W., and Schagerl, M., 2013, Major and trace element geochemistry of Lake Bogoria and Lake Nakuru, Kenya, during extreme draught: Chemie der Erde, v. 73, no. 3, p. 275-282.

Fratesi. B., 2013, Hydrology and geochemistry of the freshwater lens in coastal karst, *in* Lace, M.J., and Mylroie, J.E., eds., Coastal karst landforms: Dordrecht, Springer Netherlands, Coastal Research Library Series v. 5, p. 59-76.

Freeze, R.A., and Cherry, J.A., 1979, Groundwater: Englewood Cliffs, New Jersey, Prentice-Hall, 604 p.

Gilbert, R.O., 1987, Statistical methods for environmental pollution monitoring: New York, Van Nostrand Reinhold Co., 320 p.

Gordu, F., Goodman, B., Cunningham, T., and Munson, A., 2014, Have we been here before: Hindcasting Lake Levels for Minimum Flows and Levels Evaluations Using a Rainfall Decay Model: Florida Water Resources Journal, v. 65, no. 2, p. 55-56.

Gully, J.D., and Florea, L.J., 2016, Caves as paleo-water table indicators in the unconfined Upper Floridan aquifer: Florida Scientists, v. 79, p. 239–256.

Helsel, D.R., and Frans, L.M., 2006, Regional-Kendall test for trend: Environmental Science and Technology, v. 40, no. 13, p. 4067–4073.

Helsel, D.R., and Hirsch, R.M., 2002, Statistical methods in water resources, Chapter A3, *in* Techniques of water-resources investigations of the United States Geological Survey, Book 4, Hydrologic analysis and interpretations. https://pubs.usgs.gov/twri/twri4a3/pdf/twri4a3-new.pdf (accessed May 2015).

Hem, J.D., 1985, Study and Interpretation of the Chemical Characteristics of Natural Water: 3rd ed., U.S. Geological Survey Water Supply Paper 2254, 263 p.

Hirsch, R.M., Slack, J.R., and Smith, R.A., 1982, Techniques of trend analysis for monthly water quality data: Water Resources Research, v. 18, no. 1, p. 107–121.

Hirsh, R.M., and Slack, J.R., 1984, A nonparametric trend test for seasonal data with serial dependence: Water Resources Research, v. 20, p. 727–732.

Hubbert, M.K., 1940, The theory of groundwater motion: Journal of Geology, v. 8, p. 785-944.

Karl, T.R., Milillo, J.M., Peterson, T.C., and Hassol, S.J., 2009, Global climate change impacts in the United States, A state of knowledge report from the U.S. Global Change Research Program: New York, Cambridge University Press, 188 p.

Katz, B.G., 2004, Sources of nitrate contamination and age of water in karstic springs of Florida: Environmental Geology, v. 46, p. 689–706.

Kaufman, B., 2005, Discussion of land management practices in the Mallory Swamp, *in* Southeastern Geological Society Field Trip Field Trip Guidebook 44: Tallahassee, Florida, Southeastern Geological Society, p. 50.

Kincaid, T.M, and Olsen, A.R., 2012, Survey analysis in natural resource monitoring programs with focus on cumulative distribution functions, *in* Gitzen, R.R., Millspaugh, J.J., Cooper, A.B, and Licht, D.S., eds, Design and Analysis of Long-term Ecological Monitoring Studies: Cambridge, United Kingdom, Cambridge University Press, 560 p.

Klein, H., 1975, Depth to base of potable water in the Floridan aquifer: Florida Geological Survey Map Series 42 (Revised).

Krause, R.E., and Randolph, R.B., 1989, Hydrology of the Floridan aquifer system in southeast Georgia and adjacent parts of Florida and South Carolina: U.S. Geological Survey Professional Paper 1403-D, 89 p.

Lindsey, B.D., and Rupert, M.G., 2012, Methods for evaluating temporal groundwater quality data and results of decadal-scale changes in chloride, dissolved solids, and nitrate concentrations in groundwater in the United States, 1988–2010: U.S. Geological Survey Scientific Investigations Report 2012-5049, 46 p.

Lindsey, R., 2018, Climate change: Atmospheric Carbon Dioxide, Climate change: global sea level: Climate.gov, science and information for a climate smart nation. https://www.climate.gov/news-features/understanding-climate/climate-change-atmospheric-carbon-dioxide (accessed July 17, 2019).

Maddox, G., and Lloyd, J.M., 1991, Introduction, *in* Scott, T.M., Lloyd, J.J., and Maddox G., eds., Florida's Ground Water Quality Monitoring Program – Hydrogeological Framework: Florida Geological Survey Special Publication No. 32, 97 p.

Marella, R., 1992, Water withdrawals in Florida during 1990, with trends from 1950 to 1990: U.S. Geological Survey Open File Report 92-80, 38 p.

———, 2014, Water withdrawals, use, and trends in Florida, 2010: U.S. Geological Survey Scientific Investigations Report 22014-5088, 59 p.

———, 2015, Water withdrawals in Florida, 2012: U.S. Geological Survey Open-File Report 2015-1156, 52 p.

Marella, R.L., and Berndt, M.P., 2005, Water withdrawals and trends from the Floridan aquifer system in the southeastern United States, 1950–2000: U.S. Geological Survey Circular 1278, 9 p.

McDonald, J.H., 2015, Multiple Comparisons, Controlling the false discovery rate: Benjamini-Hochberg procedure, *in* Handbook of Biological Statistics, Spreadsheet to do the Benjamini-Hochberg procedure, http://www.biostathandbook.com/multiplecomparisons.html (accessed February 12, 2018).

McHugh, T.E., Beckley, L.M., Liu, C.Y., and Newell, C.J., 2011, Factors affecting variability in groundwater monitoring data sets: Ground Water Monitoring and Remediation, v. 31, no. 2, p. 92–101.

Merritt, M.L., 2001, Simulation of the Interaction of Karstic Lakes Magnolia and Brooklyn with the Upper Floridan aquifer, Southwestern Clay County, Florida: U.S. Geological Survey Water-Resources Investigations Report 00-4204, 69 p.

Miller, J.A., 1986, Hydrogeologic framework of the Floridan aquifer system in Florida and parts of Georgia, Alabama, and South Carolina: U.S. Geological Survey Professional Paper 1403-B, 91 p.

———, 1997, Hydrogeology of Florida, *in* Randazzo, A.F, and Jones, D.S., eds., The Geology of Florida: Gainesville, Florida, University Press of Florida, p. 69-88.

Minitab, 2011, Minitab statistical software 16: State College, Pennsylvania: Minitab, Inc.

Moore, P.J., Martin, J.B., and Screaton, E., 2009, Geochemical and statistical evidence of recharge, mixing, and controls on spring discharge in an eogenetic karst aquifer: Journal of Hydrology, v. 376, Nos. 3-4, p. 443-455.

National Atmospheric Deposition Program, National TN, 2020, Data from all sites, http://nadp.slh.wisc.edu/ntn/ (accessed November 30, 2020).

National Oceanic and Atmospheric Administration, 2019a, Ocean Service: https://www.climate.gov/news-features/understanding-climate/climate-change-global-sea-level (accessed October 5, 2019).

National Oceanic and Atmospheric Administration, 2019b. National Geodetic Survey, North American Vertical Datum of 1988 (NAVD 88): https://www.ngs.noaa.gov/datums/vertical/north-american-vertical-datum-1988.shtml, (accessed July 17, 2019).

Neuendorf, K.K.E., Mehl, J.P., and Jackson, J.A., eds., 2005, Glossary of geology: Alexandria, Virginia, American Geological Institute, 799 p.

Northwest Florida Water Management District, 2009, Five-year water resource development work program, fiscal year 2009-2010 Update, Proposed October 2009: Northwest Florida Water Management District Program Development Series 09-03, 40 p.

Olsen, A.R., Kincaid, T.M., and Payton, Q., 2012, Spatially balanced survey designs for natural resources, *in* Gitzen, R.R., Millspaugh, J.J., Cooper A.B, and Licht, D.S., eds., Design and Analysis of Long-term Ecological Monitoring Studies: Cambridge, United Kingdom, Cambridge University Press, 560 p.

Ponce, V.M, 2007, Sustainable yield of groundwater: http://gwsustainability.sdsu.edu/ (accessed June 16, 2015).

Pratt, J.W., 1959, Remarks on zeros and ties in the Wilcoxon signed-rank procedures: American Statistical Association Journal, v. 50, no. 287, p. 655–667.

Prinos, S.T., 2013, Saltwater intrusion in the surficial aquifer system of the Big Cypress Basin, southwest Florida, and a proposed plan for improved salinity monitoring: U.S. Geological Survey Open-File Report 2013-1088, 58 p.

Prinos, S.T., Wacker, M.A., Cunningham, K.J., and Fitterman, D.V., 2014, Origins and Delineation of saltwater intrusion in the Biscayne Aquifer and changes in the distribution of saltwater in Miami-Dade County, Florida: U.S. Geological Survey Scientific Investigations Report 2014-5025, 101 p.

Prinos, S.T., 2016, Saltwater intrusion monitoring in Florida, *in* Copeland, R.E., ed., Florida Scientist, Special Issue, Status of Florida's groundwater resources, v. 79, no. 4, p. 269–278.

Purdum, E.D., Burney, L.C., and Swihart, T.M., 1998, History of Water Management, *in* Fernald, E.A., and Purdhum, E.D., eds., Water Resources Atlas of Florida: Tallahassee, Florida, Florida State University, p. 156-169.

R Core Team, 2014, R: A language and environment for statistical computing: R Foundation for Statistical Computing Report 3-900051-07-0, Vienna, Austria, http://www.R-project.org/ (accessed September 16, 2014).

Sacks, L.A., and Tihansky, A.B., 1996, Geochemical and isotopic composition of ground water, with emphasis on sources of sulfate, in the upper Floridan aquifer and intermediate aquifer system in southwest Florida: U.S. Geological Survey Water-Resources Investigations Report 96-4146, 54 p.

Salsburg, D., 2001, The lady tasting tea: how statistics revolutionized science in the twentieth Century: New York, W. H. Freeman & Company, 340 p.

Schmorak. S., and Mercado, A., 1969, Upconing of fresh water-sea water interface below pumping wells, a field study: Water Resources Research, v. 6, p. 1290-1311.

Scott, T.M., 2001, Text to accompany the geologic map of Florida: Florida Geological Survey Open-File Report 80, 29 p., 6 plates.

———, 2016, Lithostratigraphy and hydrostratigraphy of Florida: Florida Scientist, v. 79, p. 198–2007.

Scott, T.M., Means, G.H., Meegan, R.P., Means, R.C., Upchurch, S.B., Copeland, R.E., Jones, J., Roberts, T., and Willet, A., 2004, Springs of Florida: Florida Geological Survey Bulletin 66, 377 p.

Sen, P.K., 1968, Estimates of the regression coefficient based on Kendall's tau: Journal of the American Statistical Association, v. 63, p. 1379–1389.

Sienko, M.J., and Plane, R.A., 1971, Chemistry, 4th ed.: New York, McGraw-Hill, 638 p.

Southeast Regional Climate Center, 2014, Historical climate summaries for Florida: http://www.sercc.com/climateinfo_files/monthly/Florida_prcp_DivNew.htm (accessed September 16, 2014).

———, 2019, Historical climate summaries for Florida: http://www.sercc.com/climateinfo_files/monthly/Florida_prcp_DivNew.htm (accessed July 17, 2019).

Southeastern Geological Society, 1986, Hydrogeological units of Florida: Florida Geological Survey Special Publication 28, 10 p.

Spechler, R.M., 1994, The relation between structure and saltwater intrusion in the Floridan aquifer system, northeastern Florida: U.S. Geological Survey Water-Resources Investigation Report 01-411, p. 25–29.

———, 2001, The relation between structure and saltwater intrusion in the Floridan aquifer system, northeastern Florida, *in* Kuniansky, E.L., ed., U.S. Geological Survey karst interest group proceedings: U.S. Geological Survey Water-Resources Investigations Report 01-4011, p. 25–29.

Sprinkle, C.L., 1989, Geochemistry of the Floridan aquifer system in Florida and in parts of Georgia, South Carolina, and Alabama: Regional aquifer-system analysis—Floridan aquifer system: U.S. Geological Survey Professional Paper 1403-I, 114 p.

Stephens, M.A., 1974, EDF statistics for goodness of fit and some comparisons: Journal of American Statistical Association, v. 69, p. 730-737.

St. Johns River Water Management District, 2017, Florida's aquifers: https://www.sjrwmd.com/water-supply/aquifer (accessed January 15, 2017).

Southwest Florida Water Management District, 2006, Southern Water Use Caution Area, Recovery Strategy: Southwest Florida Water Management District Final Report, 29 p.

Southwest Florida Water Management District, 2013, Southern Water Use Caution Area, Five-Year Assessment for FY 2007-2011: Southwest Florida Water Management District Recovery Strategy Final Report, 31 p.

Theis, C.V., 1940, The source of water derived from wells essential factors controlling the response of an aquifer to development: Reprint of American Society of Civil Engineers, U.S. Geological Survey Ground Water Hydraulics Notes No. 34, https://water.usgs.gov/ogw/pubs/Theis-1940.pdf (accessed January 2, 2017).

Thompson, S.K., 2002, Sampling, 3rd ed.: New York, Wiley and Sons, 421 p.

Toth, J., 1971, Groundwater discharge: common generator of diverse geologic and morphologic phenomena: Bulletin of the International Association of Scientific Hydrology, v. 16, no. 1, 19 p.

Tremayne, A., 2010, Changes to water balance due to urbanization: A study of Alkimos, Western Australia [Ph.D. thesis]: Perth, University of Western Australia, 42 p.

Triola, M.F., 1998, Elementary statistics, 7th ed.: New York, Addison Wesley Longman, 791 p.

Upchurch, S.B., 1992, Quality of water in Florida's aquifer systems, *in* Maddox, G.L., Lloyd, J.M., Scott, T.M., Upchurch, S.B., and Copeland R., eds., Florida's groundwater quality monitoring program—Background hydrogeochemistry: Florida Geological Survey Special Publication 34, p. 12–63.

Upchurch, S.B., Scott, T.M., Alfieri, M.C., Fratesi, B., and Diobecki, T.L., 2019, The karst systems of Florida: understanding karst in a geologically young terrain: Cham, Switzerland, Springer International, 450 p.

U.S. Environmental Protection Agency, 2017, Climate change science: Future of sea-level change: https://archive.epa.gov/epa/climate-change-science/future-climate-change.html#Sea%20level (accessed January 2, 2017).

U.S. Geological Survey, 1978, Water Quality: Field filtering of water samples for chemical analysis, Quality of Water Branch Technical Memorandum No. 78.06: https://water.usgs.gov/admin/memo/QW/qw78.06.html (accessed August 31, 2020).

U.S. Census Bureau, QuickFacts, 2018, https://www.census.gov/quickfacts/fact/table/US/PST045218 (accessed July 5, 2018).

Verdi, R.J., Tomlinson, S.A., and Marella, R.L., 2006, The drought of 1998–2002: Impacts on Florida's hydrology and landscape: U.S. Geological Survey Circular 1295, 34 p.

Walton, T.L., 2007, Projected sea level rise in Florida: Ocean Engineering, v. 34, p. 1832–1840.

Whiteaker, T., 2015, Hexagon Thiessen tessellation tool: Center for Research in Water Resources, University of Texas at Austin, http://tools.crwr.utexas.edu/Hexagon/hexagon.html (accessed January 2, 1919).

Wigley, T.M.L., and Raper, S.C.D., 1992, Implications for climate and sea level of revised IPCC emissions scenarios: Nature, v. 357, no. 6376, p. 293–300.

Williams, L.J., and Dixon, J.F., 2015, Digital surfaces and thickness of selected hydrogeologic units of the Floridan aquifer system in Florida and parts of Georgia, Alabama, and South Carolina: U.S. Geological Survey Data Series 926, 24 p.

Williams, L.J., and Kuniansky, E.L., 2015, Revised hydrogeologic framework of the Floridan aquifer system in Florida and parts of Georgia, Alabama, and South Carolina: U.S. Geological Survey Professional Paper 1807, 140 p.

Werner, A.S., 2017, On the classification of active and passive seawater intrusion: American Geophysical Union, Fall meeting 2017, abstract H11p-01.

Xu, Z., Bassett, S.W., Hu, B., and Dyer, S.B., 2016, Long distance seawater intrusion through a karst conduit network in the Woodville Karst Plain, Florida: Scientific Reports, v. 6, 10 p.

Yue, S., Pilon, P., Phinney, B., and Cavadias, G., 2002, The influence of autocorrelation on the ability to detect trend in hydrological series: Hydrological Processes, v. 16, No. 9, p. 1807–1829.

APPENDICES

Introduction

The appendices contain information and data useful to this report. **Appendix Table 1** assists in conceptualizing the information available in the appendices and appendix tables.

Appendix Table 1. Overview of information in Appendices A – G

Appendix/ Table	Information in Appendices and Table
A	Spring and well Information
A1	Spring location information
A2	Trend Network well information
A3	Background Network well information
B	Spring and well data used for trend analyses
B1	Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons
B2	Wilcoxon signed-rank data for 15 TN wells, each in separate hexagons
B3	Wilcoxon signed-rank data for 31 springs, each in separate hexagons
B4	Regional-Kendall test data for 16 TN monitoring wells
B5	Regional-Kendall data for 55 springs
B6	Mann-Whitney data for comparison of shallow to deep Background Network wells, each in separate hexagons
B7	Wilcoxon signed-rank data for shallow Background Network wells, each in separate hexagons
B8	Wilcoxon signed-rank data for deep Background Network wells, each in separate hexagons
B9	Wilcoxon signed-rank chloride data for 55 coastal and 83 Background Network wells, each in separate hexagons
B10	Wilcoxon signed-rank chloride data for 10 coastal and 11 inland selected springs, each in separate hexagons
C	Statewide precipitation data
C1	Florida mean annual precipitation data
D	Hydrologic conditions data
D1	Hydrologic conditions
E	Description of data editing process and data qualifiers
E1	State of Florida data value qualifiers
F	Derivations of pertinent areas and urban land use percentage
F1	Areas of counties excluded from study
F2	Urban and suburban land use categories and percentage of urban/suburban area of Florida.
G	Florida's atmospheric deposition chemistry means
G1	Atmospheric deposition chemistry concentration data for selected indicators in Florida (1991 – 2019).

Appendix Table A1 contains spring information for the springs used in this report. Appendix Table A2 contains well construction and well location data for the Trend Network wells. Appendix Table A3 contains well construction and well location data for the Status Network.

Appendix B contains data used for the regional-Kendall, Wilcoxon signed-rank, and Mann-Whitney tests. Appendix Table B1 – B3 contains Wilcoxon signed-rank data use for Background Network wells, Trend Network wells, and springs, respectively. Appendix Tables B4 and B5 contain regional-Kendall test data for Trend Network wells and springs respectively. Data for Mann-Whitney tests for Background Network wells are in Appendix Table B6. The 156 Background Network wells are divided into shallow and deep wells, based on their corresponding total depths. Wilcoxon signed-rank data for the shallow wells and deep wells are found in Appendix Tables B7 and B8. Wilcoxon signed-rank data for coastal and inland wells are found in Appendix Table B9. Appendix Table B10 contains Wilcoxon signed-rank data for coastal and inland springs.

Appendix C contains annual statewide precipitation data used in this report. Appendix Table C1 contains Florida mean annual precipitation data for: (a) pre-study (1931-1990), (b) study (1991-2011), and (c) post study (2012-2019).

Appendix D contains information regarding hydrological conditions for the state during the investigation. Appendix Table D1 contains annual mean precipitation for Florida, median groundwater level data for the TN, and median spring discharge data. Precipitation is from the Southeast Regional Climate Center (2014).

Appendix E discusses the data editing process. Appendix Table E1 contains a standard list of Florida data qualifiers.

Appendix F contains information regarding how the area of the study was determined. Appendix Table F1contains areas of the counties excluded from the study. Appendix Table F2 contains land use codes used in the study, plus the percent of urban/suburban land uses exist in Florida.

Appendix G contains precipitation chemistry data. Table G1 contains annual mean precipitation chemistry data from the National Atmospheric Deposition Program (2020) Trend Network.

Appendix A. Spring and Well Information

Appendix Table A1. Spring location information. Information includes spring abbreviation, name, county, WMD, latitude (Lat.) and longitude (Long.).

Abbreviation	Spring Name	County	WMD	Lat.	Long.
ALEX	Alexander Spring	Lk	SJRWMD	29.0724	-81.5687
ALR	Alapaha Rise	Hm	SRWMD	30.4267	-83.0861
APOP	Apopka Spring	Lk	SJRWMD	28.5593	-81.6745
BETJ	Betty Jay Spring	Ci	SWFWMD	28.6900	-82.5920
BOAT	Boat Spring	Hr	SWFWMD	28.4305	-82.6531
BOBH	Bob Hill Spring	Hr	SWFWMD	28.4347	-82.6411
BUBL	Bubbling Spring	Mr	SWFWMD	29.0931	-82.4302
BUCK	Buckhorn Main Spring	Hl	SWFWMD	27.8844	-82.2989
CATF	Catfish Spring	Ci	SWFWMD	28.8906	-82.5950
CHS1	Chassahowitzka No 1 Spring	Ci	SWFWMD	28.7093	-82.5712
CHSM	Chassahowitzka Main Spring	Ci	SWFWMD	28.7093	-82.5713
FAN	Fanning Spring	Lv	SRWMD	29.5782	-82.9318
FERN	Fern Hammock Springs	Mr	SJRWMD	29.1745	-82.7013
GILB	Gilchrist Blue	Gr	SRWMD	29.8299	-82.3829
HAR	Hart Spring	Gr	SRWMD	29.6660	-82.9482
HID2	Hidden River No. 2 Spring	Ci	SWFWMD	28.7691	-82.5835
HIDH	Hidden River Head Spring	Cit	SWFWMD	28.7691	-82.5840
HOM1	Homosassa No. 1 Spring	Cit	SWFWMD	28.7919	-82.5846
HOM2	Homosassa No. 2 Spring	Cit	SWFWMD	28.7919	-82.5846
HOM3	Homosassa No. 3 Spring	Cit	SWFWMD	28.7919	-82.5846
HOR	Hornsby Spring	Aa	SRWMD	29.8398	-82.5883
HSALT	Salt Spring	Hr	SWFWMD	29.5330	-82.6152
HUNT	Hunter Spring	Ci	SWFWMD	28.8944	-82.5925
JKB	Jackson Blue	Ja	NWFWMD	30.7913	-85.1401
JUNP	Juniper Springs	Mr	SJRWMD	29.1746	-81.7055
LBS	Lafayette Blue Spring	Lf	SRWMD	30.1146	-82.2233
LRS	Little River Spring	Su	SRWMD	29.9861	-82.9627
MAG	Magnolia Spring	Ps	SWFWMD	28.4277	-82.6490
MAN	Manatee Spring	Lv	SRWMD	29.4804	-82.9736
MIA	Miami Spring	Se	SJRWMD	28.7022	-81.4361
MSAL	Salt Spring	Mr	SJRWMD	29.3411	-81.7257
PALM	Palm Spring	Se	SJRWMD	28.8437	-81.4501
PDL	Ponce De Leon Spring	Vo	SJRWMD	30.7070	-81.8384
PUMP	Pump House Spring	Ci	SWFWMD	28.7859	-82.5883
RKB	Rock Bluff Spring	Gr	SRWMD	29.7889	-82.9149
RLS	Ruth/Little Sulfur Spring	Su	SRWMD	29.9956	-82.9770
RNB1	Rainbow No. 1 Spring	Mr	SWFWMD	29.1014	-82.4330
RNB4	Rainbow No. 4 Spring	Mr	SWFWMD	29.1014	-82.4333

Appendix Table A1 (continued). Spring location information. Information includes spring abbreviation, name, county, WMD, latitude (Lat.) and longitude (Long.).

Abbreviation	Spring Name	County	WMD	Lat.	Long.
RNB6	Rainbow No. 6 Spring	Mr	SWFWMD	29.0851	-82.4234
RNBS	Rainbow Bridge Seep	Mr	SWFWMD	29.0938	-82.4331
RNS3	Rainbow Swamp Spring No. 3	Mr	SWFWMD	29.0937	-82.4313
ROCK	Rock Spring	Or	SJRWMD	28.7485	-81.4949
SANL	Sanlando Springs	Se	SJRWMD	28.6808	-81.3882
SBS	Suwannee Blue Spring	Su	SRWMD	30.0704	-82.9310
SILG	Silver Glen Springs	Mr	SJRWMD	29.2366	-81.6363
STAR	Starbuck Spring	Se	SJRWMD	28.6891	-81.3841
SWEE	Sweetwater Spring	Mr	SJRWMD	29.2096	-81.6528
TARP	Tarpon Hole Spring	Ci	SWFWMD	28.8745	-82.5908
TEL	Telford Spring	Su	SRWMD	30.1065	-83.1657
TROT	Trotter Main Spring	Ci	SWFWMD	28.8879	-82.5628
TRY	Troy Spring	Lf	SRWMD	29.9952	-82.9940
VOLB	Volusia Blue Spring	Vo	SJRWMD	29.9387	-81.3319
WAK	Wakulla	Wk	NWFWMD	30.2238	-84.3037
WEEK	Weeki Wachee Main Spring	Hr	SWFWMD	28.5108	-82.5694
WEKI	Wekiwa Spring	Or	SJRWMD	28.7040	-81.4535
Spring discharge stations only					
CHASNRCHAS	Chassahowitzka River Near Chassahowitzka	Ci	SWFWMD	28.7150	-82.6064
HOMBCOMB	Homosassa Springs at Homosassa Springs	Ci	SWFWMD	28.7850	-82.6181
WEEKNRBROOK	Weeki Wachee Springs	Hr	SWFWMD	28.5167	-82.5736
RAINATDUN	Rainbow River at Dunnellon	Mr	SWFWMD	29.0492	-82.4478
RAINNEARDUN	Rainbow Springs near Dunnellon	Mr	SWFWMD	29.0380	-82.4266

Appendix Table A2. Trend Network well information. The table contains DEP well number, total depth (TD), casing depth (CD), measuring point elevation (MP), confinement (confined [Cn], unconfined [Un]), county, latitude, and longitude, in decimal degrees. Missing or non-applicable information is labeled with an asterisk (*). A prefix "W" is Florida Geological Survey well number. Well #67 is a tube tapping Wakulla Spring water.

Well Number	Well Name	TD (ft)	CD (ft)	MP (ft)	Cn/Un	County	Latitude	Longitude
67	WAKULLA SPRING	*	*	*	Un	Wk	30.2353	-84.3025
91	DONAHUE	80	56	26.39	Un	Ln	30.3114	-84.2939
243	BLOUNTS-TOWN FLORIDAN	303	202	84.75	Cn	Ca	30.4500	-85.0703
312	USGS 422a NR GREENHEAD	150	110	69.01	Cn	Ws	29.5269	-85.5842
1943	-111117007	30	6	18.00	Un	Dx	29.6417	-83.2417
2003	-101601002	60	30	88.14	Un	Gr	29.5950.	-82.6636
2259	-061401003	48	18	58.72	Un	Su	30.1872	-83.5281
2404	-030833001	68	48	91.97	Cn	Ty	30.2753	-83.1533
2465	-021231001	80	40	88.04	Un	Su	30.4142	-83.1533
2585	-011011002	78	58	80.49	Cn	Md	30.5314	-83.2975
2675	021332004	103	63	123.00	Cn	Hm	30.3153	-83.0417
707	ROMP 23-1 DEEP	100 0	904	66.00	Cn	Mn	27.3147	-82.1775
997 (W5989)	CLAYWELL ELEM	60	40	53.98	Cn	Hl	28.0967	-82.5231
1087	WITHLA. ST. FOREST	175	99	98.54	Un	Sm	28.4617	-81.9822
1420	S-0038	165	55	21.48	Cn	Se	28.7233	-81.1578
1762	SJ0029	603	350	68.29	Cn	Sj	30.0853	-81.4572

Appendix Table A3. Background Network well information. Table contains DEP well number, well name, total depth (TD), casing depth (CD), measuring point elevation (MP), confinement (confined [Cn], unconfined [Un]), county, latitude, longitude, both in decimal degrees. Missing or non-applicable data are labeled with an asterisk (*). Well prefix "W" represents Florida Geological Survey number.

Well Number	Well Name	TD (ft)	CD (ft)	MP (ft)	Un/Cn	County	Latitude	Longitude
8	GREEN POINT FLORIDAN	189	140	19.15	Cn	Fk	29.7840	-84.8310
46	POWER PLANT #4	106	71	13.64	Un	Wk	30.1691	-84.2105
172	MARY ESTHER #2	764	595	21.96	Cn	Oa	30.4117	-86.6614
373	EAFB #6204 FLD 6	690	527	136.47	Cn	Oa	30.6284	-86.7375
378	EAFB WELL #2	609	456	198.32	Cn	Oa	30.6475	-86.5275
409	COTTONDALE #3	280	128	135.29	Cn	Jk	30.7963	-85.3756
418	AUBURN W.S. #2	450	350	259.71	Cn	Oa	30.8433	-86.5259
450	BLACKMAN COMM CTR	320	285	211.28	Cn	Oa	30.924	-86.6356
520	ROMP TR 3-1 SUWANNEE	620	600	34.50	Cn	Ch	26.9443	-82.218
520	ROMP TR 3-1 SUWANNEE	620	600	34.50	Cn	Sa	26.9443	-82.218
544	ROMP TR 4-2 SUWANNEE	475	460	27.29	Cn	Sa	27.0447	-82.3994
605	ROMP 19 WLAM	420	410	33.62	Cn	Ds	27.1671	-82.3414
614	ROMP 17 AP	1430	1115	29	Cn	Ds	27.1745	-81.9765
615	ROMP 17 SWNN	670	620	26.31	Cn	Sa	27.1745	-81.9765
636	ROMP 18 SUWANNEE	845	505	52	Cn	Hi	27.1931	-82.1301
684	ROMP 28X DEEP	1385	585	108.64	Cn	Sa	27.2667	-81.3396
690	FLORIDA CITIES TEST	446	104	37.26	Cn	Sa	27.2711	-82.401
696	ROMP 26 AVON PARK	*	*	77.87	Cn	Ds	27.2996	-81.8246
740	ROMP TR 7-4 TAMPA	*	*	20.12	Cn	Mn	27.4278	-82.4891
754	ROMP 33 AVON PARK	1600	1460	77.50	Cn	Mn	27.4579	-82.2571
777	N CO. TREAT. OLD SUP	700	340	25	Cn	Mn	27.5836	-82.478
793	ROMP 40 AVON PARK	1140	408	140.03	Cn	Po	27.6478	-82.0541
797	ROMP 123 DEEP	620	117	54.28	Cn	Hl	27.6755	-82.2513
819	ROMP 48 AVON PARK	815	780	103.77	Cn	Hl	27.7409	-82.1425
838	ROMP 45 AVON PARK	757	680	125.38	Cn	Po	27.7643	-81.7861
842	ROMP TR 9-2 SWNN	460	250	13	Cn	Hl	27.7653	-82.3932
861	ROMP 44 FLORIDAN	402	232	136.38	Cn	Po	27.8244	-81.598
891	ROMP 57-1 FLORIDAN	634	160	132.43	Cn	Po	27.9036	-81.6225
902	ROMP TR 13-1 SUWANNEE	264	254	12.84	Cn	Pi	27.9164	-82.7776
918	ROMP DV-2 FL	130	108	109.28	Cn	Hl	27.9667	-82.1481
937	DUNEDIN #4	170	35	22	Cn	Pi	28.0038	-82.7877
947	ROMP TR 14-3 SWNN	319	219	97.61	Cn	Pi	28.022	-82.729
951	TAMPA DEEP # 15	413	67	73.95	Cn	Hl	28.0297	-82.2231
988	ROMP 68-1 AVON PARK	490	440	59.39	Cn	Hl	28.0837	-82.2429
998	MORRIS BR DP # 12	520	238	33.85	Cn	Hl	28.1018	-82.3109

Appendix Table A3 (continued). Background Network well information. Table contains DEP well number, well name, total depth (TD), casing depth (CD), measuring point elevation (MP), confinement (confined [Cn], unconfined [Un]), county, latitude, longitude, both in decimal degrees. Missing or non-applicable data are labeled with an asterisk (*). Well prefix "W" is Florida Geological Survey number.

Well Number	Well Name	TD (ft)	CD (ft)	MP (ft)	Un/Cn	County	Latitude	Longitude
1015	ROMP TR 15-2 TAMPA	55	50	16.28	Cn	Pi	28.1291	-82.7576
1016	ROMP TR 15-1 TAMPA	87	68	10.55	Cn	Pi	28.1341	-82.7805
1020	HILL ST P PKG LOT DP	50	37	48.93	Cn	Hl	28.1484	-82.2314
1028	LK ALFRED DP NR LK A	*	*	139.63	Cn	Po	28.1686	-81.7376
1030	ELDRIDGE-WILDE #3	*	*	*	Cn	Pi	28.1732	-82.6672
1036	ROMP 76A POLK CITY	315	264	140.19	Cn	Po	28.1826	-81.8306
1038	HOLIDAY LAKS WRAP-61F	53	43	63.91	Cn	Ps	28.5501	-82.0234
1041 (W14889)	ROMP 87	380	300	111.38	Cn	Po	28.2201	-82.0234
1045	ROMP 85 FLORIDAN	300	160	111.62	Cn	Ps	28.2403	-82.3237
1046	USGS GREEN SWAMP DEEP	285	80	136	Cn	Po	28.2448	-81.7211
1053	LOUGHMAN DEEP	247	85	107.01	Cn	Po	28.2594	-81.5806
1059	US HWY 98 WELL	200	41	86.87	Cn	Ps	28.2821	-82.1162
1064	SR 52 WELL	73	38	81.93	Un	Ps	28.3219	-82.4461
1066	ROMP 93 DEEP	700	149	78.1	Cn	Ps	28.3232	-82.4226
1069	SR 52 DEEP WELL	73	60	59.53	Un	Ps	28.3305	-82.5501
1070	CUMPRESSCO RANCH WEL	143	20	100.41	Un	Sm	28.3575	-82.04
1071	ROMP 90 FLORIDAN	160	62	78	Cn	Ps	28.3601	-82.142
1073	EVA DEEP WELL	192	100	116.87	Cn	Lk	28.3795	-81.8236
1134	TOWN OF WEBSTER # 2	341	174	92.80	Un	Sm	28.6108	-82.0494
1140	SUMTER CORR INST SUP	414	190	61	Un	Sm	28.6206	-82.2051
1147 (W13518)	ROMP 107	240	140	118.86	Un	Hr	28.657	-82.4565
1153	ROMP 109 OCALA	260	189	159.80	Un	Ci	28.7253	-82.3648
1154	LECANTO WELL # 1	169	168	35.80	Un	Ci	28.7274	-82.4515
1160	ROMP 111 DEEP	192	62	65.23	Un	Sm	28.7722	-82.0643
1184	CRYSTAL RIVER DEEP	176	162	10.65	Cn	Ci	28.9062	-82.6037
1193	USGS OBS. CE-23	45	19	65.64	Un	Mr	29.0186	-82.3192
1195	ROMP 119 MARION OAKS	502	106	74.75	Un	Mr	29.0261	-82.2358
1251	ROMP 13 SWNN	797	674	63	Cn	Mr	27.072	-81.6162
1266	OK0001	960	125	55.97	Cn	Ds	27.5306	-80.8049
1221 (W15495)	ROMP 120 COTTON PLAN	403	110	79.26	Un	Oe	29.1834	-82.3183
1267	IR0312	568	120	23.25	Cn	Ir	27.5769	-80.4306
1292 (W19494)	BR0624	650	550	6.42	Cn	Bv	27.8683	-80.4547

Appendix Table A3 (continued). Background Network well information. Table contains DEP well number, well name, total depth (TD), casing depth (CD), measuring point elevation (MP), confinement (confined [Cn], unconfined [Un]), county, latitude, longitude, both in decimal degrees. Missing or non-applicable data are labeled with an asterisk (*). Well prefix "W" is Florida Geological Survey number.

Well Number	Well Name	TD (ft)	CD (ft)	MP (ft)	Un/Cn	County	Latitude	Longitude
1293 (W19495)	BR0625	454	299	40.30	Cn	Bv	27.8699	-80.4547
1342	BR1558	180	140	15	Cn	Bv	28.3273	-80.7387
1348	BR1557	190	150	25	Cn	Bv	28.3824	-80.767
1358	BR0608	320	175	8.86	Cn	Bv	28.4892	-80.6795
1362	OR0617	550	210	65.33	Cn	Or	28.5271	-81.1125
1363	L-0062	160	63	105.86	Cn	Lk	28.5346	-81.9135
1375	BR1526	300	235	7.05	Cn	Bv	28.6121	-80.9642
1377	BR0585	195	107	28.94	Cn	Bv	28.626	-80.8499
1389	S-1014	300	142	81.55	Cn	Se	28.6824	-81.3554
1455	V-0198	122	88	29.59	Cn	Vo	28.9057	-81.0691
1460 (W17153)	V-0772	140	100	49.98	Cn	Vo	28.9287	-81.2272
1501	M-0037	72	51	82.3	Cn	Mr	29.1411	-82.0591
1504	V-1030	200	120	17.02	Cn	Vo	29.142	-81.3654
1506	V-0188	150	92	46.02	Cn	Vo	29.1431	-81.1268
1516	V-0086	222	122	42.52	Cn	Vo	29.1686	-81.1696
1522	V-0200	879	98	14.9	Cn	Vo	29.1752	-80.9847
1527	M-0028	153	124	67.51	Cn	Mr	29.185	-82.0154
1528	V-0187	817	97	32.28	Cn	Vo	29.1849	-81.0627
1580	M-0025	280	258	53.59	Cn	Mr	29.2964	-81.9408
1587	M-0021	277	268	20.92	Cn	Mr	29.3118	-81.6857
1590	M-0063	120	61	92.03	Un	Mr	29.339	-82.1117
1606	P-0427	148	95	41.24	Cn	Pu	29.4107	-81.7367
1609	F-0176	120	91	13.29	Cn	Fg	29.4342	-81.14
1612	P-0242	135	105	51.13	Cn	Pu	29.4349	-81.5234
1639	F-0225	140	80	5.43	Cn	Fg	29.5248	-81.1521
1661	F-0294	124	95	25.35	Cn	Fg	29.5622	-81.3905
1666	F-0165	140	127	34.82	Cn	Fg	29.5936	-81.3199
1691	F-0200	148	140	20.42	Cn	Fg	29.6317	-81.2054
1722	P-0859	122	110	99.95	Cn	Pu	29.6784	-82.0081
1734	P-0001	170	90	98.66	Cn	Pu	29.7192	-82.0068
1740	SJ0516	205	95	29.55	Cn	Sj	29.7556	-81.3121
1751	SJ0027	464	225	33.63	Cn	Sj	29.9074	-81.4903
1777	SJ0754	857	385	12	Cn	Sj	30.2483	-81.3871
1779	BA0054	700	370	127.82	Cn	Bk	30.2725	-82.1864
1787	D-0547	740	490	57.34	Cn	Du	30.2862	-81.5431

Appendix Table A3 (continued). Background Network well information. Table contains DEP well number, well name, total depth (TD), casing depth (CD), measuring point elevation (MP), confinement (confined [Cn], unconfined [Un]), county, latitude, longitude, both in decimal degrees. Missing or non-applicable data are labeled with an asterisk (*). Well prefix "W" is Florida Geological Survey number.

Well Number	Well Name	TD (ft)	CD (ft)	MP (ft)	Un/Cn	County	Latitude	Longitude
1788	D-1342	764	456	80	Cn	Du	30.3006	-81.9803
1841	D-0673	857	450	29.77	Cn	Du	30.5361	-81.6212
1842	BA0057	700	360	133.30	Cn	Bk	30.5432	-82.3437
1844 (W17155)	N-0220	650	458	23.45	Cn	Na	30.5949	-81.8301
1850	N-0199	821	447	65	Cn	Na	30.6893	-81.9189
1878	-151310002	170	110	9	Cn	Lv	29.2028	-82.9898
1880	-151608001	17	*	10	Un	Lv	29.1924	-82.7068
1891	-141305001	*	*	8	Un	Lv	29.2965	-83.0324
1896	-131526002	105	*	26	Un	Lv	29.324	-82.7745
1909	-121332003	75	32	9	Un	Lv	29.3967	-83.0221
1910	-121528003	39	19	39	Un	Lv	29.4079	-82.8191
1929	-111436002	85	45	38	Un	Lv	29.479	-82.8589
1932	-111436007	100	89	36	Un	Lv	29.4869	-82.8648
1945	-110911002	25	5	7	Un	Dx	29.5294	-83.3826
1946	R18T11SEC0402 - 111816004	183	122	93	Un	Aa	29.5351	-82.5188
1962	-101527001	57	37	60	Un	Lv	29.5832	-82.7901
1983	-101516006	100	61	57	Un	Gr	29.614	-82.8178
2037	-91323001	30	10	34	Un	Dx	29.6845	-83.0008
2113	R18T08SEC1401	194	101	81	Cn	Aa	29.7933	-82.4911
2115	-81814004	370	225	76	Cn	Aa	29.7933	-82.4911
2146	-71234001	61	41	66	Cn	Lf	29.8363	-83.1052
2151	-71429001	80	53	37	Un	Lf	29.8396	-82.9307
2165	R18T07SEC2702	220	180	152	Cn	Aa	29.8511	-82.5042
2210	-72205001	246	206	152.17	Cn	Bf	29.9172	-82.1296
2216	-61025003	61	41	56.03	Cn	Lf	29.9279	-83.2789
2219	-60726002	38	8	47	Un	Ty	29.9333	-83.5882
2221	-62232004	520	254	146	Cn	Bf	29.9371	-82.1185
2251	-61610001	65	45	74	Un	Co	29.9845	-82.7099
2260	-51331002	56	36	67.06	Cn	Lf	29.9995	-83.0575
2267	-50529001	36	16	10	Un	Ty	30.0153	-83.8504
2299	-52115006	700	300	122	Cn	Vo	28.9287	-81.2272
2305	-52113001	400	284	134	Cn	Bf	30.0634	-82.1595
2367	-40724005	164	125	48	Un	Ty	30.1197	-83.5847
2368	-40724004	364	136	46	Un	Ty	30.1198	-83.5853
2369	-40724006	53	*	40	Un	Ty	30.1203	-83.5854

Appendix Table A3 (continued). Background Network well information. Table contains DEP well number, well name, total depth (TD), casing depth (CD), measuring point elevation (MP), confinement (confined [Cn], unconfined [Un]), county, latitude, longitude, both in decimal degrees. Missing or non-applicable data are labeled with an asterisk (*). Well prefix "W" is Florida Geological Survey number.

Well Number	Well Name	TD (ft)	CD (ft)	MP (ft)	Un/Cn	County	Latitude	Longitude
2374	-40723011	53	33	46	Un	Ty	30.1278	-83.5962
2384	-41608002	122	100	122.87	Un	Co	30.1513	-82.7333
2412	-30729002	29	9	49	Cn	Ty	30.1927	-83.6494
2414	-31834001	421	250	196	Cn	Co	30.1933	-82.4993
2417	-30419001	30	10	15	Un	Jf	30.2014	-83.9692
2423	-31923004	253	233	181.28	Cn	Bk	30.2129	-82.3913
2426	-31924001	447	225	168	Cn	Bk	30.2148	-82.3719
2457	-20731002	57	37	68.98	Cn	Ty	30.2636	-83.6609
2489	-20528002	35	15	42	Un	Jf	30.2881	-83.8356
2492	-21324010	290	185	107	Un	Sw	30.2967	-82.9705
2520	-21811001	201	172	139.11	Cn	Co	30.328	-82.4895
2538	-21805001	220	195	131.13	Cn	Co	30.3438	-82.5263
2541	-11535004	148	128	132	Cn	Hm	30.3523	-82.7813
2557	-11129001	69	49	77	Un	Md	29.8541	-83.5737
2567	-11124009	55	25	66	Un	Sw	30.3848	-83.1689
2585	-11011002	78	58	80.33	Cn	Md	30.414	-83.2975
2587	-11611002	180	120	127	Cn	Hm	30.4152	-82.6828
2618	-11401008	270	168	138	Cn	Hm	30.4396	-82.8641
2622	-11501001	201	*	133.62	Cn	Hm	30.4372	-82.7677
2630	11535003	240	200	130	Cn	Hm	30.4446	-82.7842
2645	10922001	420	110	83	Cn	Md	30.4726	-83.4165
2655	11417001	165	132	142	Cn	Hm	30.4881	-82.9312
2666	10704001	105	92	116	Cn	Md	30.5167	-83.6367
2675	21332004	103	63	122.94	Un	Hm	30.5312	-83.0417
2678	21429005	249	149	147	Cn	Hm	30.5424	-82.9381
2705	21202003	305	120	144	Cn	Hm	30.6031	-83.0968
2706	20904004	195	106	222	Cn	Md	30.597	-83.4234
3081	HIF-0014	1500	*	36.81	Cn	Hi	27.2927	-81.2771
3084	HIF-0037	1450	619	31.10	Cn	Hi	27.2237	-81.1933
3091	L-00652A	598	188	13	Cn	Le	26.6826	-81.7417
3112	L-02311	625	300	33.80	Cn	Le	26.5626	-81.6046
3115	L-02525	645	405	8.30	Cn	Le	26.5216	-82.0857
3116	L-02527	*	*	10.74	Cn	Le	26.6651	-82.1417
3117	L-02528	625	420	14.19	Cn	Le	26.6522	-81.9905
3118	L-02531	605	345	21	Cn	Le	26.7425	-81.6071
3159	MF-00031	1091	844	3	Cn	Mt	27.1493	-80.1741

Appendix Table A3 (continued). Background Network well information. Table contains DEP well number, well name, total depth (TD), casing depth (CD), measuring point elevation (MP), confinement (confined [Cn], unconfined [Un]), county, latitude, longitude, both in decimal degrees. Missing or non-applicable data are labeled with an asterisk (*). Well prefix "W" is Florida Geological Survey number.

Well Number	Well Name	TD (ft)	CD (ft)	MP (ft)	Un/Cn	County	Latitude	Longitude
3191 (W17095)	OKF-7	963	412	61.98	Cn	Oe	27.3668	-80.7840
3194	OKF-17	*	*	41.54	Cn	Oe	27.3345	-80.9202
3195	OKF-23	925	496	34.44	Cn	Oe	27.254	-80.8535
3199	OKF-42	1152	370	40.57	Cn	Oe	27.4008	-81.1155
3265	OSF-0003	310	243	61	Cn	Os	27.8731	-81.0522
3267	OSF-0005	261	63	262	Cn	Os	28.2615	-81.5470
3268	OSF-0006	318	176	60.89	Cn	Os	28.1392	-81.3607
3437	POF-0015	575	*	61	Cn	Po	27.9399	-81.4229
3432	POF-0007	*	*	80.48	Cn	Po	27.9766	-81.5420
3433	POF-0008	199	153	66.97	Cn	Po	27.8136	-81.4387
3444	SLF-0021	707	156	21.65	Cn	Sl	27.4283	-80.4021
3447	SLF-0050	775	600	27	Cn	Sl	27.3384	-80.4981

Appendix B. Spring and Well Data Used for Trend Analyses

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons. Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (200-2011) periods, and the difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	Alk_E	Alk_L	Alk_Dif	Well	Ca_E	Ca_L	Ca_Dif
8	270.00	290.00	20.00	8	109.00	110.00	1.00
46	370.00	375.00	5.00	46	100.00	105.00	5.00
172	191.00	189.00	-2.00	172	4.55	4.88	0.33
373	181.00	180.00	-1.00	373	13.00	12.70	-0.30
378	130.50	134.00	4.00	378	27.50	28.20	0.70
409	152.00	147.00	-5.00	409	57.45	59.00	1.55
418	109.00	108.00	-1.00	418	25.00	25.70	0.70
450	186.00	192.00	6.00	450	39.00	38.00	-1.00
520	138.00	143.00	5.00	520	110.00	108.00	-2.00
544	141.00	148.00	7.00	544	230.00	239.00	9.00
605	129.50	131.00	2.00	605	220.00	218.00	-2.00
615	152.00	152.00	0.00	615	117.00	113.00	-4.00
636	175.00	182.00	7.00	636	90.00	87.40	-2.60
684	67.00	61.00	-6.00	684	19.00	16.90	-2.10
690	101.00	149.00	48.00	690	110.00	148.00	38.00
696	113.00	137.00	24.00	696	66.50	98.00	31.50
740	155.00	156.00	1.00	740	62.00	64.10	2.10
754	128.00	127.00	-1.00	754	325.00	389.00	64.00
777	152.00	158.00	6.00	777	84.00	85.30	1.30
793	112.00	128.00	16.00	793	44.30	44.60	0.30
819	107.00	132.00	25.00	819	36.70	41.25	4.55
838	156.00	134.00	-22.00	838	24.20	25.90	1.70
842	129.50	141.00	12.00	842	140.00	168.00	28.00
861	173.00	157.00	-16.00	861	33.20	35.00	1.80
891	170.00	178.00	8.00	891	41.00	49.90	8.90
902	190.00	176.00	-14.00	902	150.00	243.00	93.00
918	175.50	178.00	3.00	918	39.30	47.80	8.50
947	128.50	132.00	4.00	947	54.40	116.00	61.60
951	146.00	161.00	15.00	951	63.90	63.60	-0.30
988	262.50	255.00	-8.00	988	102.50	99.90	-2.60
1016	250.00	204.00	-46.00	1016	96.00	93.10	-2.90
1020	263.50	268.00	5.00	1020	103.80	108.00	4.20
1028	134.50	123.00	-12.00	1028	40.30	45.40	5.10
1030	165.50	230.00	65.00	1030	65.20	95.50	30.30
1036	124.00	130.00	6.00	1036	37.35	44.70	7.35
1038	81.00	75.00	-6.00	1038	40.30	33.50	-6.80
1041	210.00	216.00	6.00	1041	72.50	68.70	-3.80

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	Alk_E	Alk_L	Alk_Dif	Well	Ca_E	Ca_L	Ca_Dif
1045	103.90	109.00	5.00	1045	38.75	41.60	2.85
1046	120.00	123.00	3.00	1046	45.00	48.20	3.20
1053	153.00	139.00	-14.00	1053	50.90	51.80	0.90
1059	116.00	182.00	66.00	1059	*	*	*
1066	210.00	202.00	-8.00	1066	79.00	75.80	-3.20
1069	138.00	234.00	96.00	1069	49.50	91.50	42.00
1071	155.00	97.00	-58.00	1071	60.15	38.30	-21.85
1073	162.00	153.00	-9.00	1073	56.90	56.40	-0.50
1134	185.50	179.00	-7.00	1134	67.80	70.70	2.90
1140	193.50	187.00	-7.00	1140	74.30	72.40	-1.90
1147	143.00	223.00	80.00	1147	49.60	88.30	38.70
1154	110.00	119.00	9.00	1154	39.00	43.40	4.40
1160	159.50	162.00	3.00	1160	59.75	59.30	-0.45
1184	144.50	205.00	61.00	1184	70.50	162.00	91.50
1195	126.00	116.00	-10.00	1195	210.50	178.00	-32.50
1221	249.50	234.00	-16.00	1221	93.40	93.50	0.10
1251	120.00	125.00	5.00	1251	42.30	44.80	2.50
1266	268.00	265.00	-3.00	1266	86.00	85.00	-1.00
1267	160.00	162.00	2.00	1267	45.60	48.80	3.20
1293	147.00	152.00	5.00	1293	52.30	57.10	4.80
1342	121.00	109.00	-12.00	1342	54.70	132.00	77.30
1358	118.00	142.00	24.00	1358	157.90	173.00	15.10
1362	139.00	160.00	21.00	1362	53.60	53.00	-0.60
1363	113.00	156.00	43.00	1363	47.50	62.30	14.80
1375	152.00	163.00	11.00	1375	209.00	218.00	9.00
1377	75.00	78.00	3.00	1377	28.00	34.20	6.20
1389	229.50	259.00	30.00	1389	75.65	79.00	3.35
1455	240.00	260.00	20.00	1455	97.00	90.60	-6.40
1460	102.00	106.00	4.00	1460	58.40	56.90	-1.50
1504	142.00	83.00	-59.00	1504	41.95	24.40	-17.55
1506	290.00	300.00	10.00	1506	98.00	101.00	3.00
1522	129.00	164.00	35.00	1522	480.50	390.00	-90.50
1527	139.00	132.00	-7.00	1527	56.00	65.90	9.90
1580	*	*	*	1580	*	*	*
1587	73.00	65.00	-8.00	1587	44.00	41.30	-2.70
1590	109.00	104.00	-5.00	1590	37.60	42.70	5.10
1606	52.00	55.00	3.00	1606	23.00	22.40	-0.60

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	Alk_E	Alk_L	Alk_Dif	Well	Ca_E	Ca_L	Ca_Dif
1612	131.00	149.00	18.00	1612	48.00	57.50	9.50
1639	200.00	205.00	5.00	1639	200.00	201.00	1.00
1666	164.00	190.00	26.00	1666	125.00	117.20	-7.80
1691	119.00	128.00	9.00	1691	260.00	269.00	9.00
1722	1.00	21.00	20.00	1722	5.78	4.70	-1.08
1734	77.90	87.00	9.00	1734	21.70	27.90	6.20
1740	123.00	126.00	3.00	1740	260.00	283.00	23.00
1751	118.00	120.00	2.00	1750	230.00	248.00	18.00
1777	144.00	150.00	6.00	1777	65.50	79.50	14.00
1779	158.50	159.00	1.00	1779	34.50	35.60	1.10
1787	141.00	124.00	-17.00	1787	73.00	57.00	-16.00
1788	124.50	127.00	3.00	1788	33.50	34.80	1.30
1841	157.50	166.00	9.00	1841	49.50	53.40	3.90
1842	158.00	166.00	8.00	1842	66.00	65.95	-0.05
1844	155.00	160.50	6.00	1844	66.00	64.35	-1.65
1850	158.00	166.00	8.00	1850	65.00	64.30	-0.70
1878	235.00	241.50	7.00	1878	92.80	97.85	5.05
1880	342.00	347.00	5.00	1880	140.00	148.00	8.00
1891	163.00	151.00	-12.00	1891	65.00	61.60	-3.40
1896	269.00	278.00	9.00	1896	117.00	125.00	8.00
1909	185.50	183.00	-3.00	1909	91.50	104.00	12.50
1910	225.00	214.00	-11.00	1910	88.00	89.60	1.60
1929	174.50	187.00	13.00	1929	84.55	95.40	10.85
1945	248.00	374.00	126.00	1945	142.50	221.00	78.50
1946	115.50	133.00	18.00	1946	45.50	51.80	6.30
1962	143.00	154.00	11.00	1962	54.00	66.90	12.90
2037	217.50	224.00	7.00	2037	87.50	87.80	0.30
2115	174.50	169.00	-6.00	2115	64.50	71.50	7.00
2146	297.00	292.00	-5.00	2146	110.00	102.00	-8.00
2151	130.00	121.00	-9.00	2299	34.00	34.00	0.00
2165	180.00	170.00	-10.00	2165	76.00	75.50	-0.50
2210	140.00	163.00	23.00	2210	32.00	38.95	6.95
2216	197.00	204.00	7.00	2216	76.05	79.80	3.75
2219	151.50	142.00	-10.00	2219	38.95	36.50	-2.45
2251	238.00	256.00	18.00	2251	96.50	103.00	6.50
2260	114.00	120.00	6.00	2260	47.00	47.10	0.10
2267	285.00	343.00	58.00	2267	203.00	258.50	55.50

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	Alk_E	Alk_L	Alk_Dif	Well	Ca_E	Ca_L	Ca_Dif
2305	130.00	136.00	6.00	2305	38.00	38.20	0.20
2384	87.50	99.00	12.00	2384	34.00	39.20	5.20
2412	212.00	226.00	14.00	2412	55.20	64.00	8.80
2414	167.50	181.00	14.00	2414	44.50	43.95	-0.55
2417	302.50	323.00	21.00	2417	93.35	101.00	7.65
2423	171.50	181.00	10.00	2423	41.00	42.25	1.25
2426	170.00	175.00	5.00	2426	48.00	46.70	-1.30
2457	95.00	92.00	-3.00	2457	34.00	34.80	0.80
2489	200.00	198.00	-2.00	2489	72.00	67.10	-4.90
2492	148.00	159.00	11.00	2492	56.50	60.00	3.50
2538	274.00	286.00	14.00	2538	*	*	*
2541	240.00	242.00	2.00	2541	62.00	60.00	-2.00
2557	165.00	211.00	46.00	2557	59.20	78.50	19.30
2567	182.80	246.00	63.00	2567	65.25	86.00	20.75
2585	137.00	151.00	14.00	2585	38.65	44.40	5.75
2587	241.00	241.00	0.00	2587	50.80	51.40	0.60
2618	262.50	246.50	-16.00	2618	67.95	63.55	-4.40
2630	200.00	184.00	-16.00	2630	58.00	48.80	-9.20
2645	152.00	154.00	2.00	2645	50.40	53.00	2.60
2655	150.00	152.00	2.00	2655	50.00	50.40	0.40
2666	120.00	114.00	-6.00	2666	41.00	40.50	-0.50
2675	167.00	174.50	8.00	2675	64.00	70.10	6.10
2678	182.50	173.00	-10.00	2678	43.90	65.20	21.30
2705	122.00	130.00	8.00	2705	32.10	36.10	4.00
2706	120.50	126.00	6.00	2706	40.85	43.20	2.35
3084	70.50	74.00	4.00	3084	42.00	270.00	228.00
3091	*	*	*	3091	*	*	*
3112	120.00	122.00	2.00	3112	160.00	160.00	0.00
3115	193.00	158.00	-35.00	3115	70.10	65.00	-5.10
3116	177.00	138.00	-39.00	3116	175.50	154.00	-21.50
3117	146.00	157.00	11.00	3117	126.50	103.00	-23.50
3118	106.00	108.00	2.00	3118	94.00	98.80	4.80
3159	166.00	172.00	6.00	3159	80.00	81.50	1.50
3191	266.00	139.00	-127.00	3191	70.00	66.50	-3.50
3194	150.00	156.00	6.00	3194	19.90	16.50	-3.40
3195	115.00	112.00	-3.00	3195	54.00	58.10	4.10
3199	181.00	208.00	27.00	3199	37.00	31.20	-5.80
3265	177.50	312.00	135.00	3265	65.50	112.00	46.50

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	Alk_E	Alk_L	Alk_Dif	Well	Ca_E	Ca_L	Ca_Dif
3267	166.00	144.00	-22.00	3267	47.90	47.90	0.00
3268	90.50	104.50	14.00	3268	37.80	36.05	-1.75
3432	51.00	53.00	2.00	3432	23.00	25.40	2.40
3433	71.50	72.00	1.00	3433	18.80	18.40	-0.40
3437	88.40	82.00	-6.00	3437	15.20	15.40	0.20
3444	166.00	100.50	-66.00	3444	52.10	34.00	-18.10
3447	176.00	145.00	-31.00	3447	86.00	91.30	5.30

Table continues next page.

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	Cl_E	Cl_L	Cl_Dif	Well	K_E	K_L	K_Dif
8	13.00	13.00	0.00	8	0.98	1.07	0.09
46	110.00	110.00	0.00	46	3.30	3.20	-0.10
172	62.00	65.00	3.00	172	5.95	5.50	-0.45
373	3.30	32.00	28.70	373	4.70	*	*
378	2.30	2.50	0.20	378	1.95	*	*
409	2.85	5.30	2.45	409	0.39	0.34	-0.05
418	2.10	3.00	0.90	418	1.10	1.00	-0.10
450	425.00	390.00	-35.00	450	5.60	*	*
520	46.00	290.00	244.00	520	19.00	*	*
544	94.00	28.00	-66.00	544	6.80	7.00	0.20
605	46.00	71.00	25.00	605	5.60	*	*
615	350.00	290.00	-60.00	615	4.23	4.06	-0.17
636	41.00	41.00	0.00	636	3.00	*	*
684	52.00	53.00	1.00	684	1.00	0.69	-0.31
690	17.00	21.00	4.00	690	6.60	*	*
696	19.00	19.00	0.00	696	2.60	*	*
740	12.00	11.00	-1.00	740	6.40	*	*
754	7.40	14.00	6.60	754	4.20	*	*
777	9.50	12.00	2.50	777	3.10	2.40	-0.70
793	4.40	8.10	3.70	793	1.00	*	*
819	5.10	7.70	2.60	819	1.12	0.78	-0.34
838	180.00	240.00	60.00	838	2.32	*	*
842	9.80	5.60	-4.20	842	2.20	2.40	0.20
861	15.50	14.00	-1.50	861	2.53	*	*
891	74.00	750.00	676.00	891	7.20	*	*
902	1825.00	1800.00	-25.00	902	2.40	3.20	0.80
918	6.70	8.80	2.10	918	12.00	*	*
947	43.50	410.00	366.50	947	0.91	*	*
951	17.50	12.00	-5.50	951	0.40	0.38	-0.02
988	12.00	12.00	0.00	988	1.08	*	*
1016	51.00	32.00	-19.00	1016	9.50	*	*
1020	4.60	4.50	-0.10	1020	0.23	*	*
1028	520.00	780.00	260.00	1028	1.63	1.50	-0.13
1030	8.90	14.00	5.10	1030	0.79	*	*
1036	9.64	11.00	1.36	1036	1.08	*	*
1038	15.00	10.00	-5.00	1038	0.29	*	*
1041	3.90	9.30	5.40	1041	1.35	*	*

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	Cl_E	Cl_L	Cl_Dif	Well	K_E	K_L	K_Dif
1045	9.25	4.80	-4.45	1045	0.84	*	*
1046	15.00	4.40	-10.60	1046	1.60	*	*
1053	3.40	3.10	-0.30	1053	0.78	*	*
1059	3.10	3.10	0.00	1059	*	*	*
1066	*	*	*	1066	*	*	*
1069	*	*	*	1069	0.26	*	*
1071	5.66	5.70	0.04	1071	0.56	*	*
1073	5.40	6.40	1.00	1073	1.52	*	*
1134	4.85	6.40	1.55	1134	0.29	*	*
1140	8.70	8.00	-0.70	1140	0.18	*	*
1147	7.70	6.30	-1.40	1147	1.70	*	*
1154	445.00	460.00	15.00	1154	0.20	60.00	7.35
1160	6.80	6.90	0.10	1160	0.65	1.30	-0.14
1184	8.90	9.60	0.70	1184	52.65	2.90	-0.07
1195	*	*	*	1095	*	*	*
1221	7.15	7.40	0.25	1221	1.44	*	*
1251	8.45	8.40	-0.05	1251	2.97	*	*
1266	19.00	15.00	-4.00	1266	1.65	*	*
1267	5.65	6.30	0.65	1267	12.75	*	*
1293	1000.00	1100.00	100.00	1293	4.55	*	*
1358	*	*	*	1358	*	*	*
1358	7.80	8.10	0.30	1358	13.35	*	*
1362	6.70	110.00	103.30	1362	1.77	*	*
1363	1320.00	3400.00	2080.00	1363	0.39	*	*
1375	9.84	9.20	-0.64	1375	26.00	1.60	-1.62
1377	310.00	170.00	-140.00	1377	0.80	*	*
1389	12.50	12.00	-0.50	1389	3.22	8.70	0.66
1455	99.00	100.00	1.00	1455	1.94	*	*
1460	6.75	7.00	0.25	1460	8.04	*	*
1504	49.50	41.00	-8.50	1504	2.13	*	*
1506	4.60	5.20	0.60	1506	1.00	1.10	-0.10
1522	100.00	86.00	-14.00	1522	182.00	0.96	-0.02
1527	7.00	7.70	0.70	1527	1.20	*	*
1580	37.00	35.00	-2.00	1580	0.98	1.70	-0.50
1587	1800.00	1800.00	0.00	1587	3.30	*	*
1590	1545.00	1500.00	-45.00	1590	2.20	*	*
1606	34.00	35.00	1.00	1606	0.68	*	*

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	Cl_E	Cl_L	Cl_Dif	Well	K_E	K_L	K_Dif
1612	8.50	10.00	1.50	1612	1.43	8.60	-0.20
1639	310.00	325.00	15.00	1639	12.00	*	*
1666	*	*	*	1666	8.80	*	*
1691	1700.00	1700.00	0.00	1691	25.00	0.48	-0.09
1722	14.00	36.00	22.00	1722	0.20	*	*
1734	12.00	12.00	0.00	1734	0.57	4.10	0.00
1740	500.00	460.00	-40.00	1740	34.00	*	*
1751	10.00	10.00	0.00	1750	4.10	1.31	-0.34
1777	142.00	140.00	-2.00	1777	2.35	*	*
1779	37.00	35.00	-2.00	1779	1.65	*	*
1787	180.00	170.00	-10.00	1787	3.20	*	*
1788	4.60	5.00	0.40	1788	1.60	*	*
1841	460.00	470.00	10.00	1841	1.70	1.60	-0.60
1842	445.00	450.00	5.00	1842	2.60	*	*
1844	1800.00	2000.00	200.00	1844	2.20	0.30	-0.07
1850	3.70	3.70	0.00	1850	1.80	1.00	0.22
1878	6.80	7.50	0.70	1878	0.37	0.30	-0.10
1880	2200.00	2300.00	100.00	1880	0.78	1.90	-0.09
1891	180.00	220.00	40.00	1891	0.40	1.00	0.60
1896	76.00	130.00	54.00	1896	1.99	0.98	0.50
1909	6.25	6.20	-0.05	1909	0.40	1.80	0.45
1910	15.00	15.00	0.00	1910	0.48	43.00	22.50
1929	700.00	640.00	-60.00	1929	1.35	0.30	0.10
1945	10.00	9.90	-0.10	1945	20.50	0.30	0.19
1946	21.00	23.00	2.00	1946	0.20	0.30	0.15
1962	*	*	*	1962	0.11	0.72	-0.03
2037	27.00	27.00	0.00	2037	0.15	0.30	-0.40
2115	*	*	*	2115	0.75	0.88	0.08
2146	26.00	27.00	1.00	2146	0.70	0.62	-0.38
2151	9.50	10.00	0.50	2299	0.98	0.94	-0.04
2165	27.00	28.00	1.00	2165	0.80	0.30	-0.40
2210	700.00	710.00	10.00	2210	1.00	0.30	0.20
2216	7.50	7.30	-0.20	2216	0.70	0.30	0.19
2219	7.80	10.00	2.20	2219	0.10	0.30	-0.70
2251	21.00	21.00	0.00	2251	0.11	175.00	-5.50
2260	2.10	2.00	-0.10	2260	1.00	1.00	-0.20
2267	9.30	13.00	3.70	2267	180.50	1.80	-0.35

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	Cl_E	Cl_L	Cl_Dif	Well	K_E	K_L	K_Dif
2305	7.50	8.30	0.80	2305	1.20	0.30	0.02
2384	8.70	10.00	1.30	2384	2.15	1.20	0.05
2412	1000.00	1100.00	100.00	2412	0.28	0.37	0.02
2414	9.30	11.00	1.70	2414	1.15	1.20	0.10
2417	11.95	11.00	-0.95	2417	0.35	1.30	0.00
2423	52.00	54.00	2.00	2423	1.10	0.34	0.05
2426	6.80	7.50	0.70	2426	1.30	0.30	0.20
2457	4.65	5.60	0.95	2457	0.29	0.30	0.00
2489	12.00	12.00	0.00	2489	0.10	1.30	-0.20
2492	*	*	*	2492	*	*	*
2538	7.05	5.40	-1.65	2538	0.30	0.30	0.13
2541	8600.00	8400.00	-200.00	2541	1.50	0.46	-0.04
2557	5.65	6.60	0.95	2557	0.17	0.39	0.04
2567	5.35	5.30	-0.05	2567	0.50	1.40	0.09
2585	18.00	8.10	-9.90	2585	0.35	1.10	0.10
2587	11.00	12.00	1.00	2587	1.31	0.62	-0.13
2630	8.62	9.60	0.98	2630	1.00	0.49	0.01
2630	19.00	190.00	171.00	2630	0.75	1.10	0.10
2645	5.41	9.70	4.29	2645	0.48	0.30	-0.14
2655	2.50	3.60	1.10	2655	1.00	1.60	0.40
2666	4.20	2.90	-1.30	2666	0.44	1.70	0.91
2675	11.00	11.00	0.00	2675	1.20	0.84	0.10
2678	6.40	6.20	-0.20	2678	0.79	0.67	0.06
2705	2.20	3.20	1.00	2705	0.74	*	*
2706	4.85	5.10	0.25	2706	0.61	*	*
3084	4.40	7.90	3.50	3084	1.35	8.25	0.55
3091	720.00	730.00	10.00	3091	*	*	*
3112	*	*	*	3112	*	*	*
3115	*	*	*	3115	*	*	*
3116	*	*	*	3116	*	*	*
3117	*	*	*	3117	*	*	*
3118	*	*	*	3118	*	*	*
3159	*	*	*	3159	*	*	*
3191	*	*	*	3191	*	*	*
3194	*	*	*	3194	*	*	*
3195	6.40	6.90	0.50	3195	7.70	1.50	-2.60
3199	8.20	6.90	-1.30	3199	5.00	0.66	0.01

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network Wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	Cl_E	Cl_L	Cl_Dif	Well	K_E	K_L	K_Dif
3265	5.25	5.20	-0.05	3265	4.10	0.66	-0.11
3267	4.50	4.70	0.20	3267	0.65	1.05	0.26
3268	3.80	4.10	0.30	3268	0.77	0.67	0.01
3432	7.44	11.00	3.56	3432	0.79	*	*
3433	4.00	8.20	4.20	3433	0.66	9.40	-1.10
3437	3.30	3.30	0.00	3437	1.10	11.00	1.00
3444	39.50	960.00	920.50	3444	10.50	*	*
3447	720.00	730.00	10.00	3447	10.00	*	*

Table continues next page.

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	Mg_E	Mg_L	Mg_Dif	Well	Na_E	Na_L	Na_Dif
8	5.32	5.40	0.08	8	8.10	8.00	-0.10
46	51.00	52.10	1.10	46	23.50	25.30	1.80
172	2.70	3.13	0.43	172	120.00	120.00	0.00
373	7.50	7.60	0.10	373	74.00	64.50	-9.50
378	15.00	14.70	-0.30	378	3.90	3.40	-0.50
409	1.84	1.84	0.01	409	3.33	3.10	-0.23
418	12.50	12.60	0.10	418	1.70	1.80	0.10
450	20.00	20.00	0.00	450	6.90	6.00	-0.90
520	76.00	78.20	2.20	520	270.00	288.00	18.00
544	130.00	123.00	-7.00	544	110.00	123.00	13.00
605	89.00	88.20	-0.80	605	31.00	33.20	2.20
615	58.70	60.05	1.35	615	60.00	38.80	-21.20
636	43.00	42.20	-0.80	636	21.00	21.60	0.60
684	4.40	4.57	0.17	684	5.20	4.80	-0.40
690	69.00	85.30	16.30	690	35.00	35.50	0.50
696	25.90	50.80	24.90	696	11.00	11.60	0.60
740	34.00	33.00	-1.00	740	30.00	27.00	-3.00
754	126.00	125.00	-1.00	754	12.00	13.10	1.10
777	35.00	36.20	1.20	777	26.00	14.80	-11.20
793	14.70	14.50	-0.20	793	8.66	7.50	-1.16
819	14.30	15.35	1.05	819	10.30	10.20	-0.10
838	15.20	14.70	-0.50	838	16.30	13.30	-3.00
842	63.00	70.60	7.60	842	51.00	72.80	21.80
861	14.10	14.30	0.20	861	6.60	6.30	-0.30
891	9.30	15.50	6.20	891	23.00	8.90	-14.10
902	33.10	52.70	19.60	902	107.00	209.00	102.00
918	15.25	17.80	2.55	918	10.00	4.60	-5.40
947	5.91	14.30	8.39	947	12.00	166.00	154.00
951	2.04	2.06	0.02	951	5.10	5.10	0.00
988	9.98	10.00	0.03	988	8.40	7.40	-1.00
1016	29.00	44.80	15.80	1016	315.00	407.00	92.00
1020	1.81	1.80	0.00	1020	4.80	5.40	0.60
1028	4.53	4.70	0.17	1028	4.90	4.70	-0.20
1030	2.38	3.40	1.03	1030	5.20	6.70	1.50
1036	9.95	11.00	1.05	1036	5.00	5.60	0.60
1038	1.20	1.10	-0.10	1038	5.50	8.60	3.10
1041	6.00	5.70	-0.30	1041	11.00	14.60	3.60

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	Mg_E	Mg_L	Mg_Dif	Well	Na_E	Na_L	Na_Dif
1045	0.76	0.82	0.06	1045	3.40	3.10	-0.30
1046	1.30	1.40	0.10	1046	3.10	3.10	0.00
1053	2.77	2.70	-0.06	1053	3.90	3.70	-0.20
1059	*	*	*	1059	3.20	4.00	0.80
1066	2.70	2.50	-0.20	1066	5.60	4.60	-1.00
1069	1.82	2.60	0.78	1069	3.00	3.50	0.50
1071	5.23	1.50	-3.73	1071	5.70	3.70	-2.00
1073	2.36	2.20	-0.16	1073	4.60	3.80	-0.80
1134	1.31	1.30	0.00	1134	4.60	4.70	0.10
1140	2.21	2.40	0.20	1140	4.70	4.90	0.20
1147	2.00	3.00	1.00	1147	11.00	9.20	-1.80
1154	5.00	5.40	0.40	1154	1.62	3.70	2.08
1160	6.12	5.10	-1.02	1160	4.30	4.80	0.50
1184	125.50	224.00	98.50	1184	550.00	1710.00	1160.00
1195	35.90	29.00	-6.90	1195	9.84	9.20	-0.64
1221	17.10	17.80	0.70	1221	8.20	8.70	0.50
1251	21.20	24.00	2.80	1251	59.70	62.90	3.20
1266	6.79	7.40	0.62	1266	40.00	37.70	-2.30
1267	45.65	47.80	2.15	1267	143.00	168.00	25.00
1293	36.85	38.70	1.85	1293	80.00	87.50	7.50
1342	38.90	70.40	31.50	1342	585.00	437.00	-148.00
1358	101.00	116.00	15.00	1358	650.00	760.00	110.00
1362	12.50	12.10	-0.40	1362	20.80	21.20	0.40
1363	1.07	1.20	0.13	1363	5.30	5.10	-0.20
1375	117.00	120.00	3.00	1375	810.00	860.00	50.00
1377	2.30	2.90	0.60	1377	8.82	17.20	8.38
1389	11.95	13.75	1.80	1389	7.26	7.30	0.04
1455	4.80	4.40	-0.40	1455	37.00	30.50	-6.50
1460	32.90	30.80	-2.10	1460	220.00	269.00	49.00
1504	7.44	4.00	-3.44	1504	9.10	9.40	0.30
1506	8.90	9.10	0.20	1506	19.00	19.00	0.00
1522	624.50	487.00	-137.50	1522	4040.00	4370.00	330.00
1527	13.00	14.40	1.40	1527	7.67	8.10	0.43
1580	*	*	*	1580	27.00	28.70	1.70
1587	18.00	16.70	-1.30	1587	97.00	87.40	-9.60
1590	1.53	1.75	0.22	1590	8.20	4.60	-3.60
1606	0.97	0.96	-0.01	1606	4.00	3.20	-0.80

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	Mg_E	Mg_L	Mg_Dif	Well	Na_E	Na_L	Na_Dif
1612	3.55	5.40	1.85	1612	12.00	16.10	4.10
1639	106.00	109.00	3.00	1639	570.00	581.00	11.00
1666	83.00	75.40	-7.60	1666	190.00	194.00	4.00
1691	162.00	182.00	20.00	1691	66.00	1040.00	974.00
1722	1.98	2.00	0.02	1722	4.60	2.50	-2.10
1734	4.88	6.98	2.10	1734	83.00	4.80	-78.20
1740	180.00	195.00	15.00	1740	2.12	1210.00	1207.88
1751	92.00	99.60	7.60	1750	6.80	86.60	79.80
1777	34.00	41.40	7.40	1777	7.20	53.70	46.50
1779	15.50	15.90	0.40	1779	3.43	8.20	4.77
1787	32.00	26.40	-5.60	1787	63.00	14.90	-48.10
1788	13.50	14.30	0.80	1788	17.00	9.60	-7.40
1841	30.50	34.10	3.60	1841	14.00	15.90	1.90
1842	28.00	28.05	0.05	1842	9.20	16.10	6.90
1844	32.00	30.85	-1.15	1844	11.00	17.60	6.60
1850	32.00	31.40	-0.60	1850	13.00	18.70	5.70
1878	1.50	1.63	0.13	1878	16.00	5.60	-10.40
1880	14.00	14.50	0.50	1880	18.00	12.20	-5.80
1891	0.71	0.52	-0.19	1891	11.00	1.50	-9.50
1896	2.20	2.53	0.33	1896	3.10	31.00	27.90
1909	5.60	11.80	6.20	1909	5.70	12.20	6.50
1910	1.80	2.09	0.29	1910	26.00	12.90	-13.10
1929	3.80	4.95	1.16	1929	2.25	3.90	1.65
1945	68.50	166.00	97.50	1945	2.64	1290.00	1287.36
1946	3.00	3.84	0.84	1946	5.50	2.70	-2.80
1962	2.40	3.32	0.92	1962	2.61	2.90	0.29
2037	1.97	2.00	0.03	2037	2.40	3.00	0.60
2115	8.65	12.50	3.85	2115	5.20	8.10	2.90
2146	12.00	11.60	-0.40	2146	2.90	4.70	1.80
2151	13.00	13.30	0.30	2299	2.26	7.30	5.04
2165	8.50	10.00	1.50	2165	4.20	18.50	14.30
2210	14.00	17.15	3.15	2210	4.02	6.60	2.58
2216	4.15	4.75	0.61	2216	3.60	4.80	1.20
2219	15.60	15.20	-0.40	2219	1.60	3.20	1.60
2251	1.25	1.31	0.06	2251	4.90	4.10	-0.80
2260	1.40	1.69	0.29	2260	2.60	2.00	-0.60
2267	552.50	634.50	82.00	2267	4.38	5080.00	5075.62

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	Mg_E	Mg_L	Mg_Dif	Well	Na_E	Na_L	Na_Dif
2305	15.50	15.10	-0.40	2305	7.10	18.10	11.00
2384	1.00	1.32	0.32	2384	3.50	2.30	-1.20
2412	18.90	21.50	2.60	2412	8.70	3.00	-5.70
2414	19.00	20.00	1.00	2414	3.30	8.40	5.10
2417	23.65	24.90	1.25	2417	2.10	6.90	4.80
2423	18.00	18.95	0.95	2423	6.70	8.80	2.10
2426	*	*	*	2426	2.35	9.80	7.45
2457	2.60	2.68	0.08	2457	4.00	2.10	-1.90
2489	7.00	10.80	3.80	2489	3.20	2.00	-1.20
2492	3.90	4.51	0.61	2492	10.00	2.40	-7.60
2538	*	*	*	2538	10.00	13.30	3.30
2541	24.80	26.00	1.20	2541	5.62	10.30	4.68
2557	4.96	7.04	2.09	2557	2.50	1.80	-0.70
2567	11.65	13.70	2.05	2567	14.80	3.00	-11.80
2585	11.00	13.65	2.65	2585	2.90	4.20	1.30
2587	27.50	28.10	0.60	2587	3.00	5.80	2.80
2618	29.10	28.65	-0.45	2618	18.00	8.10	-9.90
2630	25.00	22.20	-2.80	2630	5.10	7.50	2.40
2645	7.88	8.54	0.66	2645	2.90	3.50	0.60
2655	23.00	21.20	-1.80	2655	7.90	3.90	-4.00
2666	4.40	4.89	0.49	2666	20.00	2.90	-17.10
2675	2.00	2.20	0.20	2675	3.30	5.70	2.40
2678	21.70	28.20	6.50	2678	2.60	9.30	6.70
2705	8.88	10.40	1.53	2705	3.20	3.30	0.10
2706	6.76	7.20	0.44	2706	7.50	3.00	-4.50
3084	19.00	157.00	138.00	3084	585.00	507.00	-78.00
3091	*	*	*	3091	901.00	398.00	-503.00
3112	129.50	130.00	0.50	3112	76.00	669.00	593.00
3115	63.40	65.20	1.80	3115	11.00	218.00	207.00
3116	155.50	155.00	-0.50	3116	21.00	818.00	797.00
3117	122.50	111.00	-11.50	3117	400.00	472.00	72.00
3118	81.20	84.90	3.70	3118	325.00	403.00	78.00
3159	77.70	76.50	-1.20	3159	648.00	590.00	-58.00
3191	8.91	46.10	37.19	3191	1700.00	107.00	-1593.00
3194	25.10	27.80	2.70	3194	230.00	129.00	-101.00
3195	40.80	42.30	1.50	3195	865.00	195.00	-670.00
3199	40.00	38.70	-1.30	3199	656.00	37.90	-618.10

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	Mg_E	Mg_L	Mg_Dif	Well	Na_E	Na_L	Na_Dif
3265	6.10	6.39	0.30	3265	410.00	26.80	-383.20
3267	6.79	6.67	-0.12	3267	592.00	2.90	-589.10
3268	6.05	6.17	0.12	3268	25.00	5.10	-19.90
3432	5.30	6.70	1.40	3432	38.00	5.30	-32.70
3433	6.89	7.00	0.12	3433	2.90	4.80	1.90
3437	8.37	8.30	-0.07	3437	70.00	3.40	-66.60
3444	45.95	34.65	-11.30	3444	65.30	185.00	119.70
3447	61.10	63.90	2.80	3447	4.50	331.00	326.50

Table continues next page.

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	SO4_E	SO4_L	SO4_Dif	Well	TDS_E	TDS_L	TDS_Dif
8	0.20	2.10	1.90	8	406.60	429.57	22.97
46	1.40	1.40	0.00	46	659.20	672.00	12.8
172	7.60	13.00	5.40	172	393.80	400.51	6.71
373	5.10	5.20	0.10	373	*	*	*
378	7.85	7.70	-0.15	378	*	*	*
409	3.55	4.10	0.55	409	221.40	220.68	-0.72
418	7.85	7.90	0.05	418	*	*	*
450	7.90	7.50	-0.40	450	159.25	160.00	0.75
520	450.00	460.00	10.00	520	*	*	*
544	800.00	790.00	-10.00	544	*	*	*
605	815.00	830.00	15.00	605	1511.80	1458.00	-53.8
615	370.00	360.00	-10.00	615	*	*	*
636	230.00	220.00	-10.00	636	*	*	*
684	1.40	0.99	-0.41	684	*	*	*
690	490.00	580.00	90.00	690	*	*	*
696	180.00	330.00	150.00	696	*	*	*
740	170.00	180.00	10.00	740	*	*	*
754	1350.00	1400.00	50.00	754	*	*	*
777	200.00	200.00	0.00	777	*	*	*
793	41.00	42.00	1.00	793	*	*	*
819	41.00	39.50	-1.50	819	*	*	*
838	5.70	6.00	0.30	838	*	*	*
842	370.00	370.00	0.00	842	*	*	*
861	0.84	0.67	-0.17	861	*	*	*
891	5.20	6.80	1.60	891	771.20	838.80	67.6
902	22.00	24.00	2.00	902	*	*	*
918	2.18	1.30	-0.88	918	*	*	*
947	3.15	7.10	3.95	947	*	*	*
951	2.05	4.50	2.45	951	*	*	*
988	*	*	*	988	*	*	*
1016	42.00	45.00	3.00	1016	231.48	248.64	17.16
1020	2.65	7.00	4.35	1020	*	*	*
1028	0.44	0.70	0.26	1028	*	*	*
1030	2.90	5.80	2.90	1030	*	*	*
1036	11.95	12.00	0.05	1036	195.94	191.00	-4.94
1038	12.00	19.00	7.00	1038	*	*	*
1041	0.20	0.20	0.00	1041	*	*	*

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	SO4_E	SO4_L	SO4_Dif	Well	TDS_E	TDS_L	TDS_Dif
1045	0.56	0.22	-0.34	1045	*	*	*
1046	0.30	0.23	-0.07	1046	*	*	*
1053	0.20	0.20	0.00	1053	*	*	*
1059	0.80	5.90	5.11	1059	*	*	*
1066	315.00	240.00	-75.00	1066	*	*	*
1069	0.35	6.90	6.56	1069	*	*	*
1071	23.00	4.50	-18.50	1071	*	*	*
1073	0.20	0.20	0.00	1073	*	*	*
1134	2.15	3.50	1.35	1134	*	*	*
1140	1.85	9.50	7.65	1140	*	*	*
1147	3.15	3.40	0.25	1147	*	*	*
1154	4.70	5.50	0.80	1154	*	*	*
1160	11.10	10.00	-1.10	1160	579.20	6246.00	5666.8
1184	251.00	485.00	234.00	1184	750.64	598.30	-152.34
1195	545.00	400.00	-145.00	1195	*	*	*
1221	71.00	73.00	2.00	1221	*	*	*
1251	79.00	76.00	-3.00	1251	*	*	*
1266	2.85	0.44	-2.41	1266	*	*	*
1267	110.00	120.00	10.00	1267	*	*	*
1293	88.50	85.00	-3.50	1293	*	*	*
1342	160.00	170.00	10.00	1342	*	*	*
1358	145.00	150.00	5.00	1358	*	*	*
1362	23.00	21.00	-2.00	1362	*	*	*
1363	0.30	0.20	-0.10	1363	343.19	397.20	54.01
1375	510.00	500.00	-10.00	1375	*	*	*
1377	4.90	13.00	8.10	1377	*	*	*
1389	1.61	0.55	-1.07	1389	*	*	*
1455	0.34	0.20	-0.14	1455	*	*	*
1460	37.00	58.00	21.00	1460	*	*	*
1504	1.75	1.30	-0.45	1504	*	*	*
1506	2.00	2.10	0.10	1506	*	*	*
1522	1450.00	1100.00	-350.00	1522	*	*	*
1527	79.00	93.00	14.00	1527	*	*	*
1580	24.00	22.00	-2.00	1580	*	*	*
1587	84.00	84.00	0.00	1587	*	*	*
1590	1.10	4.30	3.20	1590	*	*	*
1606	7.50	6.90	-0.60	1606	988.56	405.05	-583.51

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	SO4_E	SO4_L	SO4_Dif	Well	TDS_E	TDS_L	TDS_Dif
1612	7.20	16.00	8.80	1612	1991.25	2132.56	141.31
1639	280.00	290.00	10.00	1639	*	*	*
1666	*	*	*	1666	*	*	*
1691	710.00	680.00	-30.00	1691	1197.70	1305.80	108.1
1722	530.00	0.38	-529.62	1722	2593.05	*	*
1734	3.20	5.40	2.20	1734	395.53	442.01	46.48
1740	770.00	800.00	30.00	1740	558.20	*	*
1751	740.00	740.00	0.00	1750	221.35	*	*
1777	140.00	160.00	20.00	1777	368.20	*	*
1779	1.95	2.00	0.05	1779	373.80	*	*
1787	170.00	150.00	-20.00	1787	407.20	*	*
1788	25.00	23.00	-2.00	1788	416.80	419.22	2.42
1841	100.00	100.00	0.00	1841	371.87	374.28	2.41
1842	100.00	97.00	-3.00	1842	598.78	617.70	18.92
1844	120.00	115.00	-5.00	1844	249.21	224.32	-24.89
1850	120.00	120.00	0.00	1850	403.49	451.83	48.34
1878	0.20	0.41	0.21	1878	379.70	338.57	-41.13
1880	57.00	67.00	10.00	1880	634.44	2367.00	1732.56
1891	1.60	2.10	0.50	1891	179.95	236.52	56.57
1896	2.40	3.40	1.00	1896	*	*	*
1909	70.00	120.00	50.00	1909	210.68	203.64	-7.04
1910	12.00	17.00	5.00	1910	317.77	324.80	7.03
1929	*	*	*	1929	433.80	421.95	-11.85
1945	143.00	260.00	117.00	1945	*	*	*
1946	2.75	3.70	0.95	1946	*	*	*
1962	3.10	2.60	-0.50	1962	*	*	*
2037	2.75	2.40	-0.35	2037	400.42	388.06	-12.36
2115	38.00	48.00	10.00	2115	*	*	*
2146	1.90	0.35	-1.55	2146	231.41	205.70	-25.71
2151	*	*	*	2151	257.21	252.03	-5.17
2165	9.30	11.00	1.70	2165	345.76	370.97	25.21
2210	1.30	3.00	1.70	2210	*	*	*
2216	4.70	2.90	-1.80	2216	*	*	*
2219	0.35	1.00	0.65	2219	2332.43	8635.40	6302.97
2251	0.35	0.66	0.31	2251	*	*	*
2260	5.00	4.00	-1.00	2260	167.40	151.10	-16.3
2267	1100.00	1150.00	50.00	2267	*	*	*

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	SO4_E	SO4_L	SO4_Dif	Well	TDS_E	TDS_L	TDS_Dif
2305	31.00	27.00	-4.00	2305	307.23	268.25	-38.98
2384	1.60	2.20	0.60	2384	440.29	479.27	38.98
2412	0.73	1.50	0.77	2412	261.30	275.70	14.4
2414	11.25	8.40	-2.85	2414	288.99	288.60	-0.39
2417	0.34	15.00	14.66	2417	141.90	142.22	0.32
2423	12.00	11.50	-0.50	2423	285.40	283.30	-2.1
2426	25.00	25.00	0.00	2426	227.90	235.11	7.21
2457	0.60	0.60	0.00	2457	367.92	373.60	5.68
2489	0.60	1.50	0.90	2489	*	*	*
2492	5.00	6.00	1.00	2492	385.50	308.84	-76.66
2538	11.00	8.50	-2.50	2538	294.70	371.36	76.66
2541	23.00	23.00	0.00	2541	202.20	227.74	25.54
2557	3.55	4.00	0.45	2557	328.32	337.40	9.08
2567	17.50	19.00	1.50	2567	397.95	372.80	-25.15
2585	7.45	9.00	1.55	2585	225.15	230.43	5.28
2587	0.31	1.80	1.50	2587	*	*	*
2618	13.00	18.00	5.00	2618	308.65	285.80	-22.85
2630	24.00	14.00	-10.00	2630	192.14	169.29	-22.85
2645	3.30	4.00	0.70	2645	246.80	266.10	19.3
2655	59.00	52.00	-7.00	2655	265.03	382.40	117.37
2666	1.80	2.00	0.20	2666	176.42	192.94	16.52
2675	5.50	7.90	2.40	2675	183.42	187.67	4.25
2678	6.10	94.00	87.90	2678	*	*	*
2705	5.50	4.10	-1.40	2705	*	*	*
2706	3.90	4.30	0.40	2706	*	*	*
3084	115.00	860.00	745.00	3084	*	*	*
3091	370.00	360.00	-10.00	3091	*	*	*
3112	580.00	560.00	-20.00	3112	*	*	*
3115	175.00	170.00	-5.00	3115	*	*	*
3116	280.00	270.00	-10.00	3116	*	*	*
3117	245.00	230.00	-15.00	3117	2216.80	3551.25	1334.45
3118	390.00	380.00	-10.00	3118	2069.15	734.70	-1334.45
3159	220.00	210.00	-10.00	3159	703.27	585.50	-117.77
3191	0.20	180.00	179.80	3191	1652.50	895.65	-756.85
3194	170.00	160.00	-10.00	3194	*	*	*
3195	220.00	190.00	-30.00	3195	716.10	492.09	-224.01
3199	110.00	76.00	-34.00	3199	818.14	208.43	-609.71

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	SO4_E	SO4_L	SO4_Dif	Well	TDS_E	TDS_L	TDS_Dif
3265	1.90	1.40	-0.50	3265	178.37	169.38	-8.99
3267	0.20	1.80	1.60	3267	136.79	115.45	-21.34
3268	11.50	9.90	-1.60	3268	109.45	112.87	3.42
3432	10.00	14.00	4.00	3432	188.16	*	*
3433	1.70	2.30	0.60	3433	789.85	751.45	-38.4
3437	0.49	0.61	0.12	3437	1207.60	1432.20	224.6
3444	140.00	62.90	-77.10	3444	168.32	*	*
3447	170.00	150.00	-20.00	3447	235.82	574.50	338.68

Table continues next page.

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator groundwater level (ft) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	GWL_E	GWL_L	GWL_Dif
8	6.77	9.38	2.61
46	5.00	9.32	4.32
172	66.00	93.64	27.64
373	*	*	*
378	141.36	188.40	47.05
409	13.75	30.05	16.30
418	*	*	*
450	104.52	50.00	-54.52
520	*	*	*
544	*	*	*
605	7.07	14.70	7.64
615	*	*	*
636	14.14	15.55	1.41
684	39.91	42.70	2.79
690	22.67	42.00	19.33
696	32.86	38.00	5.15
740	12.25	13.55	1.30
754	66.40	65.65	-0.75
777	13.79	19.15	5.37
793	95.00	100.00	5.00
819	80.26	70.70	-9.56
838	58.27	57.60	-0.67
842	8.80	7.75	-1.05
861	44.83	56.78	11.96
891	29.42	28.00	-1.42
902	6.03	8.00	1.97
918	46.11	44.70	-1.41
947	89.11	91.00	1.89
951	14.59	16.91	2.33
988	8.69	6.21	-2.48
1016	7.95	8.00	0.05
1020	11.64	10.65	-0.99
1028	10.72	13.40	2.69
1030	20.46	11.30	-9.16
1036	10.23	12.10	1.88
1038	24.12	22.10	-2.02
1041	11.92	9.91	-2.01

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator groundwater level (ft) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	GWL_E	GWL_L	GWL_Dif
1045	36.45	33.60	-2.85
1046	11.75	14.60	2.85
1053	15.96	18.36	2.41
1059	13.61	12.40	-1.21
1066	*	*	*
1069	8.39	9.90	1.51
1071	16.71	15.20	-1.51
1073	6.64	7.10	0.46
1134	10.18	18.60	8.42
1140	*	*	*
1147	108.13	107.39	-0.73
1154	28.12	29.20	1.08
1160	12.47	13.50	1.03
1184	9.22	10.65	1.43
1195	30.37	32.30	1.94
1221	34.50	38.85	4.36
1251	14.65	14.90	0.25
1266	11.93	13.20	1.27
1267	*	*	*
1293	*	*	*
1342	0.99	7.14	6.15
1358	*	*	*
1362	23.06	24.20	1.14
1363	5.56	7.70	2.14
1375	*	*	*
1377	15.94	17.00	1.07
1389	36.91	36.68	-0.23
1455	12.64	11.25	-1.39
1460	37.54	35.54	-2.00
1504	2.70	4.90	2.20
1506	30.26	28.31	-1.95
1522	14.98	11.55	-3.43
1527	26.10	23.75	-2.35
1580	10.55	6.89	-3.66
1587	6.65	4.18	-2.47
1590	47.60	49.70	2.10
1606	31.34	12.30	-19.04

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator groundwater level (ft) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	GWL_E	GWL_L	GWL_Dif
1639	*	*	*
1666	17.42	18.84	1.42
1691	4.04	21.13	17.09
1722	18.44	18.30	-0.14
1734	14.52	15.60	1.08
1740	12.25	11.89	-0.36
1751	6.23	6.71	0.48
1777	*	*	*
1779	75.47	78.03	2.56
1787	26.90	33.25	6.35
1788	*	*	*
1841	*	*	*
1842	83.09	84.85	1.76
1844	*	*	*
1850	*	*	*
1878	*	*	*
1880	*	*	*
1891	5.08	5.54	0.46
1896	*	*	*
1909	7.20	75.00	67.80
1910	6.31	9.47	3.16
1929	*	*	*
1945	5.13	5.31	0.18
1946	36.76	43.10	6.34
1962	*	*	*
2037	19.15	17.14	-2.01
2115	*	*	*
2146	3.44	2.30	-1.14
2151	*	*	*
2165	*	*	*
2210	*	*	*
2216	4.71	5.20	0.49
2219	34.26	11.87	-22.39
2251	48.05	52.33	4.28
2260	28.01	27.35	-0.66
2267	5.00	5.13	0.13
2305	*	*	*

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator groundwater level (ft) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	GWL_E	GWL_L	GWL_Dif
2384	*	*	*
2412	24.50	6.18	-18.33
2414	*	*	*
2417	7.50	3.14	-4.36
2423	125.08	100.00	-25.08
2426	*	*	*
2457	7.52	4.92	-2.60
2489	21.00	6.35	-14.65
2492	*	*	*
2538	79.28	82.20	2.92
2541	65.00	75.20	10.20
2557	38.50	34.80	-3.70
2567	37.49	39.75	2.26
2585	33.51	35.10	1.59
2587	*	*	*
2618	*	*	*
2630	*	*	*
2645	*	*	*
2655	*	*	*
2666	*	*	*
2675	66.78	87.15	20.37
2678	*	*	*
2705	*	*	*
2706	*	*	*
3084	*	*	*
3091	*	*	*
3112	*	*	*
3115	*	*	*
3116	*	*	*
3117	*	*	*
3118	*	*	*
3159	*	*	*
3191	*	*	*
3194	*	*	*
3195	*	*	*
3199	*	*	*
3265	8.00	8.31	0.31

Appendix Table B1. Wilcoxon signed-rank data for 156 Background Network wells, each in separate hexagons (continued). Table contains well name, median indicator groundwater level (ft) for E (1991-1997) and L (2005-2011) periods, and difference between the medians (L minus E). Missing data is labeled with an asterisk (*).

Well	GWL_E	GWL_L	GWL_Dif
3267	*	*	*
3268	*	*	*
3432	*	*	*
3433	*	*	*
3437	*	*	*
3444	*	*	*
3447	*	*	*

Appendix Table B2. Wilcoxon signed-rank data for 15 Trend Network wells, each in separate hexagons. The table contains well number, median indicator concentrations (mg/L) for the E (1991-1997) and L (2005-2011) periods, and the difference (L med -E med).

Well	Alk_E	Alk_L	Alk_Dif	Well	Ca_E	Ca_L	Ca_Dif
91	129.75	142.50	12.75	91	50.95	51.20	0.25
243	120.00	119.00	-1.00	243	25.00	27.30	2.30
312	92.00	106.50	14.50	312	31.50	36.75	5.25
707	138.50	141.00	2.50	707	110.00	112.00	2.00
997	180.00	182.50	2.50	997	72.00	70.50	-1.50
l087	300.00	300.50	0.50	1087	120.00	118.00	-2.00
1420	120.00	122.50	2.50	1420	85.75	88.10	2.35
1762	130.75	130.00	-0.75	1762	76.75	65.95	-10.80
1943	227.00	233.00	6.00	1943	93.50	99.55	6.05
2003	180.00	163.50	-16.50	2003	75.50	68.70	-6.80
2259	173.50	205.00	31.50	2259	68.00	78.00	10.00
2404	220.00	202.00	-18.00	2404	58.50	51.50	-7.00
2465	150.00	170.00	20.00	2465	41.50	42.40	0.90
2585	137.00	150.50	13.50	2585	38.30	44.40	6.10
2675	164.50	177.50	13.00	2675	64.50	73.30	8.80

Table continues next page.

Appendix Table B2. Wilcoxon signed-rank data for 15 Trend Network wells, each in separate hexagons (continued). Table contains well number, median indicator concentrations (mg/L) for the E (1991-1997) and L (2005-2011) periods, and the difference (L med -E med).

Cl_Well	Cl_E	Cl_L	Cl_Dif	Well	K_E	K_L	K_Dif
91	5.10	5.10	0.00	91	0.44	0.57	0.14
243	3.10	2.80	-0.30	243	2.10	2.00	-0.10
312	2.45	2.65	0.20	312	0.30	0.30	0.00
707	16.00	15.50	-0.50	707	3.58	3.50	-0.08
997	11.00	10.50	-0.50	997	0.51	0.40	-0.11
l087	12.00	11.50	-0.50	1087	0.56	0.42	-0.14
1420	1182.50	1200.00	17.50	1420	22.50	21.25	-1.25
1762	20.00	19.50	-0.50	1762	3.13	3.40	0.28
1943	12.25	12.50	0.25	1943	0.31	0.30	-0.01
2003	3.80	3.00	-0.80	2003	0.26	1.92	1.66
2259	3.40	3.75	0.35	2259	0.58	0.36	-0.22
2404	5.80	5.75	-0.05	2404	0.60	0.42	-0.18
2465	5.25	3.60	-1.65	2465	0.20	0.30	0.10
2585	4.93	7.15	2.23	2585	0.32	0.40	0.08
2675	6.90	8.05	1.15	2675	1.20	1.50	0.30

Table continues next page.

Appendix Table B2. Wilcoxon signed-rank data for 15 Trend Network wells, each in separate hexagons (continued). Table contains well number, median indicator concentrations (mg/L) for the E (1991-1997) and L (2005-2011) periods, and the difference (L med -E med).

Well	Mg_E	Mg_L	Mg_Dif	Well	Na_E	Na_L	Na_Dif
91	2.75	3.65	0.90	91	3.10	3.28	0.18
243	10.75	11.85	1.10	43	5.80	5.50	-0.30
312	3.15	3.55	0.40	312	1.50	1.70	0.20
707	60.00	63.60	3.60	707	12.00	12.50	0.50
997	2.60	2.92	0.32	997	6.40	7.35	0.95
l087	2.38	2.55	0.18	1087	7.30	7.60	0.30
1420	71.50	73.15	1.65	1420	650.00	638.00	-12.00
1762	38.50	42.75	4.25	1762	16.50	19.05	2.55
1943	1.23	1.55	0.33	1943	7.78	7.33	-0.45
2003	0.91	1.56	0.65	2003	3.08	2.00	-1.08
2259	3.35	3.95	0.60	2259	1.90	1.95	0.05
2404	19.50	20.20	0.70	2404	3.23	3.35	0.13
2465	17.00	17.90	0.90	2465	2.20	2.00	-0.20
2585	11.10	13.70	2.60	2585	2.55	3.65	1.10
2675	2.05	2.20	0.15	2675	3.80	4.40	0.60

Table continues next page.

Appendix Table B2. Wilcoxon signed-rank data for 15 Trend Network wells, each in separate hexagons (continued). Table contains well number, median indicator concentrations (mg/L) for the E (1991-1997) and L (2005-2011) periods, and the difference (L med -E med).

Well	SO4_E	SO4_L	SO4_Dif	Well	TDS_E	TDS_L	TDS_Dif
91	4.25	2.80	-1.45	91	192.00	210.50	18.50
243	8.00	7.75	-0.25	243	177.60	177.00	-0.60
312	0.95	0.89	-0.06	312	134.00	152.35	18.35
707	430.00	415.00	-15.00	707	759.63	765.55	5.92
997	3.10	1.90	-1.20	997	272.90	275.80	2.90
l087	0.20	0.78	0.58	1087	442.50	441.10	-1.40
1420	180.00	175.00	-5.00	1420	2313.80	2307.80	-6.00
1762	225.00	220.00	-5.00	1762	512.67	497.25	-15.42
1943	11.50	7.40	-4.10	1943	355.67	364.90	9.23
2003	3.65	3.30	-0.35	2003	269.70	247.80	-21.90
2259	8.90	9.40	0.50	2259	260.85	303.30	42.45
2404	0.20	0.40	0.20	2404	307.10	285.20	-21.90
2465	6.20	6.75	0.55	2465	226.75	245.00	18.25
2585	7.35	9.10	1.75	2585	201.50	231.70	30.20
2675	5.45	7.85	2.40	2675	249.95	279.00	29.05

Table continues next page.

Appendix Table B2. Wilcoxon signed-rank data for 15 Trend Network wells, each in separate hexagons (continued). Table contains well number, median indicator concentrations (mg/L) for the E (1991-1997) and L (2005-2011) periods, and the difference (L med -E med).

Well	GWL_E	GWL_L	GWL_Dif
91	6.89	6.76	-0.14
243	*	66.32	*
312	*	54.87	*
707	25.93	21.32	-4.61
997	45.10	44.78	-0.31
l087	95.07	93.07	-2.00
1420	18.10	16.84	-1.27
1762	39.17	37.08	-2.09
1943	12.74	12.85	0.11
2003	44.24	38.04	-6.20
2259	30.73	26.97	-3.76
2404	84.28	85.25	0.96
2465	46.47	33.94	-12.53
2585	47.20	46.02	-1.18
2675	64.80	35.25	-29.55

Appendix Table B3. Wilcoxon signed-rank data for 31 springs, each in separate hexagons. The table contains spring abbreviation, median indicator concentrations (mg/L) for the E (1991-1997) and L (2005-2011) periods, and the difference between the median (L minus E). **Appendix Table A1** lists spring abbreviations.

Spring	Alk_E	Alk_L	Alk_Dif	Spring	Ca_E	Ca_L	Ca_Dif
ALEX	81.10	81.15	0.05	ALEX	44.50	45.00	0.50
ALR	*	100.00	*	ALR	*	39.00	*
APOP	72.00	80.30	8.30	APOP	28.73	31.00	2.27
BOAT	118.00	127.90	9.90	BOAT	49.00	55.45	6.45
BOBH	114.00	114.00	0.00	BOBH	47.44	47.44	0.00
BUCK	117.00	124.90	7.90	BUCK	60.00	64.10	4.10
CATF	78.00	83.60	5.60	CATF	30.60	32.30	1.70
CHS1	146.00	156.20	10.20	CHS1	53.00	59.80	6.80
FAN	180.50	200.00	19.50	FAN	70.55	86.15	15.60
FERN	44.18	45.00	0.82	FERN	12.00	12.95	0.95
GILB	165.00	149.50	-15.50	GILB	65.20	54.40	-10.80
HAR	*	207.00	*	HAR	*	88.60	*
HID2	120.00	128.20	8.20	HID2	55.65	78.50	22.85
HOR	152.50	162.00	9.50	HOR	60.55	75.10	14.55
HSALT	125.50	129.50	4.00	HSALT	105.00	116.00	11.00
JKB	100.00	111.00	11.00	JKB	43.00	47.30	4.30
LBS	187.00	201.00	14.00	LBS	64.10	70.85	6.75
RLS	160.00	169.00	9.00	RLS	57.10	66.00	8.90
MAN	188.00	204.00	16.00	MAN	71.80	91.00	19.20
MSAL	65.00	66.40	1.40	MSAL	154.40	151.00	-3.40
PALM	119.79	123.00	3.21	PALM	38.83	42.00	3.17
PDL	119.00	123.00	4.00	PDL	49.00	51.00	2.00
RKB	131.00	146.00	15.00	RKB	50.10	61.80	11.70
RNB1	61.00	63.90	2.90	RNB1	23.00	24.60	1.60
SANL	132.00	145.00	13.00	SANL	41.00	44.00	3.00
SBS	*	165.00	*	SBS	50.15	59.45	9.30
SILG	68.00	68.40	0.40	SILG	71.00	66.85	-4.15
VOLB	133.00	144.00	11.00	VOLB	68.00	67.30	-0.70
WAK	130.00	136.00	6.00	WAK	42.00	44.10	2.10
WEEK	136.00	147.00	11.00	WEEK	51.00	54.40	3.40
WEKI	113.00	128.00	15.00	WEKI	36.00	40.90	4.90

Table continues next page.

Appendix Table B3. Wilcoxon signed-rank data for 31 springs, each in separate hexagons (continued). The table contains spring abbreviation, median indicator concentrations (mg/L) for the E (1991-1997) and L (2005-2011) periods, and the difference between the median (L minus E). **Appendix Table A1** lists spring abbreviations.

Spring	Cl_E	Cl_L	Cl_Dif	Spring	Mg_E	Mg_L	Mg_Dif
ALEX	251.70	250.00	-1.70	ALEX	20.35	20.00	-0.35
ALR	7.00	7.60	0.60	ALR	*	7.60	*
APOP	12.00	13.30	1.30	APOP	7.80	8.02	0.22
BOAT	207.00	290.00	83.00	BOAT	18.00	22.85	4.85
BOBH	6.44	6.44	0.00	BOBH	3.20	3.20	0.00
BUCK	31.00	28.85	-2.15	BUCK	12.00	12.30	0.30
CATF	34.00	89.00	55.00	CATF	7.70	11.00	3.30
CHS1	127.00	286.00	159.00	CHS1	17.00	27.20	10.20
FAN	7.50	10.40	2.90	FAN	76.30	*	*
FERN	4.00	4.29	0.29	FERN	4.40	4.54	0.14
GILB	5.90	5.00	-0.90	GILB	35.21	33.36	-1.85
HAR	1.50	8.30	6.80	HAR	*	53.43	*
HID2	546.50	1010.00	463.50	HID2	41.55	71.30	29.75
HOR	12.40	13.50	1.10	HOR	88.90	140.50	51.60
HSALT	2362.00	2865.00	503.00	HSALT	173.00	189.50	16.50
JKB	3.90	4.30	0.40	JKB	1.90	2.30	0.40
LBS	9.00	9.65	0.65	LBS	*	57.94	*
RLS	5.20	5.80	0.60	RLS	82.14	51.60	-30.54
MAN	6.00	8.70	2.70	MAN	141.67	*	*
MSAL	1750.00	1650.00	-100.00	MSAL	98.20	94.25	-3.95
PALM	15.00	19.00	4.00	PALM	0.65	12.10	11.45
PDL	165.09	131.87	-33.22	PDL	13.39	12.00	-1.39
RKB	4.20	5.50	1.30	RKB	27.64	25.73	-1.91
RNB1	3.40	5.00	1.60	RNB1	0.05	0.19	0.14
SANL	17.00	22.50	5.50	SANL	11.18	12.00	0.82
SBS	7.00	6.70	-0.30	SBS	22.41	13.30	-9.11
SILG	471.00	433.00	-38.00	SILG	35.00	32.15	-2.85
VOLB	508.00	361.50	-146.50	VOLB	31.65	25.00	-6.65
WAK	7.70	8.65	0.95	WAK	9.50	10.40	0.90
WEEK	5.90	8.40	2.50	WEEK	5.70	6.52	0.82
WEKI	14.00	15.20	1.20	WEKI	10.40	11.35	0.95

Appendix Table B3. Wilcoxon signed-rank data for 31 springs, each in separate hexagons (continued). The table contains spring abbreviation, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and the difference between the median (L minus E). **Appendix Table A1** lists spring abbreviations.

Spring	K_E	K_L	K_Dif	Spring	Na_E	Na_L	Na_Dif
ALEX	4.00	4.00	0.00	ALEX	134.00	134.00	0.00
ALR	*	1.60	*	ALR	*	6.90	*
APOP	1.00	1.37	0.37	APOP	5.00	6.20	1.20
BOAT	4.90	6.76	1.86	BOAT	127.00	168.00	41.00
BOBH	0.40	0.40	0.00	BOBH	3.70	3.70	0.00
BUCK	0.64	0.74	0.10	BUCK	16.00	14.60	-1.40
CATF	0.63	1.59	0.96	CATF	20.00	44.70	24.70
CHS1	2.60	5.68	3.08	CHS1	74.00	153.00	79.00
FAN	7.13	7.30	0.17	FAN	1.85	3.70	1.85
FERN	*	*	*	FERN	3.00	2.70	-0.30
GILB	7.49	7.32	-0.17	GILB	0.40	0.20	-0.20
HAR	7.06	7.17	0.12	HAR	*	0.90	*
HID2	11.00	17.20	6.20	HID2	313.50	524.00	210.50
HOR	7.21	7.40	0.19	HOR	1.00	1.10	0.10
HSALT	51.00	58.10	7.10	HSALT	1390.00	1565.00	175.00
JKB	0.27	0.33	0.06	JKB	1.79	1.90	0.11
LBS	7.29	7.27	-0.02	LBS	0.80	1.20	0.40
RLS	7.28	7.49	0.21	RLS	0.70	0.80	0.10
MAN	7.21	7.24	0.03	MAN	1.35	1.40	0.05
MSAL	29.00	28.50	-0.50	MSAL	906.00	902.00	-4.00
PALM	1.00	1.20	0.20	PALM	8.84	11.00	2.16
PDL	4.50	4.10	-0.40	PDL	83.00	73.00	-10.00
RKB	7.35	7.34	-0.01	RKB	0.50	0.60	0.10
RNB1	2.30	2.77	0.47	RNB1	8.15	7.97	-0.18
SANL	1.64	1.70	0.06	SANL	9.88	13.00	3.12
SBS	7.09	7.42	0.33	SBS	0.95	1.15	0.20
SILG	8.70	8.10	-0.60	SILG	254.00	231.00	-23.00
VOLB	9.55	7.80	-1.75	VOLB	225.00	208.00	-17.00
WAK	0.51	0.61	0.10	WAK	5.10	5.71	0.61
WEEK	0.20	0.42	0.22	WEEK	3.80	4.97	1.17
WEKI	1.50	1.70	0.20	WEKI	8.00	9.75	1.75

Appendix Table B3. Wilcoxon signed-rank data for 31 springs, each in separate hexagons (continued). The table contains spring abbreviation, median indicator concentrations (mg/L) for E (1991-1997) and L (2005-2011) periods, and the difference between the median (L minus E). **Appendix Table A1** lists spring abbreviations.

Spring	SC_E	SC_L	SC_Dif	Spring	SO4_E	SO4_L	SO4_Dif
ALEX	1157.50	1054.00	-103.50	ALEX	68.00	64.90	-3.10
ALR	314.00	281.00	-33.00	ALR	*	28.00	*
APOP	246.50	258.00	11.50	APOP	9.02	11.00	1.98
BOAT	885.00	1299.00	414.00	BOAT	34.00	45.80	11.80
BOBH	268.00	268.00	0.00	BOBH	8.05	8.05	0.00
BUCK	479.00	483.00	4.00	BUCK	67.50	65.60	-1.90
CATF	307.00	514.00	207.00	CATF	18.00	25.20	7.20
CHS1	755.00	1300.00	545.00	CHS1	25.00	48.45	23.45
FAN	4.05	5.35	1.30	FAN	441.50	487.00	45.50
FERN	118.00	125.50	7.50	FERN	6.21	6.21	0.00
GILB	3.10	2.50	-0.60	GILB	365.00	351.00	-14.00
HAR	*	3.70	*	HAR	434.50	462.00	27.50
HID2	2150.00	3575.00	1425.00	HID2	85.75	153.00	67.25
HOR	7.90	9.15	1.25	HOR	440.00	461.00	21.00
HSALT	8520.00	9508.00	988.00	HSALT	339.00	386.50	47.50
JKB	*	*	*	JKB	1.10	1.20	0.10
LBS	5.45	5.70	0.25	LBS	425.00	441.00	16.00
RLS	2.75	2.80	0.05	RLS	372.00	375.00	3.00
MAN	4.95	4.30	-0.65	MAN	465.00	486.00	21.00
MSAL	5670.00	5300.00	-370.00	MSAL	386.00	394.00	8.00
PALM	327.00	353.00	26.00	PALM	22.19	27.60	5.41
PDL	826.00	698.00	-128.00	PDL	27.00	26.25	-0.75
RKB	2.00	2.50	0.50	RKB	297.00	325.00	28.00
RNB1	148.00	346.00	198.00	RNB1	4.50	5.10	0.60
SANL	337.50	354.00	16.50	SANL	12.00	13.65	1.65
SBS	2.75	3.35	0.60	SBS	369.00	384.00	15.00
SILG	2000.00	1796.00	-204.00	SILG	188.00	169.00	-19.00
VOLB	2241.00	1570.00	-671.00	VOLB	72.00	55.80	-16.20
WAK	288.00	316.00	28.00	WAK	10.00	11.00	1.00
WEEK	302.00	332.00	30.00	WEEK	8.40	10.40	2.00
WEKI	316.00	326.00	10.00	WEKI	18.00	20.30	2.30

Table continues next page.

Appendix Table B3. Wilcoxon signed-rank data for 31 springs, each in separate hexagons (continued). The table contains spring abbreviation, median indicator concentrations (mg/L) for the E (1991-1997) and L (2005-2011) periods, and the difference between the median (L minus E). **Appendix Table A1** lists spring abbreviations.

Spring	TDS_E	TDS_L	TDS_Dif	Spring	DischE	DischL	DischDif
ALEX	580.50	602.90	22.40	ALEX	95.10	95.15	0.05
ALR	*	*	*	APOP	29.79	25.71	-4.08
APOP	134.10	151.09	16.99	FAN	76.73	76.40	-0.33
BOAT	567.50	677.00	109.50	FERN	12.55	11.90	-0.65
BOBH	183.10	215.91	32.81	GILB	35.21	33.26	-1.95
BUCK	306.21	313.19	6.98	HOMOSCOMB	153.45	131.20	-22.25
CATF	191.96	289.94	97.98	HOR	83.64	74.70	-8.94
CHS1	436.60	732.80	296.20	JKB	107.10	95.30	-11.80
FAN	289.76	341.14	51.38	RLS	82.14	51.60	-30.54
FERN	75.22	74.57	-0.65	PDL	22.71	24.79	2.08
GILB	248.94	219.82	-29.12	RKB	27.64	25.73	-1.91
HAR	*	*	*	SANL	19.43	20.02	0.59
HID2	1167.70	1994.00	826.30	SILG	97.30	99.15	1.85
HOR	292.46	334.58	42.12	MSAL	77.67	82.20	4.53
HSALT	4591.00	5544.00	953.00	MSAL	22.14	13.30	-8.84
JKB	151.96	168.33	16.37	WEEK	138.55	144.60	6.05
LBS	292.79	321.58	28.79	WEKI	65.54	61.42	-4.12
RLS	255.59	274.89	19.30	RNATDUN	655.00	601.20	-53.80
MAN	311.80	353.26	41.46				
MSAL	3326.00	3351.00	25.00				
PALM	202.53	236.55	34.02				
PDL	483.20	421.70	-61.50				
RKB	224.61	261.06	36.45				
RNB1	97.85	108.20	10.35				
SANL	227.46	253.15	25.69				
SBS	*	*	*				
SILG	1082.10	1005.50	-76.60				
VOLB	915.80	931.10	15.30				
WAK	205.01	220.98	15.97				
WEEK	213.05	233.02	19.97				
WEKI	201.24	228.17	26.93				

Appendix Table B4. Regional-Kendall data for 16 TN wells. The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table correspond to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	Alk	Well	Year	Ca	Well	Year	Cl	Well
1	128.00	67	1	41.00	67	1	7.70	67
2	125.00	67	2	41.00	67	2	7.85	67
3	130.00	67	3	41.00	67	3	7.50	67
4	130.00	67	4	42.00	67	4	7.60	67
5	*	67	5	*	67	5	*	67
6	0.00	67	6	*	67	6	*	67
7	153.00	67	7	42.20	67	7	7.70	67
8	*	67	8	*	67	8	*	67
9	*	67	9	*	67	9	*	67
10	124.00	67	10	42.00	67	10	7.75	67
11	*	67	11	*	67	11	*	67
12	*	67	12	*	67	12	*	67
13	142.00	67	13	47.50	67	13	8.50	67
14	139.50	67	14	46.15	67	14	8.00	67
15	135.00	67	15	41.85	67	15	8.75	67
16	134.00	67	16	44.35	67	16	8.20	67
17	138.00	67	17	44.30	67	17	30.70	67
18	136.00	67	18	42.55	67	18	20.00	67
19	137.50	67	19	44.40	67	19	8.60	67
20	*	67	20	*	67	20	*	67
21	141.50	67	21	45.90	67	21	8.50	67
1	127.00	91	1	52.90	91	1	5.10	91
2	129.50	91	2	49.00	91	2	4.50	91
3	140.00	91	3	54.00	91	3	5.45	91
4	130.00	91	4	49.00	91	4	4.25	91
5	*	91	5	*	91	5	5.50	91
6	*	91	6	*	91	6	*	91
7	*	91	7	*	91	7	*	91
8	*	91	8	*	91	8	*	91
9	125.00	91	9	46.70	91	9	6.00	91
10	143.00	91	10	49.60	91	10	4.95	91
11	*	91	11	*	91	11	*	91
12	*	91	12	*	91	12	*	91
13	131.00	91	13	50.20	91	13	3.60	91
14	144.50	91	14	56.30	91	14	4.25	91
15	147.00	91	15	53.25	91	15	4.50	91
16	127.50	91	16	48.25	91	16	5.30	91
17	142.50	91	17	51.20	91	17	6.05	91
18	126.00	91	18	43.95	91	18	5.50	91
19	156.00	91	19	58.85	91	19	5.10	91
20	136.00	91	20	51.00	91	20	4.80	91
21	151.00	91	21	55.40	91	21	4.60	91
1	120.00	243	1	26.00	243	1	3.10	243
2	*	243	2	*	243	2	*	243
3	*	243	3	*	243	3	*	243

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	Alk	Well	Year	Ca	Well	Year	Cl	Well
4	*	243	4	*	243	4	*	243
5	*	243	5	24.00	243	5	*	243
6	*	243	6	*	243	6	*	243
7	*	243	7	*	243	7	*	243
8	*	243	8	*	243	8	*	243
9	106.00	243	9	25.60	243	9	3.00	243
10	112.00	243	10	25.70	243	10	2.50	243
11	115.00	243	11	25.30	243	11	2.40	243
12	*	243	12	*	243	12	*	243
13	*	243	13	*	243	13	*	243
14	117.00	243	14	26.00	243	14	2.60	243
15	75.50	243	15	28.45	243	15	3.00	243
16	115.50	243	16	30.15	243	16	2.80	243
17	120.00	243	17	27.20	243	17	2.90	243
18	120.00	243	18	27.30	243	18	2.70	243
19	117.50	243	19	26.80	243	19	2.80	243
20	119.00	243	20	27.10	243	20	2.90	243
21	120.00	243	21	27.55	243	21	2.80	243
1	92.00	312	1	32.50	312	1	2.20	312
2	90.50	312	2	31.50	312	2	2.45	312
3	90.50	312	3	31.00	312	3	2.45	312
4	94.00	312	4	33.00	312	4	2.65	312
5	*	312	5	*	312	5	2.45	312
6	*	312	6	*	312	6	*	312
7	100.00	312	7	31.20	312	7	2.10	312
8	*	312	8	*	312	8	*	312
9	*	312	9	*	312	9	*	312
10	*	312	10	*	312	10	*	312
11	97.00	312	11	31.90	312	11	2.10	312
12	96.00	312	12	32.25	312	12	2.20	312
13	*	312	13	*	312	13	*	312
14	98.00	312	14	32.60	312	14	2.60	312
15	95.50	312	15	34.90	312	15	2.65	312
16	93.50	312	16	35.90	312	16	2.45	312
17	100.50	312	17	34.10	312	17	2.50	312
18	106.50	312	18	36.75	312	18	2.60	312
19	110.50	312	19	38.75	312	19	2.75	312
20	110.00	312	20	39.20	312	20	2.80	312
21	110.50	312	21	39.00	312	21	2.75	312
1	135.00	707	1	110.00	707	1	16.00	707
2	137.00	707	2	110.00	707	2	15.00	707
3	140.00	707	3	110.00	707	3	16.00	707
4	140.00	707	4	110.00	707	4	16.50	707
5	*	707	5	*	707	5	16.00	707
6	*	707	6	*	707	6	*	707

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	Alk	Well	Year	Ca	Well	Year	Cl	Well
7	*	707	7	*	707	7	*	707
8	*	707	8	*	707	8	*	707
9	*	707	9	*	707	9	*	707
10	133.00	707	10	109.00	707	10	15.00	707
11	140.00	707	11	108.00	707	11	15.00	707
12	*	707	12	*	707	12	*	707
13	*	707	13	*	707	13	*	707
14	139.00	707	14	118.00	707	14	15.00	707
15	137.50	707	15	108.00	707	15	15.50	707
16	138.00	707	16	112.50	707	16	15.50	707
17	144.00	707	17	112.00	707	17	16.50	707
18	143.00	707	18	117.00	707	18	16.00	707
19	139.50	707	19	110.50	707	19	15.00	707
20	141.00	707	20	112.00	707	20	15.00	707
21	141.00	707	21	114.50	707	21	16.00	707
1	187.50	997	1	72.50	997	1	12.00	997
2	187.00	997	2	72.00	997	2	11.00	997
3	180.00	997	3	70.00	997	3	11.00	997
4	180.00	997	4	69.50	997	4	11.00	997
5	*	997	5	*	997	5	10.00	997
6	168.00	997	6	73.90	997	6	9.10	997
7	*	997	7	*	997	7	*	997
8	*	997	8	*	997	8	*	997
9	173.00	997	9	67.60	997	9	12.00	997
10	176.00	997	10	69.30	997	10	12.00	997
11	*	997	11	*	997	11	*	997
12	*	997	12	*	997	12	*	997
13	181.00	997	13	68.30	997	13	10.00	997
14	179.50	997	14	69.50	997	14	11.00	997
15	180.00	997	15	69.15	997	15	10.00	997
16	177.50	997	16	70.20	997	16	10.50	997
17	183.50	997	17	70.55	997	17	12.00	997
18	182.50	997	18	71.80	997	18	12.00	997
19	180.50	997	19	70.50	997	19	11.00	997
20	185.00	997	20	68.80	997	20	10.00	997
21	186.00	997	21	70.80	997	21	10.00	997
1	297.00	1087	1	120.00	1087	1	12.50	1087
2	300.00	1087	2	120.00	1087	2	12.00	1087
3	300.00	1087	3	120.00	1087	3	12.00	1087
4	300.00	1087	4	120.00	1087	4	12.50	1087
5	*	1087	5	*	1087	5	12.00	1087
6	*	1087	6	*	1087	6	*	1087
7	*	1087	7	*	1087	7	*	1087
8	*	1087	8	*	1087	8	*	1087
9	*	1087	9	*	1087	9	*	1087

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	Alk	Well	Year	Ca	Well	Year	Cl	Well
10	*	1087	10	*	1087	10	*	1087
11	*	1087	11	*	1087	11	*	1087
12	303.00	1087	12	120.00	1087	12	12.00	1087
13	314.00	1087	13	114.00	1087	13	12.00	1087
14	298.00	1087	14	108.00	1087	14	11.00	1087
15	295.50	1087	15	116.00	1087	15	11.50	1087
16	295.00	1087	16	118.00	1087	16	11.00	1087
17	306.50	1087	17	119.50	1087	17	12.00	1087
18	303.50	1087	18	118.50	1087	18	11.50	1087
19	296.50	1087	19	118.00	1087	19	12.00	1087
20	301.00	1087	20	117.00	1087	20	11.00	1087
21	300.50	1087	21	120.50	1087	21	12.00	1087
1	117.00	1420	1	83.50	1420	1	1150.00	1420
2	120.50	1420	2	87.50	1420	2	1200.00	1420
3	120.00	1420	3	84.00	1420	3	1170.00	1420
4	120.00	1420	4	87.50	1420	4	1195.00	1420
5	*	1420	5	*	1420	5	*	1420
6	*	1420	6	*	1420	6	*	1420
7	*	1420	7	*	1420	7	*	1420
8	*	1420	8	*	1420	8	*	1420
9	*	1420	9	*	1420	9	*	1420
10	*	1420	10	*	1420	10	*	1420
11	*	1420	11	*	1420	11	*	1420
12	126.00	1420	12	87.30	1420	12	1200.00	1420
13	124.00	1420	13	89.10	1420	13	1200.00	1420
14	123.00	1420	14	83.20	1420	14	1200.00	1420
15	121.50	1420	15	88.10	1420	15	1200.00	1420
16	121.00	1420	16	86.50	1420	16	1200.00	1420
17	125.50	1420	17	88.70	1420	17	1200.00	1420
18	125.00	1420	18	87.75	1420	18	1200.00	1420
19	122.50	1420	19	88.50	1420	19	1100.00	1420
20	126.00	1420	20	85.90	1420	20	1200.00	1420
21	122.50	1420	21	90.90	1420	21	1200.00	1420
1	131.50	1762	1	79.00	1762	1	19.00	1762
2	133.00	1762	2	76.00	1762	2	20.50	1762
3	130.00	1762	3	75.50	1762	3	20.00	1762
4	130.00	1762	4	77.50	1762	4	20.00	1762
5	*	1762	5	*	1762	5	*	1762
6	*	1762	6	*	1762	6	*	1762
7	*	1762	7	*	1762	7	*	1762
8	*	1762	8	*	1762	8	*	1762
9	*	1762	9	*	1762	9	*	1762
10	*	1762	10	*	1762	10	*	1762
11	132.00	1762	11	66.70	1762	11	17.00	1762
12	133.00	1762	12	67.40	1762	12	18.00	1762

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	Alk	Well	Year	Ca	Well	Year	Cl	Well
13	*	1762	13	*	1762	13	*	1762
14	127.00	1762	14	61.30	1762	14	18.00	1762
15	126.50	1762	15	63.80	1762	15	18.50	1762
16	125.50	1762	16	66.70	1762	16	19.50	1762
17	132.00	1762	17	66.60	1762	17	20.00	1762
18	130.00	1762	18	65.80	1762	18	19.00	1762
19	130.00	1762	19	65.95	1762	19	19.50	1762
20	132.00	1762	20	65.30	1762	20	21.00	1762
21	126.50	1762	21	66.70	1762	21	19.50	1762
1	216.00	1943	1	91.50	1943	1	11.00	1943
2	224.00	1943	2	92.00	1943	2	10.00	1943
3	235.00	1943	3	95.00	1943	3	13.50	1943
4	230.00	1943	4	97.50	1943	4	15.00	1943
5	*	1943	5	*	1943	5	*	1943
6	*	1943	6	*	1943	6	*	1943
7	*	1943	7	*	1943	7	*	1943
8	*	1943	8	*	1943	8	*	1943
9	*	1943	9	*	1943	9	*	1943
10	*	1943	10	*	1943	10	*	1943
11	240.00	1943	11	95.40	1943	11	17.00	1943
12	215.00	1943	12	89.10	1943	12	17.00	1943
13	246.00	1943	13	104.00	1943	13	10.00	1943
14	242.50	1943	14	103.00	1943	14	9.05	1943
15	259.00	1943	15	108.00	1943	15	12.00	1943
16	233.00	1943	16	101.50	1943	16	13.50	1943
17	201.00	1943	17	82.00	1943	17	9.60	1943
18	211.50	1943	18	86.55	1943	18	12.50	1943
19	207.00	1943	19	88.55	1943	19	16.00	1943
20	267.00	1943	20	104.00	1943	20	13.00	1943
21	239.50	1943	21	99.55	1943	21	11.00	1943
1	168.00	2003	1	74.95	2003	1	4.05	2003
2	180.00	2003	2	75.00	2003	2	3.60	2003
3	180.00	2003	3	78.00	2003	3	3.20	2003
4	180.00	2003	4	76.00	2003	4	4.00	2003
5	*	2003	5	*	2003	5	*	2003
6	*	2003	6	*	2003	6	*	2003
7	*	2003	7	*	2003	7	*	2003
8	*	2003	8	*	2003	8	*	2003
9	*	2003	9	*	2003	9	*	2003
10	179.00	2003	10	77.90	2003	10	3.00	2003
11	159.00	2003	11	64.00	2003	11	2.70	2003
12	*	2003	12	*	2003	12	*	2003
13	152.00	2003	13	71.20	2003	13	5.30	2003
14	172.00	2003	14	70.55	2003	14	4.30	2003
15	163.50	2003	15	68.70	2003	15	4.00	2003

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	Alk	Well	Year	Ca	Well	Year	Cl	Well
16	166.00	2003	16	73.20	2003	16	4.20	2003
17	176.00	2003	17	70.20	2003	17	3.95	2003
18	146.50	2003	18	57.30	2003	18	2.75	2003
19	128.50	2003	19	51.50	2003	19	2.25	2003
20	133.00	2003	20	51.90	2003	20	2.10	2003
21	172.00	2003	21	72.30	2003	21	3.00	2003
1	169.00	2259	1	69.00	2259	1	3.40	2259
2	172.00	2259	2	67.00	2259	2	4.20	2259
3	175.00	2259	3	64.00	2259	3	3.35	2259
4	180.00	2259	4	69.50	2259	4	3.60	2259
5	*	2259	5	*	2259	5	3.20	2259
6	*	2259	6	*	2259	6	*	2259
7	*	2259	7	*	2259	7	*	2259
8	*	2259	8	*	2259	8	*	2259
9	176.00	2259	9	70.50	2259	9	3.60	2259
10	182.00	2259	10	70.60	2259	10	3.50	2259
11	*	2259	11	*	2259	11	*	2259
12	*	2259	12	*	2259	12	*	2259
13	206.00	2259	13	84.30	2259	13	2.20	2259
14	203.50	2259	14	79.70	2259	14	2.75	2259
15	177.00	2259	15	71.85	2259	15	3.90	2259
16	177.00	2259	16	75.00	2259	16	4.10	2259
17	198.50	2259	17	76.90	2259	17	3.75	2259
18	205.50	2259	18	78.00	2259	18	3.40	2259
19	205.00	2259	19	83.20	2259	19	3.40	2259
20	228.00	2259	20	88.60	2259	20	4.10	2259
21	217.50	2259	21	87.55	2259	21	3.45	2259
1	220.00	2404	1	59.50	2404	1	5.95	2404
2	220.00	2404	2	58.00	2404	2	5.80	2404
3	220.00	2404	3	55.00	2404	3	5.45	2404
4	220.00	2404	4	59.00	2404	4	5.80	2404
5	*	2404	5	*	2404	5	5.90	2404
6	*	2404	6	*	2404	6	*	2404
7	*	2404	7	*	2404	7	*	2404
8	*	2404	8	*	2404	8	*	2404
9	*	2404	9	*	2404	9	*	2404
10	*	2404	10	*	2404	10	*	2404
11	*	2404	11	*	2404	11	*	2404
12	209.00	2404	12	51.80	2404	12	5.00	2404
13	207.00	2404	13	60.90	2404	13	5.20	2404
14	208.00	2404	14	51.70	2404	14	5.25	2404
15	201.00	2404	15	51.50	2404	15	5.60	2404
16	199.50	2404	16	52.50	2404	16	5.55	2404
17	208.00	2404	17	49.20	2404	17	5.80	2404
18	205.50	2404	18	51.80	2404	18	5.55	2404

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	Alk	Well	Year	Ca	Well	Year	Cl	Well
19	202.00	2404	19	50.25	2404	19	5.75	2404
20	207.00	2404	20	50.30	2404	20	6.00	2404
21	202.00	2404	21	52.00	2404	21	5.75	2404
1	150.00	2465	1	41.50	2465	1	5.25	2465
2	154.00	2465	2	43.00	2465	2	5.70	2465
3	150.00	2465	3	41.00	2465	3	5.05	2465
4	150.00	2465	4	41.50	2465	4	5.20	2465
5	152.00	2465	5	39.00	2465	5	5.35	2465
6	*	2465	6	*	2465	6	*	2465
7	*	2465	7	*	2465	7	*	2465
8	168.00	2465	8	43.00	2465	8	4.00	2465
9	152.00	2465	9	40.70	2465	9	4.70	2465
10	152.00	2465	10	40.60	2465	10	4.20	2465
11	*	2465	11	*	2465	11	*	2465
12	*	2465	12	*	2465	12	*	2465
13	157.00	2465	13	43.70	2465	13	4.00	2465
14	165.50	2465	14	42.70	2465	14	3.85	2465
15	158.50	2465	15	42.10	2465	15	3.70	2465
16	150.00	2465	16	40.80	2465	16	3.60	2465
17	165.00	2465	17	40.50	2465	17	4.00	2465
18	181.00	2465	18	44.05	2465	18	3.30	2465
19	171.50	2465	19	43.60	2465	19	3.45	2465
20	170.00	2465	20	42.40	2465	20	3.60	2465
21	173.00	2465	21	44.70	2465	21	3.30	2465
1	125.00	2585	1	39.50	2585	1	5.05	2585
2	140.00	2585	2	41.00	2585	2	5.30	2585
3	140.00	2585	3	37.50	2585	3	4.80	2585
4	100.00	2585	4	29.00	2585	4	4.50	2585
5	*	2585	5	*	2585	5	5.40	2585
6	137.00	2585	6	38.30	2585	6	4.00	2585
7	*	2585	7	*	2585	7	*	2585
8	*	2585	8	*	2585	8	*	2585
9	*	2585	9	*	2585	9	*	2585
10	*	2585	10	*	2585	10	*	2585
11	*	2585	11	*	2585	11	*	2585
12	139.00	2585	12	41.10	2585	12	6.90	2585
13	145.00	2585	13	42.20	2585	13	5.75	2585
14	149.50	2585	14	41.45	2585	14	5.45	2585
15	111.50	2585	15	31.25	2585	15	4.30	2585
16	150.00	2585	16	44.80	2585	16	6.00	2585
17	152.00	2585	17	41.65	2585	17	7.95	2585
18	150.50	2585	18	44.35	2585	18	8.95	2585
19	152.00	2585	19	45.10	2585	19	7.15	2585
20	156.00	2585	20	44.40	2585	20	6.60	2585
21	150.00	2585	21	44.65	2585	21	8.25	2585

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	Alk	Well	Year	Ca	Well	Year	Cl	Well
1	164.00	2675	1	64.00	2675	1	6.05	2675
2	175.00	2675	2	67.00	2675	2	7.00	2675
3	160.00	2675	3	65.00	2675	3	6.90	2675
4	165.00	2675	4	62.50	2675	4	6.65	2675
5	*	2675	5	*	2675	5	7.25	2675
6	*	2675	6	*	2675	6	*	2675
7	*	2675	7	*	2675	7	*	2675
8	*	2675	8	*	2675	8	*	2675
9	*	2675	9	*	2675	9	*	2675
10	*	2675	10	*	2675	10	*	2675
11	193.00	2675	11	84.80	2675	11	7.80	2675
12	*	2675	12	*	2675	12	*	2675
13	175.50	2675	13	69.55	2675	13	8.25	2675
14	184.50	2675	14	71.60	2675	14	7.90	2675
15	165.50	2675	15	61.05	2675	15	7.20	2675
16	161.50	2675	16	67.25	2675	16	7.45	2675
17	184.00	2675	17	75.55	2675	17	8.15	2675
18	185.50	2675	18	76.20	2675	18	8.05	2675
19	138.00	2675	19	57.00	2675	19	8.55	2675
20	188.00	2675	20	73.30	2675	20	8.10	2675
21	177.50	2675	21	73.30	2675	21	7.55	2675

Table continued next page.

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	K	Well	Year	Mg	Well	Year	Na	Well
1	1.00	67	1	8.90	67	1	4.80	67
2	0.75	67	2	9.60	67	2	5.15	67
3	0.50	67	3	9.50	67	3	5.20	67
4	0.48	67	4	9.30	67	4	5.00	67
5	*	67	5	*	67	5	*	67
6	*	67	6	*	67	6	*	67
7	0.51	67	7	9.65	67	7	4.99	67
8	*	67	8	*	67	8	*	67
9	*	67	9	*	67	9	*	67
10	0.56	67	10	10.05	67	10	5.20	67
11	*	67	11	*	67	11	*	67
12	*	67	12	*	67	12	*	67
13	0.62	67	13	10.80	67	13	6.48	67
14	0.60	67	14	10.65	67	14	5.82	67
15	0.58	67	15	9.55	67	15	5.26	67
16	0.59	67	16	10.30	67	16	5.60	67
17	0.90	67	17	11.50	67	17	16.45	67
18	0.79	67	18	10.50	67	18	11.90	67
19	0.57	67	19	10.12	67	19	5.80	67
20	*	67	20	*	67	20	*	67
21	0.63	67	21	10.50	67	21	5.75	67
1	0.50	91	1	2.50	91	1	3.10	91
2	0.75	91	2	2.70	91	2	*	91
3	0.37	91	3	2.80	91	3	*	91
4	0.36	91	4	2.85	91	4	*	91
5	*	91	5	*	91	5	*	91
6	*	91	6	*	91	6	*	91
7	*	91	7	*	91	7	*	91
8	*	91	8	*	91	8	*	91
9	0.42	91	9	4.00	91	9	3.20	91
10	0.44	91	10	5.06	91	10	2.75	91
11	*	91	11	*	91	11	*	91
12	*	91	12	*	91	12	*	91
13	0.40	91	13	2.50	91	13	2.69	91
14	0.41	91	14	2.70	91	14	3.05	91
15	0.44	91	15	2.55	91	15	*	91
16	0.62	91	16	3.65	91	16	*	91
17	0.57	91	17	4.05	91	17	3.50	91
18	0.65	91	18	4.10	91	18	*	91
19	0.57	91	19	3.72	91	19	*	91
20	0.42	91	20	3.27	91	20	*	91
21	0.42	91	21	3.61	91	21	3.05	91
1	2.20	243	1	12.00	243	1	6.30	243
2	*	243	2	*	243	2	*	243
3	*	243	3	*	243	3	*	243

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	K	Well	Year	Mg	Well	Year	Na	Well
4	*	243	4	*	243	4	*	243
5	2.00	243	5	9.50	243	5	5.30	243
6	*	243	6	*	243	6	*	243
7	*	243	7	*	243	7	*	243
8	*	243	8	*	243	8	*	243
9	2.00	243	9	10.90	243	9	5.40	243
10	1.90	243	10	11.50	243	10	5.30	243
11	2.00	243	11	11.35	243	11	5.35	243
12	*	243	12	*	243	12	*	243
13	*	243	13	*	243	13	*	243
14	1.90	243	14	11.80	243	14	5.09	243
15	2.00	243	15	8.30	243	15	5.07	243
16	2.25	243	16	13.15	243	16	5.88	243
17	1.99	243	17	11.75	243	17	5.15	243
18	2.00	243	18	12.05	243	18	5.60	243
19	1.95	243	19	11.70	243	19	5.40	243
20	2.00	243	20	12.20	243	20	5.60	243
21	2.05	243	21	11.85	243	21	5.50	243
1	0.75	312	1	3.40	312	1	1.55	312
2	0.55	312	2	3.15	312	2	1.50	312
3	0.23	312	3	3.15	312	3	1.50	312
4	0.25	312	4	3.45	312	4	1.60	312
5	*	312	5	*	312	5	*	312
6	*	312	6	*	312	6	*	312
7	0.30	312	7	3.15	312	7	1.47	312
8	*	312	8	*	312	8	*	312
9	*	312	9	*	312	9	*	312
10	*	312	10	*	312	10	*	312
11	0.22	312	11	3.40	312	11	1.50	312
12	0.24	312	12	3.25	312	12	1.50	312
13	*	312	13	*	312	13	*	312
14	0.23	312	14	3.20	312	14	1.52	312
15	0.27	312	15	3.55	312	15	1.72	312
16	0.24	312	16	3.60	312	16	1.68	312
17	0.19	312	17	3.40	312	17	1.55	312
18	0.30	312	18	3.50	312	18	1.75	312
19	0.30	312	19	3.57	312	19	1.65	312
20	0.30	312	20	3.85	312	20	1.70	312
21	0.30	312	21	3.49	312	21	1.70	312
1	3.60	707	1	60.00	707	1	12.00	707
2	3.80	707	2	60.00	707	2	12.00	707
3	3.55	707	3	59.00	707	3	12.00	707
4	3.55	707	4	63.50	707	4	12.00	707
5	*	707	5	*	707	5	*	707
6	*	707	6	*	707	6	*	707

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	K	Well	Year	Mg	Well	Year	Na	Well
7	*	707	7	*	707	7	*	707
8	*	707	8	*	707	8	*	707
9	*	707	9	*	707	9	*	707
10	3.40	707	10	61.60	707	10	12.20	707
11	3.20	707	11	60.50	707	11	12.10	707
12	*	707	12	*	707	12	*	707
13	*	707	13	*	707	13	*	707
14	3.80	707	14	67.10	707	14	13.40	707
15	3.40	707	15	59.70	707	15	11.85	707
16	3.60	707	16	63.80	707	16	12.65	707
17	3.47	707	17	62.70	707	17	12.50	707
18	3.50	707	18	65.85	707	18	12.90	707
19	3.49	707	19	63.60	707	19	12.35	707
20	3.60	707	20	64.20	707	20	12.40	707
21	3.60	707	21	63.25	707	21	12.60	707
1	0.90	997	1	2.85	997	1	6.55	997
2	0.90	997	2	2.50	997	2	6.40	997
3	0.51	997	3	2.60	997	3	6.10	997
4	0.48	997	4	2.50	997	4	6.20	997
5	*	997	5	*	997	5	*	997
6	0.50	997	6	2.88	997	6	6.53	997
7	*	997	7	*	997	7	*	997
8	*	997	8	*	997	8	*	997
9	0.44	997	9	2.30	997	9	6.40	997
10	0.38	997	10	2.60	997	10	6.20	997
11	*	997	11	*	997	11	*	997
12	*	997	12	*	997	12	*	997
13	0.37	997	13	2.70	997	13	6.93	997
14	0.39	997	14	2.65	997	14	6.83	997
15	0.40	997	15	2.70	997	15	6.50	997
16	0.39	997	16	2.75	997	16	7.35	997
17	0.36	997	17	2.75	997	17	7.25	997
18	0.43	997	18	2.92	997	18	7.45	997
19	0.39	997	19	2.95	997	19	7.40	997
20	0.67	997	20	3.02	997	20	7.20	997
21	0.41	997	21	2.97	997	21	7.45	997
1	0.70	1087	1	2.45	1087	1	7.30	1087
2	0.70	1087	2	2.40	1087	2	7.20	1087
3	0.41	1087	3	2.30	1087	3	7.30	1087
4	0.40	1087	4	2.35	1087	4	7.35	1087
5	*	1087	5	*	1087	5	*	1087
6	*	1087	6	*	1087	6	*	1087
7	*	1087	7	*	1087	7	*	1087
8	*	1087	8	*	1087	8	*	1087
9	*	1087	9	*	1087	9	*	1087

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	K	Well	Year	Mg	Well	Year	Na	Well
10	*	1087	10	*	1087	10	*	1087
11	*	1087	11	*	1087	11	*	1087
12	0.39	1087	12	2.60	1087	12	7.50	1087
13	0.37	1087	13	2.40	1087	13	7.50	1087
14	0.36	1087	14	2.30	1087	14	6.73	1087
15	0.38	1087	15	2.45	1087	15	6.80	1087
16	0.42	1087	16	2.60	1087	16	7.80	1087
17	0.39	1087	17	2.50	1087	17	7.60	1087
18	0.43	1087	18	2.62	1087	18	7.62	1087
19	0.41	1087	19	2.55	1087	19	7.55	1087
20	0.66	1087	20	2.55	1087	20	7.50	1087
21	0.49	1087	21	2.58	1087	21	7.65	1087
1	21.20	1420	1	70.00	1420	1	645.00	1420
2	24.00	1420	2	73.00	1420	2	650.00	1420
3	22.00	1420	3	71.00	1420	3	650.00	1420
4	23.00	1420	4	72.00	1420	4	665.00	1420
5	*	1420	5	*	1420	5	*	1420
6	*	1420	6	*	1420	6	*	1420
7	*	1420	7	*	1420	7	*	1420
8	*	1420	8	*	1420	8	*	1420
9	*	1420	9	*	1420	9	*	1420
10	*	1420	10	*	1420	10	*	1420
11	*	1420	11	*	1420	11	*	1420
12	21.20	1420	12	71.60	1420	12	659.00	1420
13	22.00	1420	13	75.40	1420	13	677.00	1420
14	22.70	1420	14	69.80	1420	14	685.00	1420
15	21.25	1420	15	73.05	1420	15	627.50	1420
16	21.65	1420	16	72.90	1420	16	643.00	1420
17	21.15	1420	17	74.25	1420	17	623.50	1420
18	20.70	1420	18	73.15	1420	18	653.50	1420
19	21.85	1420	19	73.10	1420	19	638.00	1420
20	20.80	1420	20	73.40	1420	20	621.00	1420
21	22.05	1420	21	75.30	1420	21	662.00	1420
1	3.10	1762	1	39.00	1762	1	17.40	1762
2	3.15	1762	2	36.50	1762	2	16.00	1762
3	3.15	1762	3	38.50	1762	3	16.50	1762
4	3.05	1762	4	38.50	1762	4	16.50	1762
5	*	1762	5	*	1762	5	*	1762
6	*	1762	6	*	1762	6	*	1762
7	*	1762	7	*	1762	7	*	1762
8	*	1762	8	*	1762	8	*	1762
9	*	1762	9	*	1762	9	*	1762
10	*	1762	10	*	1762	10	*	1762
11	3.10	1762	11	41.20	1762	11	17.90	1762
12	3.20	1762	12	41.40	1762	12	18.20	1762

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	K	Well	Year	Mg	Well	Year	Na	Well
13	*	1762	13	*	1762	13	*	1762
14	3.10	1762	14	39.20	1762	14	17.10	1762
15	3.15	1762	15	40.30	1762	15	17.55	1762
16	3.45	1762	16	43.25	1762	16	19.05	1762
17	3.30	1762	17	42.35	1762	17	18.35	1762
18	3.37	1762	18	42.75	1762	18	19.50	1762
19	3.50	1762	19	42.45	1762	19	18.65	1762
20	3.40	1762	20	43.30	1762	20	19.20	1762
21	3.45	1762	21	43.60	1762	21	19.15	1762
1	0.50	1943	1	1.15	1943	1	7.05	1943
2	0.50	1943	2	1.20	1943	2	7.40	1943
3	0.10	1943	3	1.25	1943	3	8.65	1943
4	0.12	1943	4	1.30	1943	4	8.15	1943
5	*	1943	5	*	1943	5	*	1943
6	*	1943	6	*	1943	6	*	1943
7	*	1943	7	*	1943	7	*	1943
8	*	1943	8	*	1943	8	*	1943
9	*	1943	9	*	1943	9	*	1943
10	*	1943	10	*	1943	10	*	1943
11	0.05	1943	11	1.30	1943	11	11.10	1943
12	0.03	1943	12	1.20	1943	12	9.60	1943
13	0.04	1943	13	1.40	1943	13	7.11	1943
14	0.06	1943	14	1.40	1943	14	6.70	1943
15	0.04	1943	15	1.60	1943	15	7.33	1943
16	0.07	1943	16	1.55	1943	16	8.10	1943
17	0.08	1943	17	1.10	1943	17	5.30	1943
18	0.30	1943	18	1.25	1943	18	6.30	1943
19	0.30	1943	19	1.22	1943	19	8.60	1943
20	0.36	1943	20	2.13	1943	20	8.50	1943
21	0.30	1943	21	2.15	1943	21	7.15	1943
1	0.45	2003	1	1.00	2003	1	3.00	2003
2	0.40	2003	2	0.90	2003	2	3.30	2003
3	0.12	2003	3	0.92	2003	3	3.05	2003
4	0.10	2003	4	0.88	2003	4	3.10	2003
5	*	2003	5	*	2003	5	*	2003
6	*	2003	6	*	2003	6	*	2003
7	*	2003	7	*	2003	7	*	2003
8	*	2003	8	*	2003	8	*	2003
9	*	2003	9	*	2003	9	*	2003
10	0.90	2003	10	1.20	2003	10	3.00	2003
11	1.40	2003	11	1.10	2003	11	2.20	2003
12	*	2003	12	*	2003	12	*	2003
13	1.70	2003	13	1.30	2003	13	2.27	2003
14	2.35	2003	14	1.30	2003	14	2.29	2003
15	0.96	2003	15	1.60	2003	15	2.17	2003

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	K	Well	Year	Mg	Well	Year	Na	Well
16	1.92	2003	16	1.69	2003	16	2.57	2003
17	1.23	2003	17	1.25	2003	17	2.40	2003
18	3.57	2003	18	1.35	2003	18	1.40	2003
19	4.16	2003	19	1.56	2003	19	1.25	2003
20	2.10	2003	20	1.52	2003	20	1.30	2003
21	1.70	2003	21	1.64	2003	21	2.00	2003
1	0.75	2259	1	3.25	2259	1	2.00	2259
2	0.70	2259	2	3.40	2259	2	1.90	2259
3	0.41	2259	3	3.35	2259	3	1.75	2259
4	0.45	2259	4	3.35	2259	4	1.90	2259
5	*	2259	5	*	2259	5	*	2259
6	*	2259	6	*	2259	6	*	2259
7	*	2259	7	*	2259	7	*	2259
8	*	2259	8	*	2259	8	*	2259
9	0.31	2259	9	3.40	2259	9	1.80	2259
10	0.31	2259	10	3.60	2259	10	1.90	2259
11	*	2259	11	*	2259	11	*	2259
12	*	2259	12	*	2259	12	*	2259
13	0.22	2259	13	3.30	2259	13	1.41	2259
14	0.26	2259	14	3.20	2259	14	1.82	2259
15	0.40	2259	15	3.15	2259	15	1.75	2259
16	0.36	2259	16	3.85	2259	16	2.10	2259
17	0.30	2259	17	3.95	2259	17	1.95	2259
18	0.32	2259	18	4.15	2259	18	1.90	2259
19	0.35	2259	19	4.35	2259	19	2.00	2259
20	0.52	2259	20	3.91	2259	20	2.10	2259
21	0.50	2259	21	3.99	2259	21	1.95	2259
1	0.75	2404	1	19.50	2404	1	3.15	2404
2	0.80	2404	2	19.00	2404	2	3.30	2404
3	0.44	2404	3	19.50	2404	3	3.25	2404
4	0.43	2404	4	20.00	2404	4	3.20	2404
5	*	2404	5	*	2404	5	*	2404
6	*	2404	6	*	2404	6	*	2404
7	*	2404	7	*	2404	7	*	2404
8	*	2404	8	*	2404	8	*	2404
9	*	2404	9	*	2404	9	*	2404
10	*	2404	10	*	2404	10	*	2404
11	*	2404	11	*	2404	11	*	2404
12	0.38	2404	12	19.10	2404	12	3.20	2404
13	0.48	2404	13	21.60	2404	13	3.63	2404
14	0.43	2404	14	18.95	2404	14	3.33	2404
15	0.42	2404	15	19.30	2404	15	3.32	2404
16	0.41	2404	16	20.20	2404	16	3.37	2404
17	0.42	2404	17	19.20	2404	17	3.00	2404
18	0.37	2404	18	20.30	2404	18	3.45	2404

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	K	Well	Year	Mg	Well	Year	Na	Well
19	0.50	2404	19	19.85	2404	19	3.30	2404
20	0.43	2404	20	20.40	2404	20	3.40	2404
21	0.41	2404	21	20.25	2404	21	3.35	2404
1	0.75	2465	1	17.00	2465	1	2.35	2465
2	0.50	2465	2	17.00	2465	2	2.20	2465
3	0.16	2465	3	17.00	2465	3	2.15	2465
4	0.16	2465	4	17.50	2465	4	2.20	2465
5	0.20	2465	5	16.00	2465	5	2.30	2465
6	*	2465	6	*	2465	6	*	2465
7	*	2465	7	*	2465	7	*	2465
8	0.20	2465	8	17.80	2465	8	1.90	2465
9	0.13	2465	9	16.70	2465	9	2.00	2465
10	0.16	2465	10	17.40	2465	10	2.10	2465
11	*	2465	11	*	2465	11	*	2465
12	*	2465	12	*	2465	12	*	2465
13	0.16	2465	13	17.70	2465	13	1.97	2465
14	0.15	2465	14	17.60	2465	14	2.06	2465
15	0.19	2465	15	17.60	2465	15	1.92	2465
16	0.18	2465	16	17.10	2465	16	2.05	2465
17	0.12	2465	17	17.55	2465	17	1.80	2465
18	0.30	2465	18	18.65	2465	18	1.75	2465
19	0.30	2465	19	18.65	2465	19	2.00	2465
20	0.31	2465	20	17.90	2465	20	2.10	2465
21	0.30	2465	21	19.20	2465	21	2.05	2465
1	0.75	2585	1	10.50	2585	1	2.75	2585
2	0.70	2585	2	12.00	2585	2	2.90	2585
3	0.32	2585	3	11.50	2585	3	2.55	2585
4	0.32	2585	4	9.05	2585	4	2.55	2585
5	*	2585	5	*	2585	5	*	2585
6	0.30	2585	6	11.10	2585	6	2.28	2585
7	*	2585	7	*	2585	7	*	2585
8	*	2585	8	*	2585	8	*	2585
9	*	2585	9	*	2585	9	*	2585
10	*	2585	10	*	2585	10	*	2585
11	*	2585	11	*	2585	11	*	2585
12	0.25	2585	12	12.10	2585	12	3.20	2585
13	0.43	2585	13	12.35	2585	13	3.04	2585
14	0.39	2585	14	12.75	2585	14	2.93	2585
15	0.34	2585	15	9.30	2585	15	2.30	2585
16	0.41	2585	16	14.05	2585	16	3.20	2585
17	0.32	2585	17	13.10	2585	17	3.65	2585
18	0.33	2585	18	12.95	2585	18	4.20	2585
19	0.47	2585	19	13.75	2585	19	3.70	2585
20	0.58	2585	20	13.70	2585	20	3.60	2585
21	0.40	2585	21	14.05	2585	21	4.30	2585

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	K	Well	Year	Mg	Well	Year	Na	Well
1	1.25	2675	1	2.25	2675	1	3.30	2675
2	1.50	2675	2	2.00	2675	2	4.10	2675
3	1.05	2675	3	1.80	2675	3	3.65	2675
4	1.15	2675	4	2.10	2675	4	3.95	2675
5	*	2675	5	*	2675	5	*	2675
6	*	2675	6	*	2675	6	*	2675
7	*	2675	7	*	2675	7	*	2675
8	*	2675	8	*	2675	8	*	2675
9	*	2675	9	*	2675	9	*	2675
10	*	2675	10	*	2675	10	*	2675
11	1.30	2675	11	2.00	2675	11	4.70	2675
12	*	2675	12	*	2675	12	*	2675
13	1.40	2675	13	2.35	2675	13	4.50	2675
14	1.40	2675	14	2.50	2675	14	4.46	2675
15	1.25	2675	15	2.30	2675	15	3.76	2675
16	1.45	2675	16	2.05	2675	16	4.30	2675
17	1.35	2675	17	2.05	2675	17	4.25	2675
18	1.68	2675	18	2.55	2675	18	4.60	2675
19	1.87	2675	19	2.20	2675	19	4.85	2675
20	2.10	2675	20	2.32	2675	20	4.50	2675
21	1.50	2675	21	2.20	2675	21	4.40	2675
1	10.00	67	1	202.00	67	1	6.89	91
2	11.00	67	2	201.50	67	2	*	91
3	9.75	67	3	204.50	67	3	*	91
4	11.00	67	4	206.00	67	4	*	91
5	*	67	5	*	67	5	*	91
6	*	67	6	*	67	6	*	91
7	10.00	67	7	229.00	67	7	*	91
8	*	67	8	*	67	8	*	91
9	*	67	9	*	67	9	6.89	91
10	11.50	67	10	202.00	67	10	6.33	91
11	*	67	11	*	67	11	7.80	91
12	*	67	12	*	67	12	7.49	91
13	10.00	67	13	227.00	67	13	7.78	91
14	10.50	67	14	222.50	67	14	6.55	91
15	11.00	67	15	213.00	67	15	*	91
16	11.00	67	16	214.50	67	16	*	91
17	15.00	67	17	257.50	67	17	6.76	91
18	13.50	67	18	236.00	67	18	6.22	91
19	10.50	67	19	218.50	67	19	6.71	91
20	*	67	20	*	67	20	7.27	91
21	11.50	67	21	225.00	67	21	6.91	91

Table continues next page.

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	SO4	Well	Year	TDS	Well	Year	GWL	Well
1	3.45	91	1	193.00	91	1	*	243
2	3.60	91	2	190.00	91	2	*	243
3	4.25	91	3	207.50	91	3	*	243
4	4.50	91	4	191.00	91	4	*	243
5	4.60	91	5	*	91	5	*	243
6	*	91	6	*	91	6	*	243
7	*	91	7	*	91	7	*	243
8	*	91	8	*	91	8	*	243
9	3.50	91	9	189.00	91	9	*	243
10	5.35	91	10	211.00	91	10	66.79	243
11	*	91	11	*	91	11	67.25	243
12	*	91	12	*	91	12	69.05	243
13	1.80	91	13	192.00	91	13	71.51	243
14	3.20	91	14	214.50	91	14	69.75	243
15	2.55	91	15	211.00	91	15	69.45	243
16	2.50	91	16	188.00	91	16	66.03	243
17	4.00	91	17	210.50	91	17	66.53	243
18	2.80	91	18	183.00	91	18	66.32	243
19	2.85	91	19	227.00	91	19	68.17	243
20	2.20	91	20	198.00	91	20	64.45	243
21	3.90	91	21	222.00	91	21	66.32	243
1	8.00	243	1	177.60	243	1	*	312
2	*	243	2	*	243	2	*	312
3	*	243	3	*	243	3	*	312
4	*	243	4	*	243	4	*	312
5	*	243	5	*	243	5	*	312
6	*	243	6	*	243	6	*	312
7	*	243	7	*	243	7	*	312
8	*	243	8	*	243	8	*	312
9	8.00	243	9	160.90	243	9	*	312
10	7.80	243	10	166.70	243	10	53.95	312
11	7.30	243	11	168.70	243	11	50.26	312
12	*	243	12	*	243	12	50.03	312
13	*	243	13	*	243	13	60.78	312
14	7.40	243	14	171.80	243	14	61.20	312
15	8.10	243	15	167.00	243	15	61.26	312
16	7.45	243	16	177.20	243	16	54.87	312
17	8.00	243	17	177.00	243	17	49.53	312
18	8.05	243	18	177.70	243	18	50.88	312
19	7.45	243	19	173.60	243	19	57.02	312
20	7.70	243	20	176.50	243	20	58.08	312
21	7.75	243	21	177.50	243	21	51.88	312
1	4.50	312	1	134.00	312	1	25.94	707
2	0.95	312	2	130.60	312	2	18.80	707
3	0.90	312	3	129.75	312	3	27.66	707

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	SO4	Well	Year	TDS	Well	Year	GWL	Well
4	0.95	312	4	135.95	312	4	26.89	707
5	0.95	312	5	*	312	5	28.89	707
6	*	312	6	*	312	6	24.61	707
7	0.88	312	7	139.10	312	7	24.52	707
8	*	312	8	*	312	8	29.33	707
9	*	312	9	*	312	9	23.18	707
10	*	312	10	*	312	10	17.07	707
11	0.91	312	11	137.10	312	11	13.41	707
12	0.85	312	12	136.30	312	12	20.34	707
13	*	312	13	*	312	13	29.63	707
14	0.33	312	14	138.50	312	14	21.47	707
15	0.84	312	15	139.45	312	15	24.52	707
16	0.89	312	16	138.30	312	16	21.50	707
17	0.93	312	17	143.20	312	17	20.45	707
18	0.95	312	18	152.35	312	18	19.68	707
19	0.74	312	19	158.30	312	19	21.33	707
20	0.75	312	20	158.60	312	20	25.15	707
21	0.99	312	21	158.75	312	21	16.88	707
1	425.00	707	1	760.30	707	1	45.10	997
2	410.00	707	2	746.80	707	2	44.63	997
3	430.00	707	3	758.95	707	3	45.30	997
4	430.00	707	4	777.05	707	4	44.42	997
5	430.00	707	5	*	707	5	44.78	997
6	*	707	6	*	707	6	45.55	997
7	*	707	7	*	707	7	46.31	997
8	*	707	8	*	707	8	46.86	997
9	*	707	9	*	707	9	44.66	997
10	380.00	707	10	714.20	707	10	44.81	997
11	410.00	707	11	749.70	707	11	45.03	997
12	*	707	12	*	707	12	45.30	997
13	*	707	13	*	707	13	46.25	997
14	400.00	707	14	756.30	707	14	45.12	997
15	415.00	707	15	748.50	707	15	45.20	997
16	420.00	707	16	765.55	707	16	44.78	997
17	415.00	707	17	765.80	707	17	44.38	997
18	425.00	707	18	784.25	707	18	44.01	997
19	410.00	707	19	759.95	707	19	44.66	997
20	410.00	707	20	758.20	707	20	45.66	997
21	415.00	707	21	767.35	707	21	45.23	997
1	3.60	997	1	283.40	997	1	95.07	1087
2	2.70	997	2	281.00	997	2	93.16	1087
3	3.00	997	3	272.90	997	3	95.54	1087
4	3.55	997	4	272.60	997	4	94.28	1087
5	3.10	997	5	*	997	5	95.48	1087
6	3.10	997	6	264.10	997	6	95.60	1087

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	SO4	Well	Year	TDS	Well	Year	GWL	Well
7	*	997	7	*	997	7	94.27	1087
8	*	997	8	*	997	8	96.14	1087
9	6.00	997	9	267.80	997	9	93.91	1087
10	5.70	997	10	271.70	997	10	91.35	1087
11	*	997	11	*	997	11	92.86	1087
12	*	997	12	*	997	12	94.28	1087
13	2.20	997	13	271.60	997	13	95.11	1087
14	2.05	997	14	269.75	997	14	94.45	1087
15	1.50	997	15	270.25	997	15	95.07	1087
16	1.90	997	16	271.10	997	16	92.84	1087
17	2.65	997	17	278.50	997	17	90.74	1087
18	2.95	997	18	280.50	997	18	93.07	1087
19	2.15	997	19	274.85	997	19	93.04	1087
20	1.10	997	20	275.80	997	20	94.87	1087
21	1.20	997	21	280.10	997	21	93.74	1087
1	2.05	1087	1	438.55	1087	1	18.38	1420
2	0.20	1087	2	442.95	1087	2	16.86	1420
3	0.20	1087	3	442.20	1087	3	18.49	1420
4	0.20	1087	4	442.80	1087	4	17.82	1420
5	0.20	1087	5	*	1087	5	*	1420
6	*	1087	6	*	1087	6	*	1420
7	*	1087	7	*	1087	7	*	1420
8	*	1087	8	*	1087	8	*	1420
9	*	1087	9	*	1087	9	*	1420
10	*	1087	10	*	1087	10	15.32	1420
11	*	1087	11	*	1087	11	15.46	1420
12	0.20	1087	12	445.90	1087	12	17.25	1420
13	0.20	1087	13	450.70	1087	13	18.92	1420
14	0.20	1087	14	426.80	1087	14	17.58	1420
15	0.20	1087	15	434.55	1087	15	19.69	1420
16	0.20	1087	16	434.45	1087	16	16.53	1420
17	0.20	1087	17	449.65	1087	17	16.56	1420
18	0.78	1087	18	445.50	1087	18	16.83	1420
19	0.86	1087	19	437.80	1087	19	18.13	1420
20	1.20	1087	20	441.10	1087	20	19.27	1420
21	1.82	1087	21	445.60	1087	21	16.84	1420
1	160.00	1420	1	2180.35	1420	1	37.73	1762
2	180.00	1420	2	2336.50	1420	2	39.12	1762
3	180.00	1420	3	2291.00	1420	3	39.28	1762
4	180.00	1420	4	2342.50	1420	4	39.22	1762
5	*	1420	5	*	1420	5	*	1762
6	*	1420	6	*	1420	6	39.29	1762
7	*	1420	7	*	1420	7	38.51	1762
8	*	1420	8	*	1420	8	40.41	1762
9	*	1420	9	*	1420	9	*	1762

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	SO4	Well	Year	TDS	Well	Year	GWL	Well
10	*	1420	10	*	1420	10	35.58	1762
11	*	1420	11	*	1420	11	34.24	1762
12	180.00	1420	12	2345.20	1420	12	36.24	1762
13	170.00	1420	13	2358.80	1420	13	39.45	1762
14	180.00	1420	14	2363.80	1420	14	38.38	1762
15	170.00	1420	15	2307.75	1420	15	40.51	1762
16	170.00	1420	16	2315.65	1420	16	36.15	1762
17	180.00	1420	17	2311.65	1420	17	35.79	1762
18	180.00	1420	18	2292.60	1420	18	37.08	1762
19	170.00	1420	19	2237.50	1420	19	37.68	1762
20	180.00	1420	20	2307.20	1420	20	38.46	1762
21	175.00	1420	21	2345.90	1420	21	35.74	1762
1	220.00	1762	1	505.55	1762	1	12.70	1943
2	230.00	1762	2	513.20	1762	2	12.79	1943
3	225.00	1762	3	512.15	1762	3	12.69	1943
4	225.00	1762	4	515.60	1762	4	13.50	1943
5	*	1762	5	*	1762	5	*	1943
6	*	1762	6	*	1762	6	*	1943
7	*	1762	7	*	1762	7	*	1943
8	*	1762	8	*	1762	8	*	1943
9	*	1762	9	*	1762	9	*	1943
10	*	1762	10	*	1762	10	13.84	1943
11	220.00	1762	11	497.90	1762	11	12.34	1943
12	220.00	1762	12	502.20	1762	12	12.63	1943
13	*	1762	13	*	1762	13	12.06	1943
14	220.00	1762	14	485.70	1762	14	13.29	1943
15	210.00	1762	15	483.50	1762	15	12.85	1943
16	220.00	1762	16	498.75	1762	16	13.42	1943
17	220.00	1762	17	502.65	1762	17	11.95	1943
18	210.00	1762	18	491.25	1762	18	12.06	1943
19	215.00	1762	19	497.25	1762	19	11.83	1943
20	220.00	1762	20	504.20	1762	20	13.21	1943
21	220.00	1762	21	497.15	1762	21	13.29	1943
1	10.50	1943	1	336.70	1943	1	42.80	2003
2	12.00	1943	2	348.40	1943	2	42.30	2003
3	11.00	1943	3	362.95	1943	3	45.69	2003
4	12.00	1943	4	367.10	1943	4	48.28	2003
5	*	1943	5	*	1943	5	*	2003
6	*	1943	6	*	1943	6	*	2003
7	*	1943	7	*	1943	7	*	2003
8	*	1943	8	*	1943	8	*	2003
9	*	1943	9	*	1943	9	*	2003
10	*	1943	10	*	1943	10	37.34	2003
11	8.10	1943	11	373.00	1943	11	36.49	2003

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	SO4	Well	Year	TDS	Well	Year	GWL	Well
12	9.40	1943	12	339.00	1943	12	35.04	2003
13	7.20	1943	13	375.80	1943	13	39.17	2003
14	8.10	1943	14	370.80	1943	14	39.64	2003
15	7.20	1943	15	395.45	1943	15	44.99	2003
16	7.40	1943	16	364.85	1943	16	43.71	2003
17	7.40	1943	17	306.50	1943	17	38.04	2003
18	7.20	1943	18	325.60	1943	18	35.18	2003
19	7.25	1943	19	332.45	1943	19	35.86	2003
20	7.90	1943	20	402.90	1943	20	38.19	2003
21	7.55	1943	21	367.25	1943	21	37.41	2003
1	4.45	2003	1	257.10	2003	1	33.27	2259
2	2.50	2003	2	267.90	2003	2	32.68	2259
3	3.80	2003	3	272.40	2003	3	27.89	2259
4	3.50	2003	4	271.50	2003	4	28.79	2259
5	*	2003	5	*	2003	5	*	2259
6	*	2003	6	*	2003	6	*	2259
7	*	2003	7	*	2003	7	*	2259
8	*	2003	8	*	2003	8	*	2259
9	*	2003	9	*	2003	9	*	2259
10	2.10	2003	10	269.50	2003	10	28.42	2259
11	2.40	2003	11	257.20	2003	11	24.97	2259
12	*	2003	12	*	2003	12	23.02	2259
13	6.20	2003	13	244.00	2003	13	27.96	2259
14	3.70	2003	14	256.65	2003	14	29.31	2259
15	5.15	2003	15	247.85	2003	15	35.25	2259
16	4.35	2003	16	257.75	2003	16	33.27	2259
17	3.65	2003	17	263.85	2003	17	26.87	2259
18	3.15	2003	18	216.25	2003	18	24.95	2259
19	3.20	2003	19	215.30	2003	19	25.07	2259
20	3.30	2003	20	196.50	2003	20	28.92	2259
21	2.70	2003	21	259.80	2003	21	26.97	2259
1	9.55	2259	1	257.10	2259	1	84.39	2404
2	10.00	2259	2	263.70	2259	2	84.18	2404
3	8.75	2259	3	258.00	2259	3	82.80	2404
4	8.55	2259	4	266.65	2259	4	85.13	2404
5	8.90	2259	5	*	2259	5	*	2404
6	*	2259	6	*	2259	6	*	2404
7	*	2259	7	*	2259	7	*	2404
8	*	2259	8	*	2259	8	*	2404
9	8.60	2259	9	264.90	2259	9	*	2404
10	8.80	2259	10	267.30	2259	10	85.36	2404
11	*	2259	11	*	2259	11	84.35	2404
12	*	2259	12	*	2259	12	84.43	2404
13	5.70	2259	13	303.40	2259	13	86.70	2404
14	7.05	2259	14	299.60	2259	14	86.25	2404

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	SO4	Well	Year	TDS	Well	Year	GWL	Well
15	8.70	2259	15	266.85	2259	15	86.98	2404
16	9.70	2259	16	271.10	2259	16	85.25	2404
17	9.60	2259	17	297.55	2259	17	84.47	2404
18	9.40	2259	18	303.30	2259	18	83.87	2404
19	9.40	2259	19	305.80	2259	19	85.48	2404
20	9.20	2259	20	337.00	2259	20	87.32	2404
21	8.65	2259	21	323.45	2259	21	84.92	2404
1	1.10	2404	1	307.90	2404	1	42.13	2465
2	0.20	2404	2	306.30	2404	2	38.10	2465
3	0.20	2404	3	302.20	2404	3	50.82	2465
4	0.20	2404	4	308.40	2404	4	54.68	2465
5	0.20	2404	5	*	2404	5	*	2465
6	*	2404	6	*	2404	6	*	2465
7	*	2404	7	*	2404	7	*	2465
8	*	2404	8	*	2404	8	*	2465
9	*	2404	9	*	2404	9	*	2465
10	*	2404	10	*	2404	10	32.19	2465
11	*	2404	11	*	2404	11	32.84	2465
12	0.20	2404	12	291.20	2404	12	31.14	2465
13	0.20	2404	13	299.50	2404	13	38.47	2465
14	0.20	2404	14	289.05	2404	14	36.28	2465
15	0.20	2404	15	280.50	2404	15	42.48	2465
16	0.20	2404	16	282.45	2404	16	37.89	2465
17	0.30	2404	17	286.90	2404	17	31.89	2465
18	0.40	2404	18	286.45	2404	18	33.94	2465
19	0.42	2404	19	283.75	2404	19	33.94	2465
20	0.49	2404	20	288.50	2404	20	36.61	2465
21	0.46	2404	21	285.20	2404	21	32.00	2465
1	7.15	2465	1	227.90	2465	1	57.18	2585
2	6.20	2465	2	236.00	2465	2	47.20	2585
3	6.20	2465	3	226.10	2465	3	36.35	2585
4	6.40	2465	4	226.75	2465	4	*	2585
5	6.00	2465	5	224.20	2465	5	*	2585
6	*	2465	6	*	2465	6	*	2585
7	*	2465	7	*	2465	7	*	2585
8	6.70	2465	8	243.50	2465	8	*	2585
9	6.60	2465	9	225.50	2465	9	*	2585
10	6.70	2465	10	222.80	2465	10	44.79	2585
11	*	2465	11	*	2465	11	43.39	2585
12	*	2465	12	*	2465	12	41.19	2585
13	6.60	2465	13	233.20	2465	13	48.84	2585
14	7.05	2465	14	240.05	2465	14	46.71	2585
15	6.05	2465	15	232.40	2465	15	56.73	2585
16	6.60	2465	16	222.90	2465	16	46.02	2585
17	7.00	2465	17	238.70	2465	17	42.52	2585

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	SO4	Well	Year	TDS	Well	Year	GWL	Well
18	6.45	2465	18	257.00	2465	18	44.04	2585
19	6.75	2465	19	247.90	2465	19	47.59	2585
20	7.30	2465	20	245.00	2465	20	48.79	2585
21	7.30	2465	21	250.00	2465	21	43.14	2585
1	7.30	2585	1	189.80	2585	1	44.80	2675
2	7.40	2585	2	212.30	2585	2	42.44	2675
3	8.20	2585	3	205.10	2585	3	88.35	2675
4	4.85	2585	4	148.90	2585	4	84.71	2675
5	5.65	2585	5	*	2585	5	*	2675
6	8.20	2585	6	201.50	2585	6	*	2675
7	*	2585	7	*	2585	7	*	2675
8	*	2585	8	*	2585	8	*	2675
9	*	2585	9	*	2585	9	*	2675
10	*	2585	10	*	2585	10	42.30	2675
11	*	2585	11	*	2585	11	39.75	2675
12	8.00	2585	12	210.90	2585	12	33.90	2675
13	8.50	2585	13	219.70	2585	13	43.27	2675
14	7.35	2585	14	223.10	2585	14	36.39	2675
15	4.85	2585	15	220.95	2585	15	51.83	2675
16	6.80	2585	16	225.70	2585	16	35.25	2675
17	5.90	2585	17	224.40	2585	17	34.13	2675
18	9.55	2585	18	233.45	2585	18	34.95	2675
19	10.35	2585	19	234.90	2585	19	41.47	2675
20	9.10	2585	20	234.50	2585	20	46.26	2675
21	9.45	2585	21	231.70	2585	21	33.31	2675
1	6.65	2675	1	241.40	2675	*	*	*
2	5.80	2675	2	263.90	2675	*	*	*
3	5.10	2675	3	243.90	2675	*	*	*
4	5.45	2675	4	256.00	2675	*	*	*
5	4.00	2675	5	*	2675	*	*	*
6	*	2675	6	*	2675	*	*	*
7	*	2675	7	*	2675	*	*	*
8	*	2675	8	*	2675	*	*	*
9	*	2675	9	*	2675	*	*	*
10	*	2675	10	*	2675	*	*	*
11	19.00	2675	11	312.70	2675	*	*	*
12	*	2675	12	*	2675	*	*	*
13	6.60	2675	13	268.25	2675	*	*	*
14	6.30	2675	14	278.85	2675	*	*	*
15	4.75	2675	15	249.40	2675	*	*	*
16	7.85	2675	16	250.25	2675	*	*	*
17	13.00	2675	17	288.45	2675	*	*	*
18	14.50	2675	18	292.20	2675	*	*	*
19	6.65	2675	19	220.55	2675	*	*	*

Appendix Table B4. Regional-Kendall data for 16 TN wells (continued). The table contains data for year, annual median indicator concentration (mg/L), and well number. Years 1–21 in the table corresponds to years 1991–2011. Missing data is labeled with an asterisk (*).

Year	SO4	Well	Year	TDS	Well	Year	GWL	Well
20	6.80	2675	20	285.30	2675	*	*	*
21	11.50	2675	21	279.00	2675	*	*	*

Appendix Table B5. Regional-Kendall data for 55 springs. The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
1	84.50	ALEX	1	*	ALEX	1	221.50	ALEX
2	81.00	ALEX	2	*	ALEX	2	249.00	ALEX
3	83.00	ALEX	3	43.00	ALEX	3	261.00	ALEX
4	81.00	ALEX	4	46.00	ALEX	4	250.00	ALEX
5	80.50	ALEX	5	44.00	ALEX	5	239.50	ALEX
6	78.00	ALEX	6	46.00	ALEX	6	250.00	ALEX
7	80.83	ALEX	7	42.00	ALEX	7	256.00	ALEX
8	81.37	ALEX	8	46.90	ALEX	8	255.00	ALEX
9	78.89	ALEX	9	45.55	ALEX	9	249.50	ALEX
10	80.04	ALEX	10	47.10	ALEX	10	263.00	ALEX
11	82.45	ALEX	11	46.85	ALEX	11	266.60	ALEX
12	82.00	ALEX	12	47.35	ALEX	12	254.55	ALEX
13	81.10	ALEX	13	46.30	ALEX	13	250.00	ALEX
14	81.95	ALEX	14	47.60	ALEX	14	254.00	ALEX
15	81.25	ALEX	15	42.55	ALEX	15	236.00	ALEX
16	83.80	ALEX	16	43.35	ALEX	16	248.00	ALEX
17	84.65	ALEX	17	47.00	ALEX	17	271.00	ALEX
18	85.20	ALEX	18	46.00	ALEX	18	285.00	ALEX
19	82.00	ALEX	19	42.50	ALEX	19	228.00	ALEX
20	78.70	ALEX	20	44.95	ALEX	20	244.00	ALEX
21	79.56	ALEX	21	48.25	ALEX	21	270.00	ALEX
1	*	ALR	1	*	ALR	1	*	ALR
2	*	ALR	2	*	ALR	2	*	ALR
3	*	ALR	3	*	ALR	3	*	ALR
4	*	ALR	4	*	ALR	4	*	ALR
5	*	ALR	5	*	ALR	5	*	ALR
6	*	ALR	6	*	ALR	6	*	ALR
7	*	ALR	7	*	ALR	7	7.00	ALR
8	88.00	ALR	8	32.60	ALR	8	2.50	ALR
9	99.50	ALR	9	32.60	ALR	9	8.70	ALR
10	104.50	ALR	10	38.85	ALR	10	8.50	ALR
11	78.00	ALR	11	36.00	ALR	11	7.10	ALR
12	106.00	ALR	12	32.50	ALR	12	9.45	ALR
13	51.80	ALR	13	23.90	ALR	13	7.40	ALR
14	94.60	ALR	14	37.60	ALR	14	8.90	ALR
15	62.90	ALR	15	25.60	ALR	15	6.50	ALR
16	119.00	ALR	16	40.60	ALR	16	7.80	ALR

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
17	122.00	ALR	17	36.60	ALR	17	8.00	ALR
18	102.00	ALR	18	43.50	ALR	18	7.00	ALR
19	94.00	ALR	19	40.80	ALR	19	7.70	ALR
20	75.40	ALR	20	31.90	ALR	20	7.10	ALR
21	72.50	ALR	21	30.00	ALR	21	9.90	ALR
1	*	APOP	1	*	APOP	1	*	APOP
2	*	APOP	2	*	APOP	2	*	APOP
3	*	APOP	3	*	APOP	3	*	APOP
4	*	APOP	4	*	APOP	4	*	APOP
5	72.00	APOP	5	28.50	APOP	5	12.00	APOP
6	70.50	APOP	6	28.50	APOP	6	11.50	APOP
7	72.20	APOP	7	28.70	APOP	7	11.70	APOP
8	72.10	APOP	8	29.60	APOP	8	11.10	APOP
9	72.20	APOP	9	30.65	APOP	9	11.40	APOP
10	73.40	APOP	10	29.70	APOP	10	11.30	APOP
11	73.40	APOP	11	29.60	APOP	11	11.60	APOP
12	74.75	APOP	12	30.00	APOP	12	11.45	APOP
13	76.30	APOP	13	30.00	APOP	13	12.10	APOP
14	76.75	APOP	14	29.65	APOP	14	11.80	APOP
15	75.35	APOP	15	31.95	APOP	15	12.05	APOP
16	77.05	APOP	16	32.20	APOP	16	12.00	APOP
17	79.30	APOP	17	29.75	APOP	17	12.75	APOP
18	81.20	APOP	18	30.00	APOP	18	12.90	APOP
19	80.55	APOP	19	31.20	APOP	19	13.75	APOP
20	80.50	APOP	20	30.65	APOP	20	14.25	APOP
21	83.50	APOP	21	31.75	APOP	21	14.70	APOP
1	*	BETJ	1	*	BETJ	1	*	BETJ
2	*	BETJ	2	*	BETJ	2	*	BETJ
3	*	BETJ	3	*	BETJ	3	*	BETJ
4	*	BETJ	4	*	BETJ	4	*	BETJ
5	167.00	BETJ	5	60.00	BETJ	5	37.00	BETJ
6	171.00	BETJ	6	58.50	BETJ	6	33.50	BETJ
7	166.00	BETJ	7	59.05	BETJ	7	248.00	BETJ
8	165.00	BETJ	8	56.35	BETJ	8	26.40	BETJ
9	164.00	BETJ	9	62.75	BETJ	9	111.80	BETJ
10	165.50	BETJ	10	64.20	BETJ	10	224.00	BETJ
11	169.00	BETJ	11	63.20	BETJ	11	129.25	BETJ

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
12	173.50	BETJ	12	64.70	BETJ	12	105.20	BETJ
13	182.00	BETJ	13	56.10	BETJ	13	28.90	BETJ
14	176.13	BETJ	14	60.45	BETJ	14	62.20	BETJ
15	168.21	BETJ	15	59.20	BETJ	15	40.15	BETJ
16	168.35	BETJ	16	62.35	BETJ	16	158.50	BETJ
17	172.15	BETJ	17	62.10	BETJ	17	211.50	BETJ
18	173.25	BETJ	18	63.55	BETJ	18	176.00	BETJ
19	171.75	BETJ	19	63.50	BETJ	19	228.00	BETJ
20	170.85	BETJ	20	65.20	BETJ	20	317.00	BETJ
21	174.40	BETJ	21	59.95	BETJ	21	60.80	BETJ
1	*	BOAT	1	*	BOAT	1	*	BOAT
2	*	BOAT	2	*	BOAT	2	*	BOAT
3	*	BOAT	3	*	BOAT	3	*	BOAT
4	120.50	BOAT	4	49.00	BOAT	4	279.50	BOAT
5	118.00	BOAT	5	47.00	BOAT	5	86.00	BOAT
6	118.00	BOAT	6	52.00	BOAT	6	41.00	BOAT
7	120.00	BOAT	7	48.90	BOAT	7	232.50	BOAT
8	118.00	BOAT	8	50.05	BOAT	8	138.65	BOAT
9	101.00	BOAT	9	54.00	BOAT	9	305.00	BOAT
10	116.00	BOAT	10	51.80	BOAT	10	291.00	BOAT
11	117.00	BOAT	11	52.40	BOAT	11	120.00	BOAT
12	128.00	BOAT	12	50.40	BOAT	12	139.10	BOAT
13	*	BOAT	13	*	BOAT	13	*	BOAT
14	122.00	BOAT	14	48.70	BOAT	14	135.00	BOAT
15	129.50	BOAT	15	56.65	BOAT	15	236.75	BOAT
16	124.00	BOAT	16	53.80	BOAT	16	282.00	BOAT
17	129.00	BOAT	17	62.20	BOAT	17	671.00	BOAT
18	131.00	BOAT	18	58.30	BOAT	18	321.00	BOAT
19	80.00	BOAT	19	31.10	BOAT	19	76.50	BOAT
20	124.00	BOAT	20	57.10	BOAT	20	298.00	BOAT
21	131.00	BOAT	21	52.80	BOAT	21	167.00	BOAT
1	*	BOBH	1	*	BOBH	1	*	BOBH
2	*	BOBH	2	*	BOBH	2	*	BOBH
3	*	BOBH	3	*	BOBH	3	*	BOBH
4	121.00	BOBH	4	48.50	BOBH	4	6.15	BOBH
5	114.00	BOBH	5	48.50	BOBH	5	6.65	BOBH
6	113.50	BOBH	6	45.50	BOBH	6	6.15	BOBH

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
7	117.00	BOBH	7	45.95	BOBH	7	6.30	BOBH
8	111.00	BOBH	8	45.35	BOBH	8	6.60	BOBH
9	112.00	BOBH	9	49.00	BOBH	9	6.60	BOBH
10	111.00	BOBH	10	47.90	BOBH	10	8.10	BOBH
11	143.50	BOBH	11	58.40	BOBH	11	9.65	BOBH
12	142.00	BOBH	12	60.50	BOBH	12	10.50	BOBH
13	124.00	BOBH	13	48.40	BOBH	13	9.90	BOBH
14	122.20	BOBH	14	49.20	BOBH	14	9.80	BOBH
15	122.70	BOBH	15	49.00	BOBH	15	10.45	BOBH
16	122.10	BOBH	16	50.90	BOBH	16	10.70	BOBH
17	133.00	BOBH	17	53.55	BOBH	17	12.25	BOBH
18	137.30	BOBH	18	55.95	BOBH	18	12.70	BOBH
19	124.30	BOBH	19	49.15	BOBH	19	12.00	BOBH
20	131.05	BOBH	20	54.65	BOBH	20	12.65	BOBH
21	142.30	BOBH	21	58.90	BOBH	21	13.05	BOBH
1	*	BUBL	1	*	BUBL	1	*	BUBL
2	*	BUBL	2	*	BUBL	2	*	BUBL
3	*	BUBL	3	55.00	BUBL	3	4.50	BUBL
4	141.00	BUBL	4	56.00	BUBL	4	4.60	BUBL
5	144.00	BUBL	5	55.00	BUBL	5	4.70	BUBL
6	148.00	BUBL	6	56.00	BUBL	6	4.50	BUBL
7	141.00	BUBL	7	51.40	BUBL	7	4.70	BUBL
8	141.00	BUBL	8	53.75	BUBL	8	5.00	BUBL
9	140.00	BUBL	9	54.20	BUBL	9	4.90	BUBL
10	143.50	BUBL	10	59.10	BUBL	10	5.20	BUBL
11	148.00	BUBL	11	56.80	BUBL	11	5.15	BUBL
12	162.00	BUBL	12	58.65	BUBL	12	5.30	BUBL
13	171.00	BUBL	13	58.00	BUBL	13	6.20	BUBL
14	154.00	BUBL	14	60.00	BUBL	14	6.00	BUBL
15	158.50	BUBL	15	58.60	BUBL	15	6.20	BUBL
16	144.00	BUBL	16	56.00	BUBL	16	5.60	BUBL
17	150.50	BUBL	17	56.95	BUBL	17	6.25	BUBL
18	161.50	BUBL	18	62.35	BUBL	18	6.30	BUBL
19	156.00	BUBL	19	58.80	BUBL	19	6.35	BUBL
20	158.00	BUBL	20	61.25	BUBL	20	6.95	BUBL
21	159.50	BUBL	21	59.10	BUBL	21	6.75	BUBL
1	*	BUCK	1	*	BUCK	1	*	BUCK

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
2	*	BUCK	2	*	BUCK	2	*	BUCK
3	*	BUCK	3	*	BUCK	3	*	BUCK
4	*	BUCK	4	*	BUCK	4	*	BUCK
5	116.00	BUCK	5	61.00	BUCK	5	32.00	BUCK
6	117.00	BUCK	6	62.00	BUCK	6	32.50	BUCK
7	119.00	BUCK	7	59.90	BUCK	7	29.05	BUCK
8	115.00	BUCK	8	60.60	BUCK	8	32.90	BUCK
9	114.00	BUCK	9	61.95	BUCK	9	29.75	BUCK
10	115.00	BUCK	10	65.40	BUCK	10	28.40	BUCK
11	119.50	BUCK	11	62.30	BUCK	11	26.10	BUCK
12	124.00	BUCK	12	62.30	BUCK	12	28.20	BUCK
13	126.00	BUCK	13	61.00	BUCK	13	30.50	BUCK
14	124.15	BUCK	14	64.25	BUCK	14	28.90	BUCK
15	121.95	BUCK	15	63.40	BUCK	15	29.35	BUCK
16	121.40	BUCK	16	64.60	BUCK	16	27.90	BUCK
17	124.35	BUCK	17	63.40	BUCK	17	28.80	BUCK
18	126.35	BUCK	18	64.40	BUCK	18	28.25	BUCK
19	125.60	BUCK	19	64.60	BUCK	19	28.45	BUCK
20	124.55	BUCK	20	63.60	BUCK	20	29.85	BUCK
21	127.30	BUCK	21	65.80	BUCK	21	28.80	BUCK
1	72.16	CATF	1	28.00	CATF	1	29.00	CATF
2	*	CATF	2	*	CATF	2	*	CATF
3	*	CATF	3	*	CATF	3	*	CATF
4	75	CATF	4	32.00	CATF	4	32.00	CATF
5	77.5	CATF	5	31.50	CATF	5	38.50	CATF
6	83	CATF	6	31.00	CATF	6	33.00	CATF
7	78	CATF	7	29.20	CATF	7	36.50	CATF
8	79.5	CATF	8	29.90	CATF	8	39.25	CATF
9	79	CATF	9	29.00	CATF	9	29.90	CATF
10	78	CATF	10	32.50	CATF	10	28.40	CATF
11	75.1	CATF	11	28.80	CATF	11	51.00	CATF
12	85.1	CATF	12	30.58	CATF	12	55.22	CATF
13	84.65	CATF	13	31.65	CATF	13	74.20	CATF
14	80	CATF	14	30.00	CATF	14	41.20	CATF
15	87.95	CATF	15	32.45	CATF	15	49.01	CATF
16	78.2	CATF	16	29.50	CATF	16	47.50	CATF
17	82.95	CATF	17	31.90	CATF	17	56.90	CATF

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
19	82.75	CATF	19	31.65	CATF	19	85.00	CATF
20	82.25	CATF	20	32.95	CATF	20	98.10	CATF
21	84.05	CATF	21	32.85	CATF	21	93.25	CATF
1	*	CHS1	1	*	CHS1	1	*	CHS1
2	*	CHS1	2	*	CHS1	2	*	CHS1
3	*	CHS1	3	63.00	CHS1	3	307.00	CHS1
4	146.50	CHS1	4	54.50	CHS1	4	166.00	CHS1
5	143.00	CHS1	5	53.00	CHS1	5	126.00	CHS1
6	145.00	CHS1	6	50.50	CHS1	6	99.50	CHS1
7	151.00	CHS1	7	56.70	CHS1	7	341.00	CHS1
8	142.00	CHS1	8	49.25	CHS1	8	78.40	CHS1
9	143.00	CHS1	9	54.30	CHS1	9	160.00	CHS1
10	144.50	CHS1	10	63.90	CHS1	10	399.00	CHS1
11	143.00	CHS1	11	66.70	CHS1	11	351.50	CHS1
12	158.50	CHS1	12	55.60	CHS1	12	252.30	CHS1
13	152.00	CHS1	13	53.80	CHS1	13	132.00	CHS1
14	153.00	CHS1	14	52.90	CHS1	14	133.00	CHS1
15	153.68	CHS1	15	52.35	CHS1	15	71.00	CHS1
16	153.80	CHS1	16	57.40	CHS1	16	214.50	CHS1
17	156.00	CHS1	17	62.95	CHS1	17	452.50	CHS1
18	155.75	CHS1	18	59.55	CHS1	18	316.00	CHS1
19	158.05	CHS1	19	63.60	CHS1	19	426.50	CHS1
20	156.95	CHS1	20	59.55	CHS1	20	234.00	CHS1
21	157.80	CHS1	21	60.95	CHS1	21	356.50	CHS1
1	*	CHSM	1	*	CHSM	1	*	CHSM
2	*	CHSM	2	*	CHSM	2	*	CHSM
3	*	CHSM	3	78.00	CHSM	3	872.00	CHSM
4	138.00	CHSM	4	60.50	CHSM	4	436.50	CHSM
5	141.00	CHSM	5	55.50	CHSM	5	336.00	CHSM
6	142.00	CHSM	6	56.00	CHSM	6	264.50	CHSM
7	147.00	CHSM	7	73.15	CHSM	7	1106.50	CHSM
8	142.50	CHSM	8	49.65	CHSM	8	138.00	CHSM
9	139.50	CHSM	9	62.95	CHSM	9	511.00	CHSM
10	143.50	CHSM	10	85.35	CHSM	10	1261.00	CHSM
11	150.50	CHSM	11	90.65	CHSM	11	1064.00	CHSM
12	159.50	CHSM	12	66.10	CHSM	12	804.00	CHSM
13	156.00	CHSM	13	54.00	CHSM	13	188.00	CHSM

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
14	150.00	CHSM	14	61.90	CHSM	14	507.00	CHSM
15	152.68	CHSM	15	52.65	CHSM	15	99.05	CHSM
16	152.60	CHSM	16	75.40	CHSM	16	890.00	CHSM
17	153.75	CHSM	17	89.70	CHSM	17	1520.00	CHSM
18	154.45	CHSM	18	78.50	CHSM	18	1012.50	CHSM
19	156.30	CHSM	19	88.85	CHSM	19	1415.00	CHSM
20	154.85	CHSM	20	67.20	CHSM	20	587.50	CHSM
21	157.90	CHSM	21	75.20	CHSM	21	921.50	CHSM
1	*	FAN	1	*	FAN	1	*	FAN
2	*	FAN	2	*	FAN	2	*	FAN
3	*	FAN	3	*	FAN	3	*	FAN
4	*	FAN	4	*	FAN	4	*	FAN
5	176.00	FAN	5	60.55	FAN	5	7.25	FAN
6	186.00	FAN	6	69.80	FAN	6	6.00	FAN
7	184.00	FAN	7	72.80	FAN	7	8.00	FAN
8	183.00	FAN	8	69.40	FAN	8	8.50	FAN
9	184.00	FAN	9	69.20	FAN	9	8.95	FAN
10	187.00	FAN	10	77.15	FAN	10	8.95	FAN
11	186.00	FAN	11	82.60	FAN	11	9.00	FAN
12	184.00	FAN	12	79.60	FAN	12	8.30	FAN
13	194.00	FAN	13	*	FAN	13	*	FAN
14	197.50	FAN	14	80.45	FAN	14	10.50	FAN
15	200.00	FAN	15	84.65	FAN	15	11.35	FAN
16	206.00	FAN	16	84.50	FAN	16	10.55	FAN
17	204.50	FAN	17	84.75	FAN	17	9.60	FAN
18	190.00	FAN	18	87.00	FAN	18	10.00	FAN
19	199.00	FAN	19	90.40	FAN	19	10.95	FAN
20	194.00	FAN	20	87.70	FAN	20	10.50	FAN
21	197.00	FAN	21	85.20	FAN	21	11.00	FAN
1	83.00	FERN	1	*	FERN	1	3.00	FERN
2	52.00	FERN	2	*	FERN	2	3.00	FERN
3	46.00	FERN	3	12.15	FERN	3	4.00	FERN
4	45.00	FERN	4	13.00	FERN	4	5.00	FERN
5	44.50	FERN	5	12.00	FERN	5	5.00	FERN
6	43.00	FERN	6	12.00	FERN	6	4.00	FERN
7	44.10	FERN	7	11.35	FERN	7	5.00	FERN
8	44.40	FERN	8	12.90	FERN	8	4.60	FERN

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
9	43.35	FERN	9	13.15	FERN	9	4.75	FERN
10	42.90	FERN	10	12.20	FERN	10	4.50	FERN
11	45.15	FERN	11	12.85	FERN	11	4.50	FERN
12	45.30	FERN	12	13.50	FERN	12	4.50	FERN
13	47.00	FERN	13	14.00	FERN	13	4.40	FERN
14	46.20	FERN	14	13.35	FERN	14	4.45	FERN
15	44.95	FERN	15	13.00	FERN	15	4.60	FERN
16	47.90	FERN	16	13.00	FERN	16	4.50	FERN
17	45.65	FERN	17	12.00	FERN	17	4.35	FERN
18	45.00	FERN	18	13.00	FERN	18	4.30	FERN
19	44.25	FERN	19	12.00	FERN	19	4.40	FERN
20	43.50	FERN	20	12.90	FERN	20	4.10	FERN
21	43.85	FERN	21	12.95	FERN	21	4.00	FERN
1	142.00	GILB	1	53.40	GILB	1	5.40	GILB
2	*	GILB	2	*	GILB	2	*	GILB
3	153.00	GILB	3	*	GILB	3	*	GILB
4	149.00	GILB	4	*	GILB	4	*	GILB
5	148.00	GILB	5	53.85	GILB	5	4.35	GILB
6	149.00	GILB	6	51.80	GILB	6	3.00	GILB
7	161.50	GILB	7	59.30	GILB	7	5.00	GILB
8	153.00	GILB	8	51.70	GILB	8	5.00	GILB
9	156.50	GILB	9	51.75	GILB	9	6.40	GILB
10	156.00	GILB	10	60.70	GILB	10	6.00	GILB
11	160.00	GILB	11	62.50	GILB	11	5.50	GILB
12	154.50	GILB	12	63.40	GILB	12	5.30	GILB
13	163.50	GILB	13	61.00	GILB	13	6.75	GILB
14	161.00	GILB	14	58.80	GILB	14	5.60	GILB
15	160.00	GILB	15	61.70	GILB	15	6.15	GILB
16	172.00	GILB	16	64.50	GILB	16	5.80	GILB
17	174.50	GILB	17	62.95	GILB	17	5.50	GILB
18	162.00	GILB	18	64.90	GILB	18	5.00	GILB
19	164.00	GILB	19	68.75	GILB	19	5.85	GILB
20	164.00	GILB	20	67.25	GILB	20	6.05	GILB
21	165.00	GILB	21	63.70	GILB	21	6.50	GILB
1	*	HAR	1	*	HAR	1	*	HAR
2	*	HAR	2	*	HAR	2	*	HAR
3	*	HAR	3	*	HAR	3	*	HAR

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
4	*	HAR	4	*	HAR	4	*	HAR
5	*	HAR	5	*	HAR	5	*	HAR
6	*	HAR	6	*	HAR	6	3.00	HAR
7	*	HAR	7	*	HAR	7	14.00	HAR
8	192.00	HAR	8	74.25	HAR	8	7.50	HAR
9	194.50	HAR	9	70.85	HAR	9	7.15	HAR
10	197.00	HAR	10	80.45	HAR	10	7.30	HAR
11	183.00	HAR	11	80.30	HAR	11	7.40	HAR
12	192.00	HAR	12	80.25	HAR	12	7.85	HAR
13	178.00	HAR	13	68.30	HAR	13	7.40	HAR
14	204.50	HAR	14	77.55	HAR	14	7.00	HAR
15	218.00	HAR	15	89.60	HAR	15	7.80	HAR
16	213.00	HAR	16	88.10	HAR	16	8.30	HAR
17	219.00	HAR	17	87.30	HAR	17	8.00	HAR
18	196.00	HAR	18	88.60	HAR	18	7.00	HAR
19	200.00	HAR	19	88.00	HAR	19	8.40	HAR
20	201.00	HAR	20	88.90	HAR	20	9.00	HAR
21	208.00	HAR	21	88.90	HAR	21	9.80	HAR
1	*	HID2	1	*	HID2	1	*	HID2
2	*	HID2	2	*	HID2	2	*	HID2
3	*	HID2	3	*	HID2	3	*	HID2
4	124.00	HID2	4	63.50	HID2	4	767.50	HID2
5	120.00	HID2	5	61.00	HID2	5	651.00	HID2
6	122.00	HID2	6	48.00	HID2	6	373.00	HID2
7	119.00	HID2	7	51.65	HID2	7	493.50	HID2
8	122.00	HID2	8	58.60	HID2	8	650.50	HID2
9	113.50	HID2	9	51.65	HID2	9	487.50	HID2
10	116.50	HID2	10	76.20	HID2	10	754.50	HID2
11	125.50	HID2	11	82.35	HID2	11	984.50	HID2
12	136.00	HID2	12	86.20	HID2	12	1167.83	HID2
13	137.00	HID2	13	72.20	HID2	13	1000.00	HID2
14	124.43	HID2	14	52.90	HID2	14	702.50	HID2
15	118.03	HID2	15	43.80	HID2	15	426.60	HID2
16	115.20	HID2	16	47.05	HID2	16	410.50	HID2
17	121.00	HID2	17	67.10	HID2	17	713.00	HID2
18	127.60	HID2	18	92.75	HID2	18	1075.00	HID2
19	131.80	HID2	19	89.15	HID2	19	1135.00	HID2

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
20	130.10	HID2	20	91.00	HID2	20	1175.00	HID2
21	132.30	HID2	21	78.85	HID2	21	1040.00	HID2
1	*	HIDH	1	*	HIDH	1	*	HIDH
2	*	HIDH	2	*	HIDH	2	*	HIDH
3	*	HIDH	3	*	HIDH	3	*	HIDH
4	122.00	HIDH	4	56.00	HIDH	4	507.50	HIDH
5	119.50	HIDH	5	52.00	HIDH	5	690.50	HIDH
6	118.00	HIDH	6	41.00	HIDH	6	234.50	HIDH
7	119.00	HIDH	7	48.45	HIDH	7	341.00	HIDH
8	119.50	HIDH	8	51.75	HIDH	8	408.50	HIDH
9	111.00	HIDH	9	49.45	HIDH	9	316.50	HIDH
10	115.50	HIDH	10	71.65	HIDH	10	567.50	HIDH
11	128.50	HIDH	11	82.05	HIDH	11	918.00	HIDH
12	135.00	HIDH	12	75.24	HIDH	12	845.90	HIDH
13	136.00	HIDH	13	59.50	HIDH	13	646.00	HIDH
14	123.15	HIDH	14	44.95	HIDH	14	398.74	HIDH
15	114.60	HIDH	15	39.30	HIDH	15	236.61	HIDH
16	113.20	HIDH	16	43.15	HIDH	16	364.00	HIDH
17	119.60	HIDH	17	62.55	HIDH	17	528.50	HIDH
18	127.50	HIDH	18	80.60	HIDH	18	795.00	HIDH
19	130.40	HIDH	19	76.35	HIDH	19	828.00	HIDH
20	128.30	HIDH	20	74.25	HIDH	20	850.50	HIDH
21	130.05	HIDH	21	69.25	HIDH	21	771.00	HIDH
1	*	HOM1	1	*	HOM1	1	*	HOM1
2	*	HOM1	2	*	HOM1	2	*	HOM1
3	*	HOM1	3	69.00	HOM1	3	1007.00	HOM1
4	110.00	HOM1	4	57.00	HOM1	4	1060.00	HOM1
5	106.50	HOM1	5	56.50	HOM1	5	866.00	HOM1
6	108.00	HOM1	6	59.00	HOM1	6	825.50	HOM1
7	108.00	HOM1	7	58.25	HOM1	7	1069.50	HOM1
8	106.50	HOM1	8	62.60	HOM1	8	1004.00	HOM1
9	107.00	HOM1	9	69.20	HOM1	9	1235.00	HOM1
10	108.00	HOM1	10	83.75	HOM1	10	1616.00	HOM1
11	116.50	HOM1	11	85.65	HOM1	11	1880.00	HOM1
12	119.50	HOM1	12	66.95	HOM1	12	1305.00	HOM1
13	113.50	HOM1	13	61.80	HOM1	13	1060.50	HOM1
14	110.32	HOM1	14	60.30	HOM1	14	922.14	HOM1

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
15	115.28	HOM1	15	58.60	HOM1	15	818.23	HOM1
16	107.30	HOM1	16	59.10	HOM1	16	735.00	HOM1
17	112.65	HOM1	17	66.25	HOM1	17	1180.00	HOM1
18	115.40	HOM1	18	68.85	HOM1	18	1200.00	HOM1
19	114.50	HOM1	19	71.95	HOM1	19	1250.00	HOM1
20	113.05	HOM1	20	69.85	HOM1	20	1325.00	HOM1
21	115.20	HOM1	21	69.80	HOM1	21	1305.00	HOM1
1	*	HOM2	1	*	HOM2	1	*	HOM2
2	*	HOM2	2	*	HOM2	2	*	HOM2
3	*	HOM2	3	90.00	HOM2	3	1868.00	HOM2
4	114.00	HOM2	4	79.00	HOM2	4	1790.00	HOM2
5	109.50	HOM2	5	81.00	HOM2	5	1607.00	HOM2
6	110.00	HOM2	6	78.50	HOM2	6	1555.50	HOM2
7	115.00	HOM2	7	72.45	HOM2	7	1525.50	HOM2
8	111.00	HOM2	8	79.90	HOM2	8	1627.00	HOM2
9	108.50	HOM2	9	80.75	HOM2	9	1680.00	HOM2
10	110.50	HOM2	10	94.80	HOM2	10	1964.50	HOM2
11	113.00	HOM2	11	79.50	HOM2	11	2120.00	HOM2
12	123.00	HOM2	12	80.90	HOM2	12	1830.00	HOM2
13	119.00	HOM2	13	79.60	HOM2	13	1640.00	HOM2
14	112.00	HOM2	14	82.80	HOM2	14	1740.00	HOM2
15	119.30	HOM2	15	80.10	HOM2	15	1593.70	HOM2
16	109.90	HOM2	16	74.00	HOM2	16	1580.00	HOM2
17	114.50	HOM2	17	81.35	HOM2	17	1750.00	HOM2
18	117.50	HOM2	18	87.45	HOM2	18	1870.00	HOM2
19	116.30	HOM2	19	90.10	HOM2	19	1930.00	HOM2
20	114.70	HOM2	20	84.85	HOM2	20	1790.00	HOM2
21	116.95	HOM2	21	83.40	HOM2	21	1810.00	HOM2
1	*	HOM3	1	*	HOM3	1	*	HOM3
2	*	HOM3	2	*	HOM3	2	*	HOM3
3	*	HOM3	3	48.00	HOM3	3	380.00	HOM3
4	105.00	HOM3	4	43.00	HOM3	4	424.00	HOM3
5	103.50	HOM3	5	45.00	HOM3	5	366.50	HOM3
6	106.00	HOM3	6	40.00	HOM3	6	212.00	HOM3
7	104.00	HOM3	7	45.45	HOM3	7	445.00	HOM3
8	102.50	HOM3	8	42.45	HOM3	8	270.50	HOM3
9	103.00	HOM3	9	47.00	HOM3	9	405.50	HOM3

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
10	104.00	HOM3	10	59.20	HOM3	10	724.50	HOM3
11	111.50	HOM3	11	57.45	HOM3	11	777.50	HOM3
12	116.50	HOM3	12	50.30	HOM3	12	604.00	HOM3
13	114.00	HOM3	13	42.30	HOM3	13	287.00	HOM3
14	105.00	HOM3	14	42.60	HOM3	14	238.00	HOM3
15	114.80	HOM3	15	42.40	HOM3	15	278.20	HOM3
16	104.90	HOM3	16	44.40	HOM3	16	370.00	HOM3
17	110.90	HOM3	17	56.05	HOM3	17	719.00	HOM3
18	112.60	HOM3	18	53.30	HOM3	18	598.50	HOM3
19	111.10	HOM3	19	51.25	HOM3	19	661.00	HOM3
20	110.70	HOM3	20	52.90	HOM3	20	692.00	HOM3
21	112.45	HOM3	21	55.40	HOM3	21	704.00	HOM3
1	*	HOR	1	*	HOR	1	*	HOR
2	144.00	HOR	2	59.45	HOR	2	12.35	HOR
3	151.50	HOR	3	59.45	HOR	3	13.55	HOR
4	153.00	HOR	4	61.95	HOR	4	14.25	HOR
5	152.00	HOR	5	61.95	HOR	5	11.95	HOR
6	158.00	HOR	6	59.20	HOR	6	10.10	HOR
7	161.00	HOR	7	66.80	HOR	7	10.00	HOR
8	152.50	HOR	8	56.20	HOR	8	8.00	HOR
9	156.00	HOR	9	57.35	HOR	9	13.15	HOR
10	159.00	HOR	10	69.10	HOR	10	14.80	HOR
11	157.00	HOR	11	72.20	HOR	11	12.10	HOR
12	150.00	HOR	12	77.25	HOR	12	13.10	HOR
13	158.00	HOR	13	65.50	HOR	13	12.90	HOR
14	163.00	HOR	14	70.80	HOR	14	13.20	HOR
15	161.00	HOR	15	69.80	HOR	15	14.20	HOR
16	168.00	HOR	16	69.20	HOR	16	13.20	HOR
17	171.50	HOR	17	70.25	HOR	17	13.20	HOR
18	164.00	HOR	18	79.45	HOR	18	13.00	HOR
19	160.00	HOR	19	84.00	HOR	19	14.25	HOR
20	158.00	HOR	20	76.60	HOR	20	13.60	HOR
21	159.00	HOR	21	75.70	HOR	21	13.90	HOR
1	*	HSALT	1	*	HSALT	1	*	HSALT
2	*	HSALT	2	*	HSALT	2	*	HSALT
3	*	HSALT	3	176.00	HSALT	3	1446.00	HSALT
4	121.00	HSALT	4	119.00	HSALT	4	3350.00	HSALT

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
5	126.00	HSALT	5	95.00	HSALT	5	1872.50	HSALT
6	126.50	HSALT	6	82.50	HSALT	6	1574.50	HSALT
7	125.00	HSALT	7	118.00	HSALT	7	3650.00	HSALT
8	122.00	HSALT	8	85.40	HSALT	8	1904.50	HSALT
9	123.00	HSALT	9	83.10	HSALT	9	1370.00	HSALT
10	126.00	HSALT	10	96.30	HSALT	10	1800.00	HSALT
11	130.00	HSALT	11	106.00	HSALT	11	1310.00	HSALT
12	136.00	HSALT	12	70.70	HSALT	12	1309.90	HSALT
13	136.00	HSALT	13	83.10	HSALT	13	1260.00	HSALT
14	130.00	HSALT	14	96.40	HSALT	14	2100.00	HSALT
15	132.00	HSALT	15	92.70	HSALT	15	1360.10	HSALT
16	125.00	HSALT	16	113.00	HSALT	16	2740.00	HSALT
17	127.00	HSALT	17	172.00	HSALT	17	5960.00	HSALT
18	132.00	HSALT	18	134.00	HSALT	18	3130.00	HSALT
19	133.80	HSALT	19	116.00	HSALT	19	2990.00	HSALT
20	*	HSALT	20	*	HSALT	20	*	HSALT
21	*	HSALT	21	*	HSALT	21	*	HSALT
1	103.00	JKB	1	43.00	JKB	1	4.10	JKB
2	103.00	JKB	2	41.00	JKB	2	4.05	JKB
3	100.00	JKB	3	43.50	JKB	3	3.90	JKB
4	100.00	JKB	4	44.00	JKB	4	4.20	JKB
5	*	JKB	5	*	JKB	5	*	JKB
6	*	JKB	6	*	JKB	6	*	JKB
7	101.90	JKB	7	42.85	JKB	7	3.70	JKB
8	*	JKB	8	*	JKB	8	*	JKB
9	*	JKB	9	*	JKB	9	*	JKB
10	*	JKB	10	*	JKB	10	*	JKB
11	109.00	JKB	11	43.60	JKB	11	3.80	JKB
12	109.00	JKB	12	44.05	JKB	12	3.90	JKB
13	111.50	JKB	13	45.95	JKB	13	4.30	JKB
14	109.50	JKB	14	46.85	JKB	14	4.25	JKB
15	108.50	JKB	15	47.05	JKB	15	4.25	JKB
16	107.50	JKB	16	47.40	JKB	16	4.15	JKB
17	113.00	JKB	17	47.10	JKB	17	4.20	JKB
18	116.50	JKB	18	48.55	JKB	18	4.35	JKB
19	114.00	JKB	19	49.70	JKB	19	4.30	JKB
20	*	JKB	20	*	JKB	20	*	JKB

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
21	118.00	JKB	21	48.80	JKB	21	4.40	JKB
1	45.00	JUNP	1	9.50	JUNP	1	4.00	JUNP
2	48.00	JUNP	2	11.00	JUNP	2	*	JUNP
3	49.00	JUNP	3	12.50	JUNP	3	4.00	JUNP
4	44.00	JUNP	4	13.00	JUNP	4	*	JUNP
5	44.00	JUNP	5	12.00	JUNP	5	13.00	JUNP
6	42.00	JUNP	6	13.00	JUNP	6	4.00	JUNP
7	44.00	JUNP	7	11.60	JUNP	7	5.00	JUNP
8	44.95	JUNP	8	13.05	JUNP	8	5.00	JUNP
9	43.05	JUNP	9	13.05	JUNP	9	8.00	JUNP
10	43.20	JUNP	10	12.30	JUNP	10	4.00	JUNP
11	44.70	JUNP	11	12.80	JUNP	11	5.00	JUNP
12	44.65	JUNP	12	13.35	JUNP	12	4.50	JUNP
13	45.00	JUNP	13	13.00	JUNP	13	4.30	JUNP
14	44.55	JUNP	14	13.55	JUNP	14	4.65	JUNP
15	44.20	JUNP	15	12.55	JUNP	15	4.15	JUNP
16	46.90	JUNP	16	12.90	JUNP	16	4.30	JUNP
17	45.60	JUNP	17	13.00	JUNP	17	4.30	JUNP
18	44.65	JUNP	18	13.00	JUNP	18	3.85	JUNP
19	45.10	JUNP	19	13.00	JUNP	19	4.55	JUNP
20	44.75	JUNP	20	13.15	JUNP	20	4.50	JUNP
21	44.35	JUNP	21	13.45	JUNP	21	4.10	JUNP
1	*	LBS	1	*	LBS	1	*	LBS
2	*	LBS	2	*	LBS	2	*	LBS
3	*	LBS	3	*	LBS	3	*	LBS
4	*	LBS	4	*	LBS	4	*	LBS
5	184.00	LBS	5	67.00	LBS	5	10.50	LBS
6	*	LBS	6	*	LBS	6	6.10	LBS
7	190.00	LBS	7	64.00	LBS	7	9.00	LBS
8	186.00	LBS	8	57.90	LBS	8	7.00	LBS
9	194.00	LBS	9	58.35	LBS	9	9.10	LBS
10	196.00	LBS	10	65.70	LBS	10	10.00	LBS
11	195.50	LBS	11	66.80	LBS	11	9.60	LBS
12	194.00	LBS	12	68.10	LBS	12	10.55	LBS
13	202.00	LBS	13	68.10	LBS	13	10.25	LBS
14	202.00	LBS	14	69.00	LBS	14	9.60	LBS
15	197.00	LBS	15	68.30	LBS	15	8.70	LBS

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
16	208.00	LBS	16	71.95	LBS	16	9.80	LBS
17	213.00	LBS	17	68.25	LBS	17	11.00	LBS
18	200.00	LBS	18	70.15	LBS	18	8.90	LBS
19	198.00	LBS	19	74.00	LBS	19	9.10	LBS
20	200.00	LBS	20	73.80	LBS	20	10.00	LBS
21	196.00	LBS	21	78.60	LBS	21	10.80	LBS
1	*	LRS	1	*	LRS	1	*	LRS
2	*	LRS	2	*	LRS	2	*	LRS
3	*	LRS	3	*	LRS	3	*	LRS
4	162.50	LRS	4	54.65	LRS	4	6.00	LRS
5	155.50	LRS	5	50.70	LRS	5	4.45	LRS
6	156.00	LRS	6	57.60	LRS	6	3.00	LRS
7	166.00	LRS	7	57.80	LRS	7	6.00	LRS
8	170.50	LRS	8	60.45	LRS	8	6.00	LRS
9	162.50	LRS	9	55.85	LRS	9	6.00	LRS
10	155.00	LRS	10	61.10	LRS	10	5.80	LRS
11	158.00	LRS	11	60.20	LRS	11	5.50	LRS
12	158.00	LRS	12	64.30	LRS	12	5.10	LRS
13	166.00	LRS	13	56.00	LRS	13	6.30	LRS
14	168.00	LRS	14	63.10	LRS	14	5.80	LRS
15	174.00	LRS	15	67.25	LRS	15	6.25	LRS
16	177.00	LRS	16	63.85	LRS	16	5.95	LRS
17	171.00	LRS	17	62.90	LRS	17	5.20	LRS
18	164.00	LRS	18	65.10	LRS	18	5.00	LRS
19	162.50	LRS	19	66.80	LRS	19	5.40	LRS
20	165.00	LRS	20	68.80	LRS	20	6.10	LRS
21	165.00	LRS	21	67.20	LRS	21	5.40	LRS
1	*	MAG	1	*	MAG	1	*	MAG
2	*	MAG	2	*	MAG	2	*	MAG
3	*	MAG	3	*	MAG	3	*	MAG
4	96.00	MAG	4	43.00	MAG	4	74.00	MAG
5	104.00	MAG	5	43.00	MAG	5	72.50	MAG
6	107.00	MAG	6	42.50	MAG	6	40.50	MAG
7	106.00	MAG	7	42.25	MAG	7	75.70	MAG
8	104.00	MAG	8	40.95	MAG	8	39.75	MAG
9	104.50	MAG	9	47.55	MAG	9	59.60	MAG
10	103.50	MAG	10	48.10	MAG	10	62.35	MAG

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
11	110.50	MAG	11	47.90	MAG	11	69.20	MAG
12	114.00	MAG	12	45.55	MAG	12	54.70	MAG
13	113.00	MAG	13	44.10	MAG	13	24.90	MAG
14	113.31	MAG	14	44.50	MAG	14	24.90	MAG
15	111.40	MAG	15	45.10	MAG	15	24.85	MAG
16	111.00	MAG	16	45.75	MAG	16	25.80	MAG
17	114.70	MAG	17	46.10	MAG	17	52.20	MAG
18	115.60	MAG	18	47.75	MAG	18	46.30	MAG
19	115.80	MAG	19	46.25	MAG	19	44.25	MAG
20	113.00	MAG	20	46.30	MAG	20	30.80	MAG
21	118.00	MAG	21	48.20	MAG	21	20.90	MAG
1	*	MAN	1	*	MAN	1	*	MAN
2	*	MAN	2	*	MAN	2	*	MAN
3	*	MAN	3	*	MAN	3	*	MAN
4	*	MAN	4	*	MAN	4	*	MAN
5	188.00	MAN	5	71.75	MAN	5	6.00	MAN
6	*	MAN	6	*	MAN	6	4.00	MAN
7	*	MAN	7	*	MAN	7	9.00	MAN
8	191.00	MAN	8	71.80	MAN	8	7.00	MAN
9	371.00	MAN	9	72.75	MAN	9	7.20	MAN
10	*	MAN	10	80.90	MAN	10	7.90	MAN
11	*	MAN	11	84.10	MAN	11	7.60	MAN
12	196.00	MAN	12	84.75	MAN	12	7.40	MAN
13	203.00	MAN	13	85.35	MAN	13	8.70	MAN
14	203.00	MAN	14	82.70	MAN	14	8.50	MAN
15	207.00	MAN	15	87.50	MAN	15	9.10	MAN
16	211.50	MAN	16	91.70	MAN	16	8.70	MAN
17	210.50	MAN	17	85.90	MAN	17	8.00	MAN
18	200.00	MAN	18	90.30	MAN	18	8.00	MAN
19	200.00	MAN	19	93.50	MAN	19	8.65	MAN
20	201.00	MAN	20	94.10	MAN	20	9.10	MAN
21	191.00	MAN	21	87.70	MAN	21	8.40	MAN
1	*	MIA	1	*	MIA	1	*	MIA
2	*	MIA	2	*	MIA	2	*	MIA
3	106.00	MIA	3	33.00	MIA	3	9.00	MIA
4	*	MIA	4	*	MIA	4	*	MIA
5	108.50	MIA	5	32.00	MIA	5	11.00	MIA

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
6	111.00	MIA	6	33.50	MIA	6	10.50	MIA
7	110.70	MIA	7	32.40	MIA	7	10.00	MIA
8	111.00	MIA	8	34.95	MIA	8	10.30	MIA
9	110.00	MIA	9	36.40	MIA	9	10.30	MIA
10	113.80	MIA	10	36.40	MIA	10	10.70	MIA
11	113.90	MIA	11	35.80	MIA	11	10.60	MIA
12	115.45	MIA	12	36.25	MIA	12	11.00	MIA
13	114.00	MIA	13	37.00	MIA	13	12.00	MIA
14	112.00	MIA	14	34.75	MIA	14	10.90	MIA
15	110.00	MIA	15	34.60	MIA	15	11.30	MIA
16	119.00	MIA	16	36.55	MIA	16	12.55	MIA
17	119.00	MIA	17	35.00	MIA	17	12.10	MIA
18	115.00	MIA	18	34.50	MIA	18	12.85	MIA
19	107.50	MIA	19	33.50	MIA	19	13.45	MIA
20	109.00	MIA	20	36.55	MIA	20	13.40	MIA
21	110.10	MIA	21	36.65	MIA	21	13.40	MIA
1	66.00	MSAL	1	*	MSAL	1	1205.00	MSAL
2	67.50	MSAL	2	128.00	MSAL	2	1385.00	MSAL
3	65.00	MSAL	3	132.00	MSAL	3	1610.00	MSAL
4	63.50	MSAL	4	145.50	MSAL	4	1461.00	MSAL
5	66.00	MSAL	5	152.50	MSAL	5	1750.00	MSAL
6	64.00	MSAL	6	163.00	MSAL	6	2070.00	MSAL
7	65.70	MSAL	7	167.50	MSAL	7	1910.00	MSAL
8	67.60	MSAL	8	176.70	MSAL	8	2091.00	MSAL
9	64.60	MSAL	9	152.25	MSAL	9	1750.00	MSAL
10	63.60	MSAL	10	138.50	MSAL	10	1366.00	MSAL
11	64.10	MSAL	11	137.30	MSAL	11	*	MSAL
12	67.00	MSAL	12	168.00	MSAL	12	1870.00	MSAL
13	66.00	MSAL	13	166.80	MSAL	13	1911.00	MSAL
14	65.25	MSAL	14	164.40	MSAL	14	2235.00	MSAL
15	71.00	MSAL	15	169.00	MSAL	15	1810.00	MSAL
16	70.30	MSAL	16	168.00	MSAL	16	1512.00	MSAL
17	65.15	MSAL	17	130.50	MSAL	17	1580.00	MSAL
18	72.20	MSAL	18	143.50	MSAL	18	1865.00	MSAL
19	67.40	MSAL	19	152.50	MSAL	19	1490.00	MSAL
20	63.90	MSAL	20	156.00	MSAL	20	1063.00	MSAL
21	62.20	MSAL	21	129.00	MSAL	21	*	MSAL

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
1	*	PALM	1	*	PALM	1	*	PALM
2	*	PALM	2	*	PALM	2	*	PALM
3	123.00	PALM	3	40.50	PALM	3	17.00	PALM
4	*	PALM	4	*	PALM	4	*	PALM
5	116.00	PALM	5	38.00	PALM	5	15.00	PALM
6	118.50	PALM	6	40.00	PALM	6	15.00	PALM
7	121.00	PALM	7	38.00	PALM	7	15.00	PALM
8	119.50	PALM	8	40.30	PALM	8	15.20	PALM
9	119.50	PALM	9	42.80	PALM	9	14.70	PALM
10	121.00	PALM	10	42.10	PALM	10	15.50	PALM
11	124.00	PALM	11	40.80	PALM	11	14.90	PALM
12	123.00	PALM	12	40.85	PALM	12	15.65	PALM
13	121.00	PALM	13	41.00	PALM	13	17.00	PALM
14	119.50	PALM	14	40.75	PALM	14	17.40	PALM
15	120.50	PALM	15	41.25	PALM	15	17.35	PALM
16	131.50	PALM	16	40.35	PALM	16	18.30	PALM
17	129.50	PALM	17	41.50	PALM	17	17.70	PALM
18	125.00	PALM	18	42.50	PALM	18	19.45	PALM
19	123.00	PALM	19	40.00	PALM	19	20.30	PALM
20	119.00	PALM	20	43.05	PALM	20	20.50	PALM
21	121.50	PALM	21	43.20	PALM	21	20.70	PALM
1	120.50	PDL	1	48.00	PDL	1	164.50	PDL
2	119.00	PDL	2	49.00	PDL	2	162.50	PDL
3	119.00	PDL	3	46.00	PDL	3	131.00	PDL
4	119.00	PDL	4	45.50	PDL	4	179.50	PDL
5	120.00	PDL	5	52.00	PDL	5	157.00	PDL
6	114.00	PDL	6	53.00	PDL	6	175.00	PDL
7	120.00	PDL	7	49.00	PDL	7	226.70	PDL
8	119.50	PDL	8	51.75	PDL	8	166.95	PDL
9	117.00	PDL	9	50.20	PDL	9	149.50	PDL
10	117.00	PDL	10	47.70	PDL	10	91.80	PDL
11	119.00	PDL	11	48.50	PDL	11	153.40	PDL
12	120.00	PDL	12	52.85	PDL	12	193.45	PDL
13	120.00	PDL	13	53.80	PDL	13	200.00	PDL
14	121.50	PDL	14	52.70	PDL	14	189.60	PDL
15	115.50	PDL	15	51.90	PDL	15	189.00	PDL
16	124.00	PDL	16	50.50	PDL	16	131.00	PDL

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
17	127.00	PDL	17	48.00	PDL	17	122.00	PDL
18	135.00	PDL	18	52.00	PDL	18	145.00	PDL
19	124.00	PDL	19	49.50	PDL	19	134.00	PDL
20	123.00	PDL	20	52.10	PDL	20	133.00	PDL
21	121.00	PDL	21	52.50	PDL	21	128.00	PDL
1	*	PUMP	1	*	PUMP	1	*	PUMP
2	*	PUMP	2	*	PUMP	2	*	PUMP
3	*	PUMP	3	47.00	PUMP	3	125.00	PUMP
4	117.50	PUMP	4	43.50	PUMP	4	97.50	PUMP
5	118.50	PUMP	5	45.00	PUMP	5	82.50	PUMP
6	121.00	PUMP	6	42.00	PUMP	6	56.00	PUMP
7	117.00	PUMP	7	42.00	PUMP	7	96.00	PUMP
8	116.00	PUMP	8	42.00	PUMP	8	58.85	PUMP
9	115.00	PUMP	9	40.00	PUMP	9	49.40	PUMP
10	116.00	PUMP	10	47.00	PUMP	10	97.45	PUMP
11	114.00	PUMP	11	50.00	PUMP	11	194.00	PUMP
12	129.00	PUMP	12	50.00	PUMP	12	206.10	PUMP
13	131.00	PUMP	13	47.50	PUMP	13	138.95	PUMP
14	122.00	PUMP	14	42.00	PUMP	14	73.80	PUMP
15	126.00	PUMP	15	43.00	PUMP	15	63.30	PUMP
16	115.00	PUMP	16	40.00	PUMP	16	66.60	PUMP
17	123.00	PUMP	17	54.00	PUMP	17	242.00	PUMP
18	128.00	PUMP	18	59.00	PUMP	18	308.00	PUMP
19	129.00	PUMP	19	62.00	PUMP	19	313.00	PUMP
20	119.00	PUMP	20	51.00	PUMP	20	227.00	PUMP
21	131.00	PUMP	21	58.00	PUMP	21	233.00	PUMP
1	*	RKB	1	*	RKB	1	*	RKB
2	125.00	RKB	2	50.30	RKB	2	4.35	RKB
3	128.00	RKB	3	49.40	RKB	3	4.30	RKB
4	142.00	RKB	4	50.10	RKB	4	4.70	RKB
5	129.00	RKB	5	48.30	RKB	5	2.40	RKB
6	133.50	RKB	6	47.80	RKB	6	3.00	RKB
7	137.00	RKB	7	53.10	RKB	7	4.00	RKB
8	136.50	RKB	8	48.80	RKB	8	5.50	RKB
9	133.00	RKB	9	47.80	RKB	9	4.60	RKB
10	126.00	RKB	10	52.10	RKB	10	4.85	RKB
11	127.00	RKB	11	54.60	RKB	11	4.50	RKB

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
12	126.00	RKB	12	55.10	RKB	12	4.10	RKB
13	138.00	RKB	13	56.35	RKB	13	5.45	RKB
14	145.00	RKB	14	58.70	RKB	14	4.95	RKB
15	150.50	RKB	15	61.60	RKB	15	5.95	RKB
16	153.00	RKB	16	61.60	RKB	16	5.30	RKB
17	151.00	RKB	17	57.45	RKB	17	4.80	RKB
18	136.00	RKB	18	58.00	RKB	18	5.00	RKB
19	146.00	RKB	19	65.90	RKB	19	6.20	RKB
20	143.00	RKB	20	64.70	RKB	20	6.50	RKB
21	144.00	RKB	21	66.80	RKB	21	6.10	RKB
1	*	RLS	1	*	RLS	1	*	RLS
2	*	RLS	2	*	RLS	2	*	RLS
3	*	RLS	3	*	RLS	3	*	RLS
4	*	RLS	4	*	RLS	4	*	RLS
5	*	RLS	5	*	RLS	5	*	RLS
6	*	RLS	6	*	RLS	6	3.00	RLS
7	*	RLS	7	*	RLS	7	10.00	RLS
8	165.50	RLS	8	61.75	RLS	8	7.00	RLS
9	170.50	RLS	9	58.50	RLS	9	7.00	RLS
10	167.00	RLS	10	65.60	RLS	10	7.70	RLS
11	169.00	RLS	11	68.30	RLS	11	8.40	RLS
12	171.00	RLS	12	71.00	RLS	12	8.70	RLS
13	175.50	RLS	13	70.20	RLS	13	9.30	RLS
14	175.00	RLS	14	68.80	RLS	14	10.10	RLS
15	173.00	RLS	15	71.25	RLS	15	10.20	RLS
16	182.50	RLS	16	71.10	RLS	16	9.40	RLS
17	184.00	RLS	17	70.35	RLS	17	8.75	RLS
18	169.00	RLS	18	75.00	RLS	18	8.50	RLS
19	171.00	RLS	19	75.00	RLS	19	8.80	RLS
20	170.00	RLS	20	77.30	RLS	20	10.60	RLS
21	171.00	RLS	21	82.20	RLS	21	10.20	RLS
1	*	RNB1	1	*	RNB1	1	*	RNB1
2	*	RNB1	2	*	RNB1	2	*	RNB1
3	63.00	RNB1	3	24.00	RNB1	3	3.40	RNB1
4	57.00	RNB1	4	23.00	RNB1	4	3.30	RNB1
5	69.00	RNB1	5	28.00	RNB1	5	3.50	RNB1
6	62.00	RNB1	6	23.15	RNB1	6	3.40	RNB1

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
7	58.00	RNB1	7	19.00	RNB1	7	3.35	RNB1
8	58.00	RNB1	8	21.55	RNB1	8	3.75	RNB1
9	57.40	RNB1	9	24.30	RNB1	9	3.65	RNB1
10	61.15	RNB1	10	26.40	RNB1	10	4.00	RNB1
11	64.80	RNB1	11	24.00	RNB1	11	4.15	RNB1
12	125.35	RNB1	12	46.75	RNB1	12	8.00	RNB1
13	118.65	RNB1	13	44.05	RNB1	13	8.40	RNB1
14	64.00	RNB1	14	25.00	RNB1	14	4.50	RNB1
15	58.00	RNB1	15	20.95	RNB1	15	4.25	RNB1
16	*	RNB1	16	*	RNB1	16	*	RNB1
17	64.60	RNB1	17	24.90	RNB1	17	4.80	RNB1
18	64.75	RNB1	18	24.60	RNB1	18	5.05	RNB1
19	64.45	RNB1	19	24.95	RNB1	19	4.95	RNB1
20	63.75	RNB1	20	24.70	RNB1	20	5.70	RNB1
21	68.75	RNB1	21	25.70	RNB1	21	5.70	RNB1
1	*	RNB4	1	*	RNB4	1	*	RNB4
2	*	RNB4	2	*	RNB4	2	*	RNB4
3	104.00	RNB4	3	41.00	RNB4	3	4.00	RNB4
4	103.00	RNB4	4	42.00	RNB4	4	4.00	RNB4
5	103.00	RNB4	5	40.00	RNB4	5	3.90	RNB4
6	104.00	RNB4	6	38.50	RNB4	6	3.90	RNB4
7	102.00	RNB4	7	35.70	RNB4	7	4.10	RNB4
8	99.00	RNB4	8	37.90	RNB4	8	4.10	RNB4
9	101.00	RNB4	9	39.00	RNB4	9	4.15	RNB4
10	106.50	RNB4	10	43.75	RNB4	10	4.60	RNB4
11	109.00	RNB4	11	41.80	RNB4	11	4.65	RNB4
12	233.00	RNB4	12	86.10	RNB4	12	9.35	RNB4
13	237.50	RNB4	13	85.20	RNB4	13	10.15	RNB4
14	169.45	RNB4	14	62.50	RNB4	14	7.70	RNB4
15	112.00	RNB4	15	40.80	RNB4	15	5.25	RNB4
16	*	RNB4	16	*	RNB4	16	*	RNB4
17	117.60	RNB4	17	42.40	RNB4	17	5.60	RNB4
18	118.90	RNB4	18	44.90	RNB4	18	5.50	RNB4
19	116.85	RNB4	19	44.60	RNB4	19	5.55	RNB4
20	117.30	RNB4	20	45.40	RNB4	20	6.20	RNB4
21	120.45	RNB4	21	44.20	RNB4	21	6.10	RNB4
1	*	RNB6	1	*	RNB6	1	*	RNB6

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
2	*	RNB6	2	*	RNB6	2	*	RNB6
3	*	RNB6	3	51.00	RNB6	3	5.60	RNB6
4	111.00	RNB6	4	52.00	RNB6	4	5.50	RNB6
5	110.00	RNB6	5	52.00	RNB6	5	5.30	RNB6
6	114.00	RNB6	6	54.00	RNB6	6	5.30	RNB6
7	115.00	RNB6	7	51.20	RNB6	7	6.30	RNB6
8	105.50	RNB6	8	49.70	RNB6	8	5.50	RNB6
9	109.50	RNB6	9	52.15	RNB6	9	5.80	RNB6
10	114.50	RNB6	10	57.80	RNB6	10	6.15	RNB6
11	126.50	RNB6	11	58.40	RNB6	11	6.35	RNB6
12	128.50	RNB6	12	58.20	RNB6	12	6.45	RNB6
13	123.00	RNB6	13	53.20	RNB6	13	6.90	RNB6
14	119.00	RNB6	14	55.40	RNB6	14	6.90	RNB6
15	117.55	RNB6	15	51.85	RNB6	15	6.70	RNB6
16	119.10	RNB6	16	54.30	RNB6	16	6.60	RNB6
17	124.70	RNB6	17	57.45	RNB6	17	7.55	RNB6
18	121.05	RNB6	18	57.80	RNB6	18	7.30	RNB6
19	123.00	RNB6	19	58.40	RNB6	19	7.95	RNB6
20	119.55	RNB6	20	57.60	RNB6	20	8.10	RNB6
21	125.40	RNB6	21	56.65	RNB6	21	8.10	RNB6
1	*	RNBS	1	*	RNBS	1	*	RNBS
2	*	RNBS	2	*	RNBS	2	*	RNBS
3	47.00	RNBS	3	19.00	RNBS	3	3.10	RNBS
4	49.00	RNBS	4	19.50	RNBS	4	3.10	RNBS
5	49.00	RNBS	5	18.00	RNBS	5	3.00	RNBS
6	49.00	RNBS	6	18.50	RNBS	6	3.05	RNBS
7	50.00	RNBS	7	16.75	RNBS	7	3.10	RNBS
8	50.50	RNBS	8	17.85	RNBS	8	3.25	RNBS
9	47.00	RNBS	9	17.50	RNBS	9	3.10	RNBS
10	48.80	RNBS	10	21.10	RNBS	10	2.80	RNBS
11	49.20	RNBS	11	17.50	RNBS	11	3.40	RNBS
12	55.00	RNBS	12	18.80	RNBS	12	3.60	RNBS
13	50.90	RNBS	13	17.80	RNBS	13	3.70	RNBS
14	51.20	RNBS	14	18.00	RNBS	14	3.70	RNBS
15	79.10	RNBS	15	18.55	RNBS	15	3.70	RNBS
16	50.00	RNBS	16	18.50	RNBS	16	3.90	RNBS
17	53.30	RNBS	17	19.25	RNBS	17	4.15	RNBS

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
18	55.30	RNBS	18	20.60	RNBS	18	4.40	RNBS
19	53.95	RNBS	19	20.70	RNBS	19	4.20	RNBS
20	54.90	RNBS	20	20.90	RNBS	20	5.15	RNBS
21	53.30	RNBS	21	19.55	RNBS	21	4.80	RNBS
1	*	RNS3	1	*	RNS3	1	*	RNS3
2	*	RNS3	2	*	RNS3	2	*	RNS3
3	*	RNS3	3	*	RNS3	3	*	RNS3
4	95.00	RNS3	4	43.00	RNS3	4	4.50	RNS3
5	101.00	RNS3	5	46.00	RNS3	5	4.40	RNS3
6	100.00	RNS3	6	41.00	RNS3	6	5.00	RNS3
7	97.00	RNS3	7	39.00	RNS3	7	3.60	RNS3
8	97.00	RNS3	8	40.30	RNS3	8	4.40	RNS3
9	97.00	RNS3	9	40.30	RNS3	9	4.50	RNS3
10	102.00	RNS3	10	47.00	RNS3	10	4.40	RNS3
11	106.00	RNS3	11	45.30	RNS3	11	4.90	RNS3
12	110.00	RNS3	12	46.30	RNS3	12	5.10	RNS3
13	108.50	RNS3	13	42.65	RNS3	13	6.00	RNS3
14	108.00	RNS3	14	43.90	RNS3	14	5.70	RNS3
15	108.05	RNS3	15	44.60	RNS3	15	5.45	RNS3
16	100.40	RNS3	16	41.80	RNS3	16	5.60	RNS3
17	107.20	RNS3	17	45.60	RNS3	17	6.35	RNS3
18	105.35	RNS3	18	46.20	RNS3	18	6.25	RNS3
19	106.55	RNS3	19	45.70	RNS3	19	6.00	RNS3
20	105.85	RNS3	20	44.95	RNS3	20	6.35	RNS3
21	108.15	RNS3	21	44.85	RNS3	21	6.35	RNS3
1	89.00	ROCK	1	28.00	ROCK	1	7.00	ROCK
2	89.50	ROCK	2	28.50	ROCK	2	8.50	ROCK
3	90.00	ROCK	3	30.00	ROCK	3	11.00	ROCK
4	89.00	ROCK	4	30.00	ROCK	4	8.00	ROCK
5	89.00	ROCK	5	30.00	ROCK	5	7.00	ROCK
6	86.50	ROCK	6	29.50	ROCK	6	8.00	ROCK
7	90.00	ROCK	7	28.50	ROCK	7	8.00	ROCK
8	91.50	ROCK	8	30.60	ROCK	8	9.75	ROCK
9	88.70	ROCK	9	30.95	ROCK	9	8.70	ROCK
10	88.00	ROCK	10	31.20	ROCK	10	7.80	ROCK
11	*	ROCK	11	*	ROCK	11	8.20	ROCK
12	*	ROCK	12	*	ROCK	12	8.10	ROCK

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
13	92.90	ROCK	13	30.10	ROCK	13	8.70	ROCK
14	99.45	ROCK	14	31.30	ROCK	14	8.55	ROCK
15	92.75	ROCK	15	30.60	ROCK	15	9.10	ROCK
16	98.70	ROCK	16	30.70	ROCK	16	8.95	ROCK
17	98.45	ROCK	17	31.50	ROCK	17	8.90	ROCK
18	98.95	ROCK	18	31.50	ROCK	18	8.75	ROCK
19	95.70	ROCK	19	31.00	ROCK	19	9.40	ROCK
20	94.35	ROCK	20	31.80	ROCK	20	9.30	ROCK
21	95.15	ROCK	21	32.75	ROCK	21	9.25	ROCK
1	*	SANL	1	*	SANL	1	*	SANL
2	*	SANL	2	*	SANL	2	*	SANL
3	130.00	SANL	3	38.50	SANL	3	15.00	SANL
4	*	SANL	4	*	SANL	4	*	SANL
5	132.00	SANL	5	41.00	SANL	5	17.00	SANL
6	127.00	SANL	6	41.00	SANL	6	17.00	SANL
7	137.00	SANL	7	40.25	SANL	7	17.00	SANL
8	133.95	SANL	8	41.70	SANL	8	18.10	SANL
9	137.55	SANL	9	44.65	SANL	9	17.60	SANL
10	140.10	SANL	10	44.20	SANL	10	19.00	SANL
11	144.20	SANL	11	44.20	SANL	11	18.50	SANL
12	143.65	SANL	12	44.20	SANL	12	18.75	SANL
13	140.00	SANL	13	43.00	SANL	13	20.70	SANL
14	141.00	SANL	14	43.55	SANL	14	19.85	SANL
15	140.00	SANL	15	42.45	SANL	15	20.35	SANL
16	151.00	SANL	16	43.45	SANL	16	21.00	SANL
17	149.00	SANL	17	45.00	SANL	17	21.40	SANL
18	150.00	SANL	18	43.50	SANL	18	23.20	SANL
19	152.00	SANL	19	43.00	SANL	19	24.75	SANL
20	142.50	SANL	20	45.10	SANL	20	23.80	SANL
21	141.00	SANL	21	45.55	SANL	21	24.25	SANL
1	*	SBS	1	*	SBS	1	*	SBS
2	*	SBS	2	*	SBS	2	*	SBS
3	*	SBS	3	*	SBS	3	*	SBS
4	*	SBS	4	*	SBS	4	*	SBS
5	*	SBS	5	*	SBS	5	*	SBS
6	*	SBS	6	*	SBS	6	*	SBS
7	*	SBS	7	50.15	SBS	7	7.00	SBS

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
8	*	SBS	8	46.75	SBS	8	7.50	SBS
9	*	SBS	9	46.05	SBS	9	5.90	SBS
10	*	SBS	10	54.25	SBS	10	5.85	SBS
11	*	SBS	11	55.25	SBS	11	5.80	SBS
12	155.50	SBS	12	58.70	SBS	12	5.20	SBS
13	161.00	SBS	13	54.85	SBS	13	8.90	SBS
14	162.00	SBS	14	58.20	SBS	14	6.60	SBS
15	157.00	SBS	15	59.50	SBS	15	9.60	SBS
16	170.00	SBS	16	57.50	SBS	16	6.60	SBS
17	174.50	SBS	17	56.00	SBS	17	5.20	SBS
18	160.00	SBS	18	58.60	SBS	18	6.85	SBS
19	166.00	SBS	19	61.60	SBS	19	7.65	SBS
20	160.00	SBS	20	62.40	SBS	20	7.90	SBS
21	165.00	SBS	21	62.80	SBS	21	6.10	SBS
1	68.50	SILG	1	73.50	SILG	1	481.00	SILG
2	69.00	SILG	2	70.50	SILG	2	432.50	SILG
3	68.00	SILG	3	68.25	SILG	3	493.50	SILG
4	71.00	SILG	4	75.00	SILG	4	428.00	SILG
5	68.00	SILG	5	72.00	SILG	5	471.00	SILG
6	68.00	SILG	6	73.00	SILG	6	472.50	SILG
7	67.70	SILG	7	71.00	SILG	7	454.40	SILG
8	67.75	SILG	8	75.25	SILG	8	462.25	SILG
9	66.00	SILG	9	71.85	SILG	9	463.30	SILG
10	66.00	SILG	10	71.10	SILG	10	464.70	SILG
11	67.70	SILG	11	72.30	SILG	11	457.35	SILG
12	67.65	SILG	12	71.50	SILG	12	449.45	SILG
13	68.00	SILG	13	71.00	SILG	13	440.00	SILG
14	66.35	SILG	14	70.70	SILG	14	410.55	SILG
15	66.75	SILG	15	66.25	SILG	15	421.50	SILG
16	71.05	SILG	16	66.25	SILG	16	430.00	SILG
17	72.05	SILG	17	66.00	SILG	17	437.50	SILG
18	70.95	SILG	18	66.50	SILG	18	440.00	SILG
19	67.05	SILG	19	62.50	SILG	19	463.00	SILG
20	65.60	SILG	20	68.20	SILG	20	435.00	SILG
21	66.50	SILG	21	71.20	SILG	21	425.45	SILG
1	*	STAR	1	*	STAR	1	*	STAR
2	*	STAR	2	*	STAR	2	*	STAR

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
3	119.00	STAR	3	38.00	STAR	3	19.50	STAR
4	*	STAR	4	*	STAR	4	*	STAR
5	119.00	STAR	5	41.00	STAR	5	21.00	STAR
6	118.00	STAR	6	39.00	STAR	6	21.00	STAR
7	122.85	STAR	7	39.45	STAR	7	19.00	STAR
8	120.90	STAR	8	41.70	STAR	8	20.45	STAR
9	122.75	STAR	9	43.60	STAR	9	18.40	STAR
10	125.00	STAR	10	42.50	STAR	10	19.20	STAR
11	126.60	STAR	11	42.00	STAR	11	20.90	STAR
12	126.40	STAR	12	42.85	STAR	12	20.35	STAR
13	121.00	STAR	13	42.00	STAR	13	23.00	STAR
14	121.00	STAR	14	42.50	STAR	14	22.25	STAR
15	124.50	STAR	15	41.25	STAR	15	21.80	STAR
16	132.00	STAR	16	42.65	STAR	16	22.85	STAR
17	136.50	STAR	17	43.00	STAR	17	22.85	STAR
18	132.50	STAR	18	43.00	STAR	18	25.20	STAR
19	129.00	STAR	19	44.00	STAR	19	26.20	STAR
20	130.00	STAR	20	44.75	STAR	20	26.30	STAR
21	125.00	STAR	21	43.95	STAR	21	25.65	STAR
1	75.50	SWEE	1	117.50	SWEE	1	1140.00	SWEE
2	74.00	SWEE	2	110.00	SWEE	2	1150.00	SWEE
3	74.00	SWEE	3	110.00	SWEE	3	1640.00	SWEE
4	73.00	SWEE	4	105.00	SWEE	4	1061.00	SWEE
5	72.00	SWEE	5	102.50	SWEE	5	1020.00	SWEE
6	71.00	SWEE	6	104.00	SWEE	6	1010.00	SWEE
7	71.70	SWEE	7	100.90	SWEE	7	1033.50	SWEE
8	72.50	SWEE	8	104.55	SWEE	8	1060.00	SWEE
9	70.50	SWEE	9	101.45	SWEE	9	1044.80	SWEE
10	72.10	SWEE	10	106.30	SWEE	10	1058.60	SWEE
11	71.85	SWEE	11	101.10	SWEE	11	1025.30	SWEE
12	71.50	SWEE	12	104.85	SWEE	12	994.80	SWEE
13	71.00	SWEE	13	95.00	SWEE	13	930.00	SWEE
14	69.85	SWEE	14	94.70	SWEE	14	910.50	SWEE
15	71.00	SWEE	15	93.00	SWEE	15	919.00	SWEE
16	73.90	SWEE	16	93.00	SWEE	16	976.00	SWEE
17	69.60	SWEE	17	96.00	SWEE	17	1040.50	SWEE
18	75.60	SWEE	18	92.00	SWEE	18	909.50	SWEE

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
19	70.95	SWEE	19	100.00	SWEE	19	1010.00	SWEE
20	69.20	SWEE	20	105.50	SWEE	20	1040.00	SWEE
21	69.80	SWEE	21	110.50	SWEE	21	1050.00	SWEE
1	109.95	TARP	1	47.50	TARP	1	330.00	TARP
2	117.00	TARP	2	56.00	TARP	2	680.00	TARP
3	*	TARP	3	*	TARP	3	*	TARP
4	114.00	TARP	4	50.00	TARP	4	355.00	TARP
5	108.50	TARP	5	48.50	TARP	5	369.50	TARP
6	112.00	TARP	6	49.00	TARP	6	311.50	TARP
7	118.00	TARP	7	48.00	TARP	7	603.00	TARP
8	108.00	TARP	8	44.45	TARP	8	223.00	TARP
9	109.00	TARP	9	53.00	TARP	9	421.00	TARP
10	120.00	TARP	10	69.70	TARP	10	844.50	TARP
11	127.00	TARP	11	64.95	TARP	11	766.00	TARP
12	134.50	TARP	12	61.00	TARP	12	759.50	TARP
13	125.00	TARP	13	52.70	TARP	13	466.00	TARP
14	122.00	TARP	14	55.10	TARP	14	500.00	TARP
15	114.00	TARP	15	46.00	TARP	15	242.50	TARP
16	116.00	TARP	16	55.80	TARP	16	581.00	TARP
17	140.00	TARP	17	96.40	TARP	17	1800.00	TARP
18	137.35	TARP	18	86.50	TARP	18	1485.00	TARP
19	137.70	TARP	19	91.35	TARP	19	1590.00	TARP
20	130.60	TARP	20	74.05	TARP	20	1075.00	TARP
21	145.00	TARP	21	94.25	TARP	21	1865.00	TARP
1	*	TEL	1	*	TEL	1	*	TEL
2	139.00	TEL	2	49.65	TEL	2	7.15	TEL
3	168.00	TEL	3	60.80	TEL	3	6.10	TEL
4	178.00	TEL	4	58.10	TEL	4	6.60	TEL
5	168.50	TEL	5	50.30	TEL	5	3.25	TEL
6	166.00	TEL	6	57.20	TEL	6	1.00	TEL
7	186.00	TEL	7	61.20	TEL	7	8.00	TEL
8	181.50	TEL	8	56.15	TEL	8	6.50	TEL
9	171.00	TEL	9	53.10	TEL	9	5.35	TEL
10	167.00	TEL	10	59.40	TEL	10	5.90	TEL
11	168.00	TEL	11	62.80	TEL	11	6.10	TEL
12	163.00	TEL	12	59.00	TEL	12	5.50	TEL
13	191.40	TEL	13	63.40	TEL	13	7.00	TEL

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
14	187.00	TEL	14	63.90	TEL	14	6.20	TEL
15	194.50	TEL	15	68.80	TEL	15	7.00	TEL
16	189.50	TEL	16	64.60	TEL	16	6.20	TEL
17	185.50	TEL	17	61.15	TEL	17	5.10	TEL
18	179.00	TEL	18	63.65	TEL	18	5.50	TEL
19	187.00	TEL	19	70.00	TEL	19	5.60	TEL
20	184.00	TEL	20	69.70	TEL	20	6.50	TEL
21	182.00	TEL	21	69.70	TEL	21	5.70	TEL
1	*	TROT	1	*	TROT	1	*	TROT
2	*	TROT	2	*	TROT	2	*	TROT
3	*	TROT	3	45.00	TROT	3	103.00	TROT
4	111.00	TROT	4	38.50	TROT	4	43.00	TROT
5	113.00	TROT	5	41.00	TROT	5	61.00	TROT
6	113.50	TROT	6	39.50	TROT	6	43.00	TROT
7	110.00	TROT	7	39.10	TROT	7	83.50	TROT
8	108.50	TROT	8	38.55	TROT	8	46.90	TROT
9	105.00	TROT	9	40.80	TROT	9	51.30	TROT
10	107.00	TROT	10	43.40	TROT	10	116.00	TROT
11	116.00	TROT	11	44.55	TROT	11	161.00	TROT
12	121.00	TROT	12	44.10	TROT	12	140.00	TROT
13	122.00	TROT	13	41.60	TROT	13	89.30	TROT
14	114.00	TROT	14	39.85	TROT	14	49.40	TROT
15	117.00	TROT	15	38.30	TROT	15	38.70	TROT
16	110.50	TROT	16	38.40	TROT	16	43.75	TROT
17	114.50	TROT	17	43.70	TROT	17	134.00	TROT
18	118.50	TROT	18	47.90	TROT	18	203.50	TROT
19	118.40	TROT	19	46.15	TROT	19	197.50	TROT
20	114.10	TROT	20	42.20	TROT	20	146.50	TROT
21	119.20	TROT	21	44.50	TROT	21	172.50	TROT
1	*	TRY	1	*	TRY	1	*	TRY
2	133.00	TRY	2	45.20	TRY	2	6.35	TRY
3	161.00	TRY	3	56.20	TRY	3	5.70	TRY
4	156.50	TRY	4	51.75	TRY	4	6.10	TRY
5	156.00	TRY	5	47.20	TRY	5	4.40	TRY
6	175.00	TRY	6	51.80	TRY	6	4.00	TRY
7	166.00	TRY	7	55.80	TRY	7	5.00	TRY
8	164.00	TRY	8	54.25	TRY	8	6.00	TRY

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
9	159.00	TRY	9	52.50	TRY	9	5.50	TRY
10	155.00	TRY	10	58.30	TRY	10	5.80	TRY
11	155.00	TRY	11	57.90	TRY	11	5.70	TRY
12	156.00	TRY	12	59.20	TRY	12	5.50	TRY
13	167.00	TRY	13	55.80	TRY	13	6.10	TRY
14	167.00	TRY	14	61.30	TRY	14	5.90	TRY
15	171.00	TRY	15	65.00	TRY	15	6.60	TRY
16	172.00	TRY	16	63.10	TRY	16	5.90	TRY
17	169.50	TRY	17	61.00	TRY	17	5.00	TRY
18	160.00	TRY	18	61.05	TRY	18	5.00	TRY
19	160.50	TRY	19	65.85	TRY	19	5.80	TRY
20	161.50	TRY	20	64.85	TRY	20	6.45	TRY
21	163.00	TRY	21	65.20	TRY	21	6.20	TRY
1	137.00	VOLB	1	79.50	VOLB	1	580.00	VOLB
2	137.00	VOLB	2	66.50	VOLB	2	473.00	VOLB
3	133.50	VOLB	3	63.50	VOLB	3	429.50	VOLB
4	*	VOLB	4	69.00	VOLB	4	531.00	VOLB
5	*	VOLB	5	*	VOLB	5	*	VOLB
6	127.00	VOLB	6	61.00	VOLB	6	278.00	VOLB
7	*	VOLB	7	*	VOLB	7	*	VOLB
8	*	VOLB	8	60.50	VOLB	8	320.00	VOLB
9	*	VOLB	9	63.00	VOLB	9	380.00	VOLB
10	*	VOLB	10	65.00	VOLB	10	360.00	VOLB
11	140.15	VOLB	11	*	VOLB	11	383.30	VOLB
12	141.40	VOLB	12	*	VOLB	12	344.20	VOLB
13	135.00	VOLB	13	*	VOLB	13	270.00	VOLB
14	136.50	VOLB	14	65.45	VOLB	14	361.50	VOLB
15	129.50	VOLB	15	59.10	VOLB	15	224.50	VOLB
16	144.50	VOLB	16	60.15	VOLB	16	279.50	VOLB
17	148.50	VOLB	17	72.00	VOLB	17	505.50	VOLB
18	149.00	VOLB	18	72.00	VOLB	18	536.00	VOLB
19	142.50	VOLB	19	63.50	VOLB	19	284.00	VOLB
20	142.00	VOLB	20	69.35	VOLB	20	383.00	VOLB
21	145.20	VOLB	21	76.65	VOLB	21	481.65	VOLB
1	128.00	WAK	1	41.00	WAK	1	7.70	WAK
2	125.00	WAK	2	41.00	WAK	2	7.85	WAK
3	130.00	WAK	3	41.00	WAK	3	7.50	WAK

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
4	130.00	WAK	4	42.00	WAK	4	7.60	WAK
5	*	WAK	5	*	WAK	5	*	WAK
6	*	WAK	6	*	WAK	6	*	WAK
7	153.00	WAK	7	42.20	WAK	7	7.70	WAK
8	*	WAK	8	*	WAK	8	*	WAK
9	*	WAK	9	*	WAK	9	*	WAK
10	124.00	WAK	10	42.00	WAK	10	7.75	WAK
11	*	WAK	11	*	WAK	11	*	WAK
12	*	WAK	12	*	WAK	12	*	WAK
13	142.00	WAK	13	47.50	WAK	13	8.50	WAK
14	139.50	WAK	14	46.15	WAK	14	8.00	WAK
15	135.00	WAK	15	41.85	WAK	15	8.75	WAK
16	134.00	WAK	16	44.35	WAK	16	8.20	WAK
17	138.00	WAK	17	44.30	WAK	17	30.70	WAK
18	136.00	WAK	18	42.55	WAK	18	20.00	WAK
19	137.50	WAK	19	44.40	WAK	19	8.60	WAK
20	*	WAK	20	*	WAK	20	*	WAK
21	141.50	WAK	21	45.90	WAK	21	8.50	WAK
1	*	WEEK	1	*	WEEK	1	*	WEEK
2	*	WEEK	2	*	WEEK	2	*	WEEK
3	*	WEEK	3	51.00	WEEK	3	5.70	WEEK
4	137.00	WEEK	4	49.00	WEEK	4	5.60	WEEK
5	136.50	WEEK	5	54.00	WEEK	5	6.10	WEEK
6	136.00	WEEK	6	50.50	WEEK	6	5.70	WEEK
7	136.00	WEEK	7	49.75	WEEK	7	6.40	WEEK
8	131.50	WEEK	8	50.00	WEEK	8	5.95	WEEK
9	136.00	WEEK	9	53.70	WEEK	9	6.10	WEEK
10	139.00	WEEK	10	57.15	WEEK	10	7.05	WEEK
11	147.00	WEEK	11	54.95	WEEK	11	6.85	WEEK
12	150.50	WEEK	12	53.50	WEEK	12	6.75	WEEK
13	148.00	WEEK	13	51.50	WEEK	13	7.70	WEEK
14	140.00	WEEK	14	53.20	WEEK	14	7.50	WEEK
15	139.00	WEEK	15	53.15	WEEK	15	7.80	WEEK
16	147.00	WEEK	16	55.50	WEEK	16	7.20	WEEK
17	147.50	WEEK	17	54.55	WEEK	17	7.90	WEEK
18	149.00	WEEK	18	55.30	WEEK	18	8.30	WEEK
19	150.00	WEEK	19	53.50	WEEK	19	8.60	WEEK

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**

Year	Alk	Spring	Year	Ca	Spring	Year	Cl	Spring
20	143.95	WEEK	20	53.75	WEEK	20	8.50	WEEK
21	145.75	WEEK	21	54.90	WEEK	21	8.55	WEEK
1	110.00	WEKI	1	34.00	WEKI	1	11.00	WEKI
2	107.50	WEKI	2	34.00	WEKI	2	12.50	WEKI
3	113.00	WEKI	3	33.00	WEKI	3	14.00	WEKI
4	113.00	WEKI	4	36.00	WEKI	4	13.00	WEKI
5	113.00	WEKI	5	37.00	WEKI	5	14.00	WEKI
6	110.50	WEKI	6	37.50	WEKI	6	14.00	WEKI
7	116.80	WEKI	7	35.50	WEKI	7	13.40	WEKI
8	115.65	WEKI	8	37.30	WEKI	8	13.65	WEKI
9	116.85	WEKI	9	40.00	WEKI	9	13.95	WEKI
10	117.40	WEKI	10	39.90	WEKI	10	13.70	WEK*I
11	122.50	WEKI	11	39.40	WEKI	11	13.50	WEKI
12	124.05	WEKI	12	42.40	WEKI	12	14.50	WEKI
13	123.00	WEKI	13	41.00	WEKI	13	16.00	WEKI
14	124.00	WEKI	14	41.50	WEKI	14	15.80	WEKI
15	122.00	WEKI	15	40.55	WEKI	15	15.20	WEKI
16	131.00	WEKI	16	40.00	WEKI	16	14.95	WEKI
17	126.00	WEKI	17	39.50	WEKI	17	14.60	WEKI
18	130.00	WEKI	18	41.00	WEKI	18	15.75	WEKI
19	127.50	WEKI	19	40.50	WEKI	19	16.45	WEKI
20	126.50	WEKI	20	41.90	WEKI	20	16.30	WEKI
21	126.80	WEKI	21	43.55	WEKI	21	16.25	WEKI

Table continues next page.

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
1	*	ALEX	1	*	ALEX	1	130.00	ALEX
2	4.20	ALEX	2	20.00	ALEX	2	*	ALEX
3	4.00	ALEX	3	20.95	ALEX	3	137.00	ALEX
4	4.00	ALEX	4	21.75	ALEX	4	143.50	ALEX
5	3.80	ALEX	5	19.40	ALEX	5	131.00	ALEX
6	4.00	ALEX	6	19.95	ALEX	6	126.00	ALEX
7	4.00	ALEX	7	21.30	ALEX	7	138.00	ALEX
8	4.00	ALEX	8	20.30	ALEX	8	134.00	ALEX
9	3.75	ALEX	9	20.22	ALEX	9	135.00	ALEX
10	4.30	ALEX	10	21.93	ALEX	10	133.35	ALEX
11	4.10	ALEX	11	21.36	ALEX	11	146.30	ALEX
12	4.05	ALEX	12	20.46	ALEX	12	144.16	ALEX
13	3.80	ALEX	13	20.50	ALEX	13	139.55	ALEX
14	4.65	ALEX	14	21.35	ALEX	14	140.00	ALEX
15	3.45	ALEX	15	18.80	ALEX	15	142.55	ALEX
16	4.00	ALEX	16	19.25	ALEX	16	123.50	ALEX
17	4.40	ALEX	17	21.00	ALEX	17	130.00	ALEX
18	4.15	ALEX	18	20.50	ALEX	18	150.00	ALEX
19	3.60	ALEX	19	19.50	ALEX	19	142.00	ALEX
20	3.85	ALEX	20	19.70	ALEX	20	127.00	ALEX
21	4.20	ALEX	21	21.75	ALEX	21	131.00	ALEX
1	*	ALR	1	*	ALR	1	*	ALR
2	*	ALR	2	*	ALR	2	*	ALR
3	*	ALR	3	*	ALR	3	*	ALR
4	*	ALR	4	*	ALR	4	*	ALR
5	*	ALR	5	*	ALR	5	*	ALR
6	*	ALR	6	*	ALR	6	*	ALR
7	*	ALR	7	*	ALR	7	*	ALR
8	0.90	ALR	8	4.80	ALR	8	4.40	ALR
9	1.35	ALR	9	6.05	ALR	9	4.80	ALR
10	1.35	ALR	10	7.45	ALR	10	9.60	ALR
11	1.00	ALR	11	4.50	ALR	11	4.50	ALR
12	2.20	ALR	12	6.15	ALR	12	6.90	ALR
13	1.45	ALR	13	3.45	ALR	13	3.40	ALR
14	1.50	ALR	14	4.40	ALR	14	5.30	ALR
15	1.40	ALR	15	3.50	ALR	15	3.70	ALR
16	1.30	ALR	16	9.60	ALR	16	8.80	ALR

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
17	1.60	ALR	17	8.70	ALR	17	12.10	ALR
18	1.30	ALR	18	8.00	ALR	18	7.60	ALR
19	1.60	ALR	19	7.10	ALR	19	6.00	ALR
20	1.80	ALR	20	5.40	ALR	20	4.50	ALR
21	2.20	ALR	21	4.30	ALR	21	4.90	ALR
1	*	APOP	1	*	APOP	1	*	APOP
2	*	APOP	2	*	APOP	2	*	APOP
3	*	APOP	3	*	APOP	3	*	APOP
4	*	APOP	4	*	APOP	4	*	APOP
5	0.95	APOP	5	7.80	APOP	5	5.00	APOP
6	1.00	APOP	6	7.80	APOP	6	5.00	APOP
7	0.90	APOP	7	8.20	APOP	7	5.00	APOP
8	0.95	APOP	8	7.85	APOP	8	4.95	APOP
9	0.95	APOP	9	7.95	APOP	9	5.20	APOP
10	1.00	APOP	10	8.00	APOP	10	5.20	APOP
11	1.00	APOP	11	8.05	APOP	11	5.15	APOP
12	1.05	APOP	12	8.15	APOP	12	5.10	APOP
13	1.10	APOP	13	8.00	APOP	13	5.15	APOP
14	1.10	APOP	14	8.00	APOP	14	5.55	APOP
15	1.25	APOP	15	8.10	APOP	15	5.75	APOP
16	1.30	APOP	16	8.20	APOP	16	6.20	APOP
17	1.35	APOP	17	7.90	APOP	17	5.85	APOP
18	1.35	APOP	18	7.85	APOP	18	6.00	APOP
19	1.40	APOP	19	8.05	APOP	19	6.25	APOP
20	1.40	APOP	20	7.90	APOP	20	6.35	APOP
21	1.45	APOP	21	8.20	APOP	21	6.60	APOP
1	*	BETJ	1	*	BETJ	1	*	BETJ
2	*	BETJ	2	*	BETJ	2	*	BETJ
3	*	BETJ	3	*	BETJ	3	*	BETJ
4	*	BETJ	4	*	BETJ	4	*	BETJ
5	0.90	BETJ	5	13.50	BETJ	5	33.50	BETJ
6	0.70	BETJ	6	11.90	BETJ	6	19.00	BETJ
7	4.90	BETJ	7	24.90	BETJ	7	137.00	BETJ
8	0.45	BETJ	8	10.60	BETJ	8	15.05	BETJ
9	2.05	BETJ	9	17.30	BETJ	9	59.40	BETJ
10	5.60	BETJ	10	24.90	BETJ	10	128.00	BETJ
11	3.25	BETJ	11	18.70	BETJ	11	72.25	BETJ

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
12	2.25	BETJ	12	16.90	BETJ	12	59.20	BETJ
13	0.80	BETJ	13	11.60	BETJ	13	15.30	BETJ
14	1.35	BETJ	14	14.25	BETJ	14	34.90	BETJ
15	0.85	BETJ	15	12.55	BETJ	15	22.00	BETJ
16	3.20	BETJ	16	20.90	BETJ	16	90.90	BETJ
17	3.80	BETJ	17	23.20	BETJ	17	108.80	BETJ
18	3.70	BETJ	18	21.70	BETJ	18	96.30	BETJ
19	4.40	BETJ	19	24.20	BETJ	19	120.50	BETJ
20	6.10	BETJ	20	28.55	BETJ	20	166.50	BETJ
21	2.10	BETJ	21	16.50	BETJ	21	52.40	BETJ
1	*	BOAT	1	*	BOAT	1	*	BOAT
2	*	BOAT	2	*	BOAT	2	*	BOAT
3	*	BOAT	3	*	BOAT	3	*	BOAT
4	5.40	BOAT	4	20.00	BOAT	4	149.50	BOAT
5	1.80	BOAT	5	8.55	BOAT	5	49.00	BOAT
6	1.30	BOAT	6	5.90	BOAT	6	23.00	BOAT
7	5.50	BOAT	7	18.35	BOAT	7	134.00	BOAT
8	3.00	BOAT	8	11.80	BOAT	8	79.20	BOAT
9	6.60	BOAT	9	22.10	BOAT	9	164.00	BOAT
10	6.70	BOAT	10	23.20	BOAT	10	165.00	BOAT
11	3.80	BOAT	11	12.00	BOAT	11	66.30	BOAT
12	3.50	BOAT	12	13.30	BOAT	12	82.70	BOAT
13	*	BOAT	13	*	BOAT	13	*	BOAT
14	3.10	BOAT	14	12.70	BOAT	14	73.90	BOAT
15	5.00	BOAT	15	18.65	BOAT	15	125.45	BOAT
16	6.20	BOAT	16	22.00	BOAT	16	153.00	BOAT
17	13.20	BOAT	17	43.70	BOAT	17	327.00	BOAT
18	7.30	BOAT	18	24.60	BOAT	18	183.00	BOAT
19	1.60	BOAT	19	10.70	BOAT	19	43.80	BOAT
20	*	BOAT	20	23.70	BOAT	20	*	BOAT
21	*	BOAT	21	14.70	BOAT	21	*	BOAT
1	*	BOBH	1	*	BOBH	1	*	BOBH
2	*	BOBH	2	*	BOBH	2	*	BOBH
3	*	BOBH	3	*	BOBH	3	*	BOBH
4	0.45	BOBH	4	3.25	BOBH	4	3.70	BOBH
5	0.30	BOBH	5	3.30	BOBH	5	3.70	BOBH
6	0.35	BOBH	6	3.15	BOBH	6	*	BOBH

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
7	0.45	BOBH	7	3.25	BOBH	7	3.80	BOBH
8	0.30	BOBH	8	3.09	BOBH	8	3.80	BOBH
9	0.30	BOBH	9	3.43	BOBH	9	3.75	BOBH
10	0.40	BOBH	10	3.56	BOBH	10	3.85	BOBH
11	0.80	BOBH	11	3.59	BOBH	11	4.20	BOBH
12	0.80	BOBH	12	3.46	BOBH	12	5.00	BOBH
13	0.70	BOBH	13	3.47	BOBH	13	5.50	BOBH
14	0.55	BOBH	14	3.66	BOBH	14	5.10	BOBH
15	0.50	BOBH	15	3.77	BOBH	15	5.15	BOBH
16	0.60	BOBH	16	3.67	BOBH	16	5.30	BOBH
17	0.65	BOBH	17	3.59	BOBH	17	5.70	BOBH
18	0.70	BOBH	18	3.64	BOBH	18	6.15	BOBH
19	0.50	BOBH	19	3.93	BOBH	19	6.80	BOBH
20	0.70	BOBH	20	0.05	BOBH	20	5.95	BOBH
21	0.75	BOBH	21	0.05	BOBH	21	6.60	BOBH
1	*	BUBL	1	*	BUBL	1	6.90	BUBL
2	*	BUBL	2	*	BUBL	2	*	BUBL
3	5.00	BUBL	3	0.30	BUBL	3	2.40	BUBL
4	5.90	BUBL	4	0.10	BUBL	4	2.30	BUBL
5	5.90	BUBL	5	0.10	BUBL	5	2.50	BUBL
6	5.60	BUBL	6	0.10	BUBL	6	2.20	BUBL
7	5.50	BUBL	7	0.10	BUBL	7	2.20	BUBL
8	5.15	BUBL	8	0.10	BUBL	8	2.15	BUBL
9	5.95	BUBL	9	0.10	BUBL	9	2.35	BUBL
10	6.10	BUBL	10	0.20	BUBL	10	2.50	BUBL
11	6.00	BUBL	11	0.20	BUBL	11	2.55	BUBL
12	6.30	BUBL	12	0.25	BUBL	12	5.30	BUBL
13	6.50	BUBL	13	0.40	BUBL	13	4.80	BUBL
14	6.60	BUBL	14	0.30	BUBL	14	2.60	BUBL
15	6.55	BUBL	15	0.30	BUBL	15	2.35	BUBL
16	6.30	BUBL	16	0.30	BUBL	16	*	BUBL
17	6.50	BUBL	17	0.30	BUBL	17	2.70	BUBL
18	6.75	BUBL	18	0.30	BUBL	18	2.75	BUBL
19	6.45	BUBL	19	0.20	BUBL	19	2.80	BUBL
20	6.75	BUBL	20	0.25	BUBL	20	2.90	BUBL
21	6.55	BUBL	21	0.25	BUBL	21	2.90	BUBL
1	*	BUCK	1	*	BUCK	1	*	BUCK

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
2	*	BUCK	2	*	BUCK	2	*	BUCK
3	*	BUCK	3	*	BUCK	3	2.50	BUCK
4	*	BUCK	4	*	BUCK	4	2.60	BUCK
5	0.60	BUCK	5	12.00	BUCK	5	2.60	BUCK
6	0.70	BUCK	6	12.00	BUCK	6	2.55	BUCK
7	0.60	BUCK	7	11.50	BUCK	7	2.45	BUCK
8	0.70	BUCK	8	10.95	BUCK	8	2.40	BUCK
9	0.45	BUCK	9	11.90	BUCK	9	2.55	BUCK
10	0.80	BUCK	10	12.20	BUCK	10	2.70	BUCK
11	0.75	BUCK	11	11.60	BUCK	11	2.75	BUCK
12	0.70	BUCK	12	11.80	BUCK	12	5.75	BUCK
13	1.00	BUCK	13	12.00	BUCK	13	5.35	BUCK
14	0.80	BUCK	14	12.35	BUCK	14	4.15	BUCK
15	0.70	BUCK	15	12.25	BUCK	15	2.70	BUCK
16	0.70	BUCK	16	12.30	BUCK	16	*	BUCK
17	0.70	BUCK	17	12.40	BUCK	17	2.90	BUCK
18	0.80	BUCK	18	12.35	BUCK	18	2.95	BUCK
19	0.70	BUCK	19	12.20	BUCK	19	3.00	BUCK
20	0.80	BUCK	20	12.20	BUCK	20	3.05	BUCK
21	0.80	BUCK	21	12.20	BUCK	21	3.00	BUCK
1	0.61	CATF	1	7.20	CATF	1	17.00	CATF
2	*	CATF	2	*	CATF	2	*	CATF
3	*	CATF	3	*	CATF	3	*	CATF
4	0.60	CATF	4	7.70	CATF	4	20.00	CATF
5	0.65	CATF	5	7.90	CATF	5	21.50	CATF
6	0.80	CATF	6	7.80	CATF	6	19.00	CATF
7	0.64	CATF	7	7.55	CATF	7	20.00	CATF
8	0.79	CATF	8	7.91	CATF	8	22.30	CATF
9	0.57	CATF	9	7.30	CATF	9	16.10	CATF
10	0.52	CATF	10	7.79	CATF	10	16.40	CATF
11	1.08	CATF	11	8.85	CATF	11	29.20	CATF
12	1.15	CATF	12	9.28	CATF	12	31.74	CATF
13	1.63	CATF	13	10.30	CATF	13	39.75	CATF
14	0.91	CATF	14	8.57	CATF	14	23.80	CATF
15	0.97	CATF	15	9.33	CATF	15	26.85	CATF
16	0.88	CATF	16	8.68	CATF	16	259.00	CATF
17	*	CATF	17	*	CATF	17	31.10	CATF

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
18	1.82	CATF	18	11.70	CATF	18	53.40	CATF
19	1.72	CATF	19	11.45	CATF	19	49.65	CATF
20	1.82	CATF	20	11.55	CATF	20	50.45	CATF
21	1.61	CATF	21	11.20	CATF	21	47.85	CATF
1	*	CHS1	1	*	CHS1	1	*	CHS1
2	*	CHS1	2	*	CHS1	2	*	CHS1
3	6.80	CHS1	3	29.00	CHS1	3	167.00	CHS1
4	3.20	CHS1	4	19.50	CHS1	4	93.50	CHS1
5	2.50	CHS1	5	16.50	CHS1	5	72.00	CHS1
6	2.15	CHS1	6	15.00	CHS1	6	56.80	CHS1
7	6.95	CHS1	7	30.05	CHS1	7	190.00	CHS1
8	1.55	CHS1	8	12.45	CHS1	8	43.60	CHS1
9	2.85	CHS1	9	19.05	CHS1	9	86.30	CHS1
10	8.60	CHS1	10	35.15	CHS1	10	220.00	CHS1
11	7.90	CHS1	11	31.30	CHS1	11	188.50	CHS1
12	5.60	CHS1	12	25.50	CHS1	12	143.75	CHS1
13	3.20	CHS1	13	18.90	CHS1	13	77.70	CHS1
14	2.70	CHS1	14	17.60	CHS1	14	73.20	CHS1
15	1.55	CHS1	15	13.55	CHS1	15	40.15	CHS1
16	4.35	CHS1	16	22.80	CHS1	16	118.00	CHS1
17	8.95	CHS1	17	37.65	CHS1	17	247.50	CHS1
18	6.40	CHS1	18	29.75	CHS1	18	174.00	CHS1
19	8.50	CHS1	19	35.80	CHS1	19	227.50	CHS1
20	4.95	CHS1	20	23.85	CHS1	20	130.00	CHS1
21	7.35	CHS1	21	32.25	CHS1	21	198.50	CHS1
1	*	CHSM	1	*	CHSM	1	*	CHSM
2	*	CHSM	2	*	CHSM	2	*	CHSM
3	19.00	CHSM	3	66.00	CHSM	3	457.00	CHSM
4	10.00	CHSM	4	41.50	CHSM	4	300.50	CHSM
5	6.55	CHSM	5	26.50	CHSM	5	194.00	CHSM
6	6.00	CHSM	6	27.56	CHSM	6	153.00	CHSM
7	21.55	CHSM	7	75.60	CHSM	7	585.00	CHSM
8	2.64	CHSM	8	15.90	CHSM	8	73.50	CHSM
9	11.20	CHSM	9	43.45	CHSM	9	278.00	CHSM
10	26.50	CHSM	10	89.35	CHSM	10	697.00	CHSM
11	23.55	CHSM	11	76.80	CHSM	11	571.00	CHSM
12	17.65	CHSM	12	60.00	CHSM	12	446.00	CHSM

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
13	4.34	CHSM	13	22.30	CHSM	13	109.00	CHSM
14	10.30	CHSM	14	41.30	CHSM	14	280.00	CHSM
15	2.17	CHSM	15	15.10	CHSM	15	56.00	CHSM
16	18.15	CHSM	16	65.85	CHSM	16	488.00	CHSM
17	31.20	CHSM	17	104.00	CHSM	17	807.00	CHSM
18	21.00	CHSM	18	72.80	CHSM	18	547.00	CHSM
19	29.35	CHSM	19	97.30	CHSM	19	752.50	CHSM
20	12.30	CHSM	20	44.95	CHSM	20	310.00	CHSM
21	19.95	CHSM	21	67.25	CHSM	21	502.50	CHSM
1	*	FAN	1	*	FAN	1	*	FAN
2	*	FAN	2	*	FAN	2	*	FAN
3	*	FAN	3	*	FAN	3	*	FAN
4	*	FAN	4	*	FAN	4	*	FAN
5	1.95	FAN	5	5.85	FAN	5	5.00	FAN
6	2.00	FAN	6	5.80	FAN	6	5.00	FAN
7	1.40	FAN	7	4.70	FAN	7	5.00	FAN
8	1.80	FAN	8	4.40	FAN	8	4.95	FAN
9	2.05	FAN	9	4.75	FAN	9	5.20	FAN
10	2.05	FAN	10	5.40	FAN	10	5.20	FAN
11	2.30	FAN	11	6.00	FAN	11	5.15	FAN
12	2.60	FAN	12	5.70	FAN	12	5.10	FAN
13	*	FAN	13	*	FAN	13	5.15	FAN
14	3.40	FAN	14	5.85	FAN	14	5.55	FAN
15	4.05	FAN	15	5.75	FAN	15	5.75	FAN
16	3.70	FAN	16	6.05	FAN	16	6.20	FAN
17	3.35	FAN	17	6.20	FAN	17	5.85	FAN
18	3.30	FAN	18	6.40	FAN	18	6.00	FAN
19	4.00	FAN	19	6.50	FAN	19	6.25	FAN
20	3.50	FAN	20	6.40	FAN	20	6.35	FAN
21	3.40	FAN	21	6.20	FAN	21	6.60	FAN
1	*	FERN	1	*	FERN	1	*	FERN
2	*	FERN	2	*	FERN	2	*	FERN
3	*	FERN	3	4.50	FERN	3	2.45	FERN
4	*	FERN	4	4.70	FERN	4	2.00	FERN
5	*	FERN	5	4.45	FERN	5	2.25	FERN
6	*	FERN	6	4.55	FERN	6	3.00	FERN
7	*	FERN	7	4.35	FERN	7	3.00	FERN

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
8	*	FERN	8	4.50	FERN	8	2.90	FERN
9	*	FERN	9	4.85	FERN	9	2.60	FERN
10	*	FERN	10	4.70	FERN	10	2.60	FERN
11	*	FERN	11	4.65	FERN	11	2.60	FERN
12	*	FERN	12	5.05	FERN	12	2.70	FERN
13	*	FERN	13	5.20	FERN	13	2.60	FERN
14	*	FERN	14	4.95	FERN	14	2.70	FERN
15	*	FERN	15	4.70	FERN	15	2.65	FERN
16	*	FERN	16	4.85	FERN	16	2.75	FERN
17	*	FERN	17	4.45	FERN	17	2.60	FERN
18	*	FERN	18	4.50	FERN	18	2.75	FERN
19	*	FERN	19	4.35	FERN	19	2.55	FERN
20	*	FERN	20	4.45	FERN	20	2.70	FERN
21	*	FERN	21	4.60	FERN	21	2.70	FERN
1	0.50	GILB	1	5.10	GILB	1	2.10	GILB
2	*	GILB	2	*	GILB	2	2.10	GILB
3	*	GILB	3	*	GILB	3	2.10	GILB
4	*	GILB	4	*	GILB	4	1.00	GILB
5	0.45	GILB	5	7.10	GILB	5	1.00	GILB
6	0.20	GILB	6	6.30	GILB	6	3.85	GILB
7	0.10	GILB	7	5.30	GILB	7	3.40	GILB
8	0.15	GILB	8	4.65	GILB	8	2.33	GILB
9	0.40	GILB	9	5.10	GILB	9	2.23	GILB
10	0.30	GILB	10	6.00	GILB	10	2.38	GILB
11	0.30	GILB	11	6.30	GILB	11	3.13	GILB
12	0.20	GILB	12	6.50	GILB	12	3.30	GILB
13	0.30	GILB	13	6.35	GILB	13	2.96	GILB
14	0.20	GILB	14	6.10	GILB	14	3.24	GILB
15	0.30	GILB	15	6.15	GILB	15	2.94	GILB
16	0.40	GILB	16	6.60	GILB	16	2.87	GILB
17	0.40	GILB	17	6.85	GILB	17	2.92	GILB
18	0.40	GILB	18	6.70	GILB	18	3.13	GILB
19	0.50	GILB	19	6.95	GILB	19	3.17	GILB
20	0.50	GILB	20	6.90	GILB	20	3.42	GILB
21	0.50	GILB	21	6.70	GILB	21	3.20	GILB
1	*	HAR	1	*	HAR	1	*	HAR

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
2	*	HAR	2	*	HAR	2	*	HAR
3	*	HAR	3	*	HAR	3	*	HAR
4	*	HAR	4	*	HAR	4	*	HAR
5	*	HAR	5	*	HAR	5	*	HAR
6	*	HAR	6	*	HAR	6	*	HAR
7	*	HAR	7	*	HAR	7	*	HAR
8	0.55	HAR	8	4.35	HAR	8	2.55	HAR
9	0.40	HAR	9	4.45	HAR	9	255	HAR
10	0.40	HAR	10	5.10	HAR	10	2.90	HAR
11	0.60	HAR	11	5.70	HAR	11	3.60	HAR
12	0.55	HAR	12	5.55	HAR	12	3.20	HAR
13	0.80	HAR	13	4.70	HAR	13	3.10	HAR
14	0.55	HAR	14	5.40	HAR	14	3.25	HAR
15	0.60	HAR	15	5.40	HAR	15	3.10	HAR
16	0.70	HAR	16	5.80	HAR	16	3.35	HAR
17	0.80	HAR	17	6.20	HAR	17	3.90	HAR
18	0.80	HAR	18	5.90	HAR	18	3.40	HAR
19	1.10	HAR	19	5.70	HAR	19	4.00	HAR
20	1.10	HAR	20	6.00	HAR	20	4.10	HAR
21	0.99	HAR	21	6.10	HAR	21	3.70	HAR
1	*	HID2	1	*	HID2	1	*	HID2
2	*	HID2	2	*	HID2	2	*	HID2
3	*	HID2	3	*	HID2	3	*	HID2
4	14.00	HID2	4	52.00	HID2	4	52.00	HID2
5	13.00	HID2	5	49.50	HID2	5	49.50	HID2
6	9.00	HID2	6	33.34	HID2	6	33.34	HID2
7	9.70	HID2	7	39.55	HID2	7	39.55	HID2
8	12.45	HID2	8	43.75	HID2	8	43.75	HID2
9	10.95	HID2	9	40.20	HID2	9	40.20	HID2
10	12.85	HID2	10	59.75	HID2	10	59.75	HID2
11	17.55	HID2	11	71.20	HID2	11	71.20	HID2
12	23.43	HID2	12	82.14	HID2	12	82.14	HID2
13	20.10	HID2	13	74.70	HID2	13	74.70	HID2
14	14.20	HID2	14	42.30	HID2	14	42.30	HID2
15	10.30	HID2	15	34.90	HID2	15	34.90	HID2
16	8.84	HID2	16	34.75	HID2	16	34.75	HID2
17	10.85	HID2	17	50.90	HID2	17	50.90	HID2

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
18	16.65	HID2	18	76.30	HID2	18	555.00	HID2
19	20.65	HID2	19	82.10	HID2	19	603.00	HID2
20	22.00	HID2	20	79.50	HID2	20	637.00	HID2
21	20.35	HID2	21	73.45	HID2	21	553.00	HID2
1	*	HIDH	1	*	HIDH	1	*	HIDH
2	*	HIDH	2	*	HIDH	2	*	HIDH
3	*	HIDH	3	*	HIDH	3	*	HIDH
4	8.90	HIDH	4	37.00	HIDH	4	37.00	HIDH
5	8.50	HIDH	5	33.00	HIDH	5	33.00	HIDH
6	6.10	HIDH	6	24.38	HIDH	6	24.38	HIDH
7	6.31	HIDH	7	29.05	HIDH	7	29.05	HIDH
8	8.73	HIDH	8	30.60	HIDH	8	30.60	HIDH
9	5.45	HIDH	9	27.90	HIDH	9	27.90	HIDH
10	8.85	HIDH	10	45.90	HIDH	10	45.90	HIDH
11	14.90	HIDH	11	63.95	HIDH	11	63.95	HIDH
12	17.43	HIDH	12	60.22	HIDH	12	60.22	HIDH
13	14.20	HIDH	13	53.80	HIDH	13	53.80	HIDH
14	9.40	HIDH	14	32.50	HIDH	14	32.50	HIDH
15	6.41	HIDH	15	23.70	HIDH	15	23.70	HIDH
16	5.69	HIDH	16	25.50	HIDH	16	25.50	HIDH
17	7.48	HIDH	17	40.20	HIDH	17	40.20	HIDH
18	12.90	HIDH	18	58.35	HIDH	18	58.35	HIDH
19	14.85	HIDH	19	60.75	HIDH	19	60.75	HIDH
20	16.55	HIDH	20	59.60	HIDH	20	59.60	HIDH
21	14.85	HIDH	21	58.05	HIDH	21	58.05	HIDH
1	*	HOM1	1	*	HOM1	1	*	HOM1
2	*	HOM1	2	*	HOM1	2	*	HOM1
3	24.00	HOM1	3	73.00	HOM1	3	555.00	HOM1
4	21.00	HOM1	4	72.00	HOM1	4	590.00	HOM1
5	16.50	HOM1	5	60.00	HOM1	5	488.00	HOM1
6	18.00	HOM1	6	61.48	HOM1	6	452.00	HOM1
7	20.40	HOM1	7	69.75	HOM1	7	544.50	HOM1
8	20.30	HOM1	8	69.00	HOM1	8	548.50	HOM1
9	24.45	HOM1	9	87.25	HOM1	9	641.00	HOM1
10	36.00	HOM1	10	112.50	HOM1	10	902.00	HOM1
11	39.50	HOM1	11	125.00	HOM1	11	1005.00	HOM1
12	29.30	HOM1	12	92.45	HOM1	12	754.50	HOM1

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
13	22.00	HOM1	13	75.15	HOM1	13	572.50	HOM1
14	19.00	HOM1	14	64.65	HOM1	14	486.50	HOM1
15	17.50	HOM1	15	60.40	HOM1	15	446.00	HOM1
16	18.30	HOM1	16	66.10	HOM1	16	500.00	HOM1
17	22.65	HOM1	17	79.40	HOM1	17	602.00	HOM1
18	24.60	HOM1	18	83.05	HOM1	18	649.00	HOM1
19	25.80	HOM1	19	86.15	HOM1	19	66235.00	HOM1
20	27.25	HOM1	20	97.00	HOM1	20	714.50	HOM1
21	27.55	HOM1	21	88.45	HOM1	21	701.50	HOM1
1	*	HOM2	1	*	HOM2	1	572.50	HOM2
2	*	HOM2	2	*	HOM2	2	486.50	HOM2
3	44.00	HOM2	3	123.00	HOM2	3	446.00	HOM2
4	34.00	HOM2	4	109.00	HOM2	4	500.00	HOM2
5	33.50	HOM2	5	115.00	HOM2	5	602.00	HOM2
6	32.00	HOM2	6	115.05	HOM2	6	649.00	HOM2
7	32.50	HOM2	7	105.50	HOM2	7	662.35	HOM2
8	34.80	HOM2	8	109.00	HOM2	8	714.50	HOM2
9	33.35	HOM2	9	112.50	HOM2	9	701.50	HOM2
10	41.70	HOM2	10	138.50	HOM2	10	1090.00	HOM2
11	45.30	HOM2	11	143.00	HOM2	11	1340.00	HOM2
12	40.30	HOM2	12	125.00	HOM2	12	1030.00	HOM2
13	35.00	HOM2	13	126.00	HOM2	13	912.00	HOM2
14	41.20	HOM2	14	123.00	HOM2	14	953.00	HOM2
15	34.90	HOM2	15	113.00	HOM2	15	862.00	HOM2
16	30.20	HOM2	16	107.00	HOM2	16	830.00	HOM2
17	35.20	HOM2	17	116.00	HOM2	17	920.00	HOM2
18	39.10	HOM2	18	127.50	HOM2	18	995.00	HOM2
19	41.60	HOM2	19	128.50	HOM2	19	1049.00	HOM2
20	40.90	HOM2	20	120.00	HOM2	20	932.50	HOM2
21	38.65	HOM2	21	123.50	HOM2	21	988.50	HOM2
1	*	HOM3	1	*	HOM3	1	*	HOM3
2	*	HOM3	2	*	HOM3	2	*	HOM3
3	8.80	HOM3	3	29.00	HOM3	3	1010.00	HOM3
4	8.10	HOM3	4	32.00	HOM3	4	1000.00	HOM3
5	7.60	HOM3	5	29.50	HOM3	5	927.00	HOM3
6	4.40	HOM3	6	20.50	HOM3	6	928.50	HOM3
7	9.10	HOM3	7	34.80	HOM3	7	866.00	HOM3

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
9	8.10	HOM3	9	32.60	HOM3	9	898.50	HOM3
10	15.75	HOM3	10	53.60	HOM3	10	1090.00	HOM3
11	17.55	HOM3	11	57.30	HOM3	11	1340.00	HOM3
12	13.65	HOM3	12	45.70	HOM3	12	1030.00	HOM3
13	5.90	HOM3	13	24.90	HOM3	13	912.00	HOM3
14	5.20	HOM3	14	22.40	HOM3	14	953.00	HOM3
15	5.70	HOM3	15	25.10	HOM3	15	862.00	HOM3
16	7.00	HOM3	16	29.60	HOM3	16	830.00	HOM3
17	14.15	HOM3	17	51.65	HOM3	17	920.00	HOM3
18	12.05	HOM3	18	45.45	HOM3	18	995.00	HOM3
19	12.70	HOM3	19	47.80	HOM3	19	1049.00	HOM3
20	14.00	HOM3	20	49.85	HOM3	20	932.50	HOM3
21	14.55	HOM3	21	51.15	HOM3	21	988.50	HOM3
1	*	HOR	1	*	HOR	1	*	HOR
2	1.00	HOR	2	7.55	HOR	2	6.65	HOR
3	0.85	HOR	3	7.65	HOR	3	7.40	HOR
4	1.05	HOR	4	9.15	HOR	4	7.75	HOR
5	1.20	HOR	5	10.85	HOR	5	9.50	HOR
6	1.10	HOR	6	10.20	HOR	6	10.10	HOR
7	0.40	HOR	7	9.00	HOR	7	7.70	HOR
8	0.65	HOR	8	6.00	HOR	8	6.90	HOR
9	0.90	HOR	9	7.00	HOR	9	7.75	HOR
10	0.95	HOR	10	9.00	HOR	10	9.00	HOR
11	1.00	HOR	11	10.90	HOR	11	9.10	HOR
12	1.10	HOR	12	13.15	HOR	12	10.10	HOR
13	1.05	HOR	13	10.20	HOR	13	8.35	HOR
14	1.10	HOR	14	10.40	HOR	14	9.00	HOR
15	1.20	HOR	15	8.20	HOR	15	8.60	HOR
16	1.10	HOR	16	9.10	HOR	16	9.00	HOR
17	1.10	HOR	17	10.40	HOR	17	9.05	HOR
18	1.10	HOR	18	13.00	HOR	18	9.60	HOR
19	1.35	HOR	19	13.00	HOR	19	9.90	HOR
20	1.20	HOR	20	11.40	HOR	20	9.20	HOR
21	1.00	HOR	21	11.80	HOR	21	8.60	HOR
1	*	HSALT	1	*	HSALT	1	*	HSALT
2	*	HSALT	2	*	HSALT	2	*	HSALT
3	73.00	HSALT	3	232.00	HSALT	3	1812.00	HSALT

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
4	67.00	HSALT	4	207.50	HSALT	4	1932.50	HSALT
5	40.50	HSALT	5	133.00	HSALT	5	107.00	HSALT
6	33.50	HSALT	6	110.50	HSALT	6	900.50	HSALT
7	70.65	HSALT	7	220.50	HSALT	7	1956.50	HSALT
8	33.30	HSALT	8	116.80	HSALT	8	1016.00	HSALT
9	25.80	HSALT	9	89.30	HSALT	9	740.00	HSALT
10	37.30	HSALT	10	126.00	HSALT	10	999.00	HSALT
11	30.80	HSALT	11	91.10	HSALT	11	673.00	HSALT
12	28.60	HSALT	12	91.60	HSALT	12	718.80	HSALT
13	25.70	HSALT	13	90.80	HSALT	13	689.00	HSALT
14	47.20	HSALT	14	145.00	HSALT	14	1140.00	HSALT
15	28.05	HSALT	15	93.35	HSALT	15	711.50	HSALT
16	56.40	HSALT	16	188.00	HSALT	16	1500.00	HSALT
17	117.00	HSALT	17	359.00	HSALT	17	2960.00	HSALT
18	71.40	HSALT	18	212.00	HSALT	18	1700.00	HSALT
19	59.80	HSALT	19	191.00	HSALT	19	1630.00	HSALT
20	*	HSALT	20	*	HSALT	20	*	HSALT
21	*	HSALT	21	*	HSALT	21	*	HSALT
1	0.50	JKB	1	0.50	JKB	1	1.70	JKB
2	0.55	JKB	2	*	JKB	2	1.80	JKB
3	0.25	JKB	3	*	JKB	3	1.80	JKB
4	0.25	JKB	4	*	JKB	4	1.80	JKB
5	*	JKB	5	*	JKB	5	*	JKB
6	*	JKB	6	*	JKB	6	*	JKB
7	0.25	JKB	7	*	JKB	7	1.72	JKB
8	*	JKB	8	*	JKB	8	*	JKB
9	*	JKB	9	*	JKB	9	*	JKB
10	*	JKB	10	*	JKB	10	*	JKB
11	0.50	JKB	11	0.29	JKB	11	1.54	JKB
12	0.29	JKB	12	0.28	JKB	12	1.73	JKB
13	0.28	JKB	13	0.30	JKB	13	1.75	JKB
14	0.30	JKB	14	.0.30	JKB	14	1.81	JKB
15	0.31	JKB	15	0.31	JKB	15	1.80	JKB
16	0.33	JKB	16	0.33	JKB	16	1.95	JKB
17	0.36	JKB	17	0.36	JKB	17	1.90	JKB
18	0.35	JKB	18	0.35	JKB	18	1.90	JKB
19	0.35	JKB	19	0.35	JKB	19	1.90	JKB

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
20	*	JKB	20	*	JKB	20	*	JKB
21	0.35	JKB	21	0.35	JKB	21	1.80	JKB
1	0.30	JUNP	1	5.00	JUNP	1	*	JUNP
2	*	JUNP	2	4.80	JUNP	2	3.00	JUNP
3	*	JUNP	3	4.30	JUNP	3	3.00	JUNP
4	0.80	JUNP	4	4.50	JUNP	4	2.00	JUNP
5	*	JUNP	5	4.15	JUNP	5	3.00	JUNP
6	*	JUNP	6	4.50	JUNP	6	3.00	JUNP
7	0.20	JUNP	7	4.10	JUNP	7	3.00	JUNP
8	*	JUNP	8	4.44	JUNP	8	2.76	JUNP
9	*	JUNP	9	4.56	JUNP	9	2.55	JUNP
10	*	JUNP	10	4.57	JUNP	10	2.57	JUNP
11	*	JUNP	11	4.44	JUNP	11	2.53	JUNP
12	0.30	JUNP	12	4.53	JUNP	12	2.62	JUNP
13	0.30	JUNP	13	4.42	JUNP	13	2.50	JUNP
14	0.68	JUNP	14	4.67	JUNP	14	2.63	JUNP
15	0.33	JUNP	15	4.32	JUNP	15	2.55	JUNP
16	0.31	JUNP	16	4.40	JUNP	16	2.64	JUNP
17	0.33	JUNP	17	4.30	JUNP	17	2.60	JUNP
18	0.32	JUNP	18	4.50	JUNP	18	2.70	JUNP
19	0.21	JUNP	19	4.70	JUNP	19	2.60	JUNP
20	0.27	JUNP	20	4.55	JUNP	20	2.70	JUNP
21	0.33	JUNP	21	4.70	JUNP	21	2.76	JUNP
1	*	LBS	1	*	LBS	1	*	LBS
2	*	LBS	2	*	LBS	2	*	LBS
3	*	LBS	3	*	LBS	3	*	LBS
4	*	LBS	4	*	LBS	4	3.70	LBS
5	1.10	LBS	5	14.75	LBS	5	3.70	LBS
6	*	LBS	6	*	LBS	6	3.80	LBS
7	0.50	LBS	7	10.30	LBS	7	3.80	LBS
8	0.50	LBS	8	8.80	LBS	8	3.75	LBS
9	0.80	LBS	9	10.25	LBS	9	3.85	LBS
10	0.80	LBS	10	12.10	LBS	10	4.20	LBS
11	0.65	LBS	11	12.00	LBS	11	5.00	LBS
12	0.85	LBS	12	12.95	LBS	12	5.50	LBS
13	1.00	LBS	13	11.25	LBS	13	5.10	LBS
14	1.00	LBS	14	11.90	LBS	14	5.15	LBS

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
15	1.10	LBS	15	9.70	LBS	15	5.30	LBS
16	1.20	LBS	16	12.45	LBS	16	5.70	LBS
17	1.10	LBS	17	13.10	LBS	17	6.15	LBS
18	1.20	LBS	18	12.75	LBS	18	6.80	LBS
19	1.60	LBS	19	12.40	LBS	19	5.95	LBS
20	1.40	LBS	20	12.40	LBS	20	6.60	LBS
21	1.50	LBS	21	14.30	LBS	21	6.90	LBS
1	*	LRS	1	*	LRS	1	*	LRS
2	*	LRS	2	*	LRS	2	*	LRS
3	*	LRS	3	*	LRS	3	2.80	LRS
4	0.55	LRS	4	6.90	LRS	4	2.90	LRS
5	0.70	LRS	5	7.70	LRS	5	2.90	LRS
6	0.70	LRS	6	8.60	LRS	6	2.90	LRS
7	0.50	LRS	7	6.50	LRS	7	2.90	LRS
8	0.75	LRS	8	6.40	LRS	8	2.80	LRS
9	0.60	LRS	9	6.40	LRS	9	2.85	LRS
10	0.50	LRS	10	7.30	LRS	10	3.05	LRS
11	0.40	LRS	11	7.10	LRS	11	3.15	LRS
12	0.40	LRS	12	7.85	LRS	12	3.20	LRS
13	0.50	LRS	13	7.20	LRS	13	3.50	LRS
14	0.70	LRS	14	7.80	LRS	14	3.30	LRS
15	1.00	LRS	15	7.50	LRS	15	3.25	LRS
16	0.80	LRS	16	7.75	LRS	16	3.10	LRS
17	0.70	LRS	17	7.40	LRS	17	3.20	LRS
18	0.70	LRS	18	8.00	LRS	18	3.40	LRS
19	0.90	LRS	19	8.50	LRS	19	3.35	LRS
20	0.99	LRS	20	8.30	LRS	20	3.45	LRS
21	0.81	LRS	21	7.90	LRS	21	3.40	LRS
1	*	MAG	1	*	MAG	1	*	MAG
2	*	MAG	2	*	MAG	2	*	MAG
3	*	MAG	3	*	MAG	3	*	MAG
4	1.60	MAG	4	7.90	MAG	4	42.00	MAG
5	1.60	MAG	5	7.90	MAG	5	42.00	MAG
6	1.30	MAG	6	7.20	MAG	6	40.00	MAG
7	0.95	MAG	7	5.60	MAG	7	21.50	MAG
8	1.50	MAG	8	7.45	MAG	8	41.15	MAG
9	0.95	MAG	9	5.89	MAG	9	23.25	MAG

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
10	0.60	MAG	10	6.44	MAG	10	31.55	MAG
11	1.34	MAG	11	7.28	MAG	11	34.60	MAG
12	1.66	MAG	12	7.69	MAG	12	38.55	MAG
13	1.29	MAG	13	6.74	MAG	13	31.15	MAG
14	0.89	MAG	14	5.14	MAG	14	14.30	MAG
15	0.70	MAG	15	5.44	MAG	15	14.00	MAG
16	0.65	MAG	16	5.29	MAG	16	13.45	MAG
17	0.63	MAG	17	5.01	MAG	17	14.20	MAG
18	1.00	MAG	18	6.46	MAG	18	26.20	MAG
19	1.04	MAG	19	6.25	MAG	19	23.65	MAG
20	1.05	MAG	20	6.44	MAG	20	23.95	MAG
21	0.81	MAG	21	5.75	MAG	21	16.30	MAG
1	*	MAN	1	*	MAN	1	*	MAN
2	*	MAN	2	*	MAN	2	*	MAN
3	*	MAN	3	*	MAN	3	*	MAN
4	*	MAN	4	*	MAN	4	*	MAN
5	1.35	MAN	5	6.55	MAN	5	4.95	MAN
6	*	MAN	6	*	MAN	6	*	MAN
7	*	MAN	7	*	MAN	7	*	MAN
8	0.80	MAN	8	5.00	MAN	8	3.30	MAN
9	0.90	MAN	9	5.20	MAN	9	3.20	MAN
10	0.85	MAN	10	5.85	MAN	10	3.65	MAN
11	0.90	MAN	11	6.40	MAN	11	4.10	MAN
12	0.95	MAN	12	6.60	MAN	12	3.85	MAN
13	1.10	MAN	13	6.65	MAN	13	4.15	MAN
14	1.10	MAN	14	6.10	MAN	14	4.10	MAN
15	1.30	MAN	15	6.30	MAN	15	4.20	MAN
16	1.30	MAN	16	6.35	MAN	16	4.15	MAN
17	1.30	MAN	17	6.60	MAN	17	4.15	MAN
18	1.30	MAN	18	6.80	MAN	18	4.25	MAN
19	1.70	MAN	19	7.05	MAN	19	4.70	MAN
20	1.60	MAN	20	7.10	MAN	20	4.70	MAN
21	*	MAN	21	*	MAN	21	*	MAN
1	*	MIA	1	*	MIA	1	*	MIA
2	*	MIA	2	*	MIA	2	*	MIA
3	1.00	MIA	3	8.50	MIA	3	6.20	MIA
4	*	MIA	4	*	MIA	4	6.00	MIA

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
5	1.40	MIA	5	8.50	MIA	5	5.50	MIA
6	1.00	MIA	6	8.90	MIA	6	5.90	MIA
7	1.20	MIA	7	8.50	MIA	7	5.60	MIA
8	*	MIA	8	9.55	MIA	8	6.15	MIA
9	1.10	MIA	9	9.45	MIA	9	6.40	MIA
10	1.20	MIA	10	9.80	MIA	10	6.00	MIA
11	*	MIA	11	9.60	MIA	11	6.00	MIA
12	1.00	MIA	12	9.75	MIA	12	6.30	MIA
13	1.10	MIA	13	9.90	MIA	13	5.85	MIA
14	1.40	MIA	14	9.60	MIA	14	6.10	MIA
15	0.75	MIA	15	9.15	MIA	15	6.55	MIA
16	1.05	MIA	16	9.65	MIA	16	6.60	MIA
17	1.00	MIA	17	9.40	MIA	17	7.25	MIA
18	1.15	MIA	18	9.65	MIA	18	7.40	MIA
19	1.00	MIA	19	9.05	MIA	19	7.80	MIA
20	1.05	MIA	20	9.65	MIA	20	7.70	MIA
21	1.05	MIA	21	9.85	MIA	21	*	MIA
1	*	MSAL	1	*	MSAL	1	*	MSAL
2	20.90	MSAL	2	83.40	MSAL	2	710.00	MSAL
3	24.20	MSAL	3	82.30	MSAL	3	779.50	MSAL
4	24.55	MSAL	4	94.30	MSAL	4	820.00	MSAL
5	29.00	MSAL	5	91.35	MSAL	5	905.00	MSAL
6	30.95	MSAL	6	105.50	MSAL	6	923.50	MSAL
7	32.10	MSAL	7	105.50	MSAL	7	990.50	MSAL
8	34.30	MSAL	8	110.90	MSAL	8	1063.50	MSAL
9	28.20	MSAL	9	98.25	MSAL	9	927.00	MSAL
10	24.30	MSAL	10	84.50	MSAL	10	800.00	MSAL
11	24.90	MSAL	11	82.80	MSAL	11	773.00	MSAL
12	31.00	MSAL	12	106.00	MSAL	12	1000.00	MSAL
13	29.00	MSAL	13	104.00	MSAL	13	970.00	MSAL
14	30.50	MSAL	14	108.50	MSAL	14	1079.00	MSAL
15	32.30	MSAL	15	111.00	MSAL	15	1143.00	MSAL
16	33.10	MSAL	16	110.00	MSAL	16	1100.00	MSAL
17	24.50	MSAL	17	80.00	MSAL	17	781.50	MSAL
18	26.00	MSAL	18	87.50	MSAL	18	838.50	MSAL
19	30.00	MSAL	19	99.00	MSAL	19	997.00	MSAL
20	29.85	MSAL	20	94.25	MSAL	20	974.00	MSAL

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
21	21.60	MSAL	21	76.95	MSAL	21	668.50	MSAL
1	*	PUMP	1	*	PUMP	1	*	PUMP
2	*	PUMP	2	*	PUMP	2	*	PUMP
3	2.20	PUMP	3	14.00	PUMP	3	66.00	PUMP
4	1.60	PUMP	4	12.00	PUMP	4	52.00	PUMP
5	1.30	PUMP	5	10.50	PUMP	5	46.50	PUMP
6	1.05	PUMP	6	9.69	PUMP	6	31.90	PUMP
7	1.65	PUMP	7	12.05	PUMP	7	51.60	PUMP
8	1.23	PUMP	8	9.08	PUMP	8	32.30	PUMP
9	0.78	PUMP	9	8.71	PUMP	9	26.90	PUMP
10	1.61	PUMP	10	12.65	PUMP	10	52.65	PUMP
11	3.93	PUMP	11	18.10	PUMP	11	96.80	PUMP
12	4.02	PUMP	12	19.21	PUMP	12	116.69	PUMP
13	2.73	PUMP	13	15.55	PUMP	13	73.35	PUMP
14	1.61	PUMP	14	11.40	PUMP	14	43.20	PUMP
15	1.49	PUMP	15	11.10	PUMP	15	37.90	PUMP
16	1.37	PUMP	16	11.00	PUMP	16	36.70	PUMP
17	3.46	PUMP	17	21.00	PUMP	17	118.00	PUMP
18	4.87	PUMP	18	24.30	PUMP	18	158.00	PUMP
19	5.28	PUMP	19	25.90	PUMP	19	169.00	PUMP
20	4.12	PUMP	20	19.90	PUMP	20	115.00	PUMP
21	4.13	PUMP	21	*	PUMP	21	132.00	PUMP
1	*	PALM	1	*	PALM	1	*	PALM
2	*	PALM	2	*	PALM	2	*	PALM
3	1.00	PALM	3	12.00	PALM	3	8.70	PALM
4	*	PALM	4	*	PALM	4	*	PALM
5	1.00	PALM	5	0.65	PALM	5	8.60	PALM
6	1.15	PALM	6	0.90	PALM	6	9.00	PALM
7	1.13	PALM	7	0.50	PALM	7	8.80	PALM
8	1.22	PALM	8	0.75	PALM	8	9.05	PALM
9	1.05	PALM	9	0.60	PALM	9	9.40	PALM
10	1.76	PALM	10	0.70	PALM	10	11.70	PALM
11	1.11	PALM	11	0.60	PALM	11	9.30	PALM
12	1.05	PALM	12	0.60	PALM	12	9.20	PALM
13	1.10	PALM	13	0.80	PALM	13	9.70	PALM
14	1.32	PALM	14	12.20	PALM	14	9.75	PALM
15	0.95	PALM	15	12.15	PALM	15	10.10	PALM

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
16	1.15	PALM	16	11.95	PALM	16	10.15	PALM
17	1.15	PALM	17	12.00	PALM	17	10.50	PALM
18	1.25	PALM	18	12.50	PALM	18	11.50	PALM
19	1.20	PALM	19	12.00	PALM	19	12.00	PALM
20	1.20	PALM	20	12.60	PALM	20	11.70	PALM
21	1.40	PALM	21	12.80	PALM	21	12.15	PALM
1	3.45	PDL	1	*	PDL	1	68.00	PDL
2	4.60	PDL	2	12.80	PDL	2	86.00	PDL
3	4.35	PDL	3	14.35	PDL	3	78.00	PDL
4	4.10	PDL	4	12.15	PDL	4	74.00	PDL
5	4.60	PDL	5	12.90	PDL	5	90.00	PDL
6	4.50	PDL	6	14.20	PDL	6	93.00	PDL
7	4.50	PDL	7	13.07	PDL	7	80.95	PDL
8	5.50	PDL	8	15.11	PDL	8	104.25	PDL
9	3.90	PDL	9	12.96	PDL	9	75.20	PDL
10	3.50	PDL	10	11.13	PDL	10	60.40	PDL
11	3.60	PDL	11	10.46	PDL	11	54.50	PDL
12	4.80	PDL	12	14.24	PDL	12	93.65	PDL
13	5.20	PDL	13	16.20	PDL	13	111.80	PDL
14	4.95	PDL	14	15.80	PDL	14	108.50	PDL
15	4.85	PDL	15	15.00	PDL	15	103.00	PDL
16	4.05	PDL	16	11.65	PDL	16	72.75	PDL
17	3.90	PDL	17	12.00	PDL	17	64.50	PDL
18	4.20	PDL	18	13.00	PDL	18	79.50	PDL
19	3.90	PDL	19	12.00	PDL	19	74.00	PDL
20	4.25	PDL	20	12.50	PDL	20	76.15	PDL
21	4.00	PDL	21	12.10	PDL	21	70.60	PDL
1	*	PUMP	1	*	PUMP	1	*	PUMP
2	*	PUMP	2	*	PUMP	2	*	PUMP
3	2.20	PUMP	3	14.00	PUMP	3	*	PUMP
4	1.60	PUMP	4	12.00	PUMP	4	*	PUMP
5	1.30	PUMP	5	10.50	PUMP	5	*	PUMP
6	1.05	PUMP	6	9.70	PUMP	6	*	PUMP
7	1.65	PUMP	7	12.05	PUMP	7	2.75	PUMP
8	1.25	PUMP	8	9.10	PUMP	8	3.00	PUMP
9	0.80	PUMP	9	8.70	PUMP	9	2.50	PUMP
10	1.65	PUMP	10	12.65	PUMP	10	2.80	PUMP

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
11	3.90	PUMP	11	18.10	PUMP	11	2.80	PUMP
12	4.00	PUMP	12	19.20	PUMP	12	3.10	PUMP
13	2.75	PUMP	13	15.55	PUMP	13	3.75	PUMP
14	1.60	PUMP	14	11.40	PUMP	14	3.40	PUMP
15	1.50	PUMP	15	11.10	PUMP	15	3.90	PUMP
16	1.40	PUMP	16	11.00	PUMP	16	3.20	PUMP
17	3.50	PUMP	17	21.00	PUMP	17	2.85	PUMP
18	4.90	PUMP	18	24.30	PUMP	18	3.40	PUMP
19	5.30	PUMP	19	25.90	PUMP	19	3.75	PUMP
20	4.10	PUMP	20	19.90	PUMP	20	4.00	PUMP
21	4.10	PUMP	21	20.50	PUMP	21	3.00	PUMP
1	*	RKB	1	*	RKB	1	*	RKB
2	0.50	RKB	2	2.85	RKB	2	1.85	RKB
3	0.50	RKB	3	2.70	RKB	3	1.90	RKB
4	0.50	RKB	4	2.90	RKB	4	2.00	RKB
5	0.75	RKB	5	3.65	RKB	5	2.95	RKB
6	0.50	RKB	6	3.60	RKB	6	4.00	RKB
7	0.10	RKB	7	2.70	RKB	7	1.70	RKB
8	0.30	RKB	8	2.50	RKB	8	1.95	RKB
9	0.30	RKB	9	2.90	RKB	9	1.75	RKB
10	0.30	RKB	10	3.15	RKB	10	2.00	RKB
11	0.30	RKB	11	3.50	RKB	11	2.20	RKB
12	0.30	RKB	12	3.60	RKB	12	2.25	RKB
13	0.50	RKB	13	3.80	RKB	13	2.35	RKB
14	0.40	RKB	14	3.60	RKB	14	2.45	RKB
15	0.55	RKB	15	3.55	RKB	15	2.70	RKB
16	0.50	RKB	16	3.80	RKB	16	2.50	RKB
17	0.45	RKB	17	3.80	RKB	17	2.25	RKB
18	0.70	RKB	18	3.90	RKB	18	2.60	RKB
19	0.80	RKB	19	4.10	RKB	19	2.90	RKB
20	0.80	RKB	20	4.00	RKB	20	2.95	RKB
21	0.66	RKB	21	4.10	RKB	21	2.40	RKB
1	*	RLS	1	*	RLS	1	*	RLS
2	*	RLS	2	*	RLS	2	*	RLS
3	*	RLS	3	*	RLS	3	*	RLS
4	*	RLS	4	*	RLS	4	*	RLS
5	*	RLS	5	*	RLS	5	*	RLS

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
6	*	RLS	6	*	RLS	6	*	RLS
7	*	RLS	7	*	RLS	7	*	RLS
8	2.20	RLS	8	5.05	RLS	8	3.75	RLS
9	1.60	RLS	9	5.90	RLS	9	3.25	RLS
10	1.60	RLS	10	6.90	RLS	10	3.95	RLS
11	2.10	RLS	11	7.20	RLS	11	4.15	RLS
12	2.90	RLS	12	8.00	RLS	12	5.00	RLS
13	3.30	RLS	13	6.10	RLS	13	5.30	RLS
14	4.30	RLS	14	7.10	RLS	14	5.40	RLS
15	4.55	RLS	15	5.80	RLS	15	5.45	RLS
16	4.70	RLS	16	7.60	RLS	16	5.45	RLS
17	4.20	RLS	17	7.90	RLS	17	5.40	RLS
18	4.10	RLS	18	7.55	RLS	18	5.70	RLS
19	4.80	RLS	19	8.00	RLS	19	6.20	RLS
20	6.00	RLS	20	7.40	RLS	20	6.70	RLS
21	6.80	RLS	21	9.00	RLS	21	7.20	RLS
1	*	RNB1	1	*	RNB1	1	*	RNB1
2	*	RNB1	2	*	RNB1	2	2.40	RNB1
3	0.40	RNB1	3	3.70	RNB1	3	2.30	RNB1
4	0.10	RNB1	4	3.40	RNB1	4	2.50	RNB1
5	0.10	RNB1	5	4.00	RNB1	5	2.20	RNB1
6	0.10	RNB1	6	3.45	RNB1	6	2.20	RNB1
7	0.10	RNB1	7	3.30	RNB1	7	2.15	RNB1
8	0.10	RNB1	8	3.15	RNB1	8	2.35	RNB1
9	0.10	RNB1	9	3.80	RNB1	9	2.50	RNB1
10	0.10	RNB1	10	3.75	RNB1	10	2.55	RNB1
11	0.10	RNB1	11	3.75	RNB1	11	5.30	RNB1
12	0.35	RNB1	12	7.55	RNB1	12	4.80	RNB1
13	0.45	RNB1	13	7.20	RNB1	13	2.60	RNB1
14	0.30	RNB1	14	3.90	RNB1	14	2.35	RNB1
15	0.15	RNB1	15	3.55	RNB1	15	2.70	RNB1
16	*	RNB1	16	*	RNB1	16	2.75	RNB1
17	0.30	RNB1	17	4.10	RNB1	17	2.80	RNB1
18	0.30	RNB1	18	4.00	RNB1	18	2.90	RNB1
19	0.15	RNB1	19	3.95	RNB1	19	2.90	RNB1
20	0.20	RNB1	20	4.00	RNB1	20	*	RNB1
21	0.20	RNB1	21	4.10	RNB1	21	*	RNB1

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
1	*	RNB4	1	*	RNB4	1	*	RNB4
2	*	RNB4	2	*	RNB4	2	2.40	RNB4
3	*	RNB4	3	4.70	RNB4	3	2.30	RNB4
4	0.10	RNB4	4	4.80	RNB4	4	2.50	RNB4
5	0.10	RNB4	5	4.90	RNB4	5	2.20	RNB4
6	0.10	RNB4	6	4.45	RNB4	6	2.20	RNB4
7	0.10	RNB4	7	4.45	RNB4	7	2.15	RNB4
8	0.10	RNB4	8	4.00	RNB4	8	2.35	RNB4
9	0.05	RNB4	9	4.85	RNB4	9	2.50	RNB4
10	0.10	RNB4	10	5.00	RNB4	10	2.55	RNB4
11	0.10	RNB4	11	4.90	RNB4	11	5.30	RNB4
12	0.35	RNB4	12	10.35	RNB4	12	4.80	RNB4
13	0.45	RNB4	13	10.25	RNB4	13	2.60	RNB4
14	0.35	RNB4	14	7.65	RNB4	14	2.35	RNB4
15	0.15	RNB4	15	4.95	RNB4	15	2.70	RNB4
16	*	RNB4	16	*	RNB4	16	2.75	RNB4
17	0.30	RNB4	17	5.50	RNB4	17	2.80	RNB4
18	0.30	RNB4	18	5.45	RNB4	18	2.90	RNB4
19	0.20	RNB4	19	5.30	RNB4	19	2.90	RNB4
20	0.20	RNB4	20	5.55	RNB4	20	*	RNB4
21	0.20	RNB4	21	5.50	RNB4	21	*	RNB4
1	*	RNB6	1	*	RNB6	1	*	RNB6
2	*	RNB6	2	*	RNB6	2	*	RNB6
3	0.50	RNB6	3	6.00	RNB6	3	2.50	RNB6
4	0.20	RNB6	4	6.20	RNB6	4	2.60	RNB6
5	0.20	RNB6	5	6.30	RNB6	5	2.60	RNB6
6	0.20	RNB6	6	6.10	RNB6	6	2.55	RNB6
7	0.20	RNB6	7	6.10	RNB6	7	2.45	RNB6
8	0.20	RNB6	8	5.55	RNB6	8	2.40	RNB6
9	0.15	RNB6	9	6.55	RNB6	9	2.55	RNB6
10	0.30	RNB6	10	6.75	RNB6	10	2.70	RNB6
11	0.30	RNB6	11	6.85	RNB6	11	2.75	RNB6
12	0.30	RNB6	12	6.95	RNB6	12	5.75	RNB6
13	0.50	RNB6	13	6.90	RNB6	13	5.35	RNB6
14	0.30	RNB6	14	6.80	RNB6	14	4.15	RNB6
15	0.30	RNB6	15	6.65	RNB6	15	2.70	RNB6
16	0.30	RNB6	16	6.90	RNB6	16	2.90	RNB6

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
17	0.30	RNB6	17	7.20	RNB6	17	2.95	RNB6
18	0.40	RNB6	18	7.35	RNB6	18	3.00	RNB6
19	0.40	RNB6	19	7.10	RNB6	19	3.05	RNB6
20	0.35	RNB6	20	7.15	RNB6	20	3.00	RNB6
21	0.40	RNB6	21	7.10	RNB6	21	*	RNB6
1	*	RNBS	1	*	RNBS	1	*	RNBS
2	*	RNBS	2	*	RNBS	2	*	RNBS
3	0.10	RNBS	3	2.90	RNBS	3	3.50	RNBS
4	0.10	RNBS	4	3.20	RNBS	4	3.50	RNBS
5	0.10	RNBS	5	3.40	RNBS	5	3.60	RNBS
6	0.10	RNBS	6	3.00	RNBS	6	3.40	RNBS
7	0.10	RNBS	7	3.00	RNBS	7	3.60	RNBS
8	0.10	RNBS	8	2.85	RNBS	8	3.50	RNBS
9	0.10	RNBS	9	3.10	RNBS	9	3.60	RNBS
10	0.10	RNBS	10	3.40	RNBS	10	3.75	RNBS
11	0.10	RNBS	11	3.20	RNBS	11	3.95	RNBS
12	0.10	RNBS	12	3.30	RNBS	12	4.10	RNBS
13	0.30	RNBS	13	3.30	RNBS	13	4.20	RNBS
14	0.30	RNBS	14	3.30	RNBS	14	3.90	RNBS
15	0.40	RNBS	15	3.40	RNBS	15	3.90	RNBS
16	0.30	RNBS	16	3.30	RNBS	16	4.00	RNBS
17	0.30	RNBS	17	3.50	RNBS	17	4.10	RNBS
18	0.30	RNBS	18	3.50	RNBS	18	4.25	RNBS
19	0.15	RNBS	19	3.40	RNBS	19	4.40	RNBS
20	0.20	RNBS	20	3.50	RNBS	20	4.40	RNBS
21	0.20	RNBS	21	3.45	RNBS	21	4.45	RNBS
1	*	RNS3	1	*	RNS3	1	*	RNS3
2	*	RNS3	2	*	RNS3	2	*	RNS3
3	*	RNS3	3	*	RNS3	3	*	RNS3
4	0.10	RNS3	4	3.50	RNS3	4	2.50	RNS3
5	0.20	RNS3	5	3.80	RNS3	5	2.70	RNS3
6	0.10	RNS3	6	3.30	RNS3	6	2.70	RNS3
7	0.10	RNS3	7	3.50	RNS3	7	2.70	RNS3
8	0.10	RNS3	8	3.40	RNS3	8	2.70	RNS3
9	0.10	RNS3	9	3.50	RNS3	9	2.60	RNS3
10	0.20	RNS3	10	3.95	RNS3	10	2.90	RNS3
11	0.20	RNS3	11	4.10	RNS3	11	2.80	RNS3

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
12	0.20	RNS3	12	4.00	RNS3	12	3.00	RNS3
13	0.45	RNS3	13	3.85	RNS3	13	2.90	RNS3
14	0.30	RNS3	14	4.00	RNS3	14	2.70	RNS3
15	0.30	RNS3	15	4.00	RNS3	15	2.90	RNS3
16	0.30	RNS3	16	3.90	RNS3	16	3.00	RNS3
17	0.30	RNS3	17	4.35	RNS3	17	3.10	RNS3
18	0.35	RNS3	18	4.30	RNS3	18	3.25	RNS3
19	0.30	RNS3	19	4.10	RNS3	19	3.15	RNS3
20	0.30	RNS3	20	4.05	RNS3	20	3.15	RNS3
21	0.30	RNS3	21	4.20	RNS3	21	3.25	RNS3
1	1.15	ROCK	1	8.90	ROCK	1	4.00	ROCK
2	1.20	ROCK	2	9.05	ROCK	2	5.00	ROCK
3	1.45	ROCK	3	8.90	ROCK	3	4.90	ROCK
4	1.30	ROCK	4	9.30	ROCK	4	5.00	ROCK
5	1.40	ROCK	5	8.50	ROCK	5	5.00	ROCK
6	1.40	ROCK	6	8.70	ROCK	6	5.00	ROCK
7	1.30	ROCK	7	9.00	ROCK	7	5.00	ROCK
8	1.35	ROCK	8	9.20	ROCK	8	5.15	ROCK
9	1.10	ROCK	9	9.50	ROCK	9	5.00	ROCK
10	1.40	ROCK	10	9.70	ROCK	10	5.40	ROCK
11	*	ROCK	11	*	ROCK	11	*	ROCK
12	*	ROCK	12	*	ROCK	12	*	ROCK
13	1.30	ROCK	13	9.00	ROCK	13	5.10	ROCK
14	1.95	ROCK	14	9.45	ROCK	14	5.20	ROCK
15	1.20	ROCK	15	9.05	ROCK	15	5.20	ROCK
16	1.35	ROCK	16	9.30	ROCK	16	5.40	ROCK
17	1.35	ROCK	17	9.50	ROCK	17	5.60	ROCK
18	1.35	ROCK	18	9.55	ROCK	18	5.55	ROCK
19	1.35	ROCK	19	9.40	ROCK	19	5.75	ROCK
20	1.40	ROCK	20	9.40	ROCK	20	5.65	ROCK
21	1.35	ROCK	21	9.90	ROCK	21	5.75	ROCK
1	*	SANL	1	*	SANL	1	*	SANL
2	*	SANL	2	*	SANL	2	*	SANL
3	1.55	SANL	3	11.50	SANL	3	8.90	SANL
4	*	SANL	4	*	SANL	4	9.50	SANL
5	1.85	SANL	5	11.70	SANL	5	10.50	SANL
6	1.70	SANL	6	11.50	SANL	6	10.10	SANL

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
7	1.75	SANL	7	11.05	SANL	7	10.60	SANL
8	1.55	SANL	8	12.40	SANL	8	11.15	SANL
9	1.55	SANL	9	12.05	SANL	9	12.50	SANL
10	1.90	SANL	10	12.80	SANL	10	11.10	SANL
11	1.60	SANL	11	12.20	SANL	11	11.25	SANL
12	1.60	SANL	12	12.20	SANL	12	12.00	SANL
13	1.60	SANL	13	12.00	SANL	13	11.70	SANL
14	1.85	SANL	14	12.10	SANL	14	12.20	SANL
15	1.55	SANL	15	11.80	SANL	15	13.00	SANL
16	1.75	SANL	16	12.00	SANL	16	13.00	SANL
17	1.70	SANL	17	12.00	SANL	17	12.50	SANL
18	1.75	SANL	18	12.00	SANL	18	14.00	SANL
19	1.70	SANL	19	12.50	SANL	19	14.30	SANL
20	1.80	SANL	20	12.25	SANL	20	14.80	SANL
21	1.85	SANL	21	12.65	SANL	21	*	SANL
1	*	SBS	1	*	SBS	1	*	SBS
2	*	SBS	2	*	SBS	2	*	SBS
3	*	SBS	3	*	SBS	3	*	SBS
4	*	SBS	4	*	SBS	4	*	SBS
5	*	SBS	5	*	SBS	5	*	SBS
6	*	SBS	6	*	SBS	6	*	SBS
7	0.95	SBS	7	10.45	SBS	7	2.75	SBS
8	1.15	SBS	8	10.10	SBS	8	3.00	SBS
9	0.65	SBS	9	9.20	SBS	9	2.50	SBS
10	0.45	SBS	10	10.10	SBS	10	2.80	SBS
11	0.45	SBS	11	10.60	SBS	11	2.80	SBS
12	0.70	SBS	12	10.80	SBS	12	2.10	SBS
13	1.35	SBS	13	12.00	SBS	13	3.75.	SBS
14	0.90	SBS	14	11.60	SBS	14	3.40	SBS
15	1.70	SBS	15	12.50	SBS	15	3.90	SBS
16	1.10	SBS	16	11.70	SBS	16	3.20	SBS
17	0.80	SBS	17	10.90	SBS	17	2.85	SBS
18	1.35	SBS	18	12.00	SBS	18	3.40	SBS
19	1.45	SBS	19	12.00	SBS	19	3.75	SBS
20	1.70	SBS	20	12.40	SBS	20	4.00	SBS
21	1.00	SBS	21	11.40	SBS	21	3.00	SBS
1	8.75	SILG	1	34.55	SILG	1	333.50	SILG

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
2	8.65	SILG	2	34.55	SILG	2	269.00	SILG
3	10.50	SILG	3	33.95	SILG	3	275.00	SILG
4	8.40	SILG	4	37.00	SILG	4	243.00	SILG
5	8.80	SILG	5	34.20	SILG	5	247.00	SILG
6	8.70	SILG	6	36.40	SILG	6	264.00	SILG
7	8.70	SILG	7	35.20	SILG	7	250.30	SILG
8	8.95	SILG	8	35.50	SILG	8	244.35	SILG
9	8.65	SILG	9	35.30	SILG	9	260.05	SILG
10	8.80	SILG	10	35.50	SILG	10	255.70	SILG
11	9.15	SILG	11	35.80	SILG	11	258.00	SILG
12	9.10	SILG	12	35.00	SILG	12	247.30	SILG
13	8.40	SILG	13	34.80	SILG	13	240.00	SILG
14	8.10	SILG	14	34.70	SILG	14	241.05	SILG
15	7.95	SILG	15	32.05	SILG	15	226.00	SILG
16	7.95	SILG	16	31.70	SILG	16	230.00	SILG
17	8.10	SILG	17	33.00	SILG	17	233.50	SILG
18	8.40	SILG	18	33.00	SILG	18	233.50	SILG
19	7.50	SILG	19	31.00	SILG	19	224.00	SILG
20	8.05	SILG	20	32.60	SILG	20	232.50	SILG
21	8.50	SILG	21	34.35	SILG	21	242.00	SILG
1	*	STAR	1	*	STAR	1	*	STAR
2	*	STAR	2	*	STAR	2	*	STAR
3	1.30	STAR	3	11.80	STAR	3	11.50	STAR
4	*	STAR	4	*	STAR	4	*	STAR
5	1.50	STAR	5	11.10	STAR	5	11.00	STAR
6	1.40	STAR	6	11.10	STAR	6	12.50	STAR
7	1.40	STAR	7	10.90	STAR	7	11.80	STAR
8	1.40	STAR	8	12.30	STAR	8	12.25	STAR
9	1.30	STAR	9	12.10	STAR	9	12.40	STAR
10	1.60	STAR	10	12.40	STAR	10	13.00	STAR
11	1.30	STAR	11	12.10	STAR	11	12.40	STAR
12	1.40	STAR	12	12.15	STAR	12	12.95	STAR
13	1.40	STAR	13	12.00	STAR	13	13.00	STAR
14	1.75	STAR	14	11.80	STAR	14	13.20	STAR
15	1.45	STAR	15	11.25	STAR	15	13.35	STAR
16	1.55	STAR	16	11.95	STAR	16	14.20	STAR
17	1.50	STAR	17	12.00	STAR	17	14.00	STAR

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration, and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
18	1.60	STAR	18	12.00	STAR	18	15.00	STAR
19	1.50	STAR	19	13.00	STAR	19	16.00	STAR
20	1.60	STAR	20	12.35	STAR	20	15.95	STAR
21	1.75	STAR	21	12.25	STAR	21	15.40	STAR
1	18.50	SWEE	1	69.90	SWEE	1	618.00	SWEE
2	18.60	SWEE	2	67.10	SWEE	2	620.00	SWEE
3	16.95	SWEE	3	63.05	SWEE	3	616.50	SWEE
4	17.90	SWEE	4	62.10	SWEE	4	616.00	SWEE
5	18.50	SWEE	5	59.20	SWEE	5	547.00	SWEE
6	17.60	SWEE	6	58.10	SWEE	6	530.00	SWEE
7	17.70	SWEE	7	59.45	SWEE	7	568.50	SWEE
8	18.09	SWEE	8	59.40	SWEE	8	519.00	SWEE
9	17.46	SWEE	9	59.95	SWEE	9	559.50	SWEE
10	18.51	SWEE	10	63.20	SWEE	10	562.00	SWEE
11	18.19	SWEE	11	58.05	SWEE	11	546.35	SWEE
12	19.47	SWEE	12	59.90	SWEE	12	544.70	SWEE
13	16.00	SWEE	13	55.00	SWEE	13	520.00	SWEE
14	15.86	SWEE	14	55.70	SWEE	14	508.50	SWEE
15	15.70	SWEE	15	54.15	SWEE	15	496.00	SWEE
16	16.50	SWEE	16	55.00	SWEE	16	524.00	SWEE
17	17.50	SWEE	17	58.00	SWEE	17	540.00	SWEE
18	16.50	SWEE	18	54.00	SWEE	18	492.50	SWEE
19	17.50	SWEE	19	58.00	SWEE	19	554.50	SWEE
20	18.40	SWEE	20	59.05	SWEE	20	562.00	SWEE
21	19.05	SWEE	21	63.70	SWEE	21	592.00	SWEE
1	6.65	TARP	1	26.50	TARP	1	195	TARP
2	14.00	TARP	2	45.00	TARP	2	390	TARP
3	*	TARP	3	*	TARP	3	*	TARP
4	6.50	TARP	4	27.00	TARP	4	188.00	TARP
5	7.15	TARP	5	26.50	TARP	5	210.00	TARP
6	6.95	TARP	6	26.00	TARP	6	193.00	TARP
7	9.20	TARP	7	34.00	TARP	7	353.50	TARP
8	5.00	TARP	8	18.85	TARP	8	131.50	TARP
9	8.65	TARP	9	32.55	TARP	9	229.00	TARP
10	16.30	TARP	10	58.55	TARP	10	459.00	TARP
11	17.25	TARP	11	62.55	TARP	11	415.00	TARP
12	16.90	TARP	12	56.45	TARP	12	437.50	TARP

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
13	9.60	TARP	13	37.10	TARP	13	270.00	TARP
14	10.10	TARP	14	37.90	TARP	14	284.00	TARP
15	4.75	TARP	15	20.50	TARP	15	131.00	TARP
16	11.10	TARP	16	40.80	TARP	16	297.00	TARP
17	35.00	TARP	17	123.00	TARP	17	956.00	TARP
18	29.40	TARP	18	101.35	TARP	18	805.50	TARP
19	31.90	TARP	19	106.00	TARP	19	825.50	TARP
20	20.50	TARP	20	75.90	TARP	20	582.50	TARP
21	35.00	TARP	21	127.00	TARP	21	1001.00	TARP
1	*	TEL	1	*	TEL	1	*	TEL
2	0.65	TEL	2	14.15	TEL	2	*	TEL
3	0.50	TEL	3	16.80	TEL	3	2.45	TEL
4	0.50	TEL	4	15.25	TEL	4	2.00	TEL
5	0.65	TEL	5	17.80	TEL	5	2.50	TEL
6	0.60	TEL	6	20.00	TEL	6	3.00	TEL
7	0.00	TEL	7	16.80	TEL	7	3.00	TEL
8	0.35	TEL	8	16.35	TEL	8	2.90	TEL
9	0.40	TEL	9	16.15	TEL	9	2.60	TEL
10	0.40	TEL	10	16.80	TEL	10	2.60	TEL
11	0.30	TEL	11	18.00	TEL	11	2.60	TEL
12	0.40	TEL	12	17.60	TEL	12	2.70	TEL
13	0.50	TEL	13	17.40	TEL	13	2.60	TEL
14	0.50	TEL	14	18.00	TEL	14	2.70	TEL
15	0.60	TEL	15	16.80	TEL	15	2.65	TEL
16	0.55	TEL	16	19.50	TEL	16	2.75	TEL
17	0.50	TEL	17	19.00	TEL	17	2.60	TEL
18	0.65	TEL	18	18.45	TEL	18	2.75	TEL
19	0.80	TEL	19	19.50	TEL	19	2.55	TEL
20	0.79	TEL	20	19.30	TEL	20	2.70	TEL
21	0.72	TEL	21	19.50	TEL	21	2.70	TEL
1	*	TROT	1	*	TROT	1	*	TROT
2	*	TROT	2	*	TROT	2	*	TROT
3	1.80	TROT	3	12.00	TROT	3	56.00	TROT
4	1.25	TROT	4	10.40	TROT	4	37.00	TROT
5	1.10	TROT	5	9.75	TROT	5	35.00	TROT
6	0.90	TROT	6	8.95	TROT	6	24.75	TROT
7	1.50	TROT	7	11.10	TROT	7	44.35	TROT

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
8	1.15	TROT	8	8.50	TROT	8	26.15	TROT
9	0.80	TROT	9	9.85	TROT	9	27.25	TROT
10	2.50	TROT	10	13.60	TROT	10	64.35	TROT
11	3.50	TROT	11	16.50	TROT	11	86.45	TROT
12	2.70	TROT	12	15.10	TROT	12	77.60	TROT
13	2.00	TROT	13	13.40	TROT	13	51.00	TROT
14	1.20	TROT	14	9.90	TROT	14	28.75	TROT
15	0.95	TROT	15	9.20	TROT	15	22.60	TROT
16	0.95	TROT	16	9.35	TROT	16	24.20	TROT
17	2.45	TROT	17	15.05	TROT	17	72.05	TROT
18	3.50	TROT	18	19.30	TROT	18	110.50	TROT
19	3.45	TROT	19	18.50	TROT	19	99.45	TROT
20	2.95	TROT	20	15.75	TROT	20	79.75	TROT
21	3.35	TROT	21	17.15	TROT	21	94.10	TROT
1	*	TRY	1	*	TRY	1	*	TRY
2	5.55	TRY	2	0.65	TRY	2	2.70	TRY
3	6.30	TRY	3	0.60	TRY	3	2.50	TRY
4	6.35	TRY	4	0.65	TRY	4	2.45	TRY
5	7.15	TRY	5	0.90	TRY	5	3.15	TRY
6	7.20	TRY	6	0.80	TRY	6	3.40	TRY
7	6.10	TRY	7	0.40	TRY	7	2.60	TRY
8	5.95	TRY	8	0.90	TRY	8	2.60	TRY
9	5.90	TRY	9	0.60	TRY	9	2.40	TRY
10	6.70	TRY	10	0.60	TRY	10	2.70	TRY
11	6.80	TRY	11	0.70	TRY	11	2.90	TRY
12	7.20	TRY	12	0.70	TRY	12	2.80	TRY
13	7.20	TRY	13	0.90	TRY	13	3.20	TRY
14	7.30	TRY	14	1.10	TRY	14	3.20	TRY
15	7.10	TRY	15	1.40	TRY	15	3.20	TRY
16	7.20	TRY	16	1.30	TRY	16	3.20	TRY
17	7.10	TRY	17	0.95	TRY	17	3.00	TRY
18	7.50	TRY	18	1.20	TRY	18	3.15	TRY
19	7.65	TRY	19	1.55	TRY	19	3.50	TRY
20	7.55	TRY	20	1.85	TRY	20	3.60	TRY
21	7.90	TRY	21	1.30	TRY	21	3.20	TRY
1	10.95	VOLB	1	36.75	VOLB	1	197.00	VOLB
2	9.65	VOLB	2	32.70	VOLB	2	251.50	VOLB

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
3	8.35	VOLB	3	27.95	VOLB	3	225.00	VOLB
4	11.40	VOLB	4	36.80	VOLB	4	316.00	VOLB
5	*	VOLB	5	*	VOLB	5	*	VOLB
6	5.90	VOLB	6	19.90	VOLB	6	167.00	VOLB
7	*	VOLB	7	*	VOLB	7	*	VOLB
8	6.45	VOLB	8	21.00	VOLB	8	185.00	VOLB
9	6.95	VOLB	9	24.00	VOLB	9	200.00	VOLB
10	7.20	VOLB	10	24.00	VOLB	10	190.00	VOLB
11	*	VOLB	11	*	VOLB	11	*	VOLB
12	*	VOLB	12	*	VOLB	12	*	VOLB
13	*	VOLB	13	*	VOLB	13	*	VOLB
14	7.37	VOLB	14	25.35	VOLB	14	205.30	VOLB
15	4.60	VOLB	15	16.15	VOLB	15	118.00	VOLB
16	5.75	VOLB	16	18.50	VOLB	16	143.00	VOLB
17	9.45	VOLB	17	31.50	VOLB	17	254.00	VOLB
18	9.90	VOLB	18	33.00	VOLB	18	262.00	VOLB
19	5.85	VOLB	19	20.00	VOLB	19	157.50	VOLB
20	7.85	VOLB	20	25.30	VOLB	20	208.00	VOLB
21	10.65	VOLB	21	32.85	VOLB	21	278.00	VOLB
1	1.00	WAK	1	8.90	WAK	1	2.10	WAK
2	0.75	WAK	2	9.60	WAK	2	4.80	WAK
3	0.50	WAK	3	9.50	WAK	3	5.15	WAK
4	0.48	WAK	4	9.30	WAK	4	5.20	WAK
5	*	WAK	5	*	WAK	5	5.00	WAK
6	*	WAK	6	*	WAK	6	*	WAK
7	0.51	WAK	7	9.65	WAK	7	*	WAK
8	*	WAK	8	*	WAK	8	4.99	WAK
9	*	WAK	9	*	WAK	9	*	WAK
10	0.56	WAK	10	10.05	WAK	10	*	WAK
11	*	WAK	11	*	WAK	11	5.20	WAK
12	*	WAK	12	*	WAK	12	*	WAK
13	0.62	WAK	13	10.80	WAK	13	*	WAK
14	0.60	WAK	14	10.65	WAK	14	6.48	WAK
15	0.58	WAK	15	9.55	WAK	15	5.82	WAK
16	0.59	WAK	16	10.30	WAK	16	5.26	WAK
17	0.90	WAK	17	11.50	WAK	17	5.60	WAK

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
18	0.79	WAK	18	10.50	WAK	18	16.45	WAK
19	0.57	WAK	19	10.12	WAK	19	11.90	WAK
20	*	WAK	20	*	WAK	20	5.80	WAK
21	0.63	WAK	21	10.50	WAK	21	*	WAK
1	*	WEEK	1	*	WEEK	1	*	WEEK
2	*	WEEK	2	*	WEEK	2	*	WEEK
3	0.30	WEEK	3	5.80	WEEK	3	3.60	WEEK
4	0.15	WEEK	4	5.45	WEEK	4	3.65	WEEK
5	0.20	WEEK	5	6.10	WEEK	5	3.85	WEEK
6	0.25	WEEK	6	5.60	WEEK	6	3.75	WEEK
7	0.30	WEEK	7	5.65	WEEK	7	3.85	WEEK
8	0.30	WEEK	8	5.50	WEEK	8	3.85	WEEK
9	0.15	WEEK	9	6.10	WEEK	9	3.85	WEEK
10	0.35	WEEK	10	6.25	WEEK	10	4.35	WEEK
11	0.30	WEEK	11	6.20	WEEK	11	4.20	WEEK
12	0.30	WEEK	12	6.30	WEEK	12	4.35	WEEK
13	0.60	WEEK	13	6.00	WEEK	13	4.50	WEEK
14	0.40	WEEK	14	6.10	WEEK	14	4.40	WEEK
15	0.30	WEEK	15	6.20	WEEK	15	4.35	WEEK
16	0.30	WEEK	16	6.40	WEEK	16	4.70	WEEK
17	0.40	WEEK	17	6.65	WEEK	17	4.50	WEEK
18	0.40	WEEK	18	6.60	WEEK	18	4.80	WEEK
19	0.40	WEEK	19	6.50	WEEK	19	5.10	WEEK
20	0.60	WEEK	20	6.50	WEEK	20	5.75	WEEK
21	0.50	WEEK	21	6.45	WEEK	21	5.05	WEEK
1	1.40	WEKI	1	10.40	WEKI	1	6.55	WEKI
2	1.35	WEKI	2	10.35	WEKI	2	7.50	WEKI
3	1.30	WEKI	3	10.80	WEKI	3	7.90	WEKI
4	1.30	WEKI	4	10.00	WEKI	4	24.00	WEKI
5	1.65	WEKI	5	10.30	WEKI	5	9.00	WEKI
6	1.65	WEKI	6	10.55	WEKI	6	36.00	WEKI
7	1.50	WEKI	7	10.65	WEKI	7	8.80	WEKI
8	1.61	WEKI	8	10.40	WEKI	8	8.57	WEKI
9	1.38	WEKI	9	11.30	WEKI	9	8.98	WEKI
10	1.87	WEKI	10	11.80	WEKI	10	10.06	WEKI
11	1.52	WEKI	11	11.30	WEKI	11	8.87	WEKI
12	1.50	WEKI	12	11.05	WEKI	12	8.87	WEKI

Appendix Table B5. Regional-Kendall test data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	K	Station	Year	Mg	Station	Year	Na	Station
13	1.65	WEKI	13	11.25	WEKI	13	9.63	WEKI
14	2.38	WEKI	14	11.70	WEKI	14	9.77	WEKI
15	1.64	WEKI	15	11.20	WEKI	15	9.62	WEKI
16	1.70	WEKI	16	11.55	WEKI	16	9.80	WEKI
17	1.55	WEKI	17	11.00	WEKI	17	9.55	WEKI
18	1.60	WEKI	18	11.50	WEKI	18	9.75	WEKI
19	1.65	WEKI	19	11.50	WEKI	19	10.35	WEKI
20	1.75	WEKI	20	11.75	WEKI	20	21.40	WEKI
21	1.74	WEKI	21	12.05	WEKI	21	20.60	WEKI

Table continues next page

Appendix Table B5. Regional-Kendall data for 55 springs (continued). Table contains data for year, annual median indicator concentration (mg/L) or discharge (ft^3/sec), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011. Missing data labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	SO4	Station	Year	TDS	Station	Year	Discharge	Spring
1	70.50	ALEX	1	376.50	ALEX	1	96.60	ALEX
2	68.00	ALEX	2	559.00	ALEX	2	100.00	ALEX
3	70.00	ALEX	3	549.50	ALEX	3	95.00	ALEX
4	73.00	ALEX	4	607.00	ALEX	4	85.10	ALEX
5	62.00	ALEX	5	564.50	ALEX	5	93.10	ALEX
6	64.50	ALEX	6	595.50	ALEX	6	92.70	ALEX
7	66.00	ALEX	7	603.00	ALEX	7	109.50	ALEX
8	66.90	ALEX	8	608.50	ALEX	8	105.50	ALEX
9	65.30	ALEX	9	595.50	ALEX	9	111.40	ALEX
10	69.34	ALEX	10	632.00	ALEX	10	107.80	ALEX
11	67.22	ALEX	11	636.00	ALEX	11	91.80	ALEX
12	67.64	ALEX	12	616.00	ALEX	12	91.50	ALEX
13	67.00	ALEX	13	605.00	ALEX	13	104.50	ALEX
14	66.50	ALEX	14	624.00	ALEX	14	105.00	ALEX
15	59.85	ALEX	15	565.00	ALEX	15	110.00	ALEX
16	62.45	ALEX	16	597.00	ALEX	16	111.50	ALEX
17	67.80	ALEX	17	649.00	ALEX	17	102.00	ALEX
18	73.10	ALEX	18	656.50	ALEX	18	91.80	ALEX
19	60.65	ALEX	19	564.50	ALEX	19	91.90	ALEX
20	63.50	ALEX	20	584.00	ALEX	20	102.00	ALEX
21	69.20	ALEX	21	645.00	ALEX	21	102.50	ALEX
1	*	ALR	1	*	ALR	1	*	ALR
2	*	ALR	2	*	ALR	2	*	ALR
3	*	ALR	3	*	ALR	3	*	ALR
4	*	ALR	4	*	ALR	4	*	ALR
5	*	ALR	5	*	ALR	5	*	ALR
6	*	ALR	6	*	ALR	6	*	ALR
7	*	ALR	7	*	ALR	7	*	ALR
8	22.60	ALR	8	156.29	ALR	8	434.10	ALR
9	25.00	ALR	9	180.91	ALR	9	373.00	ALR
10	31.00	ALR	10	201.70	ALR	10	250.00	ALR
11	15.50	ALR	11	147.04	ALR	11	594.00	ALR
12	19.05	ALR	12	150.48	ALR	12	359.50	ALR
13	9.00	ALR	13	100.93	ALR	13	564.50	ALR
14	17.00	ALR	14	168.92	ALR	14	541.00	ALR
15	11.10	ALR	15	113.90	ALR	15	397.00	ALR
16	37.70	ALR	16	231.55	ALR	16	307.00	ALR

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) or discharge (ft^3/sec), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station	Year	Discharge	Station
17	40.60	ALR	17	234.13	ALR	17	*	ALR
18	28.00	ALR	18	200.61	ALR	18	*	ALR
19	25.00	ALR	19	178.26	ALR	19	*	ALR
20	17.70	ALR	20	141.25	ALR	20	*	ALR
21	14.60	ALR	21	138.98	ALR	21	*	ALR
1	*	APOP	1	*	APOP	1	*	APOP
2	*	APOP	2	*	APOP	2	*	APOP
3	*	APOP	3	*	APOP	3	*	APOP
4	*	APOP	4	*	APOP	4	*	APOP
5	9.00	APOP	5	134.75	APOP	5	*	APOP
6	8.00	APOP	6	133.05	APOP	6	*	APOP
7	9.05	APOP	7	135.14	APOP	7	*	APOP
8	9.75	APOP	8	136.34	APOP	8	*	APOP
9	9.45	APOP	9	137.95	APOP	9	*	APOP
10	9.60	APOP	10	139.27	APOP	10	*	APOP
11	9.80	APOP	11	138.24	APOP	11	*	APOP
12	9.90	APOP	12	140.43	APOP	12	*	APOP
13	9.95	APOP	13	142.74	APOP	13	*	APOP
14	10.25	APOP	14	144.32	APOP	14	*	APOP
15	10.75	APOP	15	145.12	APOP	15	*	APOP
16	10.50	APOP	16	146.78	APOP	16	*	APOP
17	11.65	APOP	17	148.65	APOP	17	*	APOP
18	9.75	APOP	18	152.73	APOP	18	*	APOP
19	11.00	APOP	19	150.94	APOP	19	*	APOP
20	11.35	APOP	20	153.47	APOP	20	*	APOP
21	11.70	APOP	21	157.21	APOP	21	*	APOP
1	*	BETJ	1	*	BETJ	1	*	CHASNRCHAS
2	*	BETJ	2	*	BETJ	2	*	CHASNRCHAS
3	*	BETJ	3	*	BETJ	3	*	CHASNRCHAS
4	*	BETJ	4	*	BETJ	4	*	CHASNRCHAS
5	13.50	BETJ	5	342.69	BETJ	5	*	CHASNRCHAS
6	11.00	BETJ	6	312.91	BETJ	6	*	CHASNRCHAS
7	41.75	BETJ	7	681.09	BETJ	7	*	CHASNRCHAS
8	9.75	BETJ	8	283.58	BETJ	8	*	CHASNRCHAS
9	21.35	BETJ	9	444.12	BETJ	9	58.70	CHASNRCHAS
10	40.00	BETJ	10	650.61	BETJ	10	52.20	CHASNRCHAS
11	24.30	BETJ	11	476.42	BETJ	11	52.20	CHASNRCHAS

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) or discharge (ft^3/sec), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station	Year	Discharge	Station
12	31.15	BETJ	12	454.40	BETJ	12	55.80	CHASNRCHAS
13	9.00	BETJ	13	301.72	BETJ	13	69.90	CHASNRCHAS
14	14.65	BETJ	14	363.60	BETJ	14	70.00	CHASNRCHAS
15	10.60	BETJ	15	323.58	BETJ	15	66.00	CHASNRCHAS
16	32.25	BETJ	16	538.23	BETJ	16	60.10	CHASNRCHAS
17	38.00	BETJ	17	619.65	BETJ	17	55.40	CHASNRCHAS
18	35.40	BETJ	18	570.46	BETJ	18	56.40	CHASNRCHAS
19	38.50	BETJ	19	654.72	BETJ	19	55.50	CHASNRCHAS
20	48.75	BETJ	20	805.86	BETJ	20	57.00	CHASNRCHAS
21	21.30	BETJ	21	360.33	BETJ	21	57.30	CHASNRCHAS
1	*	BOAT	1	*	BOAT	1	10.40	FERN
2	*	BOAT	2	*	BOAT	2	12.00	FERN
3	*	BOAT	3	*	BOAT	3	11.90	FERN
4	40.50	BOAT	4	664.50	BOAT	4	10.70	FERN
5	19.50	BOAT	5	330.50	BOAT	5	13.10	FERN
6	13.00	BOAT	6	255.00	BOAT	6	13.30	FERN
7	38.35	BOAT	7	598.00	BOAT	7	12.30	FERN
8	26.05	BOAT	8	430.50	BOAT	8	12.20	FERN
9	51.00	BOAT	9	704.00	BOAT	9	11.90	FERN
10	49.90	BOAT	10	704.00	BOAT	10	10.70	FERN
11	23.50	BOAT	11	396.00	BOAT	11	10.00	FERN
12	25.60	BOAT	12	443.00	BOAT	12	12.00	FERN
13	*	BOAT	13	*	BOAT	13	13.50	FERN
14	26.10	BOAT	14	422.00	BOAT	14	13.20	FERN
15	39.50	BOAT	15	612.00	BOAT	15	15.30	FERN
16	42.80	BOAT	16	684.00	BOAT	16	14.00	FERN
17	91.10	BOAT	17	1338.00	BOAT	17	11.70	FERN
18	59.30	BOAT	18	785.00	BOAT	18	11.60	FERN
19	24.80	BOAT	19	269.00	BOAT	19	12.30	FERN
20	48.80	BOAT	20	670.00	BOAT	20	11.50	FERN
21	31.40	BOAT	21	515.00	BOAT	21	10.40	FERN
1	*	BOBH	1	*	BOBH	1	*	GILB
2	*	BOBH	2	*	BOBH	2	*	GILB
3	*	BOBH	3	*	BOBH	3	*	GILB
4	8.75	BOBH	4	192.50	BOBH	4	*	GILB
5	7.70	BOBH	5	185.00	BOBH	5	*	GILB
6	7.85	BOBH	6	181.00	BOBH	6	*	GILB

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) or discharge (ft^3/sec), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station	Year	Discharge	Station
7	9.05	BOBH	7	186.00	BOBH	7	35.20	GILB
8	8.80	BOBH	8	180.00	BOBH	8	63.90	GILB
9	8.60	BOBH	9	183.00	BOBH	9	35.70	GILB
10	9.20	BOBH	10	182.00	BOBH	10	37.60	GILB
11	8.10	BOBH	11	230.00	BOBH	11	34.80	GILB
12	8.70	BOBH	12	232.00	BOBH	12	35.50	GILB
13	9.30	BOBH	13	202.00	BOBH	13	70.80	GILB
14	8.90	BOBH	14	200.00	BOBH	14	44.80	GILB
15	9.05	BOBH	15	202.00	BOBH	15	74.60	GILB
16	9.20	BOBH	16	204.00	BOBH	16	60.00	GILB
17	9.95	BOBH	17	220.00	BOBH	17	32.70	GILB
18	9.55	BOBH	18	227.50	BOBH	18	30.50	GILB
19	10.70	BOBH	19	207.00	BOBH	19	23.60	GILB
20	9.85	BOBH	20	220.00	BOBH	20	27.20	GILB
21	9.65	BOBH	21	237.00	BOBH	21	16.20	GILB
1	*	BUBL	1	*	BUBL	1	*	HAR
2	*	BUBL	2	*	BUBL	2	*	HAR
3	8.80	BUBL	3	*	BUBL	3	*	HAR
4	7.60	BUBL	4	221.44	BUBL	4	*	HAR
5	6.80	BUBL	5	222.32	BUBL	5	*	HAR
6	7.10	BUBL	6	223.16	BUBL	6	*	HAR
7	6.82	BUBL	7	214.35	BUBL	7	*	HAR
8	7.23	BUBL	8	220.67	BUBL	8	86.10	HAR
9	6.86	BUBL	9	217.06	BUBL	9	59.90	HAR
10	6.89	BUBL	10	225.43	BUBL	10	46.50	HAR
11	6.77	BUBL	11	229.66	BUBL	11	36.50	HAR
12	7.94	BUBL	12	245.44	BUBL	12	36.70	HAR
13	9.57	BUBL	13	256.90	BUBL	13	66.30	HAR
14	8.31	BUBL	14	239.97	BUBL	14	50.50	HAR
15	8.82	BUBL	15	243.50	BUBL	15	77.60	HAR
16	7.70	BUBL	16	224.93	BUBL	16	70.00	HAR
17	8.45	BUBL	17	233.97	BUBL	17	48.10	HAR
18	9.65	BUBL	18	251.82	BUBL	18	40.30	HAR
19	8.70	BUBL	19	240.76	BUBL	19	48.10	HAR
20	9.30	BUBL	20	247.80	BUBL	20	61.10	HAR
21	9.00	BUBL	21	244.54	BUBL	21	50.60	HAR
1	*	BUCK	1	*	BUCK	1	*	HOMATHOM

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) or discharge (ft^3/sec), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station	Year	Discharge	Station
2	*	BUCK	2	*	BUCK	2	*	HOMATHOM
3	*	BUCK	3	*	BUCK	3	*	HOMATHOM
4	*	BUCK	4	*	BUCK	4	*	HOMATHOM
5	67.00	BUCK	5	306.00	BUCK	5	*	HOMATHOM
6	67.00	BUCK	6	313.50	BUCK	6	96.30	HOMATHOM
7	67.75	BUCK	7	304.50	BUCK	7	84.40	HOMATHOM
8	63.15	BUCK	8	303.50	BUCK	8	101.50	HOMATHOM
9	64.55	BUCK	9	299.00	BUCK	9	89.10	HOMATHOM
10	65.65	BUCK	10	303.50	BUCK	10	82.40	HOMATHOM
11	62.30	BUCK	11	298.50	BUCK	11	83.70	HOMATHOM
12	62.10	BUCK	12	306.50	BUCK	12	85.70	HOMATHOM
13	65.10	BUCK	13	310.00	BUCK	13	103.10	HOMATHOM
14	67.50	BUCK	14	314.50	BUCK	14	103.30	HOMATHOM
15	63.85	BUCK	15	309.50	BUCK	15	96.60	HOMATHOM
16	63.90	BUCK	16	308.00	BUCK	16	85.10	HOMATHOM
17	69.00	BUCK	17	313.00	BUCK	17	79.10	HOMATHOM
18	66.60	BUCK	18	314.00	BUCK	18	80.10	HOMATHOM
19	65.45	BUCK	19	314.00	BUCK	19	72.40	HOMATHOM
20	66.25	BUCK	20	314.50	BUCK	20	75.50	HOMATHOM
21	65.60	BUCK	21	318.00	BUCK	21	77.00	HOMATHOM
1	18.00	CATF	1	170.00	CATF	1	*	HOMCOMB
2	*	CATF	2	*	CATF	2	*	HOMCOMB
3	*	CATF	3	*	CATF	3	*	HOMCOMB
4	18.00	CATF	4	189.00	CATF	4	*	HOMCOMB
5	18.50	CATF	5	193.50	CATF	5	*	HOMCOMB
6	17.00	CATF	6	194.00	CATF	6	164.00	HOMCOMB
7	17.85	CATF	7	192.00	CATF	7	142.90	HOMCOMB
8	17.20	CATF	8	197.50	CATF	8	173.20	HOMCOMB
9	17.20	CATF	9	179.00	CATF	9	151.30	HOMCOMB
10	*	CATF	10	*	CATF	10	141.20	HOMCOMB
11	19.10	CATF	11	214.00	CATF	11	141.70	HOMCOMB
12	21.12	CATF	12	235.00	CATF	12	144.10	HOMCOMB
13	23.65	CATF	13	266.00	CATF	13	176.90	HOMCOMB
14	18.10	CATF	14	203.00	CATF	14	176.90	HOMCOMB
15	18.88	CATF	15	225.50	CATF	15	165.00	HOMCOMB
16	19.00	CATF	16	210.00	CATF	16	142.80	HOMCOMB
17	20.35	CATF	17	233.00	CATF	17	131.20	HOMCOMB

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) or discharge (ft^3/sec), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station	Year	Discharge	Station
18	28.30	CATF	18	317.00	CATF	18	133.90	HOMCOMB
19	25.00	CATF	19	290.00	CATF	19	123.70	HOMCOMB
20	26.00	CATF	20	304.50	CATF	20	129.70	HOMCOMB
21	27.00	CATF	21	293.00	CATF	21	129.70	HOMCOMB
1	*	CHS1	1	*	CHS1	1	*	HOR
2	*	CHS1	2	*	CHS1	2	*	HOR
3	49.00	CHS1	3	622.37	CHS1	3	*	HOR
4	28.00	CHS1	4	511.86	CHS1	4	*	HOR
5	24.50	CHS1	5	435.01	CHS1	5	*	HOR
6	18.50	CHS1	6	389.78	CHS1	6	*	HOR
7	55.75	CHS1	7	828.33	CHS1	7	83.60	HOR
8	16.55	CHS1	8	344.92	CHS1	8	254.60	HOR
9	27.90	CHS1	9	496.45	CHS1	9	80.80	HOR
10	63.15	CHS1	10	936.54	CHS1	10	20.20	HOR
11	52.45	CHS1	11	920.99	CHS1	11	4.00	HOR
12	41.40	CHS1	12	682.09	CHS1	12	58.50	HOR
13	25.90	CHS1	13	461.89	CHS1	13	69.00	HOR
14	24.00	CHS1	14	457.08	CHS1	14	67.10	HOR
15	16.40	CHS1	15	349.40	CHS1	15	*	HOR
16	36.35	CHS1	16	607.95	CHS1	16	124.80	HOR
17	71.35	CHS1	17	1037.66	CHS1	17	*	HOR
18	57.65	CHS1	18	799.85	CHS1	18	*	HOR
19	66.85	CHS1	19	987.93	CHS1	19	*	HOR
20	40.85	CHS1	20	653.05	CHS1	20	24.50	HOR
21	58.25	CHS1	21	876.12	CHS1	21	15.20	HOR
1	*	CHSM	1	*	CHSM	1	137.20	JKB
2	*	CHSM	2	*	CHSM	2	91.10	JKB
3	149.00	CHSM	3	*	CHSM	3	107.10	JKB
4	76.00	CHSM	4	1064.00	CHSM	4	*	JKB
5	54.50	CHSM	5	811.00	CHSM	5	*	JKB
6	43.50	CHSM	6	697.00	CHSM	6	*	JKB
7	161.50	CHSM	7	2172.50	CHSM	7	*	JKB
8	25.00	CHSM	8	448.00	CHSM	8	*	JKB
9	73.55	CHSM	9	1135.50	CHSM	9	*	JKB
10	191.50	CHSM	10	2490.50	CHSM	10	*	JKB
11	150.00	CHSM	11	2129.50	CHSM	11	64.00	JKB

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) or discharge (ft^3/sec), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station	Year	Discharge	Station
12	138.00	CHSM	12	1692.50	CHSM	12	52.00	JKB
13	31.80	CHSM	13	557.00	CHSM	13	191.00	JKB
14	76.50	CHSM	14	1128.00	CHSM	14	104.00	JKB
15	19.73	CHSM	15	398.00	CHSM	15	187.80	JKB
16	134.50	CHSM	16	1825.50	CHSM	16	95.30	JKB
17	253.00	CHSM	17	2959.50	CHSM	17	54.10	JKB
18	165.00	CHSM	18	2050.00	CHSM	18	89.50	JKB
19	207.50	CHSM	19	2749.50	CHSM	19	127.30	JKB
20	89.55	CHSM	20	1258.00	CHSM	20	105.30	JKB
21	134.50	CHSM	21	1879.00	CHSM	21	55.50	JKB
1	*	FAN	1	*	FAN	1	7.60	JUNP
2	*	FAN	2	*	FAN	2	*	JUNP
3	*	FAN	3	*	FAN	3	9.70	JUNP
4	*	FAN	4	*	FAN	4	8.90	JUNP
5	19.00	FAN	5	277.76	FAN	5	12.20	JUNP
6	17.00	FAN	6	298.08	FAN	6	12.30	JUNP
7	18.00	FAN	7	295.95	FAN	7	10.20	JUNP
8	20.00	FAN	8	296.69	FAN	8	10.90	JUNP
9	20.00	FAN	9	297.22	FAN	9	10.90	JUNP
10	20.00	FAN	10	306.86	FAN	10	9.50	JUNP
11	20.00	FAN	11	313.60	FAN	11	7.90	JUNP
12	18.30	FAN	12	303.44	FAN	12	9.10	JUNP
13	*	FAN	13	*	FAN	13	11.20	JUNP
14	23.65	FAN	14	331.15	FAN	14	11.20	JUNP
15	23.40	FAN	15	342.98	FAN	15	13.10	JUNP
16	22.20	FAN	16	344.15	FAN	16	12.30	JUNP
17	22.60	FAN	17	337.36	FAN	17	11.20	JUNP
18	24.00	FAN	18	330.05	FAN	18	10.70	JUNP
19	23.50	FAN	19	347.27	FAN	19	14.20	JUNP
20	24.10	FAN	20	337.20	FAN	20	11.90	JUNP
21	23.90	FAN	21	337.18	FAN	21	10.30	JUNP
1	20.00	FERN	1	*	FERN	1	*	LBS
2	5.00	FERN	2	*	FERN	2	*	LBS
3	8.00	FERN	3	50.00	FERN	3	*	LBS
4	6.00	FERN	4	75.00	FERN	4	*	LBS
5	5.50	FERN	5	74.00	FERN	5	*	LBS

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) or discharge (ft^3/sec), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station	Year	Discharge	Station
6	6.00	FERN	6	73.00	FERN	6	*	LBS
7	7.50	FERN	7	75.00	FERN	7	*	LBS
8	6.77	FERN	8	76.00	FERN	8	118.70	LBS
9	6.57	FERN	9	72.00	FERN	9	49.60	LBS
10	5.22	FERN	10	72.00	FERN	10	30.70	LBS
11	5.63	FERN	11	75.50	FERN	11	45.90	LBS
12	8.44	FERN	12	80.00	FERN	12	40.80	LBS
13	9.50	FERN	13	82.00	FERN	13	98.90	LBS
14	6.72	FERN	14	78.50	FERN	14	76.40	LBS
15	7.30	FERN	15	77.50	FERN	15	124.50	LBS
16	8.84	FERN	16	82.50	FERN	16	68.60	LBS
17	7.61	FERN	17	77.00	FERN	17	32.10	LBS
18	6.13	FERN	18	74.50	FERN	18	46.60	LBS
19	5.17	FERN	19	73.00	FERN	19	68.00	LBS
20	4.90	FERN	20	72.00	FERN	20	79.20	LBS
21	4.40	FERN	21	75.00	FERN	21	54.20	LBS
1	7.90	GILB	1	210.00	GILB	1	*	LRS
2	*	GILB	2	*	GILB	2	*	LRS
3	*	GILB	3	*	GILB	3	*	LRS
4	*	GILB	4	*	GILB	4	*	LRS
5	11.00	GILB	5	220.00	GILB	5	*	LRS
6	9.00	GILB	6	209.00	GILB	6	*	LRS
7	9.00	GILB	7	236.00	GILB	7	82.10	LRS
8	8.65	GILB	8	216.50	GILB	8	102.30	LRS
9	9.00	GILB	9	224.00	GILB	9	63.50	LRS
10	10.50	GILB	10	234.00	GILB	10	46.20	LRS
11	10.20	GILB	11	234.00	GILB	11	50.10	LRS
12	10.30	GILB	12	235.50	GILB	12	32.60	LRS
13	12.05	GILB	13	245.00	GILB	13	*	LRS
14	11.50	GILB	14	236.00	GILB	14	67.10	LRS
15	9.80	GILB	15	241.50	GILB	15	90.40	LRS
16	9.75	GILB	16	254.50	GILB	16	69.00	LRS
17	11.30	GILB	17	256.00	GILB	17	39.00	LRS
18	12.90	GILB	18	245.00	GILB	18	45.10	LRS
19	12.00	GILB	19	250.50	GILB	19	48.20	LRS
20	12.35	GILB	20	248.50	GILB	20	55.40	LRS
21	13.10	GILB	21	248.00	GILB	21	41.90	LRS

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) or discharge (ft^3/sec), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station	Year	Discharge	Station
1	*	HAR	1	*	HAR	1	5.30	MIA
2	*	HAR	2	*	HAR	2	5.00	MIA
3	*	HAR	3	*	HAR	3	4.80	MIA
4	*	HAR	4	*	HAR	4	4.50	MIA
5	*	HAR	5	*	HAR	5	6.20	MIA
6	*	HAR	6	*	HAR	6	5.60	MIA
7	*	HAR	7	*	HAR	7	5.40	MIA
8	20.00	HAR	8	305.00	HAR	8	5.10	MIA
9	20.00	HAR	9	301.00	HAR	9	5.50	MIA
10	21.50	HAR	10	315.50	HAR	10	4.20	MIA
11	24.00	HAR	11	306.00	HAR	11	4.50	MIA
12	24.60	HAR	12	315.00	HAR	12	5.20	MIA
13	18.60	HAR	13	281.00	HAR	13	6.40	MIA
14	22.85	HAR	14	322.00	HAR	14	5.90	MIA
15	19.80	HAR	15	345.00	HAR	15	6.40	MIA
16	22.80	HAR	16	349.00	HAR	16	5.60	MIA
17	25.80	HAR	17	362.00	HAR	17	4.90	MIA
18	27.00	HAR	18	329.00	HAR	18	5.10	MIA
19	24.00	HAR	19	331.00	HAR	19	5.50	MIA
20	26.80	HAR	20	339.00	HAR	20	5.50	MIA
21	28.00	HAR	21	347.00	HAR	21	5.20	MIA
1	*	HID2	1	*	HID2	1	69.40	MSAL
2	*	HID2	2	*	HID2	2	77.70	MSAL
3	*	HID2	3	*	HID2	3	74.40	MSAL
4	112.00	HID2	4	1559.77	HID2	4	78.30	MSAL
5	93.50	HID2	5	1367.65	HID2	5	70.00	MSAL
6	60.00	HID2	6	876.59	HID2	6	86.20	MSAL
7	82.25	HID2	7	1066.43	HID2	7	81.40	MSAL
8	94.35	HID2	8	1341.83	HID2	8	78.00	MSAL
9	75.85	HID2	9	1039.99	HID2	9	90.90	MSAL
10	112.15	HID2	10	1541.33	HID2	10	77.70	MSAL
11	129.50	HID2	11	1904.10	HID2	11	74.60	MSAL
12	165.18	HID2	12	2301.88	HID2	12	78.00	MSAL
13	148.00	HID2	13	1964.37	HID2	13	80.60	MSAL
14	100.50	HID2	14	1413.67	HID2	14	86.30	MSAL
15	68.80	HID2	15	944.15	HID2	15	85.10	MSAL
16	64.15	HID2	16	902.39	HID2	16	84.90	MSAL

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) or discharge (ft^3/sec), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station	Year	Discharge	Station
17	105.90	HID2	17	1397.73	HID2	17	75.80	MSAL
18	160.50	HID2	18	2094.83	HID2	18	82.20	MSAL
19	174.50	HID2	19	2236.71	HID2	19	87.20	MSAL
20	166.00	HID2	20	2305.40	HID2	20	65.80	MSAL
21	152.00	HID2	21	2049.86	HID2	21	72.50	MSAL
1	*	HIDH	1	*	HIDH	1	26.30	PDL
2	*	HIDH	2	*	HIDH	2	30.40	PDL
3	*	HIDH	3	*	HIDH	3	25.90	PDL
4	75.50	HIDH	4	1086.00	HIDH	4	24.90	PDL
5	61.50	HIDH	5	899.50	HIDH	5	26.60	PDL
6	39.50	HIDH	6	608.00	HIDH	6	25.60	PDL
7	59.05	HIDH	7	776.50	HIDH	7	33.30	PDL
8	62.50	HIDH	8	918.00	HIDH	8	25.20	PDL
9	49.50	HIDH	9	730.00	HIDH	9	25.80	PDL
10	84.75	HIDH	10	1197.50	HIDH	10	22.40	PDL
11	123.50	HIDH	11	1811.00	HIDH	11	27.20	PDL
12	119.94	HIDH	12	1733.00	HIDH	12	28.10	PDL
13	110.00	HIDH	13	1384.00	HIDH	13	30.10	PDL
14	60.18	HIDH	14	892.50	HIDH	14	39.10	PDL
15	39.46	HIDH	15	595.00	HIDH	15	41.90	PDL
16	42.75	HIDH	16	638.50	HIDH	16	26.70	PDL
17	82.45	HIDH	17	1094.00	HIDH	17	25.00	PDL
18	127.00	HIDH	18	1623.50	HIDH	18	27.90	PDL
19	133.00	HIDH	19	1676.00	HIDH	19	29.20	PDL
20	122.50	HIDH	20	1714.50	HIDH	20	25.60	PDL
21	114.50	HIDH	21	1539.50	HIDH	21	21.60	PDL
1	*	HOM1	1	*	HOM1	1	603.50	RAINDUN
2	*	HOM1	2	*	HOM1	2	587.90	RAINDUN
3	125.00	HOM1	3	1853.39	HOM1	3	655.00	RAINDUN
4	155.00	HOM1	4	2065.63	HOM1	4	640.00	RAINDUN
5	129.50	HOM1	5	1723.07	HOM1	5	656.00	RAINDUN
6	120.50	HOM1	6	1664.58	HOM1	6	700.70	RAINDUN
7	153.50	HOM1	7	2029.07	HOM1	7	671.30	RAINDUN
8	144.50	HOM1	8	1956.89	HOM1	8	859.90	RAINDUN
9	172.50	HOM1	9	2338.92	HOM1	9	711.70	RAINDUN
10	240.00	HOM1	10	3101.40	HOM1	10	548.70	RAINDUN
11	255.50	HOM1	11	3516.30	HOM1	11	521.00	RAINDUN

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) or discharge (ft^3/sec), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station	Year	Discharge	Station
12	211.79	HOM1	12	2599.55	HOM1	12	560.20	RAINDUN
13	157.00	HOM1	13	2065.08	HOM1	13	653.00	RAINDUN
14	129.07	HOM1	14	1792.67	HOM1	14	620.20	RAINDUN
15	119.61	HOM1	15	1636.31	HOM1	15	718.20	RAINDUN
16	107.00	HOM1	16	1593.50	HOM1	16	641.30	RAINDUN
17	185.00	HOM1	17	2248.72	HOM1	17	570.40	RAINDUN
18	182.00	HOM1	18	2326.66	HOM1	18	601.20	RAINDUN
19	191.50	HOM1	19	2403.35	HOM1	19	594.80	RAINDUN
20	190.50	HOM1	20	2545.00	HOM1	20	602.30	RAINDUN
21	202.50	HOM1	21	2505.82	HOM1	21	532.70	RAINDUN
1	*	HOM2	1	*	HOM2	1	*	RKB
2	*	HOM2	2	*	HOM2	2	*	RKB
3	200.00	HOM2	3	*	HOM2	3	*	RKB
4	270.00	HOM2	4	3397.00	HOM2	4	*	RKB
5	237.00	HOM2	5	3116.00	HOM2	5	31.30	RKB
6	234.50	HOM2	6	3069.00	HOM2	6	*	RKB
7	223.50	HOM2	7	2894.50	HOM2	7	27.64	RKB
8	222.50	HOM2	8	3048.50	HOM2	8	44.78	RKB
9	233.50	HOM2	9	3143.50	HOM2	9	30.58	RKB
10	287.00	HOM2	10	3733.50	HOM2	10	18.70	RKB
11	295.00	HOM2	11	4253.00	HOM2	11	18.60	RKB
12	279.60	HOM2	12	3483.00	HOM2	12	17.10	RKB
13	239.00	HOM2	13	3221.00	HOM2	13	17.30	RKB
14	252.00	HOM2	14	3365.00	HOM2	14	29.60	RKB
15	227.40	HOM2	15	3031.00	HOM2	15	39.40	RKB
16	223.00	HOM2	16	2955.00	HOM2	16	38.30	RKB
17	270.50	HOM2	17	3293.50	HOM2	17	19.20	RKB
18	290.50	HOM2	18	3548.50	HOM2	18	23.89	RKB
19	286.00	HOM2	19	3651.00	HOM2	19	22.71	RKB
20	252.00	HOM2	20	3333.00	HOM2	20	29.14	RKB
21	272.50	HOM2	21	3437.50	HOM2	21	*	RKB
1	*	HOM3	1	*	HOM3	1	*	RLS
2	*	HOM3	2	*	HOM3	2	*	RLS
3	45.00	HOM3	3	*	HOM3	3	*	RLS
4	66.00	HOM3	4	932.00	HOM3	4	*	RLS
5	60.00	HOM3	5	821.00	HOM3	5	*	RLS
6	34.50	HOM3	6	525.50	HOM3	6	*	RLS

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) or discharge (ft^3/sec), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station	Year	Discharge	Station
7	71.55	HOM3	7	1034.50	HOM3	7	14.40	RLS
8	42.75	HOM3	8	649.50	HOM3	8	16.60	RLS
9	68.50	HOM3	9	892.00	HOM3	9	4.70	RLS
10	111.50	HOM3	10	1467.00	HOM3	10	4.10	RLS
11	110.00	HOM3	11	1559.00	HOM3	11	5.70	RLS
12	92.90	HOM3	12	1276.50	HOM3	12	2.80	RLS
13	48.60	HOM3	13	659.00	HOM3	13	*	RLS
14	37.80	HOM3	14	584.00	HOM3	14	11.90	RLS
15	45.20	HOM3	15	666.00	HOM3	15	13.00	RLS
16	52.40	HOM3	16	801.00	HOM3	16	6.50	RLS
17	118.00	HOM3	17	1448.50	HOM3	17	2.10	RLS
18	89.65	HOM3	18	1230.00	HOM3	18	8.90	RLS
19	101.80	HOM3	19	1323.50	HOM3	19	7.90	RLS
20	100.65	HOM3	20	1380.00	HOM3	20	11.00	RLS
21	107.50	HOM3	21	1430.50	HOM3	21	4.10	RLS
1	*	HOR	1	*	HOR	1	57.30	ROCK
2	33.80	HOR	2	265.75	HOR	2	57.60	ROCK
3	44.80	HOR	3	285.77	HOR	3	55.70	ROCK
4	52.15	HOR	4	300.62	HOR	4	55.70	ROCK
5	60.00	HOR	5	309.84	HOR	5	60.80	ROCK
6	45.00	HOR	6	291.33	HOR	6	62.90	ROCK
7	47.00	HOR	7	302.28	HOR	7	53.90	ROCK
8	33.75	HOR	8	267.80	HOR	8	59.30	ROCK
9	37.50	HOR	9	278.59	HOR	9	51.00	ROCK
10	46.85	HOR	10	309.16	HOR	10	46.00	ROCK
11	65.00	HOR	11	325.60	HOR	11	43.50	ROCK
12	83.70	HOR	12	352.30	HOR	12	51.50	ROCK
13	67.40	HOR	13	316.84	HOR	13	59.50	ROCK
14	67.30	HOR	14	334.18	HOR	14	56.60	ROCK
15	47.10	HOR	15	307.31	HOR	15	65.90	ROCK
16	45.40	HOR	16	314.32	HOR	16	60.30	ROCK
17	57.85	HOR	17	337.70	HOR	17	50.00	ROCK
18	87.20	HOR	18	364.56	HOR	18	52.60	ROCK
19	81.15	HOR	19	354.22	HOR	19	56.50	ROCK
20	70.80	HOR	20	336.71	HOR	20	56.30	ROCK
21	69.30	HOR	21	340.12	HOR	21	51.50	ROCK
1	*	HSALT	1	*	HSALT	1	19.20	SANL

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) or discharge (ft^3/sec), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station	Year	Discharge	Station
2	*	HSALT	2	*	HSALT	2	22.30	SANL
3	248.00	HSALT	3	*	HSALT	3	19.40	SANL
4	472.50	HSALT	4	6270.50	HSALT	4	17.60	SANL
5	273.00	HSALT	5	3611.00	HSALT	5	22.80	SANL
6	221.00	HSALT	6	3052.50	HSALT	6	25.50	SANL
7	494.50	HSALT	7	6637.00	HSALT	7	18.20	SANL
8	250.50	HSALT	8	3552.50	HSALT	8	22.00	SANL
9	199.00	HSALT	9	2631.00	HSALT	9	20.00	SANL
10	268.00	HSALT	10	3453.00	HSALT	10	12.90	SANL
11	185.00	HSALT	11	2527.00	HSALT	11	16.40	SANL
12	187.40	HSALT	12	2544.00	HSALT	12	22.00	SANL
13	290.00	HSALT	13	2575.00	HSALT	13	20.00	SANL
14	293.00	HSALT	14	3952.00	HSALT	14	18.60	SANL
15	186.45	HSALT	15	3688.00	HSALT	15	22.60	SANL
16	350.00	HSALT	16	5073.00	HSALT	16	18.50	SANL
17	782.00	HSALT	17	10478.00	HSALT	17	16.10	SANL
18	456.00	HSALT	18	5836.00	HSALT	18	20.00	SANL
19	423.00	HSALT	19	5544.00	HSALT	19	21.30	SANL
20	*	HSALT	20	*	HSALT	20	21.10	SANL
21	*	HSALT	21	*	HSALT	21	17.80	SANL
1	1.00	JKB	1	155.80	JKB	1	*	SBS
2	1.10	JKB	2	153.20	JKB	2	*	SBS
3	1.05	JKB	3	152.40	JKB	3	*	SBS
4	1.20	JKB	4	152.45	JKB	4	*	SBS
5	*	JKB	5	*	JKB	5	*	SBS
6	*	JKB	6	*	JKB	6	*	SBS
7	1.10	JKB	7	153.43	JKB	7	22.40	SBS
8	*	JKB	8	*	JKB	8	33.00	SBS
9	*	JKB	9	*	JKB	9	11.70	SBS
10	*	JKB	10	161.43	JKB	10	5.90	SBS
11	1.00	JKB	11	161.30	JKB	11	10.00	SBS
12	1.00	JKB	12	167.00	JKB	12	9.70	SBS
13	1.25	JKB	13	*	JKB	13	13.20	SBS
14	1.15	JKB	14	165.76	JKB	14	17.20	SBS
15	1.25	JKB	15	465.55	JKB	15	25.50	SBS
16	1.10	JKB	16	164.62	JKB	16	16.10	SBS

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) or discharge (ft^3/sec), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station	Year	Discharge	Station
17	1.25	JKB	17	170.55	JKB	17	7.30	SBS
18	1.65	JKB	18	176.00	JKB	18	13.10	SBS
19	1.40	JKB	19	173.66	JKB	19	13.50	SBS
20	1.60	JKB	20	*	JKB	20	18.10	SBS
21	*	JKB	21	177.69	JKB	21	9.80	SBS
1	5.00	JUNP	1	*	JUNP	1	88.00	SILG
2	6.00	JUNP	2	*	JUNP	2	91.00	SILG
3	6.00	JUNP	3	76.86	JUNP	3	92.00	SILG
4	6.00	JUNP	4	68.87	JUNP	4	99.00	SILG
5	6.00	JUNP	5	67.51	JUNP	5	107.50	SILG
6	5.50	JUNP	6	68.88	JUNP	6	112.80	SILG
7	6.42	JUNP	7	69.47	JUNP	7	97.30	SILG
8	6.11	JUNP	8	74.14	JUNP	8	102.50	SILG
9	6.30	JUNP	9	69.74	JUNP	9	102.20	SILG
10	6.11	JUNP	10	72.84	JUNP	10	90.30	SILG
11	5.71	JUNP	11	73.99	JUNP	11	95.20	SILG
12	5.49	JUNP	12	73.27	JUNP	12	0.00	SILG
13	5.50	JUNP	13	75.10	JUNP	13	117.10	SILG
14	6.04	JUNP	14	77.08	JUNP	14	116.30	SILG
15	5.29	JUNP	15	74.09	JUNP	15	88.00	SILG
16	5.73	JUNP	16	77.33	JUNP	16	99.20	SILG
17	6.25	JUNP	17	77.46	JUNP	17	93.60	SILG
18	5.21	JUNP	18	74.81	JUNP	18	103.40	SILG
19	8.52	JUNP	19	79.32	JUNP	19	99.40	SILG
20	6.65	JUNP	20	73.39	JUNP	20	102.00	SILG
21	5.50	JUNP	21	77.39	JUNP	21	72.80	SILG
1	*	LBS	1	*	LBS	1	14.50	STAR
2	*	LBS	2	*	LBS	2	14.50	STAR
3	*	LBS	3	*	LBS	3	12.60	STAR
4	*	LBS	4	*	LBS	4	12.60	STAR
5	10.00	LBS	5	291.96	LBS	5	14.90	STAR
6	*	LBS	6	*	LBS	6	16.10	STAR
7	13.00	LBS	7	292.79	LBS	7	13.40	STAR
8	11.50	LBS	8	277.73	LBS	8	*	STAR
9	12.50	LBS	9	290.45	LBS	9	*	STAR
10	13.50	LBS	10	305.60	LBS	10	10.10	STAR
11	14.25	LBS	11	304.03	LBS	11	*	STAR

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) or discharge (ft^3/sec), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station	Year	Discharge	Station
12	12.40	LBS	12	313.51	LBS	12	*	STAR
13	13.75	LBS	13	309.54	LBS	13	*	STAR
14	14.90	LBS	14	316.39	LBS	14	13.00	STAR
15	13.00	LBS	15	308.49	LBS	15	15.60	STAR
16	13.05	LBS	16	322.82	LBS	16	11.40	STAR
17	14.60	LBS	17	328.85	LBS	17	11.00	STAR
18	16.05	LBS	18	319.78	LBS	18	12.20	STAR
19	15.00	LBS	19	319.73	LBS	19	12.50	STAR
20	15.60	LBS	20	321.39	LBS	20	12.40	STAR
21	15.20	LBS	21	325.27	LBS	21	10.50	STAR
1	*	LRS	1	*	LRS	1	12.80	SWEE
2	*	LRS	2	*	LRS	2	13.30	SWEE
3	*	LRS	3	*	LRS	3	11.90	SWEE
4	19.95	LRS	4	254.08	LRS	4	11.20	SWEE
5	20.50	LRS	5	246.00	LRS	5	13.20	SWEE
6	20.00	LRS	6	254.58	LRS	6	13.70	SWEE
7	19.00	LRS	7	261.38	LRS	7	11.90	SWEE
8	22.25	LRS	8	270.32	LRS	8	13.80	SWEE
9	19.00	LRS	9	254.59	LRS	9	12.20	SWEE
10	17.50	LRS	10	253.84	LRS	10	11.40	SWEE
11	20.50	LRS	11	256.93	LRS	11	12.00	SWEE
12	16.70	LRS	12	248.14	LRS	12	12.60	SWEE
13	19.50	LRS	13	204.64	LRS	13	13.70	SWEE
14	23.40	LRS	14	271.24	LRS	14	14.50	SWEE
15	20.45	LRS	15	281.54	LRS	15	15.10	SWEE
16	19.45	LRS	16	276.74	LRS	16	13.70	SWEE
17	17.70	LRS	17	271.40	LRS	17	12.10	SWEE
18	22.30	LRS	18	264.95	LRS	18	12.20	SWEE
19	23.80	LRS	19	277.12	LRS	19	14.00	SWEE
20	23.20	LRS	20	278.85	LRS	20	13.60	SWEE
21	20.30	LRS	21	270.45	LRS	21	11.40	SWEE
1	*	MAG	1	*	MAG	1	*	TEL
2	*	MAG	2	*	MAG	2	*	TEL
3	*	MAG	3	*	MAG	3	*	TEL
4	18.00	MAG	4	282.96	MAG	4	*	TEL
5	17.50	MAG	5	287.94	MAG	5	*	TEL
6	13.50	MAG	6	237.44	MAG	6	*	TEL

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) or discharge (ft^3/sec), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station	Year	Discharge	Station
7	17.60	MAG	7	293.36	MAG	7	39.40	TEL
8	13.30	MAG	8	224.68	MAG	8	43.80	TEL
9	16.45	MAG	9	267.92	MAG	9	29.90	TEL
10	17.25	MAG	10	275.50	MAG	10	24.20	TEL
11	17.45	MAG	11	294.85	MAG	11	28.90	TEL
12	15.90	MAG	12	268.50	MAG	12	22.90	TEL
13	11.90	MAG	13	214.66	MAG	13	*	TEL
14	12.20	MAG	14	215.91	MAG	14	33.10	TEL
15	11.97	MAG	15	216.97	MAG	15	50.00	TEL
16	12.00	MAG	16	216.44	MAG	16	33.70	TEL
17	15.40	MAG	17	263.32	MAG	17	22.30	TEL
18	15.25	MAG	18	252.90	MAG	18	33.40	TEL
19	15.25	MAG	19	252.46	MAG	19	33.30	TEL
20	13.50	MAG	20	228.09	MAG	20	32.70	TEL
21	12.70	MAG	21	226.94	MAG	21	27.70	TEL
1	*	MAN	1	*	MAN	1	*	WEEK
2	*	MAN	2	*	MAN	2	*	WEEK
3	*	MAN	3	*	MAN	3	*	WEEK
4	*	MAN	4	*	MAN	4	128.60	WEEK
5	31.50	MAN	5	311.76	MAN	5	148.10	WEEK
6	*	MAN	6	*	MAN	6	164.80	WEEK
7	*	MAN	7	*	MAN	7	129.00	WEEK
8	33.00	MAN	8	314.41	MAN	8	202.10	WEEK
9	29.00	MAN	9	323.64	MAN	9	155.40	WEEK
10	29.10	MAN	10	335.93	MAN	10	130.60	WEEK
11	31.10	MAN	11	340.86	MAN	11	131.20	WEEK
12	32.85	MAN	12	338.98	MAN	12	141.40	WEEK
13	40.40	MAN	13	348.11	MAN	13	206.90	WEEK
14	38.20	MAN	14	345.56	MAN	14	*	WEEK
15	33.60	MAN	15	352.19	MAN	15	193.70	WEEK
16	31.15	MAN	16	356.97	MAN	16	154.40	WEEK
17	34.45	MAN	17	350.74	MAN	17	132.60	WEEK
18	33.40	MAN	18	346.78	MAN	18	139.50	WEEK
19	37.60	MAN	19	357.86	MAN	19	135.50	WEEK
20	41.80	MAN	20	369.35	MAN	20	144.80	WEEK
21	31.10	MAN	21	332.55	MAN	21	144.60	WEEK
1	*	MIA	1	*	MIA	1	66.30	WEKI

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L) or discharge (ft^3/sec), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station	Year	Discharge	Station
2	*	MIA	2	*	MIA	2	65.50	WEKI
3	8.85	MIA	3	175.00	MIA	3	65.50	WEKI
4	*	MIA	4	*	MIA	4	64.90	WEKI
5	8.50	MIA	5	173.00	MIA	5	73.50	WEKI
6	14.50	MIA	6	185.00	MIA	6	70.30	WEKI
7	9.08	MIA	7	177.00	MIA	7	64.80	WEKI
8	9.10	MIA	8	180.50	MIA	8	68.50	WEKI
9	9.66	MIA	9	177.50	MIA	9	64.40	WEKI
10	10.54	MIA	10	189.00	MIA	10	61.90	WEKI
11	10.51	MIA	11	187.00	MIA	11	56.90	WEKI
12	10.92	MIA	12	190.00	MIA	12	64.20	WEKI
13	12.00	MIA	13	192.00	MIA	13	66.70	WEKI
14	11.10	MIA	14	188.00	MIA	14	66.80	WEKI
15	12.85	MIA	15	185.00	MIA	15	68.30	WEKI
16	14.25	MIA	16	200.50	MIA	16	61.40	WEKI
17	14.40	MIA	17	197.00	MIA	17	55.00	WEKI
18	14.25	MIA	18	194.50	MIA	18	60.60	WEKI
19	14.15	MIA	19	192.00	MIA	19	66.10	WEKI
20	15.10	MIA	20	191.00	MIA	20	62.30	WEKI
21	14.70	MIA	21	194.50	MIA	21	56.90	WEKI
1	336.00	MSAL	1	*	MSAL			
2	341.00	MSAL	2	2766.00	MSAL			
3	340.00	MSAL	3	2830.50	MSAL			
4	367.50	MSAL	4	2929.00	MSAL			
5	384.50	MSAL	5	3269.00	MSAL			
6	399.00	MSAL	6	3604.50	MSAL			
7	422.50	MSAL	7	3819.00	MSAL			
8	432.00	MSAL	8	4085.00	MSAL			
9	412.00	MSAL	9	3417.00	MSAL			
10	356.50	MSAL	10	3036.00	MSAL			
11	387.00	MSAL	11	*	MSAL			
12	448.00	MSAL	12	3570.00	MSAL			
13	420.00	MSAL	13	3667.00	MSAL			
14	430.00	MSAL	14	4048.50	MSAL			
15	470.00	MSAL	15	3863.00	MSAL			
16	438.00	MSAL	16	3401.00	MSAL			
17	339.00	MSAL	17	3052.50	MSAL			

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station
18	386.00	MSAL	18	3388.50	MSAL
19	428.00	MSAL	19	3341.00	MSAL
20	400.00	MSAL	20	2805.00	MSAL
21	317.50	MSAL	21	*	MSAL
1	*	PALM	1	*	PALM
2	*	PALM	2	*	PALM
3	21.50	PALM	3	224.00	PALM
4	*	PALM	4	*	PALM
5	23.00	PALM	5	199.00	PALM
6	25.00	PALM	6	208.00	PALM
7	22.00	PALM	7	194.50	PALM
8	23.56	PALM	8	209.00	PALM
9	22.96	PALM	9	212.00	PALM
10	24.06	PALM	10	217.00	PALM
11	22.60	PALM	11	212.00	PALM
12	23.99	PALM	12	215.00	PALM
13	25.40	PALM	13	217.00	PALM
14	25.30	PALM	14	229.00	PALM
15	27.25	PALM	15	230.50	PALM
16	26.40	PALM	16	238.00	PALM
17	26.25	PALM	17	239.00	PALM
18	27.20	PALM	18	240.50	PALM
19	28.10	PALM	19	237.00	PALM
20	30.00	PALM	20	236.00	PALM
21	29.30	PALM	21	239.50	PALM
1	22.50	PDL	1	536.00	PDL
2	27.00	PDL	2	526.00	PDL
3	26.50	PDL	3	419.50	PDL
4	23.50	PDL	4	458.00	PDL
5	29.00	PDL	5	475.00	PDL
6	31.00	PDL	6	483.00	PDL
7	28.70	PDL	7	539.00	PDL
8	33.35	PDL	8	471.50	PDL
9	27.50	PDL	9	436.50	PDL
10	21.60	PDL	10	353.00	PDL
11	21.20	PDL	11	411.00	PDL

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in table correspond to years 1991 – 2011, Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station
12	30.95	PDL	12	518.00	PDL
13	35.00	PDL	13	542.00	PDL
14	35.30	PDL	14	527.00	PDL
15	32.15	PDL	15	493.00	PDL
16	25.55	PDL	16	418.50	PDL
17	23.30	PDL	17	408.00	PDL
18	26.75	PDL	18	450.50	PDL
19	25.85	PDL	19	426.00	PDL
20	26.00	PDL	20	405.00	PDL
21	26.15	PDL	21	417.50	PDL
1	*	PUMP	1	*	PUMP
2	*	PUMP	2	*	PUMP
3	21.00	PUMP	3	*	PUMP
4	17.00	PUMP	4	342.00	PUMP
5	14.00	PUMP	5	317.00	PUMP
6	11.50	PUMP	6	277.50	PUMP
7	19.75	PUMP	7	341.50	PUMP
8	13.45	PUMP	8	271.50	PUMP
9	11.00	PUMP	9	253.00	PUMP
10	17.80	PUMP	10	346.00	PUMP
11	29.00	PUMP	11	507.00	PUMP
12	32.50	PUMP	12	558.00	PUMP
13	22.20	PUMP	13	432.00	PUMP
14	15.00	PUMP	14	310.00	PUMP
15	13.40	PUMP	15	296.00	PUMP
16	13.20	PUMP	16	285.00	PUMP
17	37.60	PUMP	17	600.00	PUMP
18	46.40	PUMP	18	729.00	PUMP
19	48.10	PUMP	19	753.00	PUMP
20	35.60	PUMP	20	572.00	PUMP
21	37.50	PUMP	21	617.00	PUMP
1	*	RKB	1	*	RKB
2	13.20	RKB	2	218.29	RKB
3	12.10	RKB	3	223.76	RKB
4	11.90	RKB	4	236.09	RKB

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station
5	12.00	RKB	5	220.37	RKB
6	12.00	RKB	6	225.85	RKB
7	12.00	RKB	7	234.04	RKB
8	11.65	RKB	8	230.61	RKB
9	11.50	RKB	9	224.05	RKB
10	11.90	RKB	10	225.67	RKB
11	11.50	RKB	11	228.12	RKB
12	11.10	RKB	12	223.79	RKB
13	14.05	RKB	13	242.98	RKB
14	13.30	RKB	14	250.28	RKB
15	13.45	RKB	15	263.28	RKB
16	12.20	RKB	16	263.15	RKB
17	13.50	RKB	17	252.76	RKB
18	14.60	RKB	18	241.94	RKB
19	15.60	RKB	19	268.02	RKB
20	15.20	RKB	20	261.08	RKB
21	16.70	RKB	21	264.78	RKB
1	*	RLS	1	*	RLS
2	*	RLS	2	*	RLS
3	*	RLS	3	*	RLS
4	*	RLS	4	*	RLS
5	*	RLS	5	*	RLS
6	*	RLS	6	*	RLS
7	*	RLS	7	*	RLS
8	14.25	RLS	8	263.47	RLS
9	11.75	RLS	9	257.97	RLS
10	11.00	RLS	10	268.78	RLS
11	13.50	RLS	11	278.35	RLS
12	12.70	RLS	12	280.31	RLS
13	12.10	RLS	13	292.37	RLS
14	18.00	RLS	14	297.13	RLS
15	16.25	RLS	15	295.11	RLS
16	16.80	RLS	16	305.99	RLS
17	17.05	RLS	17	300.00	RLS
18	17.15	RLS	18	294.02	RLS

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station
19	17.00	RLS	19	302.81	RLS
20	19.70	RLS	20	310.46	RLS
21	22.00	RLS	21	317.23	RLS
1	*	RNB1	1	*	RNB1
2	*	RNB1	2	*	RNB1
3	5.30	RNB1	3	102.32	RNB1
4	4.70	RNB1	4	94.27	RNB1
5	4.30	RNB1	5	112.52	RNB1
6	4.45	RNB1	6	100.07	RNB1
7	4.50	RNB1	7	90.78	RNB1
8	4.60	RNB1	8	95.91	RNB1
9	4.60	RNB1	9	97.29	RNB1
10	4.60	RNB1	10	102.94	RNB1
11	4.60	RNB1	11	105.54	RNB1
12	9.00	RNB1	12	197.22	RNB1
13	9.75	RNB1	13	196.68	RNB1
14	5.00	RNB1	14	106.84	RNB1
15	4.55	RNB1	15	95.30	RNB1
16	*	RNB1	16	*	RNB1
17	6.30	RNB1	17	107.84	RNB1
18	5.90	RNB1	18	109.24	RNB1
19	5.10	RNB1	19	108.78	RNB1
20	5.05	RNB1	20	108.82	RNB1
21	5.25	RNB1	21	116.04	RNB1
1	*	RNB4	1	*	RNB4
2	*	RNB4	2	*	RNB4
3	5.20	RNB4	3	161.00	RNB4
4	4.90	RNB4	4	162.00	RNB4
5	4.10	RNB4	5	162.00	RNB4
6	4.40	RNB4	6	164.50	RNB4
7	4.35	RNB4	7	155.00	RNB4
8	5.00	RNB4	8	157.00	RNB4
9	4.35	RNB4	9	157.50	RNB4
10	4.65	RNB4	10	168.00	RNB4
11	4.50	RNB4	11	170.00	RNB4

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station
12	9.65	RNB4	12	347.50	RNB4
13	10.45	RNB4	13	362.00	RNB4
14	7.55	RNB4	14	261.50	RNB4
15	4.95	RNB4	15	173.00	RNB4
16	*	RNB4	16	*	RNB4
17	6.50	RNB4	17	181.00	RNB4
18	6.55	RNB4	18	185.50	RNB4
19	5.45	RNB4	19	183.00	RNB4
20	5.45	RNB4	20	185.00	RNB4
21	5.50	RNB4	21	189.00	RNB4
1	*	RNB6	1	*	RNB6
2	*	RNB6	2	*	RNB6
3	38.00	RNB6	3	*	RNB6
4	37.00	RNB6	4	218.00	RNB6
5	33.00	RNB6	5	212.00	RNB6
6	34.00	RNB6	6	219.00	RNB6
7	36.20	RNB6	7	220.00	RNB6
8	36.15	RNB6	8	208.00	RNB6
9	35.40	RNB6	9	214.00	RNB6
10	35.55	RNB6	10	229.00	RNB6
11	36.85	RNB6	11	239.00	RNB6
12	38.20	RNB6	12	245.00	RNB6
13	40.60	RNB6	13	240.00	RNB6
14	38.60	RNB6	14	232.00	RNB6
15	31.05	RNB6	15	219.00	RNB6
16	31.40	RNB6	16	224.00	RNB6
17	36.45	RNB6	17	240.00	RNB6
18	40.45	RNB6	18	242.00	RNB6
19	37.90	RNB6	19	242.50	RNB6
20	39.70	RNB6	20	238.50	RNB6
21	37.40	RNB6	21	240.00	RNB6
1	*	RNBS	1	*	RNBS
2	*	RNBS	2	*	RNBS
3	6.10	RNBS	3	80.00	RNBS
4	4.65	RNBS	4	82.50	RNBS

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station
5	3.80	RNBS	5	80.00	RNBS
6	4.20	RNBS	6	81.00	RNBS
7	4.05	RNBS	7	78.50	RNBS
8	4.25	RNBS	8	82.00	RNBS
9	4.10	RNBS	9	78.00	RNBS
10	3.80	RNBS	10	83.00	RNBS
11	3.90	RNBS	11	80.00	RNBS
12	4.10	RNBS	12	88.00	RNBS
13	5.10	RNBS	13	85.00	RNBS
14	4.20	RNBS	14	84.00	RNBS
15	6.50	RNBS	15	90.00	RNBS
16	5.00	RNBS	16	84.00	RNBS
17	5.60	RNBS	17	89.00	RNBS
18	5.35	RNBS	18	93.00	RNBS
19	4.35	RNBS	19	90.50	RNBS
20	4.40	RNBS	20	92.00	RNBS
21	4.40	RNBS	21	89.50	RNBS
1	*	RNS3	1	*	RNS3
2	*	RNS3	2	*	RNS3
3	*	RNS3	3	*	RNS3
4	11.00	RNS3	4	160.00	RNS3
5	9.70	RNS3	5	169.00	RNS3
6	12.00	RNS3	6	166.00	RNS3
7	11.00	RNS3	7	158.00	RNS3
8	12.40	RNS3	8	162.00	RNS3
9	11.70	RNS3	9	161.00	RNS3
10	12.00	RNS3	10	174.00	RNS3
11	13.50	RNS3	11	178.00	RNS3
12	13.30	RNS3	12	183.00	RNS3
13	11.80	RNS3	13	177.00	RNS3
14	11.20	RNS3	14	177.00	RNS3
15	10.65	RNS3	15	177.50	RNS3
16	11.90	RNS3	16	169.00	RNS3
17	14.20	RNS3	17	183.50	RNS3
18	15.10	RNS3	18	183.00	RNS3

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station
19	13.05	RNS3	19	181.00	RNS3
20	12.15	RNS3	20	178.00	RNS3
21	13.05	RNS3	21	181.50	RNS3
1	20.00	ROCK	1	157.00	ROCK
2	17.50	ROCK	2	159.00	ROCK
3	20.00	ROCK	3	173.50	ROCK
4	20.00	ROCK	4	163.00	ROCK
5	20.00	ROCK	5	160.00	ROCK
6	20.50	ROCK	6	160.00	ROCK
7	19.10	ROCK	7	163.50	ROCK
8	17.95	ROCK	8	166.00	ROCK
9	18.85	ROCK	9	163.50	ROCK
10	17.20	ROCK	10	161.00	ROCK
11	*	ROCK	11	*	ROCK
12	*	ROCK	12	*	ROCK
13	17.10	ROCK	13	164.00	ROCK
14	16.25	ROCK	14	161.00	ROCK
15	17.65	ROCK	15	166.00	ROCK
16	17.95	ROCK	16	173.00	ROCK
17	18.00	ROCK	17	173.00	ROCK
18	17.60	ROCK	18	173.50	ROCK
19	17.55	ROCK	19	169.00	ROCK
20	18.30	ROCK	20	168.50	ROCK
21	18.05	ROCK	21	173.00	ROCK
1	*	SANL	1	*	SANL
2	*	SANL	2	*	SANL
3	13.00	SANL	3	218.00	SANL
4	*	SANL	4	*	SANL
5	12.00	SANL	5	225.00	SANL
6	17.00	SANL	6	230.00	SANL
7	12.00	SANL	7	228.50	SANL
8	12.70	SANL	8	231.00	SANL
9	12.00	SANL	9	227.50	SANL
10	13.50	SANL	10	244.00	SANL
11	12.10	SANL	11	243.00	SANL

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station
12	11.95	SANL	12	245.00	SANL
13	13.00	SANL	13	242.00	SANL
14	10.90	SANL	14	238.00	SANL
15	14.05	SANL	15	243.00	SANL
16	14.45	SANL	16	257.50	SANL
17	14.00	SANL	17	250.00	SANL
18	12.30	SANL	18	270.00	SANL
19	13.55	SANL	19	262.00	SANL
20	13.20	SANL	20	252.00	SANL
21	13.05	SANL	21	255.00	SANL
1	*	SBS	1	*	SBS
2	*	SBS	2	*	SBS
3	*	SBS	3	*	SBS
4	*	SBS	4	*	SBS
5	*	SBS	5	*	SBS
6	*	SBS	6	*	SBS
7	12.00	SBS	7	*	SBS
8	12.05	SBS	8	*	SBS
9	9.50	SBS	9	*	SBS
10	8.35	SBS	10	*	SBS
11	9.55	SBS	11	*	SBS
12	9.10	SBS	12	146.60	SBS
13	14.70	SBS	13	138.80	SBS
14	11.70	SBS	14	150.30	SBS
15	15.80	SBS	15	140.50	SBS
16	10.70	SBS	16	157.90	SBS
17	10.35	SBS	17	164.45	SBS
18	13.65	SBS	18	147.40	SBS
19	13.25	SBS	19	151.75	SBS
20	14.50	SBS	20	143.90	SBS
21	11.70	SBS	21	153.30	SBS
1	193.00	SILG	1	1193.00	SILG
2	196.50	SILG	2	1081.00	SILG
3	210.00	SILG	3	1020.50	SILG
4	189.00	SILG	4	1052.00	SILG

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station
5	172.00	SILG	5	1065.00	SILG
6	195.00	SILG	6	1104.00	SILG
7	182.00	SILG	7	1077.50	SILG
8	180.95	SILG	8	1073.50	SILG
9	180.65	SILG	9	1088.00	SILG
10	184.50	SILG	10	1086.00	SILG
11	179.35	SILG	11	1076.00	SILG
12	176.45	SILG	12	1050.00	SILG
13	160.00	SILG	13	1034.00	SILG
14	162.00	SILG	14	993.00	SILG
15	169.50	SILG	15	987.00	SILG
16	172.00	SILG	16	1023.50	SILG
17	172.50	SILG	17	1028.50	SILG
18	163.00	SILG	18	1013.00	SILG
19	169.50	SILG	19	1027.50	SILG
20	167.00	SILG	20	1001.00	SILG
21	162.70	SILG	21	1010.50	SILG
1	*	STAR	1	*	STAR
2	*	STAR	2	*	STAR
3	23.50	STAR	3	224.00	STAR
4	*	STAR	4	*	STAR
5	24.00	STAR	5	227.00	STAR
6	25.00	STAR	6	228.00	STAR
7	23.00	STAR	7	228.00	STAR
8	23.90	STAR	8	233.00	STAR
9	22.70	STAR	9	236.00	STAR
10	25.50	STAR	10	239.00	STAR
11	24.80	STAR	11	240.00	STAR
12	25.90	STAR	12	243.00	STAR
13	26.00	STAR	13	237.00	STAR
14	23.80	STAR	14	235.00	STAR
15	25.25	STAR	15	240.00	STAR
16	25.10	STAR	16	249.00	STAR
17	25.25	STAR	17	253.00	STAR
18	26.10	STAR	18	254.00	STAR

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station
19	27.10	STAR	19	257.00	STAR
20	27.70	STAR	20	255.00	STAR
21	27.55	STAR	21	255.00	STAR
1	292.50	SWEE	1	2321.00	SWEE
2	259.00	SWEE	2	2299.00	SWEE
3	294.00	SWEE	3	2630.50	SWEE
4	249.00	SWEE	4	2180.00	SWEE
5	249.00	SWEE	5	2101.00	SWEE
6	262.00	SWEE	6	2088.00	SWEE
7	265.90	SWEE	7	2086.50	SWEE
8	261.65	SWEE	8	2091.00	SWEE
9	258.40	SWEE	9	2111.00	SWEE
10	252.20	SWEE	10	2133.00	SWEE
11	256.10	SWEE	11	2076.00	SWEE
12	250.95	SWEE	12	2056.00	SWEE
13	220.00	SWEE	13	1915.50	SWEE
14	220.50	SWEE	14	1888.50	SWEE
15	231.00	SWEE	15	1955.50	SWEE
16	238.50	SWEE	16	1956.00	SWEE
17	251.50	SWEE	17	2101.00	SWEE
18	225.00	SWEE	18	1871.00	SWEE
19	243.00	SWEE	19	2071.50	SWEE
20	256.00	SWEE	20	2135.00	SWEE
21	261.50	SWEE	21	2170.00	SWEE
1	51.00	TARP	1	772.00	TARP
2	100.00	TARP	2	1402.00	TARP
3	*	TARP	3	*	TARP
4	51.00	TARP	4	792.00	TARP
5	58.50	TARP	5	829.00	TARP
6	51.50	TARP	6	750.50	TARP
7	95.00	TARP	7	1228.00	TARP
8	33.65	TARP	8	562.00	TARP
9	64.95	TARP	9	918.00	TARP
10	130.75	TARP	10	1690.50	TARP
11	106.70	TARP	11	1558.00	TARP

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station
12	128.50	TARP	12	1592.00	TARP
13	71.20	TARP	13	1038.00	TARP
14	69.00	TARP	14	1082.00	TARP
15	36.50	TARP	15	596.00	TARP
16	78.60	TARP	16	1181.00	TARP
17	268.00	TARP	17	3471.00	TARP
18	213.00	TARP	18	2858.50	TARP
19	224.50	TARP	19	3007.00	TARP
20	156.50	TARP	20	2114.00	TARP
21	267.00	TARP	21	3536.50	TARP
1	*	TEL	1	*	TEL
2	18.25	TEL	2	279.20	TEL
3	41.40	TEL	3	300.61	TEL
4	35.85	TEL	4	299.69	TEL
5	42.00	TEL	5	285.29	TEL
6	47.00	TEL	6	302.30	TEL
7	39.00	TEL	7	311.18	TEL
8	47.35	TEL	8	317.64	TEL
9	48.50	TEL	9	300.02	TEL
10	44.00	TEL	10	297.72	TEL
11	42.10	TEL	11	303.44	TEL
12	42.70	TEL	12	298.40	TEL
13	30.40	TEL	13	315.11	TEL
14	51.70	TEL	14	336.46	TEL
15	41.70	TEL	15	337.32	TEL
16	48.60	TEL	16	333.76	TEL
17	48.45	TEL	17	324.63	TEL
18	44.45	TEL	18	313.62	TEL
19	44.00	TEL	19	331.52	TEL
20	44.20	TEL	20	330.77	TEL
21	50.80	TEL	21	334.99	TEL
1	*	TROT	1	*	TROT
2	*	TROT	2	*	TROT
3	19.00	TROT	3	*	TROT
4	28.00	TROT	4	270.00	TROT

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station
5	12.00	TROT	5	271.50	TROT
6	9.85	TROT	6	243.50	TROT
7	17.00	TROT	7	306.00	TROT
8	10.60	TROT	8	240.50	TROT
9	11.20	TROT	9	244.00	TROT
10	21.50	TROT	10	369.00	TROT
11	26.00	TROT	11	454.50	TROT
12	27.85	TROT	12	425.00	TROT
13	15.40	TROT	13	335.00	TROT
14	11.20	TROT	14	253.00	TROT
15	9.70	TROT	15	237.00	TROT
16	10.30	TROT	16	238.00	TROT
17	23.50	TROT	17	407.00	TROT
18	35.00	TROT	18	543.00	TROT
19	31.20	TROT	19	513.00	TROT
20	24.35	TROT	20	425.00	TROT
21	28.75	TROT	21	485.00	TROT
1	*	TRY	1	*	TRY
2	9.45	TRY	2	221.73	TRY
3	11.30	TRY	3	237.18	TRY
4	11.35	TRY	4	230.58	TRY
5	10.00	TRY	5	225.16	TRY
6	10.00	TRY	6	252.26	TRY
7	14.00	TRY	7	243.30	TRY
8	10.90	TRY	8	241.21	TRY
9	11.50	TRY	9	230.21	TRY
10	12.00	TRY	10	239.60	TRY
11	11.50	TRY	11	235.93	TRY
12	10.70	TRY	12	232.93	TRY
13	11.20	TRY	13	236.83	TRY
14	13.20	TRY	14	254.78	TRY
15	12.20	TRY	15	265.44	TRY
16	12.20	TRY	16	261.14	TRY
17	12.50	TRY	17	254.40	TRY
18	13.90	TRY	18	243.77	TRY

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station
19	13.00	TRY	19	253.78	TRY
20	13.75	TRY	20	255.63	TRY
21	13.60	TRY	21	256.53	TRY
1	84.50	VOLB	1	837.00	VOLB
2	72.50	VOLB	2	1043.00	VOLB
3	65.00	VOLB	3	953.00	VOLB
4	94.00	VOLB	4	1058.00	VOLB
5	*	VOLB	5	*	VOLB
6	48.00	VOLB	6	707.00	VOLB
7	*	VOLB	7	*	VOLB
8	51.00	VOLB	8	644.50	VOLB
9	58.50	VOLB	9	732.50	VOLB
10	55.00	VOLB	10	702.00	VOLB
11	60.59	VOLB	11	584.50	VOLB
12	53.62	VOLB	12	539.00	VOLB
13	42.00	VOLB	13	448.50	VOLB
14	58.70	VOLB	14	860.00	VOLB
15	34.30	VOLB	15	577.50	VOLB
16	42.30	VOLB	16	694.00	VOLB
17	83.90	VOLB	17	1107.50	VOLB
18	80.20	VOLB	18	1173.00	VOLB
19	45.40	VOLB	19	722.50	VOLB
20	58.00	VOLB	20	861.50	VOLB
21	67.00	VOLB	21	1102.50	VOLB
1	10.00	WAK	1	202.00	WAK
2	11.00	WAK	2	201.50	WAK
3	9.75	WAK	3	204.50	WAK
4	11.00	WAK	4	206.00	WAK
5	*	WAK	5	*	WAK
6	*	WAK	6	*	WAK
7	10.00	WAK	7	229.00	WAK
8	*	WAK	8	*	WAK
9	*	WAK	9	2.00	WAK
10	11.50	WAK	10	202.00	WAK
11	*	WAK	11	*	WAK

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station
12	*	WAK	12	*	WAK
13	10.00	WAK	13	227.00	WAK
14	10.50	WAK	14	222.50	WAK
15	11.00	WAK	15	213.00	WAK
16	11.00	WAK	16	214.50	WAK
17	15.00	WAK	17	257.50	WAK
18	13.50	WAK	18	236.00	WAK
19	10.50	WAK	19	218.50	WAK
20	*	WAK	20	*	WAK
21	11.50	WAK	21	225.00	WAK
1	*	WEEK	1	*	WEEK
2	*	WEEK	2	*	WEEK
3	8.40	WEEK	3	*	WEEK
4	8.45	WEEK	4	209.50	WEEK
5	7.70	WEEK	5	215.00	WEEK
6	8.00	WEEK	6	210.50	WEEK
7	9.10	WEEK	7	213.00	WEEK
8	8.55	WEEK	8	207.00	WEEK
9	9.60	WEEK	9	216.50	WEEK
10	9.55	WEEK	10	224.00	WEEK
11	9.05	WEEK	11	232.50	WEEK
12	9.15	WEEK	12	231.50	WEEK
13	8.90	WEEK	13	230.00	WEEK
14	9.50	WEEK	14	222.00	WEEK
15	10.00	WEEK	15	222.00	WEEK
16	9.90	WEEK	16	232.00	WEEK
17	10.25	WEEK	17	232.00	WEEK
18	10.10	WEEK	18	237.00	WEEK
19	10.70	WEEK	19	235.00	WEEK
20	10.25	WEEK	20	230.50	WEEK
21	10.85	WEEK	21	233.50	WEEK
1	17.50	WEKI	1	191.00	WEKI
2	16.50	WEKI	2	190.00	WEKI
3	21.00	WEKI	3	201.00	WEKI
4	17.00	WEKI	4	197.00	WEKI

Appendix Table B5. Regional-Kendall data for 55 springs (continued). The table contains data for year, annual median indicator concentration (mg/L), and spring abbreviation. Years 1 – 21 in the table correspond to years 1991 – 2011. Missing data is labeled with an asterisk (*). For spring abbreviation information, see **Appendix Table A1**.

Year	Sulfate	Station	Year	TDS	Station
5	18.50	WEKI	5	202.00	WEKI
6	20.50	WEKI	6	203.50	WEKI
7	18.18	WEKI	7	206.50	WEKI
8	19.42	WEKI	8	211.00	WEKI
9	19.38	WEKI	9	211.50	WEKI
10	19.08	WEKI	10	214.00	WEKI
11	18.70	WEKI	11	216.00	WEKI
12	18.54	WEKI	12	221.00	WEKI
13	19.30	WEKI	13	222.00	WEKI
14	18.80	WEKI	14	224.00	WEKI
15	19.80	WEKI	15	220.00	WEKI
16	20.40	WEKI	16	229.00	WEKI
17	19.20	WEKI	17	222.50	WEKI
18	19.55	WEKI	18	231.50	WEKI
19	20.50	WEKI	19	228.00	WEKI
20	21.70	WEKI	20	229.00	WEKI
21	21.00	WEKI	21	232.50	WEKI

Appendix Table B6. Mann-Whitney data for comparison of shallow to deep Background Network wells, each in separate hexagons. Using L period data, table contains well numbers for shallow (S) and deep (D) wells, and median indicator concentrations (mg/L). Missing data is labeled with an asterisk (*).

Well_S	Alk_S	Ca_S	Cl_S	Well_D	Alk_D	Ca_D	Cl_D
8	290.00	110.00	13.00	172	189.00	4.88	65.00
46	375.00	105.00	110.00	373	180.00	12.70	32.00
902	176.00	243.00	1800.00	378	134.00	28.20	2.50
918	178.00	47.80	8.80	409	147.00	59.00	5.30
1016	204.00	93.10	32.00	418	108.00	25.70	3.00
1020	268.00	108.00	4.50	450	192.00	38.00	390.00
1038	75.00	33.50	10.00	520	143.00	108.00	290.00
1053	139.00	51.80	3.10	544	148.00	239.00	28.00
1059	182.00	*	3.10	605	131.00	218.00	71.00
1069	234.00	91.50	*	615	152.00	113.00	290.00
1071	97.00	38.30	5.70	636	182.00	87.40	41.00
1073	153.00	56.40	6.40	684	61.00	16.90	53.00
1147	223.00	88.30	6.30	690	149.00	148.00	21.00
1154	119.00	43.40	460.00	754	127.00	389.00	14.00
1160	162.00	59.30	6.90	777	158.00	85.30	12.00
1184	205.00	162.00	9.60	793	128.00	44.60	8.10
1342	109.00	132.00	*	819	132.00	41.25	7.70
1363	156.00	62.30	3400.00	838	134.00	25.90	240.00
1377	78.00	34.20	170.00	842	141.00	168.00	5.60
1455	260.00	90.60	100.00	861	157.00	35.00	14.00
1460	106.00	56.90	7.00	891	178.00	49.90	750.00
1504	83.00	24.40	41.00	947	132.00	116.00	410.00
1506	300.00	101.00	5.20	951	161.00	63.60	12.00
1527	132.00	65.90	7.70	988	255.00	99.90	12.00
1587	65.00	41.30	1800.00	1036	130.00	44.70	11.00
1590	104.00	42.70	1500.00	1041	216.00	68.70	9.30
1606	55.00	22.40	35.00	1045	109.00	41.60	4.80
1612	149.00	57.50	10.00	1046	123.00	48.20	4.40
1639	205.00	201.00	325.00	1066	202.00	75.80	*
1666	190.00	117.20	*	1134	179.00	70.70	6.40
1691	128.00	269.00	1700.00	1140	187.00	72.40	8.00
1722	21.00	4.70	36.00	1195	116.00	178.00	*
1734	87.00	27.90	12.00	1221	234.00	93.50	7.40
1740	126.00	283.00	460.00	1251	125.00	44.80	8.40
1878	241.50	97.85	7.50	1266	265.00	85.00	15.00
1880	347.00	148.00	2300.00	1267	162.00	48.80	6.30
1896	278.00	125.00	130.00	1293	152.00	57.10	1100.00

Appendix Table B6. Mann-Whitney data for comparison of shallow to deep Background Network wells, each in separate hexagons (continued). Using L period data, table contains well numbers for shallow (S) and deep (D) wells, and median indicator concentrations (mg/L). Missing data is labeled with an asterisk (*).

Well_S	Alk_S	Ca_S	Cl_S	Well_D	Alk_D	Ca_D	Cl_D
1909	183.00	104.00	6.20	1358	142.00	173.00	8.10
1910	214.00	89.60	15.00	1362	160.00	53.00	110.00
1929	187.00	95.40	640.00	1375	163.00	218.00	9.20
1945	374.00	221.00	9.90	1389	259.00	79.00	12.00
1946	133.00	51.80	23.00	1522	164.00	390.00	86.00
1962	154.00	66.90	*	1580	*	*	35.00
2037	224.00	87.80	27.00	1751	120.00	248.00	10.00
2146	292.00	102.00	27.00	1777	150.00	79.50	140.00
2151	121.00	34.00	10.00	1779	159.00	35.60	35.00
2165	170.00	75.50	28.00	1787	124.00	57.00	170.00
2210	163.00	38.95	710.00	1788	127.00	34.80	5.00
2216	204.00	79.80	7.30	1841	166.00	53.40	470.00
2219	142.00	36.50	10.00	1842	166.00	65.95	450.00
2251	256.00	103.00	21.00	1844	160.50	64.35	2000.00
2260	120.00	47.10	2.00	1850	166.00	64.30	3.70
2267	343.00	258.50	13.00	2115	169.00	71.50	*
2384	99.00	39.20	10.00	2305	136.00	38.20	8.30
2412	226.00	64.00	1100.00	2414	181.00	43.95	11.00
2417	323.00	101.00	11.00	2426	175.00	46.70	7.50
2423	181.00	42.25	54.00	2492	159.00	60.00	*
2457	92.00	34.80	5.60	2645	154.00	53.00	9.70
2489	198.00	67.10	12.00	2705	130.00	36.10	3.20
2538	286.00	*	5.40	3084	74.00	270.00	7.90
2541	242.00	60.00	8400.00	3091	*	*	730.00
2557	211.00	78.50	6.60	3112	122.00	160.00	*
2567	246.00	86.00	5.30	3115	158.00	65.00	*
2585	151.00	44.40	8.10	3117	157.00	103.00	*
2587	241.00	51.40	12.00	3118	108.00	98.80	*
2618	246.50	63.55	9.60	3159	172.00	81.50	*
2630	184.00	48.80	190.00	3191	139.00	66.50	*
2655	152.00	50.40	3.60	3195	112.00	58.10	6.90
2666	114.00	40.50	2.90	3199	208.00	31.20	6.90
2675	174.50	70.10	11.00	3265	312.00	112.00	5.20
2678	173.00	65.20	6.20	3268	104.50	36.05	4.10
2706	126.00	43.20	5.10	3437	82.00	15.40	3.30
3267	144.00	47.90	4.70	3444	100.50	34.00	960.00
3433	72.00	18.40	8.20	3447	145.00	91.30	730.00

Appendix Table B6. Mann-Whitney data for comparison of shallow to deep Background Network wells, each in separate hexagons (continued). Using L period data, table contains well numbers for shallow (S) and deep (D) wells, and median indicator concentrations (mg/L). Missing data is labeled with an asterisk (*).

Well_S	K_S	Mg_S	Na_S	Well_D	K_D	Mg_D	Na_D
8	1.07	5.40	8.00	172	5.50	3.13	120.00
46	3.20	52.10	25.30	373	*	7.60	64.50
902	3.20	52.70	209.00	378	*	14.70	3.40
918	*	17.80	4.60	409	0.34	1.84	3.10
1016	*	44.80	407.00	418	1.00	12.60	1.80
1020	*	1.80	5.40	450	*	20.00	6.00
1038	*	1.10	8.60	520	*	78.20	288.00
1053	*	2.70	3.70	544	7.00	123.00	123.00
1059	*	*	4.00	605	*	88.20	33.20
1069	*	2.60	3.50	615	4.06	60.05	38.80
1071	*	1.50	3.70	636	*	42.20	21.60
1073	*	2.20	3.80	684	0.69	4.57	4.80
1147	*	3.00	9.20	690	*	85.30	35.50
1154	60.00	5.40	3.70	754	*	125.00	13.10
1160	1.30	5.10	4.80	777	2.40	36.20	14.80
1184	2.90	224.00	1710.00	793	*	14.50	7.50
1342	*	70.40	437.00	819	0.78	15.35	10.20
1363	*	1.20	5.10	838	*	14.70	13.30
1377	*	2.90	17.20	842	2.40	70.60	72.80
1455	*	4.40	30.50	861	*	14.30	6.30
1460	*	30.80	269.00	891	*	15.50	8.90
1504	*	4.00	9.40	947	*	14.30	166.00
1506	1.10	9.10	19.00	951	0.38	2.06	5.10
1527	*	14.40	8.10	988	*	10.00	7.40
1587	*	16.70	87.40	1036	*	11.00	5.60
1590	*	1.75	4.60	1041	*	5.70	14.60
1606	*	0.96	3.20	1045	*	0.82	3.10
1612	8.60	5.40	16.10	1046	*	1.40	3.10
1639	*	109.00	581.00	1066	*	2.50	4.60
1666	*	75.40	194.00	1134	*	1.30	4.70
1691	0.48	182.00	1040.00	1140	*	2.40	4.90
1722	*	2.00	2.50	1195	*	29.00	9.20
1734	4.10	6.98	4.80	1221	*	17.80	8.70
1740	*	195.00	1210.00	1251	*	24.00	62.90
1878	0.30	1.63	5.60	1266	*	7.40	37.70
1880	1.90	14.50	12.20	1267	*	47.80	168.00
1896	0.98	2.53	31.00	1293	*	38.70	87.50

Appendix Table B6. Mann-Whitney data for comparison of shallow to deep Background Network wells, each in separate hexagons (continued). Using L period data, table contains well numbers for shallow (S) and deep (D) wells, and median indicator concentrations (mg/L). Missing data is labeled with an asterisk (*).

Well_S	K_S	Mg_S	Na_S	Well_D	K_D	Mg_D	Na_D
1909	1.80	11.80	12.20	1358	*	116.00	760.00
1910	43.00	2.09	12.90	1362	*	12.10	21.20
1929	0.30	4.95	3.90	1375	1.60	120.00	860.00
1945	0.30	166.00	1290.00	1389	8.70	13.75	7.30
1946	0.30	3.84	2.70	1522	0.96	487.00	4370.00
1962	0.72	3.32	2.90	1580	1.70	*	28.70
2037	0.30	2.00	3.00	1751	1.31	99.60	86.60
2146	0.62	11.60	4.70	1777	*	41.40	53.70
2151	0.94	13.30	7.30	1779	*	15.90	8.20
2165	0.30	10.00	18.50	1787	*	26.40	14.90
2210	0.30	17.15	6.60	1788	*	14.30	9.60
2216	0.30	4.75	4.80	1841	1.60	34.10	15.90
2219	0.30	15.20	3.20	1842	*	28.05	16.10
2251	175.00	1.31	4.10	1844	0.30	30.85	17.60
2260	1.00	1.69	2.00	1850	1.00	31.40	18.70
2267	1.80	634.50	5080.00	2115	0.88	12.50	8.10
2384	1.20	1.32	2.30	2305	0.30	15.10	18.10
2412	0.37	21.50	3.00	2414	1.20	20.00	8.40
2417	1.30	24.90	6.90	2426	0.30	*	9.80
2423	0.34	18.95	8.80	2492	*	4.51	2.40
2457	0.30	2.68	2.10	2645	0.30	8.54	3.50
2489	1.30	10.80	2.00	2705	*	10.40	3.30
2538	0.30	*	13.30	3084	8.25	157.00	507.00
2541	0.46	26.00	10.30	3091	*	*	398.00
2557	0.39	7.04	1.80	3112	*	130.00	669.00
2567	1.40	13.70	3.00	3115	*	65.20	218.00
2585	1.10	13.65	4.20	3117	*	111.00	472.00
2587	0.62	28.10	5.80	3118	*	84.90	403.00
2618	0.49	28.65	8.10	3159	*	76.50	590.00
2630	1.10	22.20	7.50	3191	*	46.10	107.00
2655	1.60	21.20	3.90	3195	1.50	42.30	195.00
2666	1.70	4.89	2.90	3199	0.66	38.70	37.90
2675	0.84	2.20	5.70	3265	0.66	6.39	26.80
2678	0.67	28.20	9.30	3268	0.67	6.17	5.10
2706	*	7.20	3.00	3437	11.00	8.30	3.40
3267	1.05	6.67	2.90	3444	*	34.65	185.00
3433	9.40	7.00	4.80	3447	*	63.90	331.00

Appendix Table B6. Mann-Whitney data for comparison of shallow to deep Background Network wells, each in separate hexagons (continued). Using L period data, table contains well numbers for shallow (S) and deep (D) wells, and median indicator concentrations (mg/L). Missing data is labeled with an asterisk (*).

Well_S	SO4_S	TDS_S	GWL_S	Well_D	SO4_D	TDS_D	GWL_D
8	2.10	429.57	9.38	172	13.00	400.51	93.64
46	1.40	672.00	9.32	373	5.20	*	*
902	24.00	*	8.00	378	7.70	*	188.40
918	1.30	*	44.70	409	4.10	220.68	30.05
1016	45.00	248.64	8.00	418	7.90	*	*
1020	7.00	*	10.65	450	7.50	160.00	50.00
1038	19.00	*	22.10	520	460.00	*	*
1053	0.20	*	18.36	544	790.00	*	*
1059	5.90	*	12.40	605	830.00	1458.00	14.70
1069	6.90	*	9.90	615	360.00	*	*
1071	4.50	*	15.20	636	220.00	*	15.55
1073	0.20	*	7.10	684	0.99	*	42.70
1147	3.40	*	107.39	690	580.00	*	42.00
1154	5.50	*	29.20	754	1400.00	*	65.65
1160	10.00	6246.00	13.50	777	200.00	*	19.15
1184	485.00	598.30	10.65	793	42.00	*	100.00
1342	170.00	*	7.14	819	39.50	*	70.70
1363	0.20	397.20	7.70	838	6.00	*	57.60
1377	13.00	*	17.00	842	370.00	*	7.75
1455	0.20	*	11.25	861	0.67	*	56.78
1460	58.00	*	35.54	891	6.80	838.80	28.00
1504	1.30	*	4.90	947	7.10	*	91.00
1506	2.10	*	28.31	951	4.50	*	16.91
1527	93.00	*	23.75	988	*	*	6.21
1587	84.00	*	4.18	1036	12.00	191.00	12.10
1590	4.30	*	49.70	1041	0.20	*	9.91
1606	6.90	405.05	12.30	1045	0.22	*	33.60
1612	16.00	2132.56	21.21	1046	0.23	*	14.60
1639	290.00	*	*	1066	240.00	*	*
1666	*	*	18.84	1134	3.50	*	18.60
1691	680.00	1305.80	21.13	1140	9.50	*	*
1722	0.38	*	18.30	1195	400.00	*	32.30
1734	5.40	442.01	15.60	1221	73.00	*	38.85
1740	800.00	*	11.89	1251	76.00	*	14.90
1878	0.41	338.57	*	1266	0.44	*	13.20
1880	67.00	2367.00	*	1267	120.00	*	*
1896	3.40	*	*	1293	85.00	*	*

Appendix Table B6. Mann-Whitney data for comparison of shallow to deep Background Network wells, each in separate hexagons (continued). Using L period data, table contains well numbers for shallow (S) and deep (D) wells, and median indicator concentrations (mg/L). Missing data is labeled with an asterisk (*).

Well_S	SO4_S	TDS_S	GWL_S	Well_D	SO4_D	TDS_D	GWL_D
1909	120.00	203.64	75.00	1358	150.00	*	*
1910	17.00	324.80	9.47	1362	21.00	*	24.20
1929	*	421.95	*	1375	500.00	*	*
1945	260.00	*	5.31	1389	0.55	*	36.68
1946	3.70	*	43.10	1522	1100.00	*	11.55
1962	2.60	*	*	1580	22.00	*	6.89
2037	2.40	388.06	17.14	1751	740.00	*	6.71
2146	0.35	205.70	2.30	1777	160.00	*	*
2151	*	252.03	*	1779	2.00	*	78.03
2165	11.00	370.97	*	1787	150.00	*	33.25
2210	3.00	*	*	1788	23.00	419.22	*
2216	2.90	*	5.20	1841	100.00	374.28	*
2219	1.00	8635.40	11.87	1842	97.00	617.70	84.85
2251	0.66	*	52.33	1844	115.00	224.32	*
2260	4.00	151.10	27.35	1850	120.00	451.83	*
2267	1150.00	*	5.13	2115	48.00	*	*
2384	2.20	479.27	*	2305	27.00	268.25	*
2412	1.50	275.70	6.18	2414	8.40	288.60	*
2417	15.00	142.22	3.14	2426	25.00	235.11	*
2423	11.50	283.30	100.00	2492	6.00	308.84	*
2457	0.60	373.60	4.92	2645	4.00	266.10	*
2489	1.50	*	6.35	2705	4.10	*	*
2538	8.50	371.36	82.20	3084	860.00	*	*
2541	23.00	227.74	75.20	3091	360.00	*	*
2557	4.00	337.40	34.80	3112	560.00	*	*
2567	19.00	372.80	39.75	3115	170.00	*	*
2585	9.00	230.43	35.10	3117	230.00	3551.25	*
2587	1.80	*	*	3118	380.00	734.70	*
2618	18.00	285.80	*	3159	210.00	585.50	*
2630	14.00	169.29	*	3191	180.00	895.65	*
2655	52.00	382.40	*	3195	190.00	492.09	*
2666	2.00	192.94	*	3199	76.00	208.43	*
2675	7.90	187.67	87.15	3265	1.40	169.38	8.31
2678	94.00	*	*	3268	9.90	112.87	*
2706	4.30	*	*	3437	0.61	1432.20	*
3267	1.80	115.45	*	3444	62.90	*	*
3433	2.30	751.45	*	3447	150.00	574.50	*

Appendix Table B7. Wilcoxon signed-rank data for shallow Background Network wells, each in separate hexagons. The table contains well number, median indicator concentrations (mg/L) for the E and L period, and the difference between the median (L minus E). Missing data is labeled with an asterisk (*).

Well	Alk_E	Alk_L	Alk_Dif	Ca_E	Ca_L	Ca_Dif	Cl_E	Cl_L	Cl_Dif
8	270.00	290.00	20.00	109.00	110.00	1.00	13.00	13.00	0.00
46	370.00	375.00	5.00	100.00	105.00	5.00	110.00	110.00	0.00
902	190.00	176.00	-14.00	150.00	243.00	93.00	1825.00	1800.00	-25.00
918	175.50	178.00	3.00	39.30	47.80	8.50	6.70	8.80	2.10
1016	250.00	204.00	-46.00	96.00	93.10	-2.90	51.00	32.00	-19.00
1020	263.50	268.00	5.00	103.80	108.00	4.20	4.60	4.50	-0.10
1038	81.00	75.00	-6.00	40.30	33.50	-6.80	15.00	10.00	-5.00
1053	153.00	139.00	-14.00	50.90	51.80	0.90	3.40	3.10	-0.30
1059	116.00	182.00	66.00	*	*	*	3.10	3.10	0.00
1069	138.00	234.00	96.00	49.50	91.50	42.00	*	*	*
1071	155.00	97.00	-58.00	60.15	38.30	-21.85	5.66	5.70	0.04
1073	162.00	153.00	-9.00	56.90	56.40	-0.50	5.40	6.40	1.00
1147	143.00	223.00	80.00	49.60	88.30	38.70	7.70	6.30	-1.40
1154	110.00	119.00	9.00	39.00	43.40	4.40	445.00	460.00	15.00
1160	159.50	162.00	3.00	59.75	59.30	-0.45	6.80	6.90	0.10
1184	144.50	205.00	61.00	70.50	162.00	91.50	8.90	9.60	0.70
1342	121.00	109.00	-12.00	54.70	132.00	77.30	*	*	*
1363	113.00	156.00	43.00	47.50	62.30	14.80	1320.00	3400.00	2080.00
1377	75.00	78.00	3.00	28.00	34.20	6.20	310.00	170.00	-140.00
1455	240.00	260.00	20.00	97.00	90.60	-6.40	99.00	100.00	1.00
1460	102.00	106.00	4.00	58.40	56.90	-1.50	6.75	7.00	0.25
1504	142.00	83.00	-59.00	41.95	24.40	-17.55	49.50	41.00	-8.50
1506	290.00	300.00	10.00	98.00	101.00	3.00	4.60	5.20	0.60
1527	139.00	132.00	-7.00	56.00	65.90	9.90	7.00	7.70	0.70
1587	73.00	65.00	-8.00	44.00	41.30	-2.70	1800.00	1800.00	0.00
1590	109.00	104.00	-5.00	37.60	42.70	5.10	1545.00	1500.00	-45.00
1606	52.00	55.00	3.00	23.00	22.40	-0.60	34.00	35.00	1.00
1612	131.00	149.00	18.00	48.00	57.50	9.50	8.50	10.00	1.50
1639	200.00	205.00	5.00	200.00	201.00	1.00	310.00	325.00	15.00
1666	164.00	190.00	26.00	125.00	117.20	-7.80	*	*	*
1691	119.00	128.00	9.00	260.00	269.00	9.00	1700.00	1700.00	0.00
1722	1.00	21.00	20.00	5.78	4.70	-1.08	14.00	36.00	22.00
1734	77.90	87.00	9.00	21.70	27.90	6.20	12.00	12.00	0.00
1740	123.00	126.00	3.00	260.00	283.00	23.00	500.00	460.00	-40.00
1878	235.00	241.50	7.00	92.80	97.85	5.05	6.80	7.50	0.70
1880	342.00	347.00	5.00	140.00	148.00	8.00	2200.00	2300.00	100.00
1896	269.00	278.00	9.00	117.00	125.00	8.00	76.00	130.00	54.00

Appendix Table B7 (continued). Wilcoxon signed-rank data for shallow Background Network wells, each in separate hexagons. The table contains well number, median indicator concentrations (mg/L) for the E and L period, and the difference between the median (L minus E). Missing data is labeled with an asterisk (*).

Well	Alk_E	Alk_L	Alk_Dif	Ca_E	Ca_L	Ca_Dif	Cl_E	Cl_L	Cl_Dif
1910	225.00	214.00	-11.00	88.00	89.60	1.60	15.00	15.00	0.00
1929	174.50	187.00	13.00	84.55	95.40	10.85	700.00	640.00	-60.00
1945	248.00	374.00	126.00	142.50	221.00	78.50	10.00	9.90	-0.10
1946	115.50	133.00	18.00	45.50	51.80	6.30	21.00	23.00	2.00
1962	143.00	154.00	11.00	54.00	66.90	12.90	*	*	*
2037	217.50	224.00	7.00	87.50	87.80	0.30	27.00	27.00	0.00
2146	297.00	292.00	-5.00	110.00	102.00	-8.00	26.00	27.00	1.00
2151	130.00	121.00	-9.00	34.00	34.00	0.00	9.50	10.00	0.50
2165	180.00	170.00	-10.00	76.00	75.50	-0.50	27.00	28.00	1.00
2210	140.00	163.00	23.00	32.00	38.95	6.95	700.00	710.00	10.00
2216	197.00	204.00	7.00	76.05	79.80	3.75	7.50	7.30	-0.20
2219	151.50	142.00	-10.00	38.95	36.50	-2.45	7.80	10.00	2.20
2251	238.00	256.00	18.00	96.50	103.00	6.50	21.00	21.00	0.00
2260	114.00	120.00	6.00	47.00	47.10	0.10	2.10	2.00	-0.10
2267	285.00	343.00	58.00	203.00	258.50	55.50	9.30	13.00	3.70
2384	87.50	99.00	12.00	34.00	39.20	5.20	8.70	10.00	1.30
2412	212.00	226.00	14.00	55.20	64.00	8.80	1000.00	1100.00	100.00
2417	302.50	323.00	21.00	93.35	101.00	7.65	11.95	11.00	-0.95
2423	171.50	181.00	10.00	41.00	42.25	1.25	52.00	54.00	2.00
2457	95.00	92.00	-3.00	34.00	34.80	0.80	4.65	5.60	0.95
2489	200.00	198.00	-2.00	72.00	67.10	-4.90	12.00	12.00	0.00
2538	274.00	286.00	14.00	*	*	*	7.05	5.40	-1.65
2541	240.00	242.00	2.00	62.00	60.00	-2.00	8600.00	8400.00	-200.00
2557	165.00	211.00	46.00	59.20	78.50	19.30	5.65	6.60	0.95
2567	182.80	246.00	63.00	65.25	86.00	20.75	5.35	5.30	-0.05
2585	137.00	151.00	14.00	38.65	44.40	5.75	18.00	8.10	-9.90
2587	241.00	241.00	0.00	50.80	51.40	0.60	11.00	12.00	1.00
2618	262.50	246.50	-16.00	67.95	63.55	-4.40	8.62	9.60	0.98
2630	200.00	184.00	-16.00	58.00	48.80	-9.20	19.00	190.00	171.00
2655	150.00	152.00	2.00	50.00	50.40	0.40	2.50	3.60	1.10
2666	120.00	114.00	-6.00	41.00	40.50	-0.50	4.20	2.90	-1.30
2675	167.00	174.50	8.00	64.00	70.10	6.10	11.00	11.00	0.00
2678	182.50	173.00	-10.00	43.90	65.20	21.30	6.40	6.20	-0.20
2706	120.50	126.00	6.00	40.85	43.20	2.35	4.85	5.10	0.25
3267	166.00	144.00	-22.00	47.90	47.90	0.00	4.50	4.70	0.20

Table continues next page.

Appendix Table B7 (continued). Wilcoxon signed-rank data for shallow Background Network wells, each in separate hexagons. The table contains well number, median indicator concentrations (mg/L) for the E and L period, and the difference between the median (L minus E). Missing data is labeled with an asterisk (*).

Well	K_E	K_L	K_Dif	Mg_E	Mg_L	Mg_Dif	Na_E	Na_L	Na_Dif
8	0.98	1.07	0.09	5.32	5.40	0.08	8.10	8.00	-0.10
46	3.30	3.20	-0.10	51.00	52.10	1.10	23.50	25.30	1.80
902	2.40	3.20	0.80	33.10	52.70	19.60	107.00	209.00	102.00
918	12.00	*	*	15.25	17.80	2.55	10.00	4.60	-5.40
1016	9.50	*	*	29.00	44.80	15.80	315.00	407.00	92.00
1020	0.23	*	*	1.81	1.80	0.00	4.80	5.40	0.60
1038	0.29	*	*	1.20	1.10	-0.10	5.50	8.60	3.10
1053	0.78	*	*	2.77	2.70	-0.06	3.90	3.70	-0.20
1059	*	*	*	*	*	*	3.20	4.00	0.80
1069	0.26	*	*	1.82	2.60	0.78	3.00	3.50	0.50
1071	0.56	*	*	5.23	1.50	-3.73	5.70	3.70	-2.00
1073	1.52	*	*	2.36	2.20	-0.16	4.60	3.80	-0.80
1147	1.70	*	*	2.00	3.00	1.00	11.00	9.20	-1.80
1154	0.20	60.00	*	5.00	5.40	0.40	1.62	3.70	2.08
1160	0.65	1.30	-0.14	6.12	5.10	-1.02	4.30	4.80	0.50
1184	52.65	2.90	-0.07	125.50	224.00	98.50	550.00	1710.00	1160.00
1342	*	*	*	38.90	70.40	31.50	585.00	437.00	-148.00
1363	0.39	*	*	1.07	1.20	0.13	5.30	5.10	-0.20
1377	0.80	*	*	2.30	2.90	0.60	8.82	17.20	8.38
1455	1.94	*	*	4.80	4.40	-0.40	37.00	30.50	-6.50
1460	8.04	*	*	32.90	30.80	-2.10	220.00	269.00	49.00
1504	2.13	*	*	7.44	4.00	-3.44	9.10	9.40	0.30
1506	1.00	1.10	-0.10	8.90	9.10	0.20	19.00	19.00	0.00
1527	1.20	*	*	13.00	14.40	1.40	7.67	8.10	0.43
1587	3.30	*	*	18.00	16.70	-1.30	97.00	87.40	-9.60
1590	2.20	*	*	1.53	1.75	0.22	8.20	4.60	-3.60
1606	0.68	*	*	0.97	0.96	-0.01	4.00	3.20	-0.80
1612	1.43	8.60	-0.20	3.55	5.40	1.85	12.00	16.10	4.10
1639	12.00	*	*	106.00	109.00	3.00	570.00	581.00	11.00
1666	8.80	*	*	83.00	75.40	-7.60	190.00	194.00	4.00
1691	25.00	0.48	-0.09	162.00	182.00	20.00	66.00	1040.00	974.00
1722	0.20	*	*	1.98	2.00	0.02	4.60	2.50	-2.10
1734	0.57	4.10	0.00	4.88	6.98	2.10	83.00	4.80	-78.20
1740	34.00	*	*	180.00	195.00	15.00	2.12	1210.00	1207.88
1878	0.37	0.30	-0.10	1.50	1.63	0.13	16.00	5.60	-10.40
1880	0.78	1.90	-0.09	14.00	14.50	0.50	18.00	12.20	-5.80
1896	1.99	0.98	0.50	2.20	2.53	0.33	3.10	31.00	27.90
1909	0.40	1.80	0.45	5.60	11.80	6.20	5.70	12.20	6.50

Appendix Table B7 (continued). Wilcoxon signed-rank data for shallow Background Network wells, each in separate hexagons. The table contains well number, median indicator concentrations (mg/L) for the E and L period, and the difference between the median (L minus E). Missing data is labeled with an asterisk (*).

Well	K_E	K_L	K_Dif	Mg_E	Mg_L	Mg_Dif	Na_E	Na_L	Na_Dif
1910	0.48	43.00	22.50	1.80	2.09	0.29	26.00	12.90	-13.10
1929	1.35	0.30	0.10	3.80	4.95	1.16	2.25	3.90	1.65
1945	20.50	0.30	0.19	68.50	166.00	97.50	2.64	1290.00	1287.36
1946	0.20	0.30	0.15	3.00	3.84	0.84	5.50	2.70	-2.80
1962	0.11	0.72	-0.03	2.40	3.32	0.92	2.61	2.90	0.29
2037	0.15	0.30	-0.40	1.97	2.00	0.03	2.40	3.00	0.60
2146	0.70	0.62	-0.38	12.00	11.60	-0.40	2.90	4.70	1.80
2151	0.98	0.94	-0.04	13.00	13.30	0.30	2.26	7.30	5.04
2165	0.80	0.30	-0.40	8.50	10.00	1.50	4.20	18.50	14.30
2210	1.00	0.30	0.20	14.00	17.15	3.15	4.02	6.60	2.58
2216	0.70	0.30	0.19	4.15	4.75	0.61	3.60	4.80	1.20
2219	0.10	0.30	-0.70	15.60	15.20	-0.40	1.60	3.20	1.60
2251	0.11	175.00	-5.50	1.25	1.31	0.06	4.90	4.10	-0.80
2260	1.00	1.00	-0.20	1.40	1.69	0.29	2.60	2.00	-0.60
2267	180.50	1.80	-0.35	552.50	634.50	82.00	4.38	5080.00	5075.62
2384	2.15	1.20	0.05	1.00	1.32	0.32	3.50	2.30	-1.20
2412	0.28	0.37	0.02	18.90	21.50	2.60	8.70	3.00	-5.70
2417	0.35	1.30	0.00	23.65	24.90	1.25	2.10	6.90	4.80
2423	1.10	0.34	0.05	18.00	18.95	0.95	6.70	8.80	2.10
2457	0.29	0.30	0.00	2.60	2.68	0.08	4.00	2.10	-1.90
2489	0.10	1.30	-0.20	7.00	10.80	3.80	3.20	2.00	-1.20
2538	0.30	0.30	0.13	*	*	*	10.00	13.30	3.30
2541	1.50	0.46	-0.04	24.80	26.00	1.20	5.62	10.30	4.68
2557	0.17	0.39	0.04	4.96	7.04	2.09	2.50	1.80	-0.70
2567	0.50	1.40	0.09	11.65	13.70	2.05	14.80	3.00	-11.80
2585	0.35	1.10	0.10	11.00	13.65	2.65	2.90	4.20	1.30
2587	1.31	0.62	-0.13	27.50	28.10	0.60	3.00	5.80	2.80
2618	1.00	0.49	0.01	29.10	28.65	-0.45	18.00	8.10	-9.90
2630	0.75	1.10	0.10	25.00	22.20	-2.80	5.10	7.50	2.40
2655	1.00	1.60	0.40	23.00	21.20	-1.80	7.90	3.90	-4.00
2666	0.44	1.70	0.91	4.40	4.89	0.49	20.00	2.90	-17.10
2675	1.20	0.84	0.10	2.00	2.20	0.20	3.30	5.70	2.40
2678	0.79	0.67	0.06	21.70	28.20	6.50	2.60	9.30	6.70
2706	0.61	*	*	6.76	7.20	0.44	7.50	3.00	-4.50
3267	0.65	1.05	0.26	6.79	6.67	-0.12	592.00	2.90	-589.10
3433	0.66	9.40	-1.10	6.89	7.00	0.12	2.90	4.80	1.90

Appendix Table B7 (continued). Wilcoxon signed-rank data for shallow Background Network wells, each in separate hexagons. The table contains well number, median indicator concentrations (mg/L) for the E and L period, and the difference between the median (L minus E). Missing data is labeled with an asterisk (*).

Well	SO4_E	SO4_L	SO4_Dif	TDS_E	TDS_L	TDS_Dif	GWL_E	GWL_L	GWL_Dif
8	0.20	2.10	1.90	406.60	429.57	22.97	6.77	9.38	2.61
46	1.40	1.40	0.00	659.20	672.00	12.80	5.00	9.32	4.32
902	22.00	24.00	2.00	*	*	*	6.03	8.00	1.97
918	2.18	1.30	-0.88	*	*	*	46.11	44.70	-1.41
1016	42.00	45.00	3.00	231.48	248.64	17.16	7.95	8.00	0.05
1020	2.65	7.00	4.35	*	*	*	11.64	10.65	-0.99
1038	12.00	19.00	7.00	*	*	*	24.12	22.10	-2.02
1053	0.20	0.20	0.00	*	*	*	15.96	18.36	2.41
1059	0.80	5.90	5.11	*	*	*	13.61	12.40	-1.21
1069	0.35	6.90	6.56	*	*	*	8.39	9.90	1.51
1071	23.00	4.50	-18.50	*	*	*	16.71	15.20	-1.51
1073	0.20	0.20	0.00	*	*	*	6.64	7.10	0.46
1147	3.15	3.40	0.25	*	*	*	108.13	107.39	-0.73
1154	4.70	5.50	0.80	*	*	*	28.12	29.20	1.08
1160	11.10	10.00	-1.10	579.20	6246.00	5666.80	12.47	13.50	1.03
1184	251.00	485.00	234.00	750.64	598.30	-152.34	9.22	10.65	1.43
1342	160.00	170.00	10.00	*	*	*	0.99	7.14	6.15
1363	0.30	0.20	-0.10	343.19	397.20	54.01	5.56	7.70	2.14
1377	4.90	13.00	8.10	*	*	*	15.94	17.00	1.07
1455	0.34	0.20	-0.14	*	*	*	12.64	11.25	-1.39
1460	37.00	58.00	21.00	*	*	*	37.54	35.54	-2.00
1504	1.75	1.30	-0.45	*	*	*	2.70	4.90	2.20
1506	2.00	2.10	0.10	*	*	*	30.26	28.31	-1.95
1527	79.00	93.00	14.00	*	*	*	26.10	23.75	-2.35
1587	84.00	84.00	0.00	*	*	*	6.65	4.18	-2.47
1590	1.10	4.30	3.20	*	*	*	47.60	49.70	2.10
1606	7.50	6.90	-0.60	988.56	405.05	-583.51	31.34	12.30	-19.04
1612	7.20	16.00	8.80	1991.25	2132.56	141.31	23.93	21.21	-2.72
1639	280.00	290.00	10.00	*	*	*	*	*	*
1666	*	*	*	*	*	*	17.42	18.84	1.42
1691	710.00	680.00	-30.00	1197.70	1305.80	108.10	4.04	21.13	17.09
1722	530.00	0.38	-529.62	2593.05	*	*	18.44	18.30	-0.14
1734	3.20	5.40	2.20	395.53	442.01	46.48	14.52	15.60	1.08
1740	770.00	800.00	30.00	558.20	*	*	12.25	11.89	-0.36
1878	0.20	0.41	0.21	379.70	338.57	-41.13	*	*	*
1880	57.00	67.00	10.00	634.44	2367.00	1732.56	*	*	*
1896	2.40	3.40	1.00	*	*	*	*	*	*
1909	70.00	120.00	50.00	210.68	203.64	-7.04	7.20	75.00	67.80

Appendix Table B7 (continued). Wilcoxon signed-rank data for shallow Background Network wells, each in separate hexagons. The table contains well number, median indicator concentrations (mg/L) for the E and L period, and the difference between the median (L minus E). Missing data is labeled with an asterisk (*).

Well	SO4_E	SO4_L	SO4_Dif	TDS_E	TDS_L	TDS_Dif	GWL_E	GWL_L	GWL_Dif
1910	12.00	17.00	5.00	317.77	324.80	7.03	6.31	9.47	3.16
1929	*	*	*	433.80	421.95	-11.85	*	*	*
1945	143.00	260.00	117.00	*	*	*	5.13	5.31	0.18
1946	2.75	3.70	0.95	*	*	*	36.76	43.10	6.34
1962	3.10	2.60	-0.50	*	*	*	*	*	*
2037	2.75	2.40	-0.35	400.42	388.06	-12.36	19.15	17.14	-2.01
2146	1.90	0.35	-1.55	231.41	205.70	-25.71	3.44	2.30	-1.14
2151	*	*	*	257.21	252.03	-5.17	*	*	*
2165	9.30	11.00	1.70	345.76	370.97	25.21	*	*	*
2210	1.30	3.00	1.70	*	*	*	*	*	*
2216	4.70	2.90	-1.80	*	*	*	4.71	5.20	0.49
2219	0.35	1.00	0.65	2332.43	8635.40	6302.97	34.26	11.87	-22.39
2251	0.35	0.66	0.31	*	*	*	48.05	52.33	4.28
2260	5.00	4.00	-1.00	167.40	151.10	-16.30	28.01	27.35	-0.66
2267	1100.00	1150.00	50.00	*	*	*	5.00	5.13	0.13
2384	1.60	2.20	0.60	440.29	479.27	38.98	*	*	*
2412	0.73	1.50	0.77	261.30	275.70	14.40	24.50	6.18	-18.33
2417	0.34	15.00	14.66	141.90	142.22	0.32	7.50	3.14	-4.36
2423	12.00	11.50	-0.50	285.40	283.30	-2.10	125.08	100.00	-25.08
2457	0.60	0.60	0.00	367.92	373.60	5.68	7.52	4.92	-2.60
2489	0.60	1.50	0.90	*	*	*	21.00	6.35	-14.65
2538	11.00	8.50	-2.50	294.70	371.36	76.66	79.28	82.20	2.92
2541	23.00	23.00	0.00	202.20	227.74	25.54	65.00	75.20	10.20
2557	3.55	4.00	0.45	328.32	337.40	9.08	38.50	34.80	-3.70
2567	17.50	19.00	1.50	397.95	372.80	-25.15	37.49	39.75	2.26
2585	7.45	9.00	1.55	225.15	230.43	5.28	33.51	35.10	1.59
2587	0.31	1.80	1.50	*	*	*	*	*	*
2618	13.00	18.00	5.00	308.65	285.80	-22.85	*	*	*
2630	24.00	14.00	-10.00	192.14	169.29	-22.85	*	*	*
2655	59.00	52.00	-7.00	265.03	382.40	117.37	*	*	*
2666	1.80	2.00	0.20	176.42	192.94	16.52	*	*	*
2675	5.50	7.90	2.40	183.42	187.67	4.25	66.78	87.15	20.37
2678	6.10	94.00	87.90	*	*	*	*	*	*
2706	3.90	4.30	0.40	*	*	*	*	*	*
3267	0.20	1.80	1.60	136.79	115.45	-21.34	*	*	*
3433	1.70	2.30	0.60	789.85	751.45	-38.40	*	*	*

Appendix Table B8. Wilcoxon signed-rank data for deep Background Network wells, each in separate hexagons. The table contains well number, median indicator concentrations (mg/L) for the E and L period, and the difference between the median (L minus E). Missing data is labeled with an asterisk (*).

Well	Alk_E	Alk_L	Alk_Dif	Ca_E	Ca_L	Ca_Dif	Cl_E	Cl_L	Cl_Dif
172	191.00	189.00	-2.00	4.55	4.88	0.33	62.00	65.00	3.00
373	181.00	180.00	-1.00	13.00	12.70	-0.30	3.30	32.00	28.70
378	130.50	134.00	4.00	27.50	28.20	0.70	2.30	2.50	0.20
409	152.00	147.00	-5.00	57.45	59.00	1.55	2.85	5.30	2.45
418	109.00	108.00	-1.00	25.00	25.70	0.70	2.10	3.00	0.90
450	186.00	192.00	6.00	39.00	38.00	-1.00	425.00	390.00	-35.00
520	138.00	143.00	5.00	110.00	108.00	-2.00	46.00	290.00	244.00
544	141.00	148.00	7.00	230.00	239.00	9.00	94.00	28.00	-66.00
605	129.50	131.00	2.00	220.00	218.00	-2.00	46.00	71.00	25.00
615	152.00	152.00	0.00	117.00	113.00	-4.00	350.00	290.00	-60.00
636	175.00	182.00	7.00	90.00	87.40	-2.60	41.00	41.00	0.00
684	67.00	61.00	-6.00	19.00	16.90	-2.10	52.00	53.00	1.00
690	101.00	149.00	48.00	110.00	148.00	38.00	17.00	21.00	4.00
754	128.00	127.00	-1.00	325.00	389.00	64.00	7.40	14.00	6.60
777	152.00	158.00	6.00	84.00	85.30	1.30	9.50	12.00	2.50
793	112.00	128.00	16.00	44.30	44.60	0.30	4.40	8.10	3.70
819	107.00	132.00	25.00	36.70	41.25	4.55	5.10	7.70	2.60
838	156.00	134.00	-22.00	24.20	25.90	1.70	180.00	240.00	60.00
842	129.50	141.00	12.00	140.00	168.00	28.00	9.80	5.60	-4.20
861	173.00	157.00	-16.00	33.20	35.00	1.80	15.50	14.00	-1.50
891	170.00	178.00	8.00	41.00	49.90	8.90	74.00	750.00	676.00
947	128.50	132.00	4.00	54.40	116.00	61.60	43.50	410.00	366.50
951	146.00	161.00	15.00	63.90	63.60	-0.30	17.50	12.00	-5.50
988	262.50	255.00	-8.00	102.50	99.90	-2.60	12.00	12.00	0.00
1036	124.00	130.00	6.00	37.35	44.70	7.35	9.64	11.00	1.36
1041	210.00	216.00	6.00	72.50	68.70	-3.80	3.90	9.30	5.40
1045	103.90	109.00	5.00	38.75	41.60	2.85	9.25	4.80	-4.45
1046	120.00	123.00	3.00	45.00	48.20	3.20	15.00	4.40	-10.60
1066	210.00	202.00	-8.00	79.00	75.80	-3.20	*	*	*
1134	185.50	179.00	-7.00	67.80	70.70	2.90	4.85	6.40	1.55
1140	193.50	187.00	-7.00	74.30	72.40	-1.90	8.70	8.00	-0.70
1195	126.00	116.00	-10.00	210.50	178.00	-32.50	*	*	*
1221	249.50	234.00	-16.00	93.40	93.50	0.10	7.15	7.40	0.25
1251	120.00	125.00	5.00	42.30	44.80	2.50	8.45	8.40	-0.05
1266	268.00	265.00	-3.00	86.00	85.00	-1.00	19.00	15.00	-4.00
1267	160.00	162.00	2.00	45.60	48.80	3.20	5.65	6.30	0.65
1293	147.00	152.00	5.00	52.30	57.10	4.80	1000.00	1100.00	100.00
1358	118.00	142.00	24.00	157.90	173.00	15.10	7.80	8.10	0.30

Appendix Table B8 (continued). Wilcoxon signed-rank data for deep Background Network wells, each in separate hexagons. The table contains well number, median indicator concentrations (mg/L) for the E and L period, and the difference between the median (L minus E). Missing data is labeled with an asterisk (*).

Well	Alk_E	Alk_L	Alk_Dif	Ca_E	Ca_L	Ca_Dif	Cl_E	Cl_L	Cl_Dif
1362	139.00	160.00	21.00	53.60	53.00	-0.60	6.70	110.00	103.30
1375	152.00	163.00	11.00	209.00	218.00	9.00	9.84	9.20	-0.64
1389	229.50	259.00	30.00	75.65	79.00	3.35	12.50	12.00	-0.50
1522	129.00	164.00	35.00	480.50	390.00	-90.50	100.00	86.00	-14.00
1580	*	*	*	*	*	*	37.00	35.00	-2.00
1751	118.00	120.00	2.00	230.00	248.00	18.00	10.00	10.00	0.00
1777	144.00	150.00	6.00	65.50	79.50	14.00	142.00	140.00	-2.00
1779	158.50	159.00	1.00	34.50	35.60	1.10	37.00	35.00	-2.00
1787	141.00	124.00	-17.00	73.00	57.00	-16.00	180.00	170.00	-10.00
1788	124.50	127.00	3.00	33.50	34.80	1.30	4.60	5.00	0.40
1841	157.50	166.00	9.00	49.50	53.40	3.90	460.00	470.00	10.00
1842	158.00	166.00	8.00	66.00	65.95	-0.05	445.00	450.00	5.00
1844	155.00	160.50	6.00	66.00	64.35	-1.65	1800.00	2000.00	200.00
1850	158.00	166.00	8.00	65.00	64.30	-0.70	3.70	3.70	0.00
2115	174.50	169.00	-6.00	64.50	71.50	7.00	*	*	*
2305	130.00	136.00	6.00	38.00	38.20	0.20	7.50	8.30	0.80
2414	167.50	181.00	14.00	44.50	43.95	-0.55	9.30	11.00	1.70
2426	170.00	175.00	5.00	48.00	46.70	-1.30	6.80	7.50	0.70
2492	148.00	159.00	11.00	56.50	60.00	3.50	*	*	*
2645	152.00	154.00	2.00	50.40	53.00	2.60	5.41	9.70	4.29
2705	122.00	130.00	8.00	32.10	36.10	4.00	2.20	3.20	1.00
3084	70.50	74.00	4.00	42.00	270.00	228.00	4.40	7.90	3.50
3091	*	*	*	*	*	*	720.00	730.00	10.00
3112	120.00	122.00	2.00	160.00	160.00	0.00	*	*	*
3115	193.00	158.00	-35.00	70.10	65.00	-5.10	*	*	*
3117	146.00	157.00	11.00	126.50	103.00	-23.50	*	*	*
3118	106.00	108.00	2.00	94.00	98.80	4.80	*	*	*
3159	166.00	172.00	6.00	80.00	81.50	1.50	*	*	*
3191	266.00	139.00	-127.00	70.00	66.50	-3.50	*	*	*
3195	115.00	112.00	-3.00	54.00	58.10	4.10	6.40	6.90	0.50
3199	181.00	208.00	27.00	37.00	31.20	-5.80	8.20	6.90	-1.30
3265	177.50	312.00	135.00	65.50	112.00	46.50	5.25	5.20	-0.05
3268	90.50	104.50	14.00	37.80	36.05	-1.75	3.80	4.10	0.30
3437	88.40	82.00	-6.00	15.20	15.40	0.20	3.30	3.30	0.00
3444	166.00	100.50	-66.00	52.10	34.00	-18.10	39.50	960.00	920.50
3447	176.00	145.00	-31.00	86.00	91.30	5.30	720.00	730.00	10.00

Table continues next page.

Appendix Table B8 (continued). Wilcoxon signed-rank data for deep Background Network wells, each in separate hexagons. The table contains well number, median indicator concentrations (mg/L) for the E and L period, and the difference between the median (L minus E). Missing data is labeled with an asterisk (*).

Well	K_E	K_L	K_Dif	Mg_E	Mg_L	Mg_Dif	Na_E	Na_L	Na_Dif
172	5.95	5.50	-0.45	2.70	3.13	0.43	120.00	120.00	0.00
373	4.70	*	*	7.50	7.60	0.10	74.00	64.50	-9.50
378	1.95	*	*	15.00	14.70	-0.30	3.90	3.40	-0.50
409	0.39	0.34	-0.05	1.84	1.84	0.01	3.33	3.10	-0.23
418	1.10	1.00	-0.10	12.50	12.60	0.10	1.70	1.80	0.10
450	5.60	*	*	20.00	20.00	0.00	6.90	6.00	-0.90
520	19.00	*	*	76.00	78.20	2.20	270.00	288.00	18.00
544	6.80	7.00	0.20	130.00	123.00	-7.00	110.00	123.00	13.00
605	5.60	*	*	89.00	88.20	-0.80	31.00	33.20	2.20
615	4.23	4.06	-0.17	58.70	60.05	1.35	60.00	38.80	-21.20
636	3.00	*	*	43.00	42.20	-0.80	21.00	21.60	0.60
684	1.00	0.69	-0.31	4.40	4.57	0.17	5.20	4.80	-0.40
690	6.60	*	*	69.00	85.30	16.30	35.00	35.50	0.50
754	4.20	*	*	126.00	125.00	-1.00	12.00	13.10	1.10
777	3.10	2.40	-0.70	35.00	36.20	1.20	26.00	14.80	-11.20
793	1.00	*	*	14.70	14.50	-0.20	8.66	7.50	-1.16
819	1.12	0.78	-0.34	14.30	15.35	1.05	10.30	10.20	-0.10
838	2.32	*	*	15.20	14.70	-0.50	16.30	13.30	-3.00
842	2.20	2.40	0.20	63.00	70.60	7.60	51.00	72.80	21.80
861	2.53	*	**	14.10	14.30	0.20	6.60	6.30	-0.30
891	7.20	*	*	9.30	15.50	6.20	23.00	8.90	-14.10
947	0.91	*	*	5.91	14.30	8.39	12.00	166.00	154.00
951	0.40	0.38	-0.02	2.04	2.06	0.02	5.10	5.10	0.00
988	1.08	*	*	9.98	10.00	0.03	8.40	7.40	-1.00
1036	1.08	*	*	9.95	11.00	1.05	5.00	5.60	0.60
1041	1.35	*	*	6.00	5.70	-0.30	11.00	14.60	3.60
1045	0.84	*	*	0.76	0.82	0.06	3.40	3.10	-0.30
1046	1.60	*	*	1.30	1.40	0.10	3.10	3.10	0.00
1066	*	*	*	2.70	2.50	-0.20	5.60	4.60	-1.00
1134	0.29	*	*	1.31	1.30	0.00	4.60	4.70	0.10
1140	0.18	*	*	2.21	2.40	0.20	4.70	4.90	0.20
1195	*	*	*	35.90	29.00	-6.90	9.84	9.20	-0.64
1221	1.44	*	*	17.10	17.80	0.70	8.20	8.70	0.50
1251	2.97	*	*	21.20	24.00	2.80	59.70	62.90	3.20
1266	1.65	*	*	6.79	7.40	0.62	40.00	37.70	-2.30
1267	12.75	*	*	45.65	47.80	2.15	143.00	168.00	25.00
1293	4.55	*	*	36.85	38.70	1.85	80.00	87.50	7.50
1358	13.35	*	*	101.00	116.00	15.00	650.00	760.00	110.00

Appendix Table B8 (continued). Wilcoxon signed-rank data for deep Background Network wells, each in separate hexagons. The table contains well number, median indicator concentrations (mg/L) for the E and L period, and the difference between the median (L minus E). Missing data is labeled with an asterisk (*).

Well	K_E	K_L	K_Dif	Mg_E	Mg_L	Mg_Dif	Na_E	Na_L	Na_Dif
1362	1.77	*	*	12.50	12.10	-0.40	20.80	21.20	0.40
1375	26.00	1.60	-1.62	117.00	120.00	3.00	810.00	860.00	50.00
1389	3.22	8.70	0.66	11.95	13.75	1.80	7.26	7.30	0.04
1522	182.00	0.96	-0.02	624.50	487.00	-137.50	4040.00	4370.00	330.00
1580	0.98	1.70	-0.50	*	*	*	27.00	28.70	1.70
1751	4.10	1.31	-0.34	92.00	99.60	7.60	6.80	86.60	79.80
1777	2.35	*	*	34.00	41.40	7.40	7.20	53.70	46.50
1779	1.65	*	*	15.50	15.90	0.40	3.43	8.20	4.77
1787	3.20	*	*	32.00	26.40	-5.60	63.00	14.90	-48.10
1788	1.60	*	*	13.50	14.30	0.80	17.00	9.60	-7.40
1841	1.70	1.60	-0.60	30.50	34.10	3.60	14.00	15.90	1.90
1842	2.60	*	*	28.00	28.05	0.05	9.20	16.10	6.90
1844	2.20	0.30	-0.07	32.00	30.85	-1.15	11.00	17.60	6.60
1850	1.80	1.00	0.22	32.00	31.40	-0.60	13.00	18.70	5.70
2115	0.75	0.88	0.08	8.65	12.50	3.85	5.20	8.10	2.90
2305	1.20	0.30	0.02	15.50	15.10	-0.40	7.10	18.10	11.00
2414	1.15	1.20	0.10	19.00	20.00	1.00	3.30	8.40	5.10
2426	1.30	0.30	0.20	*	*	*	2.35	9.80	7.45
2492	*	*	*	3.90	4.51	0.61	10.00	2.40	-7.60
2645	0.48	0.30	-0.14	7.88	8.54	0.66	2.90	3.50	0.60
2705	0.74	*	*	8.88	10.40	1.53	3.20	3.30	0.10
3084	1.35	8.25	0.55	19.00	157.00	138.00	585.00	507.00	-78.00
3091	*	*	*	*	*	*	901.00	398.00	-503.00
3112	*	*	*	129.50	130.00	0.50	76.00	669.00	593.00
3115	*	*	*	63.40	65.20	1.80	11.00	218.00	207.00
3117	*	*	*	122.50	111.00	-11.50	400.00	472.00	72.00
3118	*	*	*	81.20	84.90	3.70	325.00	403.00	78.00
3159	*	*	*	77.70	76.50	-1.20	648.00	590.00	-58.00
3191	*	*	*	8.91	46.10	37.19	1700.00	107.00	-1593.00
3195	7.70	1.50	-2.60	40.80	42.30	1.50	865.00	195.00	-670.00
3199	5.00	0.66	0.01	40.00	38.70	-1.30	656.00	37.90	-618.10
3265	4.10	0.66	-0.11	6.10	6.39	0.30	410.00	26.80	-383.20
3268	0.77	0.67	0.01	6.05	6.17	0.12	25.00	5.10	-19.90
3437	1.10	11.00	1.00	8.37	8.30	-0.07	70.00	3.40	-66.60
3444	10.50	*	*	45.95	34.65	-11.30	65.30	185.00	119.70
3447	10.00	*	*	61.10	63.90	2.80	4.50	331.00	326.50

Table continues next page.

Appendix Table B8 (continued). Wilcoxon signed-rank data for deep Background Network wells, each in separate hexagons. The table contains well number, median indicator concentrations (mg/L) or groundwater levels (ft) for the E and L period, and the difference between the median (L minus E). Missing data is labeled with an asterisk (*).

Well	SO4_E	SO4_L	SO4_Dif	TDS_E	TDS_L	TDS_Dif	GWL_E	GWL_L	GWL_Dif
172	7.60	13.00	5.40	393.80	400.51	6.71	66.00	93.64	27.64
373	5.10	5.20	0.10	*	*	*	*	*	*
378	7.85	7.70	-0.15	*	*	*	141.36	188.40	47.05
409	3.55	4.10	0.55	221.40	220.68	-0.72	13.75	30.05	16.30
418	7.85	7.90	0.05	*	*	*	*	*	*
450	7.90	7.50	-0.40	159.25	160.00	0.75	104.52	50.00	-54.52
520	450.00	460.00	10.00	*	*	*	*	*	*
544	800.00	790.00	-10.00	*	*	*	*	*	*
605	815.00	830.00	15.00	1511.80	1458.00	-53.80	7.07	14.70	7.64
615	370.00	360.00	-10.00	*	*	*	*	*	*
636	230.00	220.00	-10.00	*	*	*	14.14	15.55	1.41
684	1.40	0.99	-0.41	*	*	*	39.91	42.70	2.79
690	490.00	580.00	90.00	*	*	*	22.67	42.00	19.33
754	1350.00	1400.00	50.00	*	*	*	66.40	65.65	-0.75
777	200.00	200.00	0.00	*	*	*	13.79	19.15	5.37
793	41.00	42.00	1.00	*	*	*	95.00	100.00	5.00
819	41.00	39.50	-1.50	*	*	*	80.26	70.70	-9.56
838	5.70	6.00	0.30	*	*	*	58.27	57.60	-0.67
842	370.00	370.00	0.00	*	*	*	8.80	7.75	-1.05
861	0.84	0.67	-0.17	*	*	*	44.83	56.78	11.96
891	5.20	6.80	1.60	771.20	838.80	67.60	29.42	28.00	-1.42
947	3.15	7.10	3.95	*	*	*	89.11	91.00	1.89
951	2.05	4.50	2.45	*	*	*	14.59	16.91	2.33
988	*	*	*	*	*	*	8.69	6.21	-2.48
1036	11.95	12.00	0.05	195.94	191.00	-4.94	10.23	12.10	1.88
1041	0.20	0.20	0.00	*	*	*	11.92	9.91	-2.01
1045	0.56	0.22	-0.34	*	*	*	36.45	33.60	-2.85
1046	0.30	0.23	-0.07	*	*	*	11.75	14.60	2.85
1066	315.00	240.00	-75.00	*	*	*	*	*	*
1134	2.15	3.50	1.35	*	*	*	10.18	18.60	8.42
1140	1.85	9.50	7.65	*	*	*	*	*	*
1195	545.00	400.00	-145.00	*	*	*	30.37	32.30	1.94
1221	71.00	73.00	2.00	*	*	*	34.50	38.85	4.36
1251	79.00	76.00	-3.00	*	*	*	14.65	14.90	0.25
1266	2.85	0.44	-2.41	*	*	*	11.93	13.20	1.27
1267	110.00	120.00	10.00	*	*	*	*	*	*
1293	88.50	85.00	-3.50	*	*	*	*	*	*
1358	145.00	150.00	5.00	*	*	*	*	*	*

Appendix Table B8 (continued). Wilcoxon signed-rank data for deep Background Network wells, each in separate hexagons. The table contains well number, median indicator concentrations (mg/L) or groundwater levels (ft) for the E and L period, and the difference between the median (L minus E). Missing data is labeled with an asterisk (*).

Well	SO4_E	SO4_L	SO4_Dif	TDS_E	TDS_L	TDS_Dif	GWL_E	GWL_L	GWL_Dif
1362	23.00	21.00	-2.00	*	*	*	23.06	24.20	1.14
1375	510.00	500.00	-10.00	*	*	*	*	*	*
1389	1.61	0.55	-1.07	*	*	*	36.91	36.68	-0.23
1522	1450.00	1100.00	-350.00	*	*	*	14.98	11.55	-3.43
1580	24.00	22.00	-2.00	*	*	*	10.55	6.89	-3.66
1751	740.00	740.00	0.00	221.35	*	*	6.23	6.71	0.48
1777	140.00	160.00	20.00	368.20	*	*	*	*	*
1779	1.95	2.00	0.05	373.80	*	*	75.47	78.03	2.56
1787	170.00	150.00	-20.00	407.20	*	*	26.90	33.25	6.35
1788	25.00	23.00	-2.00	416.80	419.22	2.42	*	*	*
1841	100.00	100.00	0.00	371.87	374.28	2.41	*	*	*
1842	100.00	97.00	-3.00	598.78	617.70	18.92	83.09	84.85	1.76
1844	120.00	115.00	-5.00	249.21	224.32	-24.89	*	*	*
1850	120.00	120.00	0.00	403.49	451.83	48.34	*	*	*
2115	38.00	48.00	10.00	*	*	*	*	*	*
2305	31.00	27.00	-4.00	307.23	268.25	-38.98	*	*	*
2414	11.25	8.40	-2.85	288.99	288.60	-0.39	*	*	*
2426	25.00	25.00	0.00	227.90	235.11	7.21	*	*	*
2492	5.00	6.00	1.00	385.50	308.84	-76.66	*	*	*
2645	3.30	4.00	0.70	246.80	266.10	19.30	*	*	*
2705	5.50	4.10	-1.40	*	*	*	*	*	*
3084	115.00	860.00	745.00	*	*	*	*	*	*
3091	370.00	360.00	-10.00	*	*	*	*	*	*
3112	580.00	560.00	-20.00	*	*	*	*	*	*
3115	175.00	170.00	-5.00	*	*	*	*	*	*
3117	245.00	230.00	-15.00	2216.80	3551.25	1334.45	*	*	*
3118	390.00	380.00	-10.00	2069.15	734.70	-1334.45	*	*	*
3159	220.00	210.00	-10.00	703.27	585.50	-117.77	*	*	*
3191	0.20	180.00	179.80	1652.50	895.65	-756.85	*	*	*
3195	220.00	190.00	-30.00	716.10	492.09	-224.01	*	*	*
3199	110.00	76.00	-34.00	818.14	208.43	-609.71	*	*	*
3265	1.90	1.40	-0.50	178.37	169.38	-8.99	8.00	8.31	0.31
3268	11.50	9.90	-1.60	109.45	112.87	3.42	*	*	*
3437	0.49	0.61	0.12	1207.60	1432.20	224.60	*	*	*
3444	140.00	62.90	-77.10	168.32	*	*	*	*	*
3447	170.00	150.00	-20.00	235.82	574.50	338.68	*	*	*

Appendix Table B9. Wilcoxon signed-rank chloride data for 55 coastal and 83 Inland Background Network wells, each in separate hexagons. The table contains well number, median indicator concentrations (mg/L) for the E and L period, and the difference between the median (L minus E) for coastal (Cst) and inland (In) wells. Missing data is labeled with an asterisk (*).

Well	Cl_Cst_E	Cl_Cst_L	Cl_Cst_Dif	Well	Cl_In_E	Cl_In_L	Cl_In_Dif
8	13.00	13.00	0.00	409	2.85	5.30	2.45
46	110.00	110.00	0.00	450	2.10	3.00	0.90
172	62.00	65.00	3.00	793	12.00	11.00	-1.00
373	3.30	32.00	28.70	777	7.40	14.00	6.60
378	2.30	2.50	0.20	819	9.50	12.00	2.50
520	425.00	390.00	-35.00	830	4.40	8.10	3.70
544	46.00	290.00	244.00	838	5.10	7.70	2.60
605	94.00	28.00	-66.00	861	9.80	5.60	-4.20
615	46.00	71.00	25.00	891	15.50	14.00	-1.50
690	41.00	41.00	0.00	918	6.70	8.80	2.10
754	17.00	21.00	4.00	1020	8.90	14.00	5.10
777	19.00	19.00	0.00	1036	9.64	11.00	1.36
842	180.00	240.00	60.00	1041	9.25	4.80	-4.45
902	74.00	750.00	676.00	1042	15.00	4.40	-10.60
947	43.50	410.00	366.50	1045	3.40	3.10	-0.30
988	17.50	12.00	-5.50	1046	3.10	3.10	0.00
998	12.00	12.00	0.00	1053	5.66	5.70	0.04
1016	520.00	780.00	260.00	1059	5.40	6.40	1.00
1028	15.00	10.00	-5.00	1064	4.85	6.40	1.55
1030	3.90	9.30	5.40	1066	8.70	8.00	-0.70
1069	8.90	9.60	0.70	1071	7.70	6.30	-1.40
1184	1320.00	3400.00	2080.00	1073	6.80	6.90	0.10
1267	310.00	170.00	-140.00	1134	7.15	7.40	0.25
1293	19.00	15.00	-4.00	1140	8.45	8.40	-0.05
1342	1800.00	1800.00	0.00	1154	5.65	6.30	0.65
1358	1545.00	1500.00	-45.00	1160	7.80	8.10	0.30
1377	14.00	36.00	22.00	1195	9.84	9.20	-0.64
1522	142.00	140.00	-2.00	1221	12.50	12.00	-0.50
1612	6.70	110.00	103.30	1251	99.00	100.00	1.00
1587	180.00	170.00	-10.00	1266	49.50	41.00	-8.50
1639	460.00	470.00	10.00	1362	34.00	35.00	1.00
1666	445.00	450.00	5.00	1363	8.50	10.00	1.50
1691	1800.00	2000.00	200.00	1375	1700.00	1700.00	0.00
1740	2200.00	2300.00	100.00	1389	12.00	12.00	0.00
1751	180.00	220.00	40.00	1460	500.00	460.00	-40.00
1777	76.00	130.00	54.00	1527	10.00	10.00	0.00
1787	15.00	15.00	0.00	1580	37.00	35.00	-2.00

Appendix Table B9. Wilcoxon signed-rank chloride data for 55 coastal and 83 Inland Background Network wells, each in separate hexagons (continued). The table contains well number, median indicator concentrations (mg/L) for the E and L period, and the difference between the median (L minus E) for coastal (Cst) and inland (In) wells. Missing data is labeled with an asterisk (*).

Well	Cl_Cst_E	Cl_Cst_L	Cl_Cst_Dif	Well	Cl_In_E	Cl_In_L	Cl_In_Dif
1841	21.00	23.00	2.00	1606	4.60	5.00	0.40
1878	7.50	7.30	-0.20	1722	3.70	3.70	0.00
1878	7.80	10.00	2.20	1734	6.80	7.50	0.70
1880	21.00	21.00	0.00	1779	6.25	6.20	-0.05
1891	2.10	2.00	-0.10	1788	10.00	9.90	-0.10
1910	9.30	13.00	3.70	1842	27.00	27.00	0.00
2219	4.65	5.60	0.95	1844	26.00	27.00	1.00
2267	8600.00	8400.00	-200.00	1850	27.00	28.00	1.00
2384	5.65	6.60	0.95	1929	7.50	8.30	0.80
2417	11.00	12.00	1.00	1962	5.50	5.30	-0.20
3115	445.00	460.00	15.00	2037	9.30	11.00	1.70
3116	1825.00	1800.00	-25.00	2115	11.95	11.00	-0.95
3267	4.60	4.50	-0.10	2151	12.00	12.00	0.00
3268	6.75	7.00	0.25	2165	52.00	54.00	2.00
3432	8.70	10.00	1.30	2210	6.80	7.50	0.70
3433	7.00	7.70	0.70	2251	7.05	5.40	-1.65
3437	4.60	5.20	0.60	2412	5.35	5.30	-0.05
3444	310.00	325.00	15.00	2414	18.00	8.10	-9.90
				2423	8.62	9.60	0.98
				2426	5.41	9.70	4.29
				2457	2.50	3.60	1.10
				2489	4.20	2.90	-1.30
				2538	11.00	11.00	0.00
				2541	6.40	6.20	-0.20
				2557	2.20	3.20	1.00
				2567	4.85	5.10	0.25
				2585	4.40	7.90	3.50
				2587	6.40	6.90	0.50
				2630	8.20	6.90	-1.30
				2645	5.25	5.20	-0.05
				2655	4.50	4.70	0.20
				2666	3.80	4.10	0.30
				2675	7.44	11.00	3.56
				2678	4.00	8.20	4.20
				2705	3.30	3.30	0.00
				3084	39.50	960.00	920.50

Appendix Table B9. Wilcoxon signed-rank chloride data for 55 coastal and Inland 83 Background Network wells, each in separate hexagons (continued). The table contains well number, median indicator concentrations (mg/L) for the E and L period, and the difference between the median (L minus E) for coastal (Cst) and inland (In) wells. Missing data is labeled with an asterisk (*).

Well	Cl_In_E	Cl_In_L	Cl_In_Dif
3091	720.00	730.00	10.00
3117	1000.00	1100.00	100.00
3118	700.00	710.00	10.00
3159	1000.00	1100.00	100.00
3191	19.00	190.00	171.00
3194	100.00	86.00	-14.00
3195	350.00	290.00	-60.00
3199	52.00	53.00	1.00
3265	51.00	32.00	-19.00

Appendix Table B10. Wilcoxon signed-rank chloride data for 10 coastal and 11 inland springs, each in separate hexagons, for 10 coastal and 11 inland selected springs, each in separate hexagons. Concentrations are in mg/L. WMD: water management district. E: early period. L: late period. Missing data are labeled with an asterisk (*).

Coastal Springs					Inland Springs				
WMD	**Spring**	**Cl_E**	**Cl_L**	**Cl_Dif**	**WMD**	**Spring**	**Cl_E**	**Cl_L**	**Cl_Dif**
NW	WAK[1]	7.70	8.65	0.95	**NW**	JKBL	3.90	4.30	0.40
SR	MAN	6.00	8.70	2.70	SR	ALR	7.00	7.60	0.60
SR	FAN	7.50	10.45	2.95	SR	RKB	4.20	5.50	1.30
SW	BETJ	53.00	176.00	123.00	SR	HAR	1.50	8.30	6.8
SW	BOAT	207.00	290.00	83.00	SR	HOR	12.40	13.50	1.10
SW	BOBH	6.40	6.40	0.00	SR	LBS	9.00	9.65	0.65
SW	CATF	34.00	89.00	55.00	SR	SBS	7.00	6.70	-0.30
SW	CHSM	432.00	955.00	523.00	SR	TRY	5.55	5.90	0.35
SW	HOM2	1670.00	1835.00	165.00	SW	BUCK	31.00	28.85	-2.15
SW	HSALT	2362.00	2865.00	503.00	SW	RNB6	6.63	7.70	1.07
					SW	WEEK	5.80	8.40	2.60

Appendix C. Statewide Precipitation Data

Table C1. Florida mean annual precipitation data

Appendix Table C1. Florida mean annual precipitation data. The table contains statewide mean annual precipitation (in/yr) data for: (a) pre-study (1931-1990), (b) study (1991-2011), and (c) post-study (2012-2019. Data obtained from Southeast Regional Climate Center (2020).

Pre-Study: Baseline				Study		Post-Study	
Year	**Mean**	**Year**	**Mean**	**Year**	**Mean**	**Year**	**Mean**
1931	42.48	1961	44.39	1991	62.61	2012	55.09
1932	53.69	1962	48.65	1992	56.18	2013	56.87
1933	54.81	1963	51.03	1993	49.92	2014	59.13
1934	53.03	1964	63.44	1994	64.77	2015	52.86
1935	52.70	1965	54.69	1995	59.10	2016	53.41
1936	57.76	1966	57.60	1996	53.96	2017	58.63
1937	57.71	1967	47.69	1997	59.65	2018	60.52
1938	42.90	1968	52.27	1998	57.05	2019	52.02
1939	53.57	1969	60.41	1999	49.69		
1940	51.67	1970	53.11	2000	40.29		
1941	59.09	1971	48.64	2001	52.21		
1942	53.44	1972	52.07	2002	58.49		
1943	48.93	1973	56.42	2003	58.77		
1944	53.19	1974	48.49	2004	57.22		
1945	55.51	1975	55.15	2005	59.48		
1946	54.28	1976	51.63	2006	41.00		
1947	72.94	1977	48.01	2007	43.72		
1948	63.27	1978	53.33	2008	53.13		
1949	55.15	1979	59.85	2009	53.76		
1950	47.83	1980	49.29	2010	48.12		
1951	50.33	1981	44.47	2011	46.77		
1952	49.54	1982	61.32				
1953	67.33	1983	64.89				
1954	45.01	1984	49.34				
1955	42.40	1985	52.34				
1956	43.94	1986	52.36				
1957	61.44	1987	52.81				
1958	57.23	1988	52.54				
1959	70.80	1989	48.70				
1960	63.16	1990	42.61				

Appendix D. Hydrologic Conditions Data

Appendix Table D1. Hydrologic Conditions. Florid mean annual precipitation, median groundwater level data for the Trend Network, and median spring discharge data. Precipitation is from the Southeast Regional Climate Center (2014).

Year	Mean Annual Statewide Precipitation (in/yr)	Median GW Levels of Trend Network ft above NAVD 88	Median Spring Discharge
1991	62.61	42.13	39.79
1992	56.18	40.72	44.48
1993	49.92	42.29	39.11
1994	64.77	44.42	55.70
1995	59.10	44.79	60.83
1996	53.96	42.42	66.59
1997	59.65	42.42	39.40
1998	57.05	43.64	68.46
1999	49.69	33.93	55.81
2000	40.29	37.34	46.00
2001	52.21	36.48	39.75
2002	58.49	35.07	35.54
2003	58.77	39.44	67.13
2004	57.22	38.39	53.54
2005	59.48	45.08	67.16
2006	41.00	40.82	60.10
2007	43.72	35.80	32.40
2008	53.13	35.17	37.51
2009	53.76	37.67	41.77
2010	48.12	38.45	44.12
2011	46.77	35.73	28.40

Appendix E. Description of Data Editing Process and Data Qualifiers

Spring data were retrieved from WMD databases. Well data were retrieved from the Generalized Water Information System (GWIS) operated by the Watershed Monitoring Section (WMS) of FDEP in Tallahassee, Florida. GWIS houses all data generated by WMS since the late 1980s. Data were restricted to the period, January 1, 1991 through December 31, 2011. All data qualified with the qualifiers in Table below with "G", "O", "Y", or "?" were eliminated from further analyses. Both spring and well data were then re-structured into a format compatible with the appropriate software. If two data records were labeled as duplicates, the first one encountered was used for analysis.

Appendix Table E1. **State of Florida Data Value Qualifiers** from Quality Assurance Rule [Florida Administrative Coe 62-160.700 Table 1 (Data Qualifier Codes)].

Code	Meaning
A	Value reported is the arithmetic mean (average) of two or more determinations.
B	Results based upon colony counts outside the acceptable range. This code applies to microbiological tests and specifically to membrane filter colony counts. The code is to be used if the colony count is generated from a plate in which the total number of coliform colonies is outside the method indicated ideal range.
G	Indicates that the analyte was detected at or above the method detection limit in both the sample and the associated field collected blank, and the value of the blank is greater than 10% of the associated sample value.
I	The reported value is greater than or equal to the laboratory method detection limit but less than the laboratory practical quantification limit.
J	Estimate value. **Shall be accompanied by a detailed explanation** to justify the reason(s) for designating the value as estimated. Examples of situations in which a "J" code must be reported include: instances where a quality control item associated with the reported value failed to meet the established quality control criteria (the specific failure must be identified); instances when the sample matrix interfered with the ability to make any accurate determination; instances when data are questionable because of improper laboratory or field protocols (e.g., composite sample was collected instead of a grab sample); instances when the analyte was detected at or above the method detection limit in an analytical laboratory blank other than the method blank (such as calibration blank) and the value the blank is greater than 10% of the associated sample value; or instances when the field or laboratory calibrations or calibration verifications did not meet calibration acceptance criteria.
K	Off-scale low. The actual value is known to be less than the value given. (Only used for lab analyses.)
L	Off-scale high. The actual value is known to be greater than the value given. (Only used for lab analyses.)
N	Presumptive evidence of presence of material; component tentatively identified based on mass spectral library search or there is an indication that the analyte is present, but quality control requirements for the confirmation were not met.
O	Sampled but analysis lost or not performed.
Q	Sample held beyond the accepted holding time. Value is derived from a sample that was prepared or analyzed after the approved holding time restrictions for sample preparation or analysis.
R	Significant rain (typically in excess of ½ inch) in the past 48 hours, which might contribute to a lower or higher than normal value.
S	Secchi disk visible to bottom of waterbody. The value reported is the depth of the waterbody at the location of the Secchi disk measurement.
T	Value reported is less than the laboratory method detection limit. Value reported for informational purposes only and shall not be used in statistical analysis.

Appendix Table E.1. **State of Florida Data Value Qualifiers (continued)**. From Quality Assurance Rule [Florida Administrative Coe 62-160.700 Table 1 (Data Qualifier Codes)].

Code	Meaning
U	Indicates that the compound was analyzed for but not detected. The reported value shall be the method detection limit.
V	Indicates that the analyte was detected at or above the method detection limit in both the sample and the associated method blank and the blank value was greater than 10% of the associated sample value.
X	Indicates, when reporting results from a Stream Condition Index Analysis (LT 7200 and FS 7420), that insufficient individuals were present in the sample to achieve a minimum of 280 organisms for identification (the method calls for two aliquots of 140-160 organisms), suggesting either extreme environmental stress or a sampling error.
Y	The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
Z	Too many colonies were present for accurate counting. Historically, this condition has been reported as “too numerous to count” (TNTC). The “Z” qualifier code shall be reported when the total number of colonies of all types is more than 200 in all dilutions of the sample tested using a membrane filter technique. When applicable to the observed test results, a numeric value for the colony count for the microorganism tested may be estimated from the highest dilution factor (smallest sample volume) used for the test and reported with the qualifier code.
!	Indicates that the reported value deviates from historically established concentration ranges.
?	Data are rejected and should not be used. Some or all of the quality control data for the analyte were outside criteria, and the presence or absence of the analyte cannot be determined from the data.

Appendix F. Derivations of Pertinent Areas Urban Land Use Percentage

The study includes 59 of Florida's 67 counties. First, the area of Florida was determined. Once determined, the area of the eight counties was subtracted from the total.

To obtain the total area of Florida from an authoritative source, the authors requested GIS layers that would be the best sources of this information from the GIS coordinator for the Watershed Monitoring Section at the FDEP. Two sources were provided consisting of the base layer for "Florida Counties and Shorelines - Areas" and the "Statewide Land Use and Land Cover (2004 to 2017)" layer. Because various layers exist for the state to represent either a political or geographical extent of the total area of Florida, published values for areas on official websites can vary. Therefore, it was necessary to compare the differences between these two supplied layers and choose the layer which best represented the State of Florida.

The base layer for "Florida Counties and Shorelines - Areas" has a total area of Florida of 56,393.86 square miles. However, upon inspection of the layer, it was noted that the layer contains some gaps in areas around the St. John's River, is missing Deer Point Lake, and portions of the Caloosahatchee River. For some island areas, the representation is too small or does not match aerial imagery sources. For comparison, this value was also less than the value reported on the Florida Department of State website (58,560 square miles). Reviewing the "Statewide Land Use and Land Cover (2004 to 2017)" layer (Florida Department of Environmental Protection, 2019c), representations for the Atlantic Ocean and the Gulf of Mexico had been included as a land cover layer but are not part of Florida. This layer has a total area of Florida of 61,103.65 square miles. This layer is also updated more frequently than the base layer for the Florida counties and more closely matches the period for the report. By removing the oceans land cover classifications, the basis for total area for Florida is 57,481 square miles. Therefore, this derived value was included in the discussions and calculations for this report.

The official areas of the eight counties (U.S. Census Bureau, 2018) excluded from this report are found in **Appendix Table Appendix F1.** The percentage of urban/suburban land use in Florida (14.21%) is found in **Appendix Table F2.**

Appendix Table F1. Areas of counties excluded from study.

County	Area (Hectares)	Area (Square Miles)
Escambia	226,625	875
Santa Rosa	304,066	1,174
Broward	342,657	1,323
Collier	596,995	2,305
Hendry	308,210	1,190
Miami-Dade	629,629	2,431
Monroe	968,142	3,738
Palm Beach	617,197	2,383
Total	3,993,521	15,419

Appendix Table F2. Percentages of Urban/Suburban and Non-Urban/Suburban Land Use Categories Area of Florida. Non-Urban/Suburban area follows Urban/Suburban area. Data are from FDEP's datasets (Florida Department of Environmental Protection (2019c).

LANDUSE	% of FL	Classification
1100: Low Density, <2 dwelling units/acre	2.1478084	Urban/Suburban
1110: Low Density, Fixed Single Family Units	0.8463292	Urban/Suburban
1120: Low Density, Mobile Home Units	0.1479206	Urban/Suburban
1130: Low Dens, Mixed (Fixed & Mobile Homes)	0.5852997	Urban/Suburban
1180: Residential, rural - one unit on 2 or more acres	0.8860455	Urban/Suburban
1190: Low Density, Under Construction	0.0785804	Urban/Suburban
1200: Medium Density, 2>5 dwelling units/acre	1.8621116	Urban/Suburban
1210: Medium Density, Fixed Single Family Units	1.4116012	Urban/Suburban
1220: Medium Density, Mobile Home Units	0.0244812	Urban/Suburban
1230: Med Dens, Mixed (Fixed & Mobile Homes)	0.1003218	Urban/Suburban
1290: Medium Density, Under Construction	0.1239294	Urban/Suburban
1300: High Density, 6 or more dwelling units/acre	1.0074306	Urban/Suburban
1310: High Density, Fixed Single Family Units	0.0827318	Urban/Suburban
1320: High Density, Mobile Home Units	0.0512633	Urban/Suburban
1330: High Den, Multiple Dwelling Units, Low Rise	0.2648827	Urban/Suburban
1340: High Den, Multiple Dwelling, High Rise	0.0711864	Urban/Suburban
1350: High Den, Mixed (Fixed & Mobile Homes))	0.0071782	Urban/Suburban
1390: High Density, Under Construction	0.0418918	Urban/Suburban
1400: Commercial and Services	0.9227280	Urban/Suburban
1411: Shopping Centers	0.0596194	Urban/Suburban
1423: Junk Yards	0.0069843	Urban/Suburban
1454: Campgrounds	0.0041545	Urban/Suburban
1460: Oil and Gas Storage	0.0026067	Urban/Suburban
1480: Cemeteries	0.0248281	Urban/Suburban
1490: Commercial and Services Under Construction	0.0236556	Urban/Suburban
1500: Industrial	0.1125267	Urban/Suburban
1510: Food Processing	0.0064940	Urban/Suburban
1520: Timber Processing	0.0075300	Urban/Suburban
1523: Pulp and Paper Mills	0.0042813	Urban/Suburban
1530: Mineral Processing	0.0023666	Urban/Suburban
1532: Phosphate	0.0010728	Urban/Suburban
1533: Limerock	0.0004816	Urban/Suburban
1540: Oil and Gas Processing	0.0016859	Urban/Suburban
1550: Other Light Industrial	0.1056210	Urban/Suburban
1551: Boat Building and Repair	0.0001951	Urban/Suburban
1552: Electronic	0.0006928	Urban/Suburban
1560: Other Heavy Industrial (Ship Repair, Ship Building, Large Lumber Mills)	0.0156376	Urban/Suburban
1561: Ship Building and Repair	0.0004500	Urban/Suburban
1562: Pre-Stressed Concrete Plants	0.0025614	Urban/Suburban
1564: Cement Plants	0.0011553	Urban/Suburban
1590: Industrial Under Construction	0.0011136	Urban/Suburban
1600: Extractive	0.4109058	Urban/Suburban
1610: Strip mines	0.0009756	Urban/Suburban
1611: Strip Mines - Clays	0.0035645	Urban/Suburban
1612: Peat	0.0007451	Urban/Suburban
1613: Strip Mines - Heavy Metals	0.0109218	Urban/Suburban
1620: Sand and Gravel Pits	0.0400001	Urban/Suburban
1630: Rock Quarries	0.0144137	Urban/Suburban

Appendix Table F2. Percentages of Urban/Suburban and Non-Urban/Suburban Land Use Categories Area of Florida (Continued). Data are from FDEP's datasets (Florida Department of Environmental Protection (2019c).

1631: Limerock	0.0065512	Urban/Suburban
1632: Limerock or Dolomite	0.0037144	Urban/Suburban
1633: Phosphates	0.0203125	Urban/Suburban
1640: Oil and Gas Fields	0.0005035	Urban/Suburban
1650: Reclaimed Lands	0.4654084	Urban/Suburban
1660: Holding Ponds	0.0892428	Urban/Suburban
1670: Abandoned Mining Lands	0.0042980	Urban/Suburban
1700: Institutional	0.3918632	Urban/Suburban
1710: Educational Facilities	0.0746116	Urban/Suburban
1750: Governmental (Kennedy Space Center only)	0.0162240	Urban/Suburban
1760: Correctional	0.0058351	Urban/Suburban
1800: Recreational	0.0722975	Urban/Suburban
1810: Swimming Beach	0.0393577	Urban/Suburban
1820: Golf Courses	0.4110752	Urban/Suburban
1830: Race Tracks	0.0091851	Urban/Suburban
1831: Automobile Tracks	0.0007532	Urban/Suburban
1833: Dog Tracks	0.0002165	Urban/Suburban
1840: Marina's and Fish Camps	0.0090287	Urban/Suburban
1850: Parks and Zoos	0.0955451	Urban/Suburban
1860: Community Recreational Facilities	0.0399144	Urban/Suburban
1870: Stadiums - facilities not associated with High Schools, Colleges, or Univ	0.0026524	Urban/Suburban
1890: Other Recreational (Riding Stables, Go Cart Tracks, Skeet Ranges)	0.0204420	Urban/Suburban
1900: Open Land (Urban)	0.7330598	Urban/Suburban
1920: Inactive Land with Street Pattern	0.1670297	Urban/Suburban
Percentage Urban/Suburban Land Use in Florida	**14.60%**	**Urban/Suburban**
Percentage Non-Urban/Suburban Land Use in Florida		
2100: Cropland and Pastureland	2.808480	Non-Urban/Suburban
2110: Improved Pastures	4.960055	Non-Urban/Suburban
2120: Unimproved Pastures	0.912510	Non-Urban/Suburban
2130: Woodland Pastures	0.742604	Non-Urban/Suburban
2140: Row Crops	1.255874	Non-Urban/Suburban
2143: Potatoes and Cabbage	0.074946	Non-Urban/Suburban
2150: Field Crops	0.353684	Non-Urban/Suburban
2153: Hay Fields	0.782929	Non-Urban/Suburban
2156: Sugar Cane	1.581616	Non-Urban/Suburban
2160: Mixed Crops	0.003834	Non-Urban/Suburban
2200: Tree Crops	0.782899	Non-Urban/Suburban
2210: Citrus Groves	1.290382	Non-Urban/Suburban
2230: Other Groves (Pecan, Avocado, Coconut, Mango, etc)	0.051982	Non-Urban/Suburban
2240: Abandoned Tree Crops	0.046763	Non-Urban/Suburban
2300: Feeding Operations	0.016905	Non-Urban/Suburban

Appendix Table F2. Percentages of Urban/Suburban and Non-Urban/Suburban Land Use Categories Area of Florida (Continued). Data are from FDEP's datasets (Florida Department of Environmental Protection (2019c).

2310: Cattle Feeding Operations	0.006463	Non-Urban/Suburban
2320: Poultry Feeding Operations	0.008150	Non-Urban/Suburban
2400: Nurseries and Vineyards	0.073054	Non-Urban/Suburban
2410: Tree Nurseries	0.100403	Non-Urban/Suburban
2420: Sod Farms	0.098986	Non-Urban/Suburban
2430: Ornamentals	0.093511	Non-Urban/Suburban
2431: Shade Ferns	0.016641	Non-Urban/Suburban
2432: Hammock Ferns	0.013545	Non-Urban/Suburban
2450: Floriculture	0.000060	Non-Urban/Suburban
2500: Specialty Farms	0.143957	Non-Urban/Suburban
2510: Horse Farms	0.176942	Non-Urban/Suburban
2520: Dairies	0.034140	Non-Urban/Suburban
2540: Aquaculture	0.010514	Non-Urban/Suburban
2550: Tropical Fish Farms	0.004889	Non-Urban/Suburban
2600: Other Open Lands (Rural)	0.521460	Non-Urban/Suburban
2610: Fallow Cropland	0.268971	Non-Urban/Suburban
3100: Herbaceous (Dry Prairie)	0.760674	Non-Urban/Suburban
3200: Shrub and Brushland	1.488614	Non-Urban/Suburban
3210: Palmetto Prairies	0.312322	Non-Urban/Suburban
3220: Coastal Scrub	0.056402	Non-Urban/Suburban
3300: Mixed Upland Nonforested	0.712737	Non-Urban/Suburban
4100: Upland Coniferous Forests	1.642163	Non-Urban/Suburban
4110: Pine Flatwoods	2.897800	Non-Urban/Suburban
4120: Longleaf Pine - Xeric Oak	0.648250	Non-Urban/Suburban
4130: Sand Pine	0.522265	Non-Urban/Suburban
4140: Pine - Mesic Oak	0.000307	Non-Urban/Suburban
4190: Hunting Plantation Woodlands	0.227088	Non-Urban/Suburban
4200: Upland Hardwood Forests	0.956084	Non-Urban/Suburban
4210: Xeric Oak	0.197667	Non-Urban/Suburban
4220: Brazilian Pepper	0.024302	Non-Urban/Suburban
4240: Melaleuca	0.021246	Non-Urban/Suburban
4270: Live Oak	0.023626	Non-Urban/Suburban
4271: Oak - Cabbage Palm Forests	0.03986	Non-Urban/Suburban
4280: Cabbage Palm	0.030573	Non-Urban/Suburban
4340: Upland Mixed - Coniferous / Hardwood	3.889900	Non-Urban/Suburban
4370: Australian Pine	0.009923	Non-Urban/Suburban
4400: Tree Plantations	0.364748	Non-Urban/Suburban
4410: Coniferous Plantations	7.065395	Non-Urban/Suburban
4420: Hardwood Plantations	0.731147	Non-Urban/Suburban
4430: Forest Regeneration Areas	0.000010	Non-Urban/Suburban

Appendix Table F2. Percentages of Urban/Suburban and Non-Urban/Suburban Land Use Categories Area of Florida (Continued). Data are from FDEP's datasets (Florida Department of Environmental Protection (2019c).

5100: Streams and Waterways	4.396920	Non-Urban/Suburban
5110: Natural River, Stream, Waterway	0.698645	Non-Urban/Suburban
5120: Channelized Waterway	0.136107	Non-Urban/Suburban
5200: Lakes	0.167121	Non-Urban/Suburban
5250: Open water within a freshwater marsh / Marshy Lakes	2.445564	Non-Urban/Suburban
5300: Reservoirs	0.012930	Non-Urban/Suburban
5400: Bays and Estuaries	0.812225	Non-Urban/Suburban
5410: Embayments Opening Directly to Gulf or Ocean	1.125007	Non-Urban/Suburban
5420: Embayments Not Opening Directly to Gulf or Ocean	3.434944	Non-Urban/Suburban
5430: Saltwater Ponds	0.067484	Non-Urban/Suburban
5500: Major Springs	0.042749	Non-Urban/Suburban
5600: Slough Waters	0.001102	Non-Urban/Suburban
5710: Atlantic Ocean	0.005053	Non-Urban/Suburban
5720: Gulf of Mexico	1.398950	Non-Urban/Suburban
6100: Wetland Hardwoods Forests	1.092135	Non-Urban/Suburban
6110: Bay Swamps	0.001979	Non-Urban/Suburban
6111: Bayhead	0.189837	Non-Urban/Suburban
6120: Mangrove Swamps	0.002850	Non-Urban/Suburban
6130: Gum Swamps	1.544346	Non-Urban/Suburban
6140: Titi Swamps	0.131542	Non-Urban/Suburban
6150: Stream and Lake Swamps (bottomland)	0.012968	Non-Urban/Suburban
6170: Mixed Wetland Hardwoods	1.931880	Non-Urban/Suburban
6172: Mixed Shrubs	2.992099	Non-Urban/Suburban
6180: Cabbage Palms	1.180900	Non-Urban/Suburban
6181: Cabbage Palm Hammock	0.063435	Non-Urban/Suburban
6182: Cabbage Palm Savannah	0.069993	Non-Urban/Suburban
6191: Wet Melaleuca	0.003617	Non-Urban/Suburban
6200: Wetland Coniferous Forests	0.069869	Non-Urban/Suburban
6210: Cypress	0.120033	Non-Urban/Suburban
6215: Cypress- Domes/Heads	1.928285	Non-Urban/Suburban
6216: Cypress - Mixed Hardwoods	0.200452	Non-Urban/Suburban
6220: Pond Pine	0.241457	Non-Urban/Suburban
6240: Cypress - Pine - Cabbage Palm	0.001696	Non-Urban/Suburban
6250: Hydric Pine Flatwoods	0.034800	Non-Urban/Suburban
6260: Pine Savannah	1.559074	Non-Urban/Suburban
6300: Wetland Forested Mixed	0.001375	Non-Urban/Suburban
6410: Freshwater Marshes	2.505737	Non-Urban/Suburban
6411: Freshwater Marshes - Sawgrass	0.973801	Non-Urban/Suburban
6420: Saltwater Marshes	2.578803	Non-Urban/Suburban
6430: Wet Prairies	1.462281	Non-Urban/Suburban

Appendix Table F2. Percentages of Urban/Suburban and Non-Urban/Suburban Land Use Categories Area of Florida (Continued). Data are from FDEP's datasets (Florida Department of Environmental Protection (2019c).

6440: Emergent Aquatic Vegetation	2.778413	Non-Urban/Suburban
6460: Mixed Scrub-shrub Wetland	0.97057	Non-Urban/Suburban
6500: Non-Vegetated Wetlands	1.224385	Non-Urban/Suburban
6510: Tidal Flats	0.364531	Non-Urban/Suburban
6520: Shoreline	2.354322	Non-Urban/Suburban
6530: Intermittent Ponds	0.048493	Non-Urban/Suburban
6600: Salt Flats	0.174667	Non-Urban/Suburban
7100: Beaches other than Swimming Beaches	0.008832	Non-Urban/Suburban
7200: Sand Other Than Beaches	0.030756	Non-Urban/Suburban
7300: Exposed Rock	0.004221	Non-Urban/Suburban
7400: Disturbed Lands	0.010509	Non-Urban/Suburban
7410: Rural land in transition without positive indicators of intended activity	0.036361	Non-Urban/Suburban
7420: Borrow Areas	0.000039	Non-Urban/Suburban
7430: Spoil Areas	0.085982	Non-Urban/Suburban
7440: Levees	0.276781	Non-Urban/Suburban
7450: Burned Areas	0.004309	Non-Urban/Suburban
7470: Dikes and Levees	0.041864	Non-Urban/Suburban
7500: Riverine Sandbars	0.004674	Non-Urban/Suburban
8100: Transportation	0.001026	Non-Urban/Suburban
8110: Airports	0.073557	Non-Urban/Suburban
8113: Private Airports	0.001695	Non-Urban/Suburban
8115: Grass Airports	0.188473	Non-Urban/Suburban
8120: Railroads	0.16428	Non-Urban/Suburban
8130: Bus and Truck Terminals	0.001654	Non-Urban/Suburban
8140: Roads and Highways	0.009418	Non-Urban/Suburban
8150: Port Facilities	0.035242	Non-Urban/Suburban
8160: Canals and Locks	0.003161	Non-Urban/Suburban
8170: Oil, Water or Gas Long Distance Transmission Lines	0.451663	Non-Urban/Suburban
8180: Auto Parking Facilities (When not directly related to other land use)	0.011583	Non-Urban/Suburban
8200: Communications	0.004718	Non-Urban/Suburban
8300: Utilities	0.016850	Non-Urban/Suburban
8310: Electric Power Facilities	0.002087	Non-Urban/Suburban
8320: Electrical Power Transmission Lines	0.013633	Non-Urban/Suburban
8330: Water Supply Plants (Including pumping stations)	0.084763	Non-Urban/Suburban
8340: Sewage Treatment	0.035241	Non-Urban/Suburban
8350: Solid Waste Disposal	0.196072	Non-Urban/Suburban
8360: Other Treatment Pond	0.007992	Non-Urban/Suburban
8370: Surface Water Collection Features	0.066464	Non-Urban/Suburban
8390: Utilities Under Construction	0.059177	Non-Urban/Suburban

Appendix Table F2. Percentages of Urban/Suburban and Non-Urban/Suburban Land Use Categories Area of Florida (Continued). Data are from FDEP's datasets (Florida Department of Environmental Protection (2019c).

Other	0.053108	Non-Urban/Suburban
Total%	**85.40**	**Non-Urban/Suburban**
Total%	**100.00**	**Urban/Suburban and Non-Urban/Suburban**

Appendix G. Florida's Atmospheric Deposition Chemistry Means

Appendix Table G1. Atmospheric deposition chemistry concentration data for selected indicators in Florida (1991 – 2019). Means are calculated are from National Atmospheric Deposition Program (2020) Trend Network annual mean data. Concentrations are in mg/L.

Site	Lat	Long	Years	Ca	Mg	K	Na	Cl	SO4
				Mean	Mean	Mean	Mean	Mean	Mean
FL03 Bradford Forest	29.8748	-82.1978	1991-2019	0.091	0.033	0.027	0.258	0.455	0.819
FL05 Chassa-howitzka National. Wildlife Refuge	28.7486	-82.5551	1996-2019	0.099	0.045	0.020	0.351	0.637	0.833
FL11 Everglades Nat. Park Research Center	25.3900	-80.6800	1991-2019	0.120	0.068	0.079	0.531	0.940	0.686
FL14 Quincy	30.5486	-84.6004	1991-2019	0.650	0.328	0.352	0.243	0.422	0.692
FL23 Sumatra	30.1106	-84.9902	1999-2019	0.638	0.392	0.051	0.313	0.552	0.662
FL41 Verna Well Field	27.3801	-82.2831	1991-2019	0.106	0.041	0.025	0.308	0.544	0.718
Grand Mean	*	*	*	0.284	0.151	0.092	0.334	0.592	0.735