DPST-78-146-3

SAVANNAH RIVER LABORATORY HYDROGEOCHEMICAL AND STREAM SEDIMENT RECONNAISSANCE

PRELIMINARY BASIC DATA RELEASE GROUND WATER IN WINSTON-SALEM 1° X 2° NTMS AREA NORTH CAROLINA, VIRGINIA, AND TENNESSEE

NATIONAL URANIUM RESOURCE EVALUATION PROGRAM

VAN PRICE AND R. B. FERGUSON

E. I. DU PONT DE NEMOURS AND COMPANY
SAVANNAH RIVER LABORATORY
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PREPARED FOR THE U.S. DEPARTMENT OF ENERGY UNDER CONTRACT AT(07-2)-1

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by

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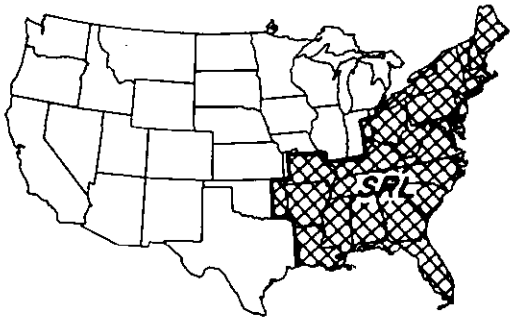
ABSTRACT

This report presents preliminary results of ground water reconnaissance in the Winston-Salem National Topographic Map Series (NTMS) 1° x 2° quadrangle. This report is issued as a supplement to SRL Document DPST-77-146-1, GJBX-66(77), which contained a geologic description of the area and analytical results for stream sediment samples.

Ground water samples were collected at 784 sites for a nominal density of one site per 25 square kilometers (ten square miles). Neutron activation analysis (NAA) results are given for uranium and 9 other elements. Field measurements and observations are reported for each site. Analytical data and field measurements are presented in tables and maps. Statistical summaries of data and a brief description of results are given.

Key data are presented in page-sized hard copy. Supplementary data are on microfiche. Key data from ground water sites include (1) water quality measurements (pH, conductivity, and alkalinity) and (2) elemental analyses (U, Na, Cl, Mg, Al, Mn, Br, V, and F). Supplementary data include site descriptors, information about the collection of the samples (well age, well depth, frequency of use of well, etc.), and analytical data for dysprosium.



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PRELIMINARY BASIC DATA RELEASE: GROUND WATER IN WINSTON-SALEM 1° x 2° NTMS AREA, NORTH CAROLINA, VIRGINIA, AND TENNESSEE

INTRODUCTION

The National Uranium Resource Evaluation (NURE) Program was established to evaluate domestic uranium resources in the continental United States and to identify areas favorable for uranium exploration. The Grand Junction Office (GJ) of the Department of Energy (DOE) is responsible for administering and coordinating NURE program efforts. The Savannah River Laboratory (SRL) has responsibility for hydrogeochemical and stream sediment reconnaissance (HSSR) of 2.2 million square kilometers in 30 eastern states. Other DOE laboratories are responsible for similar reconnaissance in the rest of the continental United States including Alaska (Figure 1). The significance of the distribution of uranium in natural waters and stream sediments will be assessed as an indicator of areas favorable for the location of uranium deposits.

The principal objectives of the NURE program are:

- To prepare, based on existing data, a preliminary evaluation of domestic uranium resources and favorable exploration areas.
- To complete a more comprehensive assessment of the uranium reserves of the United States as rapidly as possible.
- To identify areas favorable for uranium resources.
- To develop new and improved technologies for resource assessments.

The Grand Junction (Colorado) Office of the Department of Energy (DOE-GJ) has completed the first objective.[1] DOE-GJ is responsible for administering and coordinating efforts to meet the other objectives including distribution of reports. Inputs to the NURE program come from DOE prime contractors, DOE-sponsored research and development, the uranium industry, U.S. Geological Survey, U.S. Bureau of Mines, other federal and state government agencies, and independent sources.

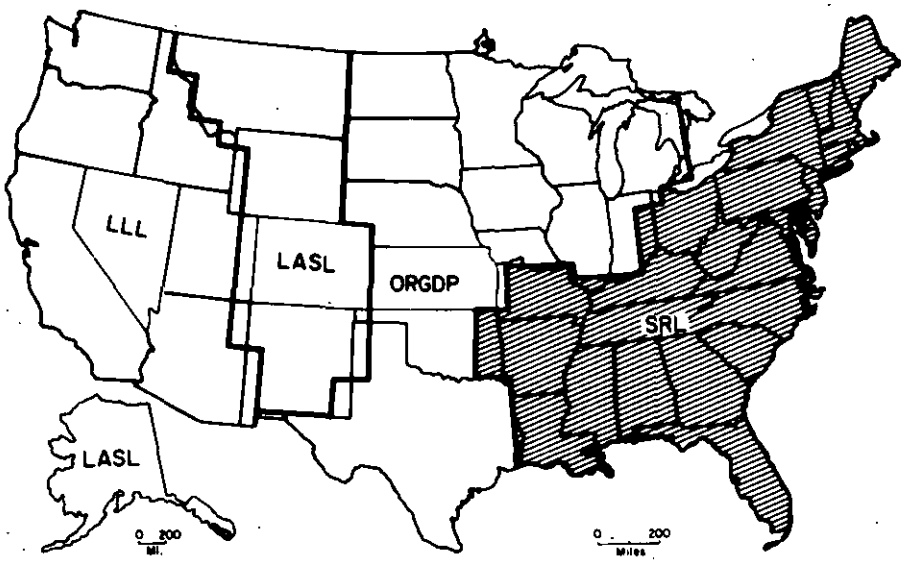


FIGURE 1. Areas of Responsibility for the NURE Hydrogeochemical Reconnaissance Program

SRL — Savannah River Laboratory
ORGDP — Oak Ridge Gaseous Diffusion Plant
LASL — Los Alamos Scientific Laboratory
LLL — Lawrence Livermore Laboratory

The NURE program consists of five parts:

1. Hydrogeochemical and Stream Sediment Reconnaissance Survey
2. Aerial Radiometric Survey
3. Surface Geologic Investigations
4. Drilling for Geologic Information
5. Geophysical Technology

The Savannah River Laboratory (SRL) has conducted and is maintaining an extensive development program to support the regional geochemical reconnaissance in its area of responsibility. Sampling densities, sampling equipment and techniques, analytical techniques (including the types of analyses required), and results obtained from sampling of different media have been evaluated.[2a-2ℓ, 3a, 3d] Orientation or pilot studies have been conducted in model areas of known uranium mineral occurrences or where geologic conditions seem favorable for the accumulation of uranium. Results of these studies have been useful in designing and conducting the regional reconnaissance.[3c]

SCOPE

The data presented here are reconnaissance basic data intended for use in identifying broad areas for further study. While care has been taken to provide reliable sampling and analyses, verification of individual analyses is beyond the scope of this report. The data should be viewed statistically because "one-point anomalies" may be misleading. Regional trends, however, should be reliable. Supplementary elemental data should be useful in identifying valid anomalies. With careful consideration of regional geology, these data should provide reliable guides to areas warranting further study.

This report is one of a series presenting SRL reconnaissance basic data. Supplementary reports will be issued later. All data will be available on magnetic tape.

A preliminary basic data release has been filed for the Winston-Salem 1° by 2° quadrangle.[4a] That report contained field data for stream sites and analyses of stream sediments. The present report gives field data and analyses of ground water from sites sampled over the same area. These analyses were not available at the time of the previous release.

Ground water samples from Forsyth County, North Carolina (NCFO), were not analyzed in time for inclusion in this report. They, together with supplementary analyses of sediment samples, will be discussed in a summary report to be filed at a later date.

RELATED STUDIES

In addition to the stream sediment data previously released for the Winston-Salem quadrangle,[4a] preliminary reconnaissance data releases have been issued for the Spartanburg, Charlotte, and Greenville quadrangles (Figure 2).[4b-d] These reports contained field and analytical data on both stream sediment and ground water samples.

SAMPLE COLLECTION AND FIELD MEASUREMENTS

Ground water samples were collected in the Winston-Salem quadrangle primarily during the period May through July, 1977. Exact sampling dates for each site are included with the field data of Table A-2.

Sampling personnel were trained by SRL staff members according to procedures in the SRL document, *Field Manual for Ground Water Reconnaissance.*[5] A sample of one liter of filtered water was collected at each ground water site. Dissolved ions in individual water samples were concentrated on portions of ion exchange resin,[3d] which were analyzed.

Figure 3 illustrates the field form completed at each ground water collection site. Entries are self-explanatory. Reference 5 describes in detail the equipment and techniques (including criteria for site selection) for collecting samples and for making field measurements.

The nominal ground water sampling density was one site per 25 square kilometers, for a total of 784 sites. Locations were marked precisely on compilation maps and the maps were returned to SRL for determination of geographic coordinates. An electronic digitizer[2i] was used to measure, verify, and enter latitude and longitude data for each site into the SRL-NURE data base. These data were recorded to four decimal places, but are considered reliable to only three decimal places.

Plate 1 is a 1:250,000 scale overlay of the Winston-Salem quadrangle showing ground water sampling sites and SRL ID numbers.

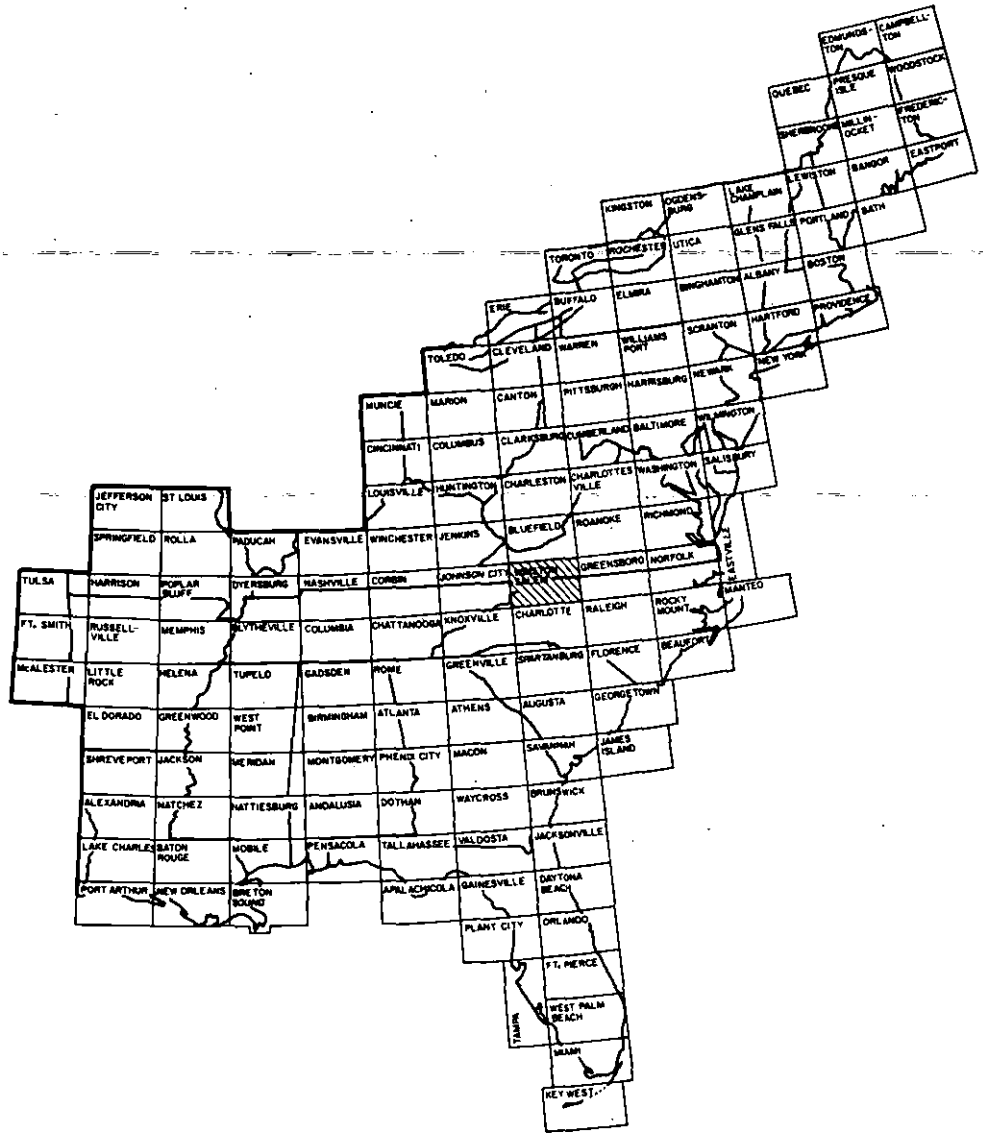
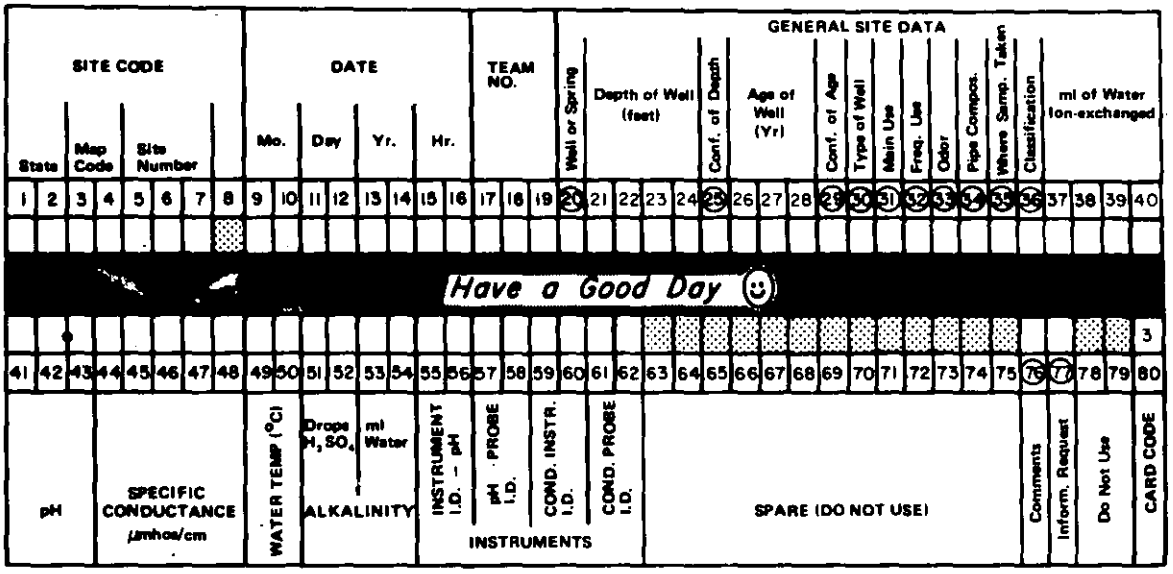
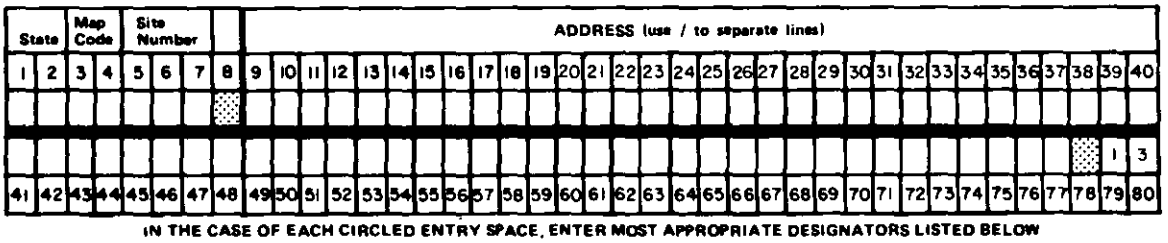


FIGURE 2. Locator Map for the Winston-Salem 1° x 2° NTMS Quadrangle Area

SRL GROUND WATER SITE FIELD DATA FORM





IN THE CASE OF EACH CIRCLED ENTRY SPACE, ENTER MOST APPROPRIATE DESIGNATORS LISTED BELOW

20 W - Well
S - SPRING
Ø - Others (use comments)

25 and 29
1 Certain
2 Probable
3 Possible
4 Educated Guess
5 Unknown

30
1 Drilled
2 Dug
3 Driven
4 Unknown

31
1 Human drinking
2 Animal drinking
3 Irrigation
4 Others (use comments)

32
1 Continuous (> once per day)
2 Once per day
3 Once per week
4 Once per month
5 Less than once per month
6 Not in use

33
1 None
2 Weak H_2S
3 Strong H_2S
4 Others (use comments)

34
1 Galvanized
2 Copper
3 Plastic
4 Steel
5 Lead
6 Unknown
7 Others (use comments)

35
1 Immediately after storage tank
2 From pipe before storage tank
3 Direct from pump
4 Direct from well or spring
5 From Municipal system
6 Unknown
7 Others (use comments)

36
1 Private (<3 families)
2 Semi-Private (used by 3 to 10 families)
3 Public (used by >10 families)
4 Industrial
5 Commercial (motel, etc.)
6 Recreational
7 Agricultural
8 Unknown
9 Others (use comments)

76 Enter "C" when comments are made

78 Comments (Explain all "other" designators used above, plus describe all unusual or significant conditions such as proximity of contaminants, general rock type, formation when known, problems with instruments, etc. Use back of form for additional space). _____

77 Enter "X" when analysis information is requested

I certify that the above sample was taken by SRL procedures at the indicated site and the information listed is correct at time of sampling _____ Sampler(s) Signature(s)

I have checked this form and associated samples for accuracy, correct format, and legibility. _____ Field Supervisor (initials)

Standard Letters and Numbers

A B C D E F G H I J K L M N Ø P Q R S T U V W X Y Z 0 1 2 3 4 5 6 7 8 9

FIGURE 3. SRL Ground Water Site Field Data Form

Each SRL ID number consists of seven characters. The first two characters give the state from which the sample was collected. Map-name abbreviations are entered as Characters 3 and 4; normally these represent counties. State and county codes in this report are listed in Table 1. Sites are numbered sequentially within each map unit (Characters 5, 6, and 7). Numbers begin at 501 in each map unit for ground water sites and are generally consecutive.

Each sampling site is marked by a "plus" (+), and the site ID number is printed symmetrically with respect to the symbol in one of six positions (see Figure 4).

Appendix A contains the reconnaissance data. Appendix B contains a brief discussion of elemental distributions. Coordinates and the most important analytical data and field measurements are listed in Table A-1. Other field and analytical data are in Table A-2, which is on microfiche only. Statistical summaries and areal distributions of various measurements are given in Figures A-1 through A-26. The ratio of uranium concentration to conductivity in ground water is shown in Figures B-1 and B-2 of Appendix B. Plate 2 illustrates the areal distribution of uranium in ground water at a scale of 1:250,000. Selection of symbols is described in Appendix A (Table A-3).

ANALYSES

Each ground water sample was treated with a 10-g portion of ultrapure mixed cation-anion exchange resin that collected all dissolved ions from the water.[3d] The volumes of water ranged from 50 to 1000 mL depending upon sample conductivity.[5] Resin samples were dried at 105°C and packed in ultrapure polyethylene capsules for analysis. The encapsulated samples were loaded into the NAA pneumatic system in batches of 25 including one blank. Standards were included in every fifth batch. Transport into the irradiation assembly and counting stations and the collection and processing of data were computer-controlled.

TABLE 1

State and County Abbreviations for SRL Site Codes in the Winston-Salem Quadrangle

Site Code	*County Location*
North Carolina	
NCAE	Alexander
NCAG	Alleghany
NCAS	Ashe
NCAV	Avery
NCCL	Caldwell
NCDE	Davie
NCDV	Davidson
NCFO	Forsyth
NCGU	Guilford
NCIR	Iredell
NCRC	Rockingham
NCSO	Stokes
NCSU	Surry
NCWL	Wilkes
NCWT	Watauga
NCYD	Yadkin
Tennessee	
TNCT	Carter
TNJO	Johnson
TNSL	Sullivan
Virginia	
VABL	Bland
VACO	Carroll
VAFO	Floyd
VAFR	Franklin
VAGR	Grayson
VAHR	Henry
VAPT	Patrick
VAPU	Pulaski
VARU	Russell
VASM	Smyth
VATA	Tazewell
VAWS	Washington
VAWY	Wythe

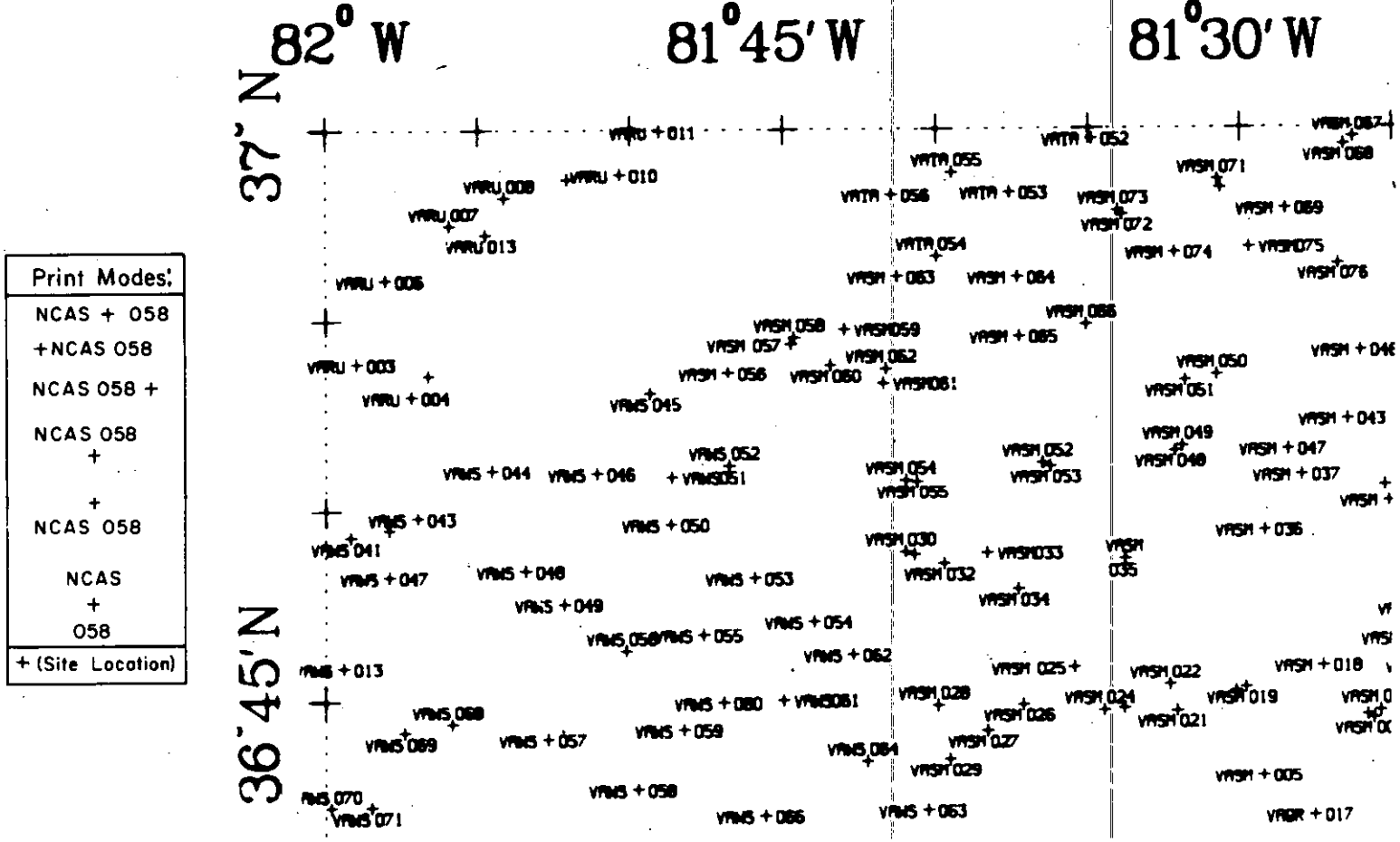


FIGURE 4. Print Modes for Sampling Site Identifiers

Uranium was determined by counting neutrons emitted by induced fission products of ^{235}U in the sample. Other elements were determined by computer reduction of gamma-ray spectra. Details of the activation analysis system at SRL have been presented elsewhere.[2j,3b]

QUALITY ASSURANCE

Sample Collection

Two to five percent of the sampled sites were routinely checked by SRL personnel or by a separate subcontractor to assure that the reported field locations were accurate. Based on these quality assurance checks, more than 98% of the sampled sites were judged to be located as accurately as they could be plotted on county road maps. No evidence has been discovered of deliberate malfeasance by the sampling teams. Most sites that were mapped incorrectly were within 300 meters of their correct locations. Thus, the goals of a regional reconnaissance have not been compromised by mapping errors. Details of the quality assurance program are given elsewhere.[2e-2k]

Analytical Calibration and Standards

All analytical values in this report were calculated using the measured neutron flux, irradiation time, decay time, counting time, literature values for activation cross-section, decay constants, and spectra for each element. The neutron flux monitor was calibrated by activating samples of gold. Spectral lines least likely to have interferences were used to determine elemental concentrations.

Assignment of photopeaks in the gamma-ray spectra depends on the fact that certain elements (e.g., chlorine) are detectable in most samples. Strong gamma-ray peaks of these key elements were used for internal calibration across the range of energies monitored. Because some water samples contain very low levels of the elements used for calibration, analyses of water samples are less reliable than analyses of sediment samples.

Every batch of twenty-five samples includes a blank resin sample. Resin blanks are not reacted with water samples. Every fifth batch includes a resin sample that was reacted with a standard solution containing nominally 0.278 ppb uranium. Analyses of standards and blanks are summarized in Table 2.

TABLE 2

Analyses of Resin Standards and Blanks

A. Standards

No. of Analyses	*Uranium Concentration, ppb*			*Standard Deviation, ±1 σ*
	Minimum	*Maximum*	*Mean*	
40	0.246	0.352	0.303[a]	0.026 (8.5%)

B. Blanks

Element	*Number of Analyses Above Detection Limit*	*Mean Concentration,[b] ppb*	*Standard Deviation, ±1 σ*
U	36	0.024	0.013
Cl	36	3700	370
Al	35	20	6
Na	21	150	70

a. The standard solution was prepared to be 0.278 ppb. The value 0.303 ppb is not corrected for 0.024 ±0.013 ppb U in resin.

b. Traces of chloride used in processing resin remain in the resin. the mean values listed here are expressed in ppb for one liter of ion-exchange water. These values can be considered background contribution in all analyzed water (resin) samples.

Figure 5 shows coefficient of variation of resin analyses in water samples. At apparent uranium concentrations below about 0.04 ppb, the coefficient of variation approaches 100%. At uranium concentrations above about 1.5 ppb, the coefficient of variation is about 3.5%. The data for this figure are from samples collected in sextuplicate in the field. Data from several sources fall on this curve.

Resins reacted with DOE standard solutions were analyzed with samples. The uranium analyses of these standards are reported in Table 3.

Analyses for some elements (particularly Mg, Br, and F) in resin are less reliable than analyses for uranium. Relative calibration for each element is thought to be correct, but absolute values may vary from those reported.

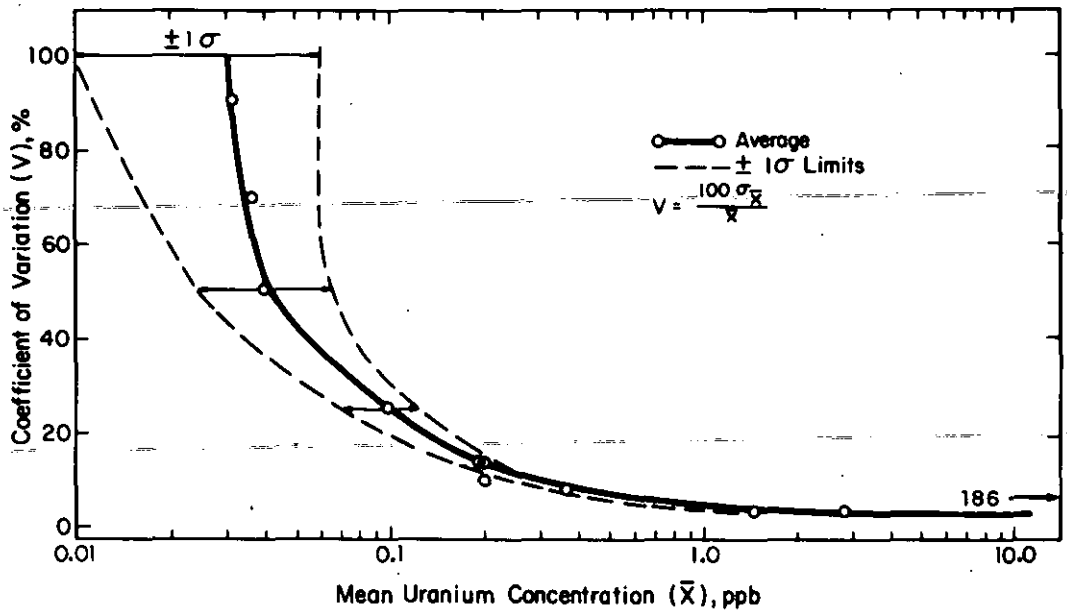


FIGURE 5. Coefficient of Variation vs. Uranium Content of Water

TABLE 3

Analyses of DOE Standard Uranium Solutions

Standard	*Analyses, No.*	*Uranium Concentration, ppb*		*Standard Deviation, ±1 σ*
		Nominal	*Mean*	
A-1	10	0.82	0.82	0.053 (6.4%)
B-1	5	7.77	7.58	*a*
C-1	4	100.2	94.8	*a*

a. Too few analyses for standard deviations to be meaningful.

REFERENCES

1. National Uranium Resource Evaluation Preliminary Report. DOE-GJ Document No. GJ-11(76).

2. *Savannah River Laboratory Quarterly Report. Hydrogeochemical and Stream Sediment Reconnaissance - Eastern United States. National Uranium Resource Evaluation Program.* E. I. du Pont de Nemours & Co., Savannah River Laboratory, Aiken, South Carolina.

	Quarter	*SRL Document No.*	*DOE-GJ Document No.*
a.	January-March 1975	DPST-75-138-1	GJBX-5(76)
b.	April-June 1975	DPST-75-138-2	GJBX-6(76)
c.	July-September 1975	DPST-75-138-3	GJBX-7(76)
d.	October-December 1975	DPST-75-138-4	GJBX-8(76)
e.	January-March 1976	DPST-76-138-1	GJBX-17(76)
f.	April-June 1976	DPST-76-138-2	GJBX-27(76)
g.	July-September 1976	DPST-76-138-3	GJBX-63(76)
h.	October-December 1976	DPST-76-138-4	GJBX-6(77)
i.	January-March 1977	DPST-77-138-1	GJBX-35(77)
j.	April-June 1977	DPST-77-138-2	GJBX-55(77)
k.	July-September 1977	DPST-77-138-3	GJBX-90(77)
l.	October-December 1977	DPST-77-138-4	GJBX- (78)

3. Papers contributed by E. I. du Pont de Nemours and Co., Savannah River Laboratory, Aiken, South Carolina, and presented to the ERDA-GJO *Symposium on Hydrogeochemical and Stream Sediment Reconnaissance* at Grand Junction, Colorado, March 16-17, 1977. Published in the proceedings of this meeting, see DOE-GJ Document No. GJBX-77(77).

   a. E. I. Baucom. "Operating Summary of SRL Hydrogeochemical and Stream Sediment Reconnaissance Program."

   b. W. W. Bowman. "Neutron Activation Analysis for Uranium and Associated Elements."

   c. V. Price and R. B. Ferguson. "Geochemical Interpretation of Kings Mountain, North Carolina, Orientation Area."

   d. E. I. Baucom, R. B. Ferguson, and R. M. Wallace. "Collection and Preparation of Water Samples for Hydrogeochemical Reconnaissance."

4. a. E. I. Baucom, V. Price, and R. B. Ferguson. *Preliminary Raw Data Release, Winston-Salem 1° x 2° NTMS Area, North Carolina, Virginia, Tennessee.* SRL Document DPST-77-146-1, E. I. du Pont de Nemours & Co., Savannah River Laboratory, Aiken, South Carolina (1977). DOE-GJ Document No. GJBX-66(77).

b. J. D. Heffner and R. B. Ferguson. *Preliminary Raw Data Release, Spartanburg 1° x 2° NTMS Area, North Carolina and South Carolina.* SRL Document DPST-77-146-2, E. I. du Pont de Nemours & Co., Savannah River Laboratory, Aiken, South Carolina, DOE-GJ Document No. GJBX- (78).

c. J. D. Heffner and R. B. Ferguson. *Preliminary Raw Data Release, Charlotte 1° x 2° NTMS Area, North Carolina and South Carolina.* SRL Document DPST-78-146-1, E. I. du Pont de Nemours & Co., Savannah River Laboratory, Aiken, South Carolina, DOE-GJ Document No. GJBX- (78).

d. R. B. Ferguson. *Preliminary Raw Data Release, Greenville 1° x 2° NTMS Area, Georgia, North Carolina, and South Carolina.* SRL Document DPST-78-146-2, E. I. du Pont de Nemours & Co., Savannah River Laboratory, Aiken, South Carolina, DOE-GJ Document No. GJBX- (78).

5. R. B. Ferguson, V. Price, and E. I. Baucom. *Field Manual for Ground Water Reconnaissance.* SRL Document DPST-76-416, E. I. du Pont de Nemours & Co., Savannah River Laboratory, Aiken, South Carolina (1976). DOE-GJ Document No. GJBX-30(77).

APPENDIX A: Reconnaissance Data

This appendix presents (1) a brief explanation of the columnar entries for Tables A-1 and A-2, (2) an explanation of the histograms, cumulative frequency, and areal symbol plots in Figures A-1 through A-26, and figures on microfiche, (3) Table A-1, and (4) Figures A-1 through A-26.

COLUMNAR ENTRIES FOR TABLE A-1

SRL Identification Number

Each SRL identification (ID) site code consists of seven characters. The first two characters give the state from which the sample was collected. Map name abbreviations are entered as characters 3 and 4; normally these represent counties. State and county codes used in this report are listed in Table 1. Sites are numbered sequentially within each map unit (Characters 5, 6, and 7). Numbers begin with 501 in each map unit for ground water sites and are generally consecutive. Columns 8 and 9 represent the type of sample analyzed. In this report, R means that ion exchange resin was analyzed.

DOE Identification Number

Each sample is assigned a DOE ID number. This number consists of 28 characters as follows:

1-2	State (37 = NC; 51 = VA; 47 = TN)
4-10	Latitude of site
12-19	Longitude of site
21	Laboratory code (4 = SRL)
23-24	Sample type (ion exchange resin reacted with ground water: 52 = well; 53 = spring)
26-28	Replication code. In this report, only original samples (-000) are reported.

pH

Normally, pH will be in the range of 4.0 to 9.5. Values far outside this range may suggest instrument malfunction or pollution. Missing data are indicated by "M."

COND

Conductivity, measured in μmhos/cm.

ALKA

Alkalinity as milliequivalents of sulfuric acid required per liter of sample (meq/L) to titrate to a pH of 4.5.

U, Na, Cl, Mg, Al, Mn, Br, V, F

Concentrations of each of the above elements in ppb are reported for each ground water sample as determined by neutron activation analysis (NAA). Values have been rounded to appropriate significant figures. Missing data are indicated by "M." Where all analytical data for a sample are missing (e.g., NCFO samples), samples will be analyzed and reported in a supplementary report. Values below detection limit are indicated in two ways. If background is low enough for an estimate of the minimum detection limit, a minus (-) is used to indicate that value. For example, -3 means that the sample contains less than 3 ppb of that element. If background is so high that an accurate estimate of the minimum detection limit is not available, a period (.) is used to indicate not only that the element was not detected, but that the detection limit is unusually high in that sample.

U/COND

Uranium concentration in ppb multiplied by 1000 and divided by conductivity is listed in this column. This value gives an approximation of the ratio of uranium to total dissolved solids.

COLUMNAR ENTRIES FOR TABLE A-2 (ON MICROFICHE ONLY)

SRL Identification Number (same as in Table A-1)

Dy (same as elements in Table A-1)

SAMPDATE

The date of sampling, month/day/year. For example, 7/15/77 is July 15, 1977.

TEAM

This code identifies the personnel who performed the sampling and is used by SRL for quality assurance monitoring.

TEMP

The water temperature at the time of sampling is recorded in this column. The water temperature is recorded in degrees Celsius (°C) to the nearest whole degree.

WELSPR

A "W" in this column denotes a ground water sample taken from a well; an "S" denotes a sample taken from a flowing spring.

WELDEPTH

The depths of sampled wells are recorded to the nearest whole foot. Flowing springs are shown as having depths of zero. "U" indicates that the well depth is not known.

DEPTHCON

Confidence in the values of well depths is listed in this column. The possible entries are:

1 Certain
2 Probable
3 Possible
4 Educated Guess
5 Unknown

Any site with "U" listed in WELDEPTH should have "5" listed for DEPTHCON.

AGE; AGECON

The ages of sampled wells are recorded to the nearest whole year. When only minimum ages are known, they are recorded. A "U" means the age of the well is unknown. Wells less than one year old are not sampled. The accuracy of the age determination is also entered; the possible entries are

1 Certain
2 Probable
3 Possible
4 Educated Guess
5 Unknown

WELLTYPE

Sampled wells are classified by method of construction. The types listed are:

1 Drilled; denotes wells formed by rotary drills or augers
2 Dug; denotes wells dug by manual or mechanical scooping equipment
3 Driven; denotes wells formed by vertical drivers
4 Unknown

WELLUSE

This column describes the primary use of water from the wells.

1 Human drinking
2 Animal drinking
3 Irrigation
4 All other purposes

WELLFREQ

This column lists the frequency of use of sampled wells. The entries and their meanings are:

1 Continuous (>once per day)
2 Once per day
3 Once per week
4 Once per month
5 Less than once per month
6 Not in use

Wells used less frequently than weekly are generally not sampled.

WELLODOR

Hydrogen sulfide odors in well water are noted. The entries in this column and their meanings are:

1 No odor
2 Weak H_2S odor
3 Strong H_2S odor
4 Others

PIPECOMP

The major materials used in pipes are listed in this column. The entries used and their meanings are:

1 Galvanized
2 Copper
3 Plastic
4 Steel
5 Lead
6 Unknown
7 Others

WELLOC

The positions at which samples are taken are listed in this column. The positions listed are relative positions in plumbing systems. The entries and their meanings are:

1 Immediately after storage tank
2 From pipe before storage tank
3 Direct from pump
4 Direct from well or spring
5 From municipal system
6 Unknown
7 Others

WELCLASS

Sampled wells are classified by use. The classes of wells recognized here are:

1 Private (<3 families)
2 Semiprivate (used by 3 to 10 families)
3 Public (used by >10 families)
4 Industrial
5 Commercial (motel, etc.)
6 Recreational
7 Agricultural
8 Unknown
9 Others

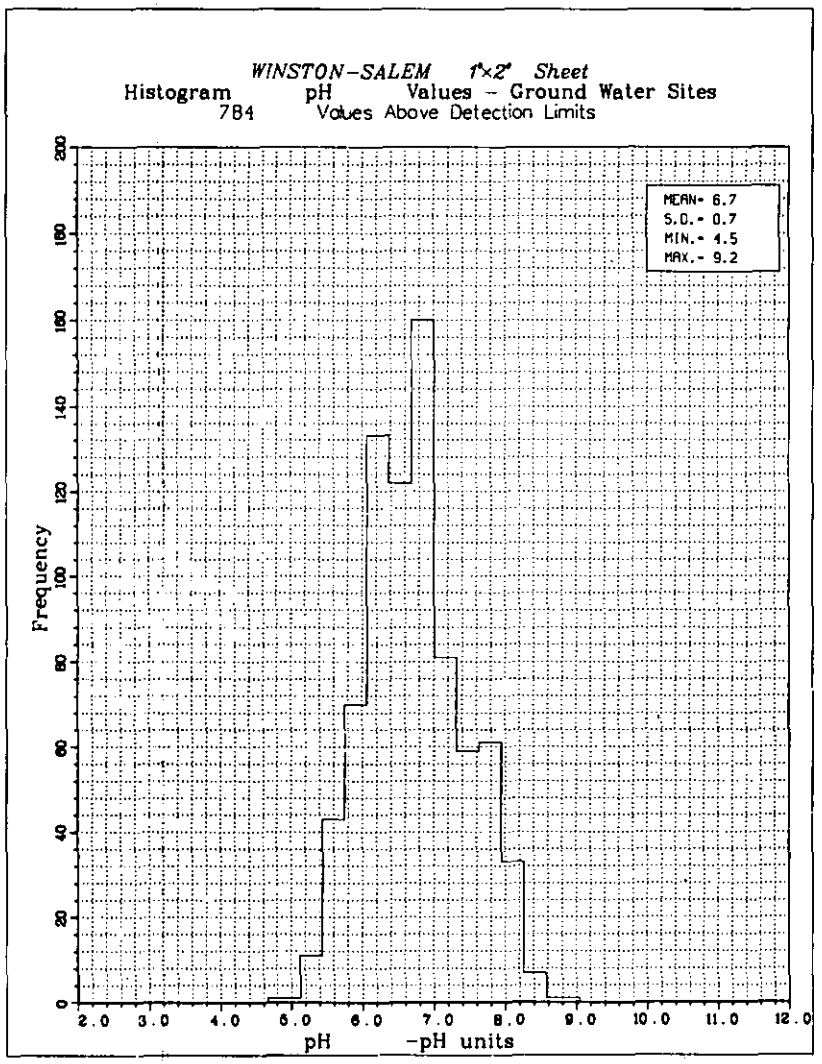
GRAPHICAL DATA

Histograms, cumulative frequency, and areal distribution of all measurements in Table A-1 are presented in Figures A-1 through A-26.

Figure A-1 is the histogram and cumulative frequency of ground water pH values. Figures A-3 and A-5 are log histograms and log cumulative frequencies of ground water conductivity and alkalinity, respectively. Figures A-2, A-4, and A-6 summarize areal distributions of these measurements. The symbol plots in these figures (and all similar figures in this report) are based on the statistical distribution shown in Table A-3.

Odd-numbered Figures A-7 through A-25 are log histogram and cumulative frequency plots of U, Na, Cl, Mg, Al, Mn, Br, V, F, and Dy. The facing even-numbered Figures A-8 through A-26 are the corresponding areal plots for the same elements. Symbols are based on percentile rather than absolute values to permit convenient comparison of elements with widely differing concentration ranges.

In loghistogram and log cumulative frequency plots, LMEAN is the mean of the base 10 logarithms of the measured values. LS.D. is the standard deviation of these logarithms. MIN. and MAX. are the minimum and maximum values of the measurements, not of the logarithms.



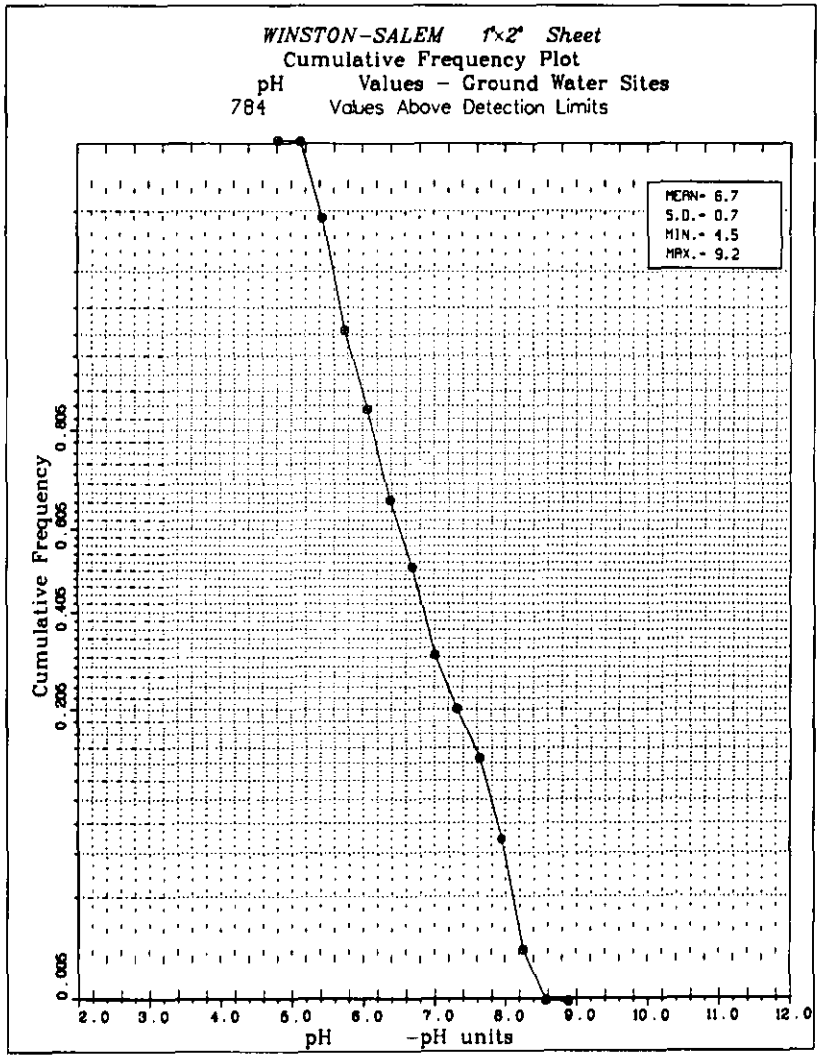


FIGURE A-1. Histogram and Cumulative Frequency Plot of Ground Water pH Values

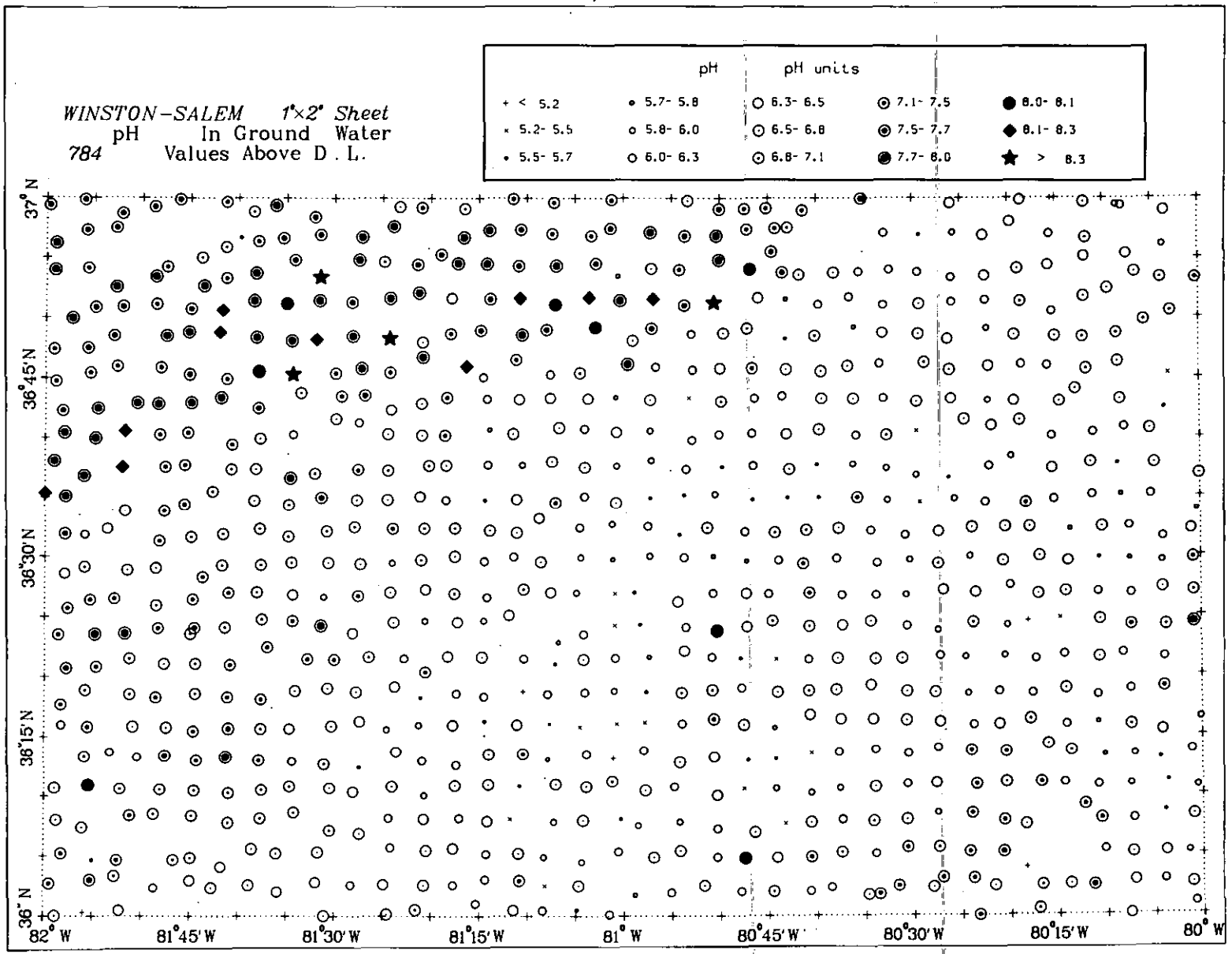
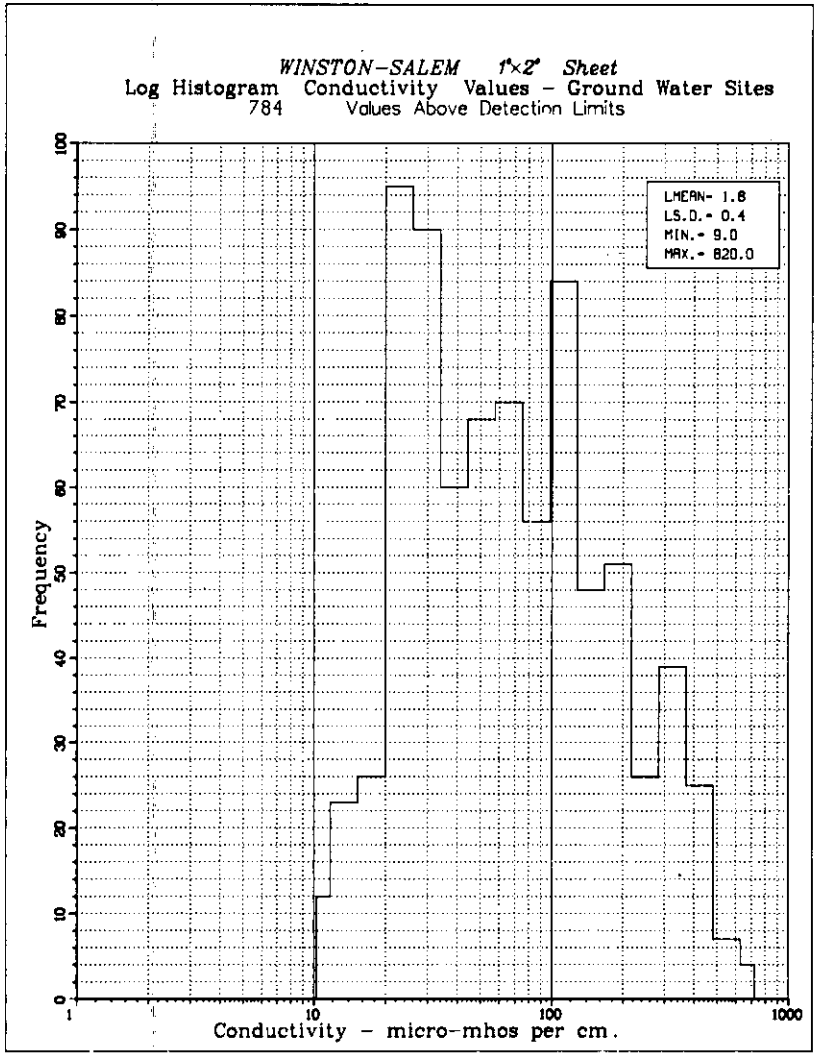


FIGURE A-2. Areal Distribution of Ground Water pH Values



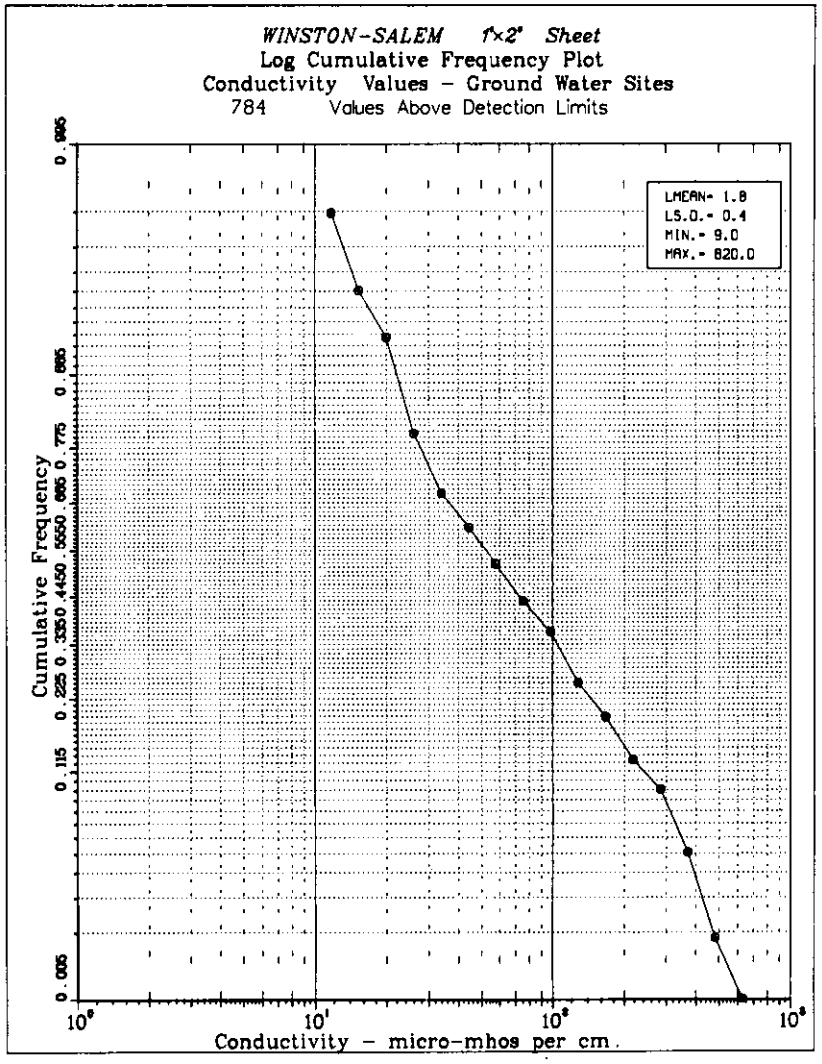


FIGURE A-3. Log Histogram and Cumulative Frequency Plot of Ground Water Conductivity

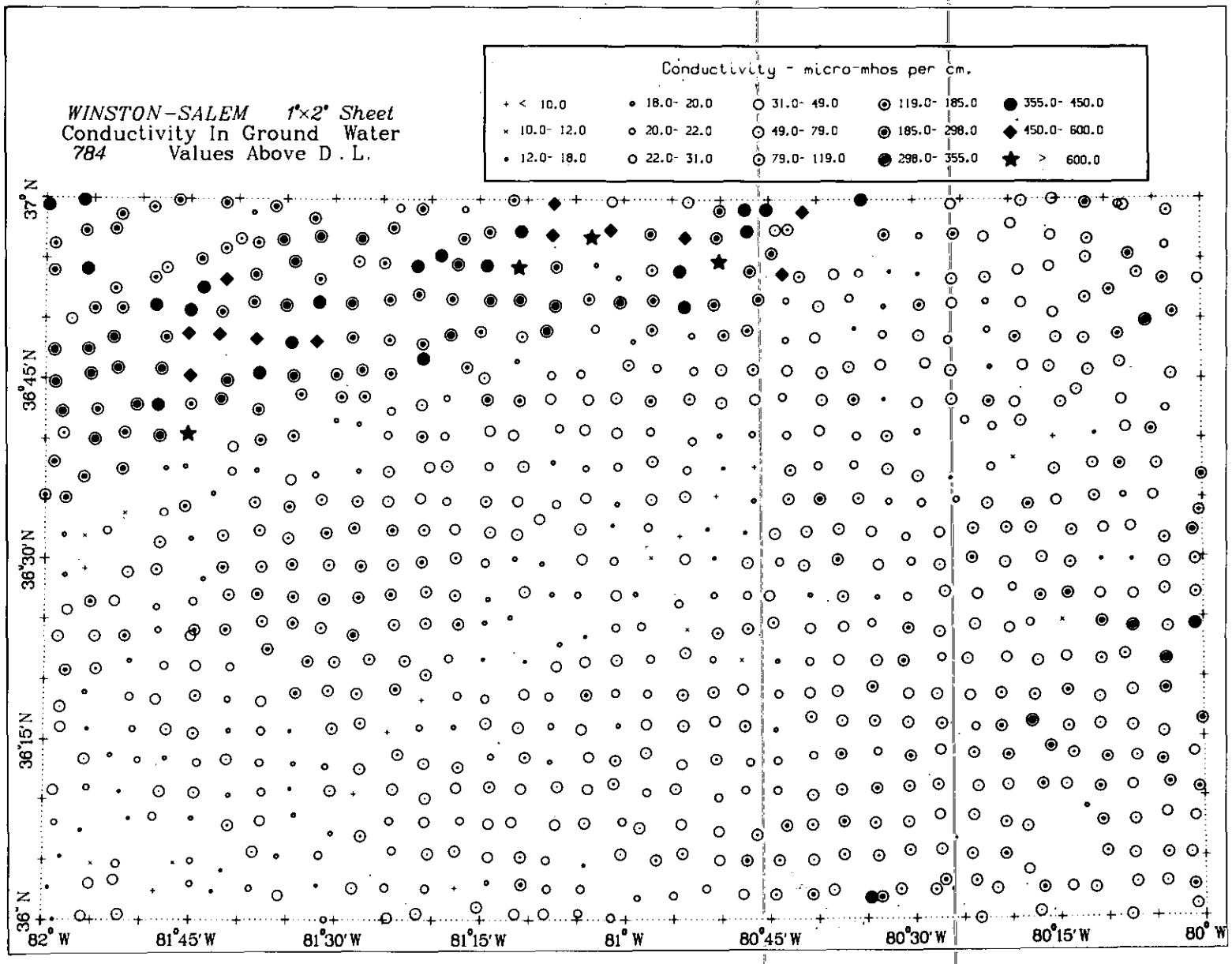
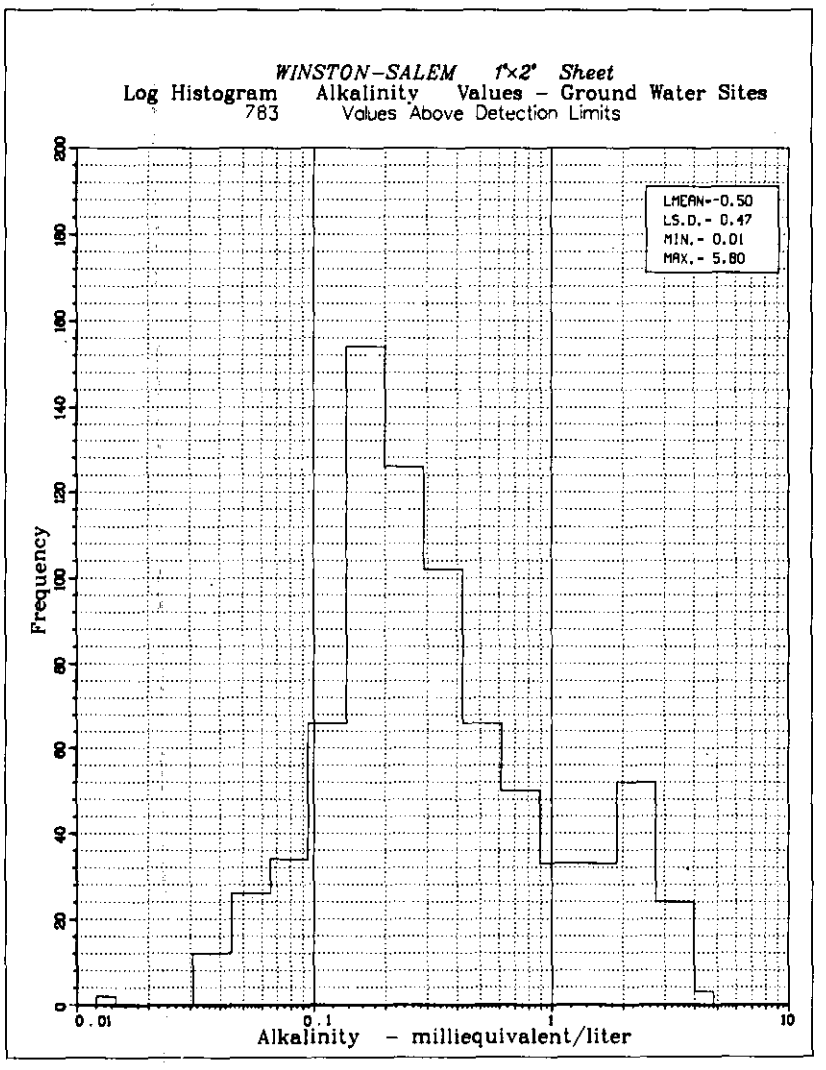


FIGURE A-4. Areal Distribution of Ground Water Conductivity



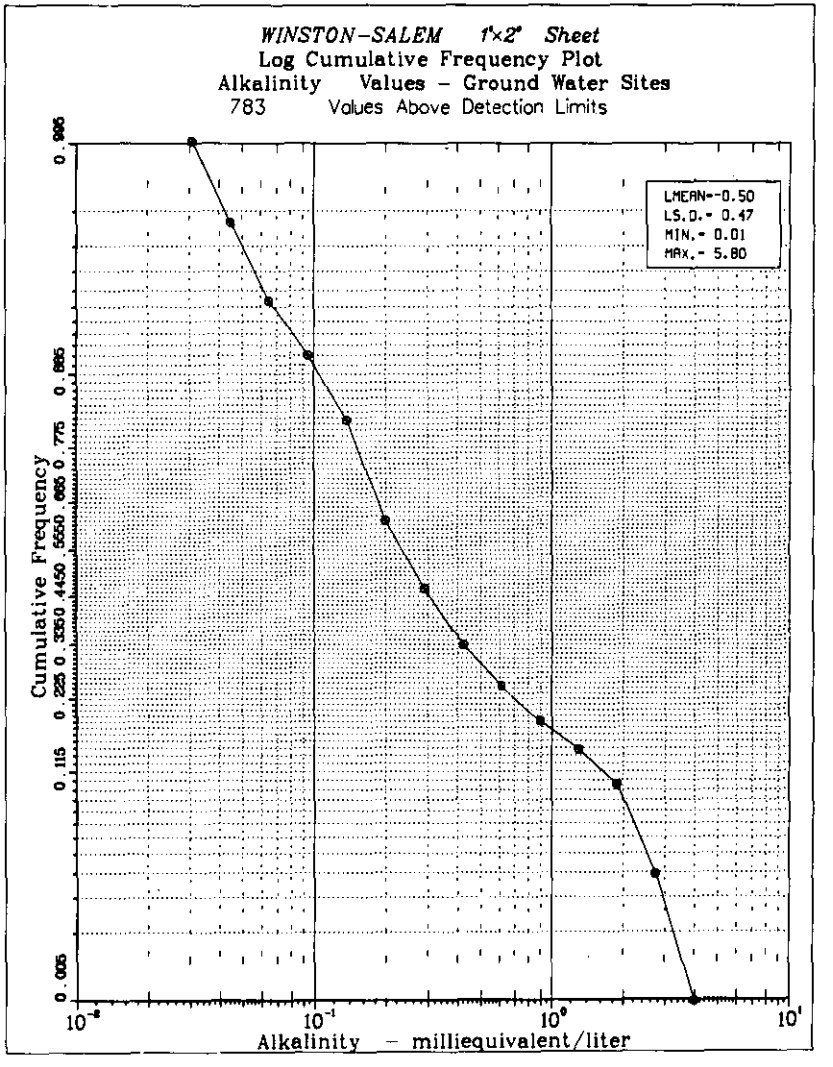


FIGURE A-5. Log Histogram and Cumulative Frequency Plot of Values of Ground Water Alkalinity

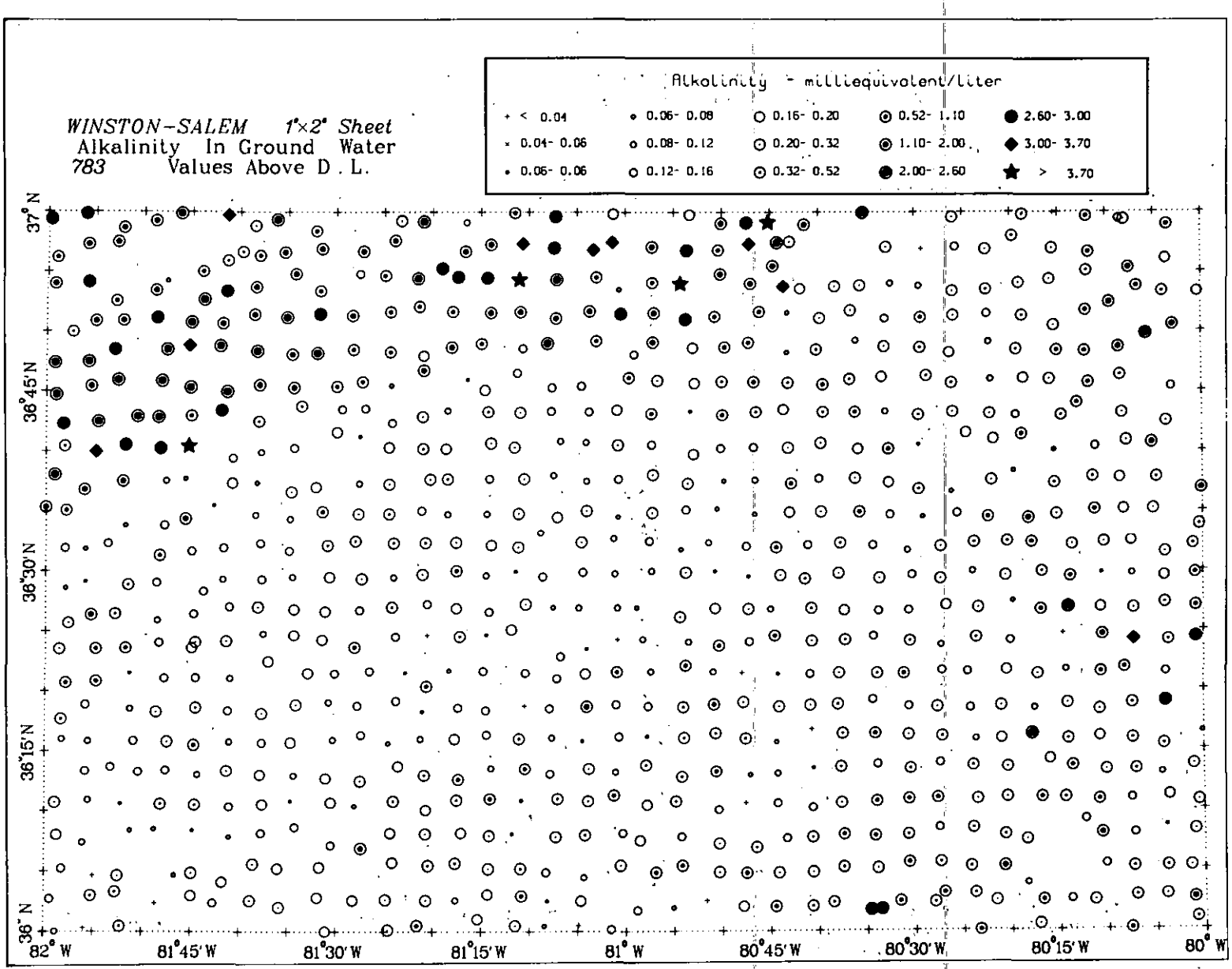
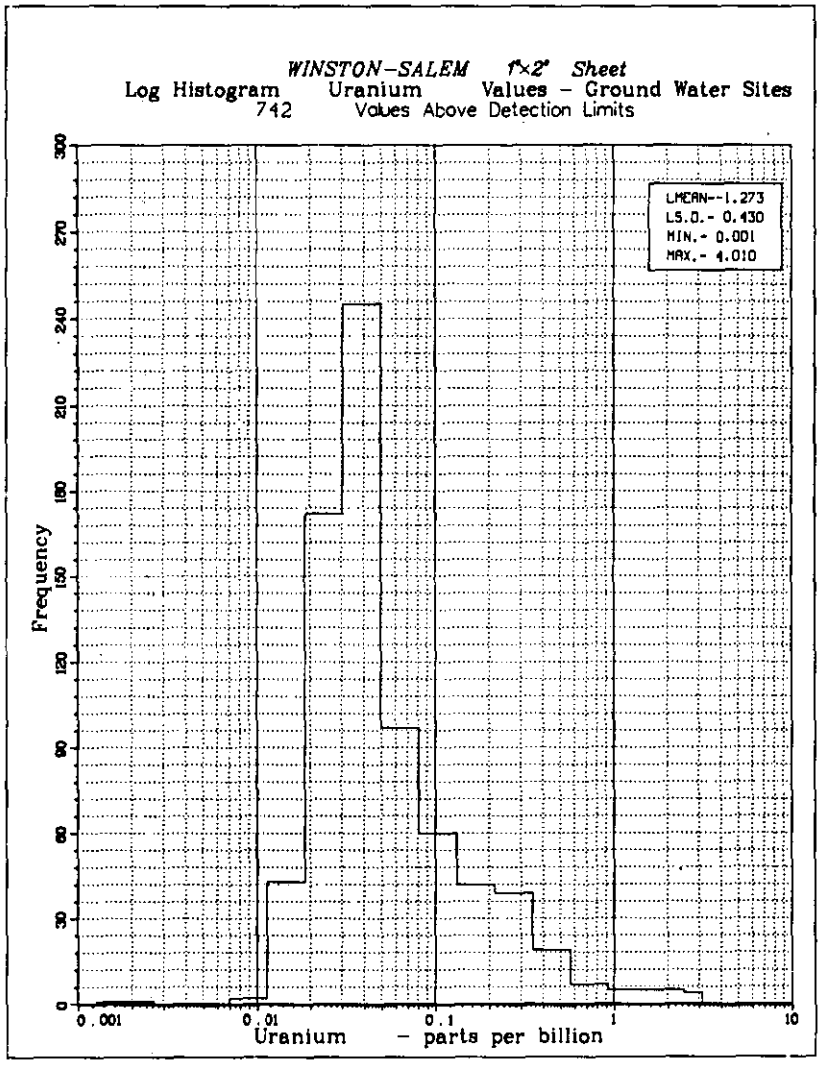


FIGURE A-6. Areal Distribution of Values of Ground Water Alkalinity



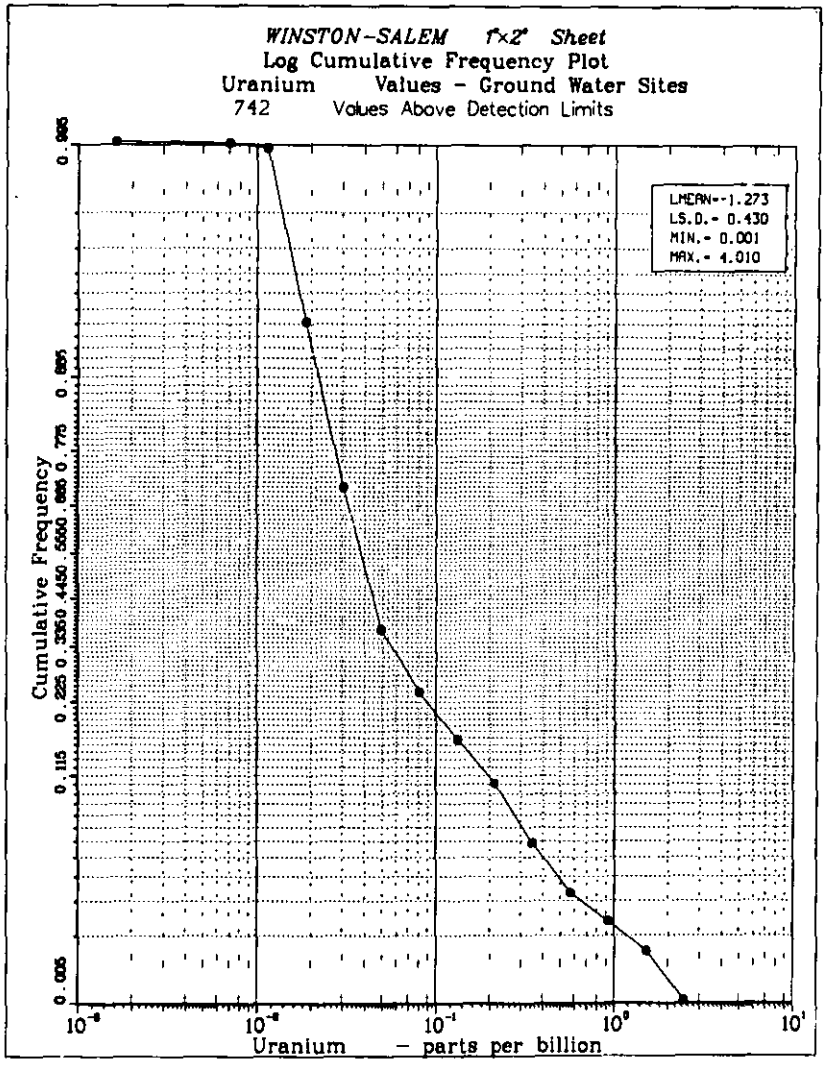


FIGURE A-7. Log Histogram and Cumulative Frequency Plot of Uranium Concentrations in Ground Water

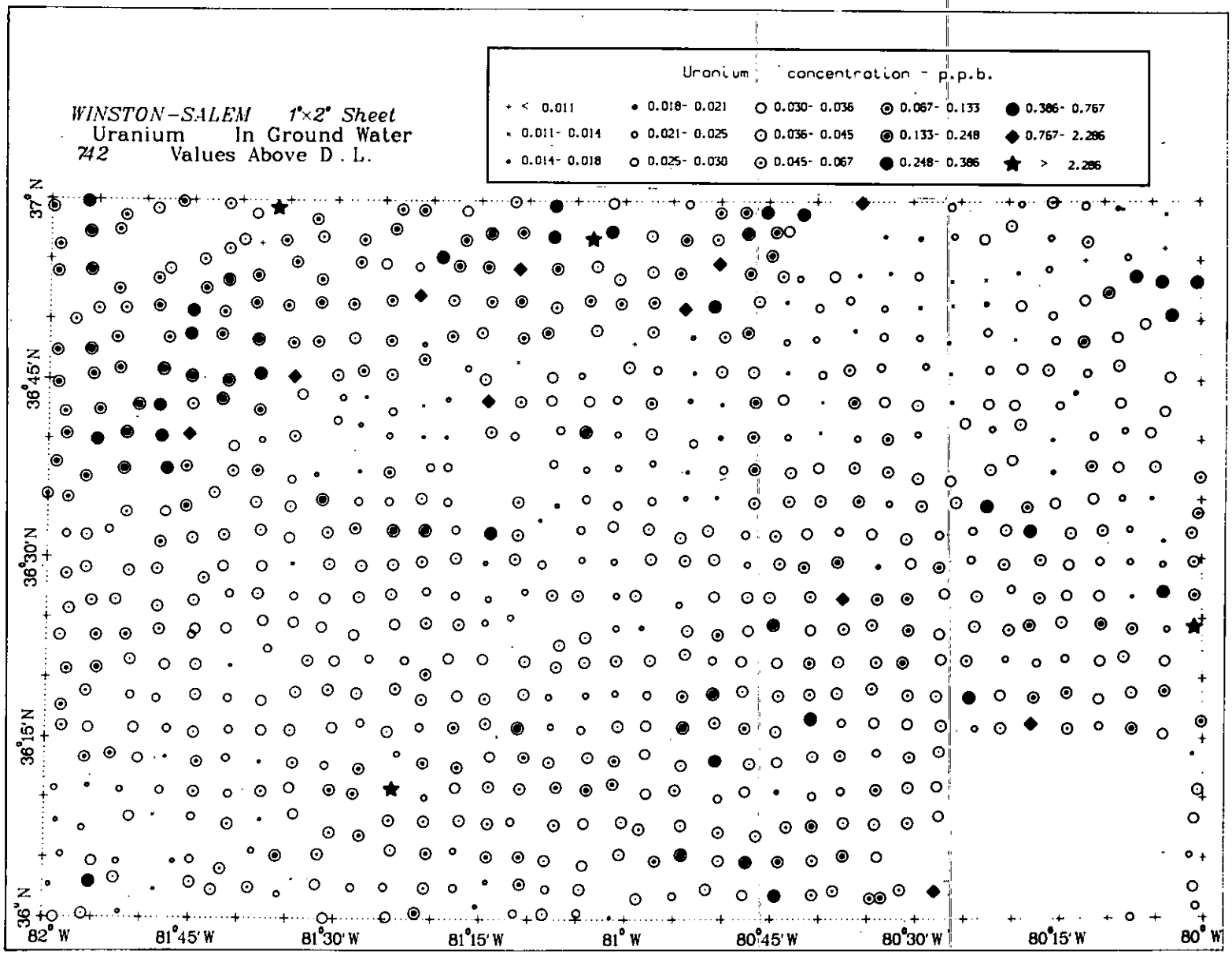
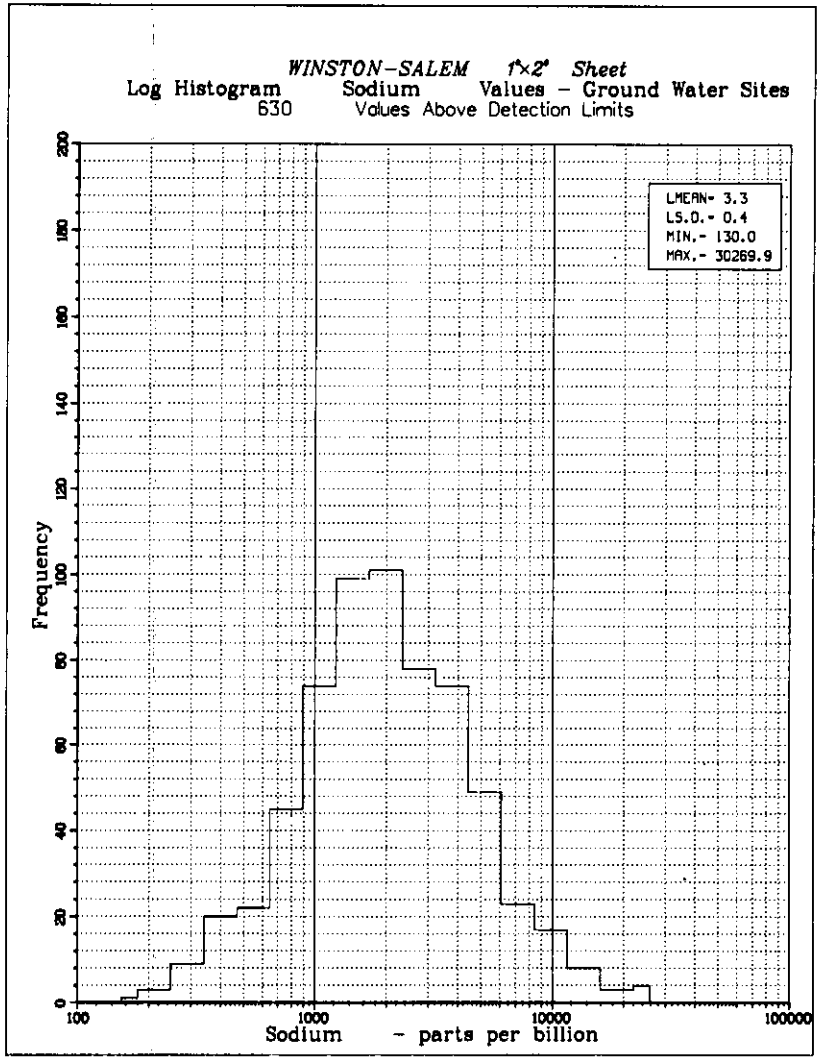


FIGURE A-8. Areal Distribution of Uranium Concentrations in Ground Water



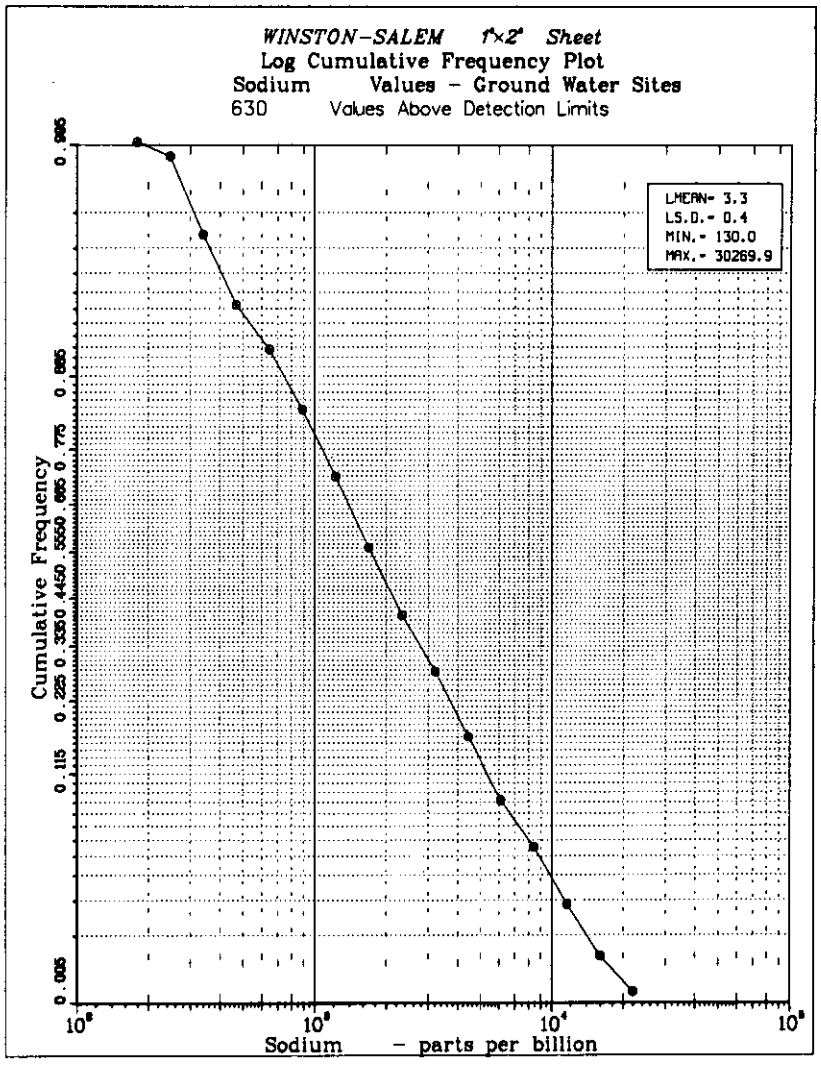


FIGURE A-9. Log Histogram and Cumulative Frequency Plot of Sodium Concentrations in Ground Water

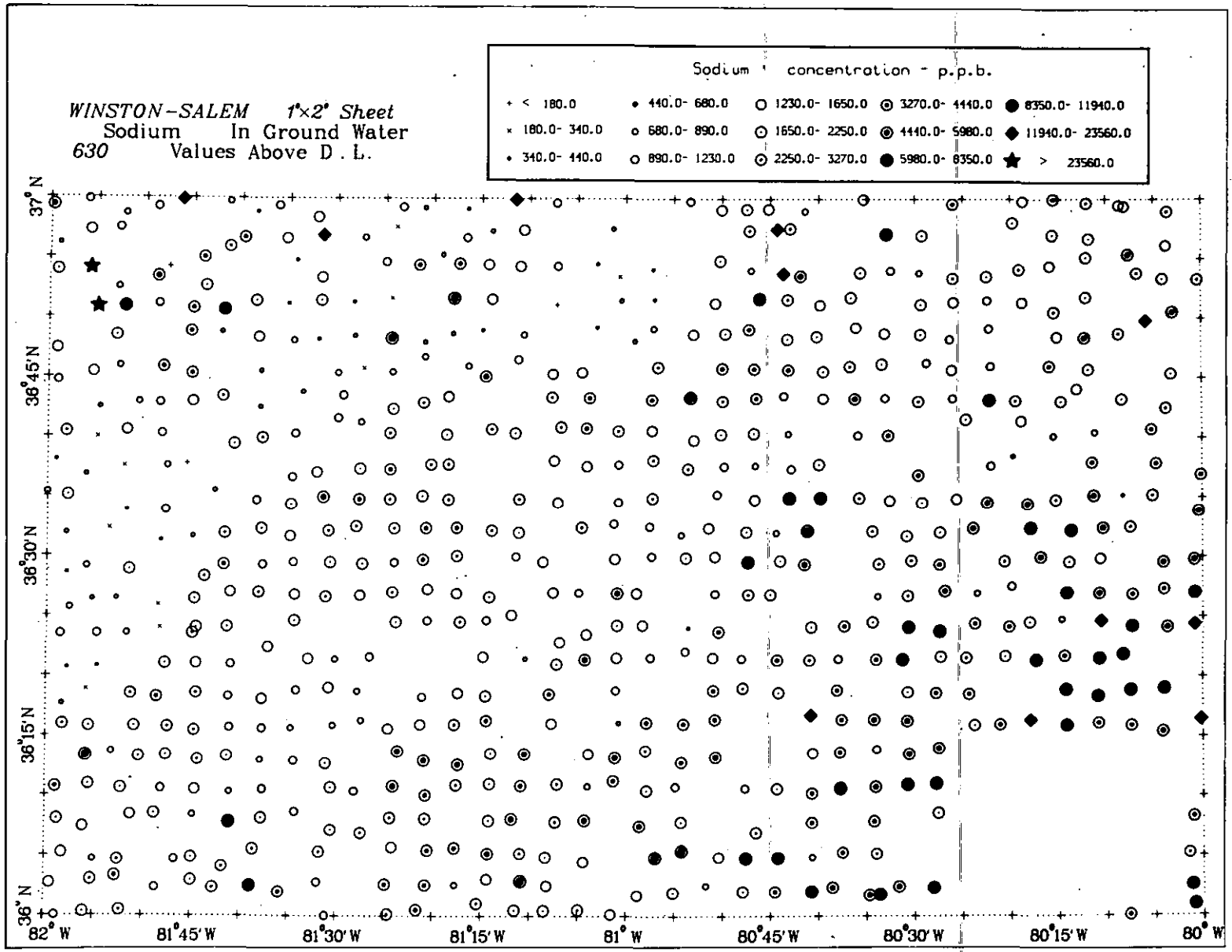


FIGURE A-10. Areal Distribution of Sodium Concentrations in Ground Water

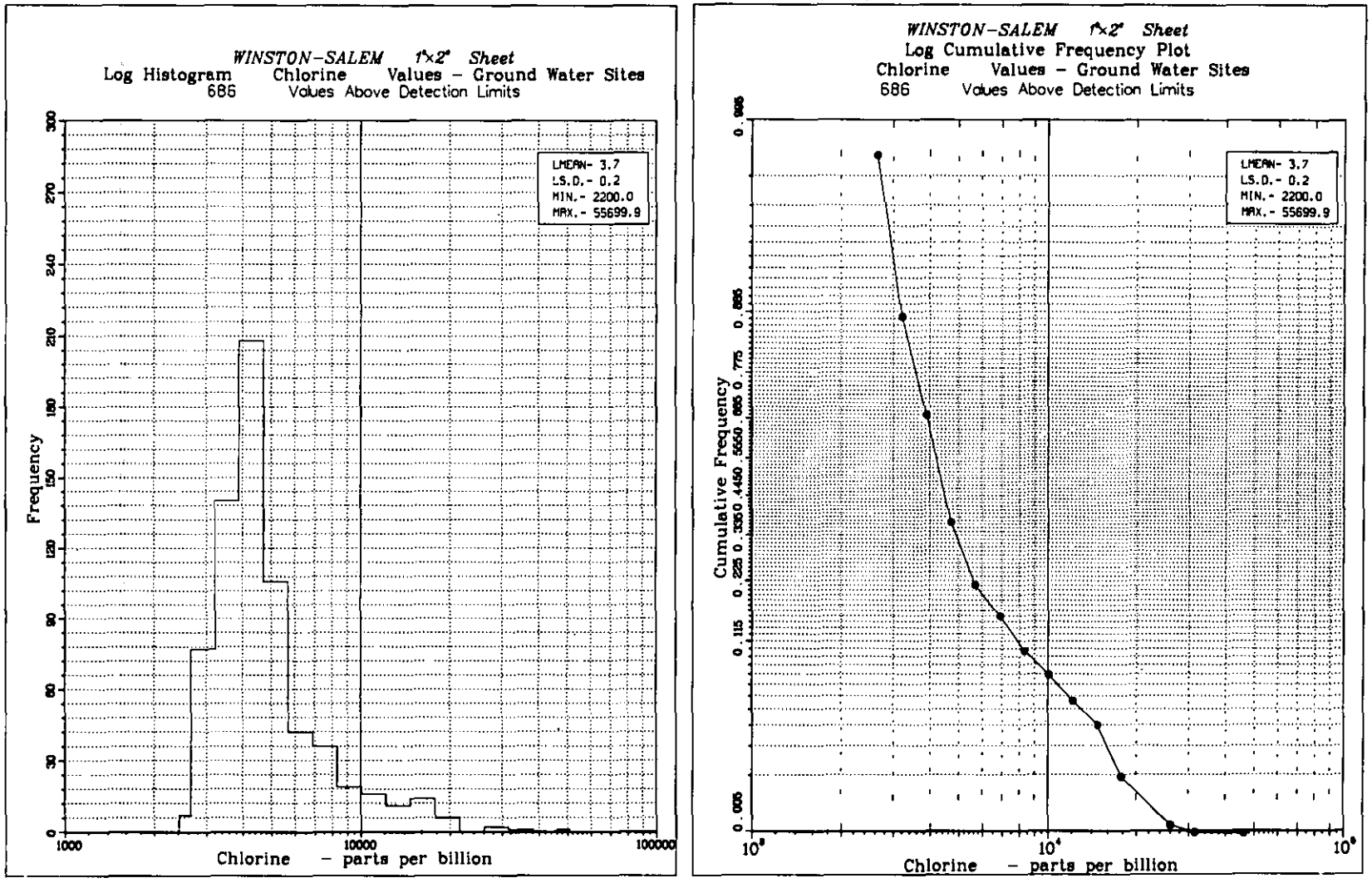


FIGURE A-11. Log Histogram and Cumulative Frequency Plot of Chlorine Concentrations in Ground Water

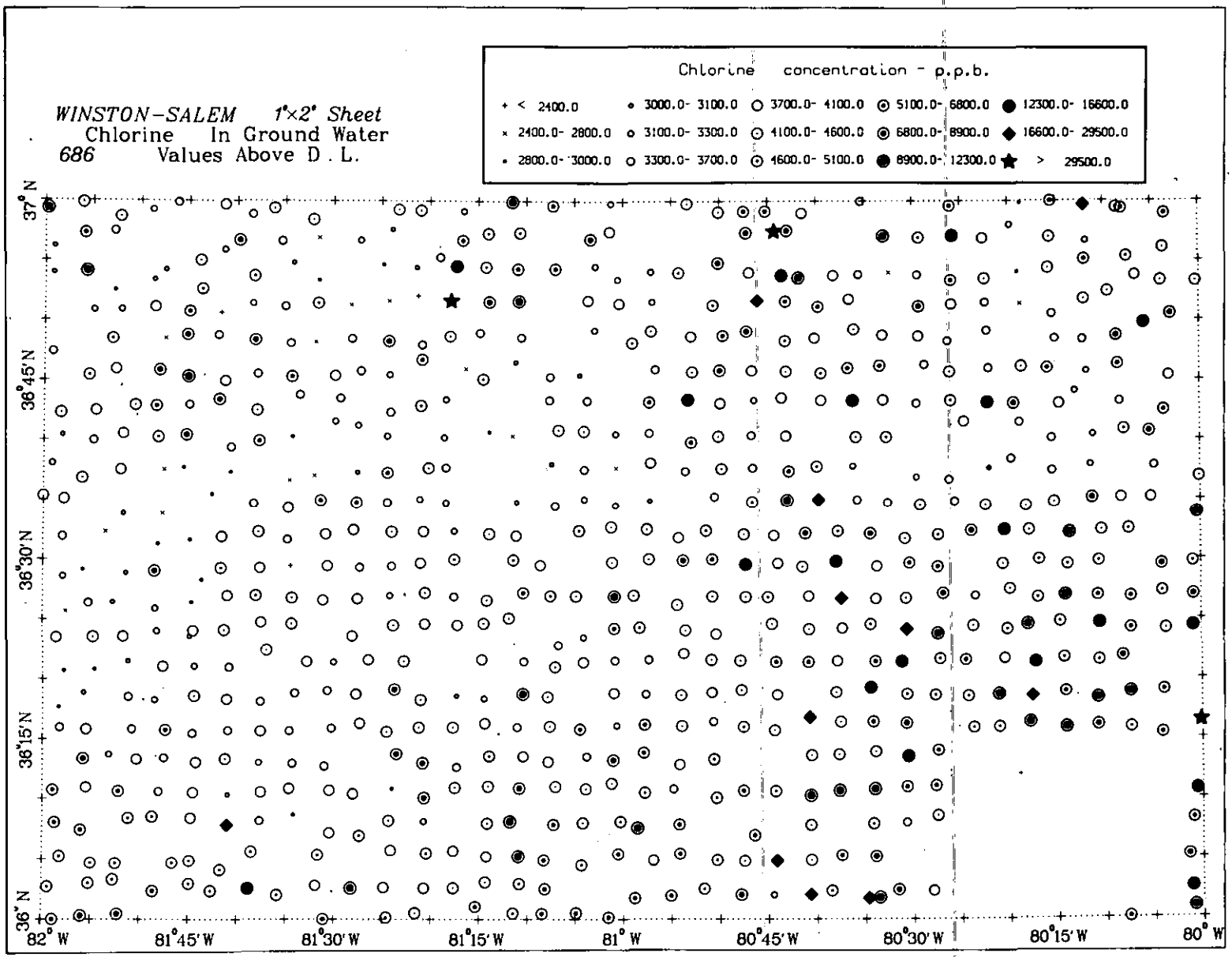
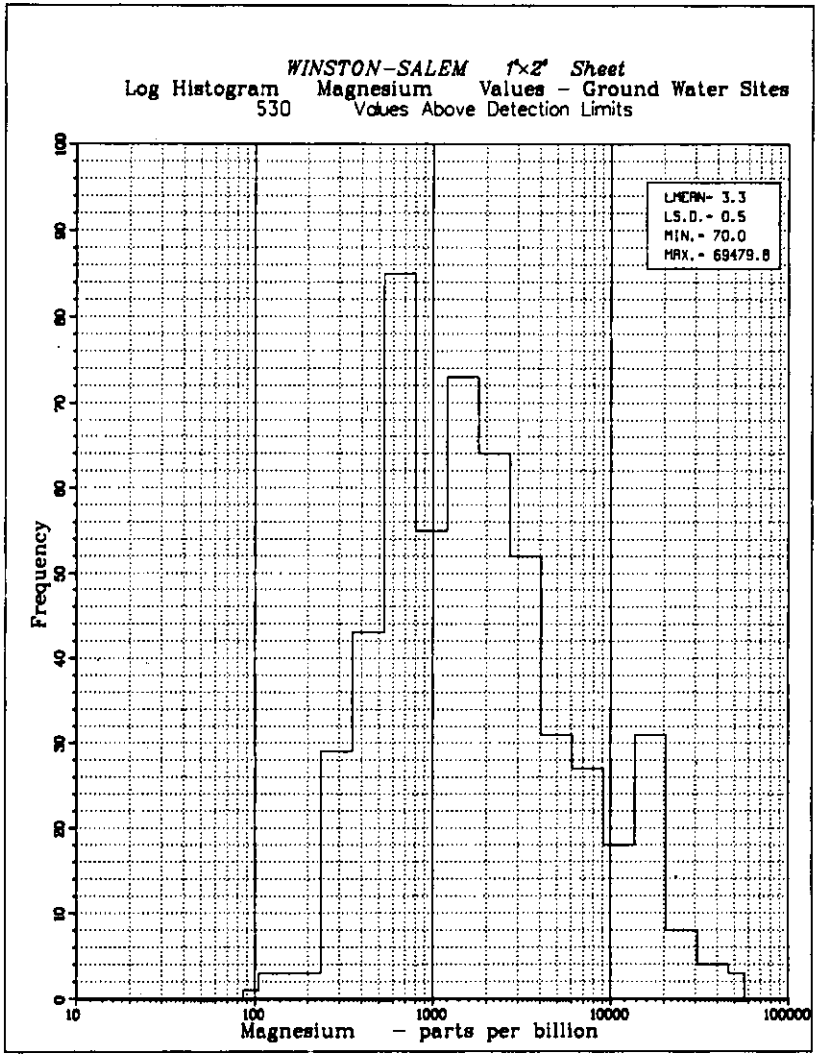


FIGURE A-12. Areal Distribution of Chlorine Concentrations in Ground Water



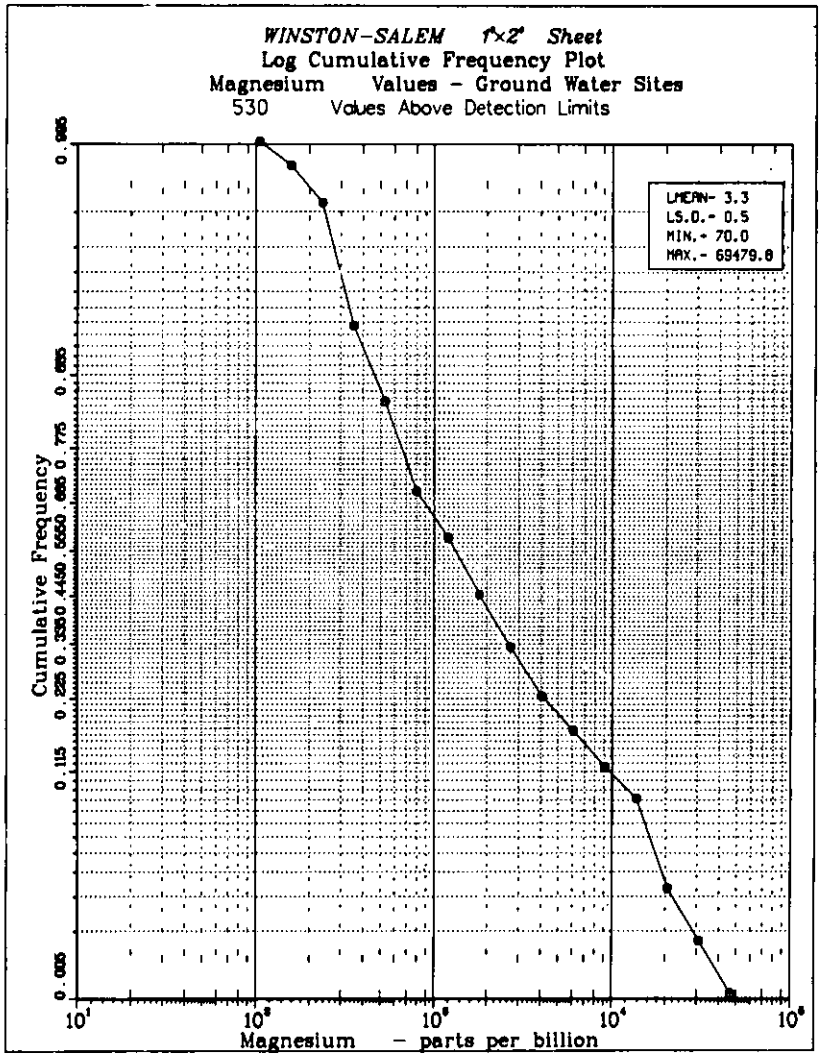


FIGURE A-13. Log Histogram and Cumulative Frequency Plot of Magnesium Concentrations in Ground Water

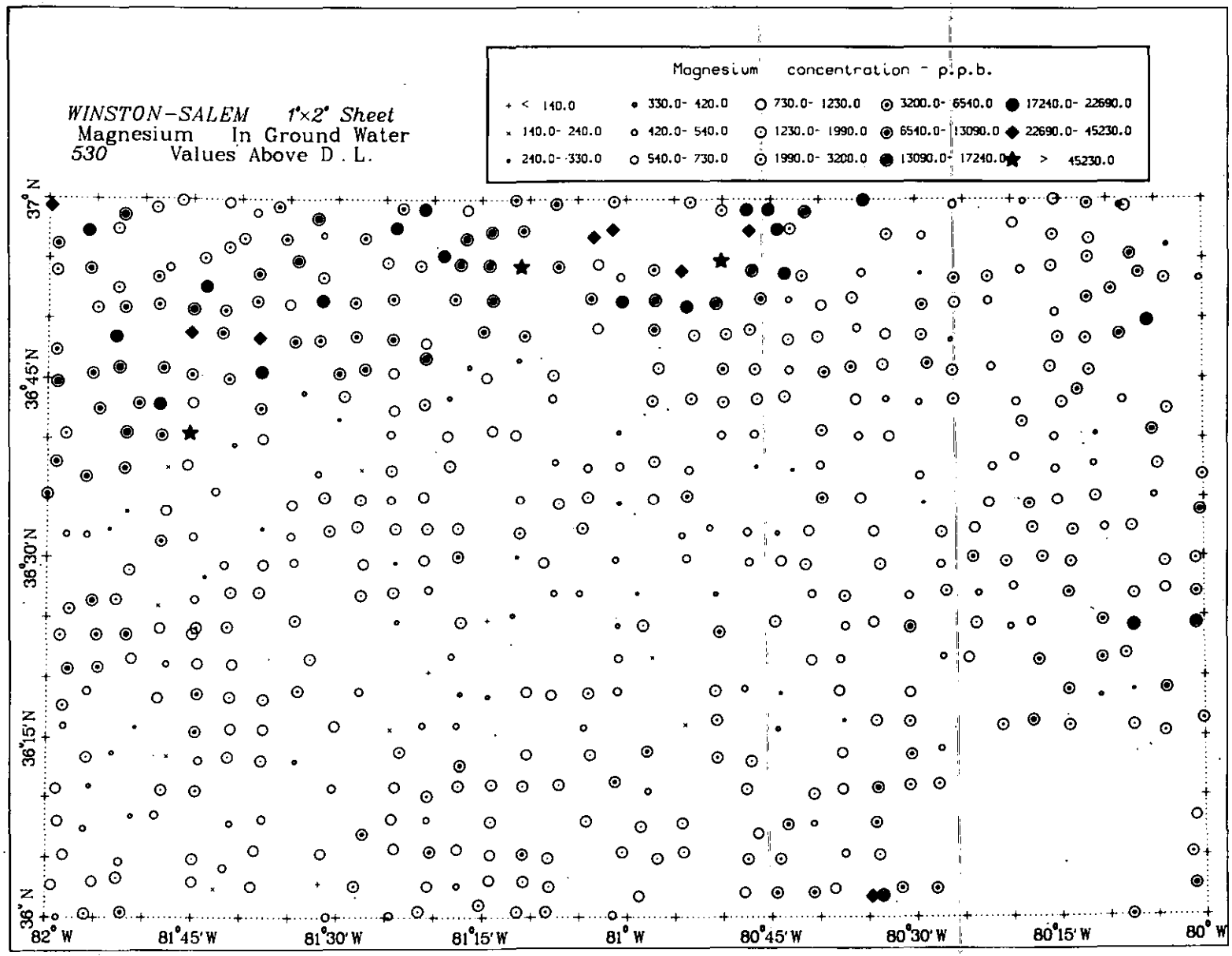
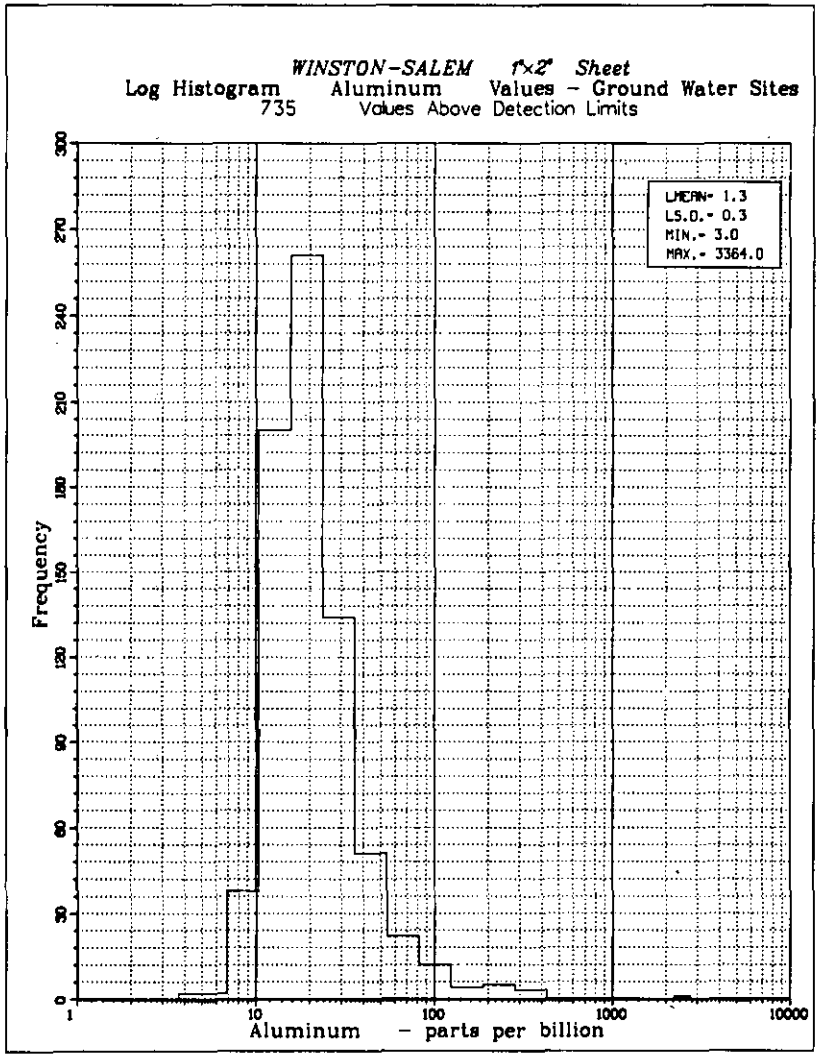


FIGURE A-14. Areal Distribution of Magnesium Concentrations in Ground Water



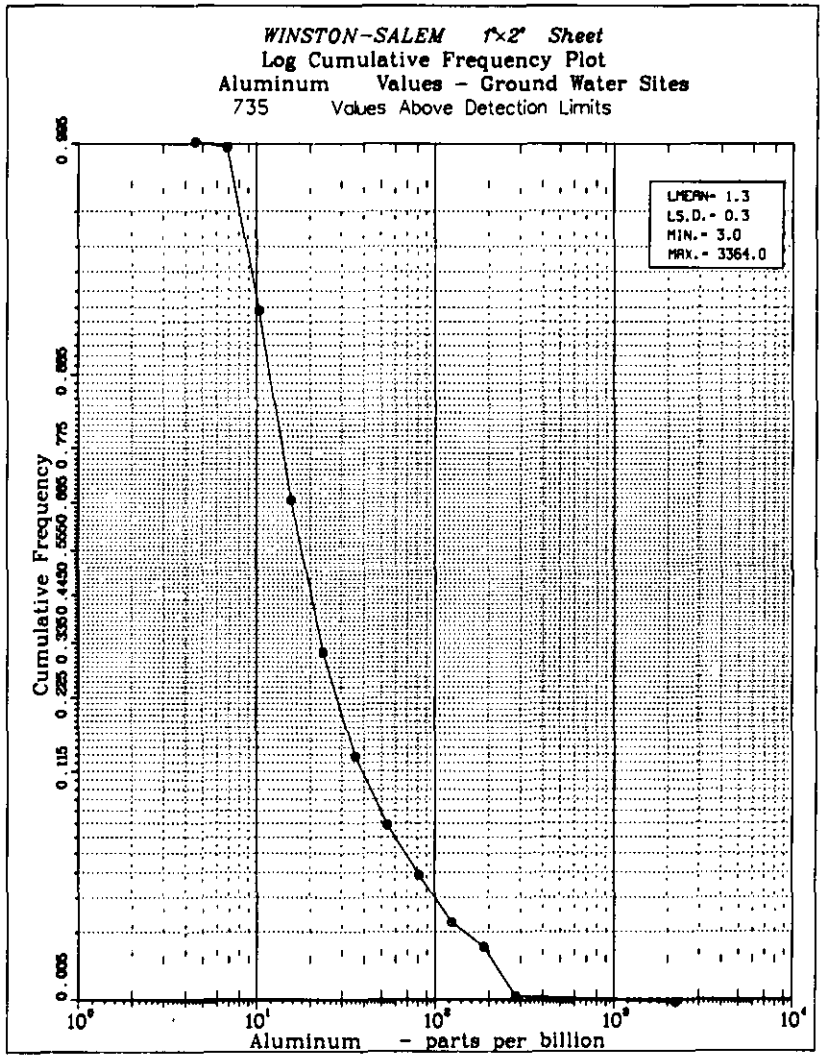


FIGURE A-15. Log Histogram and Cumulative Frequency Plot of Aluminum Concentrations in Ground Water

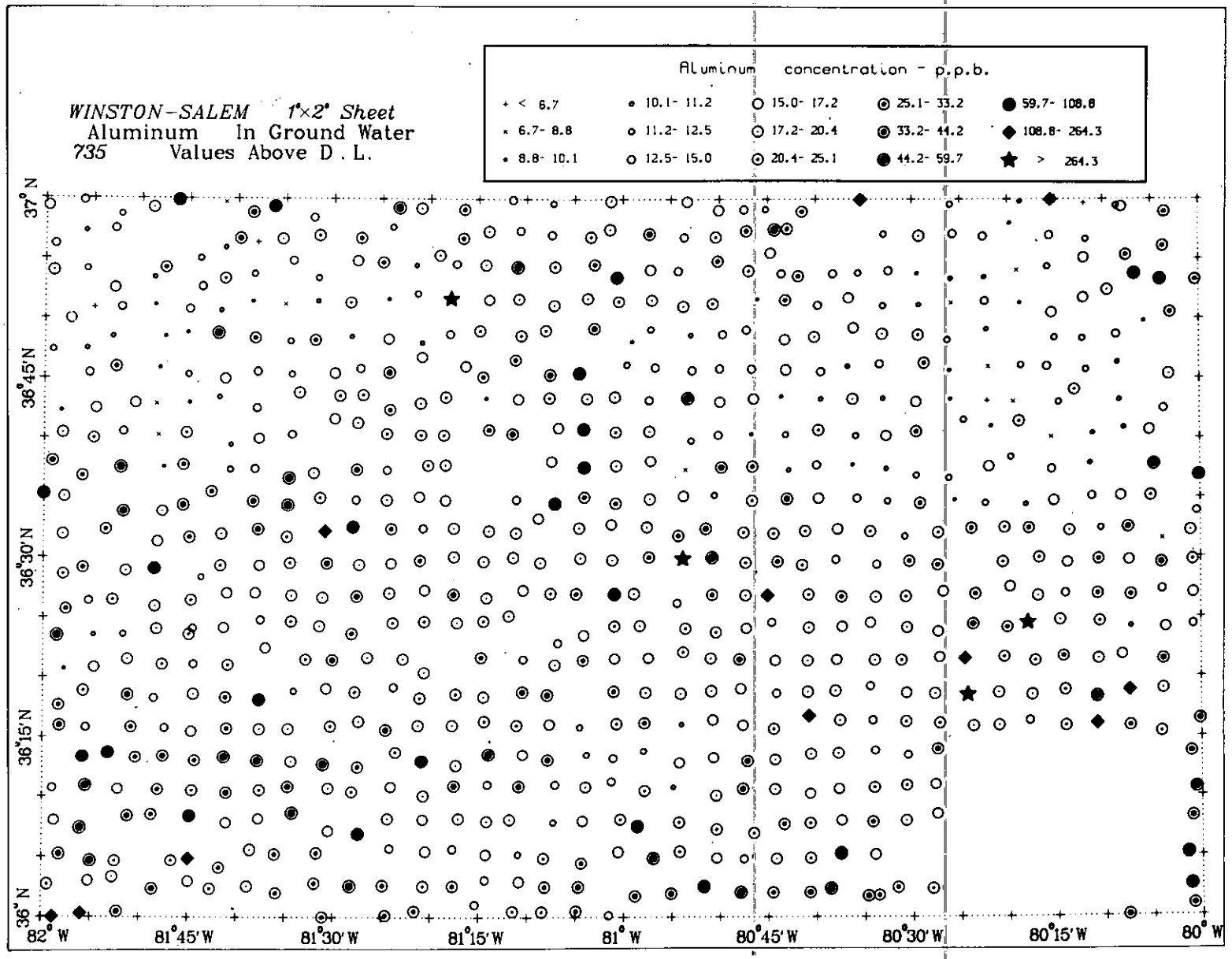
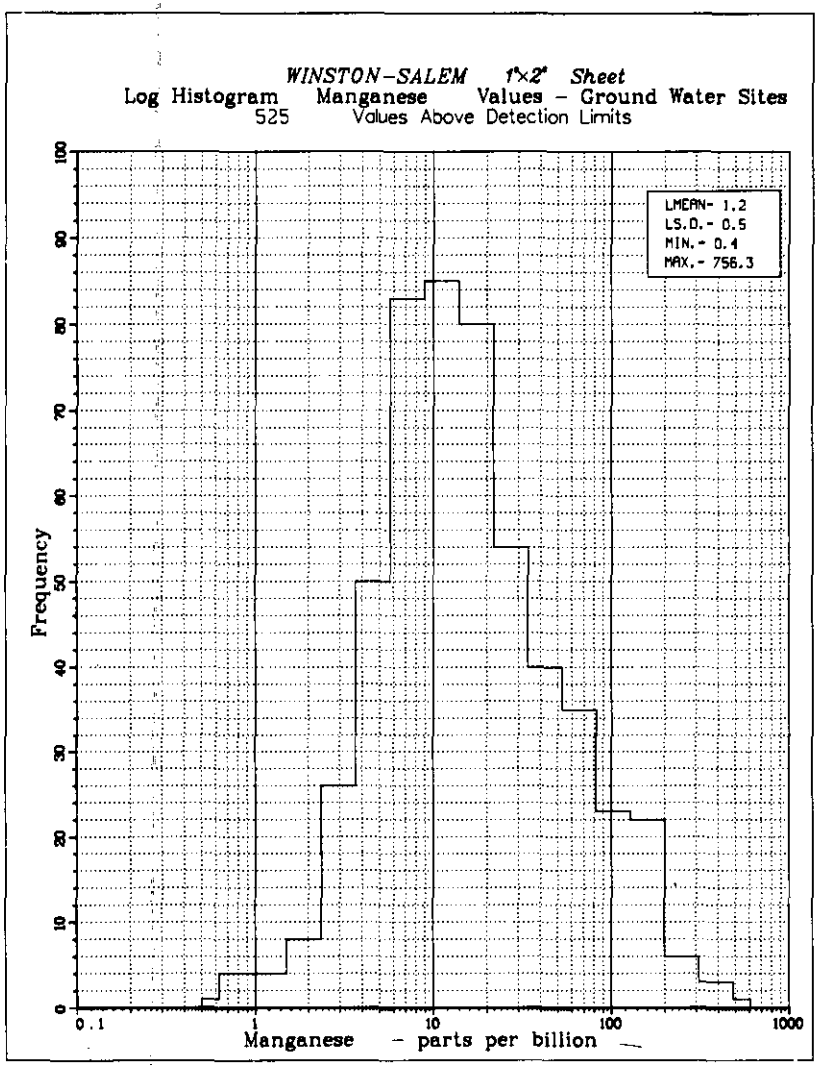


FIGURE A-16. Areal Distribution of Aluminum Concentrations in Ground Water



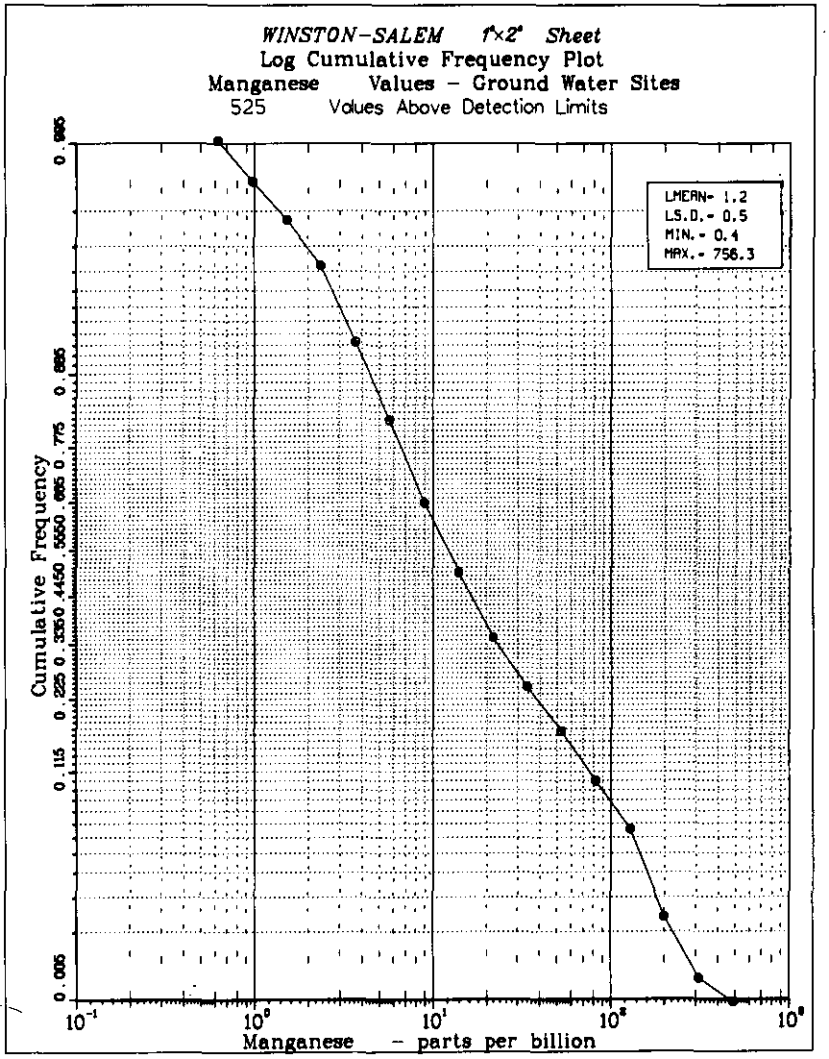


FIGURE A-17. Log Histogram and Cumulative Frequency Plot of Manganese Concentrations in Ground Water

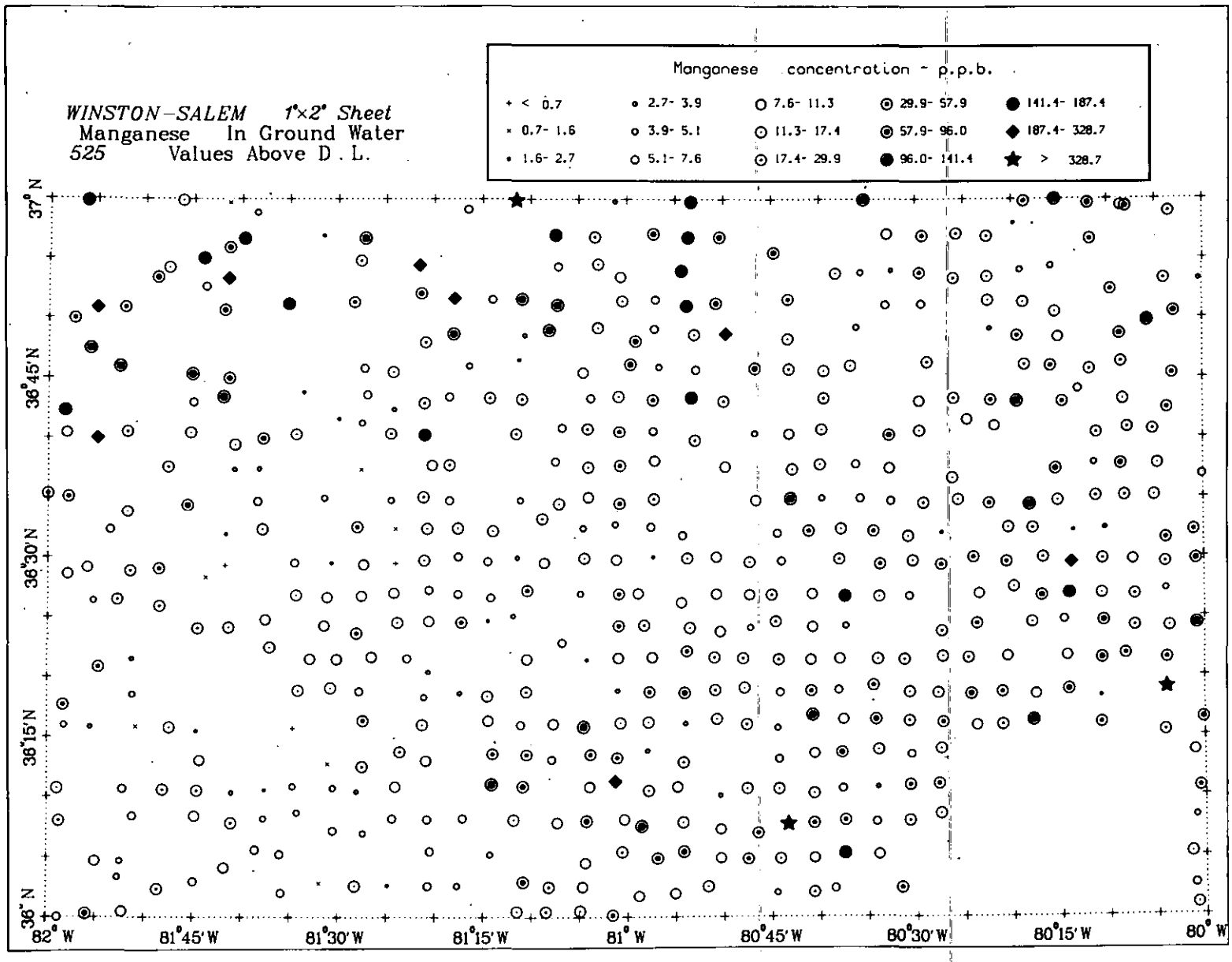


FIGURE A-18. Areal Distribution of Manganese Concentrations in Ground Water

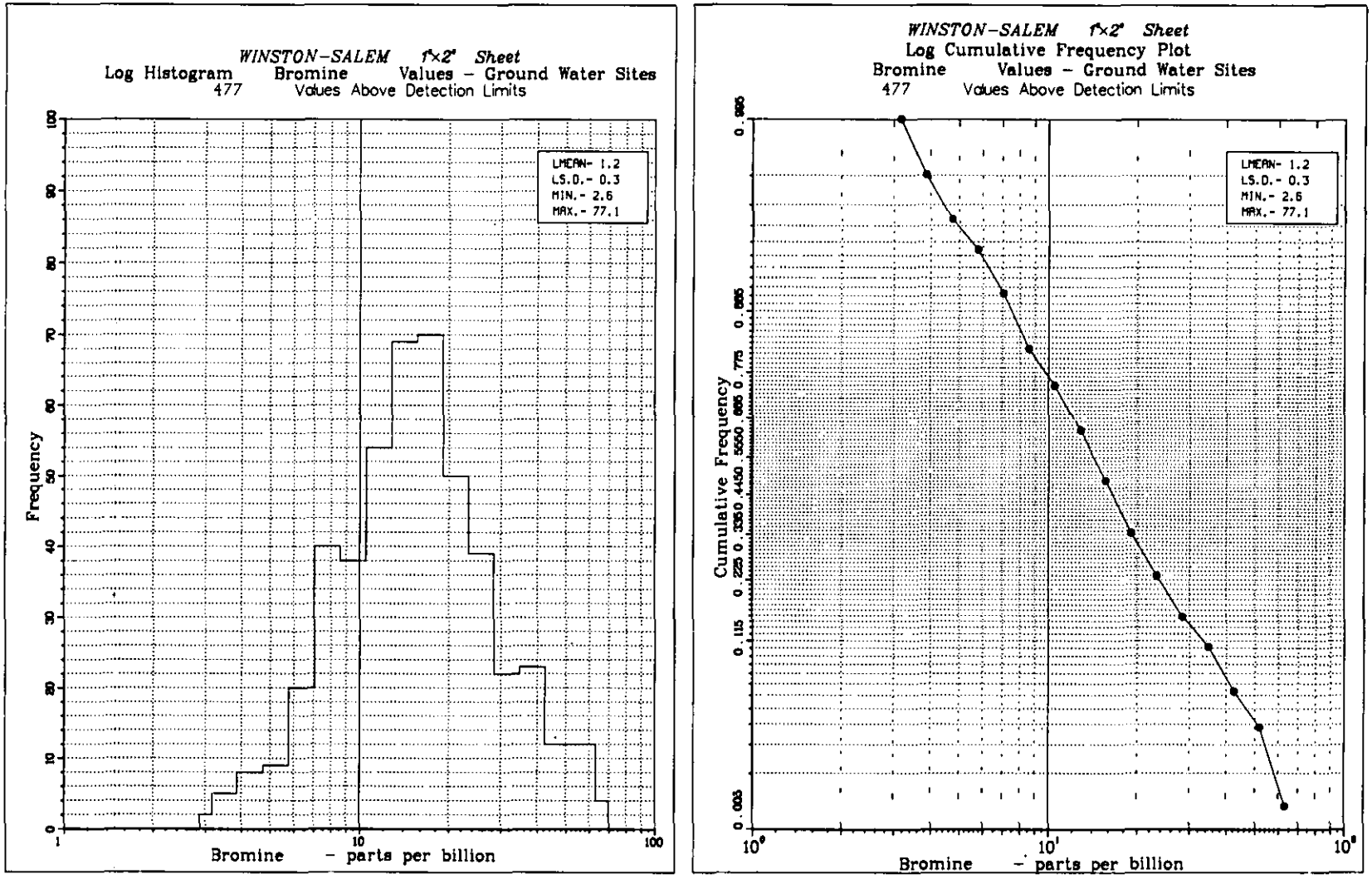


FIGURE A-19. Log Histogram and Cumulative Frequency Plot of Bromine Concentrations in Ground Water

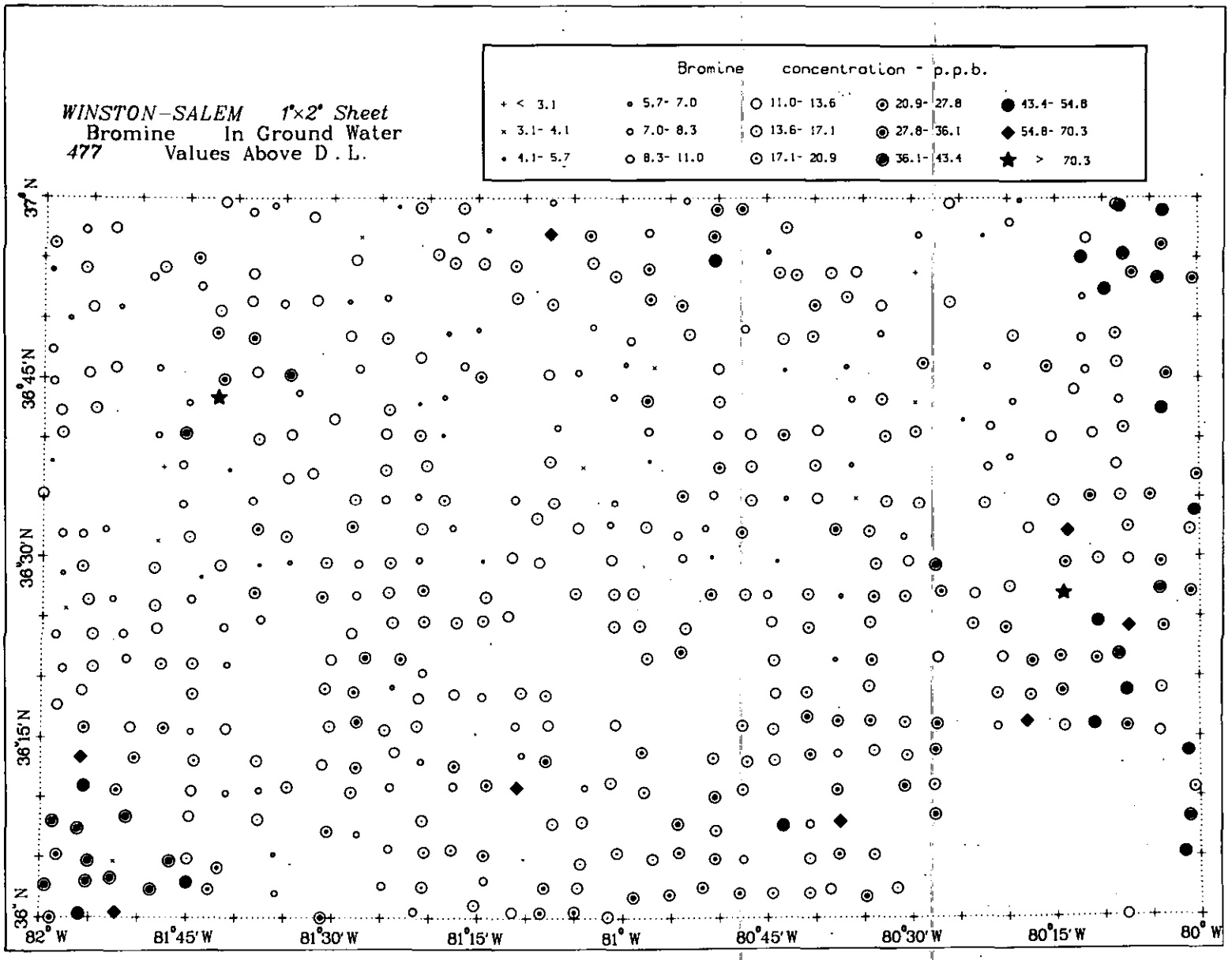
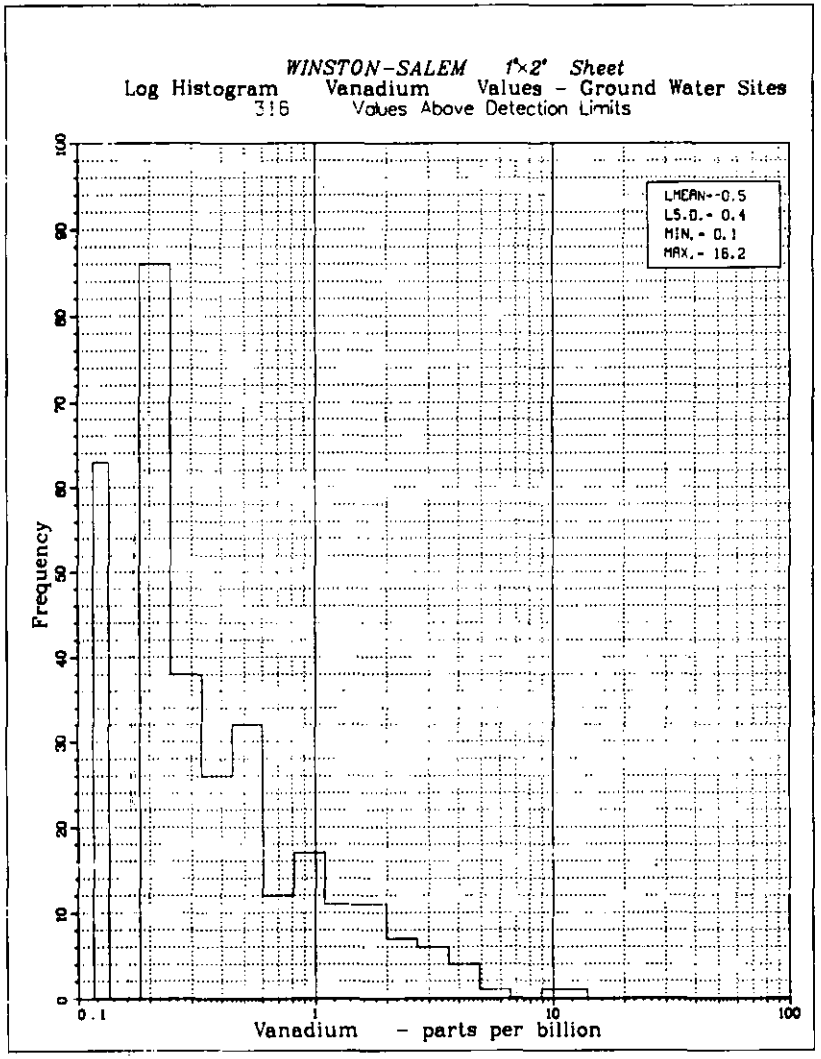


FIGURE A-20. Areal Distribution of Bromine Concentrations in Ground Water



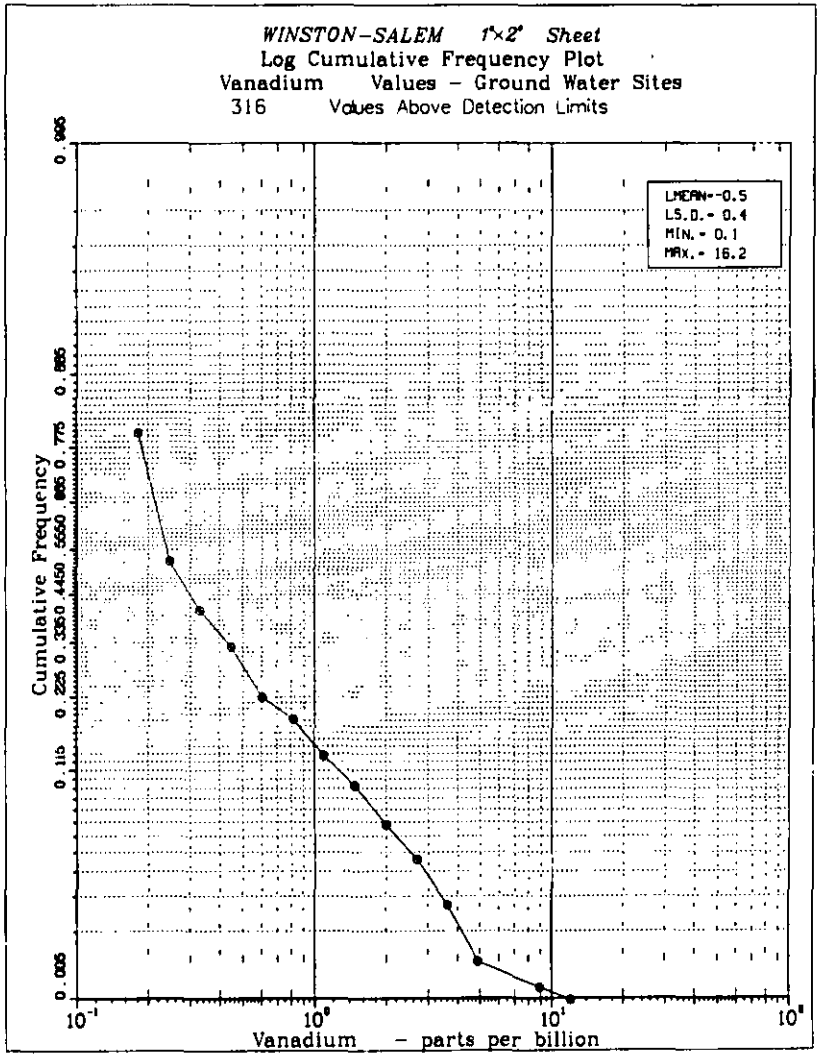


FIGURE A-21. Log Histogram and Cumulative Frequency Plot of Vanadium Concentrations in Ground Water

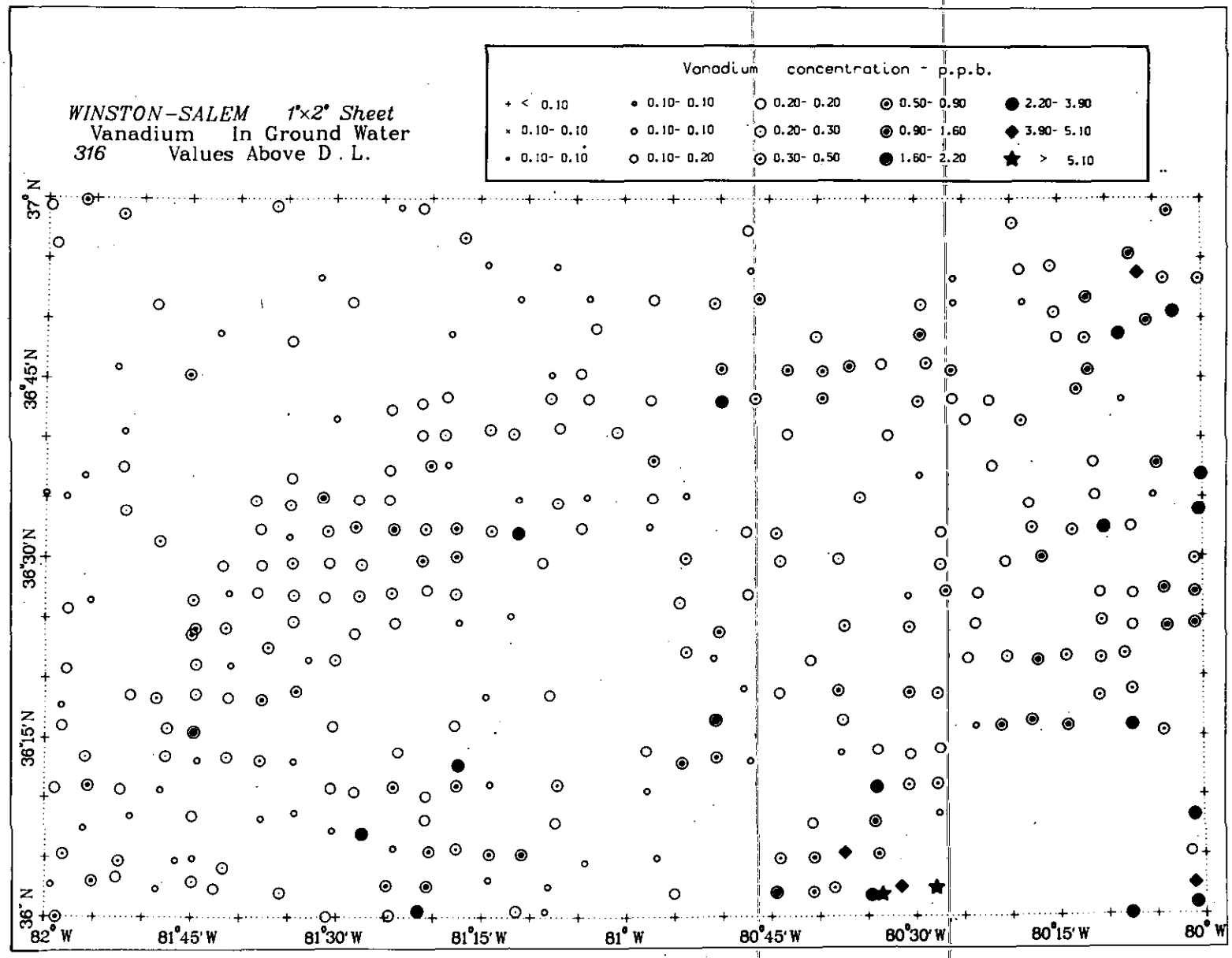
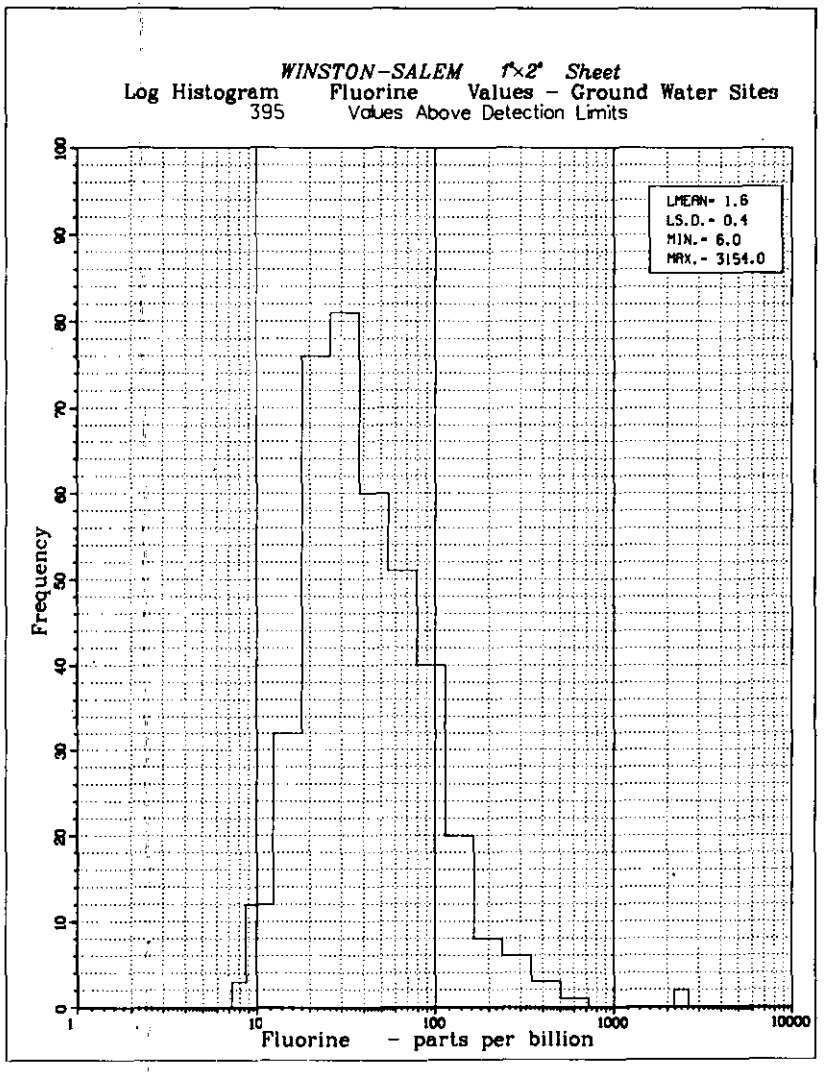


FIGURE A-22. Areal Distribution of Vanadium Concentrations in Ground Water



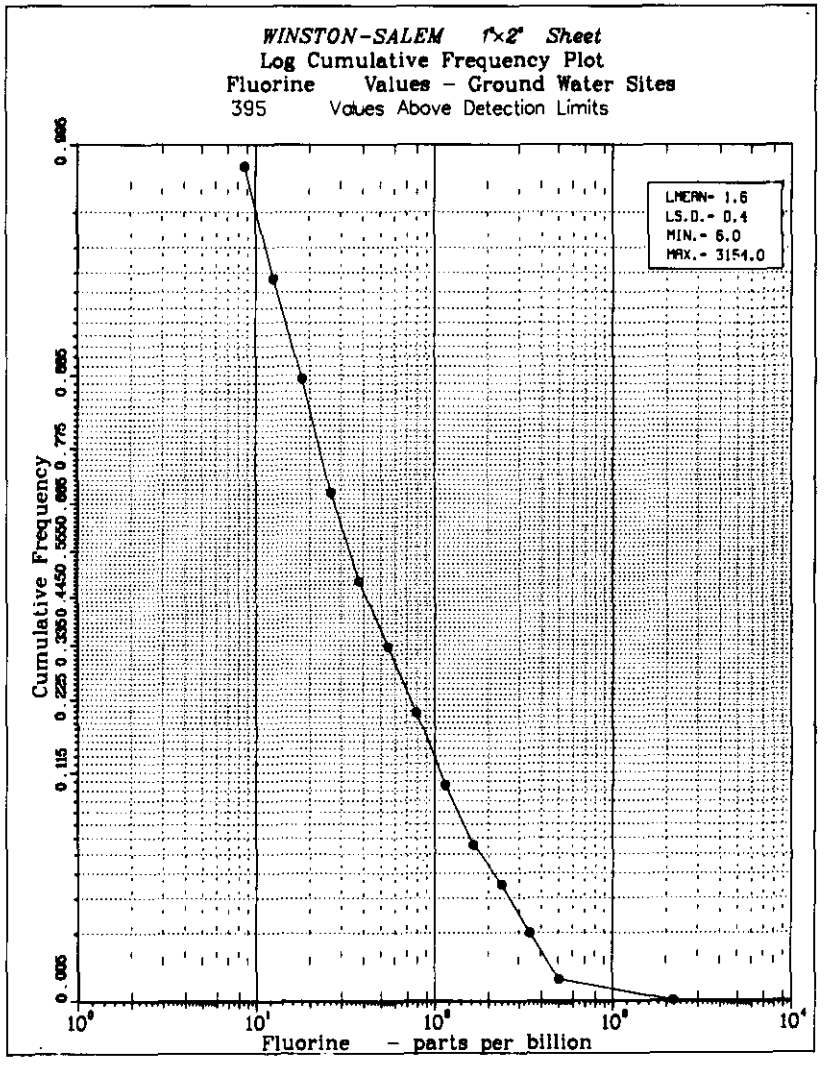


FIGURE A-23. Log Histogram and Cumulative Frequency Plot of Fluorine Concentrations in Ground Water

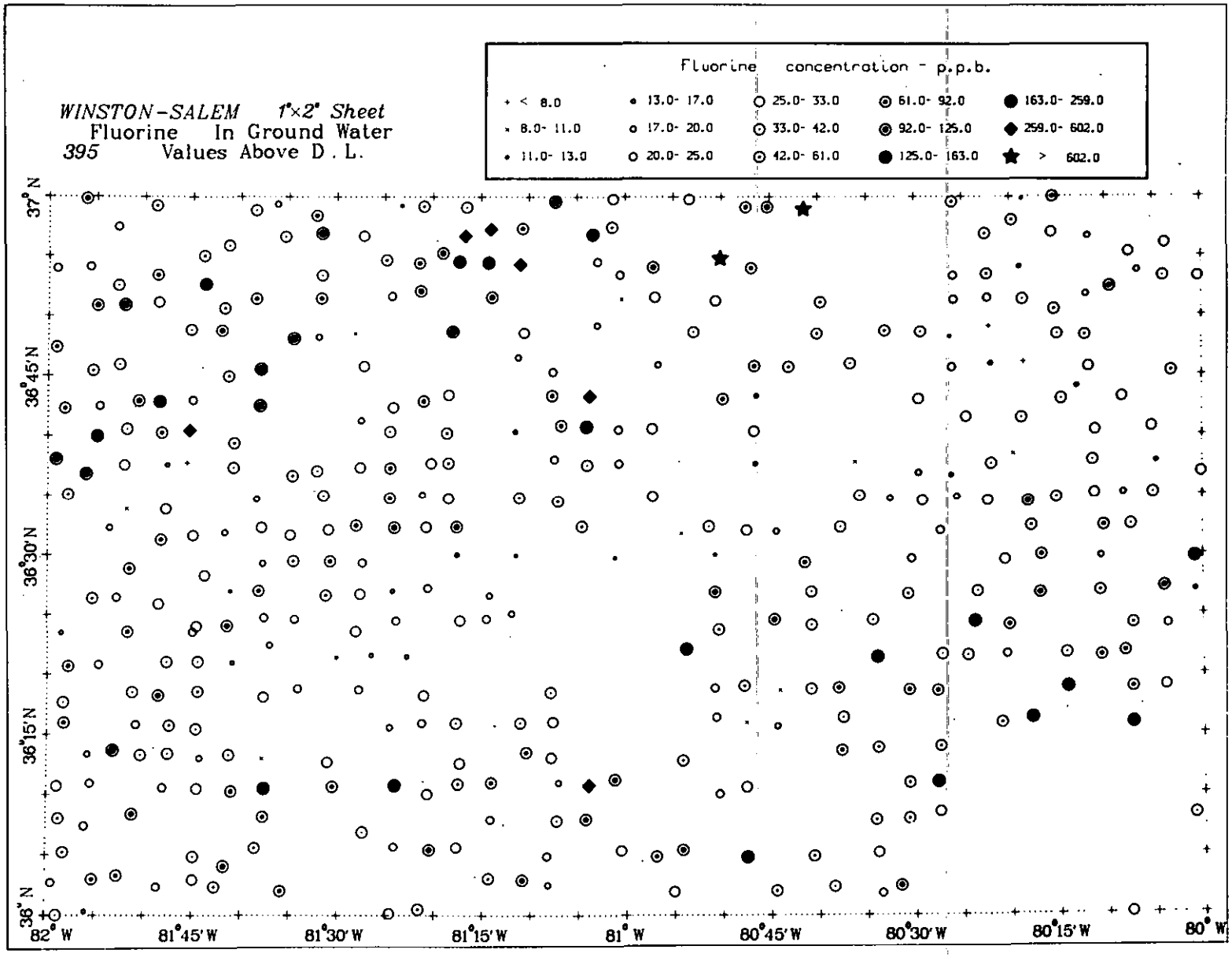
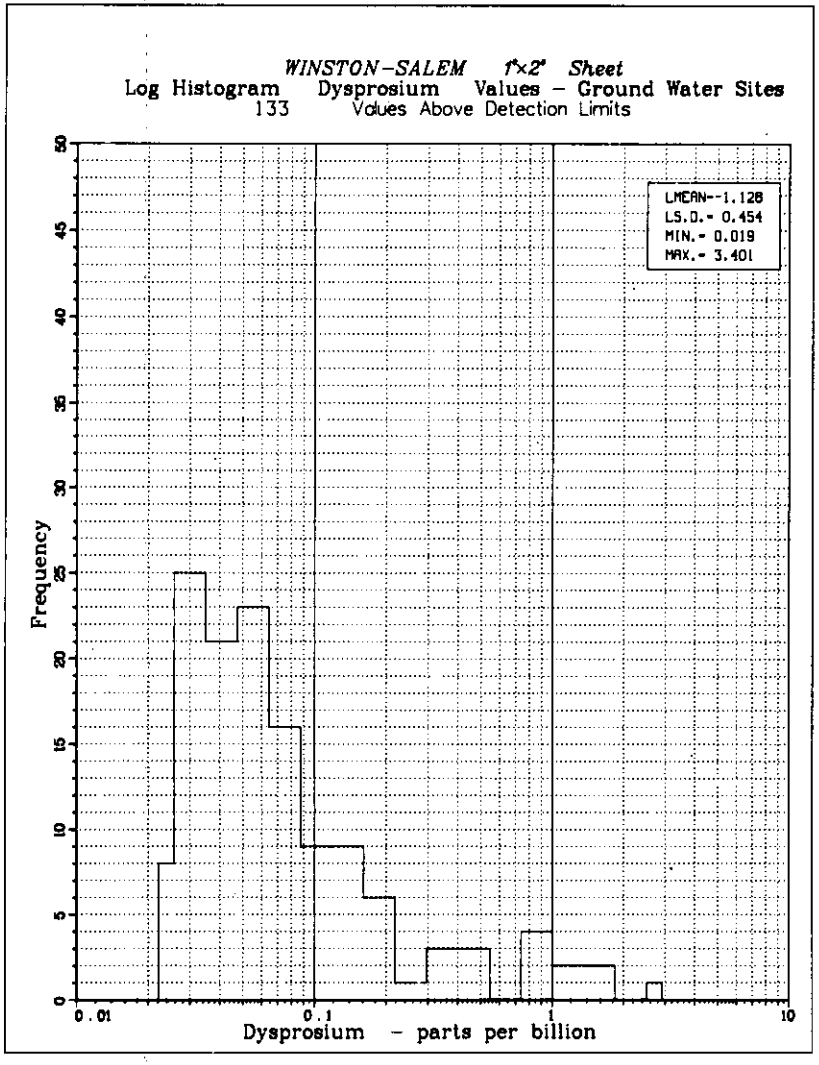


FIGURE A-24. Areal Distribution of Fluorine Concentrations in Ground Water



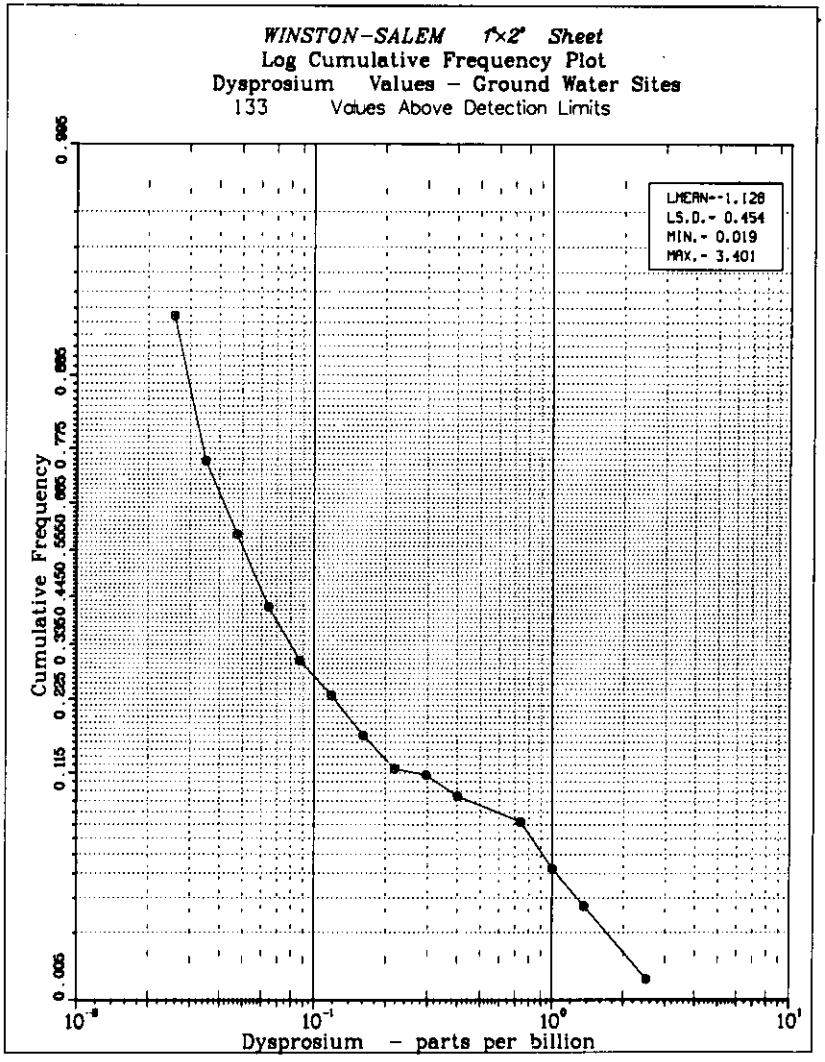


FIGURE A-25. Log Histogram and Cumulative Frequency Plot of Dysprosium Concentrations in Ground Water

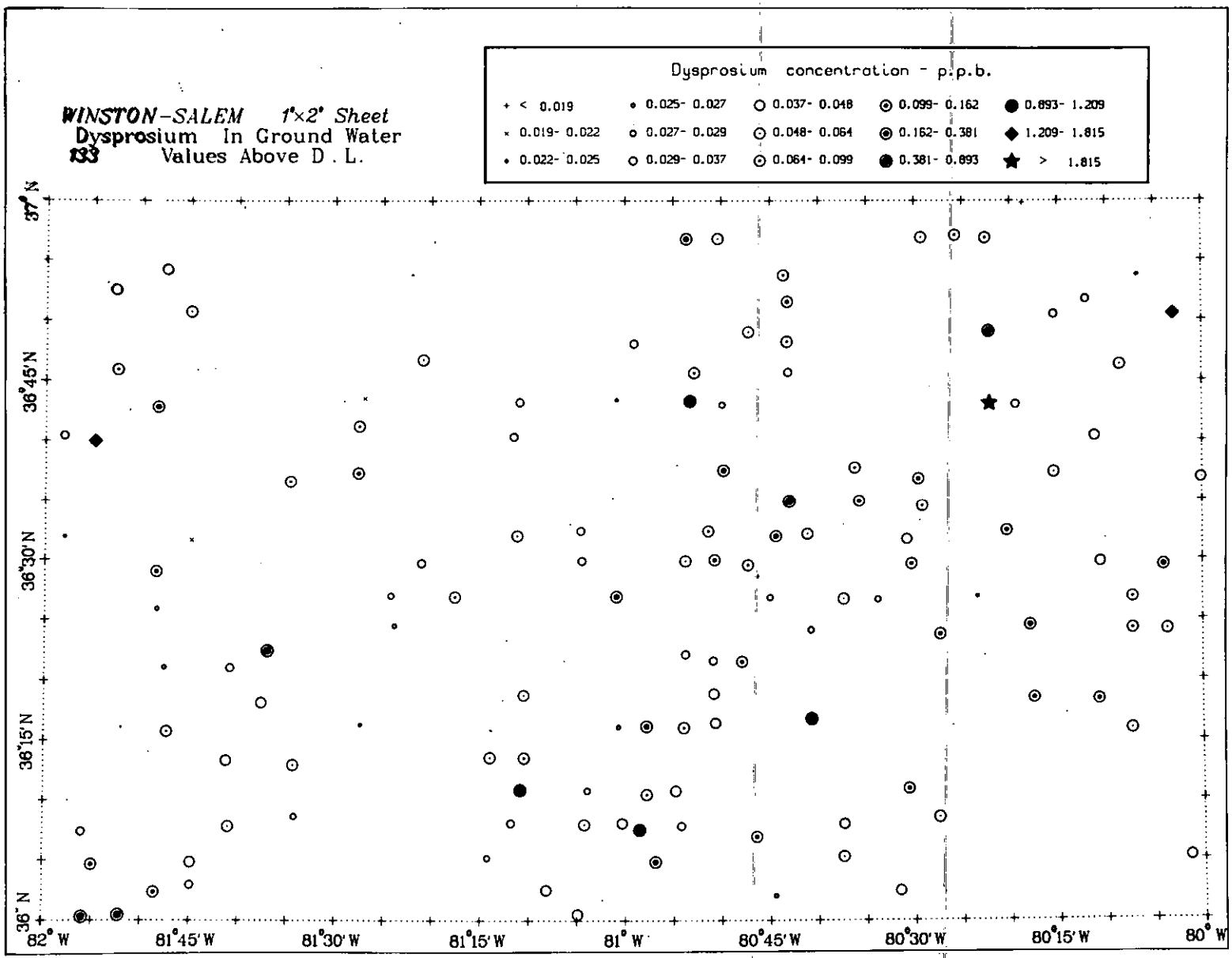


FIGURE A-26. Areal Distribution of Dysprosium Concentrations in Ground Water

TABLE A-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA -GROUND WATER-WINSTON-SALEM SHEET 1

SRL I.D.	DOE I.D.	PH	COND.	ALK.	U	NA	CL	MG	AL	MN	BR	V	F	U/COND.
NCAE508R	37-36.0174- 81.2558-4-53-000	6.3	50	0.18	0.019	3090	6800	2070	14.5	.	15.9	-0.1	.	0.380
NCAE509R	37-36.0082- 81.1909-4-52-000	6.4	33	0.24	0.029	2220	5000	1680	22.1	11.8	13.4	0.3	.	0.879
NCAE512R	37-36.0076- 81.1407-4-53-000	6.2	34	0.08	0.040	2210	5500	2580	23.2	18.2	25.8	0.1	.	1.176
NCAE513R	37-36.0085- 81.0817-4-53-000	5.6	25	0.04	0.029	2530	5400	.	29.0	13.1	24.4	-0.1	.	1.160
NCAE514R	37-36.0025- 81.0254-4-53-000	6.3	24	0.16	0.016	1640	5400	590	14.0	30.2	16.2	-0.1	.	0.667
NCAG501R	37-36.4930- 81.1427-4-53-000	6.8	20	0.16	0.027	1350	3900	900	17.9	11.1	13.4	0.2	.	1.350
NCAG502R	37-36.4505- 81.1250-4-53-000	6.4	20	0.08	0.046	1600	4800	490	23.4	.	.	-0.1	.	2.300
NCAG503R	37-36.4548- 81.1722-4-53-000	7.0	52	0.30	0.025	M	5600	.	17.0	32.6	.	-0.1	.	0.481
NCAG504R	37-36.4193- 81.1969-4-53-000	6.5	20	0.18	0.022	1380	4500	340	19.5	3.1	13.3	0.1	18	1.100
NCAG505R	37-36.4120- 81.2405-4-53-000	6.0	20	0.06	0.022	1210	4400	140	20.5	2.5	17.6	-0.1	23	1.100
NCAG506R	37-36.4443- 81.2353-4-53-000	6.2	20	0.14	0.023	2100	4300	.	17.4	5.8	14.9	-0.1	18	1.150
NCAG507R	37-36.4946- 81.2403-4-53-000	6.2	27	0.12	0.019	M	M	M	17.7	5.2	5.5	-0.1	.	0.704
NCAG508R	37-36.5012- 81.2913-4-53-000	6.6	83	0.60	0.045	3170	4900	4850	19.7	5.9	.	0.9	17	0.542
NCAG509R	37-36.5406- 81.2917-4-52-000	6.9	40	0.30	0.029	3300	3300	1620	18.6	11.5	7.1	0.6	110	0.725
NCAG510R	37-36.5368- 81.2312-4-52-000	6.8	60	0.20	0.417	2750	4200	.	20.4	12.5	.	0.4	.	6.950
NCAG511R	37-36.5003- 81.1894-4-53-000	6.1	20	0.06	0.046	1030	4700	300	18.4	2.9	11.1	-0.1	13	2.300
NCAG512R	37-36.5340- 81.1846-4-53-000	6.8	50	0.32	0.046	1720	4000	3080	18.3	.	.	3.9	.	0.920
NCAG513R	37-36.5543- 81.1461-4-53-000	6.5	42	0.12	0.017	M	M	M	16.6	19.6	15.6	-0.1	.	0.405
NCAG514R	37-36.5410- 81.0755-4-52-000	6.2	50	0.30	0.028	2650	4700	2300	17.9	4.8	11.1	0.2	51	0.560
NCAG515R	37-36.5462- 81.0199-4-53-000	6.0	18	0.12	0.031	1230	4300	.	16.6	4.8	7.2	-0.1	.	1.722
NCAG516R	37-36.5427- 80.9583-4-52-000	6.1	28	0.14	0.041	940	4500	.	20.0	6.6	14.2	0.1	.	1.464
NCAG517R	37-36.5010- 80.9548-4-53-000	5.9	12	0.12	0.041	920	4300	.	28.0	2.6	.	-0.1	.	3.417
NCAG518R	37-36.4503- 80.9809-4-52-000	5.7	20	0.08	0.039	1260	4500	260	20.0	9.7	16.2	-0.1	.	1.950
NCAG519R	37-36.4058- 80.9707-4-53-000	5.7	30	0.12	0.019	1490	5100	1540	20.4	19.7	17.7	-0.1	.	0.633
NCAG520R	37-36.4051- 81.0145-4-53-000	5.4	30	0.04	0.025	1760	6200	370	23.8	37.4	14.1	-0.1	.	0.833
NCAG521R	37-36.4497- 81.0141-4-52-000	5.4	48	0.10	0.022	4870	9000	.	108.8	34.4	16.5	-0.1	.	0.458
NCAG522R	37-36.4970- 81.0182-4-52-000	5.8	25	0.12	0.025	1480	4300	520	17.8	10.7	11.3	-0.1	13	1.000
NCAG523R	37-36.4993- 81.0735-4-53-000	5.9	40	0.14	0.025	M	M	M	18.4	13.9	.	-0.1	.	0.625
NCAG524R	37-36.4500- 81.0806-4-52-000	5.9	22	0.12	0.060	1160	4500	540	25.3	4.8	17.2	-0.1	.	2.727
NCAS501R	37-36.4049- 81.5228-4-53-000	7.9	118	0.18	0.033	M	M	M	19.5	8.5	.	-0.1	.	0.280
NCAS502R	37-36.4114- 81.5715-4-53-000	7.5	135	0.18	0.032	1860	4600	2260	22.8	.	.	0.3	25	0.237
NCAS503R	37-36.3750- 81.6157-4-53-000	7.2	130	0.20	0.026	1560	4200	.	15.1	13.5	.	0.4	20	0.200
NCAS504R	37-36.4134- 81.6244-4-53-000	7.1	112	0.10	0.032	M	3800	.	14.5	9.7	10.5	-0.1	25	0.286
NCAS505R	37-36.4026- 81.6879-4-53-000	7.0	135	0.26	0.036	2100	4500	2110	15.5	14.9	10.1	0.4	95	0.267
NCAS506R	37-36.4014- 81.7415-4-53-000	7.7	128	0.22	0.035	1790	4100	2570	14.8	18.2	.	0.9	33	0.273
NCAS507R	37-36.4506- 81.6827-4-53-000	7.5	115	0.16	0.026	1550	4000	1240	16.1	.	.	0.1	12	0.226
NCAS508R	37-36.4508- 81.6335-4-53-000	7.1	130	0.22	0.037	2280	5000	1640	16.4	.	26.3	0.2	79	0.285
NCAS509R	37-36.4890- 81.6268-4-53-000	7.0	118	0.16	0.034	1150	4000	1010	15.2	.	4.8	0.2	20	0.288
NCAS510R	37-36.4887- 81.6940-4-53-000	7.0	139	0.10	0.034	4290	5100	630	22.9	0.7	14.9	0.2	.	0.245
NCAS511R	37-36.5324- 81.6927-4-53-000	7.1	109	0.14	0.067	2570	4000	.	17.3	2.5	.	-0.1	18	0.615
NCAS512R	37-36.5391- 81.6292-4-53-000	7.1	112	0.14	0.040	2030	4300	300	40.7	15.6	21.6	0.2	26	0.357
NCAS513R	37-36.5789- 81.6378-4-53-000	6.7	108	0.12	0.044	990	3700	.	42.8	6.0	10.2	0.3	18	0.407
NCAS514R	37-36.5733- 81.5780-4-53-000	7.0	120	0.12	0.041	1740	4100	950	54.7	.	.	0.3	.	0.342
NCAS515R	37-36.5287- 81.5795-4-53-000	6.9	112	0.14	0.031	1280	3700	570	22.1	.	18.5	0.1	28	0.277
NCAS516R	37-36.5363- 81.5133-4-52-000	6.9	158	0.50	0.060	3050	3900	2230	164.2	.	.	0.5	30	0.380
NCAS517R	37-36.4922- 81.5101-4-53-000	6.7	112	0.20	0.044	1980	3900	.	35.4	2.6	20.2	0.2	72	0.393
NCAS518R	37-36.4924- 81.5738-4-53-000	7.0	120	0.10	0.017	1020	2200	600	24.8	7.5	6.8	0.4	57	0.142
NCAS519R	37-36.4475- 81.5712-4-53-000	6.5	130	0.18	0.029	1270	4300	.	18.4	13.6	.	0.3	.	0.223
NCAS520R	37-36.4446- 81.5176-4-53-000	6.0	125	0.20	0.035	2530	4000	.	17.8	7.7	23.3	0.2	43	0.280
NCAS521R	37-36.3946- 81.4671-4-52-000	6.5	211	0.80	0.032	M	4000	.	28.4	43.7	11.4	0.2	26	0.152
NCAS522R	37-36.4465- 81.4584-4-53-000	7.4	120	0.14	0.042	1560	3900	1310	34.4	9.3	10.4	0.4	31	0.350
NCAS523R	37-36.4901- 81.4546-4-53-000	6.8	120	0.26	0.039	2170	3600	1160	18.0	8.2	9.4	0.3	24	0.325
NCAS524R	37-36.5423- 81.4653-4-52-000	7.1	168	0.38	0.124	2990	4100	1620	90.5	32.3	22.6	0.8	90	0.738

TABLE A-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA -GROUND WATER-WINSTON-SALEM SHEET 2

SRL I.D.	DOE I.D.	PH	COND.	ALK.	U	NA	CL	MG	AL	MN	BR	V	F	U/COND.
NCAS525R	37-36.5396- 81.3994-4-52-000	7.5	160	0.34	0.272	2750	4500	1710	25.7	1.1	.	1.2	96	1.700
NCAS526R	37-36.4919- 81.3995-4-53-000	6.0	104	0.12	0.044	1200	3600	330	15.6	0.4	20.4	-0.1	.	0.423
NCAS527R	37-36.4508- 81.4025-4-52-000	6.6	120	0.34	0.039	2590	3300	1470	17.3	7.7	15.4	0.5	14	0.325
NCAS528R	37-36.3587- 81.5462-4-53-000	7.2	120	0.20	0.048	1510	4000	1270	20.6	8.9	.	0.1	.	0.400
NCAS529R	37-36.3581- 81.5001-4-53-000	7.3	112	0.16	0.034	830	3300	.	43.5	8.5	12.4	0.3	12	0.304
NCAS530R	37-36.3613- 81.4401-4-53-000	7.1	101	0.14	0.029	1140	4000	.	17.8	7.9	34.6	-0.1	17	0.287
NCAS531R	37-36.3133- 81.4615-4-53-000	6.7	100	0.14	0.038	870	3900	630	21.7	6.2	22.0	-0.1	25	0.380
NCAS532R	37-36.3181- 81.5108-4-52-000	6.6	107	0.10	0.050	1470	3500	.	15.3	14.6	18.3	-0.1	.	0.467
NCAS533R	37-36.3145- 81.5669-4-52-000	6.6	121	0.26	0.038	1160	3700	2240	12.0	15.8	.	0.8	24	0.314
NCAS534R	37-36.2657- 81.5036-4-53-000	6.7	108	0.10	0.035	730	3600	970	23.4	.	16.7	0.2	.	0.324
NCAS535R	37-36.2724- 81.4550-4-53-000	6.5	100	0.14	0.026	890	3900	.	17.4	32.8	28.3	-0.1	.	0.260
NCAS536R	37-36.3199- 81.3949-4-53-000	6.4	122	0.14	0.047	M	8000	.	13.6	.	6.9	-0.1	.	0.385
NCAS537R	37-36.3593- 81.3789-4-53-000	6.3	100	0.06	0.030	M	4300	.	19.8	5.9	27.8	-0.1	14	0.300
NCAS538R	37-36.4094- 81.3964-4-53-000	6.6	110	0.14	0.035	1720	4400	360	24.0	16.9	16.8	0.2	23	0.318
NCAS539R	37-36.4114- 81.3422-4-53-000	6.0	100	0.04	0.046	940	4000	.	22.9	8.0	17.9	-0.1	.	0.460
NCAS540R	37-36.4097- 81.2860-4-52-000	6.5	148	0.40	0.048	2600	3900	1540	17.3	40.0	18.0	0.1	31	0.324
NCAS541R	37-36.4492- 81.2919-4-53-000	7.1	100	0.18	0.030	1260	3600	.	42.7	6.1	.	0.3	.	0.300
NCAS542R	37-36.4549- 81.3418-4-53-000	6.5	102	0.14	0.030	1390	4300	730	16.8	7.4	24.8	0.2	25	0.294
NCAS543R	37-36.4961- 81.3498-4-53-000	7.0	120	0.24	0.048	3840	4100	1110	27.1	12.3	8.2	0.9	.	0.400
NCAS544R	37-36.5401- 81.3446-4-52-000	7.0	111	0.46	0.324	4360	3900	1300	14.8	13.3	16.3	0.5	33	2.919
NCAV501R	37-36.1399- 81.8529-4-53-000	7.4	18	0.08	0.032	1610	5100	390	36.3	5.3	38.7	0.1	113	1.778
NCAV502R	37-36.1769- 81.8697-4-52-000	6.9	15	0.06	0.025	2180	5300	.	15.1	7.4	24.5	0.2	.	1.667
NCAV503R	37-36.1820- 81.9253-4-53-000	8.1	22	0.12	0.019	2250	4000	350	51.9	.	46.3	0.6	23	0.864
NCAV504R	37-36.2222- 81.9301-4-53-000	7.0	60	0.14	0.088	6410	8300	1580	61.5	.	57.4	0.3	18	1.467
NCAV505R	37-36.2637- 81.9253-4-53-000	7.2	15	0.12	0.031	2130	4000	.	13.5	3.1	26.9	-0.1	.	2.067
NCAV506R	37-36.1782- 81.9819-4-52-000	6.6	32	0.30	0.024	3300	5500	860	12.8	14.5	.	0.2	33	0.750
NCAV507R	37-36.1334- 81.9786-4-53-000	6.7	22	0.18	0.019	2210	5500	780	15.2	19.8	41.3	-0.1	53	0.864
NCAV510R	37-36.0003- 81.9803-4-53-000	6.8	14	0.12	0.035	1000	5300	450	264.3	5.5	30.9	0.6	39	2.500
NCAV513R	37-36.0451- 81.9895-4-53-000	7.2	15	0.14	0.020	1460	4700	910	23.4	.	36.2	0.1	25	1.333
NCAV515R	37-36.0869- 81.9698-4-53-000	7.2	15	0.16	0.022	1630	4800	750	38.6	.	36.1	0.5	45	1.467
NCAV516R	37-36.1231- 81.9343-4-53-000	6.8	18	0.10	0.022	1600	5200	540	46.2	.	39.8	0.1	21	1.222
NCAV517R	37-36.0779- 81.9166-4-53-000	5.6	12	0.01	0.033	870	5100	.	57.9	9.6	43.4	-0.1	.	2.750
NCAV518R	37-36.0500- 81.9198-4-52-000	7.6	49	0.44	0.445	2520	4800	860	16.7	.	37.4	0.8	68	9.082
NCAV519R	37-36.0052- 81.9321-4-52-000	5.2	48	0.01	0.043	1660	8500	2830	262.3	67.3	43.7	-0.1	16	0.896
NCAV520R	37-36.0077- 81.8701-4-53-000	6.4	60	0.38	0.019	2910	7500	5160	42.5	11.2	59.9	-0.1	.	0.317
NCAV521R	37-36.0551- 81.8782-4-52-000	7.1	45	0.40	0.042	4080	5000	1320	17.7	4.0	40.1	0.2	68	0.933
NCAV522R	37-36.0393- 81.8100-4-53-000	6.1	10	0.04	0.018	1000	5200	.	34.3	20.3	38.0	0.1	25	1.800
NCAV523R	37-36.0775- 81.8742-4-52-000	7.2	25	0.28	0.025	2810	5100	640	20.6	4.5	3.5	0.5	.	1.000
NCAV524R	37-36.0781- 81.7771-4-53-000	7.1	11	0.08	0.019	910	5000	.	24.2	.	37.3	0.1	.	1.727
NCAV525R	37-36.0493- 81.7481-4-52-000	6.5	21	0.20	0.037	2060	4900	1040	16.7	7.3	43.5	0.3	28	1.762
NCCL501R	37-36.0810- 81.7477-4-53-000	7.0	21	0.24	0.026	1800	5000	1280	114.1	.	16.0	0.1	36	1.238
NCCL518R	37-36.0393- 81.7107-4-53-000	6.6	18	0.14	0.044	2360	4900	240	23.2	.	24.2	0.2	60	2.444
NCCL519R	37-36.0682- 81.6949-4-53-000	6.5	18	0.18	0.056	2710	5000	640	28.2	8.7	24.4	0.3	97	3.111
NCCL520R	37-36.0932- 81.6415-4-52-000	6.7	78	0.30	0.024	2530	4800	860	19.9	5.4	.	-0.1	45	0.308
NCCL521R	37-36.0872- 81.5992-4-53-000	6.8	19	0.18	0.190	M	M	M	28.4	5.6	6.7	-0.1	.	10.000
NCCL522R	37-36.0336- 81.5969-4-52-000	6.4	32	0.26	0.025	3640	5000	.	27.5	6.4	8.1	0.3	70	0.781
NCCL523R	37-36.0428- 81.6467-4-53-000	6.7	22	0.24	0.049	11610	16200	1060	18.8	.	.	-0.1	.	2.227
NCCL526R	37-36.0006- 81.5172-4-52-000	6.7	22	0.20	0.031	1230	5500	600	29.8	.	28.5	0.2	.	1.409
NCCL527R	37-36.0471- 81.5309-4-52-000	6.4	18	0.18	0.033	1160	4000	130	27.2	1.5	.	-0.1	.	1.833
NCCL528R	37-36.0891- 81.5271-4-53-000	6.6	31	0.20	0.058	2590	4900	810	27.5	.	.	-0.1	.	1.871
NCCL529R	37-36.0434- 81.4699-4-52-000	6.1	59	0.18	0.029	M	11800	2230	54.6	15.5	.	-0.1	.	0.492
NCCL530R	37-36.0442- 81.4136-4-53-000	6.4	23	0.26	0.029	3290	4000	.	29.1	2.6	10.6	0.6	.	1.261
NCCL531R	37-36.0027- 81.4093-4-52-000	6.7	33	0.32	0.034	2800	4700	700	30.5	.	.	0.3	30	1.030

TABLE A-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA -GROUND WATER-WINSTON-SALEM SHEET 3

SRL I.D.	DOE I.D.	PH	COND.	ALK.	U	NA	CL	MG	AL	MN	BR	V	F	U/COND.
NCCL532R	37-36.0088- 81.3595-4-52-000	7.0	51	0.62	0.225	3950	4500	1930	26.5	.	9.8	2.9	46	4.412
NCDE510R	37-36.0341- 80.6777-4-52-000	6.2	152	0.52	0.055	11940	21100	3220	36.9	22.8	20.1	0.7	.	0.362
NCDE511R	37-36.0395- 80.6417-4-52-000	6.3	57	0.36	0.048	4470	4700	920	47.8	6.5	12.6	0.5	37	0.842
NCDE512R	37-36.0290- 80.5776-4-52-000	6.8	380	2.96	0.090	5650	29500	36490	35.1	.	32.8	3.0	.	0.237
NCDE513R	37-36.0300- 80.5590-4-52-000	7.4	249	2.72	0.141	8590	9200	17130	28.4	.	.	16.2	21	0.566
NCDE514R	37-36.0408- 80.5265-4-52-000	7.3	112	0.60	0.050	4760	7600	5810	33.1	41.0	15.9	5.1	93	0.446
NCDE515R	37-36.0392- 80.4663-4-52-000	6.6	101	0.46	0.971	9670	3800	4170	20.6	.	.	9.4	.	9.614
NCDV532R	37-36.0016- 80.1274-4-52-000	6.5	77	0.60	0.028	4210	5900	3510	39.1	.	13.4	3.4	26	0.364
NCFO501R	37-36.0410- 80.3604-4-52-000	6.8	60	0.32	M	M	M	M	M	M	M	M	M	M
NCFO502R	37-36.1821- 80.1249-4-52-000	5.9	42	0.16	M	M	M	M	M	M	M	M	M	M
NCFO503R	37-36.1439- 80.0652-4-52-000	5.6	35	0.06	M	M	M	M	M	M	M	M	M	M
NCFO504R	37-36.1857- 80.0602-4-52-000	5.7	128	0.18	M	M	M	M	M	M	M	M	M	M
NCFO505R	37-36.2176- 80.0726-4-52-000	5.7	135	0.12	M	M	M	M	M	M	M	M	M	M
NCFO506R	37-36.2228- 80.1174-4-52-000	6.0	68	0.36	M	M	M	M	M	M	M	M	M	M
NCFO507R	37-36.2224- 80.1689-4-52-000	5.8	123	0.22	M	M	M	M	M	M	M	M	M	M
NCFO508R	37-36.2284- 80.2273-4-52-000	6.9	110	0.90	M	M	M	M	M	M	M	M	M	M
NCFO509R	37-36.1839- 80.2397-4-52-000	6.2	62	0.34	M	M	M	M	M	M	M	M	M	M
NCFO510R	37-36.1806- 80.1813-4-52-000	6.1	140	0.68	M	M	M	M	M	M	M	M	M	M
NCFO511R	37-36.1340- 80.1765-4-52-000	7.2	183	1.20	M	M	M	M	M	M	M	M	M	M
NCFO512R	37-36.1338- 80.1201-4-52-000	6.1	60	0.14	M	M	M	M	M	M	M	M	M	M
NCFO513R	37-36.0874- 80.0640-4-52-000	6.5	101	0.34	M	M	M	M	M	M	M	M	M	M
NCFO514R	37-36.0868- 80.1220-4-52-000	6.7	62	0.36	M	M	M	M	M	M	M	M	M	M
NCFO515R	37-36.0910- 80.1700-4-52-000	6.2	81	0.14	M	M	M	M	M	M	M	M	M	M
NCFO516R	37-36.0482- 80.0661-4-52-000	6.3	59	0.24	M	M	M	M	M	M	M	M	M	M
NCFO517R	37-36.0470- 80.1181-4-52-000	6.5	68	0.38	M	M	M	M	M	M	M	M	M	M
NCFO518R	37-36.0409- 80.1899-4-52-000	7.6	61	0.24	M	M	M	M	M	M	M	M	M	M
NCFO519R	37-36.0427- 80.2300-4-52-000	6.7	35	0.16	M	M	M	M	M	M	M	M	M	M
NCFO521R	37-36.0083- 80.2852-4-52-000	6.9	60	0.30	M	M	M	M	M	M	M	M	M	M
NCFO523R	37-36.0414- 80.2789-4-52-000	7.1	129	0.78	M	M	M	M	M	M	M	M	M	M
NCFO524R	37-36.0659- 80.3056-4-52-000	5.2	35	0.12	M	M	M	M	M	M	M	M	M	M
NCFO525R	37-36.0884- 80.3457-4-52-000	7.7	147	1.20	M	M	M	M	M	M	M	M	M	M
NCFO526R	37-36.1259- 80.3067-4-52-000	6.7	51	0.22	M	M	M	M	M	M	M	M	M	M
NCFO527R	37-36.1324- 80.3443-4-52-000	7.2	95	0.48	M	M	M	M	M	M	M	M	M	M
NCFO528R	37-36.1844- 80.3407-4-52-000	7.0	52	0.30	M	M	M	M	M	M	M	M	M	M
NCFO529R	37-36.1844- 80.2805-4-52-000	7.5	129	0.80	M	M	M	M	M	M	M	M	M	M
NCFO530R	37-36.2379- 80.2667-4-52-000	6.8	250	0.18	M	M	M	M	M	M	M	M	M	M
NCFO531R	37-36.2266- 80.3400-4-52-000	7.3	180	0.28	M	M	M	M	M	M	M	M	M	M
NCFO532R	37-36.2291- 80.3996-4-52-000	7.2	85	0.46	M	M	M	M	M	M	M	M	M	M
NCFO533R	37-36.1821- 80.3921-4-52-000	7.3	60	0.30	M	M	M	M	M	M	M	M	M	M
NCFO534R	37-36.1419- 80.3996-4-52-000	7.2	70	0.46	M	M	M	M	M	M	M	M	M	M
NCFO535R	37-36.0947- 80.4564-4-52-000	7.0	60	0.38	M	M	M	M	M	M	M	M	M	M
NCFO536R	37-36.0944- 80.5110-4-52-000	7.4	90	0.54	M	M	M	M	M	M	M	M	M	M
NCFO537R	37-36.0523- 80.4500-4-52-000	7.4	125	0.70	M	M	M	M	M	M	M	M	M	M
NCFO538R	37-36.0884- 80.4038-4-52-000	7.4	90	0.44	M	M	M	M	M	M	M	M	M	M
NCFO539R	37-36.0514- 80.3966-4-52-000	7.2	100	0.46	M	M	M	M	M	M	M	M	M	M
NCFO540R	37-36.0000- 80.3884-4-52-000	7.3	105	0.70	M	M	M	M	M	M	M	M	M	M
NCFO541R	37-36.1534- 80.2050-4-52-000	7.3	20	0.14	M	M	M	M	M	M	M	M	M	M
NCGU528R	37-36.2288- 80.0178-4-52-000	6.2	42	0.32	0.018	M	M	M	35.4	7.7	54.8	-0.1	.	0.429
NCGU529R	37-36.1782- 80.0091-4-52-000	5.9	132	0.24	0.042	M	16300	.	45.5	40.1	20.4	-0.1	.	0.318
NCGU531R	37-36.1378- 80.0158-4-52-000	6.7	39	0.28	0.035	3430	6800	890	37.3	4.7	38.5	2.6	35	0.897
NCGU532R	37-36.0873- 80.0237-4-52-000	5.9	51	0.26	0.022	3030	7400	2320	49.1	16.4	50.4	0.2	.	0.431
NCGU562R	37-36.0433- 80.0182-4-53-000	6.8	170	1.30	0.034	9610	12600	7810	75.8	6.2	.	4.4	.	0.200
NCGU563R	37-36.0161- 80.0142-4-52-000	6.3	70	0.46	0.030	6180	12300	.	37.5	16.0	.	2.1	.	0.429

TABLE A-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA -GROUND WATER-WINSTON-SALEM SHEET 4

SRL I.D.	DOE I.D.	PH	COND.	ALK.	U	NA	CL	MG	AL	MN	BR	V	F	U/COND.
NC1R508R	37-36.0290- 80.9798-4-53-000	5.8	22	0.16	0.039	1620	5200	820	40.0	8.8	36.1	-0.1	.	1.773
NC1R509R	37-36.0324- 80.9176-4-53-000	6.1	31	0.08	0.027	1710	5800	.	35.0	9.3	26.4	0.2	29	0.871
NC1R516R	37-36.0422- 80.8607-4-53-000	6.6	29	0.04	0.044	720	4900	.	79.1	15.3	25.9	-0.1	.	1.517
NC1R517R	37-36.0339- 80.7971-4-52-000	6.2	40	0.18	0.034	2020	8000	1050	52.4	.	27.8	-0.1	.	0.850
NC1R548R	37-36.0336- 80.7415-4-52-000	7.1	82	0.64	0.661	3720	3300	3670	32.2	4.9	18.6	1.7	57	8.061
NCR0517R	37-36.2742- 80.0023-4-52-000	6.0	241	0.08	0.069	23560	55700	2200	34.7	72.8	.	-0.1	.	0.286
NCR0536R	37-36.4065- 80.0135-4-52-000	8.0	358	2.80	2.828	15330	13300	13840	14.1	102.9	.	1.2	.	7.899
NCR0537R	37-36.4502- 80.0131-4-52-000	7.1	108	0.60	0.119	7560	8000	5600	17.0	.	34.2	1.0	14	1.102
NCR0538R	37-36.4962- 80.0138-4-52-000	7.3	90	0.56	0.047	4760	4900	3030	24.1	67.4	.	0.4	129	0.522
NCR0539R	37-36.5365- 80.0171-4-52-000	6.4	188	0.40	0.053	M	M	M	17.3	31.0	15.7	-0.1	.	0.282
NCS0501R	37-36.2688- 80.1802-4-52-000	5.8	52	0.18	0.030	3700	8500	.	233.4	45.9	45.3	-0.1	.	0.577
NCS0502R	37-36.2654- 80.1232-4-52-000	6.9	62	0.36	0.170	4430	4900	1350	31.3	.	28.8	3.6	171	2.742
NCS0503R	37-36.2571- 80.0690-4-52-000	6.5	69	0.46	0.036	4450	5800	2060	23.3	23.9	13.5	0.5	.	0.522
NCS0504R	37-36.3064- 80.1805-4-52-000	6.1	70	0.32	0.034	10950	9000	350	50.2	2.1	.	0.5	.	0.486
NCS0505R	37-36.3149- 80.1238-4-52-000	6.1	77	0.40	0.039	8350	11000	330	190.9	.	53.1	0.4	70	0.506
NCS0506R	37-36.3649- 80.1369-4-52-000	6.2	101	0.70	0.042	9450	7100	3140	16.7	46.5	42.7	0.4	81	0.416
NCS0507R	37-36.3591- 80.1780-4-52-000	6.6	119	0.92	0.036	6890	4700	3810	18.2	72.8	21.3	0.4	83	0.303
NCS0508R	37-36.4112- 80.1757-4-52-000	6.8	228	1.30	0.244	11990	15900	3560	20.7	59.7	52.2	0.5	.	1.070
NCS0509R	37-36.4132- 80.2443-4-52-000	5.4	12	0.04	0.043	860	5000	.	18.4	5.4	.	-0.1	.	3.583
NCS0510R	37-36.4501- 80.2348-4-52-000	6.8	287	2.20	0.033	11270	10200	3930	12.6	158.8	72.8	-0.1	.	0.115
NCS0511R	37-36.4928- 80.2310-4-53-000	6.5	91	0.64	0.031	2180	5000	2880	15.4	221.7	23.3	-0.1	.	0.341
NCS0512R	37-36.5370- 80.2274-4-52-000	5.8	110	0.28	0.038	7220	11800	2900	18.2	2.3	70.3	0.4	.	0.345
NCS0513R	37-36.5404- 80.1723-4-52-000	6.8	45	0.32	0.050	4950	4300	550	12.2	3.9	.	2.0	68	1.111
NCS0514R	37-36.4974- 80.1770-4-52-000	5.6	18	0.06	0.030	1430	4900	.	29.1	20.2	15.8	-0.1	20	1.667
NCS0515R	37-36.4495- 80.1787-4-53-000	6.1	45	0.20	0.033	5120	6700	.	32.5	11.4	.	0.2	45	0.733
NCS0516R	37-36.4478- 80.1215-4-53-000	6.1	44	0.24	0.016	3610	5400	1850	25.6	29.5	.	0.2	.	0.364
NCS0517R	37-36.4962- 80.1241-4-52-000	5.8	14	0.10	0.024	M	M	M	16.8	10.5	12.7	-0.1	.	1.714
NCS0518R	37-36.5417- 80.1250-4-53-000	6.1	32	0.20	0.025	2640	5100	1270	39.9	.	17.7	0.2	34	0.781
NCS0519R	37-36.5256- 80.0660-4-52-000	6.1	90	0.24	0.018	M	M	M	7.8	34.8	.	-0.1	.	0.200
NCS0520R	37-36.4925- 80.0676-4-52-000	6.0	72	0.18	0.022	5650	8000	1780	42.9	26.2	22.4	-0.1	.	0.306
NCS0521R	37-36.4551- 80.0670-4-52-000	6.7	59	0.36	0.307	3550	5100	850	14.0	4.7	39.8	1.0	119	5.203
NCS0522R	37-36.4040- 80.1218-4-52-000	7.2	350	3.10	0.108	11330	6000	14100	10.2	23.4	58.1	0.2	55	0.309
NCS0523R	37-36.4027- 80.0613-4-52-000	6.9	58	0.40	0.024	4880	4600	.	17.2	13.0	27.2	1.2	25	0.414
NCS0524R	37-36.3584- 80.0652-4-52-000	6.1	300	0.14	0.031	M	M	M	38.0	39.6	.	-0.1	.	0.103
NCS0525R	37-36.3171- 80.0661-4-52-000	7.3	290	2.90	0.118	8000	6800	12130	18.1	380.4	16.8	-0.1	33	0.407
NCS0526R	37-36.3093- 80.4045-4-53-000	6.0	32	0.16	0.251	3400	4900	.	3364.0	60.3	.	-0.1	.	7.844
NCS0527R	37-36.3600- 80.4091-4-52-000	6.0	50	0.16	0.047	3200	6700	1100	204.6	18.2	.	0.2	34	0.940
NCS0528R	37-36.4077- 80.3950-4-52-000	6.9	65	0.46	0.039	4440	4600	1910	34.1	55.9	17.9	0.2	154	0.600
NCS0529R	37-36.4494- 80.3909-4-52-000	6.5	32	0.24	0.044	760	3400	480	31.1	9.8	12.4	0.2	37	1.375
NCS0530R	37-36.5000- 80.4005-4-52-000	5.9	160	0.10	0.028	M	M	3300	M	38.3	.	-0.1	.	0.175
NCS0531R	37-36.5402- 80.3975-4-53-000	6.7	89	0.34	0.027	5020	8600	810	27.6	.	.	-0.1	.	0.303
NCS0532R	37-36.5413- 80.3399-4-52-000	6.7	108	0.50	0.041	M	12700	.	23.1	16.7	.	-0.1	.	0.380
NCS0533R	37-36.5404- 80.2976-4-52-000	6.7	115	0.62	0.303	7810	4300	2580	25.2	29.6	13.5	0.5	45	2.635
NCS0534R	37-36.4996- 80.2802-4-52-000	6.7	71	0.38	0.047	5670	4900	3170	24.9	22.1	.	1.6	89	0.662
NCS0535R	37-36.4937- 80.3433-4-52-000	6.7	50	0.24	0.051	2850	4600	2620	21.8	32.6	.	0.2	29	1.020
NCS0536R	37-36.4590- 80.3309-4-52-000	6.3	23	0.08	0.030	1140	4200	610	16.8	15.1	15.1	-0.1	.	1.304
NCS0537R	37-36.4467- 80.2824-4-52-000	6.7	129	0.54	0.048	M	5000	.	19.7	73.2	.	-0.1	100	0.372
NCS0538R	37-36.4094- 80.2999-4-52-000	4.5	31	0.00	0.163	1850	9000	600	315.3	12.9	.	-0.1	.	5.258
NCS0539R	37-36.4030- 80.3357-4-52-000	6.0	32	0.14	0.067	3940	5000	540	28.5	.	27.3	-0.1	79	2.094
NCS0540R	37-36.3620- 80.3415-4-52-000	6.0	35	0.18	0.025	2020	4100	.	21.1	7.9	11.5	0.3	25	0.714
NCS0541R	37-36.3566- 80.2876-4-52-000	6.3	70	0.22	0.029	7270	15000	4540	23.2	.	32.1	1.0	.	0.414
NCS0542R	37-36.3627- 80.2384-4-52-000	6.3	41	0.12	0.026	4270	5100	.	31.6	9.0	27.5	0.4	41	0.634
NCS0543R	37-36.3155- 80.2360-4-52-000	6.6	160	0.30	0.105	8710	6800	6150	25.1	96.0	31.8	-0.1	146	0.656

TABLE A-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA -GROUND WATER-WINSTON-SALEM SHEET 5

SRL I.D.	DOE I.D.	PH	COND.	ALK.	U	NA	CL	MG	AL	MN	BR	V	F	U/COND.
NCSO544R	37-36.2656- 80.2348-4-52-000	6.3	89	0.40	0.058	8770	11600	2750	22.4	.	14.4	1.6	.	0.652
NCSO545R	37-36.2728- 80.2974-4-52-000	7.0	340	2.50	0.879	14980	10300	11790	13.6	119.7	69.5	1.2	219	2.585
NCSO546R	37-36.3090- 80.2931-4-52-000	6.3	109	0.10	0.071	M	18500	.	20.3	11.0	17.3	-0.1	.	0.651
NCSO547R	37-36.3121- 80.3510-4-52-000	6.2	80	0.28	0.032	M	9800	.	18.5	42.8	19.9	-0.1	.	0.400
NCSO548R	37-36.2664- 80.3506-4-52-000	6.5	172	0.20	0.038	3400	5100	2620	17.6	20.1	9.0	1.1	52	0.221
NCSO549R	37-36.2656- 80.3950-4-52-000	6.3	25	0.12	0.023	1880	4700	.	18.5	9.4	.	0.1	.	0.920
NCSU501R	37-36.2744- 80.8447-4-52-000	7.2	49	0.46	0.052	3840	3500	2020	15.8	14.3	.	1.9	21	1.061
NCSU502R	37-36.2670- 80.7929-4-52-000	6.8	86	0.40	0.116	M	5100	.	16.3	20.8	18.2	-0.1	11	1.349
NCSU503R	37-36.3117- 80.7351-4-52-000	6.6	27	0.22	0.046	1920	3800	330	15.0	7.2	12.4	0.2	9	1.704
NCSU504R	37-36.3575- 80.7373-4-52-000	5.5	20	0.06	0.033	3550	6100	.	16.3	22.6	16.0	-0.1	.	1.650
NCSU505R	37-36.4106- 80.7433-4-52-000	6.9	81	0.60	0.265	M	4300	1850	14.1	23.0	13.1	-0.1	93	3.272
NCSU506R	37-36.4022- 80.7871-4-52-000	6.4	109	0.16	0.033	M	M	M	15.8	4.4	.	-0.1	.	0.303
NCSU507R	37-36.4480- 80.7501-4-52-000	6.2	33	0.12	0.041	1980	5100	.	116.5	29.2	9.8	-0.1	.	1.242
NCSU508R	37-36.4949- 80.7330-4-52-000	6.1	25	0.22	0.046	1670	4100	940	30.0	6.1	4.7	0.3	.	1.840
NCSU509R	37-36.5336- 80.7398-4-52-000	7.0	79	0.76	0.047	800	3800	370	21.0	6.1	.	0.4	20	0.595
NCSU510R	37-36.5352- 80.7914-4-53-000	6.3	15	0.14	0.028	1730	4300	560	21.3	.	26.1	0.2	30	1.867
NCSU511R	37-36.5406- 80.8564-4-53-000	6.9	13	0.10	0.037	1560	4700	450	33.4	.	7.2	-0.1	35	2.846
NCSU512R	37-36.5309- 80.9039-4-52-000	5.7	10	0.08	0.037	690	4100	460	32.4	6.0	11.0	-0.1	11	3.700
NCSU513R	37-36.4991- 80.8959-4-52-000	6.3	45	0.26	0.057	2110	7600	730	324.5	12.0	10.1	0.5	.	1.267
NCSU514R	37-36.5006- 80.8457-4-52-000	5.8	16	0.06	0.039	1520	5300	.	48.0	9.5	4.6	-0.1	13	2.437
NCSU515R	37-36.4934- 80.7882-4-52-000	5.8	51	0.06	0.024	7930	13300	590	23.6	14.1	.	-0.1	.	0.471
NCSU516R	37-36.4482- 80.7884-4-52-000	6.4	30	0.24	0.038	2490	4300	.	17.4	9.8	16.7	0.2	.	1.267
NCSU517R	37-36.4491- 80.8457-4-52-000	6.3	22	0.20	0.036	900	4600	420	30.8	9.3	27.4	-0.1	105	1.636
NCSU518R	37-36.4374- 80.9062-4-53-000	6.5	23	0.24	0.023	M	4600	.	14.2	11.0	.	0.3	.	1.000
NCSU519R	37-36.3968- 80.8394-4-52-000	8.1	110	1.00	0.108	3860	4000	4470	21.3	8.8	.	0.7	54	0.982
NCSU520R	37-36.4020- 80.8919-4-52-000	6.3	12	0.10	0.041	430	4500	.	20.9	15.4	16.7	-0.1	.	3.417
NCSU521R	37-36.3606- 80.8484-4-52-000	6.1	21	0.12	0.027	1380	4600	.	17.5	18.0	.	0.1	.	1.286
NCSU522R	37-36.3694- 80.8959-4-52-000	6.5	70	0.62	0.039	1040	4000	.	24.9	30.6	30.8	0.4	241	0.557
NCSU523R	37-36.3593- 80.7988-4-52-000	5.6	12	0.04	0.035	910	4600	.	43.9	25.8	.	-0.1	.	2.917
NCSU524R	37-36.3180- 80.7967-4-52-000	6.3	32	0.22	0.038	2790	4500	530	15.8	14.6	.	0.1	51	1.187
NCSU525R	37-36.3149- 80.8474-4-52-000	6.9	80	0.60	0.296	3510	4100	1270	18.5	28.4	.	-0.1	21	3.700
NCSU526R	37-36.2801- 80.6788-4-52-000	6.4	80	0.04	0.337	13480	17600	.	166.0	136.5	31.9	-0.1	.	4.212
NCSU527R	37-36.3137- 80.6812-4-52-000	7.0	32	0.22	0.049	M	M	M	18.1	34.2	18.4	-0.1	41	1.531
NCSU528R	37-36.3573- 80.6815-4-52-000	6.3	27	0.16	0.074	2380	5700	810	17.6	8.4	.	0.2	.	2.741
NCSU529R	37-36.4031- 80.6794-4-52-000	6.9	40	0.30	0.036	2220	4400	.	19.1	8.1	19.4	-0.1	34	0.900
NCSU530R	37-36.4491- 80.6797-4-52-000	7.3	19	0.50	0.058	M	3800	620	22.2	10.5	19.4	-0.1	41	3.053
NCSU531R	37-36.4901- 80.6906-4-52-000	7.2	65	0.38	0.084	5980	4600	1800	21.6	.	.	-0.1	80	1.292
NCSU532R	37-36.5369- 80.6852-4-52-000	6.9	55	0.16	0.036	7220	7900	980	25.1	36.2	.	-0.1	.	0.655
NCSU533R	37-36.5396- 80.6292-4-52-000	6.6	50	0.40	0.028	M	5000	.	17.2	14.7	29.9	-0.1	42	0.560
NCSU534R	37-36.5363- 80.5729-4-52-000	6.3	41	0.16	0.033	3070	7000	1040	24.6	41.8	17.2	-0.1	.	0.805
NCSU535R	37-36.4898- 80.4563-4-52-000	7.1	53	0.30	0.078	4120	5800	560	26.5	55.7	38.5	0.3	.	1.472
NCSU536R	37-36.5345- 80.4554-4-52-000	6.4	40	0.24	0.028	1750	4900	1310	22.2	2.7	.	0.2	23	0.700
NCSU537R	37-36.5294- 80.5132-4-52-000	6.1	30	0.12	0.042	1700	4600	.	11.9	12.1	8.1	-0.1	.	1.400
NCSU538R	37-36.4951- 80.5054-4-52-000	5.9	28	0.14	0.032	2560	6000	.	26.6	17.4	12.9	-0.1	23	1.143
NCSU539R	37-36.4529- 80.4469-4-52-000	6.4	62	0.20	0.033	4470	7900	2730	16.0	.	25.2	0.6	.	0.532
NCSU540R	37-36.3972- 80.4560-4-52-000	6.0	61	0.12	0.031	6740	10400	.	15.8	19.1	.	-0.1	.	0.508
NCSU541R	37-36.3617- 80.4534-4-53-000	6.3	30	0.16	0.034	2090	4900	510	17.0	11.5	12.7	-0.1	42	1.133
NCSU542R	37-36.3578- 80.5195-4-52-000	6.7	129	0.58	0.163	9000	12800	.	22.1	20.0	.	-0.1	.	1.264
NCSU543R	37-36.3580- 80.5657-4-52-000	6.7	62	0.36	0.065	3290	5300	.	19.7	15.7	24.7	-0.1	178	1.048
NCSU544R	37-36.4906- 80.5619-4-52-000	6.1	49	0.24	0.021	2270	3800	1400	13.7	33.1	20.3	-0.1	.	0.429
NCSU545R	37-36.4975- 80.6323-4-52-000	6.3	147	0.30	0.152	M	13600	.	13.3	25.0	.	0.3	.	1.034
NCSU546R	37-36.4462- 80.6229-4-52-000	6.3	110	0.18	1.115	M	17700	2090	26.4	142.2	6.2	-0.1	.	10.136
NCSU547R	37-36.4454- 80.5637-4-52-000	6.2	20	0.16	0.077	840	3900	.	19.2	13.0	27.7	-0.1	.	3.850

TABLE A-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA -GROUND WATER-WINSTON-SALEM SHEET 6

SRL I.D.	DOE I.D.	PH	COND.	ALK.	U	NA	CL	MG	AL	MN	BR	V	F	U/COND.
NCSU548R	37-36.4462- 80.5116-4-53-000	6.0	28	0.14	0.069	2270	4400	670	24.5	6.6	17.2	0.1	49	2.464
NCSU549R	37-36.4030- 80.5099-4-52-000	6.2	180	0.50	0.131	10390	19900	7020	17.8	.	.	0.4	.	0.728
NCSU550R	37-36.4099- 80.5729-4-52-000	6.8	29	0.16	0.061	2130	4700	1150	16.1	.	15.3	-0.1	38	2.103
NCSU551R	37-36.4046- 80.6218-4-52-000	6.4	42	0.34	0.059	3830	3900	690	16.7	4.8	.	0.4	.	1.405
NCSU552R	37-36.3587- 80.6314-4-52-000	6.7	48	0.22	0.044	1080	3900	610	16.0	9.5	6.4	-0.1	.	0.917
NCSU553R	37-36.3150- 80.6335-4-52-000	6.7	61	0.50	0.041	4420	4400	1050	18.3	7.5	.	0.6	75	0.672
NCSU554R	37-36.3214- 80.5733-4-52-000	6.4	120	0.14	0.063	M	16600	.	13.5	41.9	16.7	-0.1	.	0.525
NCSU555R	37-36.3121- 80.5110-4-52-000	6.6	48	0.14	0.057	1910	5000	740	15.1	14.9	.	0.9	72	1.187
NCSU556R	37-36.3108- 80.4617-4-52-000	6.6	50	0.28	0.042	4090	4700	.	17.8	12.9	.	0.4	62	0.840
NCSU557R	37-36.2697- 80.4534-4-52-000	6.4	96	0.40	0.045	M	M	M	21.2	30.4	28.0	-0.1	.	0.469
NCSU558R	37-36.2719- 80.5117-4-52-000	6.7	79	0.30	0.032	4800	8500	2690	20.9	27.6	19.6	-0.1	.	0.405
NCWL501R	37-36.2140- 80.9025-4-52-000	6.7	40	0.38	0.043	3830	4100	.	16.2	18.7	.	1.2	55	1.075
NCWL502R	37-36.1798- 80.9131-4-52-000	6.3	54	0.40	0.057	920	3700	.	11.0	11.1	.	-0.1	.	1.056
NCWL503R	37-36.1308- 80.9034-4-53-000	5.9	38	0.16	0.044	2090	5400	1310	20.9	13.7	35.3	-0.1	.	1.158
NCWL504R	37-36.0905- 80.9023-4-52-000	6.7	110	0.58	0.329	6450	6600	1930	23.5	64.5	22.8	-0.1	109	2.991
NCWL505R	37-36.0814- 80.9478-4-52-000	6.7	100	0.64	0.106	7230	4100	1450	47.1	59.9	15.6	0.1	85	1.060
NCWL506R	37-36.0903- 81.0087-4-52-000	6.3	58	0.26	0.042	M	5900	1880	15.1	26.5	19.6	-0.1	31	0.724
NCWL507R	37-36.0749- 81.0722-4-53-000	5.9	18	0.12	0.036	1320	4800	.	31.9	11.0	16.7	0.1	.	2.000
NCWL508R	37-36.0421- 81.0774-4-53-000	6.6	26	0.20	0.040	M	M	M	44.2	7.9	14.2	-0.1	.	1.538
NCWL509R	37-36.0817- 81.1375-4-53-000	6.0	28	0.16	0.037	1750	5500	1410	24.8	.	.	-0.1	24	1.321
NCWL510R	37-36.0870- 81.1814-4-52-000	6.8	91	0.52	0.089	3090	10700	3670	12.5	.	.	1.0	.	0.978
NCWL511R	37-36.0491- 81.1800-4-52-000	7.5	120	1.10	0.088	7060	4800	1530	15.3	75.9	.	-0.1	114	0.733
NCWL512R	37-36.0421- 81.1356-4-53-000	5.5	31	0.06	0.028	1360	5300	1380	30.8	23.1	22.2	0.1	18	0.903
NCWL513R	37-36.0868- 81.2369-4-52-000	6.2	38	0.32	0.071	4660	3800	740	15.8	4.2	26.9	0.8	.	1.868
NCWL514R	37-36.0514- 81.2385-4-53-000	6.2	20	0.18	0.020	1570	4500	1170	13.6	.	9.8	0.1	43	1.000
NCWL515R	37-36.0434- 81.2938-4-52-000	6.2	10	0.10	0.027	820	4600	540	27.8	4.8	.	-0.1	.	2.700
NCWL516R	37-36.0433- 81.3443-4-53-000	6.7	31	0.28	0.047	3790	3800	820	21.7	5.8	17.2	1.5	.	1.516
NCWL517R	37-36.0913- 81.3403-4-52-000	6.7	74	0.46	0.072	4360	5100	3810	15.5	5.8	17.2	0.6	101	0.973
NCWL518R	37-36.0945- 81.2940-4-52-000	6.4	51	0.46	0.022	3620	3900	1030	14.5	.	20.4	0.5	29	0.431
NCWL519R	37-36.1351- 81.1957-4-52-000	5.5	40	0.06	0.029	5250	11800	.	17.6	11.4	.	-0.1	.	0.725
NCWL520R	37-36.1308- 81.1205-4-52-000	6.0	32	0.24	0.065	2900	5200	.	11.8	8.0	15.3	0.2	40	2.031
NCWL521R	37-36.1331- 81.0699-4-52-000	6.6	75	0.50	0.036	4480	4300	1560	16.5	91.2	16.8	-0.1	94	0.480
NCWL522R	37-36.1351- 81.0047-4-53-000	5.7	30	0.16	0.037	M	5000	.	20.5	8.6	.	-0.1	.	1.233
NCWL523R	37-36.1257- 80.9750-4-52-000	6.0	52	0.18	0.053	4870	9700	1570	60.1	117.0	.	-0.1	.	1.019
NCWL524R	37-36.1748- 80.9627-4-52-000	6.7	31	0.20	0.036	1730	4900	470	24.9	15.9	19.3	0.1	.	1.161
NCWL525R	37-36.1879- 81.0199-4-52-000	7.1	110	0.92	0.073	3750	4500	5340	12.9	203.8	14.1	-0.1	112	0.664
NCWL526R	37-36.1801- 81.0645-4-52-000	6.8	35	0.30	0.197	810	4600	.	20.1	9.4	7.8	-0.1	403	5.629
NCWL527R	37-36.1834- 81.1171-4-52-000	6.8	51	0.44	0.085	2910	4200	1990	13.5	.	.	0.5	20	1.667
NCWL528R	37-36.2254- 81.1730-4-52-000	7.5	119	0.94	0.079	5250	3900	1230	15.1	42.6	8.3	-0.1	65	0.664
NCWL529R	37-36.2260- 81.2315-4-52-000	6.6	22	0.12	0.032	1860	4700	.	47.9	30.3	.	-0.1	.	1.455
NCWL530R	37-36.3403- 81.3425-4-53-000	7.2	90	0.80	0.096	M	M	70	17.9	3.7	9.0	-0.1	.	1.067
NCWL531R	37-36.2668- 81.2942-4-53-000	6.5	20	0.20	0.082	2610	4500	480	19.4	.	.	0.2	37	4.100
NCWL532R	37-36.3052- 81.3498-4-53-000	5.7	10	0.06	0.056	990	4400	.	23.2	4.2	13.1	-0.1	26	5.600
NCWL533R	37-36.2668- 81.3529-4-53-000	6.0	22	0.12	0.027	1570	4600	520	19.7	15.6	13.9	-0.1	21	1.227
NCWL534R	37-36.2165- 81.3464-4-52-000	6.2	60	0.34	0.080	4950	7700	.	79.7	10.1	7.6	-0.1	.	1.333
NCWL535R	37-36.2608- 81.4084-4-53-000	6.0	10	0.08	0.043	1270	4200	240	34.2	.	13.9	-0.1	19	4.300
NCWL536R	37-36.2292- 81.3915-4-52-000	6.4	81	0.20	0.022	4510	7600	2250	21.5	21.4	11.8	0.2	.	0.272
NCWL537R	37-36.1820- 81.2909-4-52-000	6.6	45	0.38	0.031	3190	4300	1610	40.1	.	9.8	0.6	61	0.689
NCWL538R	37-36.2105- 81.2879-4-52-000	6.3	80	0.72	0.081	5610	3700	3630	17.3	.	23.6	2.3	29	1.012
NCWL539R	37-36.1681- 81.3439-4-52-000	6.0	51	0.18	0.025	3680	7700	2590	17.6	.	.	0.2	28	0.490
NCWL540R	37-36.1805- 81.3996-4-52-000	6.7	50	0.40	2.582	4760	3000	1200	15.7	8.5	9.9	0.9	258	51.640
NCWL541R	37-36.2082- 81.4565-4-52-000	5.7	79	0.22	0.089	M	M	M	28.0	19.5	26.8	-0.1	.	1.127
NCWL542R	37-36.1735- 81.4667-4-53-000	6.5	10	0.08	0.071	1050	4000	.	22.7	2.9	19.4	0.2	.	7.100

TABLE A-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA -GROUND WATER-WINSTON-SALEM SHEET 7

SRL I.D.	DOE I.D.	PH	COND.	ALK.	U	NA	CL	MG	AL	MN	BR	V	F	U/COND.
NCWL543R	37-36.1364- 81.4051-4-53-000	6.2	27	0.20	0.062	2800	4400	770	19.4	7.0	.	-0.1	.	2.296
NCWL544R	37-36.0954- 81.4017-4-52-000	6.1	23	0.20	0.045	1630	4000	960	13.8	.	11.0	0.1	21	1.957
NCWL545R	37-36.1155- 81.4556-4-52-000	6.7	111	1.20	0.072	3270	4900	6440	60.6	4.3	8.3	2.4	39	0.649
NCWL546R	37-36.1195- 81.5072-4-53-000	6.9	20	0.14	0.059	2150	3900	.	15.7	7.0	21.1	0.1	.	2.950
NCWL547R	37-36.1353- 81.3448-4-52-000	6.5	32	0.28	0.047	2870	3300	440	15.2	5.8	15.5	0.2	.	1.469
NCWL548R	37-36.1365- 81.2836-4-52-000	6.2	24	0.20	0.042	M	M	M	17.4	7.2	.	-0.1	.	1.750
NCWL549R	37-36.1326- 81.2351-4-52-000	6.4	34	0.24	0.049	1900	4200	1800	18.4	.	.	-0.1	22	1.441
NCWL550R	37-36.1837- 81.2335-4-52-000	6.7	90	0.80	0.063	2180	4500	1660	14.4	100.3	23.0	0.1	62	0.700
NCWL551R	37-36.1812- 81.1796-4-52-000	5.7	41	0.06	0.059	4330	7800	1910	35.6	69.4	63.1	-0.1	.	1.439
NCWL552R	37-36.2181- 81.1298-4-53-000	5.8	20	0.16	0.055	M	3900	.	35.1	6.7	35.1	-0.1	32	2.750
NCWL553R	37-36.2682- 81.1268-4-53-000	5.5	22	0.10	0.024	1480	4400	.	17.2	11.2	12.6	-0.1	27	1.091
NCWL554R	37-36.3093- 81.1306-4-53-000	6.1	29	0.16	0.023	3330	4200	750	34.3	.	20.5	0.2	35	0.793
NCWL555R	37-36.3132- 81.1735-4-52-000	5.2	42	0.04	0.045	M	10200	1110	43.7	20.4	16.0	-0.1	.	1.071
NCWL556R	37-36.2669- 81.1833-4-52-000	6.4	50	0.34	0.301	M	3600	.	21.0	7.3	10.8	-0.1	39	6.020
NCWL557R	37-36.2724- 81.2392-4-53-000	5.7	52	0.14	0.065	3290	4100	.	22.4	8.4	.	-0.1	.	1.250
NCWL558R	37-36.3067- 81.2406-4-52-000	6.1	30	0.16	0.060	1800	3300	350	18.4	16.1	8.8	0.1	.	2.000
NCWL559R	37-36.3106- 81.2883-4-53-000	6.2	29	0.14	0.036	1580	3100	350	23.2	3.9	12.9	-0.1	.	1.241
NCWL560R	37-36.3623- 81.3036-4-53-000	6.4	25	0.08	0.036	M	M	490	M	.	.	-0.1	.	1.440
NCWL561R	37-36.3615- 81.2446-4-53-000	6.6	15	0.16	0.034	1330	4100	.	25.7	.	.	-0.1	.	2.267
NCWL562R	37-36.3588- 81.1721-4-53-000	6.1	18	0.14	0.041	570	3600	.	14.6	8.0	.	-0.1	.	2.278
NCWL563R	37-36.3512- 81.1178-4-53-000	5.7	40	0.16	0.047	1770	4200	.	19.8	.	.	-0.1	.	1.175
NCWL564R	37-36.3817- 81.1125-4-53-000	5.8	20	0.14	0.041	1430	3600	.	13.6	5.8	.	-0.1	.	2.050
NCWL565R	37-36.3925- 81.0676-4-53-000	6.3	15	0.06	0.038	1390	3300	.	16.4	.	.	-0.1	.	2.533
NCWL566R	37-36.3577- 81.0688-4-53-000	6.6	37	0.20	0.044	5340	4100	.	29.2	1.9	.	-0.1	.	1.189
NCWL567R	37-36.3118- 81.0663-4-52-000	6.3	159	1.20	0.025	M	M	2910	M	.	.	-0.1	.	0.157
NCWL568R	37-36.2640- 81.0745-4-52-000	5.4	48	0.06	0.028	M	6400	500	11.3	96.4	.	-0.1	.	0.583
NCWL569R	37-36.2252- 81.0629-4-52-000	6.1	38	0.24	0.045	1280	3600	1740	12.5	38.0	.	-0.1	.	1.184
NCWL570R	37-36.2204- 81.0169-4-52-000	5.2	100	0.12	0.077	5590	7900	.	14.8	32.3	.	-0.1	.	0.770
NCWL571R	37-36.2691- 81.0110-4-52-000	5.4	19	0.16	0.039	590	3300	.	20.8	11.8	12.6	-0.1	.	2.053
NCWL572R	37-36.3144- 81.0158-4-53-000	6.0	27	0.14	0.022	1020	4000	680	25.2	3.6	.	-0.1	.	0.815
NCWL573R	37-36.3601- 81.0142-4-52-000	6.3	71	0.56	0.048	1520	3500	550	16.4	11.3	.	-0.1	.	0.676
NCWL574R	37-36.3609- 80.9559-4-52-000	5.8	30	0.12	0.042	970	3700	240	15.3	10.2	20.2	-0.1	.	1.400
NCWL575R	37-36.3126- 80.9607-4-52-000	5.7	30	0.14	0.027	M	3700	.	19.1	49.8	.	-0.1	.	0.900
NCWL576R	37-36.2701- 80.9627-4-52-000	5.3	40	0.06	0.033	3370	6800	.	27.9	17.3	.	-0.1	.	0.825
NCWL577R	37-36.2305- 80.9644-4-52-000	6.2	70	0.36	0.035	2460	6200	3440	11.7	3.3	26.0	0.2	.	0.500
NCWL578R	37-36.2682- 80.8989-4-52-000	6.3	51	0.34	0.317	4110	4300	240	11.2	3.1	.	-0.1	.	6.216
NCWL579R	37-36.3112- 80.9002-4-52-000	7.0	80	0.50	0.069	M	4400	.	19.4	66.6	.	-0.1	.	0.862
NCWT501R	37-36.2169- 81.6291-4-53-000	7.4	30	0.20	0.018	770	3300	1530	59.7	.	15.6	0.4	11	0.600
NCWT502R	37-36.2615- 81.6260-4-53-000	7.0	29	0.16	0.035	1160	4100	790	17.5	.	.	-0.1	.	1.207
NCWT503R	37-36.3026- 81.6262-4-53-000	7.2	40	0.30	0.033	1400	3400	1800	85.4	.	.	0.9	30	0.825
NCWT504R	37-36.2619- 81.5762-4-53-000	6.4	15	0.20	0.037	710	3500	.	18.4	0.7	.	-0.1	.	2.467
NCWT505R	37-36.2158- 81.5710-4-53-000	6.3	20	0.10	0.050	1220	3600	420	18.7	.	.	0.1	.	2.500
NCWT506R	37-36.2121- 81.5159-4-53-000	6.9	21	0.18	0.029	2250	3500	.	48.6	0.8	11.9	-0.1	30	1.381
NCWT507R	37-36.1785- 81.5071-4-52-000	6.7	50	0.20	0.073	1770	3900	630	19.2	4.9	.	0.2	82	1.460
NCWT508R	37-36.1807- 81.5766-4-53-000	7.1	13	0.06	0.036	M	3900	.	38.7	4.8	18.6	-0.1	.	2.769
NCWT509R	37-36.1758- 81.6253-4-52-000	7.0	30	0.20	0.052	1030	4000	.	20.7	2.1	7.4	-0.1	207	1.733
NCWT510R	37-36.1445- 81.5692-4-53-000	7.0	20	0.16	0.031	1190	2900	.	54.1	5.1	.	0.1	.	1.550
NCWT511R	37-36.1361- 81.6273-4-52-000	6.9	40	0.14	0.017	1920	3500	650	16.8	4.6	15.7	0.1	64	0.425
NCWT512R	37-36.1721- 81.6825-4-53-000	6.9	20	0.14	0.027	880	3100	.	37.2	3.6	7.9	-0.1	72	1.350
NCWT513R	37-36.1304- 81.6829-4-53-000	7.1	90	0.08	0.065	9470	19300	520	16.6	17.7	.	-0.1	.	0.722
NCWT514R	37-36.1398- 81.7459-4-53-000	6.9	19	0.06	0.028	870	3800	.	73.7	8.4	11.9	0.2	.	1.474
NCWT515R	37-36.1751- 81.7419-4-52-000	7.1	60	0.40	0.067	1420	3900	2200	21.3	29.6	11.7	-0.1	30	1.117
NCWT516R	37-36.1418- 81.8118-4-53-000	7.1	30	0.08	0.013	1920	4900	550	31.1	.	.	-0.1	.	0.433

TABLE A-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA -GROUND WATER-WINSTON-SALEM SHEET 8

SRL I.D.	DOE I.D.	PH	COND.	ALK.	U	NA	CL	MG	AL	MN	BR	V	F	U/COND.
NCWT517R	37-36.1764- 81.8009-4-53-000	7.0	71	0.40	0.027	910	3500	1840	31.1	18.5	.	0.1	23	0.380
NCWT518R	37-36.2234- 81.7922-4-53-000	7.6	20	0.14	0.015	2130	3700	230	38.7	.	.	0.3	37	0.750
NCWT519R	37-36.2171- 81.7372-4-53-000	7.3	31	0.12	0.093	3110	4100	620	30.0	8.2	20.8	0.1	20	3.000
NCWT520R	37-36.2221- 81.6867-4-53-000	7.8	50	0.22	0.027	2160	4600	1810	52.7	.	.	0.3	39	0.540
NCWT521R	37-36.2623- 81.6823-4-53-000	7.6	20	0.10	0.028	1030	3500	890	30.1	.	12.2	-0.1	.	1.400
NCWT522R	37-36.3058- 81.6843-4-53-000	7.3	21	0.16	0.028	900	4100	1570	30.6	.	.	0.2	.	1.333
NCWT523R	37-36.3509- 81.6803-4-53-000	7.3	28	0.12	0.018	940	3600	890	22.0	.	7.1	0.1	17	0.643
NCWT524R	37-36.3103- 81.7401-4-53-000	7.0	90	0.50	0.037	2340	4400	3770	18.8	.	19.2	0.3	56	0.411
NCWT525R	37-36.2582- 81.7433-4-52-000	7.4	110	0.62	0.040	3260	3500	3980	16.9	2.3	8.1	1.9	37	0.364
NCWT526R	37-36.2631- 81.7895-4-52-000	6.8	70	0.28	0.030	3140	5700	.	15.0	15.2	23.3	0.3	45	0.429
NCWT527R	37-36.3048- 81.8082-4-52-000	7.2	40	0.22	0.027	3780	3200	1140	13.0	.	.	0.5	107	0.675
NCWT528R	37-36.3517- 81.7940-4-53-000	6.7	30	0.16	0.034	2100	3900	460	22.7	.	18.6	-0.1	36	1.133
NCWT529R	37-36.3092- 81.8531-4-53-000	7.0	29	0.12	0.030	2680	3500	.	35.3	4.1	.	0.2	37	1.034
NCWT530R	37-36.2642- 81.8471-4-53-000	6.6	21	0.14	0.032	1810	3600	270	27.4	0.9	12.9	-0.1	23	1.524
NCWT531R	37-36.2214- 81.8391-4-53-000	6.2	21	0.16	0.033	2200	3800	.	28.9	.	23.9	-0.1	37	1.571
NCWT532R	37-36.2281- 81.8864-4-53-000	6.3	20	0.16	0.113	840	3300	350	103.9	.	.	-0.1	163	5.650
NCYD501R	37-36.1159- 80.7742-4-52-000	6.6	83	0.50	0.043	2320	6200	1230	24.6	33.6	.	-0.1	.	0.518
NCYD502R	37-36.0803- 80.7915-4-52-000	8.1	122	1.10	0.300	6980	4200	2260	14.4	32.9	8.4	-0.1	127	2.459
NCYD503R	37-36.0816- 80.8386-4-53-000	6.3	39	0.32	0.042	1310	4900	.	16.4	8.4	24.8	-0.1	.	1.077
NCYD504R	37-36.1212- 80.8386-4-52-000	6.3	40	0.26	0.053	M	M	M	21.4	10.7	19.8	-0.1	.	1.325
NCYD505R	37-36.1679- 80.8393-4-52-000	6.4	28	0.16	0.030	M	5000	.	19.2	3.5	31.7	-0.1	23	1.071
NCYD506R	37-36.2213- 80.8436-4-52-000	6.4	80	0.62	0.407	4950	4700	2590	17.1	.	18.5	0.8	.	5.087
NCYD507R	37-36.1775- 80.7929-4-52-000	5.5	30	0.04	0.034	1110	5200	1280	35.2	16.3	19.1	-0.1	29	1.133
NCYD508R	37-36.2164- 80.7850-4-53-000	5.6	31	0.08	0.043	M	M	1360	37.0	.	18.7	0.1	.	1.387
NCYD509R	37-36.2622- 80.7396-4-52-000	5.8	20	0.08	0.040	M	4200	350	22.9	4.8	14.2	-0.1	20	2.000
NCYD510R	37-36.2185- 80.7375-4-52-000	5.7	24	0.10	0.035	M	M	M	19.5	6.3	16.5	-0.1	.	1.458
NCYD511R	37-36.2266- 80.6760-4-52-000	5.5	25	0.06	0.042	1360	4500	.	17.7	9.8	21.5	-0.1	.	1.680
NCYD512R	37-36.2278- 80.6284-4-52-000	6.1	180	0.52	0.060	3400	4400	1130	18.3	58.5	10.8	0.1	68	0.333
NCYD513R	37-36.2739- 80.6255-4-52-000	6.4	58	0.34	0.029	4320	4400	320	18.6	11.3	24.0	0.3	42	0.500
NCYD514R	37-36.2739- 80.5692-4-52-000	6.4	95	0.70	0.032	4450	6000	1730	14.3	78.5	24.9	-0.1	.	0.337
NCYD515R	37-36.2316- 80.5651-4-52-000	6.2	29	0.14	0.030	1200	4500	.	14.4	14.3	14.0	0.2	56	1.034
NCYD516R	37-36.2252- 80.5085-4-52-000	6.2	141	0.36	0.053	4780	16300	4230	13.7	5.9	17.6	0.2	.	0.376
NCYD517R	37-36.2333- 80.4569-4-52-000	6.1	41	0.14	0.038	4690	6000	540	37.6	13.0	36.1	0.2	57	0.927
NCYD518R	37-36.1840- 80.4612-4-52-000	6.5	87	0.56	0.032	6040	5400	3060	16.2	36.3	20.9	0.5	160	0.368
NCYD519R	37-36.1428- 80.4583-4-52-000	6.0	32	0.16	0.033	1670	4600	.	16.4	11.4	34.9	0.1	31	1.031
NCYD520R	37-36.1334- 80.5120-4-52-000	6.8	78	0.42	0.050	M	3400	.	19.9	24.1	.	-0.1	44	0.641
NCYD521R	37-36.1826- 80.5111-4-52-000	6.1	89	0.60	0.043	7220	5900	3050	24.0	34.4	29.5	0.5	49	0.483
NCYD522R	37-36.1797- 80.5666-4-52-000	6.8	162	1.00	0.072	4710	11400	6760	21.6	3.2	.	1.7	.	0.444
NCYD523R	37-36.1776- 80.6275-4-52-000	5.9	90	0.22	0.030	6100	10800	990	16.5	7.0	23.8	-0.1	.	0.333
NCYD524R	37-36.1709- 80.6771-4-52-000	5.9	70	0.16	0.030	4170	10900	1690	16.4	15.3	.	-0.1	.	0.429
NCYD525R	37-36.1770- 80.7378-4-52-000	5.9	30	0.14	0.020	1770	5000	.	18.1	14.0	.	-0.1	.	0.667
NCYD526R	37-36.1285- 80.7218-4-52-000	5.5	145	0.16	0.057	M	M	5380	28.6	390.3	53.5	-0.1	.	0.393
NCYD527R	37-36.1299- 80.6774-4-52-000	6.8	95	0.46	0.189	4430	4500	510	20.8	39.8	11.0	0.2	.	1.989
NCYD528R	37-36.1337- 80.6232-4-52-000	6.3	169	1.00	0.044	M	M	M	16.5	41.3	61.8	-0.1	.	0.260
NCYD529R	37-36.1317- 80.5694-4-52-000	6.9	98	0.54	0.040	3440	5100	3980	31.1	7.6	.	1.6	58	0.408
NCYD530R	37-36.0865- 80.5653-4-52-000	6.2	85	0.30	0.033	2430	8300	1290	16.9	11.2	20.0	0.8	26	0.388
NCYD531R	37-36.0882- 80.6241-4-52-000	7.0	102	0.52	0.147	3340	5800	610	102.9	144.9	26.1	4.7	.	1.441
NCYD532R	37-36.0816- 80.6769-4-52-000	7.4	57	0.26	0.046	820	4500	.	23.9	8.5	14.6	0.8	57	0.807
NCYD533R	37-36.0806- 80.7357-4-52-000	6.5	115	0.30	0.135	9510	17500	2490	19.3	17.4	.	0.4	.	1.174
TNCT518R	47-36.2662- 81.9703-4-52-000	6.2	34	0.10	0.058	3150	3500	480	39.6	4.0	.	0.2	72	1.706
TNJ0501R	47-36.4845- 81.8080-4-52-000	6.7	106	0.16	0.057	M	7000	.	86.4	32.5	14.4	-0.1	.	0.538
TNJ0502R	47-36.4324- 81.8071-4-53-000	7.0	21	0.12	0.045	330	3200	220	17.7	22.5	17.1	-0.1	27	2.143
TNJ0503R	47-36.4722- 81.7275-4-53-000	7.3	20	0.14	0.059	2320	3000	330	12.3	1.5	4.8	-0.1	26	2.950

TABLE A-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA -GROUND WATER-WINSTON-SALEM SHEET 9

SRL I.D.	DOE I.D.	PH	COND.	ALK.	U	NA	CL	MG	AL	MN	BR	V	F	U/COND.
TNJ0504R	47-36.4409- 81.7443-4-53-000	7.2	30	0.14	0.041	2020	2900	560	22.5	.	9.3	0.4	.	1.367
TNJ0505R	47-36.3934- 81.7478-4-53-000	7.1	40	0.18	0.027	2690	3100	1570	21.4	.	.	0.7	23	0.675
TNJ0506R	47-36.3520- 81.7400-4-53-000	7.1	40	0.16	0.044	1530	3300	1110	14.4	.	17.3	0.3	38	1.100
TNJ0507R	47-36.4009- 81.8040-4-53-000	7.4	21	0.16	0.056	260	3200	1000	17.7	.	11.8	-0.1	.	2.667
TNJ0508R	47-36.3934- 81.8616-4-52-000	8.0	135	0.94	0.085	830	4000	7930	12.0	.	9.7	-0.1	80	0.630
TNJ0509R	47-36.3589- 81.8539-4-53-000	7.0	19	0.06	0.039	M	3100	770	18.1	3.0	8.9	-0.1	.	2.053
TNJ0510R	47-36.3475- 81.9113-4-53-000	7.3	102	0.72	0.139	410	2900	6540	17.1	46.1	17.1	-0.1	22	1.363
TNJ0511R	47-36.3147- 81.9297-4-53-000	6.9	20	0.14	0.052	310	3100	570	20.9	.	13.2	-0.1	.	2.600
TNJ0512R	47-36.2945- 81.9718-4-53-000	7.4	62	0.44	0.102	570	3000	2770	28.3	45.1	11.8	0.1	38	1.645
TNJ0513R	47-36.3451- 81.9633-4-52-000	7.7	135	1.10	0.093	390	2900	8890	10.1	.	9.1	0.2	65	0.689
TNJ0514R	47-36.3925- 81.9128-4-53-000	7.8	65	0.66	0.073	1010	4500	6320	11.0	.	16.6	-0.1	.	1.123
TNJ0515R	47-36.3917- 81.9757-4-52-000	7.3	60	0.30	0.037	910	3800	2910	47.8	.	10.4	-0.1	17	0.617
TNJ0518R	47-36.4282- 81.9603-4-53-000	7.4	48	0.26	0.039	790	2700	2510	26.6	.	3.5	0.2	.	0.812
TNJ0519R	47-36.4399- 81.9212-4-52-000	7.2	155	1.50	0.067	640	3400	9200	12.6	4.6	14.6	0.1	53	0.432
TNJ0520R	47-36.4413- 81.8797-4-53-000	7.4	45	0.34	0.044	560	3100	2380	20.5	20.6	7.5	-0.1	25	0.978
TNJ0521R	47-36.4816- 81.8573-4-53-000	6.8	58	0.38	0.037	1880	3100	1750	18.7	23.2	.	-0.1	75	0.638
TNJ0522R	47-36.4858- 81.9313-4-53-000	7.0	10	0.06	0.045	760	2900	.	29.3	10.4	19.2	-0.1	.	4.500
TNJ0523R	47-36.4766- 81.9653-4-53-000	6.4	20	0.08	0.046	440	3200	.	20.5	7.8	7.0	-0.1	.	2.300
TNJ0524R	47-36.5310- 81.9310-4-53-000	6.3	12	0.08	0.041	M	M	430	M	.	10.4	-0.1	.	3.417
TNJ0525R	47-36.5387- 81.8920-4-52-000	6.4	25	0.14	0.030	240	2700	290	33.2	7.5	8.0	-0.1	19	1.200
TNJ0526R	47-36.5645- 81.8622-4-53-000	6.6	11	0.08	0.053	390	3100	260	46.9	12.7	.	0.3	10	4.818
TNJ0527R	47-36.5920- 81.7099-4-53-000	6.9	19	0.06	0.038	500	3000	570	27.0	.	.	-0.1	.	2.000
TNJ0528R	47-36.5736- 81.7588-4-53-000	7.4	173	1.30	0.247	M	M	M	35.2	74.3	10.7	-0.1	.	1.428
TNJ0529R	47-36.5647- 81.7948-4-53-000	7.5	30	0.14	0.034	990	2800	850	18.0	.	.	-0.1	26	1.133
TNJ0530R	47-36.5279- 81.7477-4-53-000	7.0	20	0.14	0.043	540	3000	710	27.7	.	14.4	-0.1	29	2.150
TNJ0531R	47-36.5222- 81.8028-4-53-000	7.5	109	0.66	0.112	370	3000	5540	16.5	.	3.2	0.4	90	1.028
TNSL542R	47-36.5319- 81.9663-4-53-000	7.7	19	0.14	0.027	490	3400	490	19.6	.	8.8	-0.1	.	1.421
TNSL543R	47-36.5848- 81.9641-4-53-000	7.8	249	0.94	0.129	2000	3900	.	17.6	55.5	.	0.1	49	0.518
TNSL544R	47-36.5890- 81.9995-4-53-000	8.2	160	1.40	0.132	750	3800	7070	77.0	49.9	13.4	0.1	.	0.825
VABL523R	51-36.9866- 81.3491-4-53-000	7.4	189	2.60	0.181	540	4400	17400	18.3	.	19.8	0.2	51	0.958
VABL524R	51-36.9876- 81.3875-4-53-000	6.8	28	0.24	0.116	1020	4300	4220	49.4	.	4.5	0.1	13	4.143
VAC0501R	51-36.7217- 80.7738-4-52-000	6.3	32	0.34	0.231	3390	3300	1470	15.2	.	.	0.4	15	7.219
VAC0502R	51-36.6729- 80.7782-4-52-000	6.2	21	0.16	0.089	1920	3500	550	9.4	5.0	13.4	-0.1	30	4.238
VAC0503R	51-36.6276- 80.7760-4-53-000	6.2	9	0.10	0.144	700	3400	330	27.2	.	15.4	-0.1	15	16.000
VAC0504R	51-36.5804- 80.7767-4-52-000	5.7	20	0.08	0.046	1510	4800	.	22.9	10.6	14.7	-0.1	.	2.300
VAC0505R	51-36.5829- 80.7164-4-52-000	5.7	80	0.20	0.064	6620	9400	.	35.5	135.2	6.6	-0.1	.	0.800
VAC0506R	51-36.6229- 80.7135-4-52-000	6.6	87	0.80	0.042	1090	5700	300	10.2	14.4	.	-0.1	.	0.483
VAC0507R	51-36.5835- 80.6621-4-52-000	5.6	187	0.22	0.047	8990	17600	4650	15.5	4.3	13.6	-0.1	.	0.251
VAC0508R	51-36.6296- 80.6653-4-53-000	5.7	28	0.16	0.033	2060	4800	550	14.2	13.4	20.0	-0.1	.	1.179
VAC0509R	51-36.6722- 80.7186-4-53-000	6.4	23	0.24	0.023	720	3800	.	11.4	11.2	24.6	0.2	.	1.000
VAC0510R	51-36.7251- 80.7262-4-53-000	6.1	30	0.20	0.036	900	4000	1500	9.4	.	.	-0.1	.	1.200
VAC0511R	51-36.7634- 80.7773-4-52-000	7.2	112	0.84	0.044	3560	3800	2410	12.6	72.3	.	-0.1	74	0.393
VAC0512R	51-36.7176- 80.8319-4-52-000	7.0	70	0.56	0.018	3030	3900	2480	15.8	21.1	14.5	3.2	82	0.257
VAC0513R	51-36.6716- 80.8350-4-53-000	6.1	20	0.16	0.021	1820	4500	710	12.9	.	8.8	-0.1	.	1.050
VAC0514R	51-36.6265- 80.8296-4-52-000	5.7	15	0.08	0.030	1160	4400	.	34.0	11.3	26.4	-0.1	.	2.000
VAC0515R	51-36.5878- 80.8417-4-53-000	5.9	10	0.08	0.018	1050	3700	.	12.2	.	9.9	-0.1	.	1.800
VAC0516R	51-36.6232- 80.8919-4-52-000	6.2	23	0.24	0.018	3020	3600	730	7.7	.	.	-0.1	.	0.783
VAC0517R	51-36.6635- 80.8818-4-52-000	6.1	25	0.18	0.028	1450	5200	.	12.1	29.2	.	-0.1	.	1.120
VAC0518R	51-36.7198- 80.9541-4-53-000	6.7	165	1.00	0.082	4250	5600	2830	14.5	57.6	29.0	0.2	.	0.497
VAC0519R	51-36.7694- 80.9928-4-52-000	7.8	113	1.02	0.044	M	M	M	11.3	84.9	6.2	-0.1	.	0.389
VAC0520R	51-36.8018- 80.9839-4-52-000	6.7	20	0.16	0.011	470	4700	.	9.7	59.9	8.7	-0.1	.	0.550
VAC0521R	51-36.8188- 80.9514-4-52-000	7.7	156	1.50	0.067	870	4300	6780	11.9	7.4	.	-0.1	.	0.429
VAC0522R	51-36.7227- 80.8872-4-52-000	5.5	82	0.06	0.021	6660	13500	2490	58.4	152.1	.	-0.1	.	0.256

TABLE A-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA -GROUND WATER-WINSTON-SALEM SHEET 10

SRL I.D.	DOE I.D.	PH	COND.	ALK.	U	NA	CL	MG	AL	MN	BR	V	F	U/COND.
VAC0523R	51-36.7655- 80.9437-4-52-000	6.2	30	0.22	0.026	2630	3700	1590	14.3	4.5	3.9	-0.1	19	0.867
VAC0524R	51-36.7616- 80.8800-4-53-000	6.1	30	0.20	0.017	M	4200	.	14.7	6.3	.	-0.1	.	0.567
VAC0525R	51-36.7638- 80.8325-4-52-000	6.4	79	0.36	0.040	3630	8300	5340	13.3	.	13.1	0.6	.	0.506
VAC0526R	51-36.8107- 80.8825-4-52-000	6.3	21	0.18	0.020	1520	3900	1650	10.5	11.6	16.7	-0.1	37	0.952
VAC0527R	51-36.8119- 80.8273-4-52-000	6.8	122	0.74	0.046	1920	6800	2540	13.0	328.7	.	-0.1	.	0.377
VAC0528R	51-36.8181- 80.7863-4-52-000	6.9	130	0.66	0.193	3760	8800	2730	14.7	.	9.5	-0.1	.	1.485
VAC0529R	51-36.8611- 80.7673-4-52-000	6.4	198	0.64	0.039	9970	19600	9300	10.1	.	.	0.6	.	0.197
VAC0530R	51-36.8045- 80.7200-4-52-000	5.6	21	0.08	0.025	1760	4800	1410	15.6	13.6	13.7	-0.1	.	1.190
VAC0531R	51-36.7622- 80.7182-4-52-000	6.6	49	0.34	0.016	3470	4600	720	15.4	25.4	5.2	0.8	46	0.327
VAC0532R	51-36.7597- 80.6578-4-53-000	6.8	62	0.54	0.026	1870	5000	4310	14.3	14.4	.	0.9	.	0.419
VAC0533R	51-36.6083- 80.6689-4-53-000	7.0	47	0.38	0.024	1980	4100	1670	18.9	.	18.8	0.3	44	0.511
VAC0534R	51-36.8597- 80.7191-4-52-000	5.8	22	0.08	0.018	2260	5500	530	32.8	50.8	.	-0.1	.	0.818
VAC0535R	51-36.8522- 80.6628-4-52-000	6.3	58	0.26	0.027	1640	6100	1170	12.9	.	23.6	-0.1	55	0.466
VAC0536R	51-36.8960- 80.6365-4-53-000	6.8	32	0.24	0.035	M	3800	.	12.7	17.0	14.7	-0.1	.	1.094
VAC0537R	51-36.8627- 80.6094-4-52-000	6.2	30	0.26	0.026	1670	3900	1270	16.9	.	18.3	-0.1	.	0.867
VAC0538R	51-36.8207- 80.6009-4-53-000	5.8	18	0.12	0.016	1310	4200	700	16.4	4.9	.	-0.1	.	0.889
VAC0539R	51-36.8123- 80.5514-4-53-000	6.5	31	0.26	0.026	1440	4000	1180	17.6	.	8.3	-0.1	45	0.839
VAC0540R	51-36.7700- 80.5561-4-52-000	6.1	37	0.18	0.026	2030	5200	1840	13.4	.	.	0.2	.	0.703
VAC0541R	51-36.7669- 80.6114-4-53-000	6.7	68	0.34	0.065	2520	6600	3780	10.5	13.4	6.5	1.5	41	0.956
VAC0542R	51-36.7216- 80.6579-4-52-000	6.6	52	0.50	0.012	1400	4000	.	10.8	22.7	.	0.6	.	0.231
VAC0543R	51-36.6785- 80.6621-4-52-000	6.6	42	0.28	0.012	M	M	2130	20.9	15.0	11.3	-0.1	.	0.286
VAC0544R	51-36.6704- 80.5977-4-52-000	6.2	28	0.18	0.023	1080	4300	690	11.5	.	.	-0.1	.	0.821
VAC0545R	51-36.7214- 80.6027-4-52-000	6.7	123	0.58	0.149	4620	16500	1120	17.6	.	7.2	-0.1	.	1.211
VAC0546R	51-36.7220- 80.5504-4-53-000	6.2	16	0.10	0.036	900	4000	510	11.0	.	18.7	-0.1	.	2.250
VAC0547R	51-36.6704- 80.5451-4-52-000	7.0	100	0.66	0.105	3740	4700	1010	16.0	80.7	17.9	0.2	.	1.050
VAC0548R	51-36.6763- 80.4926-4-52-000	5.5	22	0.06	0.023	M	M	M	30.3	12.9	20.0	-0.1	.	1.045
VAC0549R	51-36.7173- 80.4928-4-52-000	6.6	40	0.36	0.037	2410	3500	470	16.1	9.5	3.9	0.5	28	0.925
VAF0501R	51-36.9010- 80.3173-4-52-000	6.8	33	0.32	0.016	2470	2900	570	8.1	5.0	.	0.2	17	0.485
VAF0502R	51-36.8555- 80.3122-4-52-000	7.0	44	0.36	0.035	1600	2800	.	9.3	12.4	.	0.1	35	0.795
VAF0503R	51-36.9663- 80.3291-4-53-000	6.4	40	0.34	0.042	2150	3200	910	10.1	2.6	10.4	0.3	56	1.050
VAF0504R	51-36.9966- 80.3109-4-52-000	6.5	52	0.50	0.023	1370	3000	520	10.4	36.1	6.5	-0.1	12	0.442
VAF0507R	51-36.9993- 80.2573-4-52-000	5.1	52	0.04	0.049	4210	6000	1420	170.4	121.5	.	-0.1	66	0.942
VAF0508R	51-36.9941- 80.1994-4-52-000	6.8	186	0.74	0.026	2360	20300	4140	3.0	93.6	.	-0.1	.	0.140
VAF0513R	51-36.9907- 80.1431-4-53-000	6.0	28	0.16	0.020	1400	4800	470	11.5	9.8	21.8	-0.1	.	0.714
VAF0514R	51-36.9441- 80.1964-4-52-000	6.9	111	0.76	0.052	2110	3300	1310	11.9	51.6	12.5	-0.1	18	0.468
VAF0515R	51-36.9494- 80.2599-4-52-000	6.3	45	0.24	0.024	1670	4300	2120	13.1	.	.	-0.1	28	0.533
VAF0516R	51-36.9060- 80.2637-4-52-000	6.5	38	0.26	0.023	1450	4200	1320	11.8	4.3	.	0.3	.	0.605
VAF0517R	51-36.8914- 80.3742-4-52-000	6.5	62	0.34	0.012	2040	4500	2740	10.7	13.4	.	-0.1	53	0.194
VAF0518R	51-36.8580- 80.3731-4-53-000	6.2	21	0.16	0.021	1040	3400	570	13.2	13.0	.	-0.1	22	1.000
VAF0519R	51-36.8186- 80.3705-4-53-000	6.0	21	0.10	0.027	1070	3400	.	10.2	2.8	.	-0.1	6	1.286
VAF0520R	51-36.8039- 80.4384-4-53-000	6.4	30	0.20	0.017	1230	3700	420	11.6	.	.	-0.1	13	0.567
VAF0521R	51-36.7614- 80.4349-4-53-000	6.6	52	0.42	0.014	1410	4300	2320	9.5	.	.	0.9	23	0.269
VAF0522R	51-36.7714- 80.4787-4-53-000	7.0	48	0.46	0.024	1020	3700	3570	29.1	25.2	23.0	0.4	.	0.500
VAF0523R	51-36.8108- 80.4892-4-53-000	6.7	50	0.48	0.024	1680	4000	3060	20.5	.	.	1.4	34	0.480
VAF0524R	51-36.8527- 80.4981-4-52-000	6.6	128	0.64	0.015	1700	7900	4340	10.4	5.2	.	0.3	.	0.117
VAF0525R	51-36.8555- 80.4316-4-53-000	6.3	40	0.32	0.013	1350	3800	1510	8.2	.	16.5	0.1	22	0.325
VAF0526R	51-36.8892- 80.4325-4-52-000	6.2	56	0.30	0.013	2350	5500	3860	10.6	27.3	.	0.1	25	0.232
VAF0527R	51-36.8515- 80.5501-4-53-000	6.3	20	0.14	0.023	M	M	M	11.4	6.7	11.6	-0.1	.	1.150
VAF0528R	51-36.8973- 80.5930-4-53-000	6.3	30	0.26	0.015	1990	3600	580	11.6	5.0	12.3	-0.1	.	0.500
VAF0529R	51-36.9001- 80.5403-4-53-000	6.3	15	0.10	0.017	1080	2800	.	12.8	3.4	.	-0.1	.	1.133
VAF0530R	51-36.8967- 80.4910-4-53-000	6.2	15	0.12	0.026	750	3600	250	10.1	39.8	2.6	-0.1	.	1.733
VAF0531R	51-36.9514- 80.4285-4-52-000	6.0	122	0.14	0.024	M	16200	.	13.6	28.8	.	-0.1	.	0.197
VAF0532R	51-36.9479- 80.3760-4-52-000	6.4	43	0.32	0.035	M	3800	.	14.9	18.6	4.6	-0.1	60	0.814

TABLE A-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA -GROUND WATER-WINSTON-SALEM SHEET 11

SRL I.D.	DOE I.D.	PH	COND.	ALK.	U	NA	CL	MG	AL	MN	BR	V	F	U/COND.
VAF0534R	51-36.9926- 80.4332-4-52-000	6.5	42	0.24	0.029	3970	5300	600	12.1	.	12.4	-0.1	58	0.690
VAF0535R	51-36.9486- 80.4875-4-52-000	5.7	21	0.04	0.019	2130	4800	720	17.8	36.5	7.6	-0.1	.	0.905
VAF0536R	51-36.9510- 80.5486-4-53-000	6.2	150	0.24	0.015	6450	11800	2310	11.7	8.5	.	-0.1	.	0.100
VAFR504R	51-36.8962- 80.1118-4-53-000	6.7	95	0.54	0.508	2750	4000	3560	56.2	.	28.5	4.0	20	5.347
VAFR505R	51-36.8885- 80.0670-4-53-000	7.1	171	0.46	0.451	1850	4500	3150	48.4	22.2	38.7	0.5	37	2.637
VAFR506R	51-36.8877- 80.0058-4-52-000	7.2	38	0.20	0.486	2580	4400	430	27.7	3.0	29.0	0.4	27	12.789
VAFR508R	51-36.8420- 80.0499-4-53-000	6.9	178	1.26	0.583	4730	7200	.	31.2	58.0	.	2.0	.	3.275
VAFR561R	51-36.9822- 80.0588-4-52-000	6.4	80	0.60	0.012	2260	6300	.	27.3	20.9	52.5	0.9	.	0.150
VAFR562R	51-36.9346- 80.0617-4-53-000	6.0	30	0.18	0.002	1580	4600	370	31.7	.	34.8	-0.1	28	0.067
VAFR563R	51-36.9222- 80.1265-4-53-000	6.5	200	1.50	0.024	4730	5100	6870	29.3	.	36.8	1.6	27	0.120
VAFR564R	51-36.8735- 80.1598-4-52-000	6.8	170	1.40	0.147	M	4500	3830	17.5	57.9	42.5	-0.1	108	0.865
VAFR565R	51-36.9182- 80.2003-4-53-000	6.4	50	0.40	0.011	1760	5700	2040	16.2		51.5	-0.1	.	0.220
VAFR566R	51-36.9894- 80.1339-4-52-000	6.1	60	0.28	0.013	1370	6600	1940	16.9	62.3	43.4	-0.1	.	0.217
VAGR501R	51-36.6293- 81.1744-4-53-000	6.0	70	0.22	M	M	M	M	M	M	M	M	M	M
VAGR502R	51-36.6292- 81.2340-4-53-000	6.2	31	0.14	M	M	M	M	M	M	M	M	M	M
VAGR503R	51-36.5805- 81.2387-4-52-000	5.6	92	0.12	M	M	M	M	M	M	M	M	M	M
VAGR504R	51-36.5802- 81.3062-4-53-000	6.3	29	0.12	0.026	2510	3300	.	15.2	7.6	17.5	-0.1	33	0.897
VAGR505R	51-36.5851- 81.3511-4-53-000	6.5	45	0.14	0.043	2140	3300	1180	15.1	19.2	8.3	-0.1	20	0.956
VAGR506R	51-36.5806- 81.4072-4-53-000	6.8	50	0.36	0.029	2430	3700	700	20.3	4.9	8.4	0.2	87	0.580
VAGR507R	51-36.5806- 81.4602-4-53-000	6.8	90	0.26	0.026	3310	5600	1930	14.5	.	13.9	0.2	.	0.289
VAGR508R	51-36.5835- 81.5222-4-52-000	7.7	110	0.62	0.386	4840	5300	1240	21.8	4.0	.	1.3	42	3.509
VAGR509R	51-36.6176- 81.5334-4-53-000	7.1	21	0.18	0.020	1390	2800	440	18.2	.	12.3	-0.1	42	0.952
VAGR510R	51-36.6109- 81.5760-4-53-000	8.0	32	0.24	0.029	990	2800	.	58.9	.	13.2	0.2	49	0.906
VAGR511R	51-36.6226- 81.4588-4-53-000	7.3	19	0.12	0.015	1980	3100	150	39.9	1.1	.	-0.1	26	0.789
VAGR512R	51-36.6219- 81.4069-4-52-000	6.9	68	0.24	0.119	3620	5300	1590	14.1	.	15.4	0.2	69	1.750
VAGR513R	51-36.6727- 81.4074-4-53-000	6.7	26	0.20	0.023	2370	3300	640	21.1	25.1	11.9	-0.1	36	0.885
VAGR514R	51-36.6877- 81.4575-4-53-000	6.3	20	0.06	0.021	860	3300	.	17.4	4.3	.	-0.1	20	1.050
VAGR515R	51-36.6934- 81.4972-4-53-000	6.8	19	0.18	0.027	1200	3200	280	17.2	1.9	11.4	0.1	.	1.421
VAGR516R	51-36.7061- 81.4020-4-53-000	6.4	27	0.14	0.027	2030	3500	840	26.8	3.8	14.6	0.2	30	1.000
VAGR517R	51-36.7150- 81.3494-4-53-000	6.7	52	0.28	0.014	2610	4700	2120	20.2	22.9	5.7	0.2	87	0.269
VAGR518R	51-36.6710- 81.3487-4-52-000	6.8	148	0.34	0.017	M	M	M	22.8	174.4	18.6	0.2	.	0.115
VAGR519R	51-36.6286- 81.3362-4-53-000	7.1	47	0.28	0.030	2790	4200	.	23.8	9.9	14.8	0.6	32	0.638
VAGR520R	51-36.6290- 81.3062-4-53-000	6.6	60	0.38	0.027	2490	3500	1470	18.3	22.2	.	0.1	59	0.450
VAGR521R	51-36.6708- 81.3092-4-53-000	7.3	31	0.20	0.018	2240	3300	860	24.4	.	5.5	0.3	45	0.581
VAGR522R	51-36.7235- 81.3062-4-53-000	7.3	21	0.10	0.019	1280	3200	340	21.7	5.8	6.4	0.2	31	0.905
VAGR523R	51-36.7220- 81.2362-4-52-000	6.1	200	0.38	1.260	M	M	M	9.4	22.1	.	-0.1	.	6.300
VAGR524R	51-36.7208- 81.1807-4-52-000	6.4	130	0.22	0.046	M	M	M	16.2	19.0	.	-0.1	.	0.354
VAGR525R	51-36.5810- 81.1839-4-52-000	6.5	38	0.28	0.060	2260	3100	610	13.9	4.9	9.1	0.1	56	1.579
VAGR526R	51-36.5761- 81.1170-4-53-000	7.4	29	0.20	0.020	1650	3600	1370	100.5	14.8	14.6	0.3	44	0.690
VAGR527R	51-36.6342- 81.1233-4-53-000	6.8	20	0.12	0.029	1540	3100	540	16.8	6.0	14.7	-0.1	25	1.450
VAGR528R	51-36.6813- 81.1114-4-52-000	6.7	30	0.12	0.030	2400	4300	.	15.7	7.1	7.1	0.2	68	1.000
VAGR529R	51-36.6797- 81.0673-4-52-000	6.2	49	0.10	0.344	4110	4200	.	98.2	21.7	.	-0.1	139	7.020
VAGR530R	51-36.7219- 81.0617-4-52-000	6.4	33	0.16	0.035	3540	3500	.	18.4	5.8	.	0.2	374	1.061
VAGR531R	51-36.7227- 81.1270-4-53-000	6.4	33	0.16	0.032	2550	3400	700	22.2	.	.	0.3	79	0.970
VAGR532R	51-36.7555- 81.1258-4-53-000	6.2	31	0.16	0.031	1640	3600	1400	39.8	.	13.0	0.1	22	1.000
VAGR533R	51-36.7522- 81.2419-4-52-000	6.2	70	0.20	0.043	5760	4700	980	32.8	.	26.1	-0.1	.	0.614
VAGR534R	51-36.7577- 81.0748-4-53-000	7.0	25	0.16	0.024	1460	3100	.	61.3	9.0	8.3	0.2	.	0.960
VAGR535R	51-36.7242- 81.0136-4-52-000	5.8	50	0.20	0.027	M	M	M	20.3	13.9	7.8	-0.1	.	0.540
VAGR536R	51-36.6758- 81.0122-4-53-000	6.5	38	0.28	0.024	2720	3200	410	22.3	49.9	.	0.3	25	0.632
VAGR537R	51-36.6286- 81.0114-4-52-000	6.0	25	0.14	0.024	1040	2500	700	18.3	39.5	.	-0.1	24	0.960
VAGR538R	51-36.6262- 81.0665-4-53-000	6.6	21	0.12	0.023	1310	3600	710	63.3	15.3	3.8	-0.1	37	1.095
VAGR539R	51-36.5850- 81.0664-4-53-000	6.2	48	0.32	0.027	M	3200	1530	28.7	10.8	.	0.1	.	0.562
VAGR540R	51-36.5767- 81.0123-4-53-000	6.6	20	0.08	0.028	970	3200	390	27.2	55.5	8.2	-0.1	.	1.400

TABLE A-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA -GROUND WATER-WINSTON-SALEM SHEET 12

SRL I.D.	DOE I.D.	PH	COND.	ALK.	U	NA	CL	MG	AL	MN	BR	V	F	U/COND.
VAGR541R	51-36.5826- 80.9531-4-52-000	5.7	54	0.30	0.030	2600	3100	740	18.3	29.5	.	0.2	26	0.556
VAGR542R	51-36.5867- 80.8951-4-52-000	5.6	70	0.14	0.021	M	M	4160	17.2	.	22.7	0.1	.	0.300
VAGR543R	51-36.6353- 80.9518-4-53-000	6.0	52	0.30	0.022	2300	3800	1280	16.6	9.0	5.0	0.9	.	0.423
VAGR544R	51-36.6767- 80.9540-4-53-000	5.9	30	0.14	0.038	1600	3500	.	18.0	6.4	10.5	-0.1	28	1.267
VAGR545R	51-36.6729- 81.1908-4-53-000	6.6	48	0.32	0.028	1980	2500	750	43.2	21.8	.	0.3	17	0.583
VAGR546R	51-36.6784- 81.2315-4-53-000	5.8	40	0.30	0.053	2680	2900	900	26.6	.	.	0.3	.	1.325
VAHR513R	51-36.7557- 80.0533-4-52-000	5.5	65	0.16	0.033	1780	4000	.	17.8	46.1	28.5	-0.1	57	0.508
VAHR514R	51-36.7074- 80.0626-4-52-000	5.7	27	0.30	0.036	2360	6100	1960	15.0	33.3	46.2	-0.1	.	1.333
VAHR517R	51-36.6147- 80.0018-4-52-000	6.6	210	1.40	0.052	4420	4400	2640	66.7	7.6	27.4	2.2	33	0.248
VAHR518R	51-36.5644- 80.0060-4-52-000	5.8	142	0.38	0.091	4550	9700	7050	13.6	.	54.8	2.8	.	0.641
VAPT501R	51-36.6233- 80.2575-4-52-000	6.5	51	0.46	0.020	M	3500	550	12.9	60.2	.	-0.1	.	0.392
VAPT502R	51-36.5797- 80.2540-4-52-000	6.2	40	0.28	0.036	2880	4500	770	16.0	14.0	14.4	-0.1	46	0.900
VAPT503R	51-36.5858- 80.1880-4-52-000	6.1	110	0.70	0.031	5820	7000	1720	14.8	23.4	31.4	0.2	29	0.282
VAPT504R	51-36.5862- 80.1378-4-52-000	5.8	21	0.18	0.025	350	3900	.	16.0	18.8	14.5	-0.1	19	1.190
VAPT505R	51-36.5862- 80.0861-4-53-000	6.1	34	0.28	0.016	2590	3900	500	23.2	14.4	22.8	0.1	37	0.471
VAPT506R	51-36.6301- 80.0801-4-52-000	6.6	56	0.36	0.038	3280	3700	1270	45.3	16.0	.	1.2	17	0.679
VAPT507R	51-36.6299- 80.1441-4-52-000	5.7	162	0.18	0.036	M	M	M	M	66.8	12.5	-0.1	.	0.222
VAPT508R	51-36.6316- 80.1910-4-52-000	6.7	60	0.48	0.079	3400	3200	540	11.2	4.9	.	0.2	40	1.317
VAPT509R	51-36.6736- 80.1864-4-52-000	6.1	15	0.14	0.026	890	3300	370	10.5	18.1	13.4	-0.1	30	1.733
VAPT510R	51-36.6810- 80.1323-4-52-000	6.1	40	0.24	0.023	M	5100	.	11.1	21.6	17.8	-0.1	.	0.575
VAPT511R	51-36.6780- 80.0878-4-52-000	6.6	152	1.30	0.035	3340	7300	7980	17.2	29.9	.	-0.1	27	0.230
VAPT512R	51-36.7197- 80.1395-4-52-000	6.6	40	0.30	0.032	1770	3600	720	10.4	13.0	8.4	0.1	32	0.800
VAPT513R	51-36.5745- 80.3028-4-52-000	7.2	180	1.60	0.093	5060	4300	5250	10.6	107.2	.	0.2	125	0.517
VAPT514R	51-36.5762- 80.3728-4-52-000	6.3	79	0.62	0.326	5910	4200	770	12.0	45.1	14.6	-0.1	26	4.127
VAPT515R	51-36.5811- 80.4265-4-52-000	6.0	22	0.14	0.040	1370	3500	.	9.3	12.0	.	-0.1	19	1.818
VAPT516R	51-36.5764- 80.4864-4-52-000	5.4	25	0.08	0.055	1910	4600	320	30.1	19.4	16.7	-0.1	31	2.200
VAPT517R	51-36.5793- 80.5427-4-52-000	5.9	21	0.16	0.023	1320	3600	.	12.5	6.6	13.7	-0.1	18	1.095
VAPT518R	51-36.5832- 80.5955-4-52-000	7.2	111	1.06	0.111	2330	3400	750	13.3	5.3	4.1	0.3	40	1.000
VAPT519R	51-36.6300- 80.6030-4-52-000	5.9	30	0.24	0.047	M	3200	.	9.8	6.7	7.0	-0.1	11	1.567
VAPT520R	51-36.6241- 80.5449-4-52-000	6.0	53	0.20	0.049	M	M	M	10.6	8.6	.	-0.1	.	0.925
VAPT521R	51-36.6146- 80.4928-4-52-000	6.0	60	0.46	0.038	3810	3300	660	11.7	.	.	0.1	20	0.633
VAPT522R	51-36.6111- 80.4362-4-53-000	5.6	16	0.08	0.035	M	3400	.	11.6	12.6	.	-0.1	16	2.187
VAPT523R	51-36.6271- 80.3666-4-53-000	6.3	28	0.22	0.043	940	3100	650	15.1	.	9.3	0.2	38	1.536
VAPT524R	51-36.6403- 80.3284-4-52-000	5.9	12	0.08	0.035	620	3600	640	12.0	.	7.7	-0.1	11	2.917
VAPT525R	51-36.6685- 80.2581-4-53-000	6.1	10	0.08	0.018	780	3400	680	8.5	.	11.6	-0.1	.	1.800
VAPT526R	51-36.6903- 80.3141-4-53-000	6.6	68	0.54	0.041	1540	3500	3030	21.6	.	.	0.5	36	0.603
VAPT527R	51-36.7175- 80.3239-4-52-000	6.4	41	0.14	0.035	2700	6900	660	7.2	133.2	8.3	-0.1	.	0.854
VAPT528R	51-36.7188- 80.3691-4-52-000	5.9	140	0.26	0.031	6000	14900	.	6.7	33.9	.	0.2	.	0.221
VAPT529R	51-36.6836- 80.3629-4-53-000	6.4	23	0.18	0.025	M	M	M	9.9	9.0	10.8	-0.1	.	1.087
VAPT530R	51-36.7213- 80.4333-4-52-000	6.5	59	0.26	0.017	1230	5100	2990	10.0	21.1	.	0.2	.	0.288
VAPT531R	51-36.6922- 80.4104-4-52-000	6.7	31	0.20	0.033	1920	4000	.	12.1	9.5	5.1	0.2	33	1.065
VAPT532R	51-36.7665- 80.3673-4-53-000	6.4	19	0.12	0.027	940	3500	610	8.4	.	7.1	-0.1	15	1.421
VAPT533R	51-36.7681- 80.3103-4-52-000	6.2	40	0.18	0.034	M	4200	.	12.2	17.5	.	-0.1	8	0.850
VAPT534R	51-36.7665- 80.2650-4-52-000	6.1	65	0.28	0.041	4010	6500	1350	13.0	34.4	22.8	-0.1	.	0.631
VAPT535R	51-36.7167- 80.2450-4-52-000	6.7	79	0.52	0.026	2040	3800	1360	12.4	40.6	.	-0.1	38	0.329
VAPT536R	51-36.7342- 80.2177-4-53-000	6.8	71	0.58	0.020	1280	3200	3340	24.1	5.9	11.9	0.9	17	0.282
VAPT537R	51-36.7619- 80.1974-4-52-000	6.9	67	0.62	0.027	1680	3300	2560	12.0	18.1	9.3	1.4	30	0.403
VAPT538R	51-36.7720- 80.1424-4-52-000	6.6	60	0.34	0.040	M	5300	.	10.9	20.7	16.4	-0.1	.	0.667
VAPT539R	51-36.8297- 80.0964-4-52-000	7.1	327	2.40	0.035	19180	12800	16360	9.4	115.7	.	1.4	.	0.107
VAPT540R	51-36.8113- 80.1446-4-52-000	7.0	168	1.30	0.034	2970	8700	8330	13.1	58.8	19.8	1.7	.	0.202
VAPT541R	51-36.8087- 80.3226-4-53-000	6.6	121	0.42	0.014	M	M	M	M	46.6	16.3	-0.1	.	0.116
VAPT542R	51-36.8069- 80.2520-4-53-000	6.8	76	0.68	0.026	1640	3700	2630	11.6	11.3	.	0.2	35	0.342
VAPT543R	51-36.8058- 80.2036-4-52-000	7.0	64	0.64	0.205	5150	3500	2080	12.2	.	10.8	0.5	46	3.203

TABLE A-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA -GROUND WATER-WINSTON-SALEM SHEET 13

SRL I.D.	DOE I.D.	PH	COND.	ALK.	U	NA	CL	MG	AL	MN	BR	V	F	U/COND.
VAPT544R	51-36.8626- 80.2014-4-53-000	6.7	102	0.82	0.033	2210	4400	4700	15.3	.	7.1	1.0	18	0.324
VAPT545R	51-36.8417- 80.2570-4-53-000	6.2	38	0.26	0.026	2600	3500	680	15.2	14.1	.	0.3	47	0.684
VAPU541R	51-36.9852- 80.7905-4-52-000	7.3	410	2.90	0.227	1970	6800	18160	14.3	.	30.0	-0.1	63	0.554
VAPU542R	51-36.9843- 80.8341-4-52-000	7.6	220	1.80	0.084	1290	4600	2680	16.9	.	30.6	-0.1	.	0.382
VAPU543R	51-36.9556- 80.7862-4-53-000	7.2	370	3.40	0.288	3100	7200	24580	29.9	.	.	0.2	.	0.778
VAPU544R	51-36.9576- 80.7375-4-52-000	7.2	59	2.40	0.144	18380	30900	17610	59.2	.	.	-0.1	.	2.441
VAPU545R	51-36.9855- 80.7531-4-53-000	7.5	390	3.90	0.272	1490	5900	19130	12.1	.	.	-0.1	107	0.697
VAPU546R	51-36.9250- 80.7449-4-52-000	7.6	250	1.90	0.248	M	M	M	15.1	80.4	6.1	-0.1	.	0.992
VAPU547R	51-36.8962- 80.7258-4-52-000	7.7	490	3.20	0.062	17830	16600	20170	13.8	.	17.3	-0.1	.	0.127
VAPU548R	51-36.8929- 80.6965-4-53-000	6.7	110	0.18	0.022	4980	10400	3090	31.2	.	20.5	-0.1	.	0.200
VAPU549R	51-36.9586- 80.7158-4-52-000	6.9	100	0.32	0.034	3110	7500	2580	30.9	.	18.1	-0.1	.	0.340
VAPU550R	51-36.9826- 80.6901-4-52-000	7.4	490	1.70	0.259	710	4100	15160	27.8	.	.	-0.1	3154	0.529
VAPU551R	51-36.9990- 80.5885-4-52-000	7.7	410	2.10	1.086	1400	3500	19320	149.7	136.3	.	-0.1	.	2.649
VARU502R	51-36.9548- 81.9299-4-52-000	7.7	298	2.00	0.363	1520	5300	19160	10.5	.	9.9	-0.1	.	1.218
VARU503R	51-36.9365- 81.9832-4-52-000	7.9	172	1.10	0.131	590	3100	11420	13.4	.	18.3	0.2	.	0.762
VARU504R	51-36.9019- 81.9275-4-52-000	7.5	410	2.70	0.271	30270	9400	11120	11.4	.	16.5	-0.1	23	0.661
VARU505R	51-36.8994- 81.9852-4-53-000	7.8	249	1.80	0.168	1830	3100	3200	18.6	.	6.4	-0.1	25	0.675
VARU531R	51-36.9893- 81.9950-4-52-000	7.7	390	2.70	0.233	5050	9100	23620	16.3	.	.	0.2	.	0.597
VARU532R	51-36.9971- 81.9340-4-52-000	7.6	450	3.00	0.456	1020	4500	.	13.9	167.6	.	0.7	116	1.013
VARU533R	51-36.9779- 81.8687-4-53-000	7.7	262	2.00	0.121	800	4500	14900	12.4	.	.	0.4	.	0.462
VARU534R	51-36.9580- 81.8787-4-53-000	7.7	200	1.50	0.070	1000	3400	1910	12.9	.	13.5	-0.1	22	0.350
VARU535R	51-36.9874- 81.8130-4-53-000	7.6	173	1.20	0.045	1040	3300	1250	17.7	.	.	-0.1	49	0.260
VASM501R	51-36.8577- 81.5272-4-52-000	8.0	410	2.70	0.157	1770	4900	21600	11.1	.	13.6	-0.1	92	0.383
VASM502R	51-36.8531- 81.5841-4-53-000	8.1	340	2.50	0.133	380	3400	880	8.7	155.5	9.1	-0.1	.	0.391
VASM503R	51-36.8571- 81.6401-4-52-000	7.8	242	1.50	0.162	1960	3300	4260	9.8	.	12.0	-0.1	73	0.669
VASM504R	51-36.8442- 81.6949-4-52-000	8.2	211	1.20	0.079	10250	2200	3540	11.2	75.7	15.8	-0.1	49	0.374
VASM505R	51-36.8460- 81.7493-4-52-000	7.7	404	2.30	0.488	3370	5800	15780	13.7	.	.	-0.1	.	1.208
VASM506R	51-36.8774- 81.7275-4-52-000	8.0	390	2.50	0.175	1700	5000	19600	14.1	6.1	9.8	-0.1	194	0.449
VASM507R	51-36.9039- 81.7911-4-53-000	7.4	80	0.08	0.045	180	3100	620	31.7	12.7	14.2	-0.1	.	0.563
VASM508R	51-36.9169- 81.7309-4-52-000	7.1	220	0.90	0.064	3740	4500	3160	12.1	163.0	26.0	-0.1	59	0.291
VASM509R	51-36.9319- 81.6880-4-52-000	6.9	160	0.50	0.054	3120	3300	2750	10.9	58.2	.	-0.1	37	0.337
VASM510R	51-36.8889- 81.6882-4-52-000	7.3	600	2.90	0.332	M	M	M	23.1	205.0	.	-0.1	.	0.553
VASM511R	51-36.8952- 81.6374-4-52-000	7.9	298	1.30	0.181	M	5000	10850	12.4	.	12.0	-0.1	.	0.607
VASM512R	51-36.9393- 81.6324-4-53-000	7.4	172	0.60	0.001	M	M	M	3.2	.	.	-0.1	.	0.006
VASM513R	51-36.9438- 81.5892-4-53-000	7.7	350	2.00	0.097	1610	3700	4240	17.8	.	.	-0.1	39	0.277
VASM514R	51-36.9137- 81.5702-4-53-000	7.7	340	1.60	0.098	380	3100	14910	13.2	.	.	-0.1	.	0.288
VASM515R	51-36.8898- 81.5263-4-52-000	9.2	172	0.70	0.108	1260	2900	2550	11.7	.	.	0.1	41	0.628
VASM516R	51-36.9487- 81.5250-4-53-000	7.7	321	1.80	0.048	23560	2700	510	25.1	2.4	.	-0.1	162	0.150
VASM517R	51-36.9734- 81.5351-4-53-000	7.7	194	1.00	0.115	1590	4200	15480	13.1	.	13.6	-0.1	69	0.593
VASM518R	51-36.9451- 81.4532-4-53-000	8.0	355	1.90	0.123	840	3200	3770	25.6	108.6	3.8	-0.1	26	0.346
VASM519R	51-36.9602- 81.3984-4-53-000	7.9	250	1.50	0.150	330	3100	18890	12.1	.	.	-0.1	.	0.600
VASM520R	51-36.9135- 81.4591-4-53-000	7.9	108	0.14	0.101	M	M	M	15.2	21.3	11.4	-0.1	.	0.935
VASM521R	51-36.9114- 81.4150-4-52-000	6.9	185	0.70	0.036	1100	2900	1350	29.5	.	.	-0.1	53	0.195
VASM522R	51-36.9074- 81.3575-4-52-000	7.7	400	2.50	0.028	3940	3100	2410	10.4	280.2	.	-0.1	73	0.070
VASM523R	51-36.8682- 81.3550-4-52-000	8.0	198	0.70	2.251	M	2400	.	11.9	58.5	.	-0.1	94	11.369
VASM524R	51-36.8608- 81.4049-4-53-000	8.0	201	1.00	0.113	300	2800	5310	9.7	.	7.7	-0.1	21	0.562
VASM525R	51-36.8556- 81.4708-4-52-000	7.7	325	1.50	0.084	380	2600	5630	22.0	39.7	6.4	0.2	.	0.258
VASM526R	51-36.8049- 81.4051-4-53-000	8.4	169	0.70	0.122	6840	7600	10770	16.6	.	18.2	-0.1	.	0.722
VASM527R	51-36.8083- 81.4690-4-53-000	7.9	210	0.80	0.045	540	3400	4220	11.1	.	11.4	-0.1	10	0.214
VASM528R	51-36.8034- 81.5315-4-52-000	8.2	492	2.20	0.088	380	2600	5860	30.8	.	.	-0.1	19	0.179
VASM529R	51-36.7555- 81.5719-4-52-000	8.8	310	1.30	1.465	M	6800	.	11.5	.	39.1	-0.1	.	4.726
VASM530R	51-36.8016- 81.5746-4-53-000	8.0	450	2.00	0.123	780	3500	8940	12.1	.	.	0.2	132	0.273
VASM531R	51-36.8062- 81.6354-4-52-000	7.8	600	2.60	0.366	1450	8000	33720	32.1	.	34.5	-0.1	.	0.610

TABLE A-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA -GROUND WATER-WINSTON-SALEM SHEET 14

SRL I.D.	DOE I.D.	PH	COND.	ALK.	U	NA	CL	MG	AL	MN	BR	V	F	U/COND.
VASM532R	51-36.8130- 81.6992-4-52-000	8.2	475	2.30	0.152	620	3700	8320	47.4	.	24.0	0.1	101	0.320
VASM533R	51-36.7592- 81.6311-4-53-000	8.1	380	1.60	0.487	450	3400	18040	12.9	.	11.5	-0.1	130	1.282
VASM534R	51-36.7083- 81.6322-4-52-000	7.7	209	0.50	0.134	620	4600	5220	13.2	.	.	-0.1	155	0.641
VASM535R	51-36.6659- 81.6282-4-52-000	6.6	180	0.10	0.025	2950	5200	940	15.4	68.9	14.8	-0.1	.	0.139
VASM536R	51-36.6718- 81.5710-4-53-000	6.3	182	0.14	0.056	1120	2900	.	13.8	11.7	11.3	-0.1	.	0.308
VASM537R	51-36.7298- 81.5583-4-53-000	7.1	172	0.40	0.032	670	3500	380	20.2	2.7	8.2	-0.1	.	0.186
VASM538R	51-36.7571- 81.4975-4-53-000	7.3	261	0.70	0.057	780	4000	7710	15.2	.	.	-0.1	.	0.218
VASM539R	51-36.7254- 81.4883-4-53-000	7.5	180	0.14	0.022	1190	3400	1360	24.2	.	.	-0.1	.	0.122
VASM540R	51-36.7264- 81.4483-4-53-000	7.6	162	0.14	0.017	M	M	M	22.4	5.9	.	-0.1	.	0.105
VASM541R	51-36.7583- 81.4035-4-53-000	7.5	160	0.08	0.055	700	3200	790	44.1	16.7	.	-0.1	.	0.344
VASM542R	51-36.7634- 81.4532-4-53-000	7.8	255	0.86	0.093	250	3400	7010	13.5	6.4	10.3	-0.1	26	0.365
VASM543R	51-36.7792- 81.3474-4-52-000	7.9	365	1.60	0.108	780	5500	14610	16.5	.	13.4	-0.1	.	0.296
VASM544R	51-36.7997- 81.3476-4-52-000	6.8	198	0.20	0.020	500	3500	1000	11.2	29.3	.	-0.1	.	0.101
VASM545R	51-36.8116- 81.2992-4-53-000	7.5	348	1.50	0.098	490	4500	.	14.2	107.7	6.7	0.1	141	0.282
VASM546R	51-36.7666- 81.2720-4-53-000	8.3	140	0.06	0.025	700	2800	350	15.3	4.5	10.3	-0.1	.	0.179
VATA510R	51-36.9947- 81.6882-4-53-000	7.2	281	3.10	0.060	740	4100	890	8.8	1.6	12.4	-0.1	.	0.214
VATA528R	51-36.9807- 81.6406-4-53-000	7.1	19	0.28	0.036	350	3700	700	39.6	4.1	9.8	-0.1	34	1.895
VATA529R	51-36.9445- 81.6623-4-52-000	5.7	100	0.46	0.042	4200	8900	2480	40.2	186.7	.	-0.1	.	0.420
VATA530R	51-36.9893- 81.6030-4-52-000	7.8	208	2.20	2.607	960	4400	4050	107.5	.	7.4	0.3	18	12.534
VATA569R	51-36.9976- 81.7693-4-52-000	7.7	209	2.30	0.134	12560	3700	1290	69.5	13.0	.	-0.1	.	0.641
VAWS501R	51-36.7078- 81.9099-4-53-000	8.0	252	2.50	0.192	680	4100	7630	16.4	.	15.0	-0.1	24	0.762
VAWS502R	51-36.7152- 81.8422-4-53-000	8.0	310	2.50	0.280	760	4200	11370	15.5	.	.	-0.1	93	0.903
VAWS503R	51-36.7142- 81.8058-4-53-000	8.0	370	2.60	0.476	1010	5500	19840	8.0	.	.	-0.1	259	1.286
VAWS504R	51-36.7159- 81.7489-4-52-000	7.9	120	1.00	0.058	1650	3600	1150	10.0	7.1	7.9	-0.1	21	0.483
VAWS505R	51-36.7234- 81.6970-4-52-000	7.9	339	2.70	0.267	2400	7800	.	11.2	108.8	77.1	-0.1	.	0.788
VAWS506R	51-36.6741- 81.7537-4-52-000	7.3	820	5.80	1.601	M	7900	69480	23.0	16.6	38.6	-0.1	354	1.952
VAWS507R	51-36.6291- 81.7587-4-53-000	7.4	20	0.08	0.108	180	3000	1210	25.4	.	9.3	-0.1	8	5.400
VAWS508R	51-36.6572- 81.6770-4-52-000	7.2	33	0.16	0.031	2190	3400	380	11.2	11.7	.	-0.1	59	0.939
VAWS509R	51-36.6235- 81.6354-4-53-000	6.8	20	0.08	0.123	M	M	M	14.2	3.6	.	-0.1	.	6.150
VAWS510R	51-36.6227- 81.6780-4-52-000	7.1	30	0.18	0.063	M	2900	.	11.3	3.2	4.5	-0.1	39	2.100
VAWS511R	51-36.6263- 81.7923-4-53-000	7.3	20	0.12	0.514	810	2800	210	9.7	27.8	3.1	-0.1	17	25.700
VAWS512R	51-36.6712- 81.8023-4-52-000	7.5	310	3.00	0.514	1020	5000	13090	8.5	.	8.1	-0.1	85	1.658
VAWS513R	51-36.6758- 81.8627-4-53-000	8.2	280	2.70	0.386	1410	3800	14420	14.2	20.6	.	0.1	41	1.379
VAWS514R	51-36.6257- 81.8667-4-52-000	8.3	200	1.60	0.265	340	3800	8440	57.3	.	.	0.2	28	1.325
VAWS515R	51-36.6137- 81.9329-4-53-000	7.9	230	1.70	0.159	630	4200	9180	29.8	.	.	0.1	137	0.691
VAWS516R	51-36.6342- 81.9847-4-53-000	8.0	270	2.50	0.188	400	3200	9640	36.2	.	5.3	-0.1	134	0.696
VAWS517R	51-36.6737- 81.9675-4-53-000	8.0	110	0.42	0.134	2660	3100	2530	18.2	8.1	15.3	-0.1	.	1.218
VAWS518R	51-36.6663- 81.9137-4-52-000	7.9	355	3.20	0.767	250	3700	.	22.9	190.1	.	-0.1	185	2.161
VAWS519R	51-36.7044- 81.9702-4-52-000	7.6	315	2.70	0.127	M	4400	.	9.9	145.0	11.9	-0.1	90	0.403
VAWS542R	51-36.7893- 81.9852-4-52-000	7.2	318	2.40	0.240	1640	3700	3370	12.1	.	9.8	-0.1	62	0.755
VAWS543R	51-36.7452- 81.9828-4-53-000	7.4	305	2.30	0.246	930	M	14800	M	.	10.5	-0.1	.	0.807
VAWS544R	51-36.7571- 81.9220-4-53-000	7.4	300	2.00	0.208	1340	4700	8950	13.2	.	11.4	-0.1	51	0.693
VAWS545R	51-36.7656- 81.8759-4-52-000	7.4	320	2.50	0.180	820	4000	17240	27.8	117.5	12.5	0.1	35	0.562
VAWS546R	51-36.7644- 81.8003-4-53-000	7.4	309	2.50	0.283	3500	8400	7970	9.0	.	8.1	-0.1	.	0.916
VAWS547R	51-36.7554- 81.7508-4-53-000	7.7	480	2.60	0.275	3320	12300	5930	12.1	99.3	.	0.9	.	0.573
VAWS548R	51-36.7495- 81.6871-4-53-000	7.5	308	2.10	0.272	M	3900	4560	17.2	66.7	35.6	-0.1	44	0.883
VAWS549R	51-36.8137- 81.7526-4-52-000	7.8	490	3.60	0.711	3550	7300	28710	9.9	.	.	-0.1	34	1.451
VAWS550R	51-36.8083- 81.7911-4-53-000	7.9	230	2.20	0.124	M	2800	.	9.4	.	.	-0.1	.	0.539
VAWS551R	51-36.8523- 81.8089-4-52-000	7.4	410	2.70	0.221	1010	4000	3880	9.4	.	.	0.2	33	0.539
VAWS552R	51-36.8081- 81.8819-4-52-000	7.6	330	3.00	0.120	1910	5000	22630	11.2	.	.	-0.1	.	0.364
VAWS553R	51-36.7911- 81.9268-4-53-000	7.7	331	2.50	0.271	M	M	M	10.5	141.4	.	-0.1	.	0.819
VAWS554R	51-36.8487- 81.8670-4-52-000	7.7	211	1.30	0.052	9420	3300	6800	12.8	30.9	5.8	-0.1	138	0.246
VAWS555R	51-36.8904- 81.8107-4-52-000	8.0	130	1.20	0.074	5100	3100	3450	10.8	86.8	9.8	-0.1	87	0.569

TABLE A-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA -GROUND WATER-WINSTON-SALEM SHEET 15

SRL I.D.	DOE I.D.	PH	COND.	ALK.	U	NA	CL	MG	AL	MN	BR	V	F	U/COND.
VAWS556R	51-36.8756- 81.8789-4-53-000	7.9	150	1.00	0.079	790	2900	2230	16.2	.	.	-0.1	38	0.527
VAWS557R	51-36.8479- 81.9146-4-52-000	7.7	255	1.70	0.056	25910	3300	2720	6.1	228.2	13.6	-0.1	96	0.220
VAWS558R	51-36.8326- 81.9543-4-53-000	7.9	69	0.42	0.062	M	M	M	15.6	30.2	6.4	-0.1	.	0.899
VAWY501R	51-36.9501- 81.1229-4-52-000	7.2	460	2.80	0.459	M	M	M	12.6	151.5	59.8	-0.1	.	0.998
VAWY502R	51-36.9558- 81.1774-4-52-000	7.6	360	3.30	0.170	1360	4800	7820	15.0	.	.	-0.1	76	0.472
VAWY503R	51-36.9546- 81.2323-4-53-000	8.0	250	1.90	0.311	590	5000	15970	17.9	.	6.9	-0.1	296	1.244
VAWY504R	51-36.9854- 81.2748-4-53-000	7.0	21	0.12	0.036	380	3200	980	30.4	6.9	15.2	-0.1	36	1.714
VAWY505R	51-36.9451- 81.2766-4-53-000	7.8	281	2.00	0.235	1040	5200	15520	28.0	.	11.8	0.4	284	0.836
VAWY506R	51-36.9093- 81.2879-4-53-000	7.8	323	2.70	0.222	4050	12400	13950	13.4	.	17.3	-0.1	246	0.687
VAWY507R	51-36.9080- 81.2374-4-52-000	7.8	380	2.80	0.181	1310	5000	16480	18.6	.	16.6	0.1	196	0.476
VAWY508R	51-36.9056- 81.1822-4-52-000	7.7	800	4.00	1.951	1240	6000	56260	49.3	.	17.6	-0.1	602	2.439
VAWY509R	51-36.8608- 81.1801-4-52-000	8.3	303	1.60	0.165	M	9000	.	17.7	120.3	18.2	0.1	.	0.545
VAWY510R	51-36.8597- 81.2314-4-52-000	7.7	300	1.90	0.072	1370	8000	16960	15.6	5.8	.	-0.1	125	0.240
VAWY511R	51-36.8612- 81.2973-4-52-000	6.4	225	0.70	0.060	7800	36400	5440	282.6	209.6	.	-0.1	.	0.267
VAWY512R	51-36.8164- 81.2475-4-52-000	7.7	178	1.10	0.048	400	3400	12220	23.4	.	6.1	-0.1	.	0.270
VAWY513R	51-36.8098- 81.1760-4-53-000	7.9	109	0.16	0.088	720	3600	6250	25.1	3.8	.	-0.1	33	0.807
VAWY514R	51-36.7756- 81.1857-4-53-000	7.4	19	0.14	0.012	950	3100	420	26.8	2.2	.	-0.1	19	0.632
VAWY515R	51-36.8171- 81.1335-4-52-000	7.7	330	2.50	0.189	M	M	M	21.3	132.0	.	-0.1	.	0.573
VAWY516R	51-36.8521- 81.1188-4-52-000	8.1	310	2.00	0.062	130	M	.	19.2	122.8	20.5	-0.1	.	0.200
VAWY517R	51-36.8618- 81.0605-4-53-000	8.3	170	1.30	0.108	M	3800	9430	19.8	.	.	0.1	.	0.635
VAWY518R	51-36.8203- 81.0490-4-53-000	8.1	28	0.80	0.043	410	3200	740	34.3	17.3	8.1	0.2	19	1.536
VAWY519R	51-36.8577- 81.0067-4-53-000	8.0	310	2.80	0.125	530	3900	17510	24.5	12.2	.	-0.1	11	0.403
VAWY520R	51-36.8596- 80.9495-4-52-000	8.3	255	1.80	0.096	440	3300	14550	18.8	5.7	23.1	0.2	29	0.376
VAWY521R	51-36.8508- 80.8952-4-52-000	7.7	400	2.80	1.803	M	M	22690	19.4	160.4	21.7	-0.1	.	4.507
VAWY522R	51-36.8545- 80.8444-4-52-000	8.4	209	0.80	0.435	1370	4700	13120	21.2	92.7	.	0.4	27	2.081
VAWY523R	51-36.9002- 80.7824-4-52-000	8.1	285	1.90	0.155	710	3900	13570	22.5	.	.	0.1	82	0.544
VAWY524R	51-36.9136- 80.8357-4-52-000	7.8	750	2.00	2.286	1840	7500	51180	27.4	.	48.3	-0.1	2254	3.048
VAWY525R	51-36.9471- 80.8392-4-52-000	8.0	239	1.10	0.059	M	M	M	24.4	84.8	28.8	-0.1	.	0.247
VAWY526R	51-36.9467- 80.8936-4-52-000	7.7	460	2.70	0.204	M	M	M	14.6	174.5	.	-0.1	.	0.443
VAWY527R	51-36.9059- 81.1174-4-52-000	8.0	215	2.60	0.173	1050	5400	11870	23.7	6.5	.	0.1	.	0.805
VAWY528R	51-36.9090- 81.0485-4-53-000	7.6	19	0.60	0.043	370	3200	790	32.1	11.9	15.0	-0.1	24	2.263
VAWY529R	51-36.8914- 81.0096-4-53-000	5.8	20	0.08	0.044	310	3200	560	92.3	9.0	18.4	-0.1	21	2.200
VAWY530R	51-36.9017- 80.9520-4-52-000	6.7	98	0.66	0.038	390	3200	6100	15.5	.	21.2	-0.1	114	0.388
VAWY531R	51-36.9001- 80.9039-4-52-000	7.5	441	4.00	0.076	M	4800	26510	14.3	187.4	.	-0.1	.	0.172
VAWY532R	51-36.9518- 80.9536-4-52-000	8.0	193	1.20	0.043	M	M	M	34.8	93.4	10.1	-0.1	.	0.223
VAWY534R	51-36.9961- 80.8885-4-52-000	6.7	79	0.20	0.027	1200	4600	2210	15.3	161.2	7.6	-0.1	30	0.342
VAWY535R	51-36.9969- 81.0204-4-53-000	7.5	42	0.18	0.034	M	3200	2280	20.0	3.5	.	-0.1	33	0.810
VAWY536R	51-36.9473- 81.0552-4-52-000	7.3	700	3.60	4.010	M	7900	39900	23.8	18.8	22.4	-0.1	189	5.729
VAWY537R	51-36.9577- 81.0223-4-52-000	7.7	488	3.70	0.755	470	4100	45230	17.3	.	.	-0.1	61	1.547
VAWY541R	51-36.9936- 81.1204-4-52-000	7.5	455	3.00	0.652	1070	6700	11960	12.5	.	8.2	-0.1	134	1.433
VAWY542R	51-36.9987- 81.1909-4-52-000	7.4	170	0.90	0.060	12960	10300	5360	13.5	756.3	.	-0.1	.	0.353
VAWY544R	51-36.9214- 81.3169-4-52-000	7.6	400	2.80	0.537	630	3500	22140	20.3	.	14.9	-0.1	98	1.342

TABLE A-3

Statistical Distribution Symbols for Areal Maps

Symbol	*Percentile*
	>99.5
	98.0-99.5
	95.0-97.99
	91.0-94.99
	84.0-90.99
	72.0-83.99
	58.0-71.99
	42.0-57.99
	28.0-41.99
	16.0-27.99
	9.0-15.99
	5.0- 8.99
	2.0- 4.99
	0.5- 1.99
	<0.5

APPENDIX B: Results and Discussion of the Winston-Salem Ground Water Data

INTRODUCTION

Field measurements and NAA analysis of ground water samples are summarized in Table B-1. Results of each measurement or element are discussed briefly below. Note that the statistics in Table B-1 are only for values above the analytical detection limit. Tabulated values are for ground water (resin) samples.

TABLE B-1

Statistical Summary of Field Measurements and Elemental Analyses of Ground Water

Variable	n^a	*Measured Values*			*Log Mean*[e] $\frac{(\Sigma \log_{10} x)}{n}$	*Log Std.*[e] *Deviation*	*Standard Deviation* ±1 σ
		Maximum[b]	*Minimum*[c]	*Mean*[d]			
pH	784	9.2	4.5	6.7			0.7
Conductivity	784	820	9.0	105	1.8	0.4	116
Alkalinity	783	5.80	0.01	0.60	-0.50	0.47	0.80
U	743	4.01	0.001	0.116	-1.28	0.44	0.30
Na	630	30,270	130	2,869	3.3	0.4	3,166
Cl	686	55,700	2,200	5,399	3.7	0.2	3,925
Mg	530	69,480	70	4,071	3.3	0.5	7,147
Al	735	3,364	3.0	31	1.3	0.3	127
Mn	525	756	0.4	34	1.2	0.5	58
Br	477	77	2.6	19	1.2	0.3	12
V	316	16.2	0.1	0.6	0.5	0.4	1.3
F	395	3,154	6.0	70	1.6	0.4	200

a. Number of observations for 784 samples. Some values are missing for reasons other than being below detection limit.

b. Elemental concentrations in ppb; conductivity in μmhos/cm; alkalinity in meq/L.

c. Minimum or detection limit.

d. Mean of values above detection limit.

e. Log units.

GROUND WATER VARIABLES

pH

Measurements of pH in ground water ranged from 4.5 to 9.2, with an average value of 6.7 (Figure A-1). Figure A-2 shows areal distribution of ground water pH values.

Conductivity

The conductivity of ground water in the Winston-Salem quadrangle ranged from 9 to 820 μmhos/cm and averaged 105 μmhos/cm (Figure A-3). Figure A-4 shows the areal distribution of ground water conductivity values. High values are generally clustered in the Valley and Ridge Province. Conductivity values appear to be in error (high) in Ashe County, North Carolina.

Alkalinity

Ground water alkalinity in this study ranged from zero to 5.8 milliequivalents per liter (meq/L) and averaged 0.60 meq/L (Figure A-5). Areal distribution of alkalinity values is similar to the distribution of conductivity values (Figure A-6).

DISTRIBUTIONS OF ELEMENTS IN GROUND WATER

Uranium

The concentration of uranium in ground water samples ranged from about 0.01 ppb (indistinguishable from analytical background) to 4.01 ppb, with an average value of 0.116 ppb (Figure A-7). The mean log of uranium values is -1.28 (0.05 ppb). Concentrations of uranium in ground water are dependent on several factors: 1) the concentration of uranium in the rock through which the water passes, 2) the rate at which the uranium-bearing minerals in the rock will release uranium, 3) the hydrologic character of the rock, and 4) the chemistry of the water (especially Eh, pH, and alkalinity).

Sodium

Analyzed concentrations of sodium ranged from 130 ppb to 30,270 ppb (30.3 ppm), with an average value of 2869 ppb (Figure A-9). Values below about 200 ppb are not distinguishable from background because the resin itself contains traces of sodium. Sodium concentrations are generally lower than average in the Valley and Ridge Province in the northwest corner of the Winston-Salem quadrangle. However, a few high values occur near an area just west of Saltville, Virginia (Figure A-10).

Chlorine

Chlorine analyses include 1000 to 3000 ppb background from resin. Reported values range from 2200 to 55,700 ppb (Figure A-11). In general, the areal distribution of chlorine values does not track that of conductivity values as it did in nearby quadrangles (Figure A-12). Alkalinity dominates the conductivity measurements.

Magnesium

Magnesium concentrations in ground water ranged from about 70 ppb to about 69,480 ppb (Figure A-13), with an average value of 4071 ppb. The areal distribution of magnesium values shows a region of high values in the Valley and Ridge Province (Figure A-14).

Aluminum

Concentrations of aluminum in ground water ranged from 3.0 to 3364 ppb (Figure A-15). The areal distribution of aluminum values is shown in Figure A-16.

Manganese

Manganese values ranged from a low of 0.4 ppb to 756 ppb (Figure A-17). The areal distribution of manganese values is shown in Figure A-18. Scattered highs occur in the Valley and Ridge Province.

Bromine

The areal distribution of bromine values is similar to that of chlorine values. Concentrations of bromine ranged from 2.6 ppb to 77 ppb. Some lower values may be due to traces of bromine in the resin (Figure A-19).

Vanadium

Vanadium values ranged from the detection limit of 0.1 ppb to 16.2 ppb, with an average value of 0.6 ppb (Figure A-21). High values are mostly in the Charlotte Belt.

Fluorine

Fluorine values are highest in the Valley and Ridge Province in areas underlain by Lower to Middle Cambrian Rocks (Shady, Rome, and Conasauga Formations). Several other scattered high fluorine values in the Blue Ridge and Sauratown Mountains areas may be related to plutonic rocks of the Elk Park group. Reported values ranged from 6.0 to 3154 ppb (Figure A-23).

U/Cond

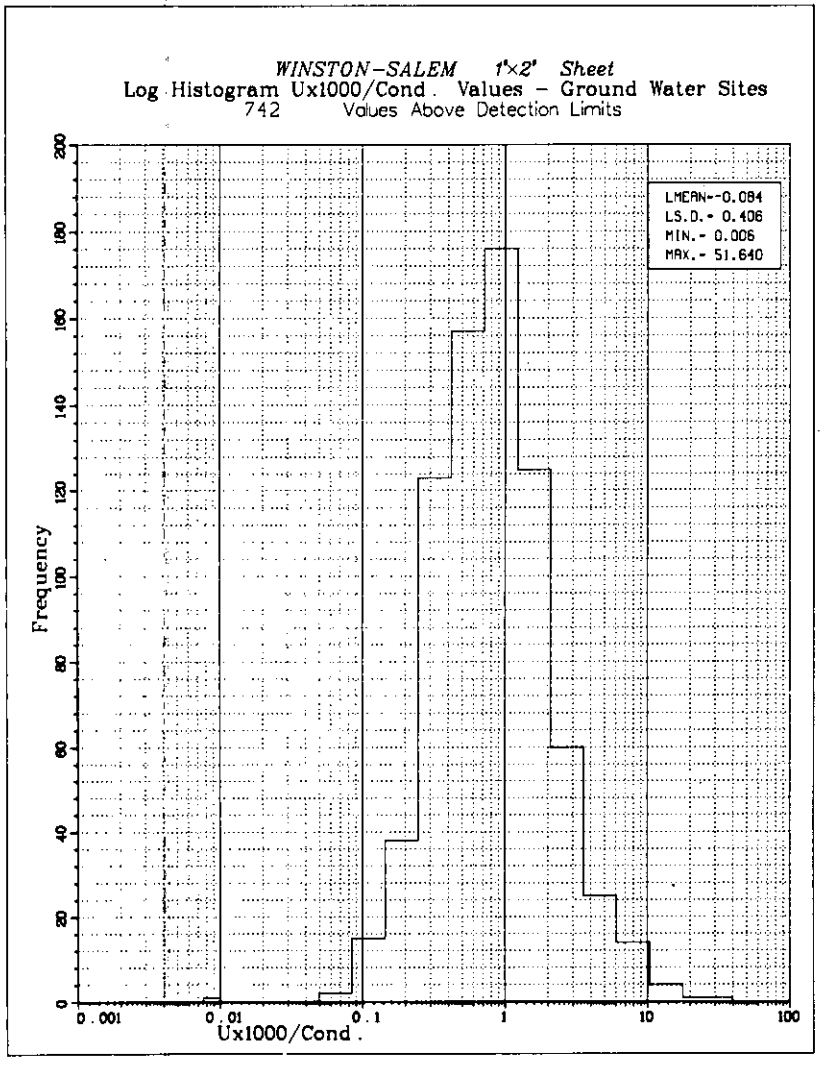
These values are uranium concentrations (ppb) divided by conductivities (μmhos/cm). The ratios have been multiplied by 1000 for convenience. Values ranged from 0.006 to 52 (Figure B-1).

Because conductivity is proportional to the total amount of dissolved material, the ratio U/Cond gives a measure of the uranium content of a given sample compared to the total amount of material in solution in that sample. The ratio U/Cond is useful for comparing water samples collected over a wide area or at different times. This ratio corrects for dilution by rain water which may cause the absolute value of uranium concentration to vary with time.

Values for U/Cond are low in Ashe County, North Carolina, because of an apparent calibration error in conductivity measurements. However, even if the low values are increased by a factor of 5, no significant anomalies occur in this area.

The statistical distribution of the 1000 U/Cond ratio has been clearly bi-modal in other SRL studies with an anomaly break at about 2 or 3. Ratio values above about 10 are clearly anomalous.

Anomalous samples are grouped in several areas on Figure B-2. These anomalies are not restricted to any particular geologic terrane.



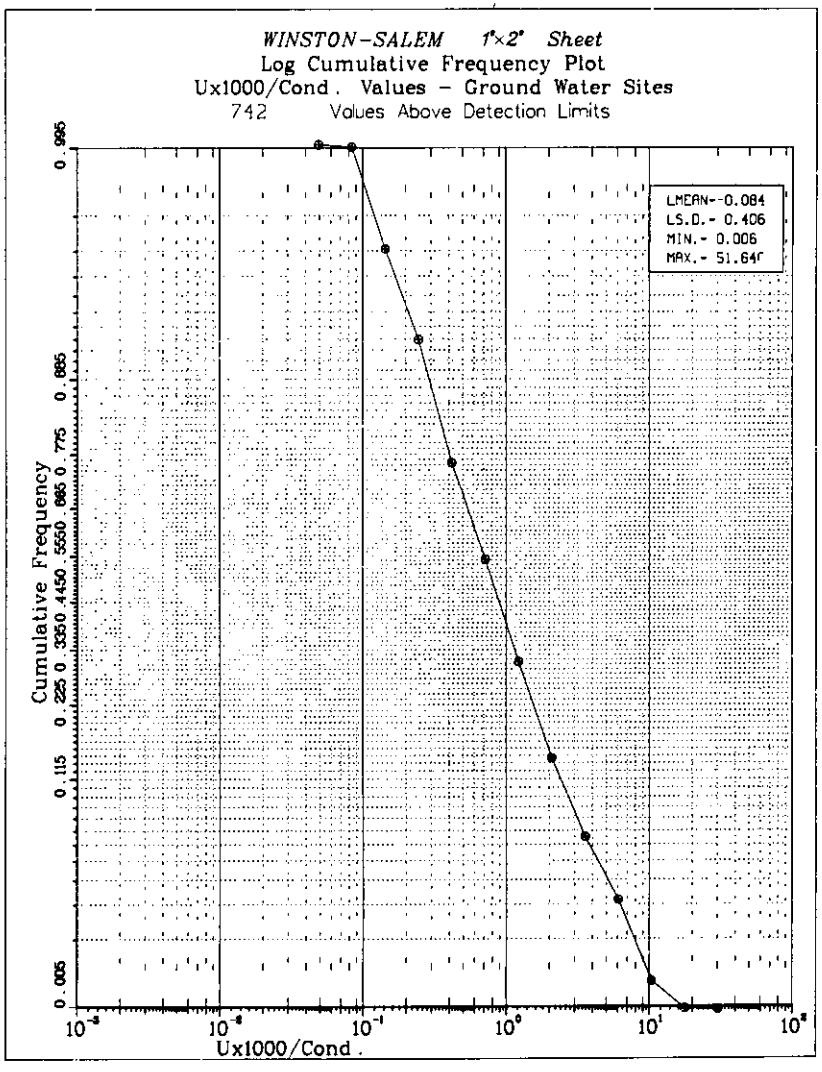


FIGURE B-1. Log Histogram and Cumulative Frequency Plot of U/Conductivity of Ground Water

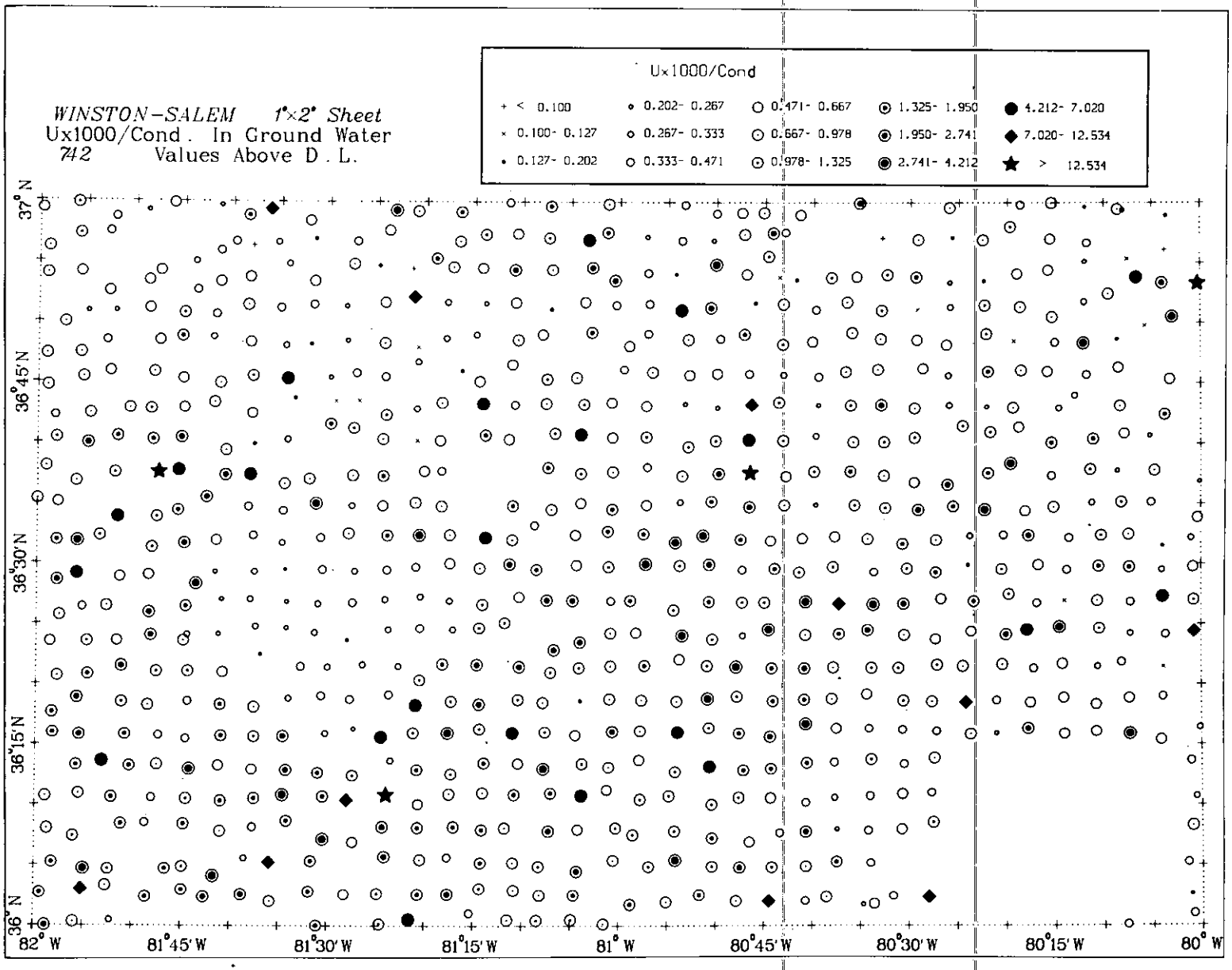


FIGURE B-2. Areal Distribution of Uranium Concentration (X1000)/Conductivity in Ground Water