MASTER

NATIONAL URANIUM RESOURCE EVALUATION PROGRAM

**HYDROGEOCHEMICAL AND STREAM SEDIMENT
RECONNAISSANCE BASIC DATA FOR
MANHATTAN NTMS QUADRANGLE, KANSAS**

Uranium Resource Evaluation Project

July 13, 1979

**UNION
CARBIDE**

**OAK RIDGE GASEOUS DIFFUSION PLANT
OAK RIDGE, TENNESSEE**

*prepared for the U.S. DEPARTMENT OF ENERGY under
U.S. GOVERNMENT Contract W-405 eng 26*

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The data will be available on magnetic tape filed with GJOIS Project, UCC-ND Computer Applications Dept., 4500 North Building, Oak Ridge National Laboratory, P. O. Box X, Oak Ridge, Tennessee 37830.

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Uranium Resource Evaluation Project

**Union Carbide Corporation, Nuclear Division
Oak Ridge Gaseous Diffusion Plant
Oak Ridge, Tennessee**

**Prepared for the U. S. Department of Energy
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CONTENTS

	<u>Page</u>
ABSTRACT.	9
INTRODUCTION.	11
GEOLOGY	13
Location and Geologic Setting	13
Lithology and Environments of Deposition.	13
Structure	19
Hydrology	19
Uranium Occurrences	20
SAMPLE COLLECTION	20
Chronology of the Survey.	20
Field Procedures.	21
Contamination	21
CHEMICAL ANALYSIS	22
QUALITY CONTROL	22
Measurements Control.	22
Principal Component Error Analysis.	22
GEOCHEMICAL RESULTS	25
Geochemical Distributions in Groundwater.	25
Uranium	28
Specific Conductance.	28
Related Variables	29
Summary of Groundwater Data	30
Geochemical Distributions in Stream Sediments	30
Uranium	31
Thorium	31
Related Variables	32
Summary of Stream Sediment Data	32
ACKNOWLEDGMENTS	33
BIBLIOGRAPHY.	35
APPENDIX A. GROUNDWATER.	A-1
APPENDIX B. STREAM SEDIMENT.	B-1
APPENDIX C. MICROFICHE OF FIELD AND LABORATORY DATA.	C-1

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LIST OF TABLES

<u>No.</u>	<u>Title</u>	<u>Page</u>
1	Detection Limits of Variables Determined in Water and Sediment Samples	23
2	Summary of Measurements Control Results Obtained With Samples From the Manhattan Quadrangle . . .	24
3	Distribution of Samples by Geologic Unit From the Manhattan Quadrangle	27

LIST OF FIGURES

<u>No.</u>	<u>Title</u>	<u>Page</u>
1	Index Map Showing the ORGDP Area of Responsibility for the HSSR Survey, the Manhattan Quadrangle, and Quadrangles for Which Basic Data Reports Have Been Open Filed	12
2	Generalized Geologic Map of Kansas.	15
3	Generalized Geologic Map of the Manhattan Quadrangle	17
4	Producing Horizon Map for Groundwater of the Manhattan Quadrangle	26

LIST OF PLATES
(In Back Pocket)

No.	Title
1	Manhattan Quadrangle, Groundwater Sample Location Map
2	Manhattan Quadrangle, Symbol Plot, Groundwater, Uranium
3	Manhattan Quadrangle, Symbol Plot, Groundwater, Specific Conductance
4	Manhattan Quadrangle, Stream Sediment Sample Location and Drainage Basin Map
5	Manhattan Quadrangle, Symbol Plot, Stream Sediment, Uranium Fluorometric
6	Manhattan Quadrangle, Symbol Plot, Stream Sediment, Thorium
7	Generalized Geologic Map, Manhattan Quadrangle, Kansas

ABSTRACT

Results of a reconnaissance geochemical survey of the Manhattan Quadrangle, Kansas are reported. Field and laboratory data are presented for 674 groundwater and 718 stream sediment samples. Statistical and areal distributions of uranium and possible uranium-related variables are displayed. A generalized geologic map of the survey area is provided, and pertinent geologic factors which may be of significance in evaluating the potential for uranium mineralization are briefly discussed.

The groundwater data indicate that the most promising area for potential uranium mineralization occurs in the western-northwestern part of the quadrangle where waters are produced from the Quaternary loess deposits, and the Cretaceous Greenhorn-Graneros and Dakota Formations. Associated elements in the quadrangle include arsenic, potassium, manganese, vanadium, and selenium.

The stream sediment data indicate that the highest average uranium concentrations in sediments from the Manhattan Quadrangle are obtained from the Pennsylvanian Wabaunsee Group followed by the Cretaceous Carlile Shale, Greenhorn-Graneros and Dakota Formations. In the northwestern corner of the quadrangle, high concentrations of uranium are associated with high concentrations of barium, niobium, strontium, titanium, vanadium, yttrium, and zirconium. In southeast Cloud County and extending to the northeast, high values of total uranium are associated with high values of titanium, yttrium, zirconium, and low U-FL/U-NT values. These associations indicate that the uranium is probably present in heavy and/or resistate minerals.

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HYDROGEOCHEMICAL AND STREAM SEDIMENT
RECONNAISSANCE BASIC DATA FOR
MANHATTAN NTMS QUADRANGLE, KANSAS

INTRODUCTION

The National Uranium Resource Evaluation (NURE) Program was established by the U. S. Atomic Energy Commission, now the U. S. Department of Energy (DOE), in the spring of 1973 to assess uranium resources and to identify favorable areas for detailed uranium exploration throughout the United States. The principal objectives of the NURE Program are: (1) to provide a comprehensive in-depth assessment of the nation's uranium resources for national energy planning, and (2) to identify areas favorable for uranium resources. A NURE Program report covering uranium resource assessment in 116 National Topographic Map Series (NTMS) 1° x 2° quadrangles, which contain 100% of the currently estimated uranium resources, is targeted for 1980. The complete resource assessment of the 272 highest-priority quadrangles is scheduled for completion in 1983, and the first comprehensive assessment report of the entire United States is scheduled for completion in 1985. This program, which is being administered by DOE, is expected to increase the activity of commercial exploration for uranium in the United States.

The NURE Program consists of five parts:

1. Hydrogeochemical and Stream Sediment Reconnaissance (HSSR) Program,
2. Aerial Radiometric and Magnetic Survey,
3. Surface Geologic Investigations,
4. Drilling for Geologic Information, and
5. Geophysical Technology Development.

The objective of the HSSR Program is to provide information to be used in accomplishing the overall NURE Program objectives. This is accomplished by a reconnaissance of surface water, groundwater, stream sediment, and lake sediment. The survey is being conducted by three Government-owned laboratories. Union Carbide Corporation, Nuclear Division (UCC-ND), under contract with DOE, is conducting its survey in 154 NTMS 1° x 2° quadrangles which cover approximately 2,500,000 km² (1,000,000 mi²) of the Central United States (see Figure 1). This area includes most of the states of Texas, Oklahoma, Kansas, Nebraska, South Dakota, North Dakota, Minnesota, Wisconsin, Michigan, Indiana, Illinois, and Iowa, as well as parts of Arkansas, Missouri, New Mexico, and Ohio. Described herein is a portion of the work done by UCC-ND in the Manhattan NTMS Quadrangle, Kansas.

Figure 1

INDEX MAP SHOWING THE ORGDP AREA OF RESPONSIBILITY
FOR THE HSSR SURVEY, THE MANHATTAN QUADRANGLE,
AND QUADRANGLES FOR WHICH BASIC DATA REPORTS
HAVE BEEN OPEN FILED

GEOLOGY

LOCATION AND GEOLOGIC SETTING

The Manhattan Quadrangle, which includes portions of the Great Plains and Central Lowland Provinces, covers a surface area of approximately 19,055 km² (7,360 mi²) between lat. 39° and 40° N. and long. 96° and 98° W. The survey area, outlined on the generalized geologic map of Kansas shown in Figure 2, includes all of Clay, Cloud, Marshall, Pottawatomie, Republic, Riley, and Washington Counties and parts of Dickinson, Geary, Jackson, Jewell, Lincoln, Mitchell, Nemaha, Ottawa, Shawnee, and Wabaunsee Counties. A generalized geologic map, along with a stratigraphic column listing geologic codes used in this report, is presented in Figure 3 and Plate 7.

Outcrops are restricted to Upper Pennsylvanian, Permian, and Cretaceous Formations. They are overlain by glacial drift in the eastern third of the quadrangle and stream-dissected loess in the western third. Alluvium of the Big Blue, Kansas, Republican, Solomon, and Vermillion Rivers and their tributaries, and Pleistocene terrace deposits occur throughout the area. Pennsylvanian and Permian rocks strike uniformly in a north-northeast direction and dip gently approximately 5 to 8 m/km (15 to 25 ft/mi) to the west-northwest. Pennsylvanian rocks crop out only in scattered areas in the Vermillion and Kansas River valleys. Permian rocks crop out over the eastern half of the area, with an aggregate thickness of approximately 290 m (950 ft).

Cretaceous age rocks cover the western half of the area. These rocks dip very gently north and strike east-west, attaining an aggregate thickness of approximately 200 m (665 ft).

LITHOLOGY AND ENVIRONMENTS OF DEPOSITION

Up to 885 m (2,900 ft) of Pennsylvanian and older rocks overlie the basement in the survey area. These consist of marine to supratidal shales, carbonates, sandstones, and coals which culminate in the cyclical repetition of beds found in the 49 formations of the Pennsylvanian. The oldest unit exposed is the Auburn Shale of the Wabaunsee Group, attaining a thickness of 150 m (500 ft). The Wabaunsee Group consists predominantly of shales with thin persistent limestones and randomly occurring channel sandstones and conglomerates. Water depth and distance from shore varied as these rocks were deposited, but the general environment of the 12 formations making up this group is shallow and close to shore. Algal deposits, coal beds, oolites, and cross-bedded units alternate with beds containing marine invertebrates such as fusulinids, brachiopods, mollusks, crinoids, and bryozoa.

The Admire, Council Grove, and Chase Groups of the Lower Permian age consist of about 215 m (700 ft) of alternating shales and limestones

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LEGEND

- QUATERNARY
- TERTIARY
- CRETACEOUS
- PERMIAN
- PENNSYLVANIAN
- MISSISSIPPIAN

Figure 2

GENERALIZED GEOLOGIC MAP OF KANSAS
(AFTER KING, ET AL, 1974)

STRATIGRAPHIC COLUMN FOR THE MANHATTAN QUADRANGLE

ERA	SYSTEM	SERIES	GEOLOGIC MAP CODE	GEOLOGIC MEMBER CODE	GEOLOGIC MEMBER	MAXIMUM THICKNESS METERS FEET	
CENOZOIC	QUATERNARY	HOLOCENE	QD	QPG	GLACIAL DRIFT	15	50
				QAL	FLUVIATILE SEDIMENT (ALLUVIUM)	58	190
		PLEISTOCENE	QPLO	QSD	DUNE SAND		
				QPLO	LOESS	12	40
	TERTIARY	PLIOCENE	TPO	TPO	OGALLALA (DELMORE)	3	
MESOZOIC	CRETACEOUS	UPPER	KGCC	KGCC	CARLILE	30	100
			KGGG	KGGG	GREENHORN, GRANEROS	50	165
		LOWER	KGDD	KGDD	DAKOTA	60	200
			KCDK	KCDK	KIOWA, CHEYENNE	60	200
PALEOZOIC	PERMIAN	CIMARRONIAN	PGS	PGS	SUMNER - WELLINGTON	75	250
			PGC	PGC	CHASE	114	375
			PGA	PGA	COUNCIL GROVE, ADMIRE	215	700
	PENNSYLVANIAN	VIRGILIAN	PVW	PVW	WABAUNSEE	150	500

SOURCE OF GEOLOGY:

1. BERENDSEN, P., KANSAS GEOLOGICAL SURVEY, LAWRENCE, KANSAS: PERSONAL COMMUNICATION DECEMBER 26, 1978.
2. KANSAS GEOLOGICAL SURVEY, GEOLOGIC MAP OF KANSAS: MAP M-1, 1964.

LEGEND FOR FIGURE 3

Figure 3
GENERALIZED GEOLOGIC MAP OF THE MANHATTAN QUADRANGLE

with sandstone lenses deposited in a shallow marine environment. The Admire Group is comprised predominantly of gray shales and thin limestones which are similar to the underlying Wabaunsee Group rocks. The Council Grove Group contains a larger percentage of limestones than do the Admire and Wabaunsee Groups. Its alternating cherty limestones and variegated shales are divided into 14 formations. An economic gypsum bed, 3 m (3 to 9 ft) thick, occurs in the Easley Creek Shale of the Council Grove Group. The overlying Chase Group contains more total shale than does the Council Grove, but the limestones are more massive. The Chase Group is divided into seven formations and contains chert-bearing limestones which form the major scarps of the Flint Hills. These hills form a major physiographic subprovince which trends north-south from Washington to Cowley County. The 15 to 75 m (50 to 250 ft) thick Wellington Formation, is comprised predominantly of gray shales and is the only unit of the Lower Permian Sumner Group recognized in this area.

The Lower Cretaceous consists of the Cheyenne Sandstone, Kiowa Formation, and Dakota Formation and rests on a major erosion surface which cuts to within 15 m (50 ft) of the base of the Wellington Formation. The clean fine-grained Cheyenne Sandstone deposits, 15 to 30 m (50 to 100 ft) thick, were formed by the moving strand line of a northward advancing Cretaceous sea. The Kiowa Formation consists of 30 m (100 ft) of gray marine shales capped by sandstones which overlapped the Cheyenne Sandstone. Up to 60 m (200 ft) of claystone, siltstone, and sandstone of the Dakota Formation apparently contains the Lower-Upper Cretaceous boundary near the top of the unit (Zeller, 1968). The overlying Colorado Group, whose lower units are the Graneros Shale, Greenhorn Limestone, and Carlile Shale, crops out in the northwestern quarter of this area.

The Graneros Shale consists of up to 15 m (45 ft) of dark bluish-black fissile marine shales which are overlain by 35 m (120 ft) of chalky shales and limestones comprising the Greenhorn Limestone. Continued deposition produced chalky shales, bentonites, thick chalks, and dark-gray fissile shales of the Carlile Shale, most of which has been eroded from this area. A maximum thickness of 30 m (100 ft) of Carlile Shale remains in Jewell County (Fisher and Leonard, 1955). The presence of inoceramids, ammonites, shark teeth, and fish scales in these formations indicate a deeper marine environment than earlier Cretaceous units.

Kansan age glaciation produced till and outwash deposits up to 15 m (50 ft) thick across the northeastern third of the area (Mudge and Burton, 1959). Stream-dissected loess up to 12 m (40 ft) thick covers parts of the western third of the area. Terrace deposits up to 10 m (70 ft) thick flank the Kansas, Solomon, and Republican Rivers and some of its tributaries. Recent alluvium fills river valleys up to 58 m (190 ft) deep.

STRUCTURE

Contrary to the relative simplicity of the post-Mississippian sequence of gently dipping rocks, the basement and early Paleozoic sedimentary units indicate that the area has a complex tectonic history. The Nemaha Uplift, a positive structural feature having a granitic core, trends in a north-northeast direction across the eastern part of the area through Pottawatomie, eastern Marshall, and western Nemaha Counties. It probably has its origin in the Precambrian and was active until at least the early Pennsylvanian. All of the pre-Pennsylvanian rocks were eroded from the top of the uplift. West of the Nemaha Uplift is the Midcontinent Gravity Anomaly, a proposed paleorift zone underlain by basaltic rocks which have been dated at 1.1 billion years. The granitic rocks of the Nemaha Uplift have been dated at 1.45 billion years.

Later movement of the basaltic basement rocks resulted in the formation of the Abilene Anticline which roughly parallels the trend of the Nemaha Uplift and traverses Riley and Marshall Counties. Permian surface rocks have also been affected by movement along this anticline. The Salina Basin occupies an area between the Nemaha Uplift and the Central Kansas Uplift which is a positive structural feature trending in a northwesterly direction across the state from Rice County to Norton County in the northwest. The Central Kansas Uplift passes through the extreme southwestern corner of the quadrangle.

HYDROLOGY

Major aquifers occur in areas where alluvium and glacial and terrace deposits are present. The water is generally of good quality, but may be highly mineralized when in contact with the Kiowa Shale or Wellington Formation. Tributaries of the Kansas River System, including the Solomon, Smoky Hill, Republican, and Big Blue Rivers, show a large variation in total dissolved solids. Measurements by Wittemore (1978) show the Solomon and Smoky Hill Rivers to contain up to 2,200 mg/liter of total dissolved solids, with sodium (up to 600 mg/liter) and chloride (up to 900 mg/liter) being the main constituents. The Republican River contains up to 750 mg/liter of total dissolved solids, chiefly consisting of calcium (up to 125 mg/liter) and sulfate (up to 185 mg/liter). The Big Blue River has the least amount of total dissolved solids (up to 500 mg/liter) above Tuttle Creek Reservoir. The Kansas River, which starts at Junction City and receives water from all of these rivers plus the Saline River, contains a maximum of approximately 900 mg/liter of total dissolved solids at Wamego.

The Dakota Formation, the upper sandy section of the Kiowa Formation and the Cheyenne Sandstone are major aquifers where they are overlain by impermeable units. The quality of water is usually good; sulfate and chloride ions are generally less than 250 ppm and calcium bicarbonate is the major constituent in most areas.

The Wellington Formation is usually drilled through to reach the underlying Permian limestones. The limestone used depends on its proximity to the surface. As a result, successively older rocks are used towards the east. Water quality varies widely even within individual units; carbonate and bicarbonate ions are the most common constituent, but sulfates and iron are sometimes at undesirable levels. Older rocks are not generally used for aquifers.

URANIUM OCCURRENCES

No commercial or appreciable concentrations of radioactive minerals are known to exist in the area. However, the Dakota Formation does contain anomalous uranium concentrations in central western Kansas and may merit further study (Zeller, et al, 1976).

In the Forest City and Cherokee Basins in the southeastern portion of the quadrangle, several of the exposed Pennsylvanian black shales are enriched in uranium. Several of these units that contain phosphate nodules commonly have uranium concentrations ranging up to several hundred ppm U_3O_8 with thorium concentrations up to 50 ppm. Equivalent black shales are common in the subsurface in the Salina Basin and over the uplifts. Gamma logs of oil wells indicate that several of the shales in the area under investigation show anomalous radioactivity. Channel sands in the Forest City Basin have been shown to have anomalous radioactivity values in direct proportion to their organic carbon content (Johnson and Dubyk, 1977).

Channel sands are also developed in the Salina Basin, but much less is known about them. However, it should be noted that the channels in the Salina Basin drained the positive uplifts which were underlain by granitic rocks.

Five kimberlite pipes of uncertain age intrude Lower Permian sedimentary rocks in northern Riley County. They are believed to be Late Cretaceous or Early Permian in age (Zeller, 1968). Several of these kimberlites are radioactive, for example, the Bala Kimberlite contains about 6 ppm uranium and 10 ppm thorium. The Precambrian Rice Formation, which is a feldspathic sandstone derived from and resting on the Precambrian basement, may be worth exploring as a potential trap for uranium leached from igneous rocks. This unit is found at depths throughout the central part of the survey area with thicknesses of over 490 m (1,600 ft) in some areas (Scott, 1966).

SAMPLE COLLECTION

CHRONOLOGY OF THE SURVEY

Sampling in the Manhattan Quadrangle began in September 1978 and was completed in October 1978. Laboratory analyses, as well as compilation and verification of all field and laboratory data, were com-

pleted by June 1979. The final field and laboratory data base used to illustrate the statistical and areal distribution of uranium and uranium-related parameters for this report was completed in June 1979.

FIELD PROCEDURES

Stream sediment and well water sampling was done by the Environmental Systems, Inc. A total of 674 groundwater and 718 stream sediment samples were collected within the boundaries of the Manhattan Quadrangle. Spring and well water samples are reported together as groundwater. Plates 1 and 4 are overlays at a scale of 1:250,000 showing sample locations for groundwater sites and stream sediment sites, respectively. Drainage basins are drawn on Plate 4 to indicate the area represented by the stream sediment samples.

Detailed information regarding techniques in sample collection, recording site data, field equipment, and field measurements may be found in the following reports: "Hydrogeochemical and Stream Sediment Reconnaissance Procedures of the Uranium Resource Evaluation Project" (Arendt, et al, In Press), "Procedures Manual for Groundwater Reconnaissance Sampling" (Uranium Resource Evaluation Project, March 1978), and "Procedures Manual for Stream Sediment Reconnaissance Sampling" (Uranium Resource Evaluation Project, May 1978). Field observations were recorded on the field form shown in Table C-2 and are included in the microfiche in Appendix C.

CONTAMINATION

Precautions were taken to avoid the possibility of collecting contaminated samples. Wells which were affected by any chlorination, water-softening, or filtering devices were not sampled if a sample could not be taken before the water passed through such devices. Any well that had not been pumped recently was allowed to run long enough to flush the system. The fact that it had no recent use was noted on the field form. Since the possibility for contamination is high in dug wells, these are noted on the field form. Any wells that the samplers felt were possibly contaminated were checked as such on the field form. Sediment samples were collected upstream from road crossings wherever possible. Visible signs of contamination or the presence of cultivated areas, or oil fields upstream from a sample site were noted on the field form.

The Manhattan Quadrangle is heavily farmed, the main crops being wheat, milo, and soybeans. At the time of sampling, milo was being harvested and winter wheat was being planted and fertilized. Ammonium nitrate and other nitrogen compounds are used for wheat fertilization. Cattle ranching is important in the Flint Hills physiographic province in the eastern half of the quadrangle. Fort Riley Military Reservation occupies a large portion of southern Riley and northern Geary Counties and a former practice bombing range is in southern Pottawatomie County. There is only a small amount of oil-field activity in the southeastern corner of the quadrangle.

CHEMICAL ANALYSIS

All samples collected in the field geology program were returned to the URE Project laboratory in Oak Ridge, Tennessee for preparation and analysis. The elements determined and the analytical techniques used along with the appropriate detection limits are given in Table 1. These detection limits are considered the best average during normal operation; however, some variables have values reported below these limits. All water samples were received in 250-ml polyethylene bottles and were filtered through 0.45- μ m cellulose acetate paper. Stream sediments samples were dried overnight at 85°C and sieved to collect the <150- μ m fraction. Part of the sediment sample was dissolved in 10 ml of 1:1 nitric-hydrofluoric acid. The analytical procedures which were used have been described by Cagle (1977) and Arendt, et al (In Press). All observed data from all samples are included in the microfiche in Appendix C.

QUALITY CONTROL

MEASUREMENTS CONTROL

The procedures used to analyze URE Project reconnaissance samples require that calibration standards, check samples, and blanks be run along with normal samples to ensure the validity of the reported results. A measurements control program provides information concerning precision and reliability of these measurements. Control samples of two water batches and two sediment batches are submitted anonymously along with routine samples on a daily basis. A statistical summary of results reported on control samples, which were analyzed along with the samples included in this survey, is given in Table 2. Results of uranium analysis of water and sediment control samples obtained from the Ames Laboratory as part of the Multilaboratory Analytical Quality Control for the HSSR Program are reported by D'Silva, et al (1979).

PRINCIPAL COMPONENT ERROR ANALYSIS

A principal component analysis of data from well water and stream sediment samples was used to produce an ordered list of samples using the eigenvalue statistics as described by Kane, et al (1977), where the most extreme samples were listed first. Additional unusual samples were identified if single-element measurements were outside a three standard deviation confidence interval around the mean. The laboratory and field data from the unusual samples identified by this procedure were reviewed. Seven well water samples (205364, 205742, 205747, 205769, 205794, 206345, and 206531) and six stream sediment samples (203273, 205410, 205745, 205927, 206120, and 206289) which appeared to be the most unusual were submitted for reanalysis. The original results were compared to the results from reanalysis. Of the

Table 1

DETECTION LIMITS OF VARIABLES DETERMINED IN WATER AND SEDIMENT SAMPLES

Variable	Method	Detection Limits	
		Sediment (ppm)	Water (ppb)
U-FL	Fluorometry	0.25	0.2
U-MS	Mass Spectrometry-Isotope Dilution	--	0.02
U-NT	Neutron Activation-Delayed Neutron Count	0.02	--
As	Atomic Absorption	0.1	0.5
Se	Atomic Absorption	0.1	0.2
Ag	Plasma Source Emission Spectrometry	2	2
Al	Plasma Source Emission Spectrometry	0.05(a)	10
B	Plasma Source Emission Spectrometry	10	8
Ba	Plasma Source Emission Spectrometry	2	2
Be	Plasma Source Emission Spectrometry	1	1
Ca	Plasma Source Emission Spectrometry	0.05(a)	0.1(b)
Ce	Plasma Source Emission Spectrometry	10	30
Co	Plasma Source Emission Spectrometry	4	2
Cr	Plasma Source Emission Spectrometry	1	4
Cu	Plasma Source Emission Spectrometry	2	2
Fe	Plasma Source Emission Spectrometry	0.05(a)	10
K	Plasma Source Emission Spectrometry	0.05(a)	0.1(b)
Li	Plasma Source Emission Spectrometry	1	4
Mg	Plasma Source Emission Spectrometry	0.05(a)	0.1(b)
Mn	Plasma Source Emission Spectrometry	4	2
Mo	Plasma Source Emission Spectrometry	4	4
Na	Plasma Source Emission Spectrometry	0.05(a)	0.1(b)
Nb	Plasma Source Emission Spectrometry	4	--
Ni	Plasma Source Emission Spectrometry	2	4
P	Plasma Source Emission Spectrometry	5	40
Sc	Plasma Source Emission Spectrometry	1	1
Si	Plasma Source Emission Spectrometry	--	0.1(b)
Sr	Plasma Source Emission Spectrometry	1	2
Th	Plasma Source Emission Spectrometry	2	--
Ti	Plasma Source Emission Spectrometry	10	2
V	Plasma Source Emission Spectrometry	2	4
Y	Plasma Source Emission Spectrometry	1	1
Zn	Plasma Source Emission Spectrometry	2	4
Zr	Plasma Source Emission Spectrometry	2	2
SO ₄	Spectrophotometry	--	5(b)
Cl	Spectrophotometry	--	10(b)

(a)Detection limits expressed in percent.

(b)Detection limits expressed in ppm.

Table 2

SUMMARY OF MEASUREMENTS CONTROL RESULTS OBTAINED WITH RESULTS FROM THE MANHATTAN QUADRANGLE

Measurements Control Results for Water										Measurements Control Results for Stream Sediments									
Batch L-3					Batch H-3					Batch R-2					Batch S-2				
Element	Method	No. of Samples	Mean (ppb)	Standard Deviation (ppb)	Coefficient of Variation	No. of Samples	Mean (ppb)	Standard Deviation (ppb)	Coefficient of Variation	Element	Method	No. of Samples	Mean (ppm)	Standard Deviation (ppm)	Coefficient of Variation	No. of Samples	Mean (ppm)	Standard Deviation (ppm)	Coefficient of Variation
U	FL(a)	25	0.61	0.150	0.24	22	10.35	1.379	0.13	U	FL	30	3.51	0.567	0.16	30	9.39	1.368	0.15
As	AA(b)	27	3.9	0.82	0.21	22	0.6	0.38	0.67	U	MT(d)	30	5.23	0.158	0.03	28	10.65	0.255	0.02
Se	AA	26	1.1	0.27	0.23	21	0.6	0.21	0.35	As	AA	27	6.0	1.08	0.17	32	10.7	1.34	0.12
Al	PS(c)	27	91	11.6	0.13	21	352	26.6	0.08	Se	AA	27	0.7	0.45	0.70	31	0.8	0.44	0.56
B	PS	28	2,276	107.2	0.05	21	64	3.9	0.06	Al	PS	31	4.13	0.393	0.10	31	5.46	0.333	0.06
Ba	PS	26	136	3.1	0.02	20	30	0.9	0.03	Ba	PS	30	336	19.3	0.06	31	361	18.1	0.05
Ca	PS	28	10.2	0.53	0.05	21	93.8	3.08	0.03	Be	PS	31	2	0.9	0.38	31	3	0.9	0.28
Co	PS	27	16	6.0	0.36	20	85	6.1	0.07	Ca	PS	28	0.24	0.07	0.07	30	0.33	0.023	0.07
Cr	PS	28	101	8.7	0.09	21	20	3.3	0.16	Ce	PS	22	80.59	9.05	0.11	21	105.24	11.802	0.11
Cu	PS	28	66	9.3	0.29	21	195	17.7	0.09	Co	PS	31	20	4.2	0.21	31	29	6.0	0.21
Fe	PS	27	107	7.7	0.07	21	971	42.8	0.04	Cr	PS	31	41	3.5	0.09	30	59	3.1	0.05
Li	PS	28	18	1.7	0.09	20	100	10.7	0.11	Cu	PS	30	14	1.5	0.10	28	46	8.3	0.18
Mg	PS	28	9.7	0.49	0.05	20	60	3.13	0.05	Fe	PS	30	2.40	0.757	0.07	31	3.19	0.191	0.06
Mn	PS	28	20	1.1	0.06	21	980	4.5	0.05	K	PS	31	1.11	0.15	0.10	30	1.84	0.165	0.09
Mo	PS	28	43	4.3	0.10	21	90	4.5	0.45	Li	PS	31	33	3.0	0.10	31	33	2.4	0.07
Na	PS	27	2.0	0.23	0.11	20	47.3	4.65	0.10	Mg	PS	30	0.38	0.124	0.06	31	0.52	0.025	0.05
Ni	PS	27	201	7.4	0.04	20	30	3.1	0.08	Mn	PS	30	998	61	0.06	31	746	39.9	0.05
P	PS	28	114	14.0	0.12	19	495	27.9	0.05	Mo	PS	31	4	1.0	0.35	31	27	2.2	0.08
Sc	PS	27	63	2.1	0.03	21	14	0.7	0.05	Na	PS	31	0.26	0.128	0.11	31	0.21	0.019	0.09
Sr	PS	28	5.21	1.371	0.26	20	48.50	2.212	0.05	Nb	PS	31	8	1.5	0.17	31	10	1.2	0.12
Ti	PS	29	100	4.8	0.05	21	35	2.0	0.05	Ni	PS	30	28	2.0	0.07	31	55	3.1	0.05
V	PS	28	9	1.8	0.19	21	44	2.3	0.05	P	PS	30	454	27.2	0.06	31	755	48.3	0.06
Y	PS	28	9	0.5	0.05	20	45	1.7	0.04	Sc	PS	30	8	0.5	0.07	31	11	0.7	0.06
Zn	PS	28	497	28.7	0.06	21	81	30.2	0.37	Sr	PS	30	53.80	3.310	0.06	31	79.74	4.266	0.05
										Th	PS	31	7	1.3	0.25	31	10	2.2	0.22
										Ti	PS	30	2,578	199	0.08	31	2,924	203.7	0.07
										V	PS	30	79	4.4	0.05	31	157	7.8	0.05
										Y	PS	30	19	1.1	0.06	31	29	1.9	0.06
										Zn	PS	29	73	6.3	0.09	31	89	8.2	0.09
										Zr	PS	30	113	5.6	0.05	31	113	5.9	0.05

(a) Fluorometric analyses.
 (b) Atomic absorption.
 (c) Plasma source emission spectroscopy.
 (d) Neutron activation, delayed neutron count.

more than 180 individual analyses that were compared, the only results which were considered to be in error in the original analysis and thus require corrections were the uranium and arsenic values in one stream sediment sample, the arsenic and spectrochemical values in one well water sample, and the sulfate and chloride values in two well water samples. This low error rate for the unusual samples indicates a high level of reliability for the laboratory measurements.

GEOCHEMICAL RESULTS

A statistical summary of all geochemical variables determined and the correlation matrix of selected variables for groundwater and stream sediment samples collected in the Manhattan Quadrangle are presented in Appendixes A and B, respectively. Areal distribution maps; log frequency, log probability, and percentile plots; and tabular data listings for selected variables are also included. All field and laboratory data for groundwater and stream sediment samples may be found on microfiche in Appendix C. A generalized geologic map of the survey area is shown at the 1:250,000 scale in Plate 7 and the 1:1,000,000 scale in Figure 3. Details of all sampling, analytical, and statistical procedures are discussed in Report K/UR-100 (Arendt, et al, In Press).

For discussion purposes, the 15th and 85th percentile concentrations are contoured on the areal distribution plots for all elements in Appendixes A and B, to indicate areas of low and high concentrations, respectively. This represents values of approximately one standard deviation below and above the mean for a normally distributed population. For more careful evaluation of the data presented, concentration levels considered to be anomalous should be determined separately for each geologic unit within the quadrangle.

GEOCHEMICAL DISTRIBUTIONS IN GROUNDWATER

The sample site locations for groundwater samples collected in the Manhattan Quadrangle are shown on Plate 1 at the 1:250,000 scale. Symbol plots for uranium and specific conductance are presented at this same scale on Plates 2 and 3 and at the 1:1,000,000 scale in Figures A-1b and A-2b, respectively. A map of the major producing horizons sampled and the samples noted as having hydrogen sulfide odor at the time of sampling is presented in Figure 4. The number of groundwater samples collected from each of the major producing units is presented in Table 3.

Observed data for the variables uranium, specific conductance, arsenic, calcium, iron, potassium, lithium, manganese, sodium, selenium, vanadium, and sulfate are listed in Table A-3. The figures in Appendix A present log frequency, lognormal probability, percentile and areal symbol plots for these variables plus uranium/specific conductance, uranium/sulfate, chloride, and total alkalinity.

Figure 4

PRODUCING HORIZON MAP FOR GROUNDWATER OF THE MANHATTAN QUADRANGLE

Table 3

DISTRIBUTION OF SAMPLES BY GEOLOGIC UNIT FROM THE MANHATTAN QUADRANGLE

<u>Geologic Unit</u>	<u>Geologic Unit Code</u>	<u>No. of Groundwater Samples</u>	<u>No. of Sediment Samples</u>
Glacial Drift	QPG	43	111
Fluvialatile Sediment (Alluvium)	QAL	85	29
Dune Sand	QSD	-	-
Loess	QPLO	18	89
Ogallala (Delmore)	TPO	-	-
Carlile	KGCC	13	2
Greenhorn, Graneros	KGGG	56	48
Dakota	KGDD	160	149
Kiowa, Cheyenne	KCDK	23	27
Sumner, Wellington	PGS	37	33
Chase	PGC	131	141
Council Grove, Admire	PGA	100	72
Wabaunsee	PVW	<u>8</u>	<u>12</u>
Total		674	713

Uranium

The distribution of uranium in groundwaters from the Manhattan Quadrangle (Plate 2 and Figure A-1b) indicates that groundwaters with uranium concentrations of greater than 8.61 ppb (85th percentile) occur primarily in the northwestern third of the quadrangle. Most of these wells produce from the Cretaceous Dakota and Graneros-Greenhorn Formations. Several of the wells with high uranium values are thought to be produced from alluvium and loess, but it seems likely that these deposits are derived from the underlying Cretaceous units, or are influenced by them. The Greenhorn is primarily a limestone-calcareous shale unit, whereas the Graneros is a gray to black shale (Merriam, 1954). Wells in the northwestern area tend to be shallow, many being hand dug and stone cased. The wells probably tap local zones of high porosity and permeability in these otherwise impermeable formations. The uranium present would appear to be coming from the black shales of the Graneros or perhaps from the overlying shales of the Carlile Formation. The Dakota Formation is a continental sandstone-shale unit which contains channel sand deposits that contain carbonaceous material, small lignite deposits, pyrite and iron oxide minerals, and some carbonate cement.

A second group of groundwaters with high uranium values occurs in the eastern part of the quadrangle and are produced from the Permian Council Grove and Admire Groups or from Quaternary alluvial and glacial deposits. The Permian units are interbedded limestones and shales which contain more evaporites in the subsurface than are seen at the surface outcrops (e.g., the gypsum deposit north of Blue Rapids in Marshall County). Solution zones in the thicker limestones are the chief aquifers in this region.

Groundwaters with uranium concentrations below 0.4 ppb (the 15th percentile) tend to occur along the outcrop band of the Dakota Formation in Clay, Cloud, Dickinson, Ottawa, and Washington Counties and in glacial deposits in Marshall and Nemaha Counties.

The correlation matrix (Table A-2) indicates significant positive correlation coefficients of >0.25 for both Pearson and Spearman correlations between uranium and specific conductance, calcium, and total alkalinity.

Specific Conductance

The distribution of specific conductance values in groundwater from the Manhattan Quadrangle (Plate 2 and Figure A-2b) indicates that there are three groups of groundwaters that tend to have specific conductance values higher than 1,628 $\mu\text{mhos/cm}$ (85th percentile). The first group occurs in the west, where the waters are produced from loess deposits, Greenhorn-Graneros rocks, and the Dakota Formation. The waters with high specific conductances in the Dakota Formation

occur primarily along the western edge of that unit's area of outcrop. The second group of groundwaters are produced primarily from the Sumner Group and the Kiowa Shale. The Sumner Group contains much evaporite with halite in the subsurface. The Kiowa Shale is gray to dark gray with pyrite, gypsum, and bentonite. The third group of groundwaters with high specific conductance values occurs primarily in the northeast corner of the quadrangle in Marshall and Nemaha Counties. These waters are produced from the Council Grove-Admire Groups and from glacial deposits overlying them.

Groundwaters with specific conductances of less than 532 $\mu\text{mhos/cm}$ (15th percentile) tend to be produced from the Dakota Formation in the eastern part of that unit's outcrop band (see Figure 3).

The correlation matrix (Table A-2) indicates significant positive correlation coefficients of >0.25 for both Pearson and Spearman correlations between specific conductance and all other variables shown except selenium, silicon, and zinc.

Related Variables

Groundwaters in the Manhattan Quadrangle can be divided into two major groupings based on aquifer geology and water geochemistry. The waters produced from the Permian aquifers (Sumner Group and older) tend to be less mineralized but to contain more calcium and sulfate and to have higher pH and total alkalinity. Rocks of Cretaceous age (Kiowa Shale and younger units) tend to have high uranium, specific conductance, arsenic, chloride, potassium, lithium, manganese, sodium, vanadium, selenium, and total alkalinity. The Permian rocks are primarily marine carbonates and shales whereas the Cretaceous rocks tend to be continental sandstones with more dark shales.

The continental nature of the Dakota Formation, together with the reduced shales, indicates that the Cretaceous units may be more favorable for uranium mineralization than the Permian rocks. In the northwestern and western part of the quadrangle, high uranium concentrations are in regions where the groundwaters are high in arsenic, calcium, chloride, potassium, lithium, selenium, sodium, vanadium, sulfate, and total alkalinity. The waters appear to be influenced by evaporites, but the uranium/specific conductance, uranium/boron, and uranium/sulfate ratios are all high in these waters, indicating that uranium is not associated with evaporites.

It is interesting to note the difference in water geochemistry within the Dakota Formation. To the west, where it occurs mostly in the subsurface, it produces waters relatively high in uranium, specific conductance, calcium, potassium, lithium, manganese, selenium, sodium, and vanadium. Where the Dakota crops out, it produces waters that are less mineralized. Possibly the Dakota sands have been flushed clean

by surface recharge in its outcrop area but unaltered rock still remains to the west where the formation is capped by shales and limestones.

It must be noted again that many wells in the western part of the Manhattan Quadrangle are shallow because the deeper the unit from which the water is produced the more mineralized it becomes. Also, there are many old, hand dug wells with rock and mortar casings. Surface contamination is always a possibility in a dug well.

Summary of Groundwater Data

The groundwaters of the Manhattan Quadrangle can be divided into groups belonging to those produced from Cretaceous aquifers and those produced from Permian and older aquifers. Waters from Cretaceous aquifers tend to be more mineralized, particularly where the units are in the subsurface and not subject to surface recharge. The most promising area for potential uranium mineralization occurs in the western-northwestern part of the quadrangle where waters are produced from loess deposits, the Greenhorn-Graneros, and the Dakota Formations. The associated elements include arsenic, potassium, manganese, vanadium, and selenium. Many wells in this area are old, shallow, and hand dug and the possibility of surface contamination exists.

GEOCHEMICAL DISTRIBUTIONS IN STREAM SEDIMENTS

The sample site locations for stream sediments collected in the Manhattan Quadrangle are shown on Plate 4 at the 1:250,000 scale. The symbol plot for the hot-acid-soluble uranium as determined by fluorometric analysis (U-FL) and thorium is presented at this scale in Plates 5 and 6, respectively, and at the 1:1,000,000 scale in Figures B-1b and B-4b, respectively. The stream sediment data subset used to generate Tables B-1 and B-2 and the figures in Appendix B includes all stream sediment samples collected from basins in the Manhattan Quadrangle that average approximately 25 km² (10 mi²). The number of stream sediment samples (713) in this subset which were collected from each of the major stratigraphic units of the survey area are presented in Table 3. Samples which were collected from basins larger than 50 km² (Phase G) were not included. Results from all stream sediment samples collected from the Manhattan Quadrangle are included in Table B-3 and in the microfiche in Appendix C.

Observed data for the variables hot-acid-soluble uranium (U-FL), total uranium as determined by neutron activation (U-NT), U-FL/U-NT, thorium, arsenic, calcium, lithium, selenium, strontium, titanium, and vanadium are listed in Table B-3. The figures in Appendix B represent log frequency, lognormal probability, percentile, and areal symbol plots for these same variables plus thorium/U-NT, barium, sodium, niobium, phosphorus, yttrium, and zirconium.

Uranium

The areal distribution for U-FL and U-NT in stream sediments from the Manhattan Quadrangle (Figures B-1b and B-2b, respectively) indicates that most stream sediments with U-FL and U-NT values greater than 2.99 and 3.80 ppm, respectively, occur in the western and northern parts of the quadrangle. The corresponding percentile plots show the unit with the highest average value for U-FL is the Pennsylvanian Wabaunsee Group. The Wabaunsee Group contains the Indian Cave Sandstone, a fluvial channel sand deposit incised into the marine carbonates and shales. The sandstone is illitic, pyritic, and carbonaceous (Zeller, 1968). The Cretaceous Carlile Shale and the Greenhorn-Graneros and Dakota Formations have slightly higher background levels for both U-FL and U-NT than the other units. In the case of both U-FL and U-NT, however, the highest values (7.6 ppm and 20.3 ppm, respectively) are contained in glacial deposits or loess.

A large grouping of stream sediments with high U-FL and U-NT values occur in the northwestern corner of the quadrangle where there are extensive loess deposits. A second grouping of sediments with high U-NT values occurs just to the southeast and seem to be derived from the Dakota and Kiowa Formations. Several high U-FL values occur in Pottawatomie County in the southeast which are apparently in sediments derived from the Wabaunsee Group. Finally, several high U-FL and U-NT values occur in Marshall County in sediments apparently derived from loess and glacial deposits. High U-FL/U-NT values generally do not coincide with high uranium values except in southwestern Marshall County and Pottawatomie County.

The correlation matrix (Table B-2) indicates significant positive correlations at the 99% confidence interval for both Pearson and Spearman correlations between U-FL and U-NT, thorium, aluminum, barium, copper, iron, nickel, phosphorus, vanadium, zinc, zirconium, and U-FL/U-NT, and between U-NT and U-FL, titanium, and zirconium. The matrix indicates significant negative correlation coefficients between U-NT and calcium, copper, lithium, magnesium, nickel, U-FL/U-NT, and thorium/U-NT.

Thorium

The areal distribution of thorium in stream sediments from the Manhattan Quadrangle (Figure B-4b and Plate 5) indicates that concentrations above the 85th percentile (11 ppm) lie in scattered groups throughout the quadrangle with more occurrences in the northern half. The percentile plot (Figure B-4a) indicates that sediments derived from the alluvium and the Permian Admire Group have the highest background ranges.

Values below the 15th percentile (6 ppm) for thorium are in areas in the west central and southwestern part of the quadrangle and appear to

be underlain by the Dakota Formation, Kiowa Formation, and Cheyenne Sandstone.

The correlation matrix (Table B-2) indicates significant positive correlation coefficients at the 99% confidence interval for both Pearson and Spearman correlations between thorium and U-FL, barium, cerium, copper, iron, magnesium, manganese, nickel, phosphorus, vanadium, zinc, zirconium, U-FL/U-NT, and thorium/U-NT. The matrix indicates a significant negative correlation between thorium and sodium.

Related Variables

As discussed previously, high values of uranium are present in the northwestern portion of the quadrangle where extensive loess and alluvium deposits are present. In this area, high concentrations of total uranium (U-NT), and to a lesser extent soluble uranium (U-FL), are associated with high concentrations of barium, niobium, strontium, titanium, vanadium, yttrium, and zirconium indicating uranium is probably derived from heavy and/or resistate mineral assemblages.

In southeastern Cloud County, extending northeast to central Washington County, high values of U-NT are associated with high values of titanium, yttrium, zirconium and low U-FL/U-NT values indicating the source of high U-NT values to be resistate and/or heavy mineral assemblages. Bedrock in this area is primarily the Dakota Formation.

Summary of Stream Sediment Data

The highest average uranium concentrations in stream sediments from the Manhattan Quadrangle are obtained from the Pennsylvanian Wabaunsee Group followed by the Cretaceous Carlile Shale, Greenhorn-Graneros and Dakota Formations. The highest individual values for U-FL and U-NT (7.6 and 20.3 ppm, respectively) are obtained from glacial deposits or loess.

In the northwestern corner of the quadrangle, where extensive loess cover exists, high concentrations of uranium are associated with high concentrations of barium, niobium, strontium, titanium, vanadium, yttrium, and zirconium. This association indicates uranium is probably present in heavy and/or resistate minerals.

In southeastern Cloud County and extending to the northeast high values of total uranium are associated with high values of titanium, yttrium, zirconium and low U-FL/U-NT values, again indicating heavy and/or resistate minerals are the probable source for the uranium.

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APPENDIX A
GROUNDWATER

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APPENDIX A

GROUNDWATER

LIST OF TABLES

<u>No.</u>	<u>Title</u>	<u>Page</u>
A-1	Statistical Summary for Groundwater of the Manhattan Quadrangle	A-7
A-2	Correlation Matrix for Groundwater of the Manhattan Quadrangle	A-8
A-3	Partial Data Listing for Groundwater of the Manhattan Quadrangle	A-42

LIST OF FIGURES

<u>No.</u>	<u>Title</u>	<u>Page</u>
A-1a	Probability, Frequency, and Percentile Plots for Uranium (ppb) in Groundwater of the Manhattan Quadrangle	A-10
A-1b	Geochemical Distribution of Uranium (ppb) in Groundwater of the Manhattan Quadrangle . .	A-11
A-2a	Probability, Frequency, and Percentile Plots for Specific Conductance ($\mu\text{mhos/cm}$) in Groundwater of the Manhattan Quadrangle . .	A-12
A-2b	Geochemical Distribution of Specific Conductance ($\mu\text{mhos/cm}$) in Groundwater of the Manhattan Quadrangle	A-13
A-3a	Probability, Frequency, and Percentile Plots for 1,000-Uranium/Specific Conductance in Groundwater of the Manhattan Quadrangle . .	A-14
A-3b	Geochemical Distribution of 1,000-Uranium/ Specific Conductance in Groundwater of the Manhattan Quadrangle	A-15
A-4a	Probability, Frequency, and Percentile Plots for 1,000-Uranium/Boron in Groundwater of the Manhattan Quadrangle	A-16

LIST OF FIGURES, Continued

<u>No.</u>	<u>Title</u>	<u>Page</u>
A-4b	Geochemical Distribution of 1,000-Uranium/Boron in Groundwater of the Manhattan Quadrangle . .	A-17
A-5a	Probability, Frequency, and Percentile Plots for 1,000-Uranium/Sulfate in Groundwater of the Manhattan Quadrangle	A-18
A-5b	Geochemical Distribution of 1,000-Uranium/ Sulfate in Groundwater of the Manhattan Quadrangle	A-19
A-6a	Probability, Frequency, and Percentile Plots for Arsenic (ppb) in Groundwater of the Manhattan Quadrangle	A-20
A-6b	Geochemical Distribution of Arsenic (ppb) in Groundwater of the Manhattan Quadrangle . .	A-21
A-7a	Probability, Frequency, and Percentile Plots for Calcium (ppm) in Groundwater of the Manhattan Quadrangle	A-22
A-7b	Geochemical Distribution of Calcium (ppm) in Groundwater of the Manhattan Quadrangle . .	A-23
A-8a	Probability, Frequency, and Percentile Plots for Chloride (ppm) in Groundwater of the Manhattan Quadrangle	A-24
A-8b	Geochemical Distribution of Chloride (ppm) in Groundwater of the Manhattan Quadrangle . .	A-25
A-9a	Probability, Frequency, and Percentile Plots for Potassium (ppm) in Groundwater of the Manhattan Quadrangle	A-26
A-9b	Geochemical Distribution of Potassium (ppm) in Groundwater of the Manhattan Quadrangle . .	A-27
A-10a	Probability, Frequency, and Percentile Plots for Lithium (ppb) in Groundwater of the Manhattan Quadrangle	A-28
A-10b	Geochemical Distribution of Lithium (ppb) in Groundwater of the Manhattan Quadrangle . .	A-29

LIST OF FIGURES, Continued

<u>No.</u>	<u>Title</u>	<u>Page</u>
A-11a	Probability, Frequency, and Percentile Plots for Manganese (ppb) in Groundwater of the Manhattan Quadrangle	A-30
A-11b	Geochemical Distribution of Manganese (ppb) in Groundwater of the Manhattan Quadrangle . .	A-31
A-12a	Probability, Frequency, and Percentile Plots for Sodium (ppm) in Groundwater of the Manhattan Quadrangle	A-32
A-12b	Geochemical Distribution of Sodium (ppm) in Groundwater of the Manhattan Quadrangle . .	A-33
A-13a	Probability, Frequency, and Percentile Plots for Selenium (ppb) in Groundwater of the Manhattan Quadrangle	A-34
A-13b	Geochemical Distribution of Selenium (ppb) in Groundwater of the Manhattan Quadrangle . .	A-35
A-14a	Probability, Frequency, and Percentile Plots for Vanadium (ppb) in Groundwater of the Manhattan Quadrangle	A-36
A-14b	Geochemical Distribution of Vanadium (ppb) in Groundwater of the Manhattan Quadrangle . .	A-37
A-15a	Probability, Frequency, and Percentile Plots for Total Alkalinity (ppm) in Groundwater of the Manhattan Quadrangle	A-38
A-15b	Geochemical Distribution of Total Alkalinity (ppm) in Groundwater of the Manhattan Quadrangle	A-39
A-16a	Probability, Frequency, and Percentile Plots for Sulfate (ppm) in Groundwater of the Manhattan Quadrangle	A-40
A-16b	Geochemical Distribution of Sulfate (ppm) in Groundwater of the Manhattan Quadrangle . .	A-41

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Table A-1

STATISTICAL SUMMARY FOR GROUNDWATER OF THE MANHATTAN QUADRANGLE

NO. SAMPLES ANALYZED		COEFFICIENT										LN TRANSFORMATION			
BELOW		OF										ROBUST			
MEASURABLE	DETECTION	DETECTION	MINIMUM	MAXIMUM	MEAN	MEDIAN	MODE	STANDARD	DEVIATION	VARIATION	MEAN	S. D.	MEAN	S. D.	
ELEMENT	VALUES	LIMIT	LIMIT	VALUE	VALUE										
U	614	60	<0.20	<0.02	177.40	5.91	2.42	0.13	11.579	1.960	1.03	1.18	0.80	1.55	
SP	670			175	7959	1096	851	678	868.9	0.8	6.80	0.60	6.79	0.63	
U/SP	670			0.01	86.34	4.75	2.82	0.15	7.181	1.513	0.83	1.37	0.88	1.43	
U/B	674			0.05	1075.65	69.57	38.73	2.26	120.106	1.726	3.21	1.78	3.31	1.79	
U/SO	674			0.06	4512.00	111.30	41.69	3.31	260.777	2.343	3.51	1.74	3.57	1.77	
AG	178	496	<2	<2	2035	32	<2	<2	202.1	6.2	1.09	1.03			
AL	93	581	<10	<10	603	39	<10	<10	64.3	1.6	3.29	0.78			
AS	249	425	<0.5	<0.5	20.8	1.2	<0.5	<0.5	1.57	1.25	-0.04	0.62			
B	674			12	5152	149	66	42	311.3	2.1	4.43	0.89	4.36	0.87	
BA	669	5	<2	<2	1045	112	89	20	98.8	0.9	4.30	1.02	4.33	1.03	
BE	19	655	<1	<1	5	1	<1	<1	1.1	0.8	0.23	0.50			
CA	674			0.2	613.8	103.7	80.3	55.4	84.48	0.81	4.40	0.73	4.41	0.70	
CO	155	519	<2	<2	126	3	<2	<2	10.1	2.7	0.99	0.50			
CR	59	615	<4	<4	10	4	<4	<4	1.5	0.3	1.57	0.26			
CU	84	590	<2	<2	659	22	<2	<2	77.7	3.5	1.81	1.24			
FE	293	381	<10	<10	466	24	<10	<10	28.9	1.2	3.04	0.49			
K	673	1	<0.1	<0.1	135.5	3.4	2.3	1.5	5.92	1.72	0.91	0.71	0.89	0.72	
LI	673	1	<2	<2	283	30	23	23	27.5	0.9	3.17	0.66	3.16	0.65	
MG	673	1	<0.1	<0.1	181.8	27.5	22.3	10.1	22.16	0.81	3.05	0.75	3.06	0.70	
MN	281	393	<2	<2	4008	96	<2	<2	392.3	4.0	2.18	1.82			
MO	195	479	<4	<4	102	8	<4	<4	9.9	1.2	1.90	0.56			
NA	674			3.2	639.9	52.0	33.5	23.0	59.71	1.15	3.56	0.85	3.55	0.89	
NI	113	561	<4	<4	159	6	<4	<4	14.7	2.1	1.68	0.47			
P	59	615	<40	<40	977	168	<40	<40	172.7	1.0	4.80	0.77			
SC	65	609	<1	<1	4	1	<1	<1	0.5	0.4	0.08	0.27			
SE	546	128	<0.2	<0.2	10.5	0.5	0.4	0.5	0.71	1.31	-0.81	0.51	-1.01	0.62	
SI	674			2.1	106.3	10.3	8.4	7.4	10.16	0.99	2.18	0.46	2.16	0.40	
SR	673	1	<2	<2	39455	1554	692	352	2859.0	1.8	6.67	1.06	6.64	1.10	
TI	87	587	<2	<2	23	3	<2	<2	2.9	0.8	1.15	0.55			
V	139	535	<4	<4	25	7	<4	<4	3.7	0.5	1.86	0.42			
Y	141	533	<1	<1	12	1	<1	<1	1.0	0.9	0.05	0.28			
ZN	598	76	<4	<4	1795	90	11	7	181.1	2.0	3.28	1.50	2.83	1.76	
ZR	121	553	<2	<2	6	2	<2	<2	0.9	0.3	0.93	0.29			
T-AK	669			40	725	315	330	342	100.4	0.3	5.68	0.43	5.73	0.41	
M-AK	669			40	778	317	330	360	100.8	0.3	5.69	0.43	5.73	0.42	
P-AK	667			0	94	0	0	0	3.8	20.3					
CL	490	184	<10	<10	1589	61	20	<10	112.6	1.8	3.58	0.90	3.03	1.28	
NA/C	674			0.25	19.74	2.40	1.57	1.13	2.512	1.048	0.52	0.81	0.50	0.80	
PH	667			1.8	9.3	6.7	7.0	7.1	0.99	0.15					
SD4	666	8	<5	<5	1586	140	57	23	236.9	1.7	4.16	1.19	4.10	1.29	

A-7

NOTE: Refer to Table 1, Page 23 and Table C-1, Page C-4 for concentration units and symbol definitions.

Table A-2

CORRELATION MATRIX FOR GROUNDWATER OF THE MANHATTAN QUADRANGLE

L-U														
L-U	1.00 (614)	L-TAK												
L-TAK	0.34*** (609)	1.00 (669)												
L-MG	0.17*** (613)	0.44*** (668)	1.00 (673)											
L-SR	0.10*** (613)	0.37*** (668)	0.72*** (673)	1.00 (673)										
L-CA	0.32*** (614)	0.25*** (669)	0.65*** (673)	0.66*** (673)	1.00 (674)									
L-ZN	-0.07 (541)	-0.16*** (595)	-0.11*** (597)	-0.09*** (597)	0.09*** (598)	1.00 (598)								
L-SP	0.39*** (610)	0.46*** (669)	0.61*** (669)	0.62*** (669)	0.65*** (670)	-0.04 (596)	1.00 (670)							
LSD4	0.19*** (607)	0.22*** (661)	0.53*** (665)	0.67*** (665)	0.60*** (666)	-0.04 (590)	0.71*** (662)							
L-D	-0.03 (614)	0.21*** (669)	0.32*** (673)	0.51*** (673)	0.24*** (674)	0.01 (598)	0.55*** (670)							
L-LI	0.19*** (613)	0.18*** (668)	0.43*** (673)	0.40*** (673)	0.44*** (673)	0.07* (597)	0.62*** (669)							
L-K	0.21*** (613)	0.05 (668)	0.07* (673)	0.13*** (673)	0.24*** (673)	0.08** (597)	0.33*** (669)							
L-NA	0.22*** (614)	0.24*** (669)	0.18*** (673)	0.19*** (673)	0.20*** (674)	0.07 (598)	0.65*** (670)							
L-CL	0.22*** (457)	0.11** (487)	0.17*** (489)	0.18*** (489)	0.27*** (490)	0.06 (427)	0.67*** (488)							
L-SE	0.21*** (498)	0.16*** (541)	-0.01 (545)	-0.03 (545)	0.03 (546)	0.05 (491)	0.09** (542)							
L-SI	0.24*** (614)	-0.03 (669)	-0.10*** (673)	-0.18*** (673)	0.04 (674)	-0.02 (598)	-0.02 (670)							

LS04									
1.00									
(666)									
	L-B								
0.61***									
0.63***	1.00								
(666)	(674)								
		L-LI							
0.59***	0.71***								
0.55***	0.74***	1.00							
(665)	(673)	(673)							
			L-K						
0.34***	0.40***	0.47***							
0.34***	0.42***	0.49***	1.00						
(665)	(673)	(673)	(673)						
				L-NA					
0.42***	0.57***	0.62***	0.37***						
0.40***	0.53***	0.60***	0.37***	1.00					
(666)	(674)	(673)	(673)	(674)					
					L-CL				
0.33***	0.29***	0.43***	0.30***	0.69***					
0.33***	0.24***	0.40***	0.25***	0.65***	1.00				
(667)	(670)	(684)	(689)	(690)	(690)				
						L-SE			
0.01	-0.05	0.01	-0.01	0.10**	0.09*				
0.02	-0.02	-0.00	-0.02	0.06	0.05	1.00			
(539)	(546)	(545)	(545)	(546)	(403)	(546)			
							L-SI		
-0.15***	-0.26***	-0.02	0.19***	0.05	0.12***	0.16***			
-0.21***	-0.21***	-0.02	0.17***	0.07*	0.11**	0.12***	1.00		
(666)	(674)	(673)	(673)	(674)	(490)	(546)	(674)

Figure A-1a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR URANIUM (PPB)
IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-1b

GEOCHEMICAL DISTRIBUTION OF URANIUM (PPB) IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-2a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR SPECIFIC CONDUCTANCE ($\mu\text{MHOS/CM}$)
IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-2b

GEOCHEMICAL DISTRIBUTION OF SPECIFIC CONDUCTANCE (μ MHOS/CM) IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-3a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR $1,000 \cdot \text{URANIUM/SPECIFIC CONDUCTANCE}$ IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-3b

GEOCHEMICAL DISTRIBUTION OF 1,000-URANIUM/SPECIFIC CONDUCTANCE
IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-4a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR 1,000·URANIUM/BORON
IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

GEOCHEMICAL DISTRIBUTION OF 1,000-URIANIUM/BORON IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-5a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR 1,000-URANIUM/SULFATE
IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-6a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR ARSENIC (PPB)
IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-6b

GEOCHEMICAL DISTRIBUTION OF ARSENIC (PPB) IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-7a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR CALCIUM (PPM)
IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-7b

GEOCHEMICAL DISTRIBUTION OF CALCIUM (PPM) IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-8a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR CHLORIDE (PPM)
IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-8b

GEOCHEMICAL DISTRIBUTION OF CHLORIDE (PPM) IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-9a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR POTASSIUM (PPM)
IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-9b

GEOCHEMICAL DISTRIBUTION OF POTASSIUM (PPM) IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-10a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR LITHIUM (PPB)
IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-11a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR MANGANESE (PPB)
IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-11b

GEOCHEMICAL DISTRIBUTION OF MANGANESE (PPB) IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-12a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR SODIUM (PPM)
IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-13a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR SELENIUM (PPB)
IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-13b

GEOCHEMICAL DISTRIBUTION OF SELENIUM (PPB) IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-14a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR VANADIUM (PPB)
IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-14b

GEOCHEMICAL DISTRIBUTION OF VANADIUM (PPB) IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-15a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR TOTAL ALKALINITY (PPM)
 IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-15b

GEOCHEMICAL DISTRIBUTION OF TOTAL ALKALINITY (PPM) IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-16a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR SULFATE (PPM)
IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Figure A-16b

GEOCHEMICAL DISTRIBUTION OF SULFATE (PPM) IN GROUNDWATER OF THE MANHATTAN QUADRANGLE

Table A-3

PARTIAL DATA LISTING FOR GROUNDWATER OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - GROUNDWATER														
ON SAMPLE	D. U. E.	SAMPLE	NUMBER	U	SP	AS	CA	K	LI	MIN	NA	SE	V	T-AK
NUMBER	SI	LAT	LJNG	L TY REP	(PPB)	UMHUS/CM	(PPB)	(PPM)	(PPM)	(PPB)	(PPB)	(PPB)	(PPB)	(PPM)
203147	20-39.619	- 96.033	-3-03-		0.25	3400	0.5	310.	15.	160	110	160.	0.4	460
203151	20-39.610	- 96.065	-3-03-		3.8	380	0.6	120.	2.5	34	1900	42.	0.4	220
203152	20-39.551	- 96.072	-3-03-		3.9	780	<0.5	110.	3.2	38	10	46.	0.5	480
203156	20-39.515	- 96.083	-3-03-		4.7	2400	<0.5	210.	2.4	24	3	99.	0.5	260
203157	20-39.508	- 96.044	-3-03-		9.3	2900	<0.5	500.	2.2	35	56	22.	0.5	140
203158	20-39.567	- 96.031	-3-03-		4.5	1300	<0.5	170.	4.0	44	<2	33.	0.4	380
203160	20-39.602	- 96.144	-3-03-		<0.20	1100	<0.5	60.	10.	66	<2	120.	0.4	430
203161	20-39.560	- 96.156	-3-03-		5.1	3100	<0.5	340.	1.9	44	26	77.	0.5	330
203164	20-39.515	- 96.131	-3-03-		3.3	1700	<0.5	170.	2.4	16	2	34.	0.5	350
203166	20-39.597	- 96.188	-3-03-		0.86	450	<0.5	78.	1.4	11	45	16.	0.5	250
203174	20-39.974	- 96.598	-3-03-		4.2	890	0.6	110.	2.0	25	2	25.	0.5	450
203176	20-39.939	- 96.600	-3-03-		2.2	1100	<0.5	130.	1.5	25	21	58.	0.5	340
203179	20-39.836	- 96.597	-3-03-		1.4	940	0.6	73.	2.0	35	<2	62.	0.4	280
203180	20-39.885	- 96.558	-3-03-		1.9	580	0.7	80.	1.2	26	2	24.	0.3	310
203181	20-39.927	- 96.539	-3-03-		4.1	1000	0.6	130.	1.5	38	<2	34.	0.5	350
203183	20-39.990	- 96.525	-3-03-		1.4	750	0.7	88.	1.0	23	<2	40.	0.6	360
203185	20-39.741	- 96.185	-3-03-		4.0	600	<0.5	70.	1.6	28	<2	37.	0.5	350
203186	20-39.844	- 96.259	-3-03-		5.1	530	<0.5	88.	1.4	23	5	15.	0.4	340
203187	20-39.772	- 96.259	-3-03-		1.0	400	0.6	45.	1.1	20	2	38.	0.5	240
203191	20-39.800	- 96.315	-3-03-		<0.20	640	<0.5	73.	4.0	51	<2	34.	0.6	380
203192	20-39.843	- 96.318	-3-03-		9.3	680	<0.5	72.	1.5	30	<2	27.	0.6	350
203195	20-39.189	- 97.006	-3-03-		2.2	570	0.9	72.	2.5	15	<2	43.	0.4	360
203196	20-39.163	- 97.018	-3-03-		2.2	600	<0.5	81.	2.0	18	<2	17.	0.4	340
203199	20-39.147	- 97.088	-3-03-		2.1	710	<0.5	80.	1.7	24	11	29.	0.3	360
203200	20-39.205	- 97.087	-3-03-		1.8	700	0.5	76.	2.0	22	4	29.	0.2	370
203202	20-39.249	- 97.087	-3-03-		2.8	830	0.6	86.	1.9	20	2	36.	0.4	420
203203	20-39.210	- 97.148	-3-03-		1.3	1000	<0.5	110.	1.7	52	2	32.	0.6	310
203204	20-39.250	- 97.143	-3-03-		3.2	650	1.1	81.	1.6	25	<2	26.	0.3	390
203207	20-39.197	- 97.203	-3-03-		3.3	2200	0.6	170.	2.7	55	3	61.	0.2	410
203211	20-39.162	- 97.221	-3-03-		2.8	1200	0.5	150.	2.1	52	4	23.	0.5	440
203215	20-39.165	- 97.129	-3-03-		2.4	590	1.0	51.	1.5	23	<2	21.	<0.2	340
203219	20-39.079	- 97.075	-3-03-		3.1	530	<0.5	79.	1.1	14	<2	14.	1.1	330
203223	20-39.033	- 97.092	-3-03-		3.0	1100	1.3	120.	2.2	23	<2	40.	0.4	360
203228	20-39.032	- 97.026	-3-03-		3.4	780	1.0	56.	1.8	15	<2	44.	0.5	480
203233	20-39.053	- 97.038	-3-03-		2.3	700	1.1	47.	1.6	23	<2	35.	0.6	400
203234	20-39.120	- 97.113	-3-03-		4.5	650	1.4	75.	1.5	24	<2	18.	0.4	400
203236	20-39.121	- 97.132	-3-03-		2.1	530	<0.5	53.	1.4	31	<2	24.	<0.2	370
203239	20-39.078	- 97.209	-3-03-		1.4	1100	0.5	76.	1.1	48	<2	60.	0.4	360
203240	20-39.033	- 97.129	-3-03-		3.7	700	1.9	69.	2.0	21	<2	26.	<0.2	430
203241	20-39.250	- 97.453	-3-03-		<0.20	180	<0.5	16.	1.8	7	<2	6.7	0.3	62
203242	20-39.238	- 97.480	-3-03-		0.67	920	<0.5	0.2	<0.1	<2	<2	200.	0.5	400
203243	20-39.111	- 97.018	-3-03-		1.5	590	1.1	60.	0.9	16	<2	40.	<0.2	400
203244	20-39.013	- 97.204	-3-03-		0.55	2900	0.8	500.	2.9	93	22	36.	0.2	250
203245	20-39.061	- 97.129	-3-03-		1.5	670	<0.5	64.	1.7	15	35	39.	0.4	370
203246	20-39.103	- 97.205	-3-03-		1.6	2100	<0.5	240.	2.5	59	3	75.	<0.2	290
203249	20-39.351	- 96.960	-3-03-		0.91	660	<0.5	46.	1.3	18	<2	28.	0.3	370
203252	20-39.305	- 96.962	-3-03-		2.0	620	0.5	59.	1.2	17	<2	16.	<0.2	390
203253	20-39.331	- 96.922	-3-03-		2.2	920	1.3	100.	5.0	16	<2	17.	<0.2	390
203254	20-39.330	- 96.850	-3-03-		1.5	630	0.9	49.	1.3	20	<2	38.	0.3	380
203255	20-39.300	- 96.847	-3-03-		1.4	860	<0.5	120.	1.7	25	2	16.	0.5	330
203258	20-39.298	- 96.810	-3-03-		1.1	620	0.7	82.	2.2	9	<2	20.	0.3	360
203263	20-39.335	- 96.784	-3-03-		1.9	890	<0.5	54.	1.0	18	<2	50.	<0.2	420
203264	20-39.379	- 96.976	-3-03-		2.1	630	0.6	53.	1.5	18	<2	14.	<0.2	350
203265	20-39.439	- 96.965	-3-03-		1.2	670	<0.5	67.	1.0	13	<2	36.	<0.2	360
203266	20-39.439	- 96.915	-3-03-		7.4	610	1.0	83.	1.4	9	<2	8.2	<0.2	350

A-42

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - GROUNDWATER														
OF SAMPLE	D. O. E.	SAMPLE	NUMBER	U	SP	AS	CA	K	LI	MN	NA	SE	V	T-AK
NUMBER	ST	LAT	LONG	L TY REP	(PPB)	UMHOS/CM	(PPB)	(PPM)	(PPB)	(PPB)	(PPM)	(PPB)	(PPB)	(PPM)
203269	20-39.422	-	97.285	-3-03-	0.39	530	<0.5	56.	1.8	22	850	35.	0.2	<4
203275	20-39.336	-	97.476	-3-03-	<0.20	1100	<0.5	57.	4.6	76	1700	13.	0.2	<4
203277	20-39.336	-	97.423	-3-03-	<0.20	310	<0.5	35.	3.1	9	7	23.	<0.2	<4
203282	20-39.311	-	97.313	-3-03-	1.7	980	<0.5	66.	6.2	69	13	94.	<0.2	<4
203286	20-39.343	-	97.276	-3-03-	1.9	860	<0.5	59.	1.7	25	<2	73.	<0.2	<4
203289	20-39.409	-	97.327	-3-03-	11.	670	<0.5	62.	3.9	56	7	45.	<0.2	<4
203292	20-39.495	-	97.265	-3-03-	2.2	1100	<0.5	120.	12.	24	4	63.	0.5	<4
203296	20-39.337	-	97.406	-3-03-	<0.20	950	<0.5	69.	3.0	19	3	88.	<0.2	<4
203298	20-39.290	-	97.392	-3-03-	<0.20	320	<0.5	28.	2.3	11	<2	30.	<0.2	<4
203300	20-39.423	-	97.411	-3-03-	0.96	340	<0.5	35.	2.6	6	<2	24.	<0.2	<4
203301	20-39.473	-	97.481	-3-03-	1.3	460	<0.5	69.	2.8	27	250	22.	<0.2	<4
203302	20-39.495	-	97.443	-3-03-	4.1	850	<0.5	50.	3.0	32	<2	87.	<0.2	<4
203303	20-39.476	-	97.405	-3-03-	<0.20	1700	<0.5	150.	2.1	12	5	100.	<0.2	<4
203304	20-39.450	-	97.377	-3-03-	<0.20	560	<0.5	74.	3.5	31	21	20.	0.2	<4
203305	20-39.415	-	97.496	-3-03-	4.1	400	<0.5	63.	2.2	17	1500	13.	<0.2	<4
203306	20-39.401	-	97.499	-3-03-	3.3	510	1.7	81.	2.4	29	<2	24.	0.6	<4
203309	20-39.380	-	97.444	-3-03-	1.0	430	<0.5	55.	3.9	42	370	15.	0.6	<4
203313	20-39.010	-	96.604	-3-03-	0.90	870	<0.5	73.	1.2	10	<2	5.8	0.5	<4
203315	20-39.108	-	96.618	-3-03-	3.7	1400	<0.5	170.	1.9	25	2	38.	0.6	<4
203316	20-39.128	-	96.562	-3-03-	2.1	730	<0.5	74.	1.0	11	<2	5.6	0.9	<4
203317	20-39.024	-	96.567	-3-03-	3.4	580	0.9	97.	2.2	7	<2	7.5	0.5	<4
203318	20-39.046	-	96.579	-3-03-	32.	2600	0.8	510.	2.0	13	7	18.	0.4	<4
203319	20-39.115	-	96.485	-3-03-	20.	650	0.6	99.	1.3	14	<2	7.9	0.6	<4
203322	20-39.099	-	96.892	-3-03-	3.0	730	<0.5	76.	1.6	11	<2	8.2	0.6	<4
203326	20-39.122	-	96.982	-3-03-	10.	620	0.5	60.	1.7	25	<2	22.	0.6	<4
203327	20-39.054	-	96.963	-3-03-	3.4	790	1.1	73.	1.3	15	<2	21.	0.5	<4
203328	20-39.016	-	96.963	-3-03-	2.7	710	<0.5	55.	1.2	14	<2	23.	1.0	<4
203329	20-39.031	-	96.918	-3-03-	2.6	740	<0.5	50.	1.2	11	<2	32.	0.5	5
203330	20-39.042	-	96.910	-3-03-	3.6	780	<0.5	52.	1.6	10	<2	12.	0.5	4
203331	20-39.160	-	96.974	-3-03-	1.6	1600	<0.5	120.	2.2	34	2	44.	0.6	<4
203332	20-39.075	-	96.500	-3-03-	1.1	480	0.8	79.	1.7	7	<2	14.	0.5	4
203334	20-39.116	-	96.452	-3-03-	4.0	890	<0.5	89.	0.8	14	<2	26.	0.3	<4
203337	20-39.004	-	96.454	-3-03-	1.8	1100	<0.5	140.	2.4	23	<2	37.	0.5	<4
203338	20-39.029	-	96.387	-3-03-	2.1	520	0.9	58.	0.9	11	<2	6.6	0.5	<4
203339	20-39.085	-	97.335	-3-03-	1.8	1100	<0.5	110.	2.2	45	28	83.	0.5	<4
203340	20-39.017	-	97.445	-3-03-	0.60	410	<0.5	49.	2.9	16	<2	28.	0.6	<4
203343	20-39.015	-	97.493	-3-03-	0.72	440	<0.5	56.	2.1	12	<2	41.	0.4	<4
203346	20-39.062	-	97.444	-3-03-	1.2	910	<0.5	75.	8.8	32	2	100.	0.3	<4
203348	20-39.248	-	97.277	-3-03-	<0.20	270	<0.5	27.	0.4	13	<2	17.	0.4	<4
203349	20-39.248	-	97.328	-3-03-	1.2	470	<0.5	31.	1.5	12	<2	41.	0.5	<4
203353	20-39.203	-	97.332	-3-03-	0.24	440	<0.5	40.	1.4	23	<2	42.	0.4	4
203354	20-39.151	-	97.335	-3-81-	19.	640	<0.5	71.	2.0	100	2	61.	0.3	<4
203357	20-39.166	-	97.279	-3-03-	<0.20	2000	<0.5	170.	1.0	29	<2	110.	0.4	<4
203360	20-39.212	-	97.279	-3-03-	0.65	3500	0.7	420.	4.7	150	4	110.	0.3	<4
203363	20-39.047	-	97.499	-3-03-	<0.20	200	<0.5	17.	1.3	7	<2	9.6	0.3	<4
203365	20-39.103	-	97.462	-3-03-	0.30	750	1.0	71.	6.2	31	610	70.	0.5	<4
203370	20-39.220	-	97.439	-3-03-	0.46	420	<0.5	53.	1.7	29	<2	34.	0.3	<4
203372	20-39.205	-	97.476	-3-03-	0.33	230	<0.5	27.	2.4	17	21	17.	0.3	<4
203373	20-39.147	-	97.440	-3-03-	0.25	4600	<0.5	380.	13.	180	86	340.	0.3	<4
203377	20-39.141	-	97.379	-3-03-	0.73	500	<0.5	72.	1.2	61	3	31.	0.2	5
203392	20-39.118	-	96.685	-3-03-	4.4	600	2.3	97.	4.6	10	<2	15.	0.5	6
203396	20-39.017	-	96.692	-3-03-	3.1	570	<0.5	90.	1.2	12	<2	7.5	0.3	<4
203397	20-39.053	-	96.720	-3-03-	1.9	650	0.5	86.	1.1	14	<2	7.3	0.4	<4
203402	20-39.102	-	96.856	-3-03-	3.2	700	1.0	70.	1.5	13	2	25.	0.3	5
203403	20-39.058	-	96.866	-3-03-	12.	1200	0.8	100.	6.1	19	<2	31.	0.4	<4

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - GROUNDWATER													
OF SAMPLE	D. U. E.	SAMPLE	NUMBER		U	SP	AS	CA	K	LI	MN	NA	SE
NUMBER	ST	LAT	LONG	L TY REP	(PPB)	UMHOS/CM	(PPB)	(PPM)	(PPM)	(PPB)	(PPB)	(PPM)	(PPB)
203404	20-39.023	-	96.804	-3-03-	3.2	590	<0.5	71.	1.2	11	<2	9.6	0.2
203405	20-39.008	-	96.742	-3-03-	2.9	1600	0.5	220.	2.3	25	2	30.	0.5
203407	20-39.155	-	96.662	-3-03-	1.7	520	0.5	83.	2.0	13	<2	25.	0.3
203408	20-39.069	-	96.653	-3-03-	2.5	1100	<0.5	110.	1.8	25	4	77.	0.4
203409	20-39.210	-	96.675	-3-03-	1.6	1600	<0.5	220.	2.2	35	2	61.	0.5
203410	20-39.247	-	96.682	-3-03-	0.78	950	0.5	75.	1.9	48	2	21.	0.4
203412	20-39.486	-	96.220	-3-03-	1.7	2900	<0.5	300.	2.3	37	4	110.	0.3
203414	20-39.436	-	96.216	-3-03-	4.4	780	<0.5	110.	1.8	23	2	28.	0.5
203415	20-39.436	-	96.164	-3-03-	2.3	490	<0.5	90.	2.5	23	2	8.1	0.8
203417	20-39.457	-	96.148	-3-03-	12.	800	<0.5	78.	1.5	13	2	20.	0.4
203422	20-39.384	-	96.190	-3-03-	2.1	700	<0.5	93.	3.5	17	<2	8.4	0.4
203427	20-39.966	-	96.263	-3-03-	9.1	670	<0.5	110.	1.5	31	2	20.	0.5
203483	20-39.234	-	97.904	-3-03-	65.	1400	<0.5	97.	7.6	45	2	78.	0.8
203484	20-39.106	-	97.890	-3-03-	1.5	990	<0.5	130.	2.5	41	2	30.	0.5
203486	20-39.046	-	97.891	-3-03-	0.45	470	<0.5	54.	6.8	21	2	20.	0.7
203487	20-39.024	-	97.907	-3-03-	3.6	790	<0.5	95.	4.2	17	<2	45.	0.4
203491	20-39.016	-	97.955	-3-03-	3.2	1100	1.2	63.	5.1	34	2	88.	0.5
203492	20-39.046	-	97.982	-3-03-	0.49	740	<0.5	140.	3.1	32	2	70.	0.4
203493	20-39.115	-	97.955	-3-03-	3.5	1000	<0.5	160.	2.4	21	<2	54.	0.4
203494	20-39.154	-	97.867	-3-03-	1.5	670	0.5	100.	3.5	17	<2	32.	0.7
203495	20-39.147	-	97.781	-3-03-	28.	6800	5.6	310.	14.	80	4	640.	1.2
203496	20-39.313	-	97.498	-3-03-	<0.20	850	0.5	58.	3.3	24	36	17.	0.0
203497	20-39.312	-	97.436	-3-03-	<0.20	260	<0.5	21.	1.5	11	160	8.2	0.6
203498	20-39.335	-	97.312	-3-03-	4.0	1000	<0.5	70.	2.0	35	<2	78.	0.6
203500	20-39.373	-	97.276	-3-03-	4.2	1500	<0.5	100.	1.7	71	<2	140.	0.5
203502	20-39.403	-	97.330	-3-03-	4.6	1000	<0.5	100.	1.3	24	9	75.	0.6
203503	20-39.247	-	97.798	-3-03-	19.	830	<0.5	100.	4.8	23	6	21.	2.4
203504	20-39.204	-	97.849	-3-03-	9.7	1600	0.6	68.	9.3	75	<2	100.	0.8
203508	20-39.278	-	96.559	-3-03-	1.9	670	0.7	93.	1.7	9	<2	6.2	0.5
203511	20-39.423	-	96.607	-3-03-	2.2	900	<0.5	85.	1.4	24	9	40.	0.7
203512	20-39.385	-	96.606	-3-03-	1.4	680	0.6	46.	2.7	12	<2	5.0	0.7
203515	20-39.392	-	96.540	-3-03-	0.37	2100	<0.5	280.	2.8	72	9	35.	0.4
203516	20-39.406	-	96.550	-3-03-	2.9	960	0.9	43.	1.2	14	<2	73.	0.9
203518	20-39.429	-	96.643	-3-03-	2.0	730	0.5	33.	1.0	13	<2	22.	0.6
203520	20-39.464	-	96.599	-3-03-	4.1	800	0.5	87.	1.1	9	<2	9.8	0.6
203521	20-39.479	-	96.556	-3-03-	1.9	740	<0.5	41.	0.9	13	<2	28.	0.5
203523	20-39.274	-	96.660	-3-03-	1.6	830	0.6	72.	1.5	22	<2	26.	0.4
203525	20-39.270	-	96.720	-3-03-	2.6	860	0.5	41.	1.5	12	<2	36.	0.6
203530	20-39.355	-	96.647	-3-03-	1.3	1100	<0.5	200.	1.0	11	3	3.6	0.8
203532	20-39.357	-	96.619	-3-03-	4.5	860	<0.5	83.	2.1	18	2	17.	0.5
203533	20-39.435	-	96.754	-3-03-	0.71	1800	<0.5	310.	1.8	30	3	30.	0.5
203537	20-39.387	-	96.717	-3-03-	1.7	1100	<0.5	220.	2.4	34	8	32.	0.4
203538	20-39.334	-	96.736	-3-03-	2.3	870	0.8	61.	2.8	17	2	40.	0.4
203541	20-39.495	-	96.756	-3-03-	2.7	800	<0.5	62.	2.9	13	<2	18.	0.8
203542	20-39.474	-	96.664	-3-03-	1.3	700	<0.5	66.	1.3	15	<2	5.6	0.4
203543	20-39.059	-	96.212	-3-03-	4.7	850	0.8	77.	2.8	13	<2	24.	0.8
203544	20-39.081	-	96.152	-3-03-	2.6	1200	<0.5	30.	2.8	25	<2	120.	0.5
203548	20-39.014	-	96.134	-3-03-	3.3	670	<0.5	63.	4.3	11	<2	11.	0.4
203550	20-39.008	-	96.113	-3-03-	1.5	790	<0.5	57.	2.3	15	<2	61.	0.5
203551	20-39.117	-	96.172	-3-03-	2.8	1300	0.7	120.	0.9	16	<2	82.	3.7
203553	20-39.115	-	96.208	-3-03-	1.1	590	<0.5	90.	1.0	9	48	23.	0.5
203555	20-39.015	-	96.223	-3-03-	2.0	610	0.5	44.	1.2	12	<2	13.	0.7
203558	20-39.041	-	96.034	-3-03-	2.9	590	<0.5	76.	1.6	8	<2	9.5	0.4
203561	20-39.017	-	96.014	-3-03-	2.0	790	<0.5	73.	0.4	8	<2	15.	0.4
203563	20-39.116	-	96.027	-3-03-	1.4	660	<0.5	73.	1.2	10	<2	39.	0.4

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - GROUNDWATER																
OF SAMPLE	D. U. E.	SAMPLE	NUMBER	U	SP	AS	CA	K	L1	MN	NA	SE	V	T-AK		
NUMBER	SI	LAT	LUNG	L TY	REP	(PPB)	UMHUS/CM	(PPB)	(PPM)	(PPM)	(PPB)	(PPB)	(PPB)	(PPM)		
203564	20-39.112	-	96.109	-3-03-		0.05	880	<0.5	85.	2.0	17	3	23.	0.5	<4	360
203566	20-39.076	-	96.095	-3-03-		<0.20	1200	<0.5	98.	2.0	12	22	37.	0.5	<4	470
203579	20-39.282	-	96.387	-3-03-		2.7	1300	<0.5	130.	1.9	17	<2	26.	0.5	<4	360
203582	20-39.287	-	96.340	-3-03-		0.49	800	0.5	110.	1.5	12	<2	21.	0.6	<4	360
203586	20-39.294	-	96.288	-3-03-		0.93	730	4.1	110.	0.9	15	<2	27.	1.0	13	350
203589	20-39.348	-	96.301	-3-03-		3.2	910	<0.5	90.	0.2	18	<2	11.	0.6	<4	450
203591	20-39.329	-	96.434	-3-03-		4.0	1200	1.3	190.	2.4	18	<2	37.	0.6	8	400
203603	20-39.338	-	96.392	-3-03-		3.0	870	<0.5	84.	0.7	10	<2	12.	0.2	<4	410
203604	20-39.353	-	96.270	-3-03-		3.0	980	0.6	150.	13.	15	<2	9.5	0.3	<4	600
203606	20-39.319	-	96.152	-3-03-		2.7	730	<0.5	80.	1.3	11	<2	16.	<0.2	<4	400
203607	20-39.289	-	96.203	-3-03-		3.4	840	<0.5	110.	0.8	17	2	16.	0.3	<4	440
203609	20-39.321	-	96.199	-3-03-		2.3	940	<0.5	89.	0.7	15	<2	19.	<0.2	<4	450
203651	20-39.428	-	96.797	-3-03-		3.1	1000	0.6	82.	1.9	23	2	42.	0.7	4	350
203654	20-39.475	-	96.793	-3-03-		2.2	590	0.6	97.	1.7	8	<2	15.	0.6	4	350
203657	20-39.482	-	96.831	-3-03-		5.1	570	0.5	78.	2.0	13	2	8.5	0.6	<4	320
203659	20-39.491	-	96.893	-3-03-		3.1	860	0.6	130.	1.5	23	2	16.	0.5	4	440
203660	20-39.438	-	96.859	-3-03-		2.3	570	0.5	47.	1.4	11	2	24.	0.5	7	350
203661	20-39.383	-	96.848	-3-03-		2.1	570	0.9	41.	1.7	20	<2	25.	0.5	5	360
203666	20-39.393	-	96.794	-3-03-		5.4	580	0.9	43.	1.3	17	<2	30.	0.7	<4	380
203669	20-39.488	-	96.960	-3-03-		1.4	1200	0.3	150.	9.0	25	5	21.	0.5	<4	380
203670	20-39.379	-	96.925	-3-03-		<0.20	660	1.0	35.	1.3	22	<2	57.	1.0	<4	340
203671	20-39.246	-	96.200	-3-03-		3.2	590	0.6	100.	1.0	11	<2	12.	0.6	<4	350
203674	20-39.226	-	96.154	-3-03-		4.8	640	1.2	62.	1.3	12	<2	10.	0.9	<4	340
203676	20-39.216	-	96.153	-3-03-		0.82	650	1.0	50.	2.7	12	3	9.7	0.6	<4	400
203678	20-39.215	-	96.204	-3-03-		17.	730	1.2	85.	17.	32	<2	15.	0.6	<4	370
203680	20-39.150	-	96.223	-3-03-		3.2	840	<0.5	68.	1.4	16	<2	45.	1.1	<4	370
203683	20-39.159	-	96.151	-3-03-		3.8	790	<0.5	64.	0.9	12	2	17.	0.5	6	480
203686	20-39.137	-	96.076	-3-03-		1.1	450	0.8	73.	1.1	10	<2	28.	0.9	<4	350
203688	20-39.157	-	96.044	-3-03-		2.9	580	<0.5	82.	0.9	15	7	6.6	0.7	10	320
203692	20-39.186	-	96.048	-3-03-		6.6	820	1.2	120.	2.2	16	2	38.	1.1	6	430
203693	20-39.189	-	96.095	-3-03-		1.4	620	0.9	80.	4.9	8	<2	13.	0.5	7	360
203694	20-39.243	-	96.110	-3-03-		2.8	560	<0.5	62.	0.9	8	<2	5.8	0.7	<4	220
203695	20-39.239	-	96.042	-3-03-		2.5	940	<0.5	99.	3.1	17	3	26.	0.5	<4	320
203724	20-39.250	-	96.608	-3-03-		2.1	940	<0.5	110.	1.2	11	<2	12.	<0.2	<4	320
203727	20-39.171	-	96.548	-3-03-		3.7	1100	<0.5	77.	1.0	14	<2	24.	0.3	<4	450
203795	20-39.244	-	96.734	-3-03-		3.3	1200	0.5	140.	2.7	13	2	22.	0.6	<4	380
203796	20-39.463	-	96.085	-3-03-		2.4	1000	<0.5	120.	2.0	14	2	24.	0.7	<4	340
203798	20-39.438	-	96.009	-3-03-		1.2	930	<0.5	85.	4.6	17	2	13.	0.6	5	360
203800	20-39.379	-	96.016	-3-03-		4.9	1000	<0.5	120.	22.	14	2	12.	0.4	5	350
203802	20-39.369	-	96.056	-3-03-		1.1	660	0.6	93.	1.2	14	<2	21.	0.5	<4	290
203808	20-39.285	-	96.017	-3-03-		0.37	640	1.7	64.	1.6	10	2	12.	0.6	4	340
203811	20-39.297	-	96.066	-3-03-		2.4	820	0.9	100.	0.7	14	<2	15.	0.6	7	310
203812	20-39.318	-	96.076	-3-03-		3.5	680	0.6	130.	2.4	15	<2	12.	0.5	<4	360
203813	20-39.333	-	96.006	-3-03-		2.6	1000	0.5	83.	1.1	13	2	54.	0.7	7	360
203815	20-39.421	-	96.091	-3-03-		1.3	580	<0.5	45.	1.5	7	2	5.2	0.5	9	350
205300	20-39.523	-	97.972	-3-03-		0.36	220	<0.5	16.	6.8	4	3	3.7	<0.2	<4	55
205301	20-39.574	-	97.949	-3-03-		8.0	640	<0.5	90.	2.3	18	30	22.	<0.2	<4	270
205303	20-39.597	-	97.931	-3-03-		6.0	1900	<0.5	100.	3.0	17	<2	150.	<0.2	12	280
205309	20-39.611	-	97.801	-3-03-		8.2	3700	2.7	67.	5.2	67	2	400.	<0.2	9	730
205311	20-39.567	-	97.758	-3-03-		30.	1800	1.3	210.	10.	49	<2	84.	<0.2	<4	330
205312	20-39.529	-	97.798	-3-03-		11.	1700	1.0	100.	3.1	21	<2	65.	1.6	<4	460
205313	20-39.566	-	97.645	-3-03-		<0.20	890	<0.5	7.5	3.2	46	<2	150.	0.7	<4	400
205314	20-39.624	-	97.858	-3-03-		7.9	2700	0.5	37.	3.4	62	<2	240.	0.7	6	430
205316	20-39.671	-	97.872	-3-03-		6.0	1600	<0.5	120.	3.1	15	<2	42.	2.0	5	310
205317	20-39.708	-	97.824	-3-03-		0.28	1100	6.5	0.6	1.3	23	<2	190.	0.7	<4	450

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - GROUNDWATER														
OF SAMPLE	D. O. E.	SAMPLE	NUMBER	U	SP	AS	CA	K	LI	MN	NA	SE	V	T-AK
NUMBER	ST	LAT	LONG	L TY REP	(PPB)	UMHUS/CM	(PPB)	(PPM)	(PPB)	(PPB)	(PPM)	(PPB)	(PPB)	(PPM)
205318	20-39.736	- 97.828	-3-03-	4.8	790	<0.5	45.	1.7	22	<2	37.	1.0	<4	300
205323	20-39.562	- 97.912	-3-03-	23.	1700	<0.5	210.	3.0	25	2	18.	1.1	<4	320
205324	20-39.506	- 97.858	-3-03-	14.	1400	3.2	180.	2.8	15	<2	47.	0.6	21	360
205327	20-39.648	- 97.802	-3-03-	19.	3400	<0.5	330.	4.6	75	3	97.	0.6	<4	330
205329	20-39.698	- 97.764	-3-03-	86.	990	2.2	26.	19.	32	<2	35.	0.5	<4	350
205330	20-39.750	- 97.786	-3-03-	1.6	1100	0.6	45.	11.	34	<2	73.	0.5	<4	380
205333	20-39.640	- 97.912	-3-03-	9.2	2000	<0.5	100.	6.2	58	<2	140.	0.5	<4	340
205337	20-39.718	- 97.931	-3-03-	6.6	2400	<0.5	33.	4.2	44	<2	220.	0.4	<4	330
205339	20-39.740	- 97.925	-3-03-	7.6	1700	2.0	100.	6.2	23	<2	100.	0.7	10	350
205342	20-39.742	- 97.984	-3-03-	42.	1500	3.1	59.	8.9	61	<2	83.	1.0	15	420
205345	20-39.654	- 97.987	-3-03-	9.3	3100	1.0	120.	4.5	40	<2	270.	1.2	14	350
205347	20-39.698	- 97.995	-3-03-	3.3	1600	0.5	76.	4.3	31	<2	110.	0.4	5	290
205350	20-39.966	- 97.424	-3-03-	2.8	1200	1.8	55.	4.0	22	<2	86.	0.5	15	350
205352	20-39.973	- 97.488	-3-03-	2.3	910	1.8	21.	2.6	19	<2	56.	0.4	8	350
205353	20-39.930	- 97.499	-3-03-	4.6	1300	0.7	74.	4.3	52	<2	88.	0.8	5	280
205354	20-39.880	- 97.480	-3-03-	1.3	1500	<0.5	39.	10.	68	<2	110.	0.5	<4	360
205357	20-39.885	- 97.409	-3-03-	0.38	920	<0.5	50.	2.9	25	<2	28.	0.5	<4	310
205359	20-39.893	- 97.387	-3-03-	42.	1200	<0.5	65.	3.2	48	<2	74.	0.7	<4	340
205362	20-39.929	- 97.455	-3-03-	15.	2400	1.2	150.	3.6	51	<2	210.	1.0	11	330
205363	20-39.952	- 97.387	-3-03-	5.6	1400	1.3	150.	3.4	28	2	97.	1.1	8	330
205364	20-39.974	- 97.381	-3-03-	3.5	8000	<0.5	99.	6.9	100	59	470.	0.3	<4	330
205365	20-39.987	- 97.323	-3-03-	0.24	660	<0.5	110.	3.3	21	100	28.	0.3	<4	300
205367	20-39.929	- 97.283	-3-03-	2.0	730	<0.5	110.	2.2	21	<2	20.	<0.2	<4	290
205369	20-39.756	- 97.269	-3-03-	1.7	320	<0.5	57.	1.3	16	<2	12.	0.3	<4	86
205370	20-39.798	- 97.259	-3-03-	1.0	1500	<0.5	220.	7.6	73	15	45.	0.4	<4	350
205371	20-39.858	- 97.265	-3-03-	0.21	230	<0.5	13.	1.4	42	<2	5.3	0.4	5	46
205375	20-39.856	- 97.314	-3-03-	3.2	850	<0.5	110.	2.0	26	<2	30.	0.4	<4	330
205378	20-39.785	- 97.314	-3-03-	4.0	1000	<0.5	140.	4.8	39	30	20.	0.3	<4	320
205379	20-39.755	- 97.305	-3-03-	11.	970	0.7	98.	4.0	17	<2	12.	0.8	<4	470
205385	20-39.846	- 97.498	-3-03-	3.6	1000	1.3	80.	1.6	24	<2	39.	0.8	9	260
205387	20-39.852	- 97.452	-3-03-	4.9	890	0.6	54.	1.7	20	<2	41.	0.7	<4	350
205388	20-39.843	- 97.410	-3-03-	6.8	1300	<0.5	110.	2.2	39	37	52.	0.6	<4	360
205389	20-39.762	- 97.402	-3-03-	8.6	690	<0.5	53.	0.5	10	<2	6.8	0.5	<4	270
205390	20-39.757	- 97.433	-3-03-	34.	3100	<0.5	270.	2.1	57	2	160.	1.1	<4	310
205391	20-39.784	- 97.442	-3-03-	1.7	560	1.0	79.	1.9	15	3	13.	0.5	5	250
205392	20-39.780	- 97.369	-3-03-	10.	3300	<0.5	170.	3.1	39	3	180.	0.6	<4	330
205398	20-39.855	- 97.144	-3-03-	3.0	400	<0.5	53.	1.4	20	<2	25.	0.7	4	230
205401	20-39.844	- 97.182	-3-03-	19.	920	<0.5	57.	3.0	27	<2	51.	0.8	<4	280
205402	20-39.814	- 97.147	-3-03-	0.21	350	<0.5	33.	1.8	27	330	12.	0.6	<4	130
205404	20-39.813	- 97.216	-3-03-	0.25	250	<0.5	3.7	0.8	4	210	3.2	0.4	<4	42
205405	20-39.795	- 97.201	-3-03-	0.76	400	<0.5	50.	1.5	22	170	14.	0.7	<4	200
205406	20-39.757	- 97.208	-3-03-	2.9	440	<0.5	55.	1.8	21	<2	19.	0.5	<4	170
205421	20-39.852	- 97.029	-3-03-	1.5	610	0.5	59.	2.3	18	6	35.	0.6	<4	200
205423	20-39.829	- 97.087	-3-03-	<0.20	290	0.6	32.	1.7	10	4	16.	0.4	<4	150
205424	20-39.784	- 97.085	-3-03-	<0.20	240	1.9	27.	1.7	12	690	14.	0.6	<4	100
205425	20-39.771	- 97.086	-3-03-	0.65	230	<0.5	29.	1.7	14	2	11.	0.3	<4	100
205426	20-39.779	- 97.029	-3-03-	0.92	1200	1.1	160.	4.2	50	<2	21.	0.4	<4	330
205427	20-39.873	- 97.049	-3-03-	5.0	300	<0.5	35.	2.7	16	3	17.	0.7	<4	110
205431	20-39.908	- 97.332	-3-03-	3.6	400	<0.5	75.	1.3	19	<2	18.	0.4	<4	230
205434	20-39.891	- 97.332	-3-03-	<0.20	850	0.5	38.	3.8	33	<2	110.	0.4	<4	270
205435	20-39.887	- 97.296	-3-03-	30.	1800	0.6	200.	2.4	37	<2	68.	0.4	4	320
205436	20-39.989	- 97.264	-3-03-	6.4	1600	1.6	110.	4.4	20	<2	96.	0.4	11	450
205437	20-39.987	- 97.223	-3-03-	8.8	900	0.5	120.	2.8	19	26	44.	0.4	<4	340
205438	20-39.973	- 97.182	-3-03-	13.	1300	<0.5	180.	7.1	75	4000	56.	0.5	<4	200
205439	20-39.939	- 97.160	-3-03-	0.69	530	0.6	68.	2.1	40	110	26.	0.3	<4	130

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - GROUNDWATER															
OF SAMPLE	D. U. E.	SAMPLE	NUMER	U	SP	AS	CA	K	LI	MN	NA	SE	V	T-AK	
NUMBER	ST	LAT	LUNG	L TY REP	(PPB)	UMHUS/CM	(PPB)	(PPM)	(PPM)	(PPB)	(PPB)	(PPB)	(PPB)	(PPM)	
205440	20-39.939	- 97.182	-3-03-		<0.20	260	<0.5	25.	1.1	13	<2	12.	0.3	<4	58
205441	20-39.900	- 97.183	-3-03-		2.5	650	0.5	62.	2.2	21	<2	51.	0.6	<4	200
205442	20-39.887	- 97.088	-3-03-		0.92	570	0.6	43.	1.9	30	190	69.	0.6	<4	210
205443	20-39.931	- 97.107	-3-03-		<0.20	470	<0.5	65.	3.3	45	520	16.	0.4	<4	180
205444	20-39.973	- 97.063	-3-03-		0.28	380	<0.5	46.	4.2	20	<2	21.	0.5	<4	130
205445	20-39.972	- 97.048	-3-03-		1.7	1800	<0.5	160.	8.9	47	3	120.	<0.2	<4	200
205449	20-39.929	- 97.020	-3-03-		0.38	300	<0.5	32.	1.0	23	<2	32.	0.3	<4	140
205451	20-39.784	- 96.185	-3-03-		2.5	930	<0.5	57.	1.0	19	<2	72.	0.2	<4	340
205457	20-39.842	- 96.215	-3-03-		7.7	1500	0.6	100.	2.6	21	2	120.	0.3	<4	360
205458	20-39.839	- 96.143	-3-03-		7.8	1600	<0.5	68.	0.9	23	2	65.	<0.2	<4	670
205459	20-39.785	- 96.146	-3-03-		9.8	1700	<0.5	120.	2.1	54	2	66.	<0.2	<4	330
205465	20-39.849	- 96.088	-3-03-		1.1	720	<0.5	75.	1.2	10	<2	32.	<0.2	<4	320
205469	20-39.812	- 96.084	-3-03-		13.	1400	<0.5	120.	1.7	40	4	57.	<0.2	<4	350
205472	20-39.782	- 96.036	-3-03-		2.6	700	<0.5	69.	1.0	13	<2	46.	<0.2	<4	270
205473	20-39.826	- 96.008	-3-03-		3.5	610	<0.5	48.	1.1	15	<2	32.	0.2	<4	270
205475	20-39.885	- 96.089	-3-03-		3.7	750	<0.5	82.	1.1	18	<2	29.	0.3	<4	340
205479	20-39.914	- 96.025	-3-03-		0.85	790	<0.5	94.	1.4	12	<2	47.	<0.2	<4	240
205481	20-39.976	- 96.029	-3-03-		2.4	1000	<0.5	110.	1.5	18	<2	30.	<0.2	<4	300
205485	20-39.899	- 96.000	-3-03-		5.7	1400	<0.5	140.	26.	24	40	47.	<0.2	<4	400
205487	20-39.972	- 96.064	-3-03-		1.3	860	1.4	78.	1.5	16	<2	46.	<0.2	<4	320
205488	20-39.925	- 96.051	-3-03-		1.7	480	<0.5	50.	1.3	7	<2	46.	6.0	<4	200
205492	20-39.970	- 96.146	-3-03-		2.4	1300	<0.5	93.	1.1	18	<2	26.	0.4	<4	340
205495	20-39.894	- 96.146	-3-03-		6.4	600	<0.5	75.	3.0	17	<2	39.	<0.2	<4	270
205496	20-39.921	- 96.147	-3-03-		6.8	1100	<0.5	110.	0.7	21	2	77.	<0.2	<4	280
205501	20-39.939	- 96.195	-3-03-		1.5	800	<0.5	110.	1.5	27	2	21.	<0.2	<4	330
205502	20-39.879	- 96.184	-3-03-		5.1	2000	1.6	200.	3.7	47	3	140.	<0.2	<4	200
205504	20-39.898	- 96.370	-3-03-		3.9	1300	<0.5	120.	1.9	22	2	100.	<0.2	<4	220
205505	20-39.924	- 96.389	-3-03-		5.8	920	<0.5	98.	1.7	48	4	35.	<0.2	<4	310
205508	20-39.945	- 96.257	-3-03-		22.	960	<0.5	85.	1.4	34	<2	14.	11.	<4	490
205509	20-39.921	- 96.314	-3-03-		16.	3800	<0.5	420.	5.6	140	1400	99.	0.7	<4	320
205510	20-39.874	- 96.327	-3-03-		12.	1500	1.5	140.	3.5	90	5	99.	0.6	<4	200
205513	20-39.035	- 97.260	-3-03-		0.99	2900	<0.5	430.	3.1	59	170	73.	<0.2	<4	200
205514	20-39.047	- 97.268	-3-03-		3.2	900	2.0	68.	2.2	41	<2	79.	0.4	<4	420
205521	20-39.099	- 97.261	-3-03-		1.4	1900	<0.5	140.	1.1	37	2	110.	0.2	<4	310
205522	20-39.621	- 97.677	-3-03-		3.5	650	0.9	100.	2.4	26	2	40.	0.6	<4	340
205523	20-39.611	- 97.746	-3-03-		<0.20	1200	2.6	78.	9.8	36	<2	96.	0.4	<4	300
205524	20-39.577	- 97.669	-3-03-		17.	1200	3.3	110.	12.	34	<2	59.	0.5	<4	410
205525	20-39.512	- 97.677	-3-03-		<0.20	720	<0.5	35.	5.8	64	3	90.	0.4	<4	370
205526	20-39.536	- 97.742	-3-03-		0.24	780	<0.5	31.	2.8	45	<2	56.	0.8	<4	360
205527	20-39.566	- 97.745	-3-03-		2.4	1200	<0.5	160.	2.7	21	<2	22.	0.9	<4	310
205528	20-39.654	- 97.659	-3-03-		16.	1100	1.4	74.	3.0	16	<2	53.	0.6	<4	440
205529	20-39.665	- 97.741	-3-03-		15.	880	<0.5	63.	4.4	15	<2	33.	0.4	<4	370
205530	20-39.706	- 97.745	-3-03-		21.	1200	1.6	58.	4.7	14	<2	66.	0.6	<4	570
205531	20-39.760	- 97.585	-3-03-		12.	1800	1.5	150.	5.6	17	3	97.	0.5	<4	420
205532	20-39.741	- 97.676	-3-03-		9.1	2300	<0.5	17.	6.5	50	<2	340.	0.5	<4	540
205533	20-39.740	- 97.614	-3-03-		8.8	1000	0.7	54.	2.5	19	<2	51.	0.4	<4	460
205534	20-39.698	- 97.620	-3-03-		2.1	590	<0.5	28.	2.8	29	<2	60.	0.6	<4	260
205535	20-39.698	- 97.678	-3-03-		<0.20	650	<0.5	15.	3.9	44	<2	90.	0.4	<4	410
205536	20-39.648	- 97.614	-3-03-		31.	1200	0.6	100.	1.8	34	<2	50.	0.3	<4	400
205537	20-39.639	- 97.549	-3-03-		2.7	980	<0.5	68.	2.1	24	<2	60.	0.3	<4	310
205538	20-39.660	- 97.481	-3-03-		4.5	600	<0.5	41.	2.2	15	<2	50.	0.3	<4	280
205539	20-39.653	- 97.452	-3-03-		5.7	970	0.5	64.	2.7	27	<2	48.	0.3	<4	310
205540	20-39.703	- 97.457	-3-03-		5.5	760	<0.5	72.	2.4	18	<2	41.	0.4	<4	330
205541	20-39.708	- 97.519	-3-03-		8.8	1200	<0.5	100.	1.7	32	<2	64.	0.3	<4	380
205542	20-39.697	- 97.554	-3-03-		14.	2100	0.6	120.	3.9	27	2	130.	0.3	<4	460

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - GROUNDWATER														
OF SAMPLE	D. U. E.	SAMPLE	NUMER	U	SP	AS	CA	K	LI	MN	NA	SE	V	T-AK
NUMBER	ST	LAT	LONG	L TY REP	(PPB)	UMHUS/CM	(PPB)	(PPM)	(PPB)	(PPB)	(PPM)	(PPB)	(PPB)	(PPM)
205543	20-39.759	- 97.745	-3-03-		8.3	900	0.6	140.	2.0	17	40.	0.5	8	430
205544	20-39.742	- 97.497	-3-03-		<0.20	580	<0.5	61.	8.8	36	45.	0.4	<4	330
205545	20-39.742	- 97.447	-3-03-		4.5	700	<0.5	100.	2.3	74	37.	0.3	5	200
205546	20-39.736	- 97.387	-3-03-		4.1	670	<0.5	91.	2.7	25	23.	0.3	<4	370
205554	20-39.518	- 97.620	-3-03-		7.8	570	3.0	100.	5.0	19	25.	0.3	4	320
205557	20-39.524	- 97.571	-3-03-		4.4	1200	<0.5	110.	4.4	31	100.	0.4	<4	320
205559	20-39.841	- 96.607	-3-03-		1.8	670	0.5	70.	1.2	18	31.	1.3	<4	290
205560	20-39.843	- 96.562	-3-03-		1.8	670	<0.5	67.	1.5	18	31.	1.1	<4	310
205563	20-39.800	- 96.567	-3-03-		1.9	1600	0.5	130.	1.2	20	51.	0.6	4	300
205739	20-39.791	- 97.600	-3-03-		7.4	1300	0.8	76.	13.	31	51.	0.6	<4	350
205740	20-39.770	- 97.688	-3-03-		18.	2700	<0.5	190.	4.8	58	170.	0.4	<4	270
205741	20-39.773	- 97.588	-3-03-		22.	3000	0.6	170.	4.4	47	170.	0.4	<4	340
205742	20-39.841	- 97.966	-3-03-		180.	5600	1.4	550.	6.6	150	240.	2.0	6	380
205743	20-39.842	- 97.930	-3-03-		46.	1400	0.7	74.	5.8	87	81.	0.8	<4	500
205747	20-39.846	- 97.802	-3-03-		14.	1300	21.	120.	18.	34	56.	0.3	7	380
205750	20-39.974	- 97.841	-3-03-		1.5	470	1.9	52.	4.1	9	34.	0.4	4	160
205751	20-39.976	- 97.800	-3-03-		0.86	960	1.2	62.	4.3	10	25.	0.3	5	160
205752	20-39.944	- 97.800	-3-03-		<0.20	940	0.9	110.	7.3	21	23.	0.4	<4	140
205756	20-39.883	- 97.815	-3-03-		14.	960	5.8	110.	11.	24	24.	0.3	24	320
205759	20-39.970	- 97.913	-3-03-		2.6	700	2.7	81.	4.8	15	26.	0.3	8	240
205760	20-39.958	- 97.971	-3-03-		1.2	700	1.4	85.	4.2	19	25.	0.3	6	290
205761	20-39.922	- 97.990	-3-		3.4	950	1.6	120.	3.5	26	35.	0.5	9	
205763	20-39.892	- 97.961	-3-03-		12.	2800	3.3	320.	12.	250	100.	0.4	10	300
205765	20-39.915	- 97.853	-3-03-		12.	600	4.3	75.	15.	43	19.	0.6	5	400
205766	20-39.893	- 97.862	-3-03-		43.	3000	1.2	350.	11.	74	160.	0.7	6	350
205769	20-39.798	- 97.372	-3-03-		38.	3700	0.7	330.	5.3	78	310.	0.5	<4	460
205771	20-39.917	- 97.914	-3-03-		25.	1600	<0.5	370.	5.3	81	290.	<0.2	<4	390
205775	20-39.820	- 96.396	-3-03-		4.5	670	1.2	110.	4.4	31	25.	1.0	6	300
205783	20-39.985	- 96.955	-3-03-		3.4	570	<0.5	29.	2.3	24	55.	0.5	<4	340
205786	20-39.968	- 96.901	-3-03-		3.3	510	<0.5	42.	2.0	30	30.	0.3	<4	340
205787	20-39.944	- 96.936	-3-03-		30.	1100	1.9	45.	4.5	43	17.	0.5	8	580
205790	20-39.922	- 96.966	-3-03-		6.5	570	1.3	84.	2.0	17	12.	0.2	<4	320
205792	20-39.892	- 96.932	-3-03-		1.9	500	<0.5	43.	2.4	14	42.	1.4	<4	260
205794	20-39.885	- 96.985	-3-03-		11.	1500	1.7	120.	140.	28	35.	0.4	5	480
205800	20-39.841	- 96.949	-3-03-		4.7	1400	<0.5	130.	5.1	33	43.	0.3	<4	420
205801	20-39.783	- 96.968	-3-03-		<0.20	2000	<0.5	400.	1.9	31	17.	0.2	<4	240
205804	20-39.831	- 96.806	-3-03-		3.9	1300	2.2	160.	2.7	35	26.	1.2	9	400
205805	20-39.800	- 96.789	-3-03-		3.3	2200	<0.5	360.	2.8	46	23.	0.4	<4	380
205811	20-39.754	- 96.855	-3-03-		1.3	900	0.9	120.	1.9	30	26.	1.2	<4	330
205812	20-39.784	- 96.853	-3-03-		3.2	1200	<0.5	160.	1.7	24	31.	0.2	4	480
205816	20-39.833	- 96.390	-3-03-		<0.20	4700	0.5	320.	9.5	140	310.	0.4	<4	460
205820	20-39.795	- 96.446	-3-03-		1.4	670	<0.5	94.	1.1	17	32.	0.4	<4	400
205823	20-39.798	- 96.477	-3-03-		0.87	1400	<0.5	160.	2.2	44	54.	0.2	5	310
205827	20-39.876	- 96.427	-3-03-		1.2	690	0.6	86.	1.2	23	50.	0.6	6	370
205832	20-39.842	- 96.483	-3-03-		3.6	1200	<0.5	100.	1.6	53	52.	0.3	<4	350
205833	20-39.885	- 96.489	-3-03-		5.4	610	<0.5	43.	2.6	52	30.	0.3	<4	370
205834	20-39.927	- 96.482	-3-03-		4.2	1100	<0.5	110.	1.1	34	68.	0.3	4	340
205835	20-39.928	- 96.426	-3-03-		4.9	690	<0.5	57.	1.5	39	34.	0.4	<4	300
205836	20-39.960	- 96.427	-3-03-		4.4	820	<0.5	100.	1.6	28	59.	0.6	<4	320
205837	20-39.987	- 96.473	-3-03-		0.32	1800	<0.5	150.	5.9	110	95.	<0.2	<4	260
205839	20-39.986	- 96.351	-3-03-		4.9	550	<0.5	80.	1.7	30	38.	<0.2	<4	350
205840	20-39.972	- 96.293	-3-03-		7.1	530	1.0	64.	1.9	41	15.	0.3	<4	380
205841	20-39.888	- 96.851	-3-03-		3.1	1200	<0.5	140.	2.2	41	23.	0.3	<4	300
205842	20-39.884	- 96.809	-3-03-		0.35	2800	0.6	470.	5.1	110	59.	0.3	<4	350
205843	20-39.930	- 96.826	-3-03-		4.3	2100	0.6	370.	1.9	38	43.	0.5	<4	400

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - GROUNDWATER															
OR SAMPLE NUMBER	D. U. E. SI LAT	SAMPLE LJNG	NUMEEK L TY REP	U (PPB)	SP UMHQS/CM	AS (PPB)	CA (PPM)	K (PPM)	LI (PPB)	MN (PPB)	NA (PPM)	SE (PPB)	V (PPB)	T-AK (PPM)	
205844	20-39.932	- 96.793	-3-03-	3.8	1300	<0.5	150.	1.7	29	3	25.	0.3	<4	490	
205845	20-39.964	- 96.784	-3-03-	4.8	1900	<0.5	140.	3.0	61	3	65.	0.4	<4	400	
205846	20-39.988	- 96.830	-3-03-	16.	1300	0.6	110.	1.3	32	2	86.	0.4	4	440	
205847	20-39.352	- 97.168	-3-03-	2.1	790	0.5	58.	2.3	30	<2	37.	0.4	<4	380	
205850	20-39.332	- 97.220	-3-03-	4.4	840	1.7	93.	2.2	53	2	45.	0.7	<4	200	
205851	20-39.279	- 97.135	-3-03-	4.8	810	1.3	110.	2.5	32	<2	32.	1.6	<4	360	
205856	20-39.279	- 97.077	-3-03-	2.3	740	<0.5	88.	2.8	28	9	29.	0.4	<4	340	
205858	20-39.337	- 97.065	-3-03-	1.7	1400	<0.5	160.	2.6	53	2	49.	0.3	<4	330	
205859	20-39.329	- 97.006	-3-03-	3.1	780	<0.5	59.	1.8	25	<2	22.	0.4	<4	360	
205861	20-39.301	- 97.015	-3-03-	1.9	540	0.8	37.	3.0	16	<2	15.	0.3	<4	330	
205866	20-39.381	- 97.067	-3-03-	1.4	650	<0.5	79.	1.9	34	10	26.	<0.2	<4	300	
205868	20-39.468	- 97.024	-3-03-	1.2	680	<0.5	76.	1.1	34	<2	33.	0.6	<4	400	
205871	20-39.467	- 97.104	-3-03-	<0.20	1900	<0.5	250.	2.3	74	11	65.	0.3	<4	300	
205875	20-39.408	- 97.107	-3-03-	2.1	1100	<0.5	61.	1.7	52	<2	44.	0.4	<4	390	
205876	20-39.421	- 97.035	-3-03-	1.6	850	<0.5	36.	2.3	35	<2	30.	0.3	<4	370	
205877	20-39.394	- 97.032	-3-03-	3.4	730	<0.5	41.	1.6	32	<2	22.	<0.2	<4	400	
205878	20-39.467	- 97.192	-3-03-	76.	990	3.8	100.	13.	42	<2	33.	0.3	12	350	
205879	20-39.466	- 97.163	-3-03-	3.1	1200	1.1	130.	3.2	49	3	63.	0.4	<4	360	
205880	20-39.436	- 97.155	-3-03-	1.9	1300	<0.5	69.	2.2	65	<2	63.	0.7	<4	340	
205881	20-39.407	- 97.162	-3-03-	3.4	1000	1.2	190.	12.	34	100	23.	0.2	<4	330	
205882	20-39.812	- 97.605	-3-03-	7.9	970	<0.5	89.	2.9	20	<2	79.	0.3	<4	360	
205883	20-39.814	- 97.542	-3-03-	0.21	1100	<0.5	2.3	1.4	19	<2	210.	0.5	<4	510	
205884	20-39.844	- 97.537	-3-03-	16.	1000	0.8	140.	1.5	29	30	73.	0.5	6	460	
205885	20-39.799	- 97.519	-3-03-	<0.20	980	<0.5	67.	6.9	47	60	130.	0.4	<4	330	
205886	20-39.755	- 97.502	-3-03-	7.5	700	<0.5	64.	4.0	31	<2	65.	0.6	4	320	
205887	20-39.755	- 97.560	-3-03-	2.1	600	<0.5	95.	6.4	24	<2	25.	0.2	<4	320	
205888	20-39.837	- 97.743	-3-03-	5.9	850	1.2	140.	4.2	21	<2	33.	0.4	8	330	
205889	20-39.792	- 97.669	-3-03-	1.4	1100	<0.5	24.	3.7	39	<2	160.	0.6	<4	380	
205893	20-39.928	- 97.593	-3-03-	6.5	1300	0.6	140.	3.1	32	<2	85.	0.4	5	320	
205894	20-39.929	- 97.553	-3-03-	6.0	2900	<0.5	310.	6.5	66	430	180.	0.4	<4	360	
205895	20-39.886	- 97.538	-3-03-	6.3	970	<0.5	110.	2.8	28	11	64.	0.3	<4	410	
205896	20-39.835	- 97.616	-3-03-	0.60	1900	<0.5	23.	2.1	29	<2	270.	0.4	<4	500	
205900	20-39.811	- 97.744	-3-03-	5.2	940	0.9	120.	4.5	24	<2	66.	0.4	15	350	
205913	20-39.857	- 97.673	-3-03-	18.	2200	0.8	210.	4.0	26	410	150.	0.5	3	550	
205914	20-39.879	- 97.746	-3-03-	74.	5200	<0.5	610.	12.	110	4	210.	0.5	<4	300	
205915	20-39.929	- 97.743	-3-03-	1.8	570	<0.5	100.	2.8	15	<2	20.	0.3	5	270	
205916	20-39.973	- 97.739	-3-03-	<0.20	290	1.5	45.	3.7	11	<2	11.	0.5	7	120	
205917	20-39.962	- 97.687	-3-03-	1.6	450	<0.5	65.	3.1	20	2	19.	0.5	7	260	
205919	20-39.941	- 97.672	-3-03-	0.23	560	<0.5	68.	2.6	21	<2	20.	0.7	<4	200	
205920	20-39.896	- 97.672	-3-03-	3.0	1300	0.9	160.	9.7	97	<2	74.	0.2	9	200	
205924	20-39.990	- 97.612	-3-03-	<0.20	510	0.9	47.	3.7	20	<2	27.	1.3	9	260	
205925	20-39.883	- 97.615	-3-03-	77.	5500	1.3	530.	16.	60	120	230.	2.0	<4	430	
205929	20-39.834	- 96.704	-3-03-	2.3	1900	<0.5	170.	2.5	47	3	83.	0.2	<4	330	
205931	20-39.794	- 96.732	-3-03-	4.5	1700	<0.5	200.	2.0	40	2	51.	0.4	<4	330	
205932	20-39.760	- 96.732	-3-03-	2.2	690	<0.5	41.	2.0	14	<2	27.	<0.2	<4	320	
205934	20-39.791	- 96.658	-3-03-	2.2	660	<0.5	69.	2.0	10	<2	12.	<0.2	<4	340	
205936	20-39.759	- 96.678	-3-03-	3.4	690	<0.5	62.	1.7	13	<2	13.	<0.2	<4	410	
205937	20-39.801	- 96.597	-3-03-	3.1	710	0.8	120.	3.8	12	4	20.	0.4	12	420	
206032	20-39.575	- 97.564	-3-03-	11.	820	1.4	85.	8.5	42	<2	69.	0.4	6	390	
206034	20-39.574	- 97.590	-3-03-	5.8	820	4.7	87.	10.	35	<2	70.	0.5	<4	390	
206038	20-39.510	- 97.495	-3-03-	2.4	1100	1.5	99.	3.7	29	<2	84.	<0.2	<4	330	
206039	20-39.518	- 97.463	-3-03-	2.0	750	<0.5	98.	4.1	32	4	42.	0.9	<4	300	
206041	20-39.524	- 97.386	-3-03-	0.24	700	<0.5	83.	4.1	16	<2	39.	1.5	<4	140	
206044	20-39.563	- 97.404	-3-03-	2.9	670	1.5	53.	6.4	21	<2	42.	0.3	<4	400	
206047	20-39.566	- 97.447	-3-03-	3.3	580	0.7	50.	4.9	22	<2	39.	<0.2	<4	310	

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - GROUNDWATER															
OF SAMPLE	D. O. E.	SAMPLE	NUMBER	U	SP	AS	CA	K	LI	MN	NA	SE	V	T-AK	
NUMBER	ST	LAT	LONG	L TY REP	(PPB)	UMHGS/CM	(PPB)	(PPM)	(PPM)	(PPB)	(PPB)	(PPM)	(PPB)	(PPB)	
206048	20-39.567	- 97.474	-3-03-	0.64	710	<0.5	84.	3.2	37	<2	54.	0.3	<4	360	
206052	20-39.610	- 97.572	-3-03-	1.0	630	<0.5	56.	2.4	23	<2	66.	<0.2	<4	320	
206059	20-39.613	- 97.625	-3-03-	2.9	870	<0.5	98.	3.5	30	2	53.	1.1	<4	300	
206064	20-39.611	- 97.497	-3-03-	8.1	750	0.9	79.	3.4	18	<2	68.	<0.2	5	400	
206067	20-39.609	- 97.439	-3-03-	4.9	610	0.5	53.	2.9	11	<2	72.	<0.2	<4	300	
206070	20-39.611	- 97.373	-3-03-	0.40	370	<0.5	45.	2.1	20	76	16.	<0.2	<4	200	
206071	20-39.610	- 97.329	-3-03-	1.3	430	1.7	45.	2.7	23	97	22.	<0.2	<4	260	
206076	20-39.595	- 97.274	-3-03-	0.89	450	<0.5	54.	2.6	16	<2	28.	<0.2	<4	230	
206079	20-39.713	- 97.404	-3-03-	3.4	650	<0.5	77.	2.9	17	<2	25.	0.3	<4	320	
206081	20-39.713	- 97.316	-3-03-	30.	1900	<0.5	130.	4.0	31	<2	110.	<0.2	<4	460	
206085	20-39.696	- 97.268	-3-03-	<0.20	480	<0.5	49.	2.9	27	<2	15.	<0.2	<4	310	
206086	20-39.756	- 97.319	-3-03-	16.	810	<0.5	120.	2.9	46	10	24.	0.4	<4	340	
206087	20-39.745	- 97.292	-3-03-	0.67	840	<0.5	98.	4.6	39	<2	15.	<0.2	<4	380	
206088	20-39.663	- 97.274	-3-03-	<0.20	420	<0.5	36.	2.5	15	<2	33.	<0.2	<4	160	
206089	20-39.674	- 97.391	-3-03-	17.	600	<0.5	58.	3.6	34	<2	32.	<0.2	<4	300	
206090	20-39.569	- 97.313	-3-03-	3.5	500	2.0	71.	7.3	23	<2	22.	<0.2	7	150	
206091	20-39.571	- 97.255	-3-03-	12.	2300	<0.5	140.	4.0	43	<2	150.	<0.2	<4	400	
206092	20-39.509	- 97.273	-3-03-	0.47	410	0.9	52.	7.1	20	<2	27.	<0.2	<4	200	
206094	20-39.542	- 97.344	-3-03-	6.3	680	<0.5	44.	5.1	26	<2	78.	0.4	<4	360	
206096	20-39.662	- 97.332	-3-03-	0.95	1000	<0.5	110.	4.5	24	<2	33.	0.3	<4	400	
206101	20-39.596	- 97.205	-3-03-	0.48	680	<0.5	52.	3.2	52	<2	69.	<0.2	<4	300	
206103	20-39.611	- 97.147	-3-03-	9.9	1600	2.5	160.	5.2	46	2	47.	0.5	7	340	
206107	20-39.567	- 97.138	-3-03-	9.8	1000	<0.5	43.	2.6	57	<2	90.	0.3	<4	440	
206110	20-39.525	- 97.219	-3-03-	<0.20	750	0.8	59.	18.	24	<2	19.	0.3	<4	430	
206111	20-39.579	- 97.208	-3-03-	2.8	550	<0.5	63.	2.8	18	2	30.	<0.2	<4	240	
206112	20-39.712	- 97.098	-3-03-	0.35	1000	<0.5	130.	5.0	10	2	33.	0.2	<4	82	
206113	20-39.712	- 97.139	-3-03-	<0.20	220	<0.5	22.	1.6	9	<2	14.	0.2	<4	110	
206116	20-39.664	- 97.144	-3-03-	<0.20	260	<0.5	26.	1.9	9	<2	17.	0.3	<4	120	
206121	20-39.664	- 97.222	-3-03-	4.8	1200	<0.5	110.	1.7	28	<2	62.	0.5	<4	330	
206126	20-39.692	- 97.220	-3-03-	16.	450	2.4	51.	2.2	22	94	34.	0.4	<4	220	
206127	20-39.739	- 97.191	-3-03-	<0.20	410	<0.5	44.	4.2	35	<2	19.	<0.2	<4	200	
206128	20-39.740	- 97.050	-3-03-	1.4	790	<0.5	82.	2.2	35	<2	44.	<0.2	8	270	
206129	20-39.712	- 97.030	-3-03-	0.20	860	0.5	97.	7.0	39	6	59.	<0.2	<4	170	
206134	20-39.670	- 97.086	-3-03-	0.64	400	<0.5	39.	2.6	10	4	28.	<0.2	<4	84	
206135	20-39.733	- 97.087	-3-03-	<0.20	230	1.9	30.	3.1	8	4	12.	0.2	<4	120	
206137	20-39.741	- 97.147	-3-03-	1.4	500	<0.5	72.	2.6	32	82	21.	0.3	5	200	
206138	20-39.610	- 97.116	-3-03-	3.0	840	<0.5	43.	4.4	59	<2	57.	<0.2	<4	330	
206139	20-39.611	- 97.022	-3-03-	0.41	350	<0.5	36.	1.6	12	<2	26.	0.5	<4	130	
206140	20-39.567	- 97.042	-3-03-	2.3	2300	<0.5	260.	4.6	77	3	39.	0.3	<4	460	
206145	20-39.511	- 97.025	-3-03-	5.1	2000	<0.5	210.	2.3	48	2	56.	0.2	<4	400	
206147	20-39.514	- 97.092	-3-03-	7.1	700	1.8	97.	14.	22	<2	27.	<0.2	5	280	
206150	20-39.566	- 97.071	-3-03-	21.	3500	<0.5	290.	3.8	63	2	150.	0.4	<4	280	
206151	20-39.516	- 97.127	-3-03-	0.21	1000	<0.5	75.	2.2	34	3	81.	<0.2	<4	290	
206152	20-39.654	- 97.045	-3-03-	1.3	750	<0.5	79.	2.2	19	<2	50.	1.4	<4	190	
206153	20-39.741	- 96.972	-3-03-	<0.20	1000	0.7	130.	2.6	27	<2	29.	0.3	<4	300	
206155	20-39.704	- 96.976	-3-03-	0.56	830	<0.5	55.	1.5	28	<2	21.	0.3	<4	400	
206159	20-39.654	- 96.964	-3-03-	1.2	2700	<0.5	480.	1.6	23	12	8.2	<0.2	<4	340	
206160	20-39.652	- 96.919	-3-03-	2.5	1000	0.5	88.	1.9	23	<2	16.	0.8	<4	400	
206162	20-39.711	- 96.906	-3-03-	1.1	670	<0.5	47.	1.4	14	<2	38.	0.3	<4	290	
206163	20-39.748	- 96.920	-3-03-	2.0	510	<0.5	72.	1.6	10	<2	15.	0.3	<4	280	
206164	20-39.611	- 96.974	-3-03-	35.	3700	<0.5	380.	4.3	65	6	210.	1.4	<4	470	
206165	20-39.554	- 96.964	-3-03-	2.3	1400	<0.5	93.	1.7	36	<2	63.	0.4	<4	460	
206168	20-39.525	- 96.961	-3-03-	1.3	2400	<0.5	370.	2.0	52	16	18.	0.5	<4	340	
206170	20-39.610	- 96.265	-3-03-	<0.20	2400	<0.5	200.	2.6	41	2	64.	<0.2	<4	220	
206172	20-39.610	- 96.306	-3-03-	<0.20	1300	<0.5	50.	4.4	49	<2	130.	0.3	<4	340	

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - GROUNDWATER														
OR SAMPLE	D. U. E.	SAMPLE	NUMER	U	SP	AS	CA	K	LI	MN	NA	SE	V	T-AK
NUMBER	ST	LAT	LONG	L TY REP	(PPB)	UMHUS/CM	(PPB)	(PPM)	(PPB)	(PPB)	(PPM)	(PPB)	(PPB)	(PPM)
206174	20-39.568	-96.301	-3-03-	2.5	730	<0.5	56.	0.9	14	<2	23.	<0.2	<4	320
206176	20-39.558	-96.276	-3-03-	5.0	3200	0.7	350.	9.3	170	770	94.	<0.2	<4	290
206177	20-39.530	-96.276	-3-03-	1.3	6800	<0.5	84.	1.0	10	<2	20.	0.3	<4	310
206178	20-39.517	-96.315	-3-03-	2.0	660	<0.5	57.	0.4	8	<2	18.	0.3	<4	360
206179	20-39.512	-96.350	-3-03-	1.0	880	<0.5	81.	1.2	12	<2	45.	<0.2	<4	320
206180	20-39.550	-96.370	-3-03-	2.7	710	<0.5	83.	5.2	10	<2	17.	<0.2	<4	330
206184	20-39.597	-96.492	-3-03-	1.9	850	<0.5	42.	1.1	12	<2	38.	<0.2	<4	380
206185	20-39.595	-96.379	-3-03-	2.3	1300	<0.5	140.	1.2	21	<2	67.	0.3	<4	270
206186	20-39.562	-96.454	-3-03-	2.2	720	<0.5	61.	1.1	11	<2	27.	<0.2	<4	330
206189	20-39.508	-96.475	-3-03-	1.0	1100	<0.5	95.	2.6	39	<2	52.	0.3	<4	230
206191	20-39.562	-96.392	-3-03-	1.7	680	<0.5	110.	1.5	12	<2	14.	<0.2	<4	300
206193	20-39.637	-96.425	-3-03-	1.5	1600	0.7	180.	1.5	27	<2	49.	0.4	<4	340
206194	20-39.566	-96.507	-3-03-	1.9	580	<0.5	52.	1.1	12	<2	18.	<0.2	<4	350
206198	20-39.637	-96.483	-3-03-	2.6	1000	<0.5	150.	2.4	16	<2	15.	0.3	<4	350
206199	20-39.665	-96.416	-3-03-	2.1	620	<0.5	45.	0.9	13	<2	23.	<0.2	<4	340
206201	20-39.746	-96.481	-3-03-	3.5	1800	<0.5	160.	2.9	47	<2	36.	0.2	<4	300
206202	20-39.690	-96.480	-3-03-	4.2	890	1.0	76.	0.9	16	<2	52.	0.4	<4	330
206205	20-39.698	-96.454	-3-03-	<0.20	690	1.7	65.	4.6	43	<2	51.	0.3	<4	330
206208	20-39.706	-96.389	-3-03-	0.52	470	0.9	49.	1.4	16	<2	36.	0.6	<4	200
206211	20-39.744	-96.314	-3-03-	1.3	980	<0.5	54.	3.6	57	<2	140.	0.3	<4	240
206213	20-39.739	-96.388	-3-03-	0.95	760	<0.5	53.	3.4	40	<2	74.	0.2	<4	280
206214	20-39.741	-96.414	-3-03-	1.2	360	1.1	51.	1.5	9	<2	20.	0.2	<4	170
206218	20-39.740	-96.310	-3-03-	3.9	1100	1.1	140.	2.2	23	<2	56.	0.3	<4	300
206221	20-39.712	-96.287	-3-03-	<0.20	450	2.8	51.	2.4	15	33	22.	0.5	<4	250
206224	20-39.711	-96.323	-3-03-	3.0	560	3.8	43.	2.5	19	<2	35.	0.3	<4	300
206227	20-39.916	-96.732	-3-03-	2.9	2800	<0.5	500.	2.5	63	13	50.	0.2	<4	280
206230	20-39.944	-96.726	-3-03-	0.21	960	4.1	110.	2.2	25	<2	45.	0.3	<4	210
206232	20-39.977	-96.717	-3-03-	2.1	2000	1.5	190.	3.7	75	<2	88.	<0.2	<4	270
206233	20-39.973	-96.675	-3-03-	5.5	1000	0.5	100.	2.1	25	7	60.	0.5	7	340
206234	20-39.944	-96.664	-3-03-	1.6	1500	<0.5	220.	2.1	41	3	47.	0.2	<4	280
206237	20-39.887	-96.651	-3-03-	<0.20	1400	1.0	130.	6.2	26	6	36.	0.4	<4	150
206239	20-39.653	-96.269	-3-03-	0.49	1900	<0.5	34.	4.6	49	9	270.	0.4	6	300
206242	20-39.667	-96.305	-3-03-	7.1	700	0.5	55.	1.8	40	<2	78.	0.4	<4	250
206243	20-39.657	-96.392	-3-03-	2.0	910	<0.5	100.	1.2	19	<2	38.	0.3	<4	330
206244	20-39.109	-97.593	-3-03-	<0.20	270	<0.5	27.	1.7	9	9	21.	0.5	<4	130
206246	20-39.093	-97.557	-3-03-	<0.20	420	<0.5	45.	4.8	7	3	16.	0.3	<4	60
206250	20-39.004	-97.592	-3-03-	0.47	260	<0.5	42.	1.7	7	2	4.9	0.2	<4	95
206251	20-39.033	-97.562	-3-03-	0.57	460	<0.5	51.	2.3	12	<2	37.	0.3	<4	170
206254	20-39.066	-97.613	-3-03-	<0.20	290	<0.5	27.	12.	6	11	15.	0.2	<4	85
206258	20-39.109	-97.679	-3-03-	0.64	480	<0.5	53.	3.4	10	2	29.	0.2	<4	160
206260	20-39.115	-97.729	-3-03-	2.1	1600	2.5	130.	9.2	45	1100	130.	0.2	5	410
206262	20-39.070	-97.718	-3-03-	0.22	460	<0.5	41.	3.8	58	25	36.	0.2	<4	70
206263	20-39.016	-97.729	-3-03-	<0.20	310	<0.5	35.	2.0	24	85	10.	<0.2	<4	75
206265	20-39.047	-97.682	-3-03-	8.4	520	0.7	64.	2.7	4	<2	33.	0.4	<4	260
206268	20-39.004	-97.668	-3-03-	8.4	540	<0.5	55.	1.2	10	<2	43.	0.4	<4	230
206269	20-39.082	-97.570	-3-03-	2.9	550	<0.5	54.	0.6	10	<2	70.	0.4	<4	120
206272	20-39.233	-97.722	-3-03-	<0.20	700	<0.5	61.	3.7	52	7	67.	0.6	5	280
206274	20-39.216	-97.738	-3-03-	<0.20	690	<0.5	62.	3.6	52	75	74.	0.4	<4	320
206277	20-39.148	-97.744	-3-03-	8.9	740	0.8	130.	5.1	40	30	16.	0.5	<4	330
206278	20-39.133	-97.671	-3-03-	<0.20	310	<0.5	23.	2.1	12	98	16.	0.3	<4	100
206284	20-39.190	-97.685	-3-03-	0.26	350	0.7	43.	2.6	22	690	21.	0.3	<4	200
206285	20-39.231	-97.667	-3-03-	9.5	2400	0.5	210.	7.4	42	8	150.	1.0	<4	200
206286	20-39.162	-97.610	-3-03-	0.60	450	<0.5	50.	1.7	18	<2	26.	0.5	<4	130
206287	20-39.247	-97.612	-3-03-	0.77	560	<0.5	78.	3.2	27	26	23.	0.5	<4	200
206292	20-39.147	-97.546	-3-03-	<0.20	210	<0.5	19.	1.1	27	6	6.4	0.2	<4	40

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - GROUNDWATER														
OF SAMPLE	D. O. E.	SAMPLE	NUMBER	U	SP	AS	CA	K	LI	AN	NA	SE	V	T-AK
NUMBER	ST	LAT	LONG	LTY REP	(PPB)	UMHOS/CM	(PPB)	(PPM)	(PPB)	(PPB)	(PPM)	(PPB)	(PPB)	(PPM)
206293	20-39.218	-	97.539	-3-03-	<0.20	210	<0.5	21.	2.3	8	2	9.3	0.4	<4
206297	20-39.293	-	96.434	-3-03-	0.39	1300	<0.5	140.	1.2	20	350	47.	0.5	<4
206298	20-39.279	-	96.481	-3-03-	0.41	1900	<0.5	240.	3.5	62	26	34.	0.4	<4
206302	20-39.341	-	96.471	-3-03-	2.3	830	1.0	120.	2.8	13	5	37.	0.2	<4
206303	20-39.382	-	96.352	-3-03-	2.6	640	<0.5	45.	0.7	10	<2	26.	<0.2	<4
206305	20-39.382	-	96.257	-3-03-	5.6	950	<0.5	72.	1.8	25	<2	23.	<0.2	<4
206306	20-39.441	-	96.260	-3-03-	2.7	700	<0.5	61.	1.5	12	<2	14.	0.2	<4
206307	20-39.456	-	96.315	-3-03-	1.2	470	<0.5	57.	0.8	8	<2	9.6	0.4	<4
206308	20-39.435	-	96.318	-3-03-	3.9	1000	<0.5	110.	1.4	18	<2	32.	0.7	<4
206309	20-39.391	-	96.303	-3-03-	34.	700	<0.5	61.	1.7	19	<2	12.	0.4	<4
206310	20-39.424	-	96.369	-3-03-	2.1	620	1.2	44.	1.6	18	<2	14.	0.3	<4
206311	20-39.466	-	96.381	-3-03-	2.7	700	<0.5	64.	1.5	22	<2	14.	0.4	<4
206312	20-39.474	-	96.425	-3-03-	1.4	550	<0.5	61.	0.8	12	<2	6.4	<0.2	<4
206313	20-39.478	-	96.481	-3-03-	1.5	2300	<0.5	340.	2.2	44	3	45.	0.4	<4
206316	20-39.519	-	96.913	-3-03-	2.4	900	<0.5	84.	1.5	24	<2	30.	0.7	<4
206319	20-39.567	-	96.903	-3-03-	3.8	1200	<0.5	120.	1.6	23	<2	58.	0.4	<4
206323	20-39.609	-	96.901	-3-03-	1.4	670	<0.5	45.	1.6	20	<2	20.	0.3	<4
206324	20-39.712	-	96.863	-3-03-	3.2	1800	<0.5	280.	2.3	41	2	16.	0.2	<4
206325	20-39.740	-	96.866	-3-03-	2.8	900	1.3	88.	1.6	23	<2	26.	0.3	<4
206329	20-39.697	-	96.782	-3-03-	2.1	620	0.5	82.	1.9	12	<2	22.	0.2	<4
206330	20-39.640	-	96.782	-3-03-	1.3	630	<0.5	78.	0.9	10	<2	20.	0.5	<4
206334	20-39.647	-	96.843	-3-03-	0.64	920	<0.5	68.	1.5	29	3	54.	0.6	<4
206337	20-39.749	-	96.786	-3-03-	0.60	1300	0.5	83.	2.5	40	2	68.	0.4	<4
206338	20-39.672	-	96.752	-3-03-	6.6	1100	<0.5	32.	5.6	20	<2	48.	0.4	<4
206342	20-39.607	-	96.783	-3-03-	1.8	1500	<0.5	190.	2.2	23	2	23.	0.5	<4
206343	20-39.600	-	96.862	-3-03-	2.1	960	0.5	14.	1.8	15	<2	61.	0.3	<4
206344	20-39.567	-	96.863	-3-03-	0.94	680	0.6	35.	1.6	25	<2	29.	0.5	<4
206345	20-39.564	-	96.772	-3-03-	0.48	610	<0.5	70.	1.5	21	9	26.	0.3	<4
206346	20-39.594	-	96.750	-3-03-	2.7	730	0.5	95.	0.9	16	2	24.	0.9	<4
206349	20-39.727	-	96.746	-3-03-	5.6	970	0.5	67.	4.4	16	<2	41.	0.4	<4
206350	20-39.521	-	96.783	-3-03-	2.7	580	<0.5	58.	1.3	8	<2	6.6	0.3	<4
206354	20-39.538	-	96.851	-3-03-	1.9	730	<0.5	53.	1.3	17	<2	20.	<0.2	<4
206355	20-39.544	-	96.718	-3-03-	2.1	870	<0.5	79.	1.2	14	<2	17.	<0.2	<4
206356	20-39.518	-	96.717	-3-03-	1.1	900	<0.5	66.	1.4	15	<2	42.	0.3	<4
206357	20-39.508	-	96.699	-3-03-	1.4	890	<0.5	91.	1.4	15	10	32.	<0.2	<4
206362	20-39.560	-	96.697	-3-03-	2.1	560	<0.5	42.	0.9	9	<2	6.1	<0.2	<4
206363	20-39.729	-	96.657	-3-03-	0.90	710	<0.5	53.	1.3	13	<2	40.	0.5	<4
206364	20-39.699	-	96.659	-3-03-	6.9	2100	<0.5	270.	3.1	33	4	37.	0.3	<4
206368	20-39.652	-	96.651	-3-03-	1.8	1600	<0.5	170.	2.7	45	3	33.	<0.2	<4
206371	20-39.595	-	96.673	-3-03-	3.5	1100	<0.5	49.	1.5	12	<2	67.	0.3	<4
206372	20-39.613	-	96.610	-3-03-	3.0	870	<0.5	95.	1.0	15	<2	18.	0.3	<4
206373	20-39.711	-	96.618	-3-03-	1.9	550	0.5	50.	1.0	15	<2	6.5	0.3	<4
206377	20-39.738	-	96.638	-3-03-	3.9	680	1.3	92.	2.7	15	<2	29.	0.2	<4
206378	20-39.725	-	96.551	-3-03-	3.1	1200	0.7	41.	1.7	35	<2	130.	0.2	<4
206379	20-39.674	-	96.538	-3-03-	1.2	480	<0.5	54.	1.1	10	<2	14.	0.2	<4
206381	20-39.698	-	96.558	-3-03-	3.3	1600	<0.5	120.	1.9	23	2	64.	<0.2	<4
206382	20-39.669	-	96.600	-3-03-	2.2	580	0.5	74.	1.8	16	<2	24.	0.3	<4
206384	20-39.561	-	96.597	-3-03-	1.4	830	<0.5	110.	0.9	12	2	23.	0.4	<4
206386	20-39.623	-	96.561	-3-03-	1.4	520	<0.5	70.	0.9	8	<2	6.4	<0.2	<4
206390	20-39.557	-	96.544	-3-03-	2.0	1000	<0.5	110.	1.1	18	<2	22.	<0.2	<4
206392	20-39.533	-	96.536	-3-03-	2.6	720	0.6	110.	1.1	11	2	11.	<0.2	<4
206394	20-39.518	-	96.615	-3-03-	1.9	810	<0.5	100.	1.1	12	<2	12.	<0.2	<4
206396	20-39.478	-	97.535	-3-03-	16.	570	<0.5	78.	2.7	41	220	25.	<0.2	<4
206397	20-39.442	-	97.554	-3-03-	14.	1000	<0.5	130.	1.8	17	<2	56.	<0.2	<4
206400	20-39.350	-	97.565	-3-03-	6.1	970	<0.5	92.	2.9	23	<2	31.	<0.2	<4

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - GROUNDWATER															
OF SAMPLE	D. U. E.	SAMPLE	NUMER	U	SP	AS	CA	K	LI	MN	NA	SE	V	1-AK	
NUMBER	SI	LAT	LUNG	L TY REP	(PPB)	UMHGS/CM	(PPB)	(PPM)	(PPB)	(PPM)	(PPM)	(PPB)	(PPB)	(PPM)	
206402	20-39.296	-	97.575	-3-03-	1.8	3000	<0.5	200.	10.	280	3000	100.	<0.2	<4	83
206406	20-39.461	-	97.621	-3-03-	5.9	880	<0.5	110.	1.5	11	<2	44.	<0.2	9	360
206407	20-39.434	-	97.611	-3-03-	<0.20	610	<0.5	63.	4.4	38	15	51.	<0.2	5	340
206409	20-39.380	-	97.616	-3-03-	24.	870	<0.5	110.	3.5	24	13	23.	0.4	<4	280
206410	20-39.378	-	97.550	-3-03-	2.2	2600	<0.5	94.	3.0	30	<2	27.	<0.2	<4	240
206411	20-39.335	-	97.617	-3-03-	8.1	1300	0.5	150.	7.1	22	4	43.	0.2	<4	240
206412	20-39.292	-	97.633	-3-03-	1.1	390	<0.5	50.	2.4	23	360	19.	<0.2	<4	170
206413	20-39.293	-	97.676	-3-03-	0.21	890	<0.5	79.	5.8	35	<2	50.	<0.2	<4	320
206417	20-39.298	-	97.739	-3-03-	7.0	990	<0.5	96.	4.6	18	<2	52.	0.3	<4	420
206418	20-39.336	-	97.723	-3-03-	3.6	590	<0.5	81.	3.3	9	<2	16.	0.3	<4	240
206419	20-39.354	-	97.665	-3-03-	0.63	810	<0.5	100.	0.4	28	40	55.	0.3	<4	390
206424	20-39.390	-	97.667	-3-03-	0.46	690	<0.5	67.	5.0	44	<2	44.	<0.2	<4	290
206425	20-39.422	-	97.662	-3-03-	<0.20	600	<0.5	65.	3.2	32	68	44.	<0.2	<4	300
206426	20-39.465	-	97.680	-3-03-	3.5	1200	<0.5	98.	4.3	36	11	66.	0.4	<4	360
206427	20-39.002	-	97.771	-3-03-	0.29	290	<0.5	40.	1.9	18	150	14.	<0.2	<4	170
206431	20-39.027	-	97.875	-3-03-	0.34	310	<0.5	28.	3.3	27	120	23.	<0.2	<4	100
206433	20-39.048	-	97.853	-3-03-	0.37	470	1.1	43.	5.5	22	2	55.	<0.2	<4	110
206434	20-39.118	-	97.796	-3-03-	<0.20	470	<0.5	50.	2.5	31	<2	29.	<0.2	<4	200
206438	20-39.110	-	97.874	-3-03-	1.1	350	<0.5	36.	1.7	8	<2	19.	<0.2	<4	140
206440	20-39.396	-	97.739	-3-03-	3.5	660	<0.5	66.	1.8	24	<2	36.	0.6	<4	360
206441	20-39.422	-	97.741	-3-03-	0.02	650	<0.5	89.	4.9	39	24	36.	0.4	<4	350
206442	20-39.467	-	97.721	-3-03-	0.09	800	<0.5	130.	4.2	68	310	22.	0.5	<4	340
206451	20-39.144	-	97.934	-3-03-	3.7	720	<0.5	80.	2.7	37	<2	51.	0.4	<4	280
206452	20-39.150	-	97.969	-3-03-	0.05	970	<0.5	76.	4.4	69	<2	84.	0.5	<4	350
206453	20-39.189	-	97.985	-3-03-	7.0	680	<0.5	94.	1.4	19	<2	46.	0.4	<4	340
206455	20-39.139	-	97.887	-3-03-	13.	850	<0.5	75.	3.6	34	<2	52.	0.5	4	370
206462	20-39.688	-	96.125	-3-03-	1.4	3500	<0.5	390.	12.	260	6	77.	0.2	<4	290
206463	20-39.675	-	96.127	-3-03-	17.	2800	<0.5	170.	2.1	82	3	89.	0.2	<4	300
206464	20-39.667	-	96.197	-3-03-	3.9	1400	<0.5	110.	2.1	34	2	58.	0.2	<4	310
206465	20-39.698	-	96.183	-3-03-	12.	1800	<0.5	160.	2.2	55	<2	57.	0.8	<4	320
206466	20-39.741	-	96.157	-3-03-	9.9	570	<0.5	46.	1.9	50	<2	51.	1.0	<4	370
206468	20-39.740	-	96.075	-3-03-	8.4	1900	<0.5	220.	1.8	63	3	16.	0.5	<4	340
206469	20-39.739	-	96.037	-3-03-	6.1	1100	<0.5	88.	0.8	26	<2	20.	0.5	<4	320
206471	20-39.697	-	96.067	-3-03-	13.	1300	1.2	95.	1.5	38	<2	26.	0.8	<4	360
206473	20-39.661	-	96.081	-3-03-	15.	1000	<0.5	72.	0.2	26	<2	47.	0.5	8	41
206474	20-39.668	-	96.012	-3-03-	5.2	950	0.7	110.	0.3	19	<2	16.	0.6	<4	350
206479	20-39.613	-	96.200	-3-03-	0.10	940	0.5	63.	3.6	45	<2	65.	0.4	<4	310
206488	20-39.496	-	97.784	-3-03-	8.6	2300	0.7	150.	4.0	27	<2	150.	10.	9	310
206489	20-39.480	-	97.843	-3-03-	23.	2300	<0.5	93.	2.9	52	<2	220.	0.6	8	360
206491	20-39.446	-	97.973	-3-03-	19.	1300	0.8	140.	2.2	23	<2	42.	0.5	8	330
206495	20-39.409	-	97.807	-3-03-	<0.02	690	<0.5	57.	2.9	31	<2	25.	0.2	<4	300
206496	20-39.373	-	97.804	-3-03-	20.	2700	<0.5	170.	6.3	110	2	170.	0.4	<4	280
206497	20-39.326	-	97.799	-3-03-	3.7	870	0.7	84.	3.2	20	<2	49.	0.3	<4	390
206498	20-39.286	-	97.780	-3-03-	1.9	880	<0.5	96.	4.0	22	<2	33.	0.6	<4	290
206499	20-39.285	-	97.854	-3-03-	14.	1400	<0.5	130.	1.6	38	<2	60.	0.3	<4	310
206500	20-39.335	-	97.842	-3-03-	0.50	2400	<0.5	99.	14.	88	<2	140.	0.3	<4	420
206501	20-39.441	-	97.853	-3-03-	4.5	1100	<0.5	86.	2.5	23	<2	20.	0.2	<4	320
206502	20-39.381	-	97.867	-3-03-	5.8	1100	<0.5	69.	3.1	19	<2	29.	0.2	4	310
206503	20-39.463	-	97.985	-3-03-	10.	2500	<0.5	30.	5.1	38	<2	270.	0.4	<4	400
206504	20-39.385	-	97.996	-3-03-	28.	1300	2.3	150.	3.2	29	<2	45.	0.8	10	340
206505	20-39.398	-	97.920	-3-03-	11.	1200	0.7	160.	3.2	19	11	28.	0.6	<4	350
206506	20-39.277	-	97.967	-3-03-	<0.20	1500	<0.5	37.	3.5	56	<2	180.	0.3	<4	500
206507	20-39.336	-	97.965	-3-03-	1.5	1200	<0.5	57.	4.3	37	69	100.	0.3	<4	400
206511	20-39.408	-	97.929	-3-03-	13.	2000	<0.5	130.	2.7	32	<2	56.	0.3	5	390
206512	20-39.354	-	97.930	-3-03-	11.	1600	<0.5	150.	2.4	31	<2	41.	<0.2	<4	320

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - GROUNDWATER												
OF SAMPLE	D. O. E.	SAMPLE	NUMBER	U	SP	AS	CA	K	LI	MN	NA	SE
NUMBER	ST	LAT	LONG	L TY REP	(PPB)	UMHQS/CM	(PPB)	(PPM)	(PPB)	(PPB)	(PPM)	(PPB)
206513	20-39.284	- 97.911	-3-03-	8.0	5400	<0.5	370.	4.5	33	140	240.	<0.2
206515	20-39.196	- 96.436	-3-03-	0.35	410	0.7	51.	1.6	6	<2	15.	<0.2
206520	20-39.239	- 96.336	-3-03-	0.42	480	<0.5	38.	2.0	5	8	19.	0.2
206523	20-39.230	- 96.371	-3-03-	0.55	440	<0.5	37.	1.2	6	<2	18.	<0.2
206524	20-39.192	- 96.302	-3-03-	11.	1000	0.6	84.	0.4	15	<2	8.2	0.4
206525	20-39.145	- 96.305	-3-03-	0.45	1000	<0.5	36.	3.4	20	<2	34.	0.2
206526	20-39.073	- 96.281	-3-03-	1.7	780	<0.5	29.	1.0	11	<2	9.6	0.2
206528	20-39.026	- 96.284	-3-03-	1.6	1200	<0.5	100.	2.7	17	<2	22.	0.2
206529	20-39.014	- 96.303	-3-03-	3.3	2100	<0.5	180.	2.1	30	2	29.	0.3
206531	20-39.067	- 96.349	-3-03-	0.25	4200	<0.5	58.	4.5	47	13	320.	<0.2
206535	20-39.206	- 96.282	-3- -	25.		0.7	120.	12.	14	<2	14.	0.4
206538	20-39.166	- 96.396	-3- -	33.		4.4	100.	12.	22	<2	13.	0.3
206540	20-39.225	- 96.476	-3- -	2.1		<0.5	76.	2.2	14	<2	32.	0.3
206541	20-39.242	- 96.444	-3- -	3.2		<0.5	79.	0.8	6	<2	12.	0.2

APPENDIX B
STREAM SEDIMENT

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APPENDIX B

STREAM SEDIMENT

LIST OF TABLES

<u>No.</u>	<u>Title</u>	<u>Page</u>
B-1	Statistical Summary for Stream Sediment of the Manhattan Quadrangle	B-7
B-2	Correlation Matrix for Stream Sediment of the Manhattan Quadrangle	B-8
B-3	Partial Data Listing for Stream Sediment of the Manhattan Quadrangle	B-40

LIST OF FIGURES

<u>No.</u>	<u>Title</u>	<u>Page</u>
B-1a	Probability, Frequency, and Percentile Plots for Soluble Uranium (ppm) in Stream Sediment of the Manhattan Quadrangle	B-10
B-1b	Geochemical Distribution of Soluble Uranium (ppm) in Stream Sediment of the Manhattan Quadrangle	B-11
B-2a	Probability, Frequency, and Percentile Plots for Uranium by Neutron Activation in Stream Sediment of the Manhattan Quadrangle	B-12
B-2b	Geochemical Distribution of Uranium by Neutron Activation in Stream Sediment of the Manhattan Quadrangle	B-13
B-3a	Probability, Frequency, and Percentile Plots for Uranium Fluorometric/Uranium Neutron Activation in Stream Sediment of the Manhattan Quadrangle	B-14
B-3b	Geochemical Distribution of Uranium Fluoro- metric/Uranium Neutron Activation in Stream Sediment of the Manhattan Quadrangle	B-15

LIST OF FIGURES, Continued

<u>No.</u>	<u>Title</u>	<u>Page</u>
B-4a	Probability, Frequency, and Percentile Plots for Thorium (ppm) in Stream Sediment of the Manhattan Quadrangle	B-16
B-4b	Geochemical Distribution of Thorium (ppm) in Stream Sediment of the Manhattan Quadrangle .	B-17
B-5a	Probability, Frequency, and Percentile Plots for Thorium/Uranium Neutron Activation in Stream Sediment of the Manhattan Quadrangle .	B-18
B-5b	Geochemical Distribution of Thorium/Uranium Neutron Activation in Stream Sediment of the Manhattan Quadrangle	B-19
B-6a	Probability, Frequency, and Percentile Plots for Barium (ppm) in Stream Sediment of the Manhattan Quadrangle	B-20
B-6b	Geochemical Distribution of Barium (ppm) in Stream Sediment of the Manhattan Quadrangle .	B-21
B-7a	Probability, Frequency, and Percentile Plots for Sodium (%) in Stream Sediment of the Manhattan Quadrangle	B-22
B-7b	Geochemical Distribution of Sodium (%) in Stream Sediment of the Manhattan Quadrangle .	B-23
B-8a	Probability, Frequency, and Percentile Plots for Niobium (ppm) in Stream Sediment of the Manhattan Quadrangle	B-24
B-8b	Geochemical Distribution of Niobium (ppm) in Stream Sediment of the Manhattan Quadrangle .	B-25
B-9a	Probability, Frequency, and Percentile Plots for Phosphorus (ppm) in Stream Sediment of the Manhattan Quadrangle	B-26
B-9b	Geochemical Distribution of Phosphorus (ppm) in Stream Sediment of the Manhattan Quadrangle .	B-27
B-10a	Probability, Frequency, and Percentile Plots for Selenium (ppm) in Stream Sediment of the Manhattan Quadrangle	B-28

LIST OF FIGURES, Continued

<u>No.</u>	<u>Title</u>	<u>Page</u>
B-10b	Geochemical Distribution of Selenium (ppm) in Stream Sediment of the Manhattan Quadrangle .	B-29
B-11a	Probability, Frequency, and Percentile Plots for Strontium (ppm) in Stream Sediment of the Manhattan Quadrangle	B-30
B-11b	Geochemical Distribution of Strontium (ppm) in Stream Sediment of the Manhattan Quadrangle .	B-31
B-12a	Probability, Frequency, and Percentile Plots for Titanium (ppm) in Stream Sediment of the Manhattan Quadrangle	B-32
B-12b	Geochemical Distribution of Titanium (ppm) in Stream Sediment of the Manhattan Quadrangle .	B-33
B-13a	Probability, Frequency, and Percentile Plots for Vanadium (ppm) in Stream Sediment of the Manhattan Quadrangle	B-34
B-13b	Geochemical Distribution of Vanadium (ppm) in Stream Sediment of the Manhattan Quadrangle .	B-35
B-14a	Probability, Frequency, and Percentile Plots for Yttrium (ppm) in Stream Sediment of the Manhattan Quadrangle	B-36
B-14b	Geochemical Distribution of Yttrium (ppm) in Stream Sediment of the Manhattan Quadrangle .	B-37
B-15a	Probability, Frequency, and Percentile Plots for Zirconium (ppm) in Stream Sediment of the Manhattan Quadrangle	B-38
B-15b	Geochemical Distribution of Zirconium (ppm) in Stream Sediment of the Manhattan Quadrangle .	B-39

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Table B-1

STATISTICAL SUMMARY FOR STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

NO. SAMPLES ANALYZED		FOLLOW		COEFFICIENT OF							LN TRANSFORMATION			
MEASURABLE DETECTION		DETECTION	MINIMUM	MAXIMUM	MEAN	MEDIAN	MODE	STANDARD	OF	MEAN	S. D.	MEAN	S. D.	
ELEMENT	VALUES	LIMIT	LIMIT	VALUE	VALUE			DEVIATION	VARIATION					
U-FL	713			1.17	7.63	2.47	2.43	2.38	0.519	0.210	0.89	0.19	0.86	0.17
U-NT	703			1.70	20.30	3.54	3.40	3.39	0.960	0.272	1.25	0.16	1.23	0.12
TH	709	4	<2	<2	36	8	8	7	2.9	0.3	2.06	0.36	2.09	0.36
U/TU	702			0.17	1.09	0.71	0.71	0.65	0.123	0.173	-0.36	0.16	-0.35	0.17
TH/U	702			0.29	5.77	2.45	2.50	2.13	0.858	0.349	0.82	0.41	0.85	0.36
AG	3	710	<2	<2	4	2	<2	<2	1.2	0.4	0.92	0.40		
AL	713			1.44	5.84	4.00	4.07	4.20	0.638	0.160	1.37	0.18	1.38	0.18
AS	712			0.3	99999.0	284.1	2.8	2.0	5296.04	18.64	1.08	0.73	1.07	0.44
B	553	160	<10	<10	41	16	13	15	5.2	0.3	2.74	0.29	2.59	0.40
BA	713			133	1211	533	535	540	80.2	0.2	6.27	0.17	6.27	0.15
BE	709	4	<1	<1	7	1	2	1	0.6	0.3	0.46	0.35	0.69	0.24
CA	713			0.14	13.44	1.68	0.96	0.80	1.715	1.020	0.13	0.65	0.11	0.80
CE	710	3	<10	<10	184	50	47	45	16.9	0.3	3.87	0.31	3.87	0.31
CO	711	2	<4	<4	40	11	11	10	4.5	0.4	2.38	0.33	2.37	0.33
CR	713			11	663	33	32	30	27.7	0.8	3.46	0.23	3.45	0.18
CU	713			5	169	14	14	13	8.3	0.6	2.64	0.28	2.63	0.23
FE	713			0.47	7.12	1.36	1.83	1.73	0.411	0.221	0.60	0.19	0.60	0.17
K	713			0.46	2.51	1.46	1.46	1.35	0.271	0.185	0.36	0.19	0.37	0.19
LI	713			6	60	22	21	20	6.0	0.3	3.08	0.27	3.08	0.26
MG	713			0.10	50.00	0.60	0.46	0.37	1.869	3.102	-0.71	0.44	-0.72	0.39
MN	713			140	3633	592	490	425	383.5	0.6	6.25	0.49	6.23	0.46
MO	104	609	<4	<4	35	7	<4	<4	4.6	0.6	1.82	0.48		
NA	713			0.17	1.57	0.67	0.68	0.64	0.142	0.210	-0.42	0.23	-0.41	0.22
NB	713			7	146	14	14	13	5.6	0.4	2.62	0.19	2.62	0.16
NI	713			3	338	18	16	15	17.4	1.0	2.81	0.35	2.80	0.30
P	713			76	1345	423	408	396	120.3	0.3	6.01	0.27	6.01	0.25
SC	713			1	9	5	6	6	0.9	0.2	1.72	0.17	1.72	0.14
SE	712			0.1	99999.0	281.5	0.6	0.6	5296.17	18.81	-0.49	0.72	-0.52	0.30
SR	713			44	3263	165	146	130	141.9	0.9	5.03	0.33	5.01	0.27
TI	713			948	23982	2368	2301	2302	911.6	0.4	7.75	0.18	7.74	0.09
V	713			15	157	59	59	60	12.0	0.2	4.07	0.19	4.07	0.18
Y	713			2	40	15	15	14	2.6	0.2	2.71	0.19	2.71	0.14
ZN	713			21	261	47	46	44	14.7	0.3	3.84	0.24	3.84	0.23
ZR	713			32	548	36	86	86	19.7	0.2	4.45	0.13	4.45	0.09

NOTE: Refer to Table 1, Page 23 and Table C-1, Page C-4 for concentration units and symbol definitions.

Table B-2

CORRELATION MATRIX FOR STREAM SEDIMENT
OF THE MANHATTAN QUADRANGLE

L-U	1.00 (713)											
LUTU	0.62*** (702)	1.00 (702)										
L-TI	0.24*** (713)	-0.32*** (702)	1.00 (713)									
L-ZR	0.45*** (713)	-0.15*** (702)	0.75*** (713)	1.00 (713)								
LUNT	0.45*** (702)	-0.42*** (702)	0.64*** (702)	0.68*** (702)	1.00 (703)							
L-CE	0.11*** (710)	-0.04 (699)	0.27*** (710)	0.18*** (710)	0.16*** (699)	1.00 (710)						
L-MN	-0.00 (713)	0.07* (702)	0.11*** (713)	0.05 (713)	-0.09** (702)	0.29*** (710)	1.00 (713)					
L-TH	0.15*** (709)	0.11*** (698)	0.09** (709)	0.21*** (709)	0.05 (698)	0.31*** (707)	0.19*** (709)	1.00 (709)				
LTUN	-0.04 (702)	0.24*** (702)	-0.15*** (702)	-0.03 (702)	-0.33*** (702)	0.26*** (699)	0.21*** (702)	0.91*** (698)	1.00 (702)			
L-BA	0.13*** (713)	0.12*** (702)	0.17*** (713)	0.13*** (713)	-0.01 (702)	0.30*** (710)	0.24*** (713)	0.17*** (709)	0.25*** (702)	1.00 (713)		
L-NA	0.03 (713)	0.05 (702)	0.07* (713)	0.19*** (713)	0.03 (702)	-0.16*** (710)	-0.12*** (713)	-0.13*** (709)	-0.12*** (702)	0.47*** (713)	1.00 (713)	
L-AL	0.17*** (713)	0.32*** (702)	-0.05 (713)	0.20*** (713)	-0.17*** (702)	-0.08** (710)	0.08** (713)	0.05 (709)	0.13*** (702)	0.39*** (713)	0.44*** (713)	
L-K	-0.02 (713)	0.12*** (702)	-0.09** (713)	0.08** (713)	-0.15*** (702)	-0.23*** (710)	-0.08** (713)	-0.09** (709)	-0.05 (702)	0.23*** (713)	0.64*** (713)	
L-CU	0.15*** (713)	0.23*** (702)	-0.04 (713)	0.10*** (713)	-0.12*** (702)	0.22*** (710)	0.24*** (713)	0.29*** (709)	0.30*** (702)	0.10*** (713)	-0.12*** (713)	
L-NI	0.17*** (713)	0.29*** (702)	-0.10*** (713)	0.05 (713)	-0.16*** (702)	0.08** (710)	0.46*** (713)	0.22*** (709)	0.27*** (702)	0.17*** (713)	-0.10*** (713)	
L-LI	0.11*** (713)	0.36*** (702)	-0.14*** (713)	0.05 (713)	-0.30*** (702)	0.01 (710)	0.25*** (713)	0.01 (709)	0.11*** (702)	-0.06 (713)	-0.02 (713)	
L-MG	0.07* (713)	0.27*** (702)	-0.16*** (713)	0.08** (713)	-0.24*** (702)	0.07* (710)	0.26*** (713)	0.10*** (709)	0.21*** (702)	0.08*** (713)	-0.08*** (713)	
L-F	0.27*** (713)	0.25*** (702)	0.10*** (713)	0.16*** (713)	-0.01 (702)	-0.03 (710)	0.47*** (713)	0.20*** (709)	0.14*** (702)	0.26*** (713)	0.09** (713)	
L-ZN	0.29*** (713)	0.25*** (702)	0.03 (713)	0.26*** (713)	0.02 (702)	-0.08** (710)	0.24*** (713)	0.26*** (709)	0.23*** (702)	0.21*** (713)	0.09** (713)	
L-FE	0.28*** (713)	0.22*** (702)	0.23*** (713)	0.37*** (713)	0.03 (702)	0.22*** (710)	0.51*** (713)	0.24*** (709)	0.23*** (702)	0.17*** (713)	-0.15*** (713)	
L-V	0.47*** (713)	0.27*** (702)	0.27*** (713)	0.43*** (713)	0.21*** (702)	0.08** (710)	0.33*** (713)	0.24*** (709)	0.17*** (702)	0.27*** (713)	0.05 (713)	
L-CA	0.11*** (713)	0.28*** (702)	-0.20*** (713)	-0.05 (713)	-0.18*** (702)	-0.00 (710)	0.33*** (713)	0.09** (709)	0.14*** (702)	-0.05 (713)	-0.13*** (713)	
L-SR	0.08** (713)	0.23*** (702)	-0.13*** (713)	-0.07* (713)	-0.14*** (702)	0.02 (710)	0.19*** (713)	0.05 (709)	0.10*** (702)	0.15*** (713)	0.06 (713)	
L-SE	0.07* (712)	0.03 (701)	0.02 (712)	0.00 (712)	0.04 (701)	-0.02 (709)	0.07* (712)	-0.01 (708)	-0.02 (701)	0.02 (712)	-0.05 (712)	

L-AL												
1.00												
(713)												
0.70***	L-K											
0.69***												
(713)	1.00											
	(713)											
0.41***		L-CU										
0.46***	0.19***											
(713)	0.18***	1.00										
	(713)	(713)										
0.33***			L-NI									
0.30***	0.08**	0.46***										
(713)	0.07*	0.51***	1.00									
	(713)	(713)	(713)									
0.56***	0.41***	0.54***	0.49***									
0.56***	0.40***	0.60***	0.49***	1.00								
(713)	(713)	(713)	(713)	(713)								
0.29***	0.18***	0.36***	0.41***	0.66***								
0.32***	0.15***	0.52***	0.47***	0.75***	1.00							
(713)	(713)	(713)	(713)	(713)	(713)							
0.35***	0.18***	0.32***	0.48***	0.38***	0.36***							
0.34***	0.15***	0.41***	0.55***	0.40***	0.44***							
(713)	(713)	(713)	(713)	(713)	(713)							
0.38***	0.24***	0.41***	0.41***	0.42***	0.41***	0.62***						
0.45***	0.22***	0.53***	0.44***	0.49***	0.56***	0.68***	1.00					
(713)	(713)	(713)	(713)	(713)	(713)	(713)	(713)					
0.38***	0.04	0.46***	0.54***	0.54***	0.38***	0.61***	0.60***					
0.47***	0.14***	0.59***	0.59***	0.64***	0.56***	0.60***	0.67***	1.00				
(713)	(713)	(713)	(713)	(713)	(713)	(713)	(713)	(713)				
0.57***	0.15***	0.44***	0.54***	0.43***	0.26***	0.60***	0.56***	0.77***				
0.62***	0.24***	0.55***	0.61***	0.49***	0.38***	0.58***	0.63***	0.76***	1.00			
(713)	(713)	(713)	(713)	(713)	(713)	(713)	(713)	(713)	(713)			
0.11***	0.05	0.27***	0.42***	0.52***	0.67***	0.42***	0.33***	0.24***	0.26***			
0.11***	0.05	0.35***	0.47***	0.54***	0.75***	0.48***	0.39***	0.35***	0.31***			
(713)	(713)	(713)	(713)	(713)	(713)	(713)	(713)	(713)	(713)			
0.13***	0.10***	0.15***	0.24***	0.31***	0.48***	0.33***	0.18***	0.12***	0.13***			
0.12***	0.07*	0.20***	0.27***	0.32***	0.54***	0.38***	0.25***	0.18***	0.18***	0.70***		
(713)	(713)	(713)	(713)	(713)	(713)	(713)	(713)	(713)	(713)	(713)	1.00	
										(713)	(713)	
0.00	-0.08**	0.04	0.07*	0.06	0.07*	0.11***	0.03	0.06	0.10***	0.13***	0.07*	
0.04	-0.06	0.13***	0.17***	0.18***	0.18***	0.17***	0.08**	0.11***	0.17***	0.20***	0.06	1.00
(712)	(712)	(712)	(712)	(712)	(712)	(712)	(712)	(712)	(712)	(712)	(712)	(712)

Figure B-1a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR SOLUBLE URANIUM (PPM)
IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-1b

GEOCHEMICAL DISTRIBUTION OF SOLUBLE URANIUM (PPM) IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-2a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR URANIUM BY NEUTRON ACTIVATION IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-2b

GEOCHEMICAL DISTRIBUTION OF URANIUM BY NEUTRON ACTIVATION (PPM) IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-3a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR URANIUM FLUOROMETRIC/
 URANIUM NEUTRON ACTIVATION IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-3b

GEOCHEMICAL DISTRIBUTION OF URANIUM FLUOROMETRIC/URANIUM NEUTRON ACTIVATION
IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-4a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR THORIUM (PPM)
IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-4b

GEOCHEMICAL DISTRIBUTION OF THORIUM (PPM) IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-5a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR THORIUM/URANIUM NEUTRON ACTIVATION
IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-5b

GEOCHEMICAL DISTRIBUTION OF THORIUM/URANIUM NEUTRON ACTIVATION IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-6a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR BARIUM (PPM)
IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-6b

GEOCHEMICAL DISTRIBUTION OF BARIUM (PPM) IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-7a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR SODIUM (%)
IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-7b

GEOCHEMICAL DISTRIBUTION OF SODIUM (%) IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-8a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR NIOBIUM (PPM)
IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-8b

GEOCHEMICAL DISTRIBUTION OF NIOBIUM (PPM) IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-9a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR PHOSPHORUS (PPM)
IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-9b

GEOCHEMICAL DISTRIBUTION OF PHOSPHORUS (PPM) IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-10a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR SELENIUM (PPM)
IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-10b

GEOCHEMICAL DISTRIBUTION OF SELENIUM (PPM) IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-11a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR STRONTIUM (PPM)
IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-11b

GEOCHEMICAL DISTRIBUTION OF STRONTIUM (PPM) IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-12a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR TITANIUM (PPM)
IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

GEOCHEMICAL DISTRIBUTION OF TITANIUM (PPM) IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-13a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR VANADIUM (PPM)
IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-13b

GEOCHEMICAL DISTRIBUTION OF VANADIUM (PPM) IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-14a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR YTTRIUM (PPM)
IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

B-37

Figure B-14b

GEOCHEMICAL DISTRIBUTION OF YTTRIUM (PPM) IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-15a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR ZIRCONIUM (PPM)
IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Figure B-15b

GEOCHEMICAL DISTRIBUTION OF ZIRCONIUM (PPM) IN STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

Table B-3

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - SEDIMENT															
OR SAMPLE	D. U. E.	SAMPLE	NUMER	U	U-NT	U/TU	TH	AS	CA	LI	SE	SR	TI	V	
NJMBER	ST	LAT	LONG	L TY RLP	(PPM)		(PPM)	(PPM)	(%)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	
203149	20-39.610	- 96.062	-3-12-		1.9	3.4	0.56	9	4.0	1.3	19	0.6	140	2900	67
203150	20-39.609	- 96.066	-3-12-		1.8	2.9	0.63	10	5.1	1.1	18	0.6	130	2000	58
203153	20-39.536	- 96.088	-3-12-		2.0	3.1	0.65	7	4.5	0.79	20	0.5	140	2100	53
203154	20-39.551	- 96.102	-3-12-		2.3	2.8	0.81	7	5.9	10.	17	0.8	250	1600	47
203155	20-39.513	- 96.104	-3-12-		2.4	3.3	0.72	10	6.8	3.9	31	0.6	190	2000	66
203159	20-39.551	- 96.039	-3-12-		2.3	2.9	0.78	10	8.0	4.7	31	0.8	210	2000	70
203162	20-39.515	- 96.151	-3-12-		1.8	2.8	0.64	8	5.4	1.6	24	0.4	150	2000	55
203163	20-39.516	- 96.146	-3-12-		2.1	2.9	0.74	7	5.5	1.6	30	0.4	140	2300	68
203165	20-39.508	- 96.123	-3-12-		2.2	2.9	0.76	11	8.7	1.4	34	0.5	140	2200	73
203167	20-39.511	- 96.189	-3-12-		2.2	3.1	0.71	8	4.3	1.9	26	0.5	150	2100	54
203168	20-39.532	- 96.204	-3-12-		2.6	2.9	0.91	9	4.7	2.7	30	0.7	200	2200	62
203169	20-39.554	- 96.214	-3-12-		2.4	3.2	0.76	10	6.4	1.5	30	1.2	140	2500	65
203170	20-39.547	- 96.183	-3-12-		1.3	1.7	0.76	5	5.1	1.1	15	0.4	160	1200	37
203171	20-39.958	- 96.615	-3-12-		2.1	3.5	0.60	13	3.7	1.3	22	0.6	160	2500	67
203173	20-39.949	- 96.617	-3-12-		2.4	3.2	0.75	10	4.0	0.80	21	0.5	150	2200	65
203175	20-39.977	- 96.594	-3-12-		2.5	3.5	0.71	10	3.3	2.9	24	0.6	150	2300	60
203177	20-39.930	- 96.619	-3-12-		2.9	3.6	0.82	12	4.7	1.2	27	0.5	170	2600	80
203178	20-39.918	- 96.623	-3-12-		2.5	3.3	0.76	8	3.9	2.3	22	0.6	200	2200	61
203182	20-39.971	- 96.539	-3-12-		3.2	3.7	0.87	10	5.8	1.6	22	0.8	140	2400	78
203184	20-39.988	- 96.505	-3-12-		2.0	3.5	0.59	7	4.0	2.4	31	0.6	120	2200	73
203188	20-39.764	- 96.273	-3-12-		2.6	3.2	0.82	13	3.6	0.65	25	0.5	120	2500	76
203189	20-39.772	- 96.283	-3-12-		2.2	3.2	0.68	9	6.2	2.5	23	0.8	170	2200	64
203190	20-39.757	- 96.296	-3-15-		2.4	3.3	0.74	11	3.3	0.52	17	0.4	140	2100	56
203193	20-39.213	- 97.023	-3-15-		2.5	3.2	0.79	11	1.8	0.62	21	0.4	150	2300	55
203194	20-39.185	- 97.021	-3-12-		2.2	3.2	0.67	10	2.2	0.83	27	0.4	130	2300	63
203197	20-39.168	- 97.011	-3-15-		2.7	3.2	0.83	13	2.2	0.86	27	0.4	130	2400	68
203198	20-39.173	- 97.017	-3-12-		2.6	3.3	0.79	10	1.8	1.4	24	0.5	140	2200	55
203201	20-39.247	- 97.061	-3-12-		2.0	3.2	0.63	10	2.1	0.79	24	0.3	130	2200	55
203205	20-39.221	- 97.225	-3-12-		1.9	3.2	0.60	7	4.3	0.58	27	0.6	200	2400	58
203206	20-39.207	- 97.203	-3-15-		2.0	3.5	0.58	10	3.6	0.60	20	0.6	120	2400	50
203208	20-39.193	- 97.201	-3-12-		1.9	3.2	0.60	10	3.6	0.85	24	0.6	150	2400	59
203209	20-39.192	- 97.247	-3-12-		1.9	3.4	0.56	8	3.5	1.1	24	1.1	210	2400	53
203210	20-39.154	- 97.223	-3-12-		2.1	3.1	0.69	7	3.2	0.51	26	0.7	150	2300	56
203212	20-39.133	- 97.186	-3-12-		2.2	3.3	0.66	9	4.0	1.0	27	0.6	150	2300	63
203213	20-39.145	- 97.171	-3-12-		2.3	4.2	0.54	6	3.4	0.64	20	0.6	110	2600	60
203214	20-39.137	- 97.148	-3-12-		2.0	3.5	0.58	7	3.4	1.3	25	0.7	190	2500	58
203217	20-39.098	- 97.120	-3-12-		2.0	3.6	0.55	8	2.8	1.3	24	1.0	110	2300	56
203218	20-39.091	- 97.097	-3-12-		2.5	3.8	0.67	8	2.8	0.76	23	0.9	120	2500	64
203220	20-39.080	- 97.079	-3-12-		2.4	3.5	0.69	11	2.0	0.85	21	0.8	150	2500	57
203221	20-39.068	- 97.112	-3-12-		2.4	3.7	0.65	12	2.9	0.87	26	1.1	120	2400	66
203222	20-39.056	- 97.075	-3-12-		2.5	4.1	0.61	13	2.5	1.5	23	0.9	120	2600	58
203224	20-39.029	- 97.056	-3-12-		2.3	2.9	0.81	15	2.3	1.2	25	1.0	240	2400	57
203226	20-39.018	- 97.056	-3-12-		2.2	3.4	0.65	12	3.1	1.2	23	1.0	130	2300	58
203227	20-39.003	- 97.056	-3-12-		2.3	3.3	0.69	8	2.6	1.0	26	1.4	130	2400	59
203229	20-39.011	- 97.026	-3-12-		2.6	3.3	0.78	7	2.7	1.5	29	1.1	210	2300	63
203230	20-39.003	- 97.008	-3-12-		1.9	3.0	0.63	10	2.0	0.61	18	0.7	110	2200	56
203231	20-39.047	- 97.041	-3-12-		2.4	3.3	0.72	10	3.1	1.4	30	0.9	120	2400	70
203232	20-39.054	- 97.047	-3-12-		3.2	4.4	0.72	11	2.1	0.83	22	0.8	130	2600	56
203235	20-39.121	- 97.139	-3-12-		1.8	3.5	0.51	5	2.6	0.97	19	0.9	120	2300	49
203237	20-39.096	- 97.139	-3-12-		2.1	3.3	0.64	10	2.6	1.4	25	0.9	130	2300	55
203238	20-39.116	- 97.168	-3-12-		2.2	3.5	0.62	12	3.1	2.0	30	0.8	130	2400	61
203247	20-39.353	- 95.981	-3-12-		2.6	3.3	0.85	13	4.0	1.5	25	0.9	140	2500	64
203248	20-39.353	- 96.979	-3-12-		2.3	3.6	0.64	11	3.1	0.90	24	0.7	130	2400	59
203250	20-39.322	- 96.935	-3-15-		2.6	3.6	0.73	9	7.0	2.2	25	0.6	130	2400	76
203251	20-39.316	- 96.945	-3-15-		2.5	3.4	0.73	8	3.8	0.73	24	0.8	120	2400	66

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - SEDIMENT														
OR SAMPLE	D. O. E.	SAMPLE	NUMBER	U	U-NT	U/TU	TH	AS	CA	LI	SE	SR	TI	V
NUMBER	ST	LAT	LONG	L TY REP	(PPM)		(PPM)	(PPM)	(%)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)
203256	20-39.300	-96.342	-3-12-		2.2	3.3	0.67	11	2.5	0.99	26	0.6	130	2400
203257	20-39.286	-96.819	-3-12-		3.5	3.6	0.97	10	3.3	1.3	27	0.6	130	2600
203259	20-39.265	-96.783	-3-12-		2.2	3.3	0.68	10	2.6	0.92	24	0.7	130	2200
203261	20-39.328	-96.776	-3-12-		2.1	3.4	0.63	10	1.6	2.1	27	0.8	220	2400
203262	20-39.336	-96.766	-3-12-		2.2	3.5	0.62	8	2.7	3.5	22	0.8	170	2200
203267	20-39.888	-96.259	-3-12-		2.6	3.6	0.73	7	2.9	1.3	21	0.8	140	2200
203268	20-39.879	-96.259	-3-12-		2.4	3.0	0.82	9	4.3	1.1	22	0.6	200	2500
203270	20-39.409	-97.257	-3-15-		2.1	3.4	0.63	9	2.2	0.47	24	0.5	130	2400
203271	20-39.417	-97.276	-3-12-		2.6	4.1	0.63	5	4.1	0.95	25	1.0	120	2400
203272	20-39.349	-97.314	-3-12-		2.5	3.6	0.68	4	2.6	0.49	27	1.0	120	2400
203273	20-39.289	-97.409	-3-12-		2.9	17.	0.17	6	2.3	0.18	10	1.0	51	9900
203274	20-39.300	-97.401	-3-15-		2.4	3.8	0.63	4	2.7	0.57	22	0.8	110	2400
203276	20-39.320	-97.446	-3-15-		2.3	4.1	0.57	5	4.9	0.51	30	0.7	110	2600
203278	20-39.495	-97.468	-3-15-		2.9	5.5	0.52	6	2.7	0.50	21	0.8	130	2900
203279	20-39.474	-97.479	-3-12-		2.6	5.3	0.49	7	3.3	0.63	26	1.1	130	2500
203280	20-39.264	-97.347	-3-15-		2.0	3.7	0.55	7	2.0	0.26	15	0.7	72	2400
203281	20-39.271	-97.352	-3-15-		2.9	3.9	0.75	4	3.1	0.40	20	0.8	110	2500
203283	20-39.357	-97.314	-3-12-		2.8	3.6	0.79	4	2.1	0.39	19	0.7	110	2300
203284	20-39.349	-97.296	-3-15-		2.8	3.8	0.73	5	3.1	0.49	20	0.7	120	2300
203285	20-39.343	-97.280	-3-12-		2.4	3.7	0.64	2	2.0	0.44	20	0.8	130	2300
203287	20-39.336	-97.432	-3-12-		2.5	3.9	0.65	4	2.4	0.39	19	0.7	100	2400
203288	20-39.339	-97.427	-3-12-		2.4	3.5	0.69	5	1.6	0.37	16	0.9	110	2200
203290	20-39.493	-97.284	-3-12-		2.2	3.6	0.60	4	1.8	0.52	19	0.7	150	2300
203291	20-39.492	-97.284	-3-15-		2.9	3.9	0.75	5	1.9	0.56	17	0.7	160	2400
203293	20-39.458	-97.426	-3-12-		2.1	4.1	0.52	5	3.1	0.39	16	1.1	100	2500
203294	20-39.454	-97.388	-3-15-		2.7	4.6	0.58	3	3.3	0.45	20	0.9	120	3000
203295	20-39.467	-97.327	-3-15-		2.2	3.4	0.65	5	2.6	0.58	20	0.8	150	2300
203299	20-39.423	-97.416	-3-12-		2.1	4.0	0.51	3	2.8	0.48	21	0.7	120	2500
203307	20-39.427	-97.425	-3-12-		2.2	3.9	0.56	6	4.3	0.46	20	1.0	120	2400
203308	20-39.446	-97.400	-3-12-		2.0	3.7	0.53	6	2.0	0.51	21	0.6	130	2300
203310	20-39.021	-96.547	-3-12-		1.9	3.3	0.59	4	1.9	1.7	26	0.6	150	2300
203311	20-39.015	-96.545	-3-15-		2.4	3.0	0.79	7	2.7	4.6	29	0.7	180	2300
203312	20-39.038	-96.594	-3-12-		2.2	3.3	0.66	10	1.2	4.2	21	0.5	230	2100
203314	20-39.124	-96.565	-3-12-		2.2	2.8	0.80	11	1.5	5.7	23	0.5	470	2000
203320	20-39.089	-96.501	-3-12-		2.3	3.2	0.71	10	4.4	3.1	29	0.5	180	2500
203321	20-39.067	-96.501	-3-15-		2.4	3.4	0.72	9	4.4	5.0	31	0.7	160	2000
203323	20-39.205	-96.509	-3-12-		2.3	4.5	0.50	13	2.0	1.8	14	0.8	180	2900
203324	20-39.085	-96.973	-3-15-		3.0	3.5	0.85	9	3.0	1.4	18	0.6	120	2100
203325	20-39.100	-96.979	-3-12-		2.8	3.4	0.82	12	3.3	0.95	24	0.9	110	2400
203335	20-39.103	-96.497	-3-12-		3.1	3.0	1.0	4	2.6	4.4	35	0.9	240	2200
203341	20-39.007	-97.481	-3-15-		2.5	3.7	0.67	11	1.2	0.41	19	0.3	120	2300
203342	20-39.008	-97.499	-3-15-		2.4	3.8	0.64	12	1.6	0.33	14	0.4	100	2400
203344	20-39.031	-97.488	-3-12-		2.6	3.4	0.76	4	2.0	0.55	24	0.9	110	2200
203345	20-39.046	-97.442	-3-15-		2.6	3.4	0.76	11	2.9	0.45	20	0.4	120	2200
203347	20-39.078	-97.446	-3-12-		2.4	3.3	0.74	6	3.2	0.43	22	0.5	100	2300
203350	20-39.245	-97.332	-3-15-		2.3	3.2	0.71	10	2.8	0.40	19	0.5	110	2100
203351	20-39.242	-97.339	-3-12-		2.1	4.1	0.51	6	2.7	0.39	15	0.5	99	2600
203352	20-39.210	-97.365	-3-15-		2.6	3.4	0.75	13	3.4	0.51	18	0.5	110	2300
203355	20-39.162	-97.302	-3-12-		2.2	3.5	0.64	6	3.0	0.44	17	0.6	130	2100
203358	20-39.165	-97.281	-3-12-		2.7	3.3	0.81	9	2.5	0.51	17	0.5	130	2100
203359	20-39.220	-97.290	-3-12-		1.7	3.2	0.53	7	2.9	0.55	16	0.5	150	2000
203361	20-39.206	-97.273	-3-12-		2.2	3.2	0.69	10	3.2	0.98	19	0.6	170	2300
203362	20-39.161	-97.271	-3-12-		1.8	3.0	0.60	7	4.5	1.4	20	0.6	290	2100
203364	20-39.113	-97.465	-3-12-		2.1	3.1	0.69	5	3.7	0.49	22	0.4	110	2100
203366	20-39.111	-97.444	-3-12-		2.4	3.2	0.75	10	2.6	0.55	19	0.6	120	2000

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - SEDIMENT														
UR SAMPLE NUMBER	D. O. E. ST LAT	SAMPLE LONG	NUMBER L TY REP	U (PPM)	U-NT	U/TU	TH (PPM)	AS (PPM)	CA (%)	LI (PPM)	SE (PPM)	SR (PPM)	TI (PPM)	V (PPM)
203358	20-39.214	- 97.399	-3-15-	1.8	3.1	0.47	6	3.1	0.32	14	0.4	75	1700	38
203369	20-39.204	- 97.391	-3-12-	1.6	3.2	0.56	11	3.3	0.35	19	0.5	91	2000	48
203371	20-39.222	- 97.427	-3-12-	2.2	3.4	0.66	7	2.3	0.38	13	0.5	91	2300	43
203374	20-39.144	- 97.446	-3-12-	2.1	3.6	0.58	6	2.5	0.38	14	0.5	100	2000	43
203375	20-39.133	- 97.444	-3-12-	2.2	3.5	0.63	8	4.1	0.49	17	0.6	120	2300	55
203376	20-39.139	- 97.458	-3-12-	1.8	3.5	0.52	7	2.9	0.43	14	0.5	110	2200	44
203378	20-39.386	- 97.238	-3-15-	2.0	3.6	0.55	10	2.8	0.51	13	0.5	140	2200	48
203379	20-39.445	- 97.235	-3-15-	1.9	3.7	0.52	12	2.1	0.58	14	0.4	140	2100	52
203380	20-39.468	- 97.169	-3-15-	2.4	3.3	0.72	10	4.0	0.59	17	0.6	140	2200	62
203381	20-39.468	- 97.162	-3-15-	2.1	3.4	0.63	8	3.5	0.56	17	0.5	130	2200	63
203382	20-39.439	- 97.163	-3-15-	2.1	3.5	0.60	9	2.3	0.52	14	0.4	140	2300	52
203383	20-39.413	- 97.128	-3-15-	2.5	3.7	0.67	11	2.2	0.48	12	0.5	120	2000	42
203384	20-39.065	- 96.798	-3-15-	2.2	4.4	0.53	4	1.9	2.4	22	0.8	220	2400	51
203385	20-39.074	- 96.853	-3-15-	2.3	3.3	0.70	7	1.2	2.0	21	0.7	240	2100	50
203386	20-39.082	- 96.864	-3-12-	2.4	3.1	0.76	8	1.7	5.3	28	0.6	250	2000	54
203387	20-39.236	- 96.775	-3-15-	3.4	3.1	1.1	7	2.3	4.2	33	0.4	110	2200	65
203389	20-39.240	- 96.770	-3-15-	2.1	3.2	0.67	7	2.2	1.9	25	0.5	150	2200	50
203390	20-39.230	- 96.726	-3-12-	2.5	3.3	0.75	7	1.7	2.0	29	0.5	150	2300	63
203391	20-39.225	- 96.707	-3-12-	3.0	3.2	0.94	10	1.5	5.7	31	0.5	170	2200	53
203393	20-39.055	- 96.719	-3-15-	1.9	2.9	0.67	8	2.1	3.2	28	0.5	140	2100	58
203394	20-39.029	- 96.701	-3-15-	2.0	2.9	0.69	4	2.4	0.89	26	0.5	140	2400	64
203395	20-39.009	- 96.677	-3-15-	2.8	3.4	0.82	7	2.3	1.4	29	0.6	130	2300	59
203398	20-39.066	- 96.653	-3-15-	2.7	3.0	0.89	4	1.8	7.8	37	0.5	230	2000	54
203399	20-39.068	- 96.643	-3-12-	2.6	3.1	0.83	4	1.6	3.9	30	0.4	210	2200	57
203400	20-39.029	- 96.787	-3-15-	2.5	3.6	0.71	8	1.7	1.4	23	0.2	160	2400	61
203401	20-39.038	- 96.849	-3-12-	2.8	3.7	0.75	11	1.7	6.1	18	0.4	150	2000	49
203411	20-39.480	- 96.203	-3-12-	2.6	3.1	0.84	9	8.7	2.1	35	0.4	190	2200	75
203413	20-39.496	- 96.223	-3-15-	2.8	3.1	0.90	7	5.4	4.1	36	0.5	210	2200	64
203416	20-39.438	- 96.163	-3-12-	2.9	3.4	0.86	10	9.3	0.88	36	0.5	160	2400	82
203418	20-39.456	- 96.146	-3-12-	2.6	3.2	0.81	6	3.4	1.3	34	0.6	150	2200	63
203419	20-39.438	- 96.148	-3-15-	2.9	3.2	0.90	8	4.3	3.0	34	0.4	210	2400	70
203420	20-39.404	- 96.159	-3-12-	2.1	3.0	0.69	12	3.8	3.9	29	0.7	230	2300	66
203421	20-39.399	- 96.187	-3-12-	3.3	3.3	0.98	8	8.1	2.8	31	0.5	220	2100	71
203423	20-39.369	- 96.239	-3-15-	3.3	3.5	0.95	9	10.	0.74	35	0.5	130	2300	84
203424	20-39.367	- 96.245	-3-12-	2.8	3.1	0.90	12	4.4	1.2	26	0.4	180	2200	65
203426	20-39.348	- 96.218	-3-12-	2.3	3.1	0.75	7	3.3	1.3	29	0.6	150	2400	62
203471	20-39.828	- 97.793	-3-12-	2.5	4.0	0.62	8	2.8	3.3	14	0.7	240	2200	69
203472	20-39.769	- 97.962	-3-12-	2.6	3.8	0.69	11	3.5	1.6	27	0.8	170	2400	79
203473	20-39.786	- 97.953	-3-12-	3.1	4.1	0.75	14	3.6	1.7	36	1.1	160	2400	94
203474	20-39.800	- 97.878	-3-12-	3.5	4.7	0.75	6	3.5	3.6	24	2.1	220	2300	65
203475	20-39.799	- 97.884	-3-12-	2.1	3.3	0.64	11	2.1	0.74	23	0.9	160	2400	66
203476	20-39.767	- 96.851	-3-12-	2.2	3.4	0.65	7	2.5	0.68	26	0.6	150	2400	60
203485	20-39.047	- 97.388	-3-15-	2.4	3.3	0.72	7	1.6	0.51	19	0.5	120	2200	53
203488	20-39.024	- 97.909	-3-15-	2.8	3.4	0.82	42	1.8	0.60	26	0.4	130	2400	56
203489	20-39.022	- 97.929	-3-15-	2.7	3.2	0.85	6	1.9	0.61	21	0.4	130	2300	60
203490	20-39.017	- 97.960	-3-15-	2.5	3.2	0.77	6	1.7	0.72	22	0.4	130	2300	58
203499	20-39.343	- 97.254	-3-15-	2.7	3.3	0.83	5	1.9	0.69	25	0.6	180	2300	54
203501	20-39.366	- 97.302	-3-12-	2.2	3.3	0.65	6	1.7	0.43	18	0.7	110	2100	45
203505	20-39.210	- 97.818	-3-15-	2.7	3.2	0.84	6	1.8	0.47	24	0.5	120	2200	59
203506	20-39.161	- 97.850	-3-15-	2.0	3.1	0.66	8	1.7	0.66	20	0.4	120	2100	54
203507	20-39.262	- 96.564	-3-15-	2.1	3.4	0.63	6	3.2	2.8	30	0.4	180	2300	53
203509	20-39.330	- 96.586	-3-15-	2.1	3.0	0.69	8	3.3	3.3	38	0.6	100	2000	60
203510	20-39.328	- 96.580	-3-15-	2.5	3.4	0.72	7	3.8	1.7	39	0.6	120	2400	64
203513	20-39.369	- 96.610	-3-12-	2.6	3.5	0.73	7	2.3	4.1	29	0.8	160	2200	53
203514	20-39.499	- 96.524	-3-15-	2.4	3.2	0.76	9	4.3	2.2	32	0.6	140	2300	64

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - SEDIMENT															
OR SAMPLE NUMBER	D. O. E. ST	SAMPLE LAT	NUMBER LONG	NUMBER L TY REP	U (PPM)	U-NT	U/TU	TH (PPM)	AS (PPM)	CA (%)	LI (PPM)	SE (PPM)	SH (PPM)	TI (PPM)	V (PPM)
203519	20-39.483	-	96.622	-3-12-	2.5	3.3	0.75	9	2.7	2.5	27	0.6	140	2400	60
203522	20-39.494	-	96.618	-3-15-	2.4	3.1	0.79	7	3.4	2.8	31	0.6	150	2300	60
203524	20-39.277	-	96.648	-3-12-	2.3	3.3	0.70	13	1.9	3.9	26	0.5	170	2200	57
203526	20-39.459	-	96.678	-3-15-	2.0	2.5	0.82	7	2.1	9.4	26	0.6	400	1600	42
203527	20-39.477	-	96.643	-3-15-	2.8	3.2	0.89	8	3.4	3.2	32	0.6	150	2200	57
203529	20-39.396	-	96.669	-3-15-	2.3	3.1	0.76	5	3.0	3.7	29	0.6	220	2100	55
203531	20-39.368	-	96.631	-3-15-	2.5	3.1	0.81	8	3.0	3.5	28	0.4	190	2200	54
203534	20-39.481	-	96.742	-3-12-	2.6	3.3	0.79	9	1.8	2.3	28	0.6	150	2300	61
203535	20-39.472	-	96.727	-3-15-	2.3	3.2	0.71	8	2.0	2.9	32	0.5	140	2300	65
203536	20-39.478	-	96.700	-3-15-	2.5	3.5	0.70	4	2.3	2.4	43	0.4	93	2200	64
203539	20-39.316	-	96.724	-3-12-	2.1	3.1	0.69	7	2.4	5.1	26	0.5	210	2200	60
203540	20-39.374	-	96.727	-3-12-	2.5	2.8	0.89	8	2.1	10.	33	0.9	250	1700	52
203545	20-39.076	-	96.148	-3-15-	2.1	3.4	0.62	6	5.6	0.60	35	0.4	130	2600	72
203546	20-39.047	-	96.150	-3-15-	2.3			8	3.5	3.9	31	0.6	190	2200	65
203547	20-39.022	-	96.146	-3-12-	1.9	3.0	0.65	<2	2.5	4.7	31	0.5	200	2200	59
203549	20-39.012	-	96.130	-3-12-	2.1			4	3.6	5.3	29	0.5	300	2100	60
203552	20-39.067	-	96.197	-3-12-	2.6	3.6	0.71	9	5.0	3.0	31	0.6	160	2200	87
203554	20-39.015	-	96.216	-3-15-	2.9	3.1	0.94	10	3.8	5.3	42	0.8	160	2200	66
203556	20-39.029	-	96.205	-3-12-	2.5	3.3	0.76	11	4.3	1.9	31	0.8	180	2400	73
203557	20-39.063	-	96.039	-3-15-	2.1	3.1	0.69	11	4.4	3.1	23	0.8	260	2300	71
203559	20-39.041	-	96.022	-3-12-	3.0	3.2	0.95	9	4.1	2.5	32	0.8	170	2200	65
203560	20-39.029	-	96.009	-3-12-	1.6	3.2	0.51	7	3.2	1.7	27	0.8	170	2100	62
203562	20-39.118	-	96.038	-3-12-	2.3	3.4	0.68	8	3.3	0.96	26	0.6	150	2600	65
203565	20-39.078	-	96.079	-3-15-	3.3	3.8	0.86	7	3.9	0.48	25	0.6	130	2400	67
203568	20-39.058	-	96.104	-3-12-	2.4	2.8	0.85	5	3.9	4.6	34	0.7	280	2000	54
203569	20-39.066	-	96.239	-3-12-	2.3	3.2	0.71	8	3.0	1.9	26	0.6	150	2400	55
203580	20-39.252	-	96.304	-3-15-	2.9	3.8	1.0	11	4.4	0.66	25	0.6	130	2400	66
203581	20-39.252	-	96.335	-3-12-	2.5	3.1	0.82	5	1.9	0.58	20	0.6	130	2100	50
203583	20-39.289	-	96.339	-3-15-	3.4	3.6	0.91	8	3.9	1.0	31	0.4	140	2300	67
203584	20-39.289	-	96.350	-3-15-	2.1	3.6	0.58	6	3.1	0.62	25	0.4	120	2300	62
203585	20-39.305	-	96.351	-3-12-	3.5	3.6	0.97	10	3.2	2.3	33	0.6	190	2400	73
203587	20-39.292	-	96.279	-3-15-	3.1	3.7	0.84	7	2.5	0.53	22	0.4	130	2300	63
203588	20-39.334	-	96.292	-3-12-	2.7	3.1	0.86	9	2.5	1.8	32	0.5	180	2200	64
203592	20-39.328	-	96.422	-3-12-	2.0	3.5	0.59	5	2.7	4.5	24	0.5	930	2000	50
203593	20-39.396	-	96.409	-3-15-	2.0	3.9	0.52	6	3.3	3.2	33	0.4	160	2100	62
203594	20-39.390	-	96.398	-3-12-	2.2	4.2	0.53	4	2.7	3.8	34	0.5	180	2100	58
203595	20-39.408	-	96.391	-3-12-	1.9	3.4	0.56	2	2.6	4.6	33	0.3	160	2000	57
203596	20-39.428	-	96.398	-3-12-	1.9	3.4	0.57	9	3.2	3.3	34	0.5	180	2400	67
203597	20-39.437	-	96.391	-3-12-	1.8	3.5	0.50	7	2.5	2.6	28	0.4	180	2300	60
203598	20-39.436	-	96.385	-3-12-	2.7	3.1	0.88	<2	2.8	5.4	31	0.7	290	1800	52
203599	20-39.422	-	96.466	-3-15-	2.9	3.6	0.81	10	6.7	1.2	25	2.9	130	2300	58
203600	20-39.379	-	96.440	-3-12-	2.0	3.7	0.54	5	2.6	1.5	24	0.6	190	2300	53
203601	20-39.434	-	96.479	-3-12-	3.0	3.7	0.81	9	3.5	2.9	33	0.4	170	2400	69
203602	20-39.434	-	96.478	-3-12-	2.2	3.5	0.63	9	3.9	2.3	31	0.5	150	2500	72
203605	20-39.343	-	96.204	-3-12-	2.4	3.1	0.77	4	4.8	3.8	38	0.7	200	2300	60
203608	20-39.253	-	96.173	-3-12-	2.4	3.6	0.66	10	2.9	1.2	27	0.7	140	2500	57
203610	20-39.217	-	96.720	-3-15-	2.6	3.2	0.82	7	2.6	6.1	41	0.7	180	2300	61
203611	20-39.221	-	96.700	-3-15-	2.5	3.1	0.80	7	2.8	1.7	28	0.5	140	2500	58
203612	20-39.212	-	96.679	-3-15-	3.0	3.3	0.90	10	2.5	0.57	24	0.5	120	2500	55
203613	20-39.190	-	96.627	-3-15-	3.0	3.1	0.96	8	3.7	0.92	27	0.6	160	2600	67
203614	20-39.119	-	96.708	-3-15-	1.8	3.2	0.58	5	2.0	1.0	19	0.6	160	2200	44
203615	20-39.153	-	96.720	-3-12-	2.7	2.6	0.75	9	2.1	5.5	21	0.6	270	2100	44
203652	20-39.451	-	96.755	-3-12-	2.4	3.1	0.76	9	3.5	3.9	27	0.7	270	2200	60
203653	20-39.478	-	96.794	-3-12-	2.4	3.4	0.70	8	3.0	2.0	24	0.7	140	2500	56
203656	20-39.464	-	96.832	-3-12-	2.9	3.4	0.85	9	3.8	3.5	27	0.6	220	2400	58

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - SEDIMENT										U	U-NT	U/TU	TH	AS	CA	LI	SE	SA	TI	V
OR SAMPLE NUMBER	ST	D. O. E. LAT	LCNG	L TY	REP	U (PPM)	U-NT	U/TU	TH (PPM)	AS (PPM)	CA (%)	LI (PPM)	SE (PPM)	SA (PPM)	TI (PPM)	V (PPM)				
203658	20-39.490	-96.830	-3-12-			2.0	3.2	0.64	8	3.3	2.1	30	0.5	170	2300	63				
203662	20-39.402	-96.813	-3-12-			1.9	3.2	0.61	7	3.3	3.4	29	0.7	200	2200	56				
203663	20-39.489	-96.871	-3-12-			2.3	2.6	0.81	6	2.3	7.2	60	0.5	3300	2100	54				
203664	20-39.435	-96.896	-3-12-			2.3	3.2	0.71	4	3.7	2.1	25	0.9	160	2300	53				
203665	20-39.452	-96.890	-3-15-			1.9	3.3	0.58	3	2.6	1.2	23	0.5	130	2100	48				
203667	20-39.485	-96.968	-3-12-			1.9	3.4	0.56	6	2.8	1.2	25	0.5	140	2200	50				
203668	20-39.487	-96.958	-3-12-			1.9	3.5	0.54	4	4.0	3.1	26	0.6	170	2200	49				
203672	20-39.242	-96.174	-3-12-			1.9	3.3	0.59	4	3.8	1.8	28	0.6	160	2300	58				
203673	20-39.236	-96.160	-3-12-			2.6	3.2	0.80	4	4.5	4.3	30	0.5	220	2300	57				
203675	20-39.222	-96.126	-3-12-			3.2	3.7	0.86	9	3.4	5.1	23	0.6	200	2300	54				
203679	20-39.178	-96.205	-3-12-			2.5	3.5	0.73	5	3.5	0.92	18	0.6	150	2500	46				
203681	20-39.179	-96.156	-3-12-			3.5	5.7	0.61	5	5.2	0.76	21	0.6	140	3800	63				
203682	20-39.172	-96.142	-3-15-			2.5	3.3	0.76	10	3.0	0.74	16	0.6	150	2200	56				
203684	20-39.143	-96.093	-3-12-			2.7	3.4	0.79	13	4.6	0.67	14	0.6	120	2200	55				
203685	20-39.136	-96.088	-3-12-			2.8	3.4	0.81	14	3.2	0.79	17	0.6	140	2300	59				
203687	20-39.137	-96.057	-3-12-			2.8	3.6	0.75	12	6.2	0.70	16	0.6	180	2400	73				
203689	20-39.208	-96.089	-3-15-			2.5	4.1	0.61	11	4.3	2.1	13	0.6	140	2300	56				
203690	20-39.221	-96.113	-3-12-			2.1	3.3	0.63	12	5.6	4.0	23	0.6	230	2200	65				
203691	20-39.203	-96.030	-3-12-			2.5	3.5	0.72	15	6.1	2.9	24	0.5	180	2300	69				
203723	20-39.244	-96.596	-3-12-			2.0	3.7	0.55	10	2.8	3.0	20	0.6	170	2300	53				
203725	20-39.245	-96.565	-3-12-			2.1	3.5	0.60	12	2.9	2.0	17	0.6	180	2300	53				
203726	20-39.172	-96.548	-3-15-			2.3	3.1	0.75	10	2.9	8.3	25	0.6	280	1800	49				
203799	20-39.439	-96.009	-3-12-			2.4	2.9	0.82	9	4.8	2.2	30	0.6	170	2400	67				
203801	20-39.379	-96.053	-3-12-			2.4	3.2	0.76	12	2.8	4.0	32	0.8	220	2200	53				
203803	20-39.368	-96.065	-3-12-			2.6	3.2	0.81	9	5.0	6.7	40	0.7	240	2100	58				
203805	20-39.314	-96.066	-3-12-			2.6	3.5	0.81	11	4.6	2.5	23	0.6	180	2300	52				
203806	20-39.299	-96.053	-3-12-			2.3	2.9	0.79	9	3.7	1.3	32	0.5	140	2300	65				
203807	20-39.292	-96.045	-3-15-			2.4	2.9	0.82	10	4.2	4.0	33	0.6	170	2100	65				
203809	20-39.272	-96.011	-3-12-			2.5	3.2	0.77	14	13.	2.0	28	0.8	200	2200	89				
203810	20-39.274	-96.029	-3-12-			2.2	3.7	0.59	11	2.9	2.0	23	0.5	150	2200	49				
203814	20-39.318	-96.024	-3-12-			2.7	3.4	0.80	8	5.3	3.9	35	0.8	180	2600	70				
205302	20-39.591	-97.926	-3-12-			2.2	3.4	0.65	7	5.8	1.0	24	4.0	180	2400	61				
205305	20-39.595	-97.870	-3-12-			3.6	3.8	1.00	7	2.6	0.67	20	0.5	150	2500	66				
205306	20-39.595	-97.845	-3-12-			2.8	2.8	1.0	6	0.5	0.60	17	0.4	140	2100	60				
205307	20-39.616	-97.847	-3-12-			2.5	3.4	0.72	9	2.5	0.90	23	0.7	170	2300	67				
205308	20-39.611	-97.820	-3-12-			2.8	3.4	0.81	5	1.9	0.64	18	0.4	150	2300	60				
205310	20-39.588	-97.784	-3-12-			2.8	4.5	0.62	4	1.7	0.61	18	0.5	170	2800	57				
205319	20-39.735	-97.831	-3-12-			2.6	3.3	0.78	3	1.8	0.95	20	1.0	170	2300	55				
205320	20-39.605	-97.782	-3-12-			2.0	3.0	0.67	7	1.5	0.87	19	0.5	170	2200	63				
205321	20-39.591	-97.914	-3-12-			2.1	3.4	0.63	6	2.8	0.74	23	0.6	130	2300	78				
205322	20-39.581	-97.895	-3-12-			2.4	3.6	0.67	8	2.6	1.3	19	0.6	140	2400	81				
205325	20-39.541	-97.836	-3-12-			2.3	3.6	0.65	8	2.0	0.83	16	0.6	170	2500	60				
205326	20-39.539	-97.824	-3-12-			3.0	3.7	0.81	8	2.4	1.6	19	0.4	180	2300	64				
205328	20-39.667	-97.801	-3-12-			2.0	3.1	0.65	5	2.7	0.65	21	0.5	170	2200	61				
205331	20-39.735	-97.761	-3-12-			2.5	3.4	0.74	11	2.0	0.80	18	0.4	190	2300	60				
205332	20-39.684	-97.757	-3-12-			2.8	4.0	0.71	12	1.8	1.2	21	0.6	180	2200	62				
205334	20-39.654	-97.884	-3-12-			2.5	3.6	0.70	7	2.0	1.0	23	0.5	170	2300	63				
205335	20-39.675	-97.893	-3-12-			1.9	3.2	0.58	9	2.8	1.6	21	0.7	170	2300	65				
205336	20-39.701	-97.931	-3-15-			2.8	3.8	0.75	11	3.9	0.83	26	0.9	170	2500	79				
205338	20-39.730	-97.931	-3-12-			2.5	3.5	0.82	9	2.7	1.6	21	0.8	200	2300	67				
205341	20-39.746	-97.966	-3-12-			3.5	4.2	0.84	9	2.8	3.9	23	0.8	240	2300	75				
205343	20-39.634	-97.941	-3-15-			2.4	3.5	0.69	7	2.0	0.88	21	0.4	150	2300	65				
205344	20-39.628	-97.960	-3-15-			2.6	3.9	0.68	9	2.4	5.2	17	0.6	260	2100	70				
205346	20-39.682	-97.983	-3-12-			2.3	3.8	0.59	13	2.8	1.2	20	0.7	160	2300	69				
205348	20-39.701	-97.969	-3-12-			3.1	3.8	0.81	7	5.8	2.4	23	0.6	260	2100	61				

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - SEDIMENT														
OR SAMPLE NUMBER	D. C. C. ST LAT	SAMPLE LONG	NJMEER L TY RCP	U (PPM)	U-NT	U/TU	TH (PPM)	AS (PPM)	CA (%)	LI (PPM)	SE (PPM)	SF (PPM)	TI (PPM)	V (PPM)
205349	20-39.713	- 97.952	-3-15-	2.8	3.4	0.81	5	2.4	0.99	19	0.5	190	2100	50
205351	20-39.993	- 97.487	-3-12-	3.5	4.0	0.97	9	2.8	3.9	19	0.6	200	2200	83
205355	20-39.878	- 97.484	-3-12-	2.9	3.7	0.79	7	2.8	2.5	20	0.4	180	2200	65
205356	20-39.880	- 97.453	-3-12-	2.5	3.2	0.78	4	2.2	0.74	24	1.0	120	2300	65
205358	20-39.888	- 97.389	-3-12-	2.3	3.8	0.61	2	2.7	1.4	22	0.6	140	2400	63
205361	20-39.880	- 97.385	-3-12-	2.0	3.5	0.58	11	1.8	0.69	18	0.3	130	2200	57
205366	20-39.930	- 97.286	-3-15-	2.4	3.7	0.64	7	3.8	0.77	20	0.6	120	2300	59
205368	20-39.917	- 97.282	-3-15-	2.5	3.6	0.69	14	3.1	0.47	22	0.3	110	2400	59
205372	20-39.860	- 97.281	-3-12-	2.8	3.5	0.79	15	2.8	0.81	23	0.5	140	2500	73
205373	20-39.852	- 97.293	-3-12-	2.6	3.5	0.73	9	2.5	1.2	16	0.5	120	2100	52
205374	20-39.847	- 97.307	-3-12-	3.3	3.9	0.84	9	4.1	1.2	19	0.7	110	2000	63
205376	20-39.858	- 97.248	-3-12-	2.4	3.8	0.62	14	2.6	0.65	16	0.5	130	2100	53
205377	20-39.835	- 97.345	-3-12-	2.8	3.6	0.77	5	3.7	2.9	18	0.4	160	2000	68
205380	20-39.823	- 97.444	-3-12-	3.9	4.7	0.82	11	3.5	3.8	17	0.6	180	2000	72
205381	20-39.829	- 97.440	-3-12-	2.5	3.4	0.74	9	2.4	1.2	17	0.7	130	2200	54
205382	20-39.823	- 97.436	-3-15-	2.8	4.3	0.66	9	4.8	3.8	21	0.7	180	2300	78
205383	20-39.827	- 97.384	-3-12-	2.5	3.6	0.81	5	4.0	2.1	17	0.5	140	2200	61
205384	20-39.872	- 97.418	-3-12-	3.0	3.9	0.78	11	2.6	1.9	19	0.7	160	2400	61
205386	20-39.869	- 97.493	-3-15-	3.2			8	2.8	6.9	20	0.4	260	1900	110
205393	20-39.861	- 97.230	-3-12-	1.9	3.5	0.55	8	1.8	0.37	16	0.1	87	2400	41
205395	20-39.873	- 97.215	-3-12-	2.2	3.6	0.63	11	1.6	0.58	19	0.3	130	2400	54
205396	20-39.865	- 97.198	-3-12-	2.3	3.4	0.68	9	2.4	0.65	22	0.3	140	2200	59
205397	20-39.842	- 97.164	-3-12-	2.1	3.3	0.63	12	2.6	0.45	21	0.4	120	2200	57
205399	20-39.858	- 97.145	-3-12-	1.8	3.7	0.49	10	3.0	0.49	16	0.3	140	2300	52
205400	20-39.853	- 97.208	-3-12-	2.1	3.3	0.63	13	2.4	0.46	17	0.5	100	2100	52
205403	20-39.827	- 97.146	-3-12-	2.0	3.6	0.72	9	2.1	0.36	27	0.4	88	2500	60
205407	20-39.813	- 97.008	-3-12-	2.3	3.4	0.68	9	1.6	0.96	23	0.3	220	2200	51
205408	20-39.799	- 97.041	-3-12-	1.4	3.4	0.43	8	2.3	0.70	18	0.4	160	2300	56
205409	20-39.770	- 97.050	-3-12-	2.2	3.4	0.65	11	1.8	0.73	24	0.6	140	2300	63
205410	20-39.765	- 97.074	-3-12-	1.6	3.6	0.44	8	1.6	0.14	10	0.5	44	3000	44
205411	20-39.797	- 97.108	-3-12-	2.6	3.7	0.70	8	1.6	0.34	18	0.6	110	2200	49
205412	20-39.809	- 97.070	-3-12-	2.4	5.6	0.43	8	1.6	0.40	16	0.7	100	3200	48
205413	20-39.837	- 97.080	-3-15-	2.7	3.7	0.72	10	2.4	0.42	17	1.0	130	2400	50
205414	20-39.893	- 97.179	-3-12-	2.3	3.7	0.63	11	3.2	0.50	17	0.5	120	2400	61
205415	20-39.887	- 97.185	-3-12-	2.9	3.5	0.84	11	1.5	0.45	18	0.5	120	2500	56
205416	20-39.889	- 97.238	-3-12-	3.0	4.0	0.74	8	1.6	0.64	19	0.4	130	2400	61
205417	20-39.919	- 97.190	-3-12-	1.7	3.8	0.44	9	2.4	0.36	19	0.4	110	2500	56
205418	20-39.919	- 97.148	-3-12-	2.3	3.5	0.65	8	2.6	0.46	19	0.4	120	2400	60
205419	20-39.943	- 97.127	-3-12-	2.4	3.5	0.68	9	1.3	0.34	20	0.4	96	2200	54
205420	20-39.870	- 97.003	-3-15-	2.3	3.8	0.59	8	2.2	0.40	15	0.4	100	2200	45
205422	20-39.846	- 97.010	-3-15-	2.2	3.2	0.69	8	2.5	0.59	17	0.4	120	2100	47
205428	20-39.902	- 97.070	-3-12-	2.4	3.3	0.74	8	3.0	0.34	19	0.3	78	2200	64
205429	20-39.911	- 97.104	-3-15-	3.1	3.9	0.79	12	3.8	0.20	18	0.4	47	2200	89
205430	20-39.898	- 97.039	-3-12-	2.7	3.8	0.71	10	3.4	0.67	21	0.7	130	2300	58
205433	20-39.902	- 97.335	-3-12-	2.9	3.9	0.75	14	2.8	1.2	20	0.5	150	2400	60
205446	20-39.968	- 97.051	-3-12-	3.1	3.0	1.0	6	2.1	0.27	14	0.4	64	2100	37
205447	20-39.953	- 97.049	-3-12-	2.4			8	2.4	0.34	21	0.6	54	2600	54
205448	20-39.943	- 97.027	-3-12-	2.5	3.8	0.67	8	2.5	0.30	15	0.6	94	2700	67
205450	20-39.808	- 96.176	-3-12-	2.7	3.5	0.77	7	1.7	0.69	17	0.6	140	2200	50
205452	20-39.776	- 96.246	-3-12-	2.4	3.5	0.69	7	1.3	0.46	19	0.6	120	2200	55
205453	20-39.766	- 96.246	-3-12-	2.1	3.1	0.68	9	3.6	0.63	16	0.6	140	2200	56
205454	20-39.770	- 96.163	-3-12-	2.4	3.7	0.65	8	2.1	0.48	19	0.5	120	2300	55
205455	20-39.842	- 96.175	-3-12-	2.6	3.6	0.73	9	2.2	0.54	18	0.5	130	2400	56
205456	20-39.842	- 96.250	-3-12-	2.3	4.3	0.55	8	6.2	1.1	17	0.4	150	2600	80
205460	20-39.845	- 96.057	-3-12-	1.9	3.1	0.61	5	3.7	0.74	18	0.4	120	2700	58

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - SEDIMENT														
OR SAMPLE NUMBER	D. O. E. ST LAT	SAMPLE LONG	NUMBER L TY REP	U (PPM)	U-NT	U/TU	TH (PPM)	AS (PPM)	CA (%)	LI (PPM)	SE (PPM)	SR (PPM)	TI (PPM)	V (PPM)
205461	20-39.867	-96.053	-3-15-	2.5	3.5	0.71	6	1.6	0.66	18	0.9	130	2500	56
205462	20-39.805	-96.071	-3-12-	2.4	3.5	0.69	6	4.1	1.0	21	0.5	140	2800	59
205463	20-39.872	-96.222	-3-12-	2.5	3.8	0.66	10	6.1	0.57	23	0.6	130	2200	76
205464	20-39.807	-96.243	-3-12-	1.9	3.0	0.63	8	3.4	0.98	21	0.4	140	2100	63
205466	20-39.822	-96.368	-3-12-	1.6	3.0	0.54	10	5.8	2.8	17	0.5	180	2500	58
205467	20-39.802	-96.362	-3-15-	2.4	3.8	0.64	8	4.0	0.49	21	0.6	120	2400	70
205470	20-39.753	-96.050	-3-12-	2.6	3.3	0.80	9	*****	5.8	19	*****	190	2700	68
205471	20-39.754	-96.027	-3-12-	2.3	2.6	0.87	15	12.	0.95	25	0.7	130	2000	95
205474	20-39.890	-96.090	-3-15-	3.0	3.2	0.94	7	1.3	0.51	19	0.4	120	2300	59
205476	20-39.888	-96.110	-3-12-	1.8	2.9	0.62	9	4.5	0.68	15	0.6	130	2900	63
205477	20-39.885	-96.112	-3-12-	2.1	2.8	0.76	9	2.7	1.4	14	0.5	160	2200	50
205478	20-39.904	-96.048	-3-12-	2.5	3.0	0.83	8	2.6	0.85	20	0.5	130	2400	64
205480	20-39.921	-96.013	-3-12-	2.9	3.2	0.90	8	2.8	0.49	17	0.4	110	2400	53
205482	20-39.978	-96.028	-3-12-	2.8	2.8	0.99	8	4.3	1.2	27	0.8	120	2300	79
205483	20-39.990	-96.039	-3-12-	2.4	3.2	0.74	8	2.7	0.92	21	0.5	120	2400	65
205484	20-39.949	-96.074	-3-12-	2.2	3.7	0.59	6	4.0	1.0	21	0.9	140	2900	64
205486	20-39.969	-96.040	-3-12-	1.6	3.3	0.48	5	4.2	0.86	18	0.8	140	2200	51
205489	20-39.942	-96.086	-3-12-	2.5	3.1	0.80	9	2.9	1.8	30	0.8	140	2300	65
205491	20-39.945	-96.113	-3-12-	2.6	2.9	0.88	11	4.0	2.2	41	0.6	160	2500	75
205493	20-39.949	-96.165	-3-15-	2.5	3.6	0.69	5	8.7	3.3	12	0.9	220	4400	64
205494	20-39.928	-96.203	-3-12-	2.0	3.7	0.53	4	0.7	2.4	20	0.9	170	3100	70
205497	20-39.988	-96.145	-3-12-	2.1	3.3	0.63	5	3.2	0.84	24	0.8	140	2300	62
205498	20-39.980	-96.188	-3-12-	2.0	2.7	0.75	4	3.6	1.9	18	0.8	160	2000	51
205499	20-39.948	-96.246	-3-12-	2.1	4.1	0.50	3	3.9	2.3	20	0.8	200	3800	62
205500	20-39.953	-96.245	-3-12-	2.0	3.5	0.57	4	4.1	3.7	17	0.8	200	3800	55
205503	20-39.923	-96.240	-3-12-	2.6	3.3	0.80	10	11.	4.9	14	0.7	710	2300	64
205506	20-39.945	-96.367	-3-12-	2.5	3.5	0.71	7	5.0	0.86	12	0.5	130	2100	56
205507	20-39.987	-96.259	-3-12-	2.8	2.8	1.0	6	5.2	1.8	17	0.7	150	2400	68
205511	20-39.032	-97.259	-3-12-	2.0	3.4	0.60	8	4.3	1.4	19	0.6	150	2000	57
205512	20-39.036	-97.263	-3-12-	2.1	3.2	0.66	7	3.4	1.1	17	0.5	170	2100	57
205515	20-39.060	-97.299	-3-15-	2.7	2.8	0.96	8	2.3	0.36	20	0.5	140	2100	47
205517	20-39.079	-97.316	-3-15-	2.1	3.5	0.59	8	2.5	0.33	18	0.5	130	2200	46
205518	20-39.002	-97.365	-3-15-	2.3	3.4	0.68	11	*****	1.2	18	*****	190	2100	56
205519	20-39.004	-97.370	-3-12-	2.4	3.2	0.77	7	3.1	0.64	23	0.4	210	2300	50
205520	20-39.014	-97.259	-3-12-	2.4	3.3	0.73	7	3.5	1.2	25	0.7	160	2300	57
205547	20-39.605	-97.651	-3-15-	2.7	3.2	0.83	8	1.8	0.65	12	0.6	160	2300	48
205548	20-39.610	-97.665	-3-15-	2.1	3.4	0.63	9	1.3	0.69	12	0.2	180	2200	49
205549	20-39.610	-97.680	-3-15-	2.2	3.1	0.71	10	1.6	0.64	11	0.4	180	2200	47
205550	20-39.607	-97.686	-3-15-	2.2	3.1	0.70	5	0.9	0.70	12	0.3	180	2200	46
205551	20-39.611	-97.695	-3-15-	2.3	3.5	0.65	10	1.2	0.69	12	0.4	180	2400	54
205552	20-39.579	-97.710	-3-12-	2.5	3.7	0.67	11	0.8	0.69	11	0.3	190	2300	51
205553	20-39.515	-97.722	-3-12-	2.3	4.3	0.53	9	1.2	0.97	11	0.4	160	2800	51
205555	20-39.519	-97.623	-3-12-	3.1	4.3	0.72	8	1.1	0.86	19	0.6	150	2500	46
205556	20-39.517	-97.612	-3-12-	2.8	3.5	0.79	9	1.6	1.1	18	0.6	150	2300	44
205561	20-39.832	-96.596	-3-12-	2.0	4.1	0.50	8	2.4	0.84	15	0.4	150	2900	49
205562	20-39.815	-96.610	-3-12-	3.3	3.8	0.88	8	5.5	4.5	24	0.8	160	2500	64
205564	20-39.822	-96.548	-3-15-	1.9	3.8	0.51	8	2.5	0.92	20	0.5	180	2800	52
205565	20-39.853	-96.538	-3-12-	2.4	3.4	0.72	9	9.5	1.2	22	1.1	160	2300	75
205744	20-39.821	-97.840	-3-12-	2.9	3.6	0.80	9	2.6	1.3	21	0.7	190	2300	68
205745	20-39.847	-97.841	-3-12-	6.2	6.7	0.92	5	6.1	13.	19	1.3	470	1700	160
205748	20-39.932	-97.821	-3-12-	2.9	5.2	0.56	9	1.4	0.85	13	0.3	200	4200	50
205749	20-39.952	-97.837	-3-15-	7.6	20.	0.38	36	1.1	0.79	6	0.4	160	24000	140
205753	20-39.946	-97.785	-3-12-	1.8			4	2.9	1.1	8	0.4	240	4100	50
205754	20-39.902	-97.762	-3-15-	3.1	3.9	0.79	10	4.6	1.3	20	0.7	190	2400	79
205755	20-39.889	-97.781	-3-15-	2.6	3.4	0.75	5	2.6	0.66	19	0.5	180	2300	59

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - SEDIMENT															
OR SAMPLE NUMBER	D. C. E. ST LAT	SAMPLE LONG	NUMBER L TY REP	U (PPM)	U-NT	U/TU	TH (PPM)	AS (PPM)	CA (%)	LI (PPM)	SE (PPM)	SR (PPM)	TI (PPM)	V (PPM)	
205757	20-39.953	- 97.785	-3-12-	1.2			7	1.7	1.8	8	0.4	250	1600	31	
205758	20-39.946	- 97.879	-3-12-	2.7	4.0	0.67	10	2.1	0.93	18	0.4	200	2700	57	
205762	20-39.891	- 97.961	-3-12-	2.6	3.5	0.74	9	3.0	2.8	26	0.5	230	2300	73	
205768	20-39.808	- 97.963	-3-15-	5.6	6.7	0.83	12	4.0	0.96	35	0.8	170	2500	110	
205770	20-39.914	- 97.919	-3-15-	2.2	3.0	0.73	14	2.7	0.94	26	0.5	160	2400	60	
205772	20-39.868	- 96.974	-3-15-	2.0	3.4	0.58	12	3.4	0.52	21	0.6	110	2400	57	
205773	20-39.865	- 96.910	-3-15-	2.8	3.4	0.81	12	4.8	3.6	28	0.3	190	2300	66	
205774	20-39.837	- 96.897	-3-15-	2.8	3.4	0.81	11	3.2	0.90	27	0.5	170	2400	70	
205776	20-39.821	- 96.895	-3-12-	2.4	3.7	0.64	12	3.7	1.3	24	0.6	250	2500	66	
205777	20-39.796	- 96.902	-3-12-	2.1	3.1	0.67	11	2.6	0.96	23	0.5	150	2300	65	
205778	20-39.800	- 96.899	-3-15-	2.4	3.0	0.81	14	4.1	1.1	29	0.8	170	2500	83	
205779	20-39.781	- 96.932	-3-15-	2.7	3.7	0.73	10	6.2	1.6	26	0.4	190	2400	68	
205780	20-39.763	- 96.928	-3-12-	2.3	4.7	0.48	15	5.3	3.6	21	0.7	240	3300	58	
205781	20-39.768	- 96.882	-3-12-	2.9	2.9	0.99	10	2.0	5.8	35	0.8	170	2100	53	
205782	20-39.973	- 96.988	-3-15-	2.0			9	4.5	1.9	17	0.8	120	1800	44	
205784	20-39.983	- 96.954	-3-12-	3.0	3.5	0.87	14	4.0	0.58	19	0.7	140	2300	61	
205789	20-39.943	- 96.936	-3-12-	2.7	4.1	0.67	11	3.6	5.1	29	0.9	290	2300	63	
205789	20-39.915	- 96.976	-3-15-	2.8	3.6	0.77	7	2.8	0.74	23	0.7	130	2300	58	
205791	20-39.905	- 96.995	-3-12-	3.0	3.3	0.91	10	2.7	0.75	22	0.8	140	2300	60	
205793	20-39.906	- 96.947	-3-15-	2.4	3.0	0.80	8	4.0	4.3	32	0.6	510	2100	62	
205795	20-39.944	- 96.832	-3-12-	2.3	3.1	0.74	9	3.1	3.0	30	0.6	270	2400	64	
205796	20-39.959	- 96.815	-3-12-	3.0	4.0	0.76	11	4.1	1.6	23	0.6	180	2400	64	
205797	20-39.959	- 96.799	-3-15-	2.8	4.1	0.68	8	4.3	0.67	20	0.8	140	2800	66	
205798	20-39.962	- 96.772	-3-12-	2.0	3.6	0.57	8	2.1	0.99	18	0.6	180	2200	47	
205799	20-39.945	- 96.770	-3-12-	2.4	3.3	0.72	8	2.4	1.8	18	0.7	220	2200	46	
205802	20-39.802	- 96.871	-3-12-	2.6	3.3	0.78	11	3.6	3.6	31	0.7	200	2300	63	
205803	20-39.862	- 96.872	-3-12-	2.7	3.2	0.85	8	4.0	3.0	34	1.0	230	2300	66	
205806	20-39.800	- 96.787	-3-12-	2.7	3.7	0.72	11	3.2	1.5	27	0.8	120	2600	66	
205807	20-39.791	- 96.789	-3-15-	2.5	3.5	0.72	11	2.5	0.61	19	0.6	130	2300	58	
205808	20-39.787	- 96.782	-3-15-	2.8	3.2	0.89	12	2.5	0.53	18	0.8	140	2300	58	
205809	20-39.757	- 96.825	-3-12-	3.6	4.3	0.83	13	7.3	0.72	26	0.8	140	2600	94	
205810	20-39.754	- 96.831	-3-12-	2.6	3.1	0.83	11	10.	2.6	27	0.8	200	2200	85	
205813	20-39.884	- 96.864	-3-12-	3.0	3.6	0.83	12	4.6	2.9	27	0.7	160	2200	66	
205814	20-39.955	- 96.837	-3-15-	2.6	2.8	0.93	10	2.7	4.4	30	0.7	220	2100	55	
205815	20-39.826	- 96.407	-3-12-	2.7	3.1	0.88	12	4.8	2.6	18	0.8	150	2200	59	
205817	20-39.769	- 96.465	-3-15-	2.2	3.4	0.66	11	2.5	1.4	24	0.8	180	2300	61	
205819	20-39.751	- 96.450	-3-15-	1.8	3.1	0.57	8	2.7	0.91	24	0.7	140	2300	59	
205821	20-39.805	- 96.464	-3-15-	2.4	2.8	0.85	9	3.6	2.9	36	0.6	100	2200	64	
205822	20-39.830	- 96.470	-3-12-	3.2	3.4	0.94	8	5.0	2.1	23	0.6	120	2300	63	
205824	20-39.831	- 96.449	-3-15-	2.6	3.0	0.88	11	6.4	3.0	25	0.6	160	2100	63	
205825	20-39.861	- 96.435	-3-15-	3.3	3.6	0.92	13	7.5	3.7	24	0.7	170	2400	65	
205826	20-39.857	- 96.425	-3-15-	2.9	3.4	0.84	13	4.2	0.78	16	0.5	140	2300	53	
205828	20-39.875	- 96.436	-3-15-	2.9	3.4	0.87	7	3.5	9.5	27	0.8	280	1800	50	
205829	20-39.901	- 96.424	-3-15-	2.5	3.6	0.71	12	5.0	0.91	20	0.5	190	2900	65	
205830	20-39.900	- 96.438	-3-12-	2.6	3.3	0.79	12	6.0	6.9	30	0.6	230	2000	57	
205831	20-39.894	- 96.436	-3-12-	2.3	3.0	0.78	9	5.2	3.7	25	0.4	170	2200	63	
205838	20-39.986	- 96.486	-3-15-	2.0	3.2	0.63	11	4.2	1.0	18	0.5	140	2300	56	
205848	20-39.351	- 97.174	-3-12-	2.3	3.6	0.65	5	4.4	0.69	21	0.6	140	2500	69	
205849	20-39.335	- 97.223	-3-12-	2.1	3.5	0.59	3	2.8	0.56	19	0.6	140	2400	55	
205852	20-39.278	- 97.130	-3-15-	2.7	4.0	0.67	7	3.7	1.2	23	0.6	120	2600	67	
205853	20-39.258	- 97.058	-3-15-	2.6	4.0	0.65	7	2.6	0.55	20	0.4	140	2400	60	
205854	20-39.301	- 97.106	-3-12-	2.4	3.7	0.65	8	2.0	0.68	19	0.5	120	2500	64	
205855	20-39.339	- 97.123	-3-12-	2.5	3.7	0.68	4	2.1	0.52	19	0.6	130	2600	57	
205857	20-39.300	- 97.073	-3-15-	2.5	3.6	0.69	4	1.8	0.66	21	0.5	140	2600	59	
205860	20-39.330	- 97.002	-3-15-	2.6	3.8	0.69	8	3.9	0.89	20	0.6	120	2500	65	

B-48

QUADRANGLE - SEDIMENT

DR SAMPLE NUMBER	D. U. ST	E. LAT	SAMPLE LCNG	NUMBER L TY REP	U (PPM)	U-NT	U/TU	TH (PPM)	AS (PPM)	CA (%)	LI (PPM)	SE (PPM)	SF (PPM)	TI (PPM)	V (PPM)
205863	20-39.320	-97.042	-3-15-	3.2	4.1	0.77	7	1.7	0.59	19	0.4	140	2600	58	
205864	20-39.377	-97.071	-3-15-	2.3	3.6	0.64	6	2.7	0.53	21	0.6	130	2500	61	
205865	20-39.383	-97.070	-3-15-	2.4	3.4	0.69	7	2.2	0.53	21	0.5	140	2400	59	
205867	20-39.389	-97.099	-3-15-	2.3	3.6	0.65	8	2.0	0.51	21	0.6	160	2400	56	
205869	20-39.467	-97.098	-3-12-	2.2	3.2	0.70	6	2.2	2.8	26	0.8	400	2400	59	
205870	20-39.994	-96.431	-3-15-	2.2	3.5	0.62	10	1.1	1.2	20	0.5	150	2700	50	
205872	20-39.467	-97.101	-3-12-	1.7	3.3	0.52	8	0.8	1.0	18	0.4	210	2200	38	
205873	20-39.453	-97.106	-3-15-	2.1			10	1.1	1.0	19	0.5	220	2400	44	
205874	20-39.429	-97.110	-3-12-	2.1	3.4	0.61	8	0.9	0.90	28	0.6	210	2400	47	
205890	20-39.919	-97.652	-3-12-	2.1	3.2	0.66	8	2.8	0.54	25	0.6	130	2300	58	
205891	20-39.922	-97.652	-3-12-	2.5	3.4	0.73	8	0.8	0.57	20	0.4	140	2200	50	
205897	20-39.770	-97.686	-3-12-	2.3	3.7	0.62	9	0.7	1.8	19	0.6	170	2200	55	
205898	20-39.801	-97.743	-3-12-	3.1	4.0	0.77	11	2.4	2.1	18	0.7	180	2400	60	
205899	20-39.804	-97.748	-3-12-	3.0	3.9	0.78	10	2.2	2.5	15	0.9	160	2400	51	
205901	20-39.827	-97.598	-3-12-	2.7	3.9	0.69	8	3.1	3.9	22	0.9	220	2400	87	
205902	20-39.814	-97.583	-3-12-	3.0	3.7	0.81	11	5.2	2.7	22	0.4	190	2300	86	
205903	20-39.799	-97.637	-3-12-	4.6	5.9	0.78	5	3.2	9.4	19	1.1	320	2100	83	
205904	20-39.805	-97.597	-3-12-	2.5	4.0	0.62	5	1.8	2.8	19	0.7	200	2600	66	
205905	20-39.785	-97.580	-3-12-	2.8	4.1	0.68	5	1.8	3.8	23	1.0	200	2300	83	
205906	20-39.763	-97.584	-3-12-	2.4	3.3	0.73	6	4.5	1.7	22	0.8	170	2400	66	
205907	20-39.755	-97.610	-3-15-	2.7	3.3	0.82	8	3.3	1.0	25	0.9	150	2500	74	
205908	20-39.873	-97.612	-3-15-	2.9	3.5	0.82	6	2.8	0.92	23	0.8	160	2300	69	
205909	20-39.986	-97.518	-3-12-	3.0	3.6	0.82	10	4.2	1.7	27	0.7	170	2500	79	
205910	20-39.973	-97.552	-3-12-	2.9	3.8	0.77	8	2.4	0.84	20	0.6	160	2300	57	
205911	20-39.956	-97.596	-3-12-	2.6	3.5	0.74	9	2.6	0.70	20	0.4	160	2400	63	
205912	20-39.757	-97.516	-3-12-	3.1	4.1	0.75	8	3.6	2.9	23	0.7	180	2300	78	
205922	20-39.949	-97.540	-3-15-	4.5	4.5	1.00	9	5.9	9.6	20	0.8	260	1900	120	
205923	20-39.987	-97.540	-3-12-	2.7	3.5	0.77	8	4.0	2.4	21	0.5	180	2300	75	
205926	20-39.834	-96.639	-3-12-	2.8	3.5	0.79	11	4.1	2.0	24	0.7	140	2400	69	
205927	20-39.859	-96.664	-3-12-	2.1	3.1	0.67	10	3.6	1.0	23	0.2	150	2200	65	
205930	20-39.826	-96.695	-3-12-	2.3	3.1	0.75	7	3.4	5.5	33	0.9	200	2000	64	
205933	20-39.789	-96.685	-3-12-	2.3	2.9	0.80	3	2.8	7.8	34	0.7	230	1800	51	
205935	20-39.791	-96.657	-3-12-	1.8	2.8	0.68	6	4.3	3.8	27	0.6	150	2100	64	
205938	20-39.778	-96.502	-3-12-	1.6	3.0	0.54	5	3.5	1.0	20	0.7	160	2300	54	
206026	20-39.670	-97.743	-3-15-	2.1	3.1	0.68	7	0.7	1.1	17	0.2	170	2300	45	
206027	20-39.698	-97.648	-3-15-	2.9	4.0	0.74	9	2.3	0.68	16	0.5	140	2600	49	
206028	20-39.743	-97.666	-3-15-	1.8	3.5	0.53	11	0.6	2.1	18	0.4	160	2300	57	
206030	20-39.610	-97.636	-3-12-	1.4	3.9	0.35	10	0.9	0.67	13	0.5	160	2500	44	
206031	20-39.575	-97.552	-3-15-	3.4	3.6	0.96	9	1.7	0.68	14	0.5	160	2300	41	
206033	20-39.571	-97.574	-3-15-	4.2	4.2	1.0	11	2.0	0.65	17	0.4	150	2600	49	
206035	20-39.573	-97.612	-3-12-	2.3	3.2	0.71	8	0.7	0.67	19	0.4	140	2200	48	
206036	20-39.564	-97.621	-3-15-	2.3	3.6	0.64	5	2.0	0.87	19	0.6	190	2400	57	
206037	20-39.505	-97.529	-3-15-	1.8	3.3	0.56	8	0.5	0.68	18	0.5	120	2300	52	
206040	20-39.520	-97.463	-3-12-	2.5	3.2	0.78	8	1.6	0.45	13	0.5	130	2100	36	
206042	20-39.543	-97.396	-3-12-	1.8	3.1	0.57	6	0.6	0.51	16	0.5	140	2200	41	
206043	20-39.549	-97.383	-3-12-	2.1	3.3	0.64	7	0.8	0.52	14	0.5	140	2200	41	
206046	20-39.552	-97.461	-3-12-	1.7	4.2	0.40	9	0.6	0.52	14	0.5	140	2500	43	
206049	20-39.582	-97.474	-3-12-	2.1	3.6	0.58	7	0.6	0.81	20	0.5	170	2200	38	
206050	20-39.566	-97.440	-3-15-	2.0	3.6	0.57	8	0.4	0.59	16	0.6	150	2300	36	
206051	20-39.610	-97.595	-3-12-	2.3	3.4	0.69	10	1.4	0.64	17	0.5	190	2300	54	
206053	20-39.611	-97.517	-3-12-	1.8	3.6	0.51	9	0.4	0.81	17	0.5	150	2300	37	
206054	20-39.704	-97.535	-3-12-	2.6	3.7	0.69	9	2.2	0.83	17	0.6	160	2500	56	
206055	20-39.727	-97.532	-3-15-	2.8	3.6	0.78	10	2.6	1.4	23	0.7	160	2400	70	
206056	20-39.698	-97.555	-3-12-	1.4	3.2	0.45	11	0.3	0.92	20	0.5	130	2200	46	
206057	20-39.720	-97.596	-3-12-	2.4	3.2	0.74	11	2.5	0.86	23	0.6	150	2400	74	

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - SEDIMENT													U	U-NT	U/TU	TH	AS	CA	LI	SE	SR	TI	V
OR SAMPLE NUMBER	D. O. E. ST	SAMPLE LAT	NUMBER LONG	L TY REP	(PPM)		(PPM)	(PPM)	(%)	(PPM)	(PPM)	(PPM)	(PPM)			(PPM)	(PPM)	(%)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)
206058	20-39.680	-	97.596	-3-12-	2.7	3.4	0.79	9	2.5	0.62	25	0.4	150	2500	79								
206060	20-39.697	-	97.456	-3-12-	2.3	3.8	0.59	8	3.5	1.1	21	0.6	140	2600	64								
206061	20-39.712	-	97.452	-3-12-	2.5	3.0	0.83	10	2.5	0.79	23	0.2	130	2300	71								
206062	20-39.713	-	97.448	-3-12-	2.6	3.5	0.79	9	2.6	1.6	18	0.5	160	2300	62								
206063	20-39.713	-	97.421	-3-12-	2.3	3.3	0.68	9	2.8	1.3	26	0.6	150	2300	73								
206065	20-39.611	-	97.492	-3-15-	3.8	6.6	0.58	11	2.2	0.68	17	0.9	170	3400	58								
206066	20-39.611	-	97.461	-3-15-	2.7	4.2	0.65	8	2.9	0.55	20	0.6	150	2700	65								
206069	20-39.612	-	97.390	-3-12-	3.0	3.1	0.98	14	3.6	0.59	28	0.6	140	2500	86								
206072	20-39.626	-	97.321	-3-12-	2.5	3.2	0.78	8	2.1	0.46	19	0.7	130	2300	56								
206073	20-39.621	-	97.324	-3-12-	2.3	3.8	0.60	13	2.9	0.56	21	0.6	130	2500	65								
206074	20-39.626	-	97.268	-3-12-	2.7	3.4	0.79	9	2.0	0.49	21	0.6	130	2500	62								
206075	20-39.597	-	97.281	-3-12-	2.6	3.6	0.74	10	2.4	0.52	22	0.6	140	2600	65								
206077	20-39.588	-	97.259	-3-15-	3.3	6.3	0.52	12	1.9	0.39	16	0.6	110	3200	52								
206078	20-39.574	-	97.255	-3-12-	3.0	3.8	0.80	8	3.0	0.57	21	0.6	140	2600	65								
206082	20-39.713	-	97.257	-3-12-	3.0	3.6	0.83	7	2.2	0.53	20	0.7	120	2400	56								
206083	20-39.718	-	97.258	-3-12-	3.0	3.5	0.86	12	2.6	0.63	22	0.6	120	2400	66								
206084	20-39.720	-	97.258	-3-12-	2.5	3.3	0.77	9	2.5	0.40	20	0.6	110	2400	56								
206093	20-39.518	-	97.295	-3-12-	2.9	3.6	0.80	8	3.1	0.60	26	0.5	160	2500	69								
206095	20-39.537	-	97.352	-3-12-	2.3	3.6	0.63	5	3.7	0.65	22	0.5	170	2400	64								
206097	20-39.643	-	97.346	-3-12-	3.0	3.4	0.38	6	3.0	0.65	26	0.6	140	2400	72								
206098	20-39.572	-	97.210	-3-15-	2.1	4.2	0.50	11	4.0	0.61	18	0.5	130	2500	57								
206099	20-39.582	-	97.202	-3-12-	2.0	3.5	0.39	6	2.7	0.49	19	0.4	140	2400	57								
206100	20-39.589	-	97.185	-3-12-	3.0	6.0	0.49	11	2.3	0.41	17	0.5	110	3500	52								
206102	20-39.592	-	97.162	-3-12-	2.5	3.6	0.71	8	2.3	0.43	22	0.4	130	2500	64								
206104	20-39.610	-	97.142	-3-12-	2.3	3.6	0.65	5	2.5	0.30	16	0.6	100	2200	45								
206105	20-39.623	-	97.133	-3-12-	2.7	3.4	0.79	9	2.2	0.38	25	0.5	130	2400	63								
206106	20-39.599	-	97.148	-3-12-	2.7	3.5	0.78	3	3.0	0.44	20	0.7	110	2200	45								
206108	20-39.525	-	97.200	-3-12-	2.8	4.2	0.66	5	3.2	0.46	19	0.6	150	2600	55								
206109	20-39.514	-	97.199	-3-12-	2.6	3.6	0.74	7	2.6	0.47	21	0.6	150	2400	56								
206114	20-39.695	-	97.143	-3-15-	2.7	3.2	0.34	9	1.9	0.42	18	0.5	130	2300	50								
206115	20-39.684	-	97.129	-3-12-	1.8			11	2.5	0.25	10	0.6	69	5500	47								
206117	20-39.649	-	97.135	-3-12-	5.0			7	19.	0.26	15	0.8	62	3300	150								
206119	20-39.632	-	97.244	-3-12-	2.7	3.3	0.83	8	2.7	0.36	23	0.4	130	2300	58								
206120	20-39.655	-	97.231	-3-15-	3.2	4.5	0.71	6	3.6	0.43	20	0.7	140	2500	56								
206122	20-39.677	-	97.223	-3-12-	2.7	3.0	0.75	5	3.9	0.38	21	0.6	120	2400	56								
206123	20-39.672	-	97.248	-3-12-	2.6	3.4	0.75	7	2.2	0.40	20	0.4	120	2300	53								
206124	20-39.684	-	97.230	-3-12-	2.6	3.3	0.79	5	2.0	0.37	18	0.6	120	2300	47								
206125	20-39.684	-	97.226	-3-12-	2.7	3.6	0.74	7	2.6	0.39	22	0.6	120	2500	57								
206130	20-39.713	-	97.001	-3-12-	2.5	3.8	0.67	6	3.4	0.49	22	0.6	230	2600	55								
206131	20-39.642	-	97.124	-3-15-	2.8	3.9	0.71	5	2.1	0.27	20	0.5	94	2400	49								
206132	20-39.664	-	97.120	-3-12-	2.6	3.7	0.71	11	2.3	0.31	18	0.5	110	2400	48								
206133	20-39.676	-	97.120	-3-12-	2.7	3.8	0.72	8	3.4	0.30	18	0.7	110	2600	52								
206136	20-39.727	-	97.167	-3-12-	3.0	3.2	0.93	8	1.9	0.40	20	0.5	130	2300	55								
206141	20-39.567	-	97.040	-3-12-	2.6	3.1	0.85	5	6.3	1.2	22	0.6	260	2000	57								
206142	20-39.555	-	97.025	-3-12-	2.5	5.3	0.48	5	2.8	1.0	19	0.4	200	2700	42								
206143	20-39.526	-	97.037	-3-12-	2.6	3.4	0.76	8	3.1	0.57	23	0.5	160	2500	55								
206144	20-39.507	-	97.034	-3-12-	2.9	3.4	0.87	6	2.8	0.77	30	0.5	170	2500	57								
206146	20-39.509	-	97.010	-3-12-	1.9	3.1	0.62	15	3.6	2.0	29	0.7	140	2300	66								
206149	20-39.540	-	97.037	-3-12-	1.8	3.3	0.54	12	2.8	0.59	22	0.9	150	2100	57								
206154	20-39.712	-	96.995	-3-12-	2.6	3.9	0.66	11	3.7	1.1	28	0.9	120	2200	65								
206156	20-39.682	-	96.976	-3-12-	1.9	4.5	0.42	8	2.9	1.1	18	0.8	150	3900	50								
206157	20-39.675	-	96.966	-3-12-	2.4	3.9	0.61	9	2.3	0.83	20	0.8	140	2700	48								
206161	20-39.659	-	96.909	-3-12-	1.7	3.7	0.45	10	2.0	1.2	21	0.9	140	2200	50								
206166	20-39.540	-	96.983	-3-12-	2.4	3.2	0.75	12	3.3	0.94	24	0.7	180	2200	67								
206167	20-39.540	-	96.988	-3-12-	2.5	3.2	0.77	7	4.5	1.8	27	0.9	150	2200	66								

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - SEDIMENT												U	U-NT	U/TU	TH	AS	CA	LI	SE	SF	TI	V
OR SAMPLE NUMBER	D. ST	O. LAT	E. LONG	SAMPLE NUMBER	L TY	REP	(PPM)			(PPM)	(PPM)	(%)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)		
206169	20-39.507	-	96.563	-3-12-			2.4	3.1	0.78	9	2.7	1.3	23	1.1	130	2000	61					
206171	20-39.609	-	96.303	-3-12-			1.9	3.5	0.55	6	4.2	0.87	23	0.5	230	2300	60					
206173	20-39.614	-	96.313	-3-12-			2.0	3.6	0.54	10	3.8	1.2	24	0.3	170	2400	59					
206181	20-39.549	-	96.369	-3-12-			2.5	3.5	0.72	9	4.3	4.4	28	0.4	200	2200	61					
206182	20-39.551	-	96.372	-3-12-			2.3	3.4	0.66	11	3.6	2.1	26	0.5	170	2400	65					
206183	20-39.615	-	96.430	-3-12-			2.2	3.3	0.66	9	4.1	1.1	23	0.3	180	2300	64					
206187	20-39.584	-	96.410	-3-12-			2.1	3.1	0.68	15	5.5	4.3	33	0.5	180	2300	64					
206188	20-39.521	-	96.475	-3-12-			2.1	3.2	0.65	5	3.5	3.3	33	0.4	180	2200	62					
206190	20-39.560	-	96.390	-3-12-			2.7	3.3	0.82	8	4.2	4.6	34	0.5	180	2200	64					
206192	20-39.580	-	96.392	-3-12-			2.2	3.6	0.62	15	3.6	2.0	25	0.5	170	2300	65					
206195	20-39.550	-	96.376	-3-12-			2.3	3.6	0.64	8	3.9	4.3	30	0.4	200	2400	62					
206196	20-39.627	-	96.434	-3-12-			2.6	3.3	0.78	13	3.8	4.8	33	0.4	210	2100	59					
206197	20-39.636	-	96.482	-3-12-			2.5	3.2	0.77	11	3.2	2.5	29	0.3	180	2300	64					
206200	20-39.745	-	96.464	-3-12-			2.6	3.4	0.77	9	3.7	3.0	27	0.6	190	2200	61					
206203	20-39.684	-	96.486	-3-12-			2.0	3.3	0.91	14	3.2	1.5	24	0.4	170	2400	67					
206204	20-39.683	-	96.466	-3-12-			2.7	3.7	0.72	9	1.9	0.72	17	0.4	160	2400	50					
206206	20-39.704	-	96.452	-3-12-			2.2	3.2	0.68	12	3.2	1.3	19	0.3	170	2100	59					
206207	20-39.671	-	96.439	-3-12-			2.8	3.5	0.80	12	3.7	4.6	26	0.5	1500	2000	60					
206209	20-39.699	-	96.385	-3-12-			2.3	3.2	0.72	13	2.1	0.60	21	0.2	140	2200	60					
206210	20-39.727	-	96.404	-3-12-			1.6	2.7	0.60	7	4.0	1.3	15	0.5	180	2000	48					
206215	20-39.728	-	96.362	-3-12-			2.5	3.0	0.85	10	5.5	0.68	20	0.8	150	2100	61					
206216	20-39.739	-	96.320	-3-12-			2.3	3.3	0.71	9	6.0	0.57	21	0.3	120	2300	69					
206217	20-39.741	-	96.305	-3-12-			2.0	3.4	0.87	8	6.0	0.58	19	0.4	130	2200	57					
206219	20-39.741	-	96.283	-3-12-			2.6	3.1	0.85	9	4.5	0.72	17	0.4	130	2300	56					
206220	20-39.705	-	96.255	-3-12-			2.4	2.5	0.58	9	8.4	2.0	16	0.6	160	1800	49					
206222	20-39.710	-	96.284	-3-12-			2.2	3.3	0.65	9	2.8	0.56	13	0.4	160	2000	42					
206223	20-39.710	-	96.303	-3-12-			1.9	2.8	0.69	7	3.2	0.55	13	0.5	150	2000	38					
206225	20-39.698	-	96.349	-3-12-			2.5	3.2	0.79	10	3.2	1.2	21	0.5	290	2400	61					
206226	20-39.898	-	96.696	-3-12-			2.5	3.3	0.77	6	2.8	1.3	24	0.4	170	2300	58					
206228	20-39.917	-	96.733	-3-12-			2.5	3.3	0.75	9	3.8	1.5	24	0.9	200	2400	59					
206229	20-39.944	-	96.748	-3-12-			2.5	3.1	0.79	12	3.4	0.70	17	0.2	160	2000	57					
206231	20-39.965	-	96.715	-3-12-				4.9														
206235	20-39.944	-	96.663	-3-12-			2.5			9	3.5	1.9	19	0.4	230	2000	58					
206236	20-39.924	-	96.634	-3-12-			2.8	3.8	0.73	14	4.5	2.0	17	0.5	210	2400	60					
206238	20-39.899	-	96.629	-3-12-			2.4	3.2	0.74	9	3.2	5.5	17	0.4	250	2000	44					
206240	20-39.625	-	96.296	-3-12-			2.2	3.0	0.73	6	3.0	0.73	14	0.6	150	2100	48					
206241	20-39.639	-	96.318	-3-12-			2.1	2.9	0.71	11	5.5	3.7	22	0.6	270	2100	68					
206245	20-39.111	-	97.555	-3-12-			1.9	3.1	0.62	6	2.0	0.39	15	0.5	94	2200	47					
206247	20-39.033	-	97.556	-3-12-			2.1	4.2	0.50	11	2.1	0.55	16	0.5	120	2500	52					
206248	20-39.033	-	97.536	-3-12-			1.7	3.6	0.48	13	4.4	0.40	16	0.4	100	2300	51					
206249	20-39.018	-	97.559	-3-15-			2.8	3.3	0.84	9	2.3	0.49	15	0.6	120	2000	54					
206252	20-39.060	-	97.601	-3-15-			2.8	5.2	0.53	8	2.0	0.31	12	0.5	90	2700	45					
206253	20-39.061	-	97.620	-3-15-			2.2	3.2	0.70	5	2.2	0.39	17	0.4	110	2000	40					
206256	20-39.084	-	97.624	-3-15-			1.7	4.4	0.39	3		0.30	13		50	2400	30					
206257	20-39.117	-	97.662	-3-12-			2.3	3.6	0.64	10	1.5	0.47	18	0.6	140	2400	54					
206259	20-39.096	-	97.744	-3-15-			2.1	3.5	0.60	7	2.9	0.42	25	0.4	110	2300	62					
206261	20-39.082	-	97.731	-3-15-			2.5	3.3	0.76	6	2.2	0.49	25	0.6	130	2200	61					
206264	20-39.021	-	97.644	-3-15-			1.8	3.3	0.56	9	2.6	0.65	22	0.6	130	2100	52					
206266	20-39.048	-	97.683	-3-15-			1.9	3.2	0.58	12	2.4	0.52	21	0.7	130	2100	50					
206267	20-39.047	-	97.632	-3-15-			2.2	3.4	0.66	15	4.8	0.75	24	0.7	130	2500	93					
206270	20-39.080	-	97.570	-3-15-			2.1	3.9	0.55	9	3.9	0.48	15	0.4	110	2500	50					
206271	20-39.235	-	97.703	-3-15-			2.7	3.6	0.76	11	2.8	0.46	19	0.5	130	2300	60					
206273	20-39.217	-	97.741	-3-15-			2.1	3.4	0.63	9	2.6	0.58	18	0.4	140	2200	56					
206275	20-39.189	-	97.740	-3-15-			2.0	3.2	0.63	6	2.2	0.51	20	0.3	140	2200	60					
206276	20-39.141	-	97.727	-3-15-			2.5	3.3	0.77	14	2.2	0.54	17	0.4	140	2200	57					

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - SEDIMENT															
OR SAMPLE NUMBER	D. O. F. ST LAT	SAMPLE LONG	NUMBER L TY REP	U (PPM)	U-NT	U/TU	TH (PPM)	AS (PPM)	CA (%)	LI (PPM)	SE (PPM)	SR (PPM)	TI (PPM)	V (PPM)	
206279	20-39.140	-97.868	-3-12-	3.4	4.6	0.73	10	1.8	0.53	19	0.3	130	2300	52	
206280	20-39.208	-97.836	-3-12-	2.6	3.3	0.79	7	2.6	0.55	22	0.5	120	2400	58	
206281	20-39.235	-97.839	-3-15-	2.8	3.2	0.86	11	2.2	0.53	20	0.5	130	2200	60	
206282	20-39.221	-97.851	-3-15-	2.3	2.2	0.73	9	2.0	0.54	18	0.6	120	2100	51	
206288	20-39.249	-97.597	-3-15-	2.0	3.3	0.60	11	2.0	0.42	15	0.5	120	2200	50	
206289	20-39.245	-97.578	-3-12-	1.5	2.8	0.54	13	5.5	0.87	22	0.6	110	1900	61	
206290	20-39.198	-97.573	-3-12-	2.1	3.1	0.68	6	2.1	0.36	16	0.4	100	2100	46	
206291	20-39.133	-97.565	-3-12-	2.4	3.8	0.64	14	7.4	0.41	19	0.7	110	2300	71	
206294	20-39.265	-96.392	-3-15-	1.9	3.3	0.58	7	2.0	0.42	19	0.5	130	2800	47	
206295	20-39.267	-96.421	-3-15-	2.7	3.9	0.69	11	1.6	0.40	12	0.6	120	2300	40	
206296	20-39.276	-96.430	-3-12-	2.4	3.2	0.74	15	4.5	3.3	22	0.6	200	2200	61	
206299	20-39.321	-96.468	-3-12-	2.4	3.0	0.79	14	3.9	4.1	22	0.5	230	2200	59	
206300	20-39.357	-96.446	-3-12-	2.1	3.4	0.61	12	3.8	2.8	20	0.6	240	2100	54	
206301	20-39.357	-96.491	-3-12-	2.3	3.6	0.63	12	2.9	1.2	17	0.6	140	2300	54	
206304	20-39.377	-96.281	-3-15-	2.0	2.8	0.71	11	5.9	5.0	25	0.5	520	2100	60	
206315	20-39.506	-96.950	-3-12-	2.7	3.4	0.79	13	3.8	1.7	23	0.8	160	2400	70	
206317	20-39.537	-96.888	-3-12-	2.3	3.4	0.67	10	3.1	3.4	25	0.9	140	2100	58	
206318	20-39.543	-96.913	-3-12-	1.8	3.3	0.56	10	3.0	1.8	24	0.9	160	2200	63	
206320	20-39.564	-96.902	-3-12-	2.1	3.5	0.60	11	2.8	2.1	22	0.8	130	2300	56	
206322	20-39.568	-96.907	-3-12-	2.0	3.4	0.59	13	4.9	1.5	27	1.0	160	2200	72	
206326	20-39.736	-96.816	-3-12-	1.8	3.1	0.59	11	2.2	2.3	22	1.2	200	2200	58	
206327	20-39.721	-96.807	-3-12-	2.3	3.4	0.69	6	2.0	3.6	22	1.0	270	2100	59	
206328	20-39.712	-96.780	-3-15-	2.5	3.3	0.77	11	2.7	0.75	18	0.9	130	2200	62	
206331	20-39.638	-96.817	-3-12-	2.6	3.3	0.78	8	2.8	2.2	20	0.9	180	2200	59	
206332	20-39.663	-96.824	-3-12-	2.5	3.3	0.76	6	2.3	1.5	18	0.8	150	2200	56	
206333	20-39.634	-96.825	-3-12-	2.3	3.1	0.74	8	2.7	5.2	22	0.8	190	2100	59	
206335	20-39.650	-96.863	-3-12-	3.0	5.2	0.58	18	4.3	1.5	18	0.4	150	2800	70	
206336	20-39.639	-96.859	-3-15-	2.7	3.2	0.84	10	2.3	4.2	24	0.8	150	2100	59	
206339	20-39.668	-96.777	-3-12-	3.3	3.1	1.1	9	2.6	2.6	23	1.1	160	2100	68	
206340	20-39.670	-96.728	-3-12-	3.1	3.4	0.91	6	2.1	2.4	17	0.7	120	2000	49	
206341	20-39.658	-96.722	-3-12-	3.1	3.3	0.93	13	3.3	1.8	31	0.7	130	2300	65	
206347	20-39.723	-96.696	-3-12-	3.0	2.8	1.1	15	3.2	7.0	48	0.9	320	1900	60	
206348	20-39.747	-96.694	-3-15-	3.2	3.7	0.86	9	3.9	0.74	22	0.8	150	2300	67	
206351	20-39.523	-96.783	-3-15-	3.0	3.2	0.94	9	3.0	3.8	29	0.8	130	2100	63	
206352	20-39.526	-96.786	-3-12-	2.0	3.2	0.63	13	2.1	4.2	29	0.9	190	2000	53	
206353	20-39.508	-96.776	-3-12-	2.7	3.3	0.82	15	2.3	5.2	29	1.0	250	2100	54	
206359	20-39.531	-96.701	-3-12-	2.1	3.2	0.65	13	3.9	2.1	28	0.7	170	2400	71	
206360	20-39.546	-96.688	-3-12-	2.1	3.3	0.63	9	2.4	3.5	28	0.7	130	2200	59	
206361	20-39.559	-96.701	-3-12-	2.1	3.3	0.64	9	2.8	3.9	30	1.0	200	2100	56	
206365	20-39.680	-96.664	-3-15-	4.1	4.4	0.92	6	2.9	1.1	20	0.6	150	2400	50	
206366	20-39.670	-96.650	-3-15-	2.8	3.2	0.87	4	3.1	1.2	27	0.6	150	2300	61	
206367	20-39.652	-96.634	-3-15-	2.2	3.2	0.67	5	3.8	1.1	26	0.6	140	2300	64	
206369	20-39.559	-96.632	-3-12-	1.9	3.4	0.56	7	2.8	2.1	29	0.6	140	2300	60	
206370	20-39.610	-96.638	-3-12-	2.2	3.6	0.62	5	4.2	1.8	25	0.6	160	2400	61	
206374	20-39.705	-96.620	-3-12-	1.9	3.2	0.59	8	3.2	1.4	27	0.5	140	2400	66	
206375	20-39.717	-96.621	-3-15-	2.2	3.4	0.65	7	2.1	0.38	18	0.5	110	2300	51	
206376	20-39.723	-96.617	-3-12-	2.2	3.3	0.65	6	3.1	0.75	22	0.6	120	2100	54	
206380	20-39.651	-96.535	-3-12-	2.1	3.3	0.64	4	4.0	1.3	23	0.6	160	2200	60	
206383	20-39.679	-96.605	-3-12-	2.5	3.2	0.78	6	2.9	0.90	25	0.7	130	2300	62	
206385	20-39.568	-96.587	-3-12-	2.8	3.1	0.91	7	3.1	3.4	28	0.7	190	2300	57	
206387	20-39.611	-96.520	-3-12-	2.3	2.9	0.79	7	2.5	5.4	31	0.9	220	2100	58	
206388	20-39.576	-96.547	-3-15-	1.8	3.1	0.58	9	3.1	1.6	25	0.5	140	2400	64	
206391	20-39.543	-96.523	-3-12-	2.2	3.2	0.68	9	3.0	4.8	30	0.7	220	2100	56	
206393	20-39.540	-96.566	-3-12-	2.3	3.4	0.69	8	3.0	2.6	26	0.5	170	2300	57	
206395	20-39.487	-97.537	-3-12-	2.5	3.5	0.73	9	2.8	0.79	25	0.6	140	2300	65	

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - SEDIMENT														
OR SAMPLE NUMBER	U. S. E. ST LAT	SAMPLE LONG	NUMBER L TY REP	U (PPM)	U-NT	U/TU	TH (PPM)	AS (PPM)	CA (%)	LI (PPM)	SE (PPM)	SH (PPM)	TI (PPM)	V (PPM)
206398	20-39.351	- 97.568	-3-12-	3.2	3.8	0.85	10	4.1	1.6	23	0.5	140	2300	67
206399	20-39.351	- 97.563	-3-15-	2.2	5.1	0.44	13	2.6	0.80	18	0.7	120	2800	55
206401	20-39.309	- 97.574	-3-12-	2.2	3.4	0.66	11	3.0	0.56	21	0.8	130	2200	59
206403	20-39.279	- 97.552	-3-12-	2.5	3.3	0.75	12	3.1	0.43	28	0.6	110	2400	72
206404	20-39.266	- 97.548	-3-12-	2.7	3.3	0.82	9	2.4	0.46	22	0.4	110	2300	59
206405	20-39.278	- 97.584	-3-12-	2.4	3.2	0.75	10	2.1	0.47	18	0.5	97	2500	58
206414	20-39.255	- 97.740	-3-15-	2.9	3.4	0.86	9	2.7	0.56	23	0.6	140	2300	64
206415	20-39.279	- 97.742	-3-12-	2.2	3.2	0.67	9	2.4	0.56	23	0.9	140	2200	68
206416	20-39.309	- 97.732	-3-15-	2.1	3.7	0.56	7	2.5	0.49	16	1.0	110	2400	50
206420	20-39.352	- 97.659	-3-15-	2.6	4.3	0.60	7	2.2	1.1	21	0.7	130	2500	63
206421	20-39.351	- 97.649	-3-15-	2.7	5.8	0.47	7	2.6	0.88	17	0.7	130	3100	57
206422	20-39.341	- 97.630	-3-15-	3.3	4.9	0.68	6	2.2	0.70	16	1.0	120	2600	50
206423	20-39.307	- 97.636	-3-15-	2.5	3.5	0.71	2	1.8	0.45	18	0.9	130	2300	49
206428	20-39.002	- 97.781	-3-12-	2.4	3.5	0.69	5	1.9	0.47	21	0.9	120	2500	53
206429	20-39.002	- 97.804	-3-15-	2.0	3.5	0.56	6	4.2	0.55	19	0.9	110	2400	54
206430	20-39.006	- 97.844	-3-15-	1.8	2.9	0.62	5	2.4	0.44	16	0.7	98	2200	44
206432	20-39.024	- 97.872	-3-15-	2.5	3.5	0.72	6	4.3	0.51	26	0.9	110	2300	74
206435	20-39.103	- 97.803	-3-15-	2.3	3.6	0.65	4	2.0	0.36	26	0.7	20	2400	62
206436	20-39.104	- 97.839	-3-15-	2.2	3.4	0.64	5	1.9	0.42	22	0.8	110	2200	52
206437	20-39.103	- 97.849	-3-15-	2.3	3.3	0.68	3	3.2	0.40	20	0.8	110	2400	48
206439	20-39.111	- 97.872	-3-15-	2.5	3.4	0.74	<2	1.3	0.44	18	0.7	110	2200	42
206443	20-39.485	- 97.722	-3-12-	2.8	4.1	0.68	5	1.9	0.91	18	0.5	150	2700	60
206444	20-39.495	- 97.741	-3-12-	2.6	3.5	0.73	5	2.3	0.76	20	0.7	140	2600	67
206445	20-39.481	- 97.729	-3-15-	2.2	3.4	0.64	6	2.8	0.82	21	0.8	150	2500	65
206446	20-39.484	- 97.725	-3-12-	2.0	3.9	0.52	6	2.6	0.68	21	0.6	130	2700	67
206447	20-39.162	- 97.879	-3-15-	2.4	3.3	0.72	5	2.4	0.52	21	0.8	130	2500	62
206448	20-39.138	- 97.896	-3-12-	2.3	3.4	0.68	4	1.4	0.43	24	0.5	100	2300	54
206450	20-39.146	- 97.924	-3-12-	2.5	4.7	0.54	7	3.3	0.94	34	0.8	130	2600	56
206454	20-39.184	- 97.942	-3-12-	2.6	3.2	0.82	6	3.2	1.0	28	0.8	130	2400	78
206456	20-39.191	- 97.900	-3-12-	2.4	3.8	0.64	7	2.5	0.50	17	0.9	98	2100	54
206457	20-39.205	- 97.912	-3-12-	2.5	3.3	0.87	6	2.2	0.67	23	0.7	130	2400	62
206458	20-39.696	- 96.166	-3-12-	2.2	3.4	0.66	6	8.1	0.73	21	0.9	130	2100	77
206459	20-39.700	- 96.199	-3-12-	2.0	3.5	0.57	4	14.	0.65	23	0.6	120	2400	54
206460	20-39.702	- 96.215	-3-12-	2.3	3.5	0.66	6	3.8	0.71	18	0.6	130	2300	61
206461	20-39.719	- 96.184	-3-12-	2.4	3.4	0.70	7	4.5	0.48	21	0.6	120	2200	66
206467	20-39.727	- 96.168	-3-12-	2.3	3.3	0.70	9	1.6	0.41	18	0.7	95	2300	52
206477	20-39.580	- 96.210	-3-12-	2.7	3.4	0.80	9	2.9	0.67	26	0.8	120	2200	63
206478	20-39.581	- 96.227	-3-12-	1.9	3.4	0.56	11	2.1	0.59	17	0.7	150	2200	47
206481	20-39.394	- 97.863	-3-12-	2.6	3.6	0.73	10	2.2	2.1	19	0.6	170	2400	67
206482	20-39.366	- 97.813	-3-12-	2.4	3.7	0.66	7	1.9	0.69	18	0.7	150	2400	57
206483	20-39.337	- 97.800	-3-15-	2.9	3.4	0.86	10	2.1	0.54	20	1.0	130	2500	66
206484	20-39.278	- 97.813	-3-15-	1.8	3.1	0.56	8	1.2	0.57	17	0.7	140	2300	50
206485	20-39.326	- 97.878	-3-15-	2.8	3.4	0.83	3	2.0	0.65	18	0.5	120	2400	53
206486	20-39.334	- 97.894	-3-12-	2.3	3.5	0.65	14	2.5	1.6	20	0.5	160	2500	70
206487	20-39.346	- 97.930	-3-12-	2.6	4.4	0.59	9	2.7	2.9	21	1.1	190	2500	79
206490	20-39.472	- 97.956	-3-12-	3.1	4.0	0.79	13	3.1	4.0	20	0.7	220	2400	82
206492	20-39.438	- 97.994	-3-12-	2.6	3.2	0.82	9	2.2	1.0	19	0.6	170	2100	63
206493	20-39.409	- 97.934	-3-15-	2.7	3.4	0.79	8	3.5	0.96	24	0.7	150	2200	73
206494	20-39.424	- 97.924	-3-12-	3.3	4.3	0.77	8	2.8	1.6	18	0.6	170	2400	60
206508	20-39.354	- 97.994	-3-15-	3.2	3.9	0.82	6	2.6	4.1	16	0.6	230	2100	81
206514	20-39.199	- 96.476	-3-12-	1.2	2.2	0.00	3	0.8	0.42	7	0.4	130	950	15
206518	20-39.248	- 96.316	-3-15-	2.3	3.1	0.73	6	3.1	0.50	20	0.6	130	2100	51
206521	20-39.151	- 96.310	-3-15-	2.3	3.3	0.71	9	2.9	2.1	27	0.7	160	2200	61
206522	20-39.148	- 96.340	-3-15-	2.1	3.9	0.55	11	4.0	0.97	19	0.7	140	2400	56
206533	20-39.072	- 96.497	-3- -	2.3	3.1	0.75	5	3.2	5.4	30	0.5	240	2000	52

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE MANHATTAN QUADRANGLE

MANHATTAN QUADRANGLE - SEDIMENT															
OR SAMPLE NUMBER	D. G. ST	E. LAT	SAMPLE LONG	NUMBER L TY REP	U (PPM)	U-NT	U/TU	TH (PPM)	AS (PPM)	CA (%)	LI (PPM)	SE (PPM)	SH (PPM)	TI (PPM)	V (PPM)
206534	20-39.073	-	96.468	-3- -	2.2	2.9	0.77	6	2.1	6.5	28	0.6	300	1800	49
206537	20-39.154	-	96.374	-3- -	2.6	3.3	0.78	9	4.4	1.1	26	0.4	170	2300	67
208476	20-39.000	-	96.113	-3-12-	2.5	2.5	1.0	7	2.9	7.6	27	0.7	620	1800	55

APPENDIX C

MICROFICHE OF FIELD AND LABORATORY DATA

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APPENDIX C

MICROFICHE OF FIELD AND LABORATORY DATA

LIST OF TABLES

<u>No.</u>	<u>Title</u>	<u>Page</u>
C-1	Computer Code List of Geochemical Variables . . .	C-4
C-2	Oak Ridge Geochemical Sampling Form Showing Field Data Recorded on Microfiche	C-5
	Microfiche	C-7

Table C-1
COMPUTER CODE LIST OF GEOCHEMICAL VARIABLES

Variable(a)	Code	Variable(a)	Code
Uranium Measured by Fluorometry(b)	U-FL	Thorium	TH
Uranium Measured by Mass Spectrometry(b)	U-MS	Titanium	TI
Uranium Measured by Neutron Activation	U-NT	Vanadium	V
Arsenic	AS	Yttrium	Y
Selenium	SE	Zinc	ZN
Silver	AG	Zirconium	ZR
Aluminum	AL	Sulfate (ppm)	SO, SO ₄
Boron	B	Chloride (ppm)	CL
Barium	BA	Conductivity from Lab (μmhos/cm)	CT-L
Beryllium	BE	Conductivity from Field (μmhos/cm)	CT-F
Calcium	CA	Dissolved Oxygen (ppm)	DO
Cerium	CE	Temperature (°C)	TP, TEMP
Cobalt	CO	pH	PH
Chromium	CR	pH Measured by Lo Ion Paper	PH-P
Copper	CU	Total Alkalinity (ppm)	T-AK
Iron	FE	M Alkalinity (ppm)	T-AK
Potassium	K	P Alkalinity (ppm)	P-AK, LIP
Lithium	LI	Carbonate (ppm)	CB
Magnesium	MG	$CB = \begin{cases} 0 & \text{if pH} \leq 8.3 \\ \frac{3.42 \times M-AK}{5.61 + 10^{(11-pH)}} & \text{if pH} > 8.3 \end{cases}$	
Manganese	MN		
Molybdenum	MO	Bicarbonate (ppm)	BC
Sodium	NA	$BC = \begin{cases} \frac{2.62 \times M-AK}{4.3 + 10^{(7-pH)}} & \text{if pH} \leq 8.3 \\ 0.61 \times M-AK - CB & \text{if pH} > 8.3 \end{cases}$	
Niobium	NB		
Nickel	NI		
Phosphorus	P	U-NT/U-FL	U/U, TUU
Lead	PB	U-FL/U-NT	U/TU
Platinum	PT	TH/U-NT	TH/U
Scandium	SC	1,000·U/SP	U/SP
Silicon	SI	1,000·U/B	U/B
Strontium	SR	1,000·U/SO	U/SO, USO

(a) If natural logarithm of variable is used, L or L- precedes the variable code.

(b) If method is not specified for waters, U-FL is used, except where value is below laboratory detection limit in which case U-MS is substituted if it is available.

Table C-2

OAK RIDGE GEOCHEMICAL SAMPLING FORM SHOWING FIELD DATA RECORDED ON MICROFICHE

OAK RIDGE GEOCHEMICAL SAMPLING FORM

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">1</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Card Number</div> </div>			
GENERAL SITE DATA			
Attach Identical Sample Number Here <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">1</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">2</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">3</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">5</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">6</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">7</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">8</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">9</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">0</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">1</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">2</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">3</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">5</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">6</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">7</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">8</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">9</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">0</div> </div>			
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">8</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">9</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">10</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">11</div> </div>		Site Number	
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">12</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">13</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">14</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">15</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">16</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">17</div> </div>		Map Code	
Sample Type <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">18</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">M</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Stream Sediment</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">H</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Lake Sediment</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">S</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Stream Water</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">W</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Well Water</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Spring Water</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">L</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Lake Water</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">A</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Bog Water</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">B</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Plant</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">F</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Soil</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">G</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Rock</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Q</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Other</div> </div> <div style="margin-left: 100px;">(Use Remarks)</div>			
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">19</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Replicate Letter (A-Z)</div> </div>			
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Hour</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Day</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Month</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Year</div> </div> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">20</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">21</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">22</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">23</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">24</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">25</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">26</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">27</div> </div> </div>			
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">28</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">29</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">30</div> </div> <div style="margin-left: 10px;">Collector's Initials</div>			
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">31</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Phase (P. 1, 2, or G)</div> </div>			
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">32</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Field Sheet Status</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">O</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Original</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">C</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Correction</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">V</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Voiding</div> </div>			
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">33</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Control Sample</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">A</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Sediment, High U</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">B</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Sediment, Low U</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">C</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Water, High U</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">D</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Water, Low U</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Q</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Other</div> </div>			
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">34</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">35</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">36</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">37</div> </div> <div style="margin-left: 10px;">Air Temperature (°C)</div>			
Location <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Latitude</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Longitude</div> </div> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Deg.</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Min.</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Sec.</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Deg.</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Min.</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Sec.</div> </div> </div>			
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">38</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">39</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">40</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">41</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">42</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">43</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">44</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">45</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">46</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">47</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">48</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">49</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">50</div> </div>			
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">31</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">32</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">33</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">34</div> </div> <div style="margin-left: 10px;">Surface Geologic Unit Code</div>			
Type of Vegetation <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">55</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">(Within 1 Km Upstream)</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">C</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Conifer</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">D</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Conifer & Deciduous</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">B</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Deciduous</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">G</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Brush</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">M</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Grass</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">L</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Moss</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Q</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Lichen</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">O</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Other</div> </div>		Density of Vegetation <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">56</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">(Within 1 Km Upstream)</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">B</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Barren</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">S</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Sparse</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">M</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Moderate</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">D</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Dense</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">V</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Very Dense</div> </div>	
Local Relief <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">57</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">(Within 1 Km Upstream)</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">F</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Flat</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">L</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Low</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">G</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Gentle</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">M</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Moderate</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">H</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">High</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Q</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Other</div> </div>		Weather <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">58</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Calm</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Lt Wind</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">V</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Windy</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">R</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">V. Windy</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">S</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Gale</div> </div> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">59</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Clear</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">L</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Pt Cldy</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">W</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Overcast</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">V</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Rainy</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">G</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Snowy</div> </div>	
Classes of Contaminants <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">60</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">None</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">M</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Mining</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">A</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Agriculture</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">F</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Oil Field</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">I</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Industry</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">S</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Sewage</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Power Plant</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">U</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Urban</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Q</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Other</div> </div> <div style="margin-left: 100px;">(Use Remarks)</div>		Sample Color (Except Plants) <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Adj.</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Houn</div> </div> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">72</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">73</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">74</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">75</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">76</div> </div> </div> <div style="margin-left: 10px;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">V</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">V Lt</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">L</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Light</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">M</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Medium</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">D</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Dark</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">CL</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Clear</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">WH</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">White</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">YL</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Yellow</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">OR</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Orange</div> </div> <div style="margin-left: 100px;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">PK</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Pink</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">RD</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Red</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">GN</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Green</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">BU</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Blue</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">BN</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Brown</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">GY</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Gray</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">BK</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Black</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">QT</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Other</div> </div>	
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">77</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">N</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">None</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">S</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">H₂S</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Q</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Other</div> </div>		Odor of Sampled Material <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">78</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">R</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Results Request</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">(Use Remarks)</div> </div>	
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">1</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">2</div> </div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Card Number</div> </div>			
PLANT SAMPLE			
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">19</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">19</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Number of Plants Sampled</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">(Number of grabs for moss)</div> </div>			
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">20</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">21</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">22</div> </div> <div style="margin-left: 10px;">Trunk Diameter (m)</div> <div style="margin-left: 10px;">(1 m above ground)</div>			
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">23</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">24</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">25</div> </div> <div style="margin-left: 10px;">Plant Height (m)</div> <div style="margin-left: 10px;">(Average of Plants Sampled)</div>			
Name of Tree, Deciduous <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">26</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">R</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Alto Verde</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">A</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Ash</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">B</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Beech</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">I</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Birch</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">D</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Box Elder</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">F</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Cherry</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">N</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Cottonwood</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">E</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Elm</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">H</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Hackberry</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">C</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Hickory</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">W</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Huisache</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">L</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Live Oak</div> </div> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">26</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">U</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Locust</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Maple</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">M</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Mesquite</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">K</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Oak, Other</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">V</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Olive</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Y</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Poplar</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">S</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Sycamore</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">T</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Salt Cedar</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">G</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Walnut</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">X</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Willow</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Q</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Other</div> </div>			

Table C-2, Continued
 OAK RIDGE GEOCHEMICAL SAMPLING FORM
 SHOWING FIELD DATA RECORDED ON MICROFICHE

STREAM OR LAKE SEDIMENT

Sample Condition

31
D
W

Sample Treatment

32
N
S
Q

33	34
----	----

35	36
----	----

GENERAL WATER SAMPLES

Water Sample Treatment

37
N
F
C
A
Q

Depth of Visibility (m)

38	39	40
----	----	----

41	42	43	44	45
----	----	----	----	----

46	47	48
----	----	----

49	50	51
----	----	----

52	53	54
----	----	----

55
P

56	57	58	59
----	----	----	----

60	61	62	63
----	----	----	----

64	65	66	67
----	----	----	----

Appearance of Water

68
C
M
A
Q

69	70	71	72	73
----	----	----	----	----

REMARKS (Card 4)

74	75	76	77
----	----	----	----

Identification of Producing Horizon (Geologic Unit Code)

Confidence of Producing Horizon Identification

78
H
R
S

Source of Producing Horizon Identification

79
P
W
U
G
Q

1
3

WELL WATER

Type of Well

18
D
P
G
U
Q

Power Classification

19
A
E
G
W
H
Q

Casing

20
N
S
G
P
U
Q

Pipe Composition

21
F
Z
C
P
U
Q

Sample Location

22	23	24
----	----	----

Where Sample Taken With Respect To Pressure Tank

25
B
A
N
F

Use of Well

26
M
H
S
I
A
X
Y
Z
N
Q

Frequency of Pumping

27
C
F
I
R

Depth to top of Producing Horizon

28	29	30	31
----	----	----	----

Confidence of Producing Depth

32
H
R
S

Source of Producing Depth Information

33
P
W
U
G
Q

Total Well Depth

34	35	36	37
----	----	----	----

Confidence of Total Depth

38
H
R
S

Source of Total Depth Information

39
P
W
U
G
Q

LAKE WATER

Type of Lake

40
N
M

Lake Area

41	42	43	44
----	----	----	----

MICROFICHE OF FIELD AND LABORATORY DATA

CONTENTS

<u>Laboratory Data</u>	<u>Page</u>
Well Water (W)	1-39
Stream Sediment (M)	40-81
<u>Field Data</u>	
Page 1	83-269
Page 2	1-269
Page 3	1-39

MANHATTAN QUAD
BASIC DATA

07/10/79

PAGE 1

LEGEND

○ WELL WATER

PLATE 1
MANHATTAN QUADRANGLE
GROUNDWATER SAMPLE
LOCATION MAP

SCALE 1: 250000
674 SAMPLES PLOTTED

SYMBOL RANGES FOR
PLOTTED VARIABLE (X)

x	$120 \leq X < 280$
.	$280 \leq X < 430$
.	$430 \leq X < 530$
o	$530 \leq X < 640$
o	$640 \leq X < 790$
o	$790 \leq X < 920$
o	$920 \leq X < 1150$
o	$1150 \leq X < 1400$
o	$1400 \leq X < 1900$
o	$1900 \leq X < 2700$
o	$2700 \leq X < 3400$
●	$3400 \leq X < 6600$
■	$6600 \leq X < 9100$

PLATE 3
MANHATTAN QUADRANGLE
SYMBOL PLOT
GROUNDWATER
SPECIFIC CONDUCTANCE (UMHOS/CM)

SCALE 1: 250000
670 SAMPLES PLOTTED

LEGEND
□ STREAM SEDIMENT

PLATE 4
MANHATTAN QUADRANGLE
STREAM SEDIMENT SAMPLE
LOCATION AND DRAINAGE
BASIN MAP
SCALE 1: 250000
718 SAMPLES PLOTTED

SYMBOL RANGES FOR PLOTTED VARIABLE (X)		
○	$1.00 \leq X <$	1.20
○	$1.20 \leq X <$	1.40
○	$1.40 \leq X <$	1.60
○	$1.60 \leq X <$	1.70
○	$1.70 \leq X <$	1.90
○	$1.90 \leq X <$	2.10
●	$2.10 \leq X <$	3.00
■	$3.00 \leq X <$	6.00
★	$X \geq$	6.00

PLATE 5
 MANHATTAN QUADRANGLE
 SYMBOL PLOT - STREAM
 SEDIMENT
 URANIUM FLUOROMETRIC (ppm)
 SCALE 1: 250000
 717 SAMPLES PLOTTED

SYMBOL RANGES FOR PLOTTED VARIABLE (X)		
+	$0 \leq X <$	2
x	$2 \leq X <$	3
○	$3 \leq X <$	4
○	$4 \leq X <$	5
○	$5 \leq X <$	7
○	$7 \leq X <$	8
○	$8 \leq X <$	10
●	$10 \leq X <$	12
●	$12 \leq X <$	14
■	$14 \leq X <$	34
★	$X \geq$	34

PLATE 6
 MANHATTAN QUADRANGLE
 SYMBOL PLOT - STREAM
 SEDIMENT
 THORIUM (PPM)
 SCALE 1: 250000
 717 SAMPLES PLOTTED