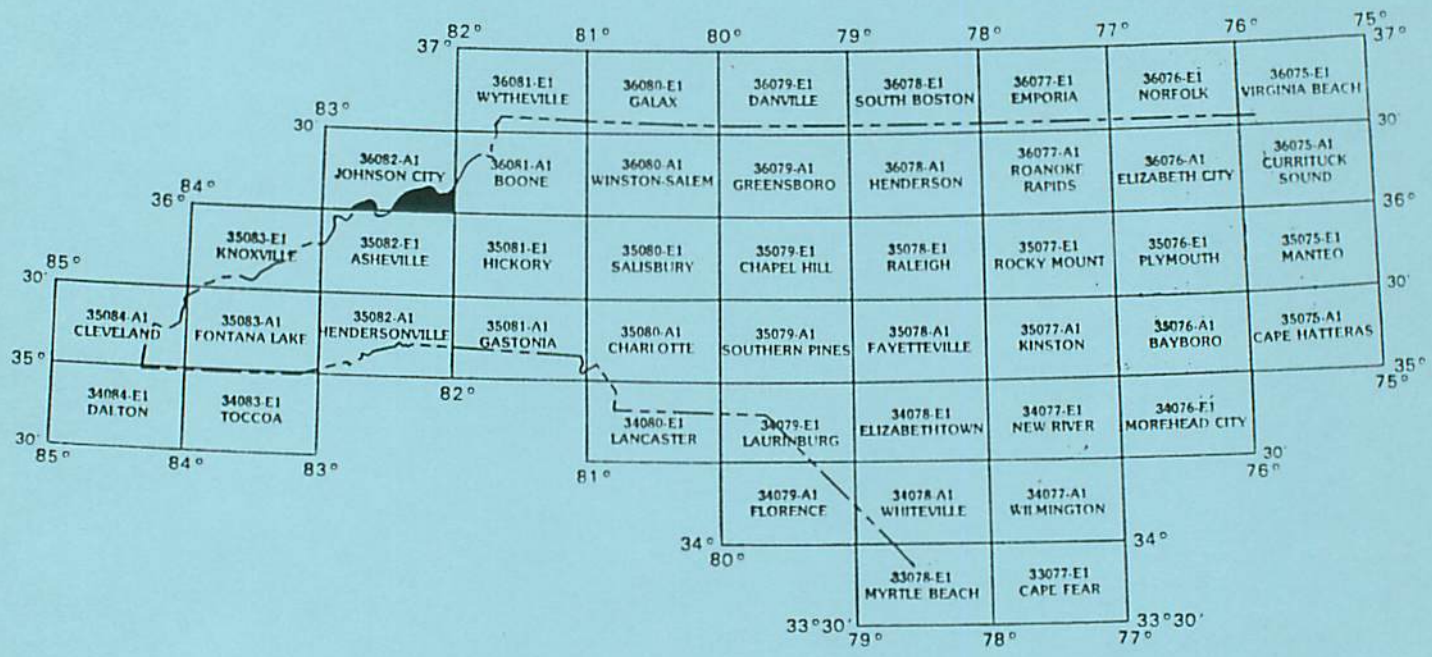
# Listing of Concentrations of Variables of Stream Sediment, Stream Water, and Groundwater for the Johnson City 30 x 60 - Minute Quadrangle -NURE Database

by
Robert H. Carpenter and Jeffrey C. Reid




**NORTH CAROLINA GEOLOGICAL SURVEY**
**OPEN-FILE REPORT 93-6**

**State of North Carolina**
James B. Hunt, Jr., Governor

**Department of Environment, Health and Natural Resources**
Jonathan B. Howes, Secretary
**Division of Land Resources**
Charles H. Gardner,
Director and State Geologist

July, 1993

# GEOLOGICAL SURVEY SECTION

The Geological Survey Section examines, surveys and maps the geology, mineral resources, and topography of the State to encourage the wise conservation and use of these resources by industry, commerce, agriculture and government agencies for the general welfare of the citizens of North Carolina.

The Section conducts basic and applied research projects in environmental geology, mineral resources exploration and systematic geologic mapping. Services include identifying rock and mineral samples submitted by citizens and providing consulting services and specially prepared reports to agencies that need geological information.

The geological Survey section publishes Bulletins, Economic Papers, Information Circulars, Educational Series, Geologic Maps and Special Publications. For a list of publications or more information about the Section contact the Geological Survey Section, Division of Land Resources, at Post Office Box 27687, Raleigh, North Carolina 27611-7687.

Jeffrey C. Reid
Chief Geologist

# Listing of Concentrations of Variables of Stream Sediment, Stream Water, and Groundwater for the Johnson City 30 x 60 - Minute Quadrangle -NURE Database

by
**Robert H. Carpenter and Jeffrey C. Reid**

## INTRODUCTION

This report is a compilation of geochemical data for stream sediment and groundwater for the Johnson City 30 x 60 - minute quadrangle (Figure 1). Maps and tables were prepared from statewide data obtained by the Savannah River Laboratory under sponsorship of the U.S. Dept. of Energy in its National Uranium Resources Evaluation (NURE) program (Sargent and others, 1982). Sampling and analysis were performed during the period 1976 - 1980.

Because of the large size of the database, the North Carolina Geological Survey is presenting the database in both statewide and 30 x 60 - minute quadrangle formats. Statewide formats currently available include atlases of stream sediment and hydrogeochemical data which contain maps showing quartile distribution of concentrations of variables (Reid, 1991; Reid, 1993). Reid and Carpenter (1993a, 1993b) present listings of concentrations of variables which equal or exceed the 90th percentile (and pH and conductivity below the 10th percentile) for stream sediment and groundwater-stream water.

This open-file report is part of a series of reports that present sample-location maps and listings of analyses of all variables in all of the 30 x 60 - minute quadrangles that comprise the state of North Carolina. Subsequent reports will review the NURE data for individual 30 x 60 - minute quadrangles. These reviews will contain the following: 1) maps showing concentrations of all the variables in up to eight class intervals; 2) geologic review of the quadrangle and discussion of relationship of geochemical variables to rock units and structural features; 3) review of mineral resources and discussion of relationship of geochemical variables to mineral occurrences; and 4) discussion of outliers that may relate to anthropogenic contamination.

In this report, site-location maps use state boundaries, county boundaries and 7-1/2 - minute quadrangle boundaries as references to site-locations. The North Carolina Index to Topographic and Other Map Coverage, prepared by the U.S. Geological Survey, is a useful reference document. The List of Publications of the North Carolina Geological Survey indicates areas within the state for which some geologic and geophysical maps, and reports, are available.

Listings in this report are in the same basic format as those presented in microfiche by Sargent

and others (1982). Column 1 lists the laboratory numbers applied to each analyzed sample. Column 2 lists site identification codes. The first two characters are the codes for the county name. The next three digits are sample numbers. They are listed sequentially for each county in the order they were collected. The next two columns list the latitude and longitude of the sampling sites in decimal degree format. The remaining columns are data columns and analyses are given in parts per million (stream sediment) and parts per billion (groundwater). In these columns, a minus (-) sign indicates that a value is below the detection limit. If background is high, and an accurate estimate of minimum detection limit could not be made, a period (.) indicates that the element was not detected and that the detection limit is unusually high. Missing data are denoted by the letter "M". For gold, analyses are listed only for those samples in which gold was detected. For arsenic, a value of 0 is assigned for samples in which arsenic was analyzed, but not detected.

For stream sediment, two listings are presented. The first listing is for elements analyzed by neutron activation as well as field measurements for pH and conductivity of stream water. Variables included in this listing are pH, conductivity, uranium (U), thorium (Th), hafnium (Hf), cerium (Ce), iron (Fe), manganese (Mn), sodium (Na), scandium (Sc), titanium (Ti), vanadium (V), aluminum (Al), dysprosium (Dy), europium (Eu), lanthanum (La), samarium (Sm), ytterbium (Yb), and lutetium (Lu). The second listing is for supplemental elements analyzed by a variety of techniques. These include extractable uranium (Ux), silver (Ag), arsenic (As), barium (Ba), beryllium (Be), calcium (Ca), cobalt (Co), chromium (Cr), copper (Cu), potassium (K), lithium (Li), magnesium (Mg), molybdenum (Mo), niobium (Nb), nickel (Ni), phosphorous (P), lead (Pb), selenium (Se), tin (Sn), strontium (Sr), tungsten (W), yttrium (Y), and zinc (Zn). Stream sediment analyses are for the minus 100 mesh fraction ($< 149$ microns) unless otherwise noted.

Groundwater, normally samples of water from wells, was also analyzed by neutron activation. Field measurements were made of pH and conductivity. Variables included in listings of groundwater analyses include pH, conductivity, uranium (U), bromine (Br), chlorine (Cl), fluorine (F), magnesium (Mg), manganese (Mn), sodium (Na), vanadium (V), uranium/conductivity, aluminum (Al), and dysprosium (Dy). Stream water was also analyzed for these variables at 295 sites in North Carolina. Listings for stream water are included for areas in which these sites are located.

Although the data was acquired with considerable attention to quality control, some errors exist. These include uncertainties of sample locations due to the use of county road maps as base maps for field use and digitizing sampling sites. Malfunction of field equipment used in measurement of pH and conductivity has also been recognized in some areas. Some of the analyses are also in error. Some of these errors are apparent when concentrations show systematic "breaks" at county boundaries. This suggests that conditions of analysis for different batches of samples were not uniform. In general, analyses of stream sediment by neutron activation are more reliable than analyses of sediment by other supplemental methods.

For a number of counties, supplemental analyses were not made. Thus elements of interest for mineral exploration and environmental geochemistry are lacking for large areas.

## REFERENCES

Reid, Jeffrey C., 1991 (revised 1993), A geochemical atlas of North Carolina: North Carolina Geological Survey, Bulletin 93, text plus 45 plates.

Reid, Jeffrey C., 1993, A hydrogeochemical atlas of North Carolina: North Carolina Geological Survey, Bulletin 94, text plus 26 plates.

Reid, Jeffrey C., and Carpenter, Robert H.,1993a, Listings of concentrations (stream sediments) of variables which equal or exceed the 90th percentile, and pH and conductivity below the 10th percentile in the North Carolina portion of the NURE database: North Carolina Geological Survey, Open-File Report 93-1, introductory text plus 178 pages of data.

Reid, Jeffrey C., and Carpenter, Robert H., 1993b, Listing of concentrations (groundwater and stream water) of variables which equal or exceed the 90th percentile, and pH and conductivity below the 10th percentile in the North Carolina portion of the NURE data base: North Carolina Geological Survey, Open-File Report 93-2, introductory text plus 162 pages of data.

Sargent, K.A., Cook, J.R., and Fay, W.M., 1982, Data report: North and South Carolina, National Uranium Resource Evaluation Program, Hydrochemical and stream sediment reconnaissance: E.I. du Pont de Nemours & Co., Savannah River Laboratory, Aiken, S.C., under contract to the U.S. Dept of Energy, contract DE-AC09-76SR000001 (DPST-81-146-22; GBJX-102), 45 p. plus microfiche.

# CONTENTS



# COUNTY CODES

| Code | County |
|---|---|
| AV | Avery |
| MD | Madison |
| MT | Mitchell |
| YN | Yancey |

Figure 1. Map Showing Outlines of Johnson City 30 x 60 Minute Quadrangle and Contained 7 - 1/2 Minute Quadrangles.

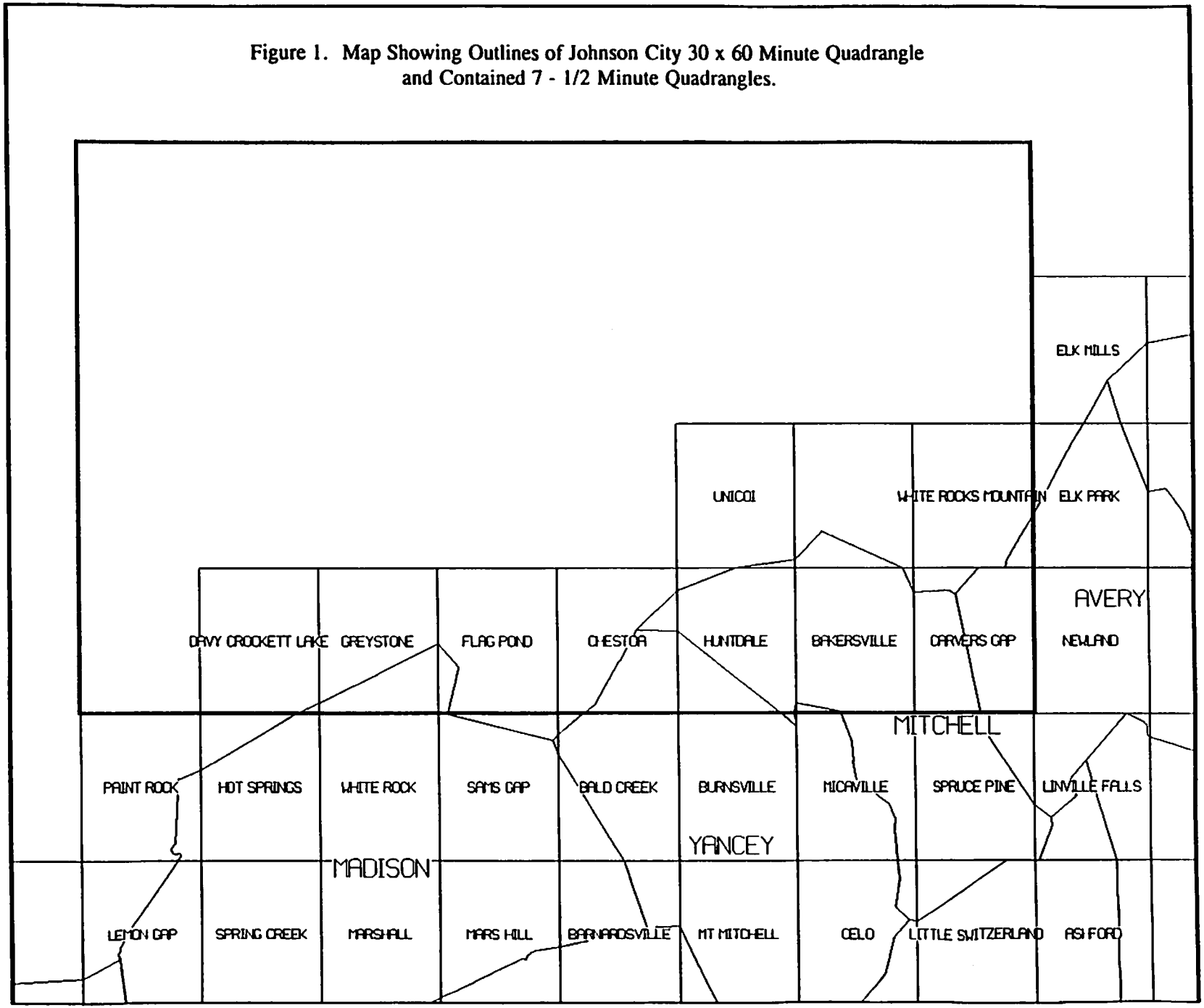


Figure 2. Stream Sediment Sites - Johnson City 30 x 60 Minute Quadrangle

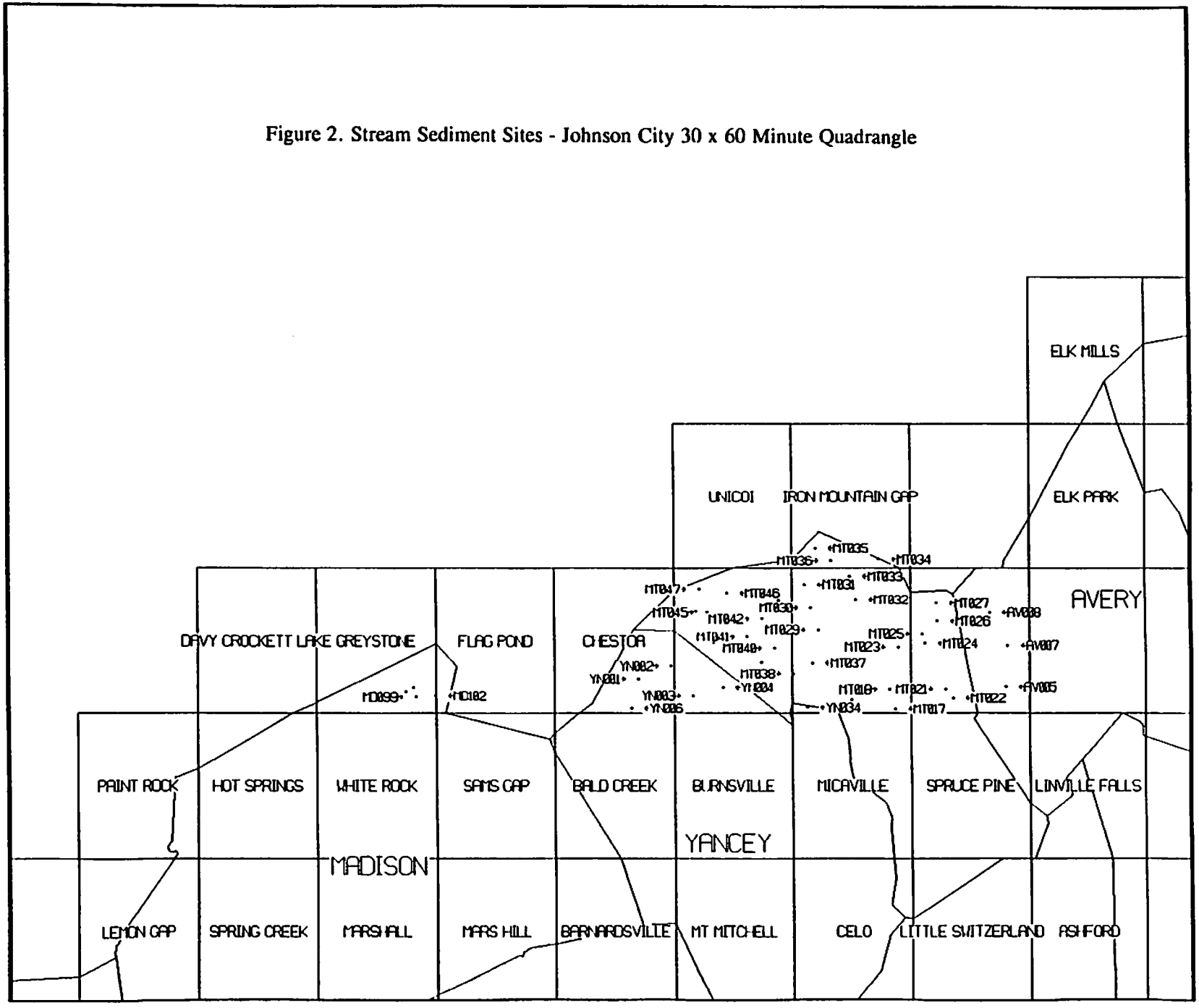
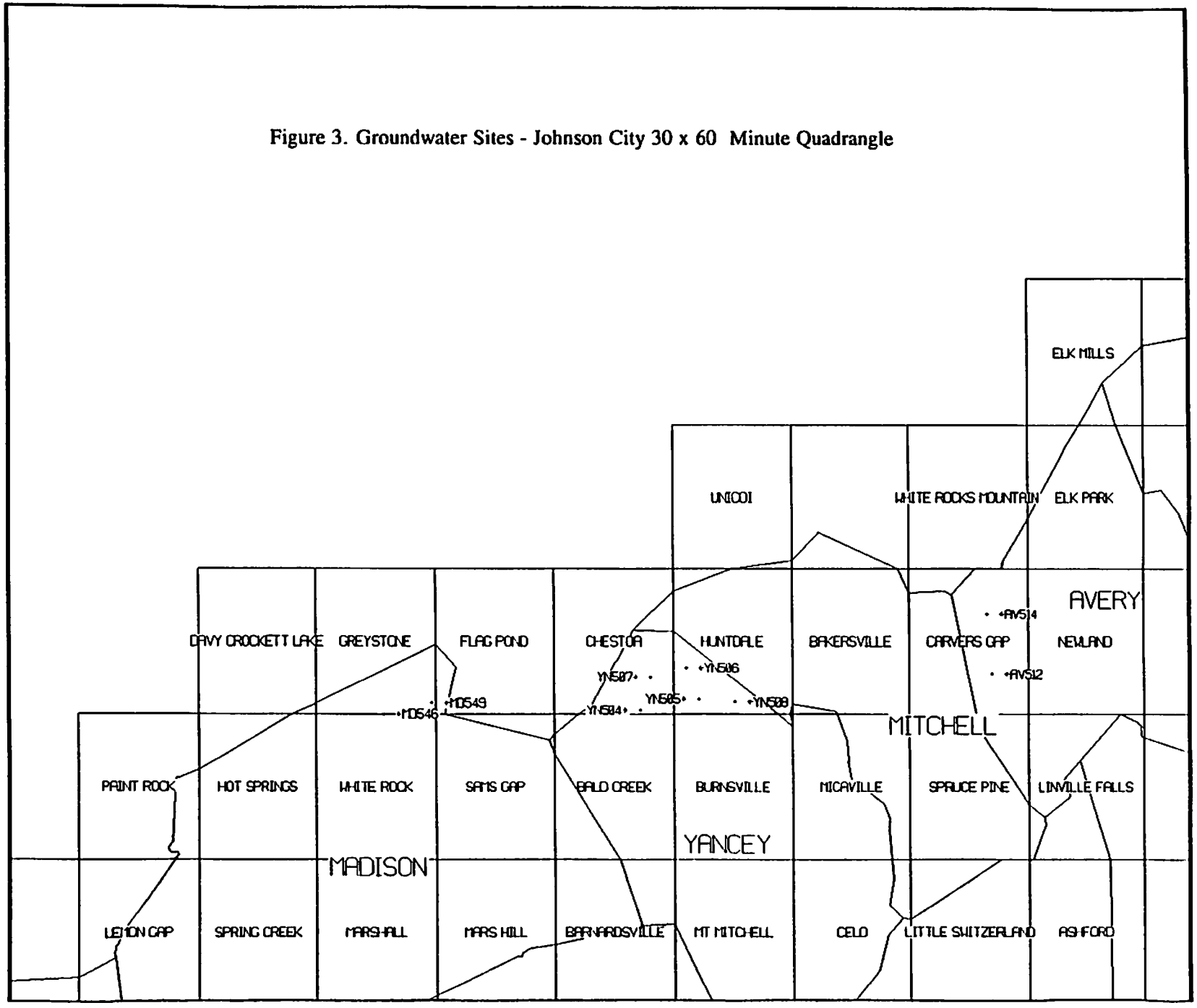


Figure 3. Groundwater Sites - Johnson City 30 x 60 Minute Quadrangle



JOHNSON CITY 100K SHEET - STREAM SEDIMENT

| Lab # | County ID | Lat | Long | pH | Cond | U | Th | Hf | Al | Ce | Fe | Mn | Na | Sc | Ti | V | Dy | Eu | La | Sm | Yb | Lu | Au |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | um/cm | ppm | ppm | ppm | ppm | ppm | ppm | ppm | ppm | ppm | ppm | ppm | ppm | ppm | ppm | ppm | ppm | ppm | ppm |
| 330 | AV005 | 36.0224 | 82.0247 | 7.5 | 20 | 4.3 | 16 | 12 | 47000 | 164 | 61600 | 740 | M | 12.3 | M | 370 | 4.1 | 2.0 | M | M | M | M | |
| 332 | AV007 | 36.0586 | 82.0224 | 7.6 | 23 | 1.8 | -4 | 13 | 45200 | 57 | 72400 | 780 | M | 18.8 | M | 360 | 2.5 | 1.6 | M | M | M | M | |
| 333 | AV008 | 36.0871 | 82.0418 | 7.8 | 20 | 1.9 | 10 | M | 46700 | 68 | 118600 | 950 | M | 12.0 | 33500 | 420 | 3.6 | 2.6 | M | M | M | M | |
| 3862 | MD097 | 36.0186 | 82.6562 | 6.6 | 12 | 6.1 | 22 | 42 | 54000 | 126 | 30700 | 2210 | 23100 | 6.0 | 4600 | 40 | 4.2 | 2.4 | 58 | 44 | 6.2 | 1.3 | |
| 3863 | MD098 | 36.0218 | 82.6484 | 6.4 | 28 | 4.8 | 15 | 29 | 47800 | 119 | 33800 | 5010 | 18100 | 5.8 | 13500 | 30 | 2.6 | 1.7 | 29 | 36 | M | 1.3 | |
| 3864 | MD099 | 36.0138 | 82.6457 | 6.5 | 23 | 4.6 | 16 | 23 | 56500 | 115 | 34500 | 2440 | 11100 | 11.8 | M | 50 | 2.9 | 2.1 | 35 | 23 | 7.3 | 0.4 | |
| 3867 | MD102 | 36.0147 | 82.6256 | 6.7 | 21 | 7.1 | 21 | 45 | 38200 | 105 | 30300 | 240 | 5400 | 4.7 | 6600 | 50 | 11.6 | 3.8 | 44 | 86 | 7.7 | 0.7 | |
| 4178 | MT016 | 36.0112 | 82.1884 | 8.1 | 41 | 3.0 | 10 | 45 | 56600 | 125 | 77700 | 1420 | 12300 | 20.6 | 32100 | 220 | 5.7 | 2.4 | 47 | 18 | 6.5 | 0.6 | |
| 4179 | MT017 | 36.0035 | 82.1418 | 7.8 | 49 | 5.5 | 12 | 54 | 58900 | 118 | 67700 | 1470 | 11100 | 29.2 | 20300 | 230 | 9.6 | 3.5 | 39 | 9 | 7.6 | 1.0 | |
| 4180 | MT018 | 36.0202 | 82.1479 | 7.8 | 58 | 3.1 | 8 | 63 | 68600 | 159 | 121300 | 1880 | 12800 | 23.1 | 58500 | 350 | 4.2 | 3.3 | 50 | 13 | M | 0.6 | |
| 4181 | MT019 | 36.0249 | 82.1266 | 8.0 | 50 | 2.5 | 8 | 46 | 65200 | 193 | 72200 | 1550 | 15600 | 26.2 | 26700 | 210 | 22.9 | 3.8 | 66 | 13 | 5.8 | 0.8 | |
| 4182 | MT020 | 36.0070 | 82.1135 | 7.7 | 39 | 3.2 | 7 | 22 | 57400 | 72 | 48500 | 1390 | 13100 | 24.0 | 17200 | 230 | M | 1.9 | 27 | 5 | 5.2 | 0.3 | |
| 4183 | MT021 | 36.0207 | 82.0884 | 7.8 | 29 | 2.6 | 12 | 37 | 78800 | 198 | 150000 | 1700 | 17200 | 63.1 | 14000 | 260 | 6.0 | 6.1 | 75 | 13 | 9.6 | 2.0 | |
| 4184 | MT022 | 36.0128 | 82.0807 | 7.8 | 25 | 2.1 | 10 | 13 | 71100 | 68 | 58900 | 1340 | 19700 | 24.8 | 11900 | 190 | 7.3 | 2.6 | 30 | 3 | 9.8 | 0.6 | |
| 4185 | MT023 | 36.0571 | 82.1389 | 7.8 | 28 | 2.7 | 17 | 61 | 59100 | 194 | 125800 | 1940 | 12600 | 24.9 | 52000 | 360 | 15.3 | 2.0 | 78 | 10 | M | 0.7 | |
| 4186 | MT024 | 36.0602 | 82.1099 | 7.7 | 30 | 2.1 | 9 | 36 | 72000 | 214 | 79800 | 1750 | 21200 | 30.1 | 24800 | 290 | M | 5.6 | 107 | 15 | 4.8 | 0.7 | |
| 4187 | MT025 | 36.0685 | 82.1133 | 7.8 | 20 | 1.4 | 17 | 34 | 66200 | 157 | 115900 | 2040 | 14500 | 28.0 | 31400 | 310 | M | 1.6 | 48 | 9 | 3.3 | 0.7 | |
| 4188 | MT026 | 36.0795 | 82.0968 | 7.8 | 20 | 1.3 | 10 | 23 | 78300 | 113 | 109600 | 1990 | 15000 | 26.5 | 34400 | 320 | 12.4 | 2.5 | 43 | 8 | 3.7 | 0.5 | |
| 4189 | MT027 | 36.0951 | 82.0979 | 7.7 | 15 | 1.0 | 4 | 13 | 77000 | 79 | 110000 | 2380 | 15600 | 24.9 | 37000 | 340 | 7.1 | 1.9 | 26 | 9 | 3.2 | 0.6 | |
| 4190 | MT028 | 36.0552 | 82.1728 | 7.7 | 35 | 2.2 | 19 | 118 | 58800 | 161 | 265600 | 1730 | 11700 | 40.5 | 50800 | 390 | M | M | 50 | 10 | 5.7 | 1.3 | |
| 4191 | MT029 | 36.0721 | 82.2225 | 7.8 | 25 | 6.5 | 58 | 68 | 73000 | 243 | 62700 | 1320 | 20600 | 18.7 | 12400 | 130 | 15.6 | 1.7 | 120 | 7 | 5.2 | 1.0 | |
| 4192 | MT030 | 36.0912 | 82.2302 | 7.8 | 31 | 3.5 | 24 | 25 | 85100 | 109 | 41100 | 1250 | 24900 | 12.7 | 9500 | 120 | 8.6 | 2.4 | 62 | 9 | 3.9 | 0.2 | |
| 4193 | MT031 | 36.1113 | 82.2368 | 7.8 | 21 | 8.9 | 82 | 57 | 69900 | 268 | 51400 | 1220 | 16800 | 13.4 | 12400 | 100 | 13.7 | 4.2 | 141 | 14 | M | 0.6 | |
| 4194 | MT032 | 36.0983 | 82.1834 | 7.7 | 25 | 1.8 | 37 | 31 | 77600 | 223 | 101000 | 1940 | 20500 | 19.8 | 35000 | 270 | M | 2.0 | 83 | 15 | M | 0.5 | |
| 4195 | MT033 | 36.1181 | 82.1895 | 7.6 | 25 | 2.6 | 18 | 35 | 65900 | 121 | 64900 | 1280 | 19200 | 22.0 | 14300 | 160 | M | 3.9 | 59 | 9 | 6.9 | 0.5 | |
| 4196 | MT034 | 36.1329 | 82.1587 | 7.7 | 21 | 3.2 | 16 | 43 | 60100 | 153 | 54500 | 1280 | 16700 | 18.6 | 14700 | 160 | M | -1.0 | 53 | 10 | 5.0 | 0.7 | |
| 4197 | MT035 | 36.1425 | 82.2255 | 7.7 | 20 | 11.0 | 73 | 45 | 90100 | 344 | 51100 | 1380 | 15500 | 14.0 | 12000 | 120 | 14.8 | M | 146 | 24 | 5.3 | 1.1 | |
| 4198 | MT036 | 36.1318 | 82.2089 | 7.6 | 25 | 7.2 | 59 | 71 | 67700 | 231 | 56900 | 1570 | 15200 | 16.4 | 15000 | 140 | 11.0 | 2.8 | 110 | 12 | M | 0.7 | |
| 4199 | MT037 | 36.0434 | 82.2291 | 7.8 | 59 | 3.1 | 10 | 42 | 64800 | 90 | 56500 | 1040 | 19700 | 13.0 | 14400 | 120 | 6.5 | 1.2 | 39 | 6 | 2.6 | 0.7 | |
| 4200 | MT038 | 36.0342 | 82.2487 | 7.9 | 70 | 2.6 | 13 | 109 | 73900 | 211 | 153400 | 1740 | 21400 | 38.4 | 27400 | 170 | 16.8 | 4.4 | 104 | 15 | 12.6 | 1.9 | |
| 4201 | MT039 | 36.0440 | 82.2829 | 7.9 | 70 | 2.8 | 12 | 44 | 67500 | 101 | 64300 | 1310 | 25600 | 16.3 | 16800 | 110 | 13.7 | 1.7 | 43 | 5 | 5.9 | 0.8 | |
| 4202 | MT040 | 36.0561 | 82.2688 | 8.1 | 30 | 4.9 | 20 | 58 | 60900 | 93 | 37600 | 1040 | 22900 | 11.8 | 11200 | 90 | 12.7 | -1.0 | 48 | 8 | 3.8 | 0.8 | |
| 4203 | MT041 | 36.0660 | 82.2973 | 7.8 | 25 | 6.6 | 73 | 61 | 84300 | 256 | 66600 | 1520 | 24900 | 17.1 | 16700 | 140 | M | 5.0 | 129 | 17 | 3.2 | 0.9 | |
| 4204 | MT042 | 36.0816 | 82.2818 | 7.7 | 20 | 10.8 | 94 | 54 | 63900 | 414 | 41300 | 1600 | 15700 | 10.9 | 19500 | 110 | 14.9 | M | 188 | 23 | 5.7 | 0.7 | |

JOHNSON CITY 100K SHEET - STREAM SEDIMENT

| Lab # | County ID | Lat | Long | pH | Cond um/cm | U ppm | Th ppm | Hf ppm | Al ppm | Ce ppm | Fe ppm | Mn ppm | Na ppm | Sc ppm | Ti ppm | V ppm | Dy ppm | Eu ppm | La ppm | Sm ppm | Yb ppm | Lu ppm | Au ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4205 | MT043 | 36.0973 | 82.2643 | 7.7 | 25 | 5.5 | 52 | 43 | 67400 | 167 | 48200 | 1380 | 17700 | 10.0 | 17300 | 120 | 9.9 | 2.0 | 89 | 7 | 4.9 | 0.5 | |
| 4206 | MT044 | 36.0609 | 82.3333 | 7.7 | 40 | 5.4 | 36 | 33 | 81300 | 199 | 55200 | 1120 | 13300 | 18.0 | 11800 | 140 | 12.9 | 2.1 | 85 | 11 | 3.7 | 0.6 | |
| 4207 | MT045 | 36.0874 | 82.3405 | 7.8 | 21 | 4.3 | 16 | 25 | 67800 | 90 | 40600 | 1190 | 11800 | 11.0 | 13100 | 130 | M | 1.3 | 37 | 5 | 3.0 | 0.3 | |
| 4208 | MT046 | 36.1040 | 82.3186 | 7.7 | 19 | 5.1 | 21 | 30 | 59100 | 104 | 35700 | 1120 | 11000 | 9.0 | 15300 | 100 | 9.1 | 2.1 | 45 | 5 | 5.8 | 0.9 | |
| 4209 | MT047 | 36.1075 | 82.3485 | 7.2 | 12 | 6.9 | 12 | 93 | 63200 | 93 | 17500 | 630 | 11000 | 2.9 | 6700 | 30 | 5.0 | 1.1 | 41 | 8 | 8.8 | 1.8 | |
| 4210 | MT048 | 36.0880 | 82.3518 | 7.9 | 11 | 5.4 | 33 | 70 | 25500 | 176 | 12000 | 190 | 900 | 4.8 | 12000 | 40 | 10.3 | 1.2 | 73 | 19 | 4.6 | 1.4 | |
| 6691 | YN001 | 36.0296 | 82.4122 | 9.0 | 21 | 5.0 | 36 | 107 | 38600 | 177 | 39000 | 610 | 7700 | 14.0 | 9900 | 50 | M | 3.6 | 90 | 9 | 8.2 | 1.6 | |
| 6692 | YN002 | 36.0409 | 82.3777 | 8.7 | 13 | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | |
| 6693 | YN003 | 36.0151 | 82.3547 | 8.4 | 21 | 6.9 | 25 | 92 | 67200 | 177 | 46300 | 1260 | 15100 | 19.1 | 12500 | 130 | 12.5 | 1.9 | 76 | 15 | 7.0 | 1.1 | 8.020 |
| 6694 | YN004 | 36.0218 | 82.3236 | 8.1 | 61 | 2.4 | 8 | 34 | 62600 | 130 | 56900 | 1080 | 18600 | 17.4 | 14900 | 90 | 11.4 | 3.9 | 65 | 12 | 5.3 | 0.6 | 0.052 |
| 6695 | YN005 | 36.0129 | 82.3841 | 8.3 | 35 | 4.0 | 11 | 54 | 65500 | 145 | 37400 | 910 | 14400 | 17.0 | 7700 | 100 | 14.2 | 1.8 | 56 | 12 | 2.5 | 0.7 | |
| 6696 | YN006 | 36.0041 | 82.4200 | 8.1 | 29 | 2.5 | 6 | 26 | 80200 | 130 | 38600 | 940 | 12200 | 14.3 | 7600 | 110 | M | 2.5 | 58 | 9 | M | 0.5 | |
| 6724 | YN034 | 36.0046 | 82.2345 | 7.8 | 45 | 6.1 | 12 | 55 | 58600 | 182 | 92300 | 2270 | 12600 | 28.5 | 37200 | 240 | 10.3 | 4.9 | 71 | 16 | 2.9 | 0.9 | |

JOHNSON CITY 100K SHEET - SUPPLEMENTAL SEDIMENTS

| Lab # | County ID | Lat | Long | Ux ppm | Ag ppm | As ppm | Ba ppm | Be ppm | Ca ppm | Co ppm | Cr ppm | Cu ppm | K ppm | Li ppm | Mg ppm | Mo ppm | Nb ppm | Ni ppm | P ppm | Pb ppm | Se ppm | Sn ppm | Sr ppm | W ppm | Y ppm | Zn ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 332 | AV005 | 36.0224 | 82.0247 | . | -0.5 | | . | . | . | 9 | . | 17 | . | 5 | . | -5 | 45 | 10 | 500 | -10 | | 10 | . | -2 | 25 | 38 |
| 334 | AV007 | 36.0586 | 82.0224 | . | -0.5 | | 103 | 1 | . | 17 | -5 | 21 | 7000 | -5 | 3650 | -5 | 30 | 13 | 700 | -10 | | 5 | . | -2 | 20 | 43 |
| 335 | AV008 | 36.0871 | 82.0418 | . | -0.5 | | 148 | 1.5 | . | 13 | -5 | 10 | 10000 | -5 | 4800 | -5 | 40 | 10 | 1000 | -10 | | 20 | . | -2 | 20 | 45 |
| 2729 | MD097 | 36.0186 | 82.6562 | | | | | | | | | | | | | | | | | | | | | | | |
| 2730 | MD098 | 36.0218 | 82.6484 | | | | | | | | | | | | | | | | | | | | | | | |
| 2731 | MD099 | 36.0138 | 82.6457 | | | | | | | | | | | | | | | | | | | | | | | |
| 2732 | MD102 | 36.0147 | 82.6256 | | | | | | | | | | | | | | | | | | | | | | | |
| 2733 | MT016 | 36.0112 | 82.1884 | 1.4 | 0.8 | 1 | 182 | 1 | 800 | 10 | 10 | 11 | 8000 | -5 | 2550 | -2 | 50 | 5 | 700 | -10 | -1 | 10 | . | 2 | -5 | 48 |
| 2734 | MT017 | 36.0035 | 82.1418 | 1.4 | 0.4 | 3 | 147 | 1 | 600 | 8 | 12 | 10 | 4000 | -5 | 1400 | -2 | 45 | -5 | 500 | -10 | 1 | 5 | . | 2 | 10 | 35 |
| 2735 | MT018 | 36.0202 | 82.1479 | 1.4 | 0.6 | | 122 | 1 | 1300 | 10 | 12 | 10 | 7000 | -5 | 1950 | 3 | 50 | -5 | 600 | -10 | -1 | -5 | . | 2 | 10 | 35 |
| 2736 | MT019 | 36.0249 | 82.1266 | 1.1 | 0.3 | 1 | 210 | 1 | 1400 | 5 | 8 | 8 | 7000 | -5 | 1900 | -2 | 30 | 5 | 600 | -10 | -1 | -5 | . | 2 | 10 | 28 |
| 2737 | MT020 | 36.0070 | 82.1135 | 1.1 | 0.4 | 0 | 187 | 0.5 | 1300 | 5 | 13 | 10 | 2000 | -5 | 1750 | -2 | 50 | 5 | 400 | -10 | 1 | -5 | . | 2 | 5 | 28 |
| 2738 | MT021 | 36.0207 | 82.0884 | 1.2 | 0.7 | 0 | 235 | 1 | 1000 | 8 | 13 | 14 | 2000 | -5 | 1400 | -2 | 30 | 7 | 500 | -10 | -1 | 10 | . | -2 | 15 | 35 |
| 2739 | MT022 | 36.0128 | 82.0807 | 1.6 | 0.2 | | 90 | 1.5 | 900 | 5 | 12 | 13 | 3000 | 5 | 7150 | 3 | 45 | 5 | 400 | -10 | -1 | 5 | . | -2 | 5 | 38 |
| 2740 | MT023 | 36.0571 | 82.1389 | 1.6 | 0.4 | 2 | 112 | 1 | 900 | 8 | 7 | 11 | 10000 | -5 | 5050 | -2 | 50 | 5 | 500 | -10 | 1 | -5 | . | -2 | 5 | 35 |
| 2741 | MT024 | 36.0602 | 82.1099 | 1.6 | 0.4 | 0 | 292 | 1 | 1600 | 8 | 9 | 9 | 13000 | -5 | 1100 | -2 | 30 | -5 | 1000 | -10 | -1 | 5 | . | -2 | -5 | 43 |
| 2742 | MT025 | 36.0685 | 82.1133 | 1.5 | 0.5 | | 185 | 1 | 1000 | 8 | 9 | 10 | 6000 | -5 | 1500 | -2 | 35 | 7 | 500 | -10 | -1 | 10 | . | -2 | 10 | 35 |
| 2743 | MT026 | 36.0795 | 82.0968 | 1.5 | 0.5 | 0 | 62 | 1 | 1000 | 13 | -5 | 15 | 7000 | -5 | 5700 | -2 | 50 | 7 | 700 | -10 | -1 | -5 | . | -2 | -5 | 58 |
| 2744 | MT027 | 36.0951 | 82.0979 | 1.6 | 0.6 | | 105 | 1.5 | 1200 | 10 | 8 | 16 | 7000 | -5 | 5250 | 2 | 55 | 12 | 700 | -10 | -1 | -5 | . | -2 | -5 | 60 |
| 2745 | MT028 | 36.0552 | 82.1728 | 1.2 | 0.4 | 0 | 257 | 1.5 | 300 | 15 | 5 | 11 | 17000 | -5 | 3350 | -2 | 50 | 5 | 500 | -10 | -1 | 10 | . | -2 | -5 | 50 |
| 2746 | MT029 | 36.0721 | 82.2225 | 2.3 | 0.6 | | 297 | 2 | 1000 | 13 | 9 | 9 | 11000 | -5 | 1550 | -2 | 25 | 7 | 600 | -10 | -1 | 5 | . | 2 | -5 | 63 |
| 2747 | MT030 | 36.0912 | 82.2302 | 1.0 | 0.4 | | 195 | 1.5 | 1000 | 10 | 8 | 12 | 9000 | -5 | 1700 | -2 | 50 | 12 | 600 | -10 | -1 | -5 | . | -2 | 5 | 75 |
| 2748 | MT031 | 36.1113 | 82.2368 | 2.2 | 0.6 | | 407 | 1.5 | 800 | 10 | 5 | 7 | 20000 | -5 | 2200 | -2 | 35 | 7 | 700 | -10 | 1 | 5 | . | -2 | -5 | 70 |
| 2749 | MT032 | 36.0983 | 82.1834 | 1.4 | 0.3 | | 245 | 1 | 800 | 8 | 10 | 8 | 10000 | -5 | 1000 | -2 | 45 | 7 | 300 | -10 | 1 | 15 | . | -2 | -5 | 33 |
| 2750 | MT033 | 36.1181 | 82.1895 | 2.0 | 0.3 | 2 | 287 | 1.5 | 800 | 8 | 6 | 10 | 10000 | -5 | 2200 | -2 | 45 | 5 | 400 | -10 | 1 | 5 | . | -2 | -5 | 58 |
| 2751 | MT034 | 36.1329 | 82.1587 | 1.4 | 0.1 | 2 | 300 | 1.5 | 600 | 5 | 7 | 12 | 14000 | -5 | 2400 | -2 | 45 | 10 | 500 | -10 | -1 | 15 | . | -2 | -5 | 55 |
| 2752 | MT035 | 36.1425 | 82.2255 | 1.6 | 0.6 | 0 | 310 | 2 | 500 | 13 | -5 | 215 | 14000 | 8 | 2400 | -2 | 35 | 10 | 800 | -10 | 1 | 5 | . | -2 | 5 | 93 |
| 2753 | MT036 | 36.1318 | 82.2089 | 1.2 | 0.6 | 6 | 305 | 2 | 700 | 13 | -5 | 14 | 11000 | -5 | 800 | -2 | 50 | 10 | 900 | 10 | 1 | -5 | . | -2 | -5 | 70 |
| 2754 | MT037 | 36.0434 | 82.2291 | 1.4 | 0.3 | 2 | 220 | 1.5 | 800 | 8 | -5 | 8 | 13000 | -5 | 2100 | -2 | 50 | 7 | 400 | -10 | 1 | -5 | . | -2 | 5 | 50 |
| 2755 | MT038 | 36.0342 | 82.2487 | 1.2 | 0.2 | 1 | 305 | 1.5 | 900 | 10 | -5 | 8 | 12000 | -5 | 2650 | -2 | 50 | -5 | 600 | -10 | 1 | 5 | . | 2 | 15 | 50 |
| 2756 | MT039 | 36.0440 | 82.2829 | 1.4 | 0.2 | 10 | 322 | 1.5 | 1000 | 10 | -5 | 7 | 14000 | -5 | 2300 | -2 | 35 | 5 | 600 | -10 | -1 | -5 | . | -2 | 5 | 55 |
| 2757 | MT040 | 36.0561 | 82.2688 | 1.2 | 0.2 | 2 | 170 | 2 | 700 | 8 | -5 | 5 | 13000 | -5 | 1800 | -2 | 40 | -5 | 500 | -10 | -1 | 5 | . | -2 | -5 | 38 |
| 2758 | MT041 | 36.0660 | 82.2973 | 1.2 | 0.7 | | 277 | 1.5 | 1200 | 10 | -5 | 8 | 14000 | -5 | 650 | -2 | 30 | -5 | 600 | -10 | -1 | 5 | . | -2 | 10 | 55 |
| 2759 | MT042 | 36.0816 | 82.2818 | 1.5 | 0.4 | 2 | 350 | 2 | 500 | 5 | -5 | 5 | 18000 | 5 | 1050 | -2 | 25 | -5 | 700 | -10 | -1 | 10 | . | -2 | 10 | 40 |

JOHNSON CITY 100K SHEET - SUPPLEMENTAL SEDIMENTS

| Lab # | County ID | Lat | Long | Ux ppm | Ag ppm | As ppm | Ba ppm | Be ppm | Ca ppm | Co ppm | Cr ppm | Cu ppm | K ppm | Li ppm | Mg ppm | Mo ppm | Nb ppm | Ni ppm | P ppm | Pb ppm | Se ppm | Sn ppm | Sr ppm | W ppm | Y ppm | Zn ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2760 | MT043 | 36.0973 | 82.2643 | 3.3 | 0.9 | 0 | 360 | 2 | 400 | 8 | -5 | 6 | 16000 | -5 | 800 | -2 | 25 | -5 | 400 | -10 | -1 | 10 | . | -2 | -5 | 45 |
| 2761 | MT044 | 36.0609 | 82.3333 | 2.2 | 0.5 | 1 | 150 | 2 | 500 | 10 | 6 | 7 | 11000 | 6 | 1250 | -2 | 25 | 5 | 400 | -10 | -1 | -5 | . | -2 | -5 | 55 |
| 4624 | MT045 | 36.0874 | 82.3405 | 1.4 | 0.8 | 1 | 442 | 2 | 400 | 8 | -5 | 5 | 16000 | -5 | 900 | -2 | 25 | -5 | 400 | 10 | 1 | 5 | . | -2 | 5 | 45 |
| 4625 | MT046 | 36.1040 | 82.3186 | 1.2 | 0.6 | 0 | 420 | 2 | 300 | 8 | -5 | 7 | 15000 | -5 | 900 | -2 | 40 | -5 | 500 | 10 | -1 | -5 | . | -2 | 15 | 48 |
| 4626 | MT047 | 36.1075 | 82.3485 | 1.2 | 0.4 | | 195 | 4 | 100 | -5 | -5 | 2 | 21000 | 7 | 400 | 2 | 75 | -5 | 200 | -10 | -1 | 10 | . | 2 | 5 | 35 |
| 4627 | MT048 | 36.0880 | 82.3518 | 1.1 | 0.2 | 1 | 40 | 1 | -100 | -5 | -5 | 2 | 15000 | 5 | 900 | -2 | 40 | -5 | 300 | -10 | -1 | 5 | . | -2 | -5 | 8 |
| 4628 | YN001 | 36.0296 | 82.4122 | 0.4 | -0.1 | | 177 | 1 | 200 | -5 | -5 | 3 | 11000 | 6 | 500 | -2 | 10 | 7 | 900 | -10 | 1 | -5 | . | -2 | -5 | 37 |
| 4629 | YN002 | 36.0409 | 82.3777 | 2.5 | -0.1 | 0 | 97 | 1.5 | 400 | 5 | -5 | 3 | 21000 | 7 | 1500 | -2 | 5 | 5 | 1000 | -10 | 1 | -5 | . | -2 | -5 | 30 |
| 4657 | YN003 | 36.0151 | 82.3547 | 0.7 | 0.3 | 2 | 345 | 1 | 800 | 10 | -5 | 8 | 7000 | -5 | 450 | 2 | 5 | 10 | 1100 | 15 | -1 | 10 | . | -2 | -5 | 52 |
| | YN004 | 36.0218 | 82.3236 | -0.1 | 0.3 | | 397 | 1.5 | 900 | 7 | -5 | 7 | 12000 | -5 | 600 | -2 | 20 | 7 | 900 | -10 | -1 | 10 | . | -2 | -5 | 45 |
| | YN005 | 36.0129 | 82.3841 | 0.4 | 0.3 | | 330 | 1 | 500 | 5 | -5 | 7 | 12000 | -5 | 800 | -2 | 5 | 10 | 1000 | -10 | -1 | 5 | . | -2 | -5 | 42 |
| | YN006 | 36.0041 | 82.4200 | 0.4 | -0.1 | 3 | 415 | 2 | 600 | 12 | -5 | 13 | 11000 | -5 | 750 | -2 | 5 | 20 | 1100 | -10 | -1 | -5 | . | -2 | -5 | 80 |
| | YN034 | 36.0046 | 82.2345 | 0.8 | -0.1 | 0 | 135 | 1 | 2000 | 10 | 15 | 9 | 4000 | -5 | 2600 | -2 | 5 | 10 | 1100 | -10 | -1 | 10 | . | -2 | 40 | 35 |

JOHNSON CITY 100K SHEET - GROUNDWATER

| Lab # | County ID | Lat | Long | pH | Cond um/cm | U ppb | Br ppb | Cl ppb | F ppb | Mg ppb | Mn ppb | Na ppb | V ppb | U/cond x 1000 | Al ppb | Dy ppb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 204 | AV512 | 36.0346 | 82.0380 | 6.8 | 18 | 0.125 | 46 | 5300 | 36 | 850 | . | 2150 | 0.1 | 6.9 | 35 | -0.001 |
| 206 | AV514 | 36.0862 | 82.0436 | 7.5 | 60 | 0.019 | 37 | 6500 | 33 | 3790 | . | 2020 | 1.4 | 0.3 | 55 | -0.001 |
| 3239 | MD546 | 36.0001 | 82.6793 | 6.9 | 50 | -0.002 | . | M | . | M | . | M | -0.1 | 0.0 | . | -0.001 |
| 3242 | MD549 | 36.0096 | 82.6288 | 6.9 | 20 | -0.002 | . | M | . | M | . | M | -0.1 | 0.0 | . | -0.001 |
| 5745 | YN504 | 36.0033 | 82.4101 | 6.3 | 40 | 0.023 | 44 | 9400 | 44 | . | 57 | 3980 | -0.1 | 0.5 | 56 | 0.070 |
| 5746 | YN505 | 36.0129 | 82.3483 | 6.5 | 60 | 0.019 | . | 15100 | 120 | . | 55 | 5100 | 0.9 | 0.3 | 111 | -0.001 |
| 5747 | YN506 | 36.0397 | 82.3617 | 6.4 | 30 | -0.002 | . | 9200 | 53 | . | 11 | 3080 | 0.5 | 0.0 | 73 | -0.001 |
| 5748 | YN507 | 36.0322 | 82.3991 | 6.5 | 30 | 0.018 | . | 9400 | 28 | . | 17 | 2590 | -0.1 | 0.6 | 82 | -0.001 |
| 5749 | YN508 | 36.0103 | 82.3101 | 6.5 | 50 | -0.002 | 57 | 9100 | 182 | 4020 | . | 4200 | 1.6 | 0.0 | 93 | -0.001 |