

ORGDP

OAK RIDGE GASEOUS DIFFUSION PLANT

MARTIN MARIETTA

NURE HSSR
GEOCHEMICAL SAMPLE ARCHIVES
TRANSFER REPORT

GEOCHEMICAL ANALYSIS

James G. Grimes

July 30, 1984

OPERATED BY
MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

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Prepared for the
U. S. Department of Energy
and the
U. S. Geological Survey
by
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1.0 INTRODUCTION

This part of the report describes how the samples were collected and prepared for analysis and what analysis was performed. The information in this part of the report is a compilation of the various data release reports and sample procedure manuals released by the various laboratories.

Although an effort was made to be as accurate as possible, this information should be considered as a general guide and the specific report(s) for the area and/or laboratories should be consulted for specific information.

Maps of the reconnaissance sample coverage are by quadrangles. As long as one sample is present, that quadrangle is marked. Appendixes A and B gives the number of samples on a quadrangle basis.

The coverage of the reconnaissance samples is shown in Figure 1.1.

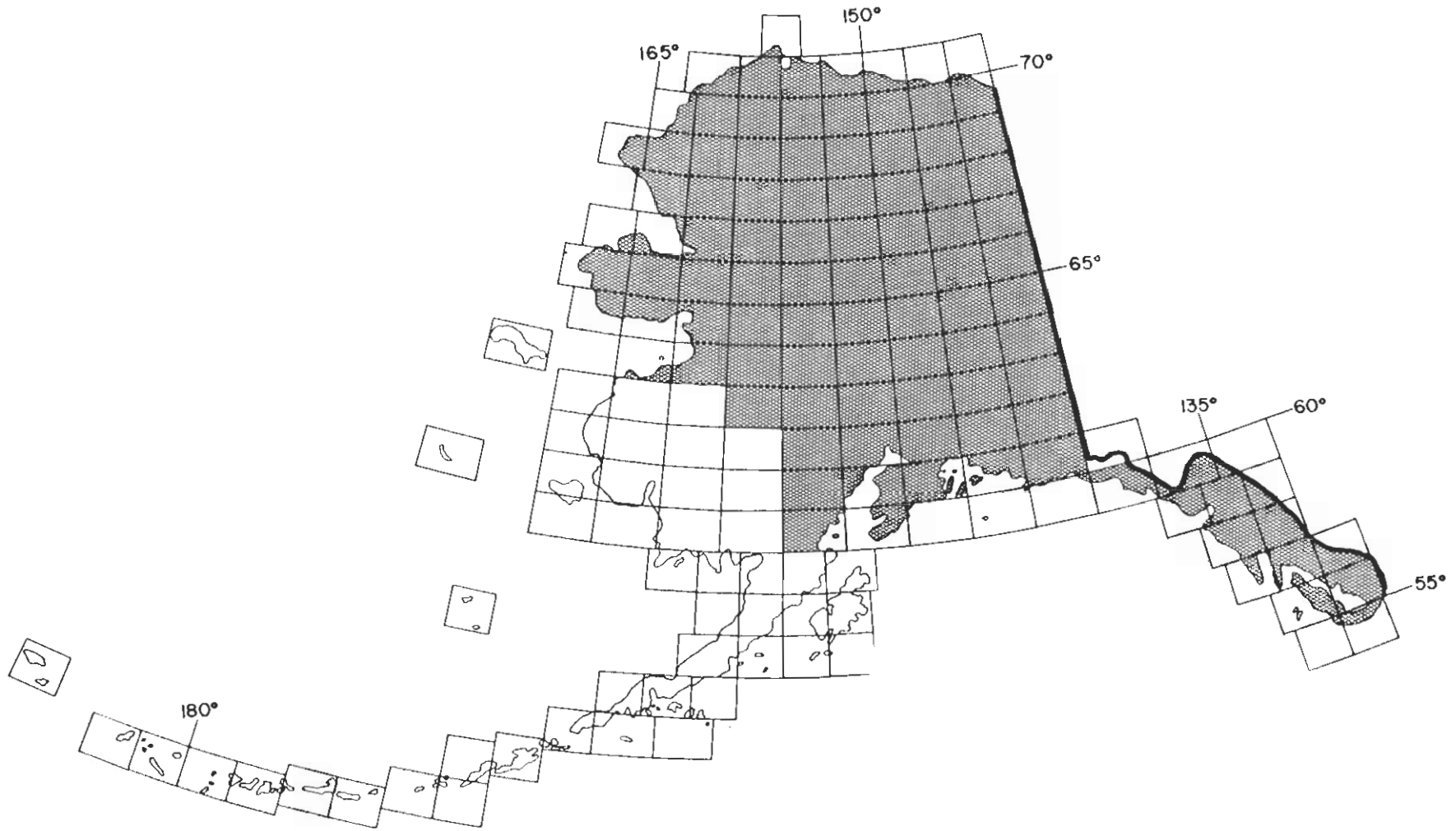


Figure 1.1
AREA COVERED BY RECONNAISSANCE SAMPLES

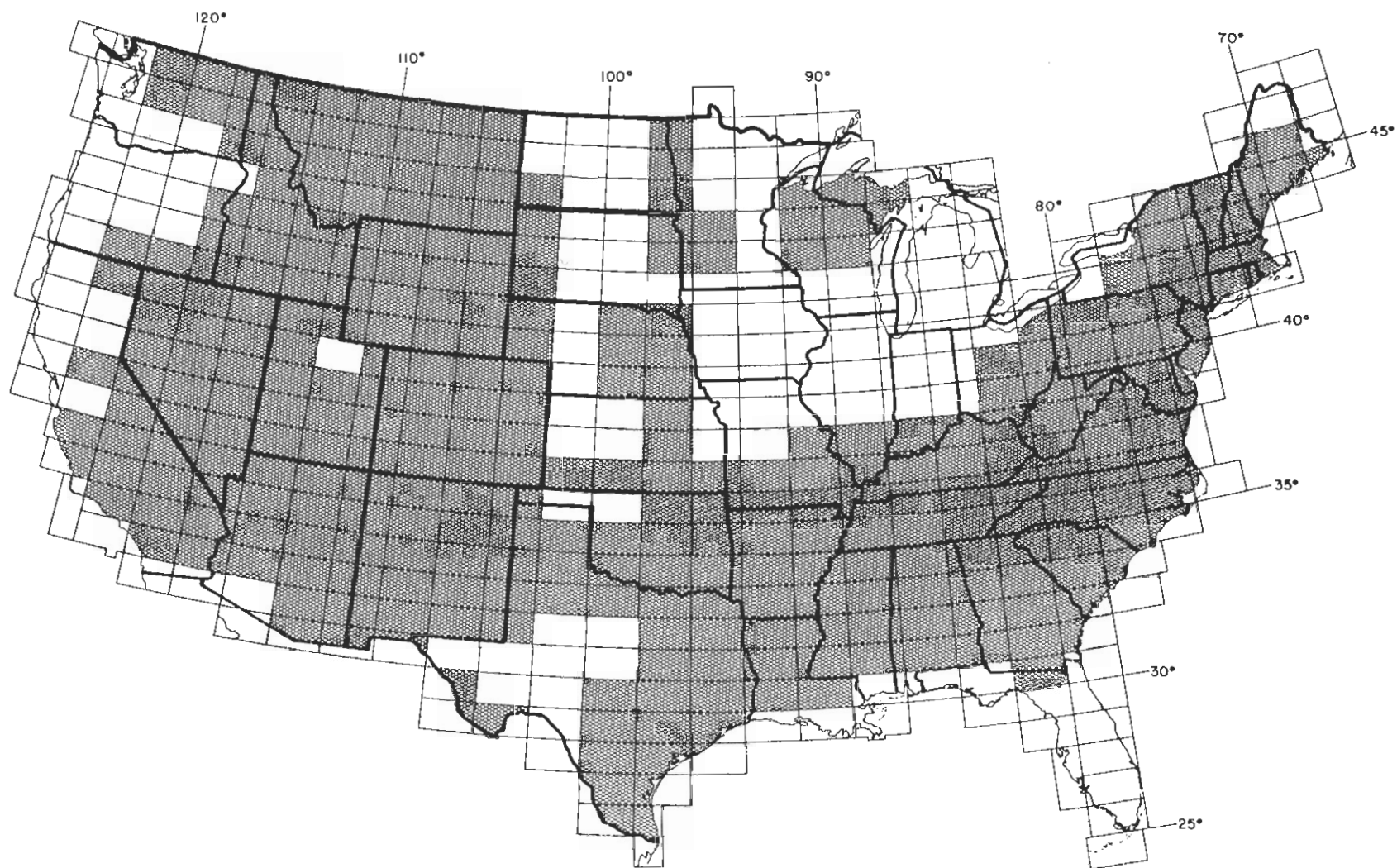


Figure 1.1, Continued
AREA COVERED BY RECONNAISSANCE SAMPLES

2.0 FIELD INFORMATION

Information obtained in the field was recorded on a field form which was later entered into the computer file. During the program, the forms were modified to some extent. The most commonly used form for each of the laboratories are shown in Figures 2.1 - 2.4 and the area covered by each form is shown on Figure 2.5.

2.1 Field Observations

These represent the best judgment of the field sampler at a location. Because these observations are subjective and made quickly in the field, they should be held subordinate to formally documented information.

2.2 Field Measurements

2.2.1 LANL

The air temperature, read in the shade at the time of sampling, was recorded to the nearest whole degree Celsius. The water temperature was measured in the source water and recorded to the nearest one-half degree Celsius. The pH of the source water was measured with a calibrated, portable pH meter. The conductivity of the source water was measured with a calibrated, temperature-compensated (25°C), portable meter. The scintillometer readings were measured with a portable scintillometer on

[illegible]

Figure 2.1
LANL FIELD FORM

LLL HYDROGEOCHEMICAL SITE VISIT FORM (PLEASE PRINT)		UCLLL SPECIFICATION		S-78 PRO 1-81 John G. Gaudin	
Site Visit Identification					
001					
1 & 2					
01 Project			Team		
02 Map Name			Date		
03 Township, Range, Section, & Section			Owner		
04 Time (24 hr)			Address		
TYPE OF ROCK AT SITE					
05	Volcanic	Granitic			
06	Metamorphic	Sedimentary			
07	Carbonate	Other			
SAMPLES COLLECTED					
TYPE					
08 Substrate	Soil	Drill	Line or		
09 Material Type	Rock or Soil	Core or	Sample		
TREATMENT					
10 Perforated, Perforated Unperforated Volume (ml)	250	500	1000	Other	
11 Perforated, Perforated Unperforated Volume (ml)	250	500	1000	Other	
12 Perforated, Perforated Unperforated Volume (ml)	250	500	1000	Other	
13 Other Sample	Forces	Rock	Barometric		
14 Phase	Surface	Other			
15 Perforated Sample					
FIELD DATA (ALL WATER SITES)					
16 Temperature of Water at Site	Barometric Conductivity (umhos/cm)		Temperature of Soil, Sand, Moss		
17 Total Alkalinity (mg/l)	Phosphate (mg/l)		CO ₂ (mg/l)		
18 Phosphate (mg/l)	Nitrate (mg/l)		Ammonia (mg/l)		
19 pH					
GROUNDWATER, LAKES					
20 In situ	Dissolved Oxygen (mg/l)				
STREAM WATER AND SEDIMENT					
21 Stream Name	Depth (ft)				
22 River Level	Low	Normal	High	Flood	
23 Nature of Stream	Rock	Gravel	Sand & Gravel	Silt	
24 Composition	None	Mining	Agriculture	Industry	
25	Urban	Residential	Forest	Logging	
26 Perforated or Borehole (FE Hydrocarbon/Oils)	None	Gas	Oil	Liquor	
27	None	Gas	Oil	Liquor	
28 Vegetation	None	Medium	High	Forest	
29 Color	Hydrocarbon Surface	None	Green	Brown	
30 Color	None	Green	Yellow	Reddish	
31	None	Green	Yellow	Reddish	
32 Suspended Matter	None	Light	Medium	Heavy	
33 Aerial	None	High	Medium	Low	
34 Riverbank	None	High	Medium	Low	
35	None	High	Medium	Low	
36	None	High	Medium	Low	
37	None	High	Medium	Low	
38	None	High	Medium	Low	
39	None	High	Medium	Low	
40	None	High	Medium	Low	
41	None	High	Medium	Low	
42	None	High	Medium	Low	
43	None	High	Medium	Low	
44	None	High	Medium	Low	
45	None	High	Medium	Low	
46	None	High	Medium	Low	
47	None	High	Medium	Low	
48	None	High	Medium	Low	
49	None	High	Medium	Low	
50	None	High	Medium	Low	
51	None	High	Medium	Low	
52	None	High	Medium	Low	
53	None	High	Medium	Low	
54	None	High	Medium	Low	
55	None	High	Medium	Low	
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59	None	High	Medium	Low	
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88	None	High	Medium	Low	
89	None	High	Medium	Low	
90	None	High	Medium	Low	
91	None	High	Medium	Low	
92	None	High	Medium	Low	
93	None	High	Medium	Low	
94	None	High	Medium	Low	
95	None	High	Medium	Low	
96	None	High	Medium	Low	
97	None	High	Medium	Low	
98	None	High	Medium	Low	
99	None	High	Medium	Low	
100	None	High	Medium	Low	

Figure 2.2
LLL FIELD FORM

Figure 2.3
ORGDP FIELD FORM

2-4

SRL STREAM WATER AND SEDIMENT FIELD DATA FORM

SITE CODE						DATE				TEAM NO.		GENERAL SITE DATA												ACTIVITIES CONTAMINANTS (List up to Four)		COMMENTS		ROAD STREAM SITE											
State	Map Code	Site Number	Mo	Day	Yr	Hr						Sed Type	Sed Color	Width	Depth	Flow	Level	Color	Channel	Veg. Type	Density	Relief	Weather																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
<i>Have a Good Day ☺</i>																																							
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
pH		SPECIFIC CONDUCTANCE (µmhos)		WATER TEMP (°C)		Drops H ₂ SO ₄ ml Water		ALKALINITY		NO. OF SAMPLE COMPOSITES		SAMPLER TYPE		INSTRUMENT I.D. - pH		pH PROBE I.D.		COND INSTR. I.D.		COND PROBE I.D.		ml of Water Ion Exchanged		SPARE (DO NOT USE!)		INFORM. REQUEST		CARD CODE											

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

20 1 Boulders
2 Cobble
3 Pebble
4 Sand
5 Silt
6 Clay
7 Organic Muck
8 Others (use comments)

21 1 White/Buff
2 Yellow
3 Orange
4 Pink/Red
5 Green
6 Brown
7 Gray
8 Black
9 Others (use comments)

22 1 < 1/2 ft
2 1/2 - 1 ft
3 1 - 2 ft
4 2 - 4 ft
5 4 - 8 ft
6 8 - 16 ft
7 16 - 32 ft
8 > 32 ft
9 Dry

23 1 Stagnant
2 Slow
3 Moderate
4 Fast
5 Torrent
6 Dry

24 1 Dry
2 Low
3 Normal
4 High
5 Flood

25 1 Clear
2 Brown - Clear
3 Cloudy
4 Muddy
5 Algal
6 Others (use comments)

26 1 Depositing
2 Eroding
3 Unknown

27 1 Conifer
2 Deciduous
3 Brush
4 Grass Pasture
5 Marsh/Swamp
6 Peat Bog
7 Other (use comments)

28 1 Barren
2 Sparse
3 Moderate
4 Dense
5 Very Dense

29 1 Flat
2 Low 0-50
3 Gentle 50-200
4 Moderate 200-400
5 High > 400

30 1 Sunny/Clear
2 Overcast
3 Light Rain
4 Heavy Rain
5 Snow
6 Other (use comments)

31 1 Chemical
2 Smelting
3 Mining
4 Sewage
5 Dumps
6 Farming
7 Power Generation
8 Urban
9 Other Industrial

32-35 1 Recreational
2 Residential

39 Enter "C" when comments are made

40 Enter "R" when site is road stream site
"O" when site is off-road

51 B - Bag S - Scoop

40 Road Stream Site Description
(Type, material, size, etc.)

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

I certify that the above sample was taken by SRL procedures at the indicated site and the information listed is correct at time of sampling.

I have checked this form and associated samples for accuracy, correct format, and legibility.

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

Sampler's Signature: _____
Field Supervisor (Initials): _____

Figure 2.4
SRL FIELD FORM

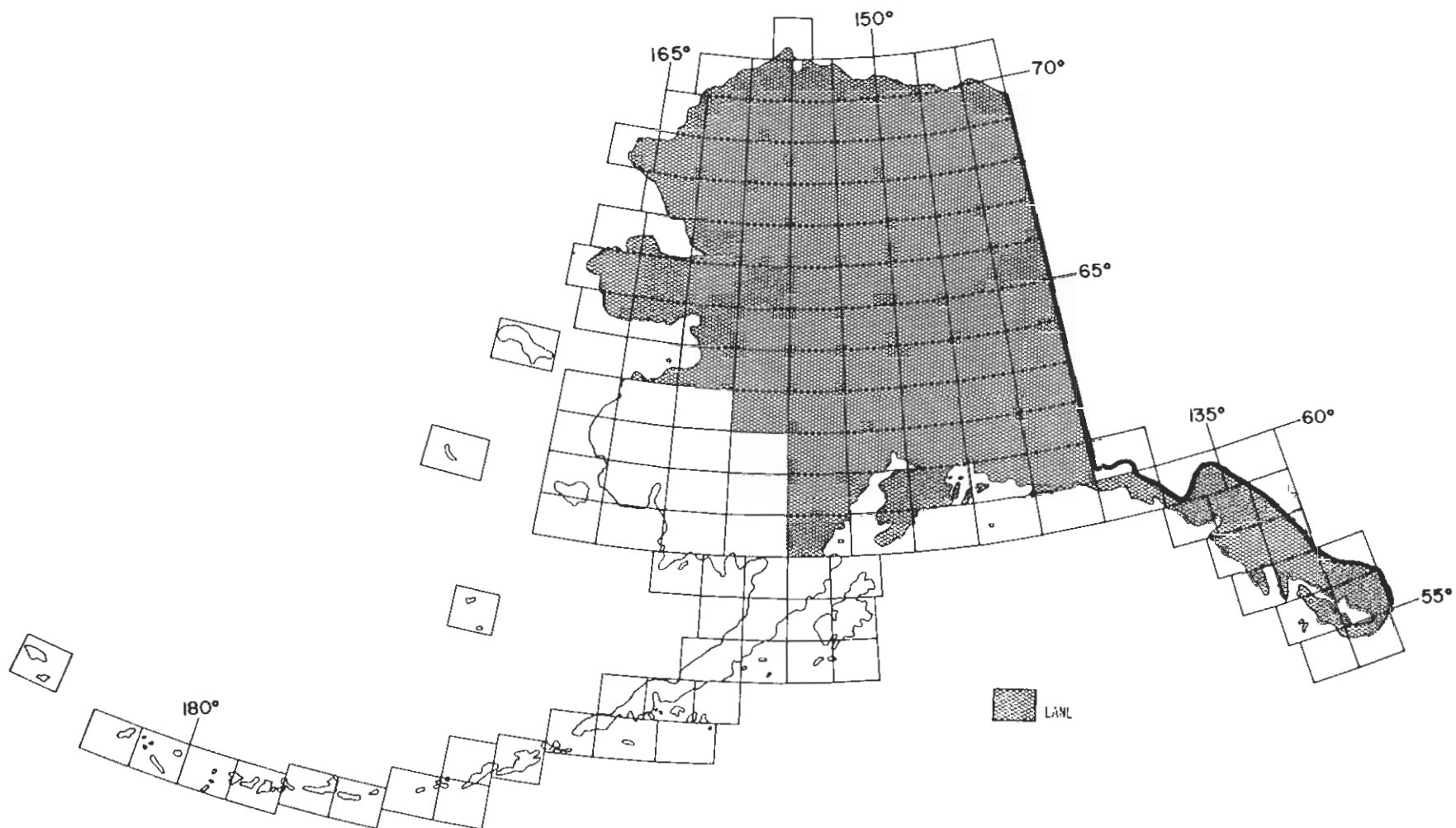


Figure 2.5
AREA COVERED BY THE VARIOUS FIELD FORMS

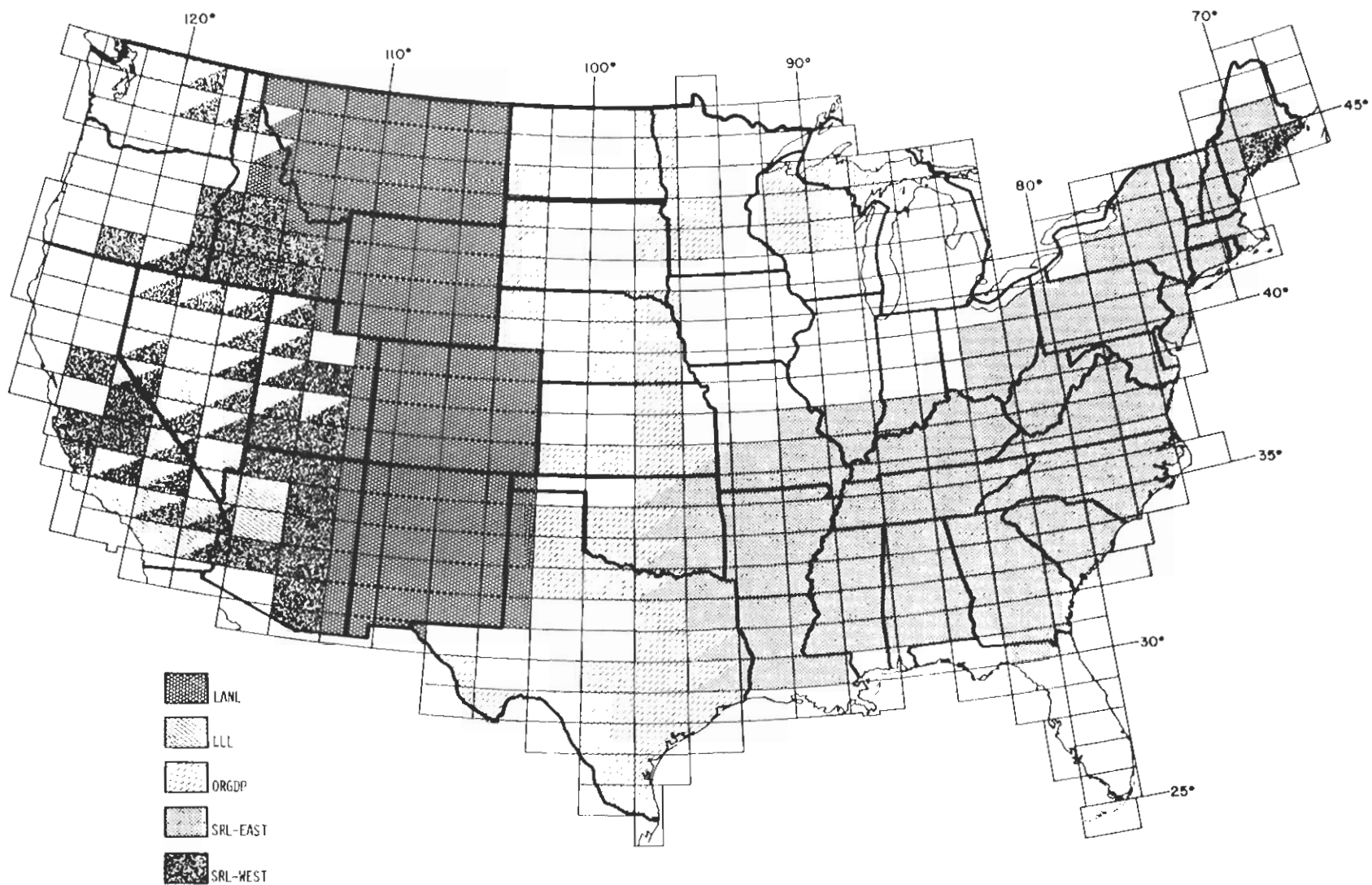


Figure 2.5, Continued
 AREA COVERED BY THE VARIOUS FIELD FORMS

a flat, dry spot within a few meters of the sample location. Special measurements, such as dissolved oxygen, were made with a calibrated, commercially available, portable meter and probe. In lakes, the water temperature, pH, conductivity, and dissolved oxygen were all measured with a single, digital-readout unit, utilizing a parameter selector switch and a composite probe that was lowered from the sampling helicopter to just below the water's surface.

2.2.2 LLL

Field measurements for water samples were temperature, pH, conductivity, Eh or dissolved oxygen, and alkalinity.

2.2.3 ORGDP

The air temperature was measured at the time the sample was collected by hanging a mercury thermometer in a shady area adjacent to the sampling site. Field measurements of water samples were made of conductivity, dissolved oxygen, temperature, pH (using the Horiba U-7 Water Analyzer), and alkalinity (using the LaMotte Alkalinity Test Kit).

2.2.4 SRL

Field measurements of the unfiltered water were made of temperature, conductivity, pH (using calibrated portable meters) and alkalinity (using a titration kit).

3.0 SEDIMENT SAMPLES

The following is a brief summary of the sample collection, preparation, and analytical procedures for each of the laboratories.

3.1 Sample Collection

3.1.1 LANL

Enough fine-grained, organic-rich, water-transported sediment to yield a composite sample of 25 g after processing was taken from beneath the water level (where water exists) at three adjacent spots at each spring or stream location. The sediment was put into a new, clean, and originally sealed, rip-top polyethylene bag. In the case of lakes sampled in Alaska, the sediment was taken from as near the center of each lake as possible by dropping a tethered, stainless steel bottom sampler overboard from a pontoon-equipped helicopter. Only a bottom sample from a single location was taken and sampling was limited to lakes less than 10 m deep and about 0.3 to 2.0 km in least horizontal dimension. The bottom sampler was rinsed before each use and the raw sample was put into a clean polyethylene bag.

3.1.2 LLL

About 2½ kg of uncontaminated sediment was collected.

3.1.3 ORGDP

Enough material was collected from the active portion of the stream over at least a 15 m interval to make up approximately 25 g of clay to silt size (-100 mesh) sediment. The sediment was put into a new Kraft paper sediment bag.

3.1.4 SRL

Using either a bag or scoop sampler, sediment samples were collected from the active portion of the stream.

3.2 Sample Preparation

3.2.1 LANL

After drying at <100°C, each sample was sieved through a 100 mesh stainless steel sieve. The minus 100 mesh fraction was put into a prewashed, 25 ml polyethylene vial.

3.2.2 LLL

The sediments were oven-dried and split into two fractions. One fraction (1 kg) was retained as an historical sample, and the other was sieve-sorted. The appropriate size fraction, determined during the

pilot studies, was blended. One gram was packed in a polyethylene 'rabbit' for neutron activation analysis, approximately 1 g was sealed in a vial for emission spectrochemical analysis, and about 200 g was placed in a polyethylene bottle as an analytical historical sample.

3.2.3 ORGDP

Stream sediment samples were dried overnight at 85°C, placed in a plastic envelope, and disaggregated by impact with a rubber mallet. The fraction passing through a 100 mesh nylon sieve was collected and blended. Approximately 2 g were loaded into a polyethylene rabbit for neutron activation analysis. Another 0.25 g aliquant was placed in a 100 ml Teflon beaker to which was added 5 ml of concentrated nitric acid, then 5 ml of concentrated hydrofluoric acid. The sample was placed on a hotplate at 250°C and evaporated just to dryness. Then, 20 ml of 30% nitric acid was added and the sample warmed. The contents of the beaker were transferred to a 50 ml centrifuge and diluted to volume with distilled water. This was submitted for analysis.

3.2.4 SRL

The sediment was sieved in the field with a minimum of 1 lb of -40 mesh sediment placed in a new Kraft paper sediment bag.

3.3 Analysis - Reconnaissance Samples

3.3.1 LANL

3.3.1.1 Delayed-Neutron Counting (LANL 1)

All sediment samples were analyzed for total uranium by delayed-neutron counting (DNC). A split of each sample was transferred to a clean 4 ml rabbit, weighed, and its weight (less that of the rabbit) recorded. These rabbits were then loaded into a 50-sample transfer clip. The reactor pneumatic transfer system and background radiation levels were checked, and standards were run for calibration. The transfer clip was installed and the samples were cycled through the system (typically, a 20 sec irradiation, 10 sec delay, and 30 sec count cycle was used). The uranium concentration was automatically measured, converted to ppm, and entered into the data base.

Element analyzed for: U

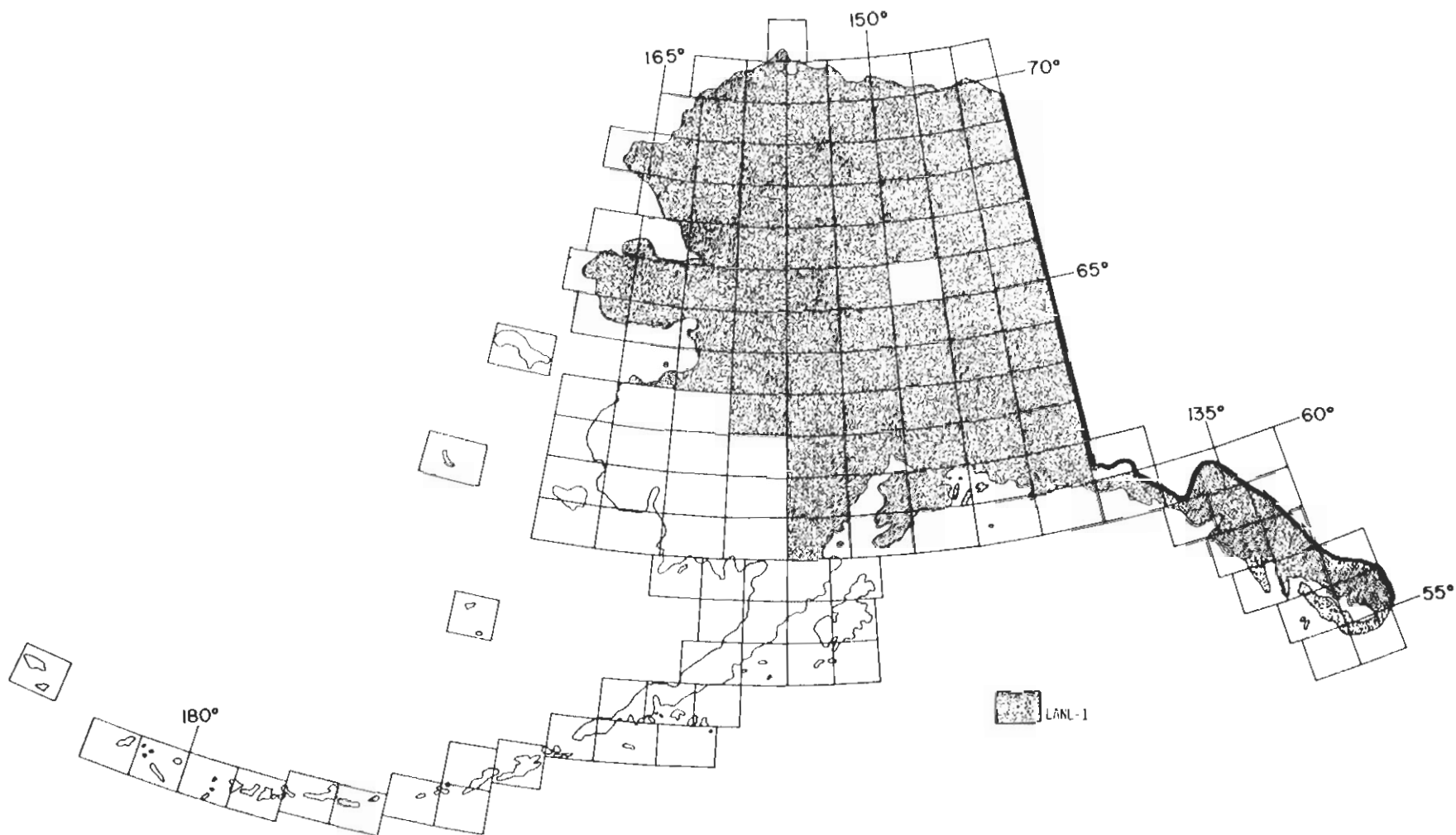


Figure 3.1
AREA COVERED BY ANALYTICAL PROCEDURE LANL 1

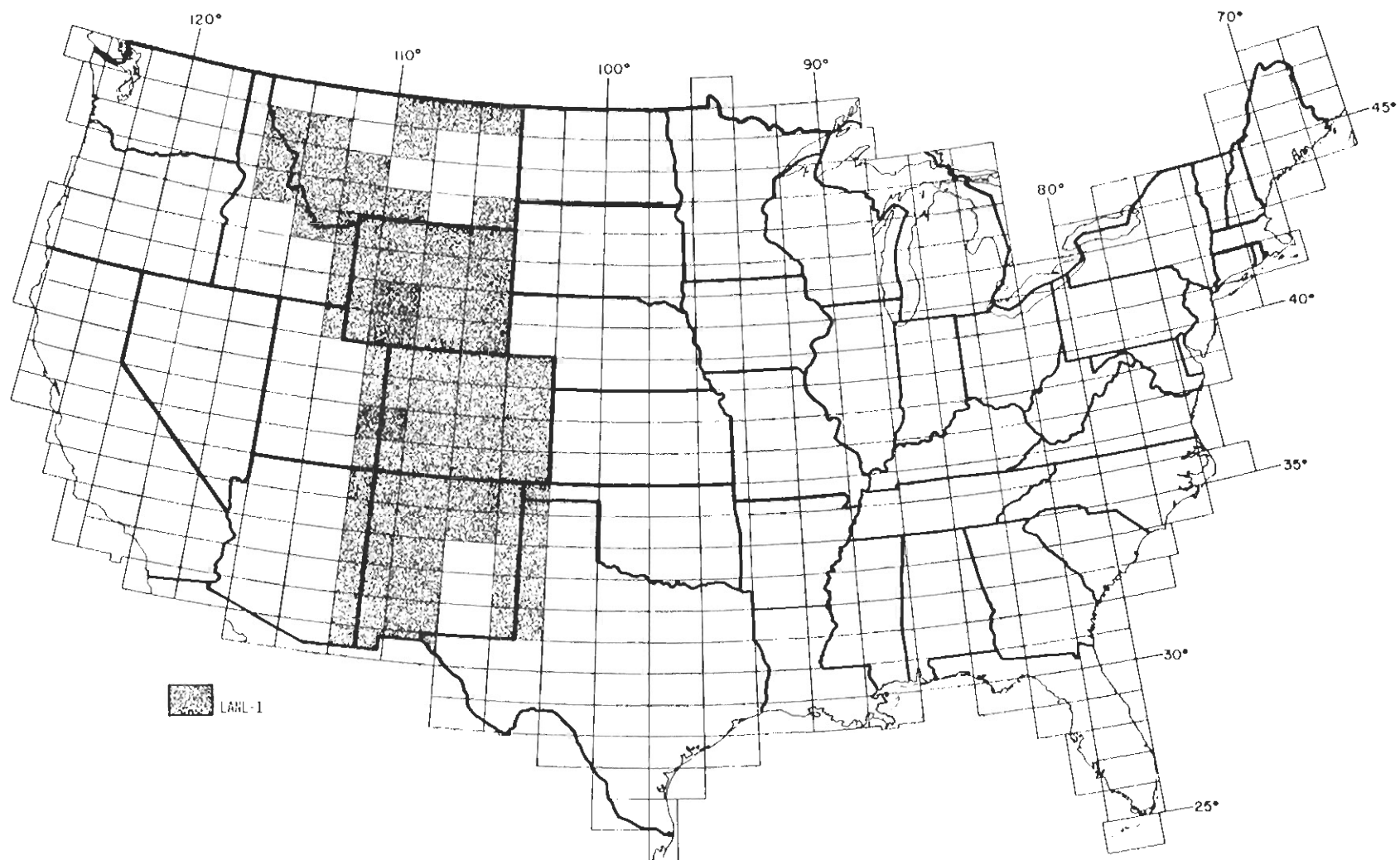


Figure 3.1, Continued
AREA COVERED BY ANALYTICAL PROCEDURE LANL 1

3.3.1.2 Energy Dispersive X-Ray Fluorescence (LANL 2 - 3)

A computer-controlled, energy-dispersive x-ray fluorescence system was used to analyze sediments. The system consists of an automatic 20-position sample changer, a lithium-drifted silicon detector, a pulsed molybdenum transmission-target x-ray tube, a multichannel analyzer, and a minicomputer. The sediment samples were prepared for analysis by grinding 6 g of each minus 100 mesh sample to a minus 325 mesh powder. A computer program positions the 6 g samples in the x-ray beam, unfolds overlapping peaks, determines peak intensities for each element, and calculates the ratio of the intensity of each peak to that of the molybdenum K_{α} Compton peak. Concentrations of each element are then calculated using equations obtained by analyzing prepared standards.

Elements analyzed for:

<u>LANL 2</u>	<u>LANL 3</u>
Ag	Ag
	As
Bi	Bi
Cd	Cd
Cu	Cu
Nb	Nb
Ni	Ni
Pb	Pb
	Se
Sn	Sn
W	W
	Zr

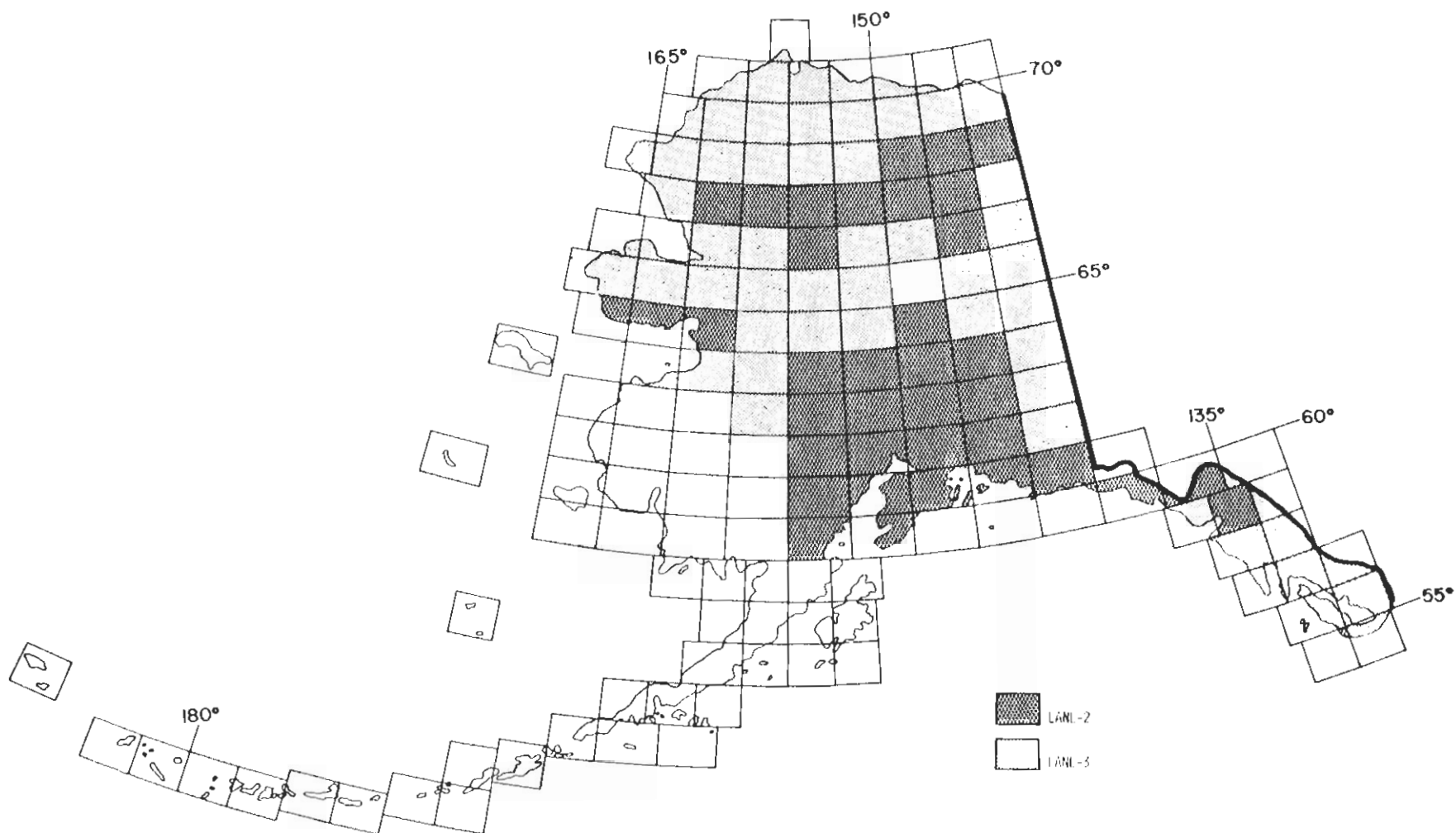


Figure 3.2
 AREA COVERED BY ANALYTICAL PROCEDURES LANL 2 - 3

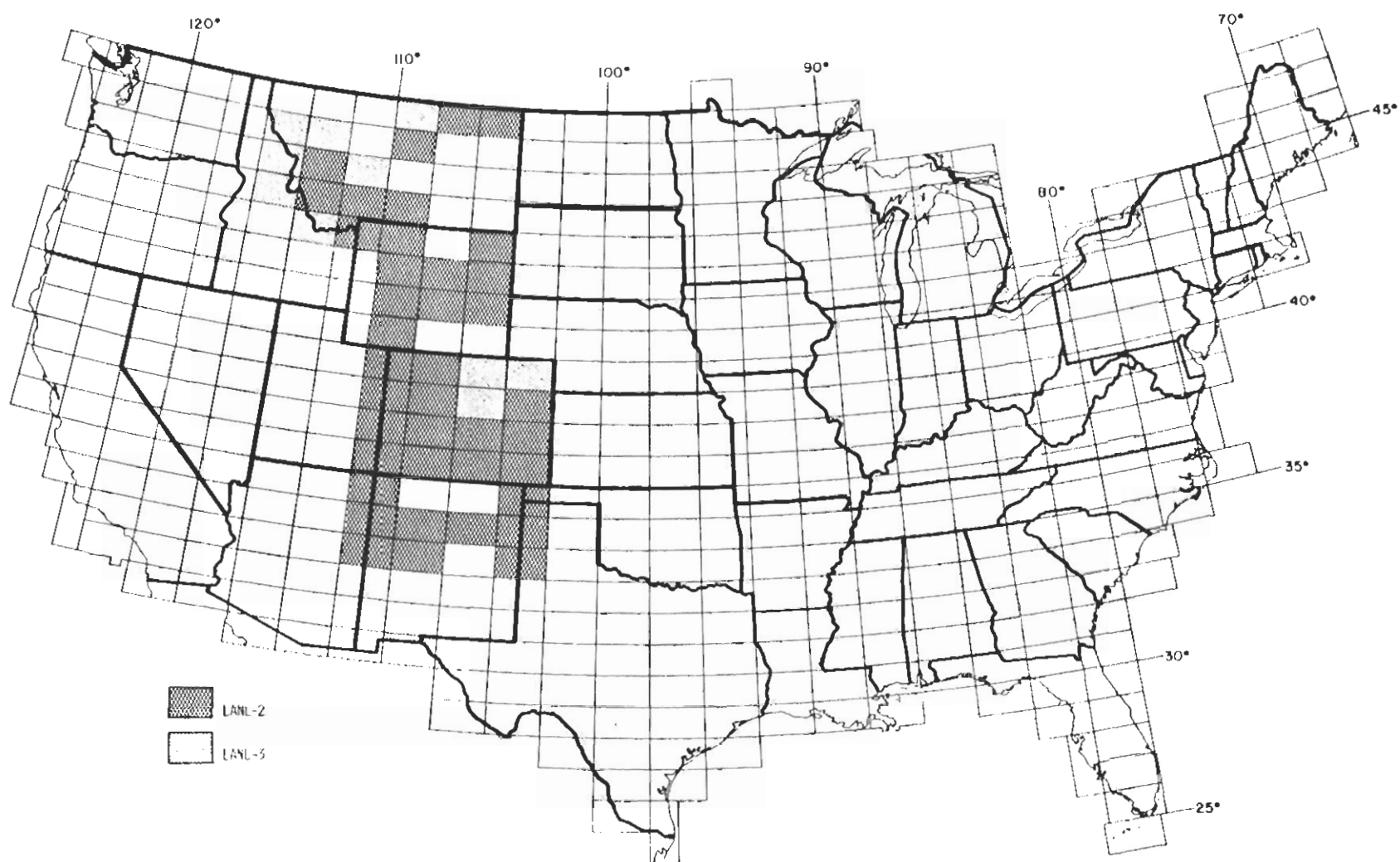


Figure 3.2, Continued
AREA COVERED BY ANALYTICAL PROCEDURES LANL 2 - 3

3.3.1.3 Arc-Source Emission Spectrography (LANL 4)

A 5 mg portion of the -325 mesh sample that was already analyzed by x-ray fluorescence was mixed with 10 mg of a buffer consisting of one part graphite and one part SiO_2 . The sample/buffer mixture was placed into a graphite electrode that was used as the anode of a dc arc having a short circuit current of 6 A for 10 sec, then 17 A for 50 sec. Photomultiplier tubes in a direct-reading spectrograph was used to measure the second order 313.0 nm line of Be, the first order 670.7 and 610.3 nm lines of Li, the background spectra near these lines, and the 327.6 nm line of V. The 670.7 nm Li line was used for Li concentrations up to 10 ppm and the 610.3 nm line of Li was used for concentrations above 10 ppm. The V line was used to correct the Be value when V was present. The signals from the photomultiplier tubes were read by a digital voltmeter and were processed by a desk-top calculator. The elemental concentrations of Be and Li were determined from the spectra, based on the results of previously run calibration standards.

Elements analyzed for: Be and Li

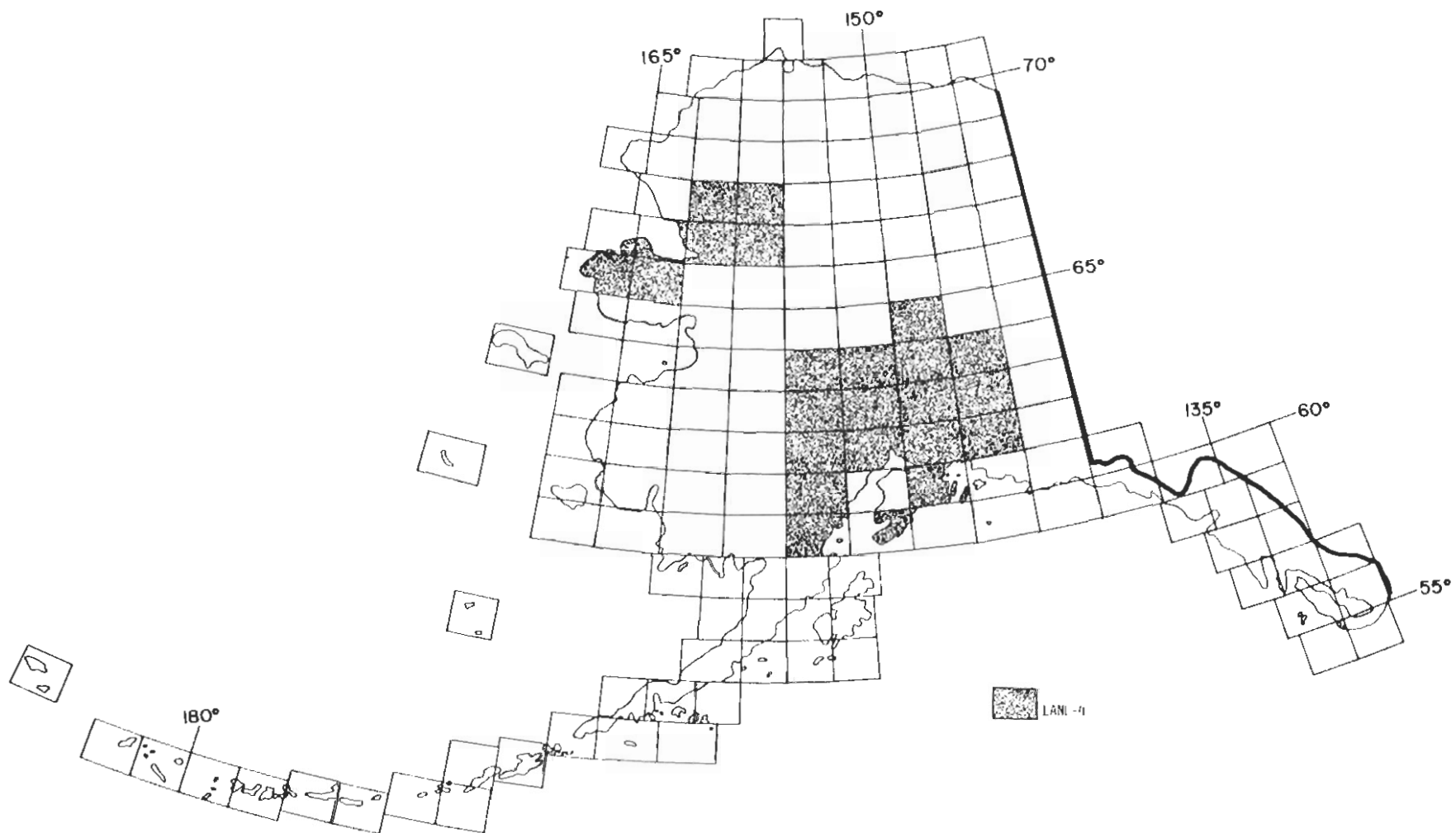


Figure 3.3
AREA COVERED BY ANALYTICAL PROCEDURE LANL 4

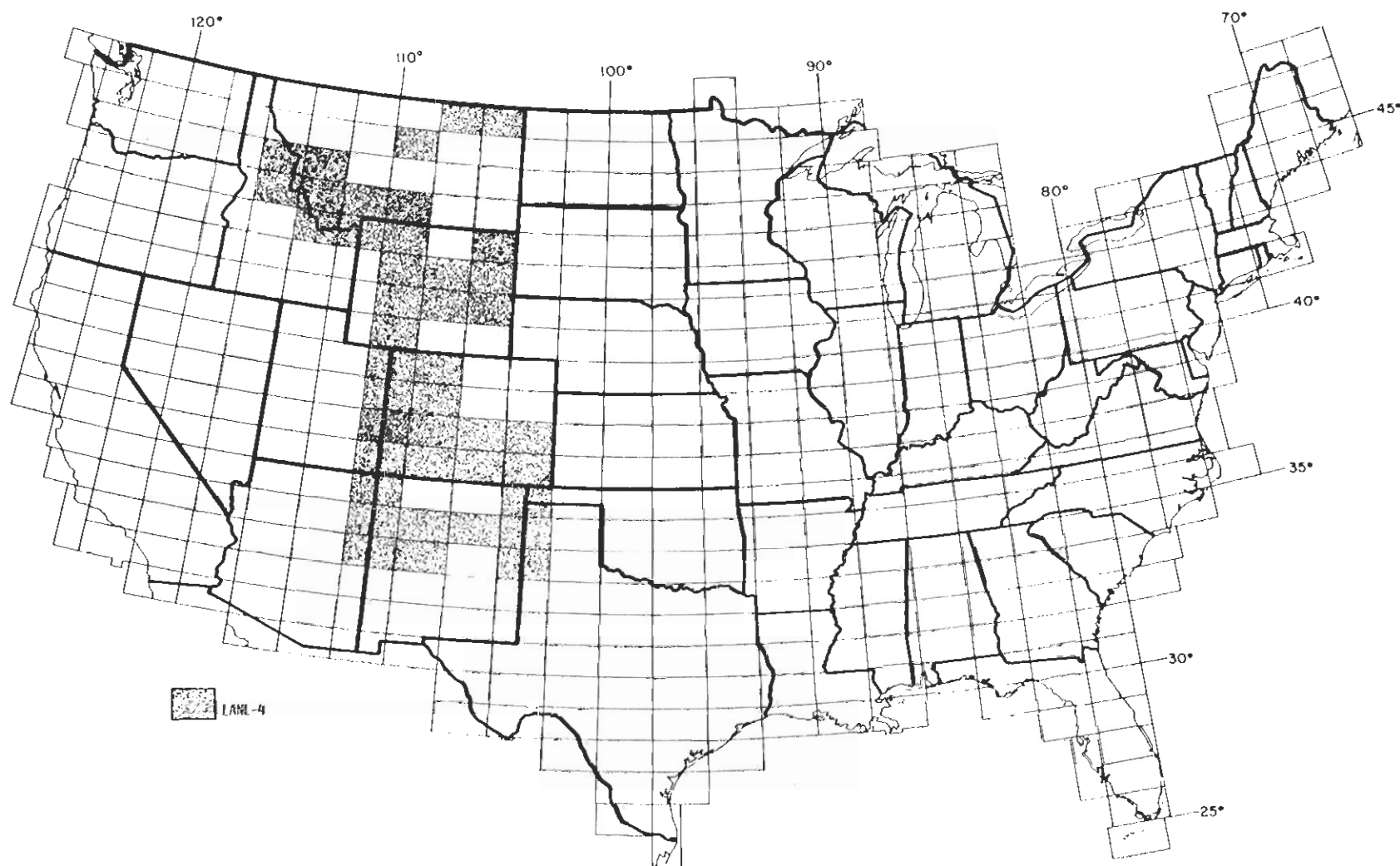


Figure 3.3, Continued
AREA COVERED BY ANALYTICAL PROCEDURE LANL 4

3.3.1.4 Neutron Activation Analysis (LANL 5)

Immediately upon completion of the uranium analysis of sediment samples by DNC, the same 4 ml sediment split was entered into the neutron activation analysis (NAA) sequence. The full DNC/NAA timing sequence used at the LANL for each sediment sample was: 20 sec irradiation, 10 sec delay, 30 sec DNC analysis, 20 min delay, 500 sec γ -ray count for short-lived radionuclides, 96 sec re-irradiation, 14 day delay, and finally a 1000 sec γ -ray count for long-lived radionuclides. The γ -ray counting was done by lead-shielded Ge(Li) detectors; the 4096-channel γ -ray data were recorded and subsequently analyzed for each individual element by computer.

Elements analyzed for: Al, Au, Ba, Ca, Ce, Cl, Co, Cr, Cs, Dy, Eu, Fe, Hf, K, La, Lu, Mg, Mn, Na, Rb, Sb, Sc, Sm, Sr, Ta, Tb, Th, Ti, V, Yb, and Zn.

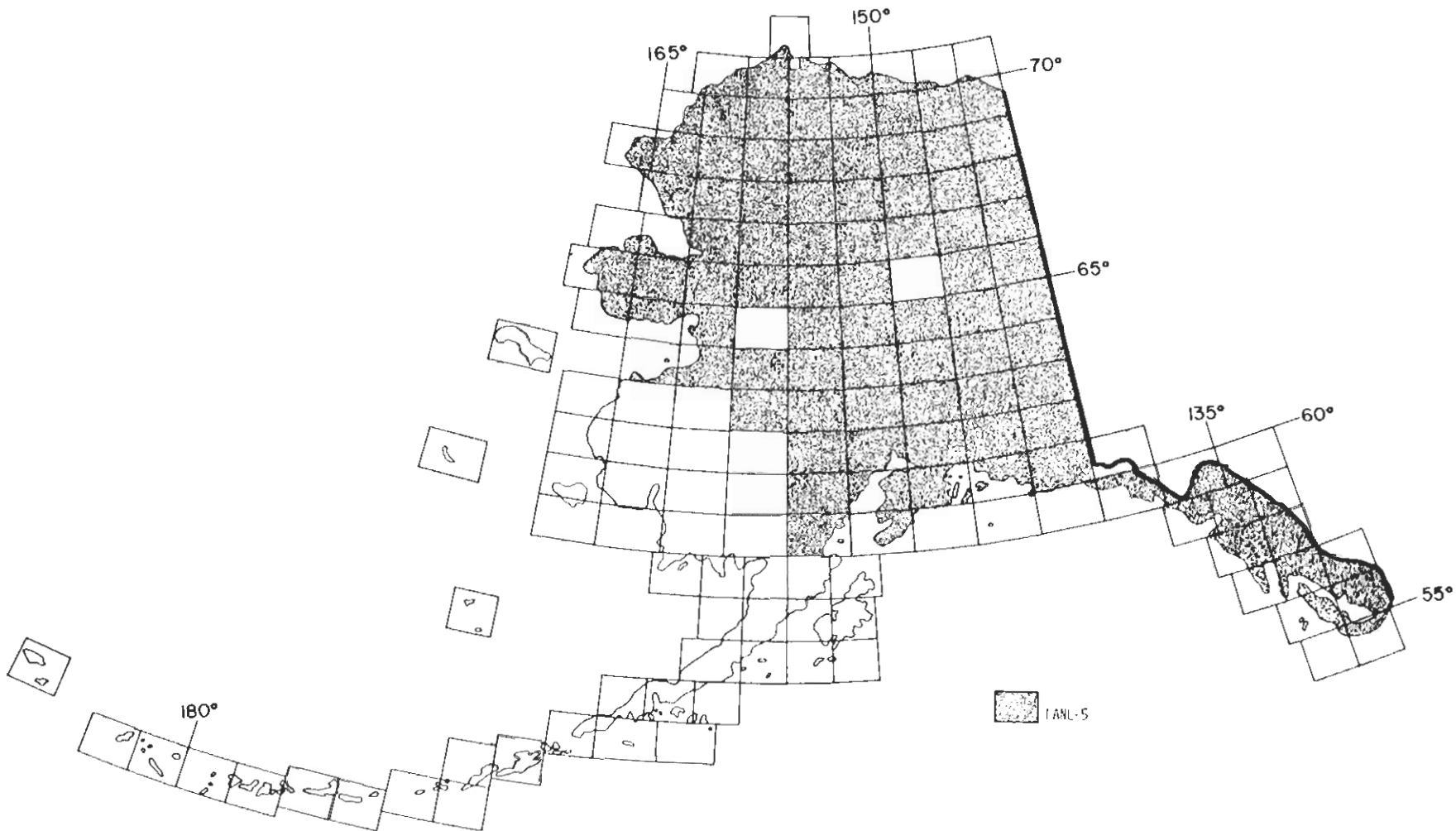


Figure 3.4
AREA COVERED BY ANALYTICAL PROCEDURE LANL 5

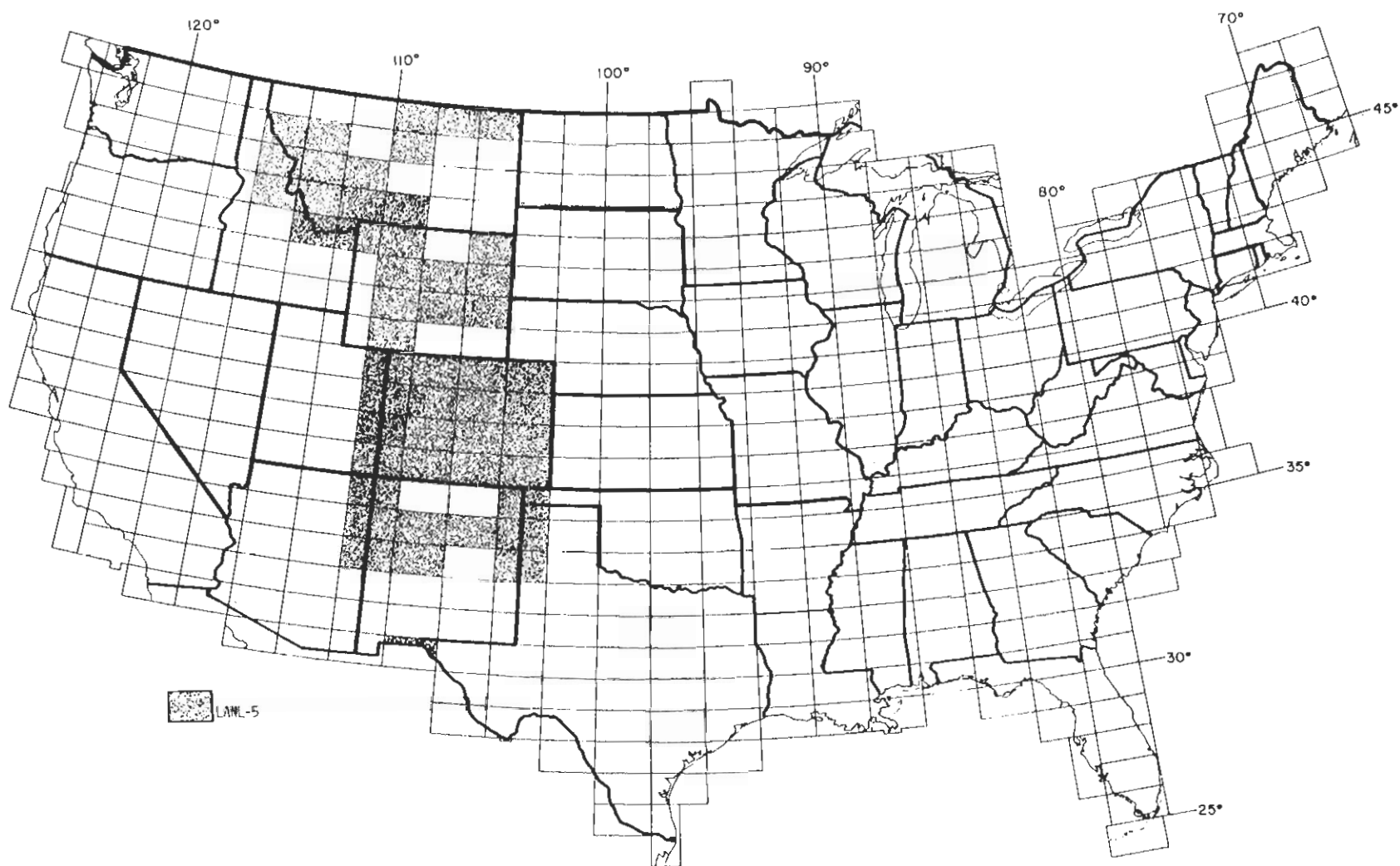


Figure 3.4, Continued
AREA COVERED BY ANALYTICAL PROCEDURE LANL 5

3.3.2 LLL

3.3.2.1 Neutron Activation Analysis (LLL 1)

Rabbits, each containing 1 to 2 g of sample, were blown by compressed nitrogen through polyethylene tubing into and out of the reactor, into and out of a delayed neutron counter, to one of four gamma ray detectors, and finally to storage. The activation analysis was controlled by computers which identified each rabbit and routed it successively into the reactor for a short irradiation - to the delayed neutron counter for uranium determination - to the delay station to allow decay of short-lived isotopes - to one of the gamma detectors coupled to pulse height analyzers - back to the reactor for a longer irradiation - and finally to storage. After storage for one week the gamma spectra of the rabbits were again examined for longer-lived nuclides.

Elements analyzed for: Ag, Al, As, Ba, Br, Ca, Ce, Cl, Co, Cr, Cs, Dy, Eu, Fe, Hf, Hg, K, La, Lu, Mg, Mn, Na, Rb, Sb, Sc, Sm, Sr, Ta, Tb, Th, Ti, U, V, W, Yb, and Zn.

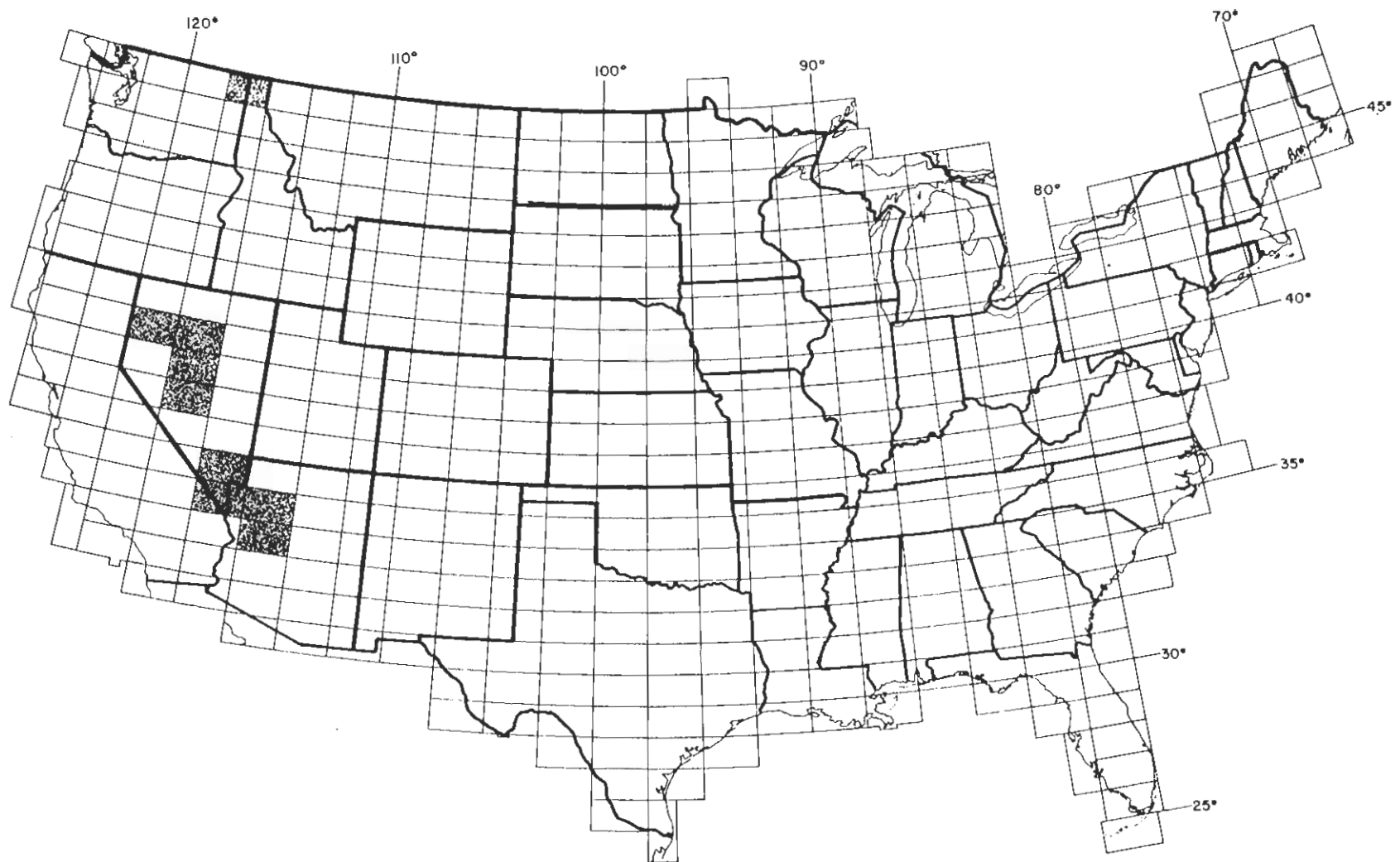


Figure 3.5
AREA COVERED BY ANALYTICAL PROCEDURE LLL 1

3.3.3 ORGDP

3.3.3.1 Fluorescence Spectroscopy (ORGDP 1)

Twenty ml of the dissolved sediment sample was transferred to a 50 ml vial and extracted into 2 ml of 2% TOPO in Varsol. A 50 μ l aliquant was transferred onto a sodium fluoride pellet which was then sintered for 20 min at 900°C. The fluorescence intensity of the sample and standard pellets was measured using an automated fluorometer. The intensity was read directly by the calculator, and the sample concentration was computed. Results were reported as ppm of the original sediment sample.

Element analyzed for: U

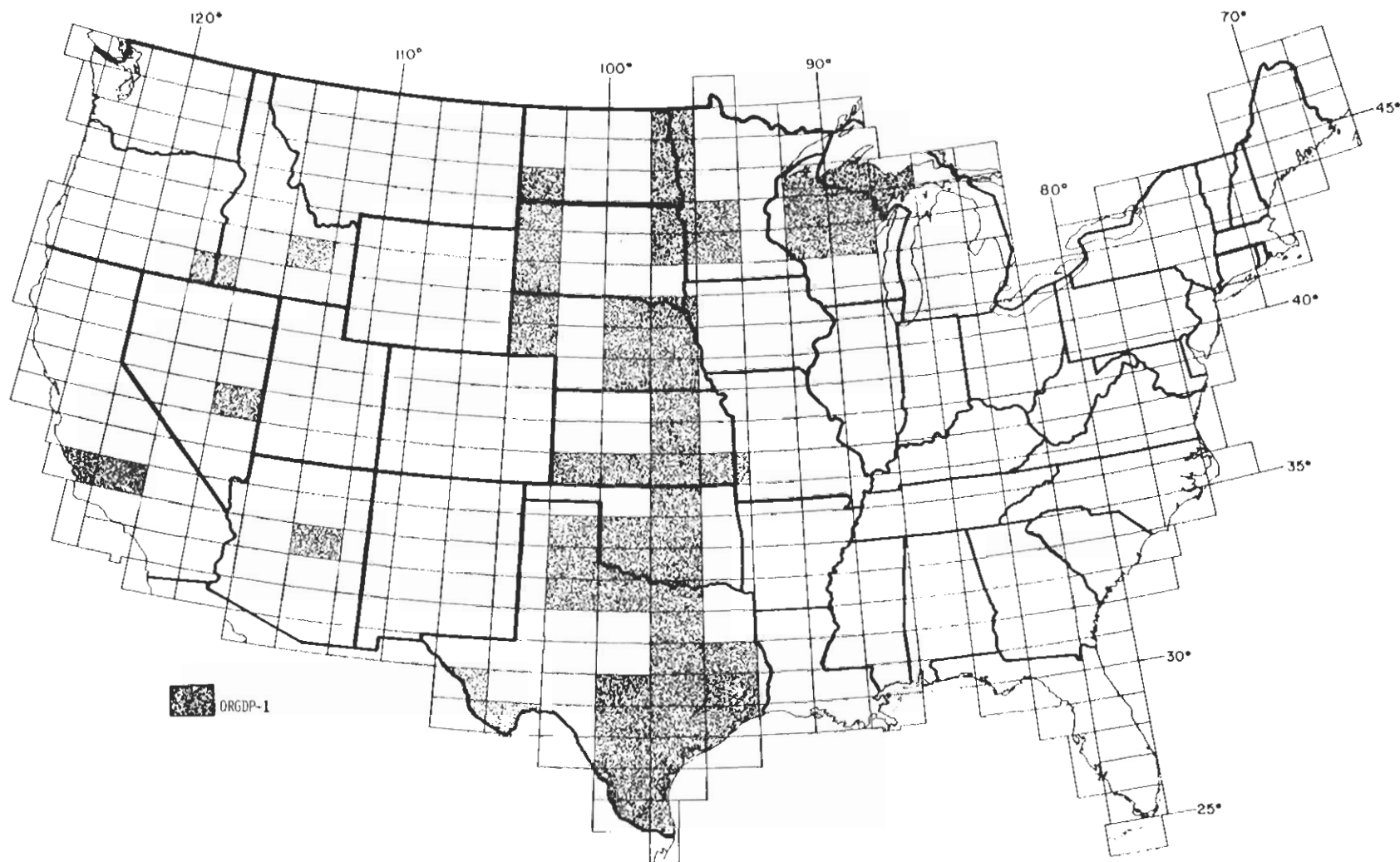


Figure 3.6
AREA COVERED BY ANALYTICAL PROCEDURE ORGDP 1

3.3.3.2 Neutron Activation Analysis (ORGDP 2)

A total uranium value was determined for stream sediments by neutron activation using delayed neutron counting. Approximately 2 g of <100 mesh sediment material was loaded into a polyethylene rabbit. It was transferred through a pneumatic transfer system into a reactor where it was exposed to a neutron flux of 3×10^{13} n/cm²-sec for 60 sec and then transferred to a neutron counter. Results were reported as ppm of the dry sediment.

Element analyzed for: U

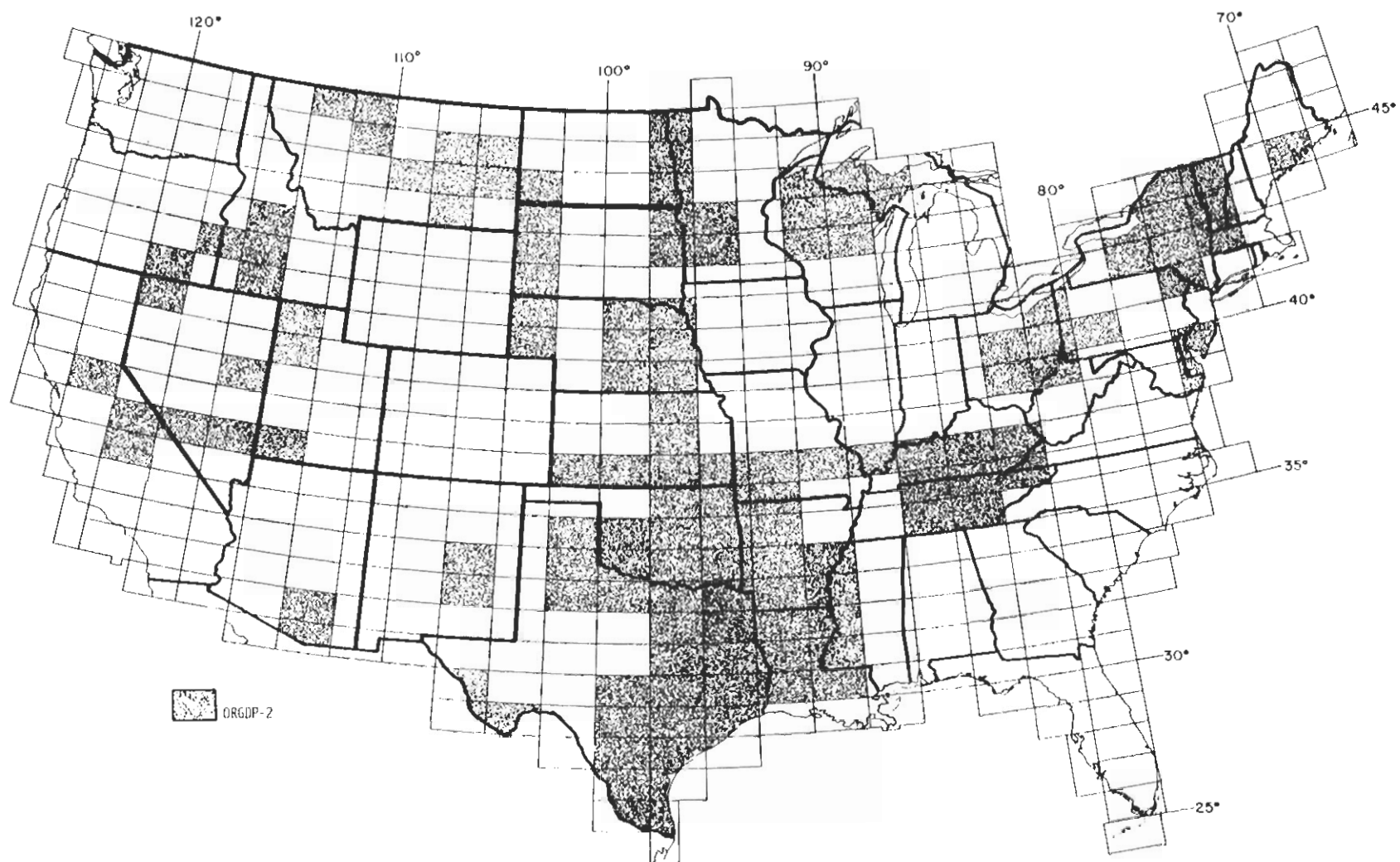


Figure 3.7
AREA COVERED BY ANALYTICAL PROCEDURE ORGDP 2

3.3.3.3 Emission Spectrochemical Analysis (ORGDP 3 - 7)

Sediment extracts were analyzed spectrochemically using a direct-reading spectrograph with a Inductively Coupled Argon Plasma (ICAP) source. The sample was aspirated directly into the source with no additional preparation required.

The spectrochemical analysis of stream sediment for some of the early quadrangles was done using a dc arc source instead of the ICAP. In this procedure (ORGDP 3 and 4), approximately 0.5 g of the <100 mesh fraction of the dried sediment sample was ground in an Al_2O_3 mortar, and 15 mg was weighed and mixed on the balance pan with a level scoop of graphite (approximately 17 mg). This mixture was tamped into a thin-walled, undercut electrode with 2 mm x 4 mm crater. The electrodes were maintained at 200°C until arced. They were arched until the sample was totally consumed (70 sec), using a current of 15 A dc. The concentration of each element was read from the photographed spectra by visual comparison to standards prepared by grinding oxides of the desired elements into a matrix of 60% SiO_2 , 15% Al_2O_3 , 10% Fe_2O_3 , 10% CaO , 2% Na_2CO_3 , 2% K_2CO_3 , and 1% MgO .

Elements analyzed for:

<u>ORGDP 3</u>	<u>ORGDP 4</u>	<u>ORGDP 5</u>	<u>ORGDP 6</u>	<u>ORGDP 7</u>
Ag	Ag	Ag	Ag	Ag
		Al	Al	Al
Au				
B	B	B	B	B
Ba	Ba	Ba	Ba	Ba
		Be	Be	Be
		Ca	Ca	Ca
			Ce	Ce
Co	Co	Co	Co	Co
Cr	Cr	Cr	Cr	Cr
Cu	Cu	Cu	Cu	Cu
		Fe	Fe	Fe
				Hf
			K	K
				La
Li	Li	Li	Li	Li
		Mg	Mg	Mg
Mn	Mn	Mn	Mn	Mn
Mo	Mo	Mo	Mo	Mo
		Na	Na	Na
Nb	Nb	Nb	Nb	Nb
Ni	Ni	Ni	Ni	Ni
P	P	P	P	P
Pb	Pb			Pb
Pt	Pt			
Sc	Sc	Sc	Sc	Sc
			Sr	Sr
Th	Th	Th	Th	Th
Ti	Ti	Ti	Ti	Ti
V	V	V	V	V
Y	Y	Y	Y	Y
Zn	Zn	Zn	Zn	Zn
Zr	Zr	Zr	Zr	Zr

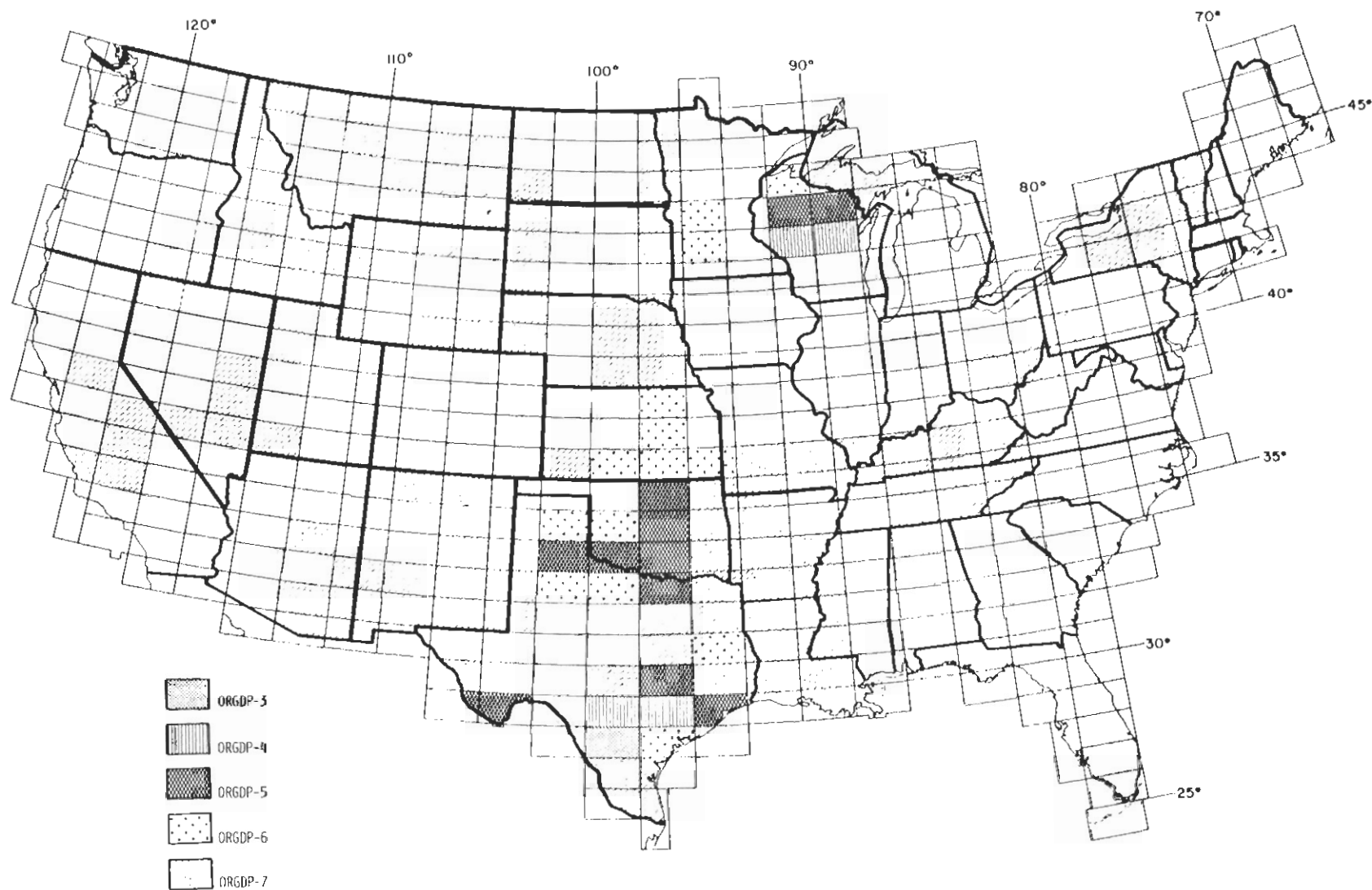


Figure 3.8
AREA COVERED BY ANALYTICAL PROCEDURES ORGDP 3 - 7

3.3.3.4 Atomic Absorption Spectroscopy (ORGDP 8)

Arsenic and selenium concentrations in aliquots of dissolved sediment were determined using hydride generation flameless atomic absorption spectroscopy. An automated, microprocessor-controlled, atomic absorption spectrometer was used for the analysis. Sixty dissolved sediment samples (diluted from 5 to 35 ml) were loaded in the sample changer. Twenty ml of each sample was pumped into the reactor followed by 15 ml of 15% sulfuric acid, and 10 ml of 0.20% sodium borohydride in 0.5% KOH. The arsenic and selenium hydrides and excess hydrogen gas were collected in a rubber balloon and after 45 sec were sparged through a quartz atomizer tube heated to 600°C. The absorption of the 193.7 nm arsenic line or the 196.0 nm selenium line was measured, and the resulting peak height was recorded. A series of solutions with standard concentrations was analyzed as described and a least-squares fit to a second-order equation applied to the observed peak heights. The calculated coefficients were then used to calculate sample concentrations. During normal operations, every tenth sample was a known standard.

Elements analyzed for: As and Se

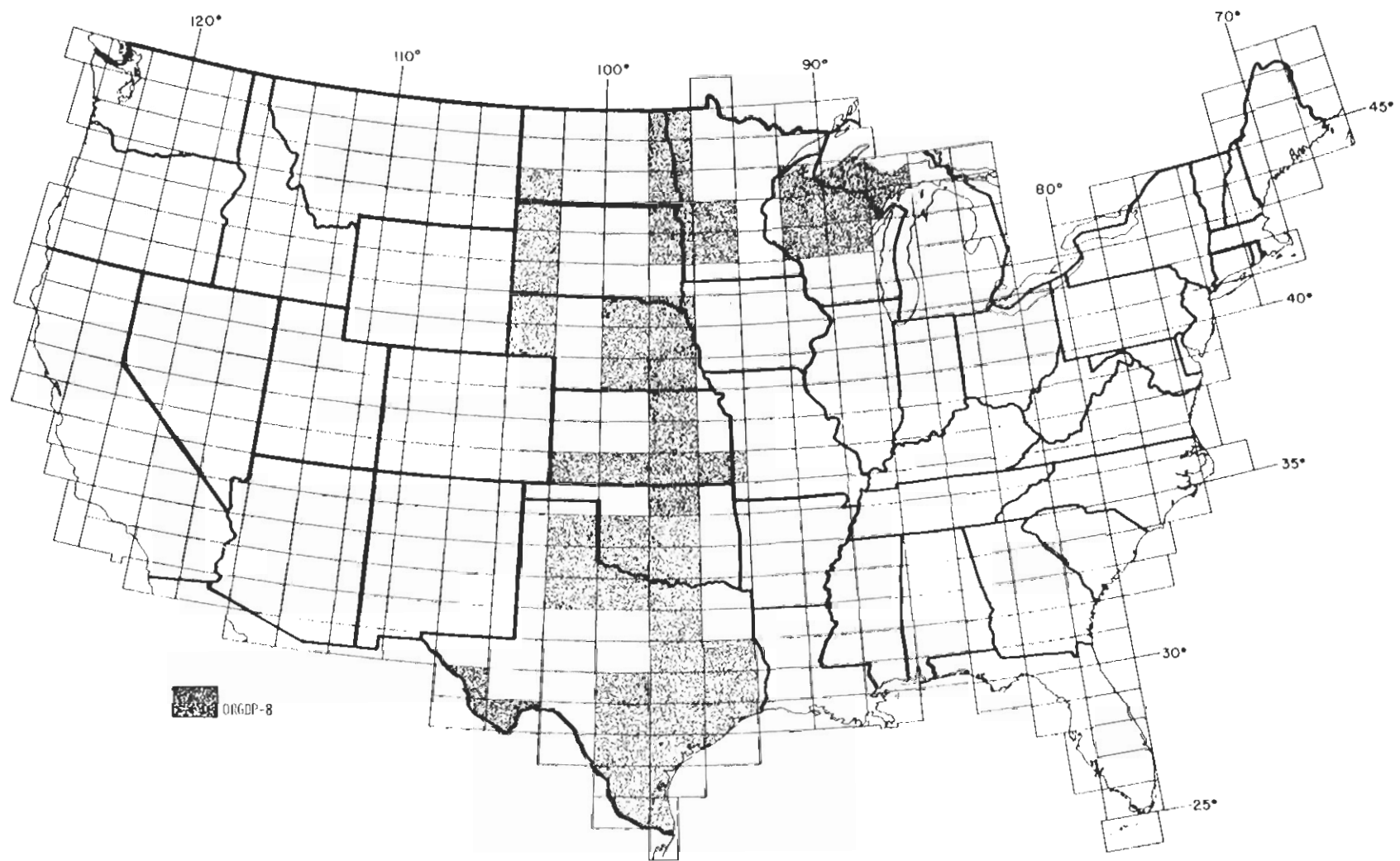


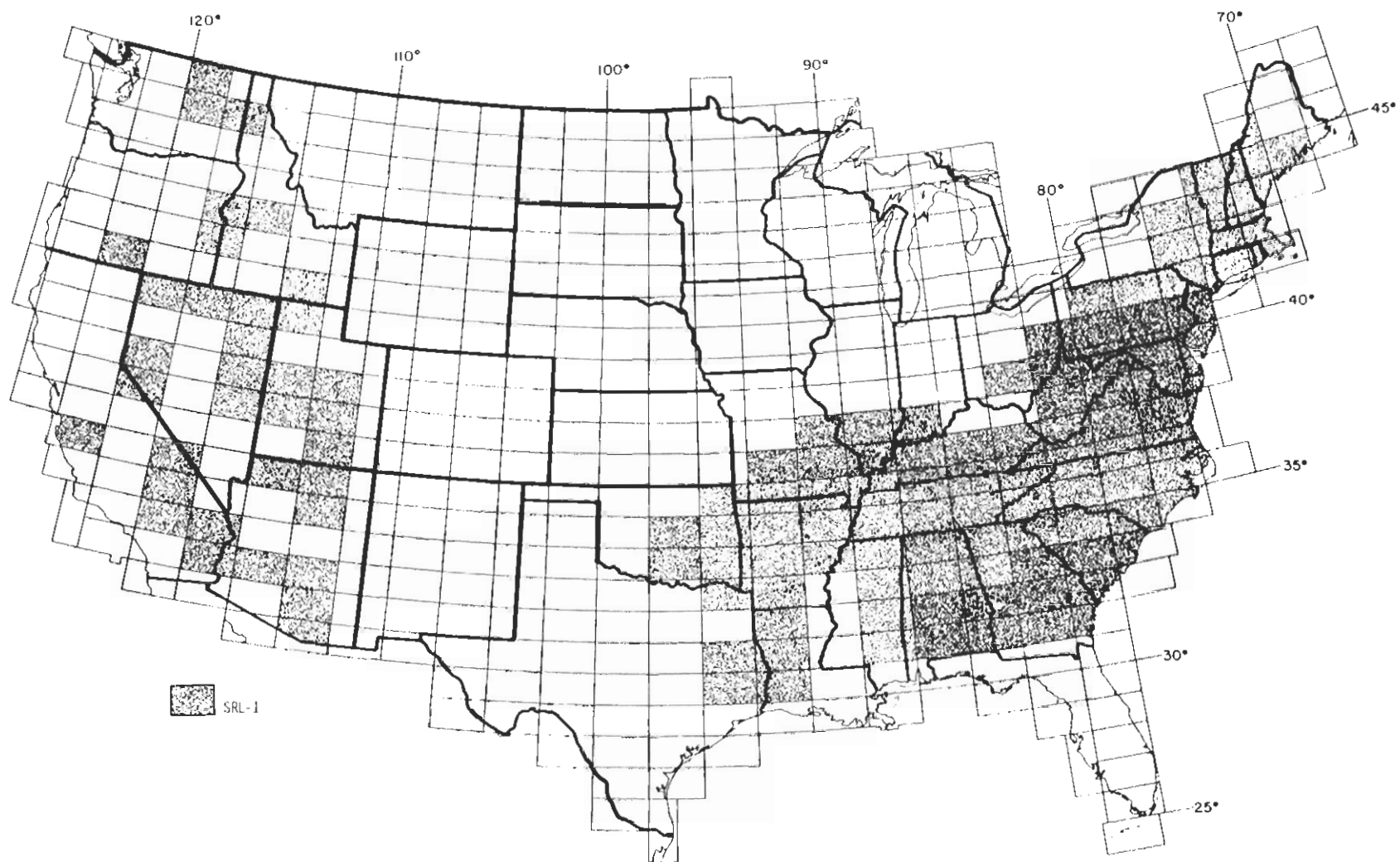
Figure 3.9
AREA COVERED BY ANALYTICAL PROCEDURE ORGDP 8

3.3.4 SRL

3.3.4.1 Neutron Activation Analysis (SRL 1)

Each sample received a 2 sec irradiation and 2 sec combined gama-neutron count to ensure that the sample could safely undergo irradiation. This test was immediately followed by 10 cycles of 6 sec irradiations and 6 sec gama-neutron counts. Uranium concentrations were determined from the neutron counts.

Element analyzed for: U



3-33

Figure 3.10
AREA COVERED BY ANALYTICAL PROCEDURE SRL 1

3.3.4.2 Neutron Activation Analysis (SRL 2)

At the same time that the uranium concentration was being determined by neutron counts (SRL 1), short-lived (<2 min) activation products were measured by the gamma counts, followed by an additional 400 sec irradiation, followed by gamma counting after decay for 600 sec (to measure intermediate-lived activation products) and 7 days (to measure long-lived activation products).

Elements analyzed for: Al, Ce, Dy, Eu, Fe, Hf, La, Lu, Mn, Sc, Sm, Na, Th, Ti, V, and Yb

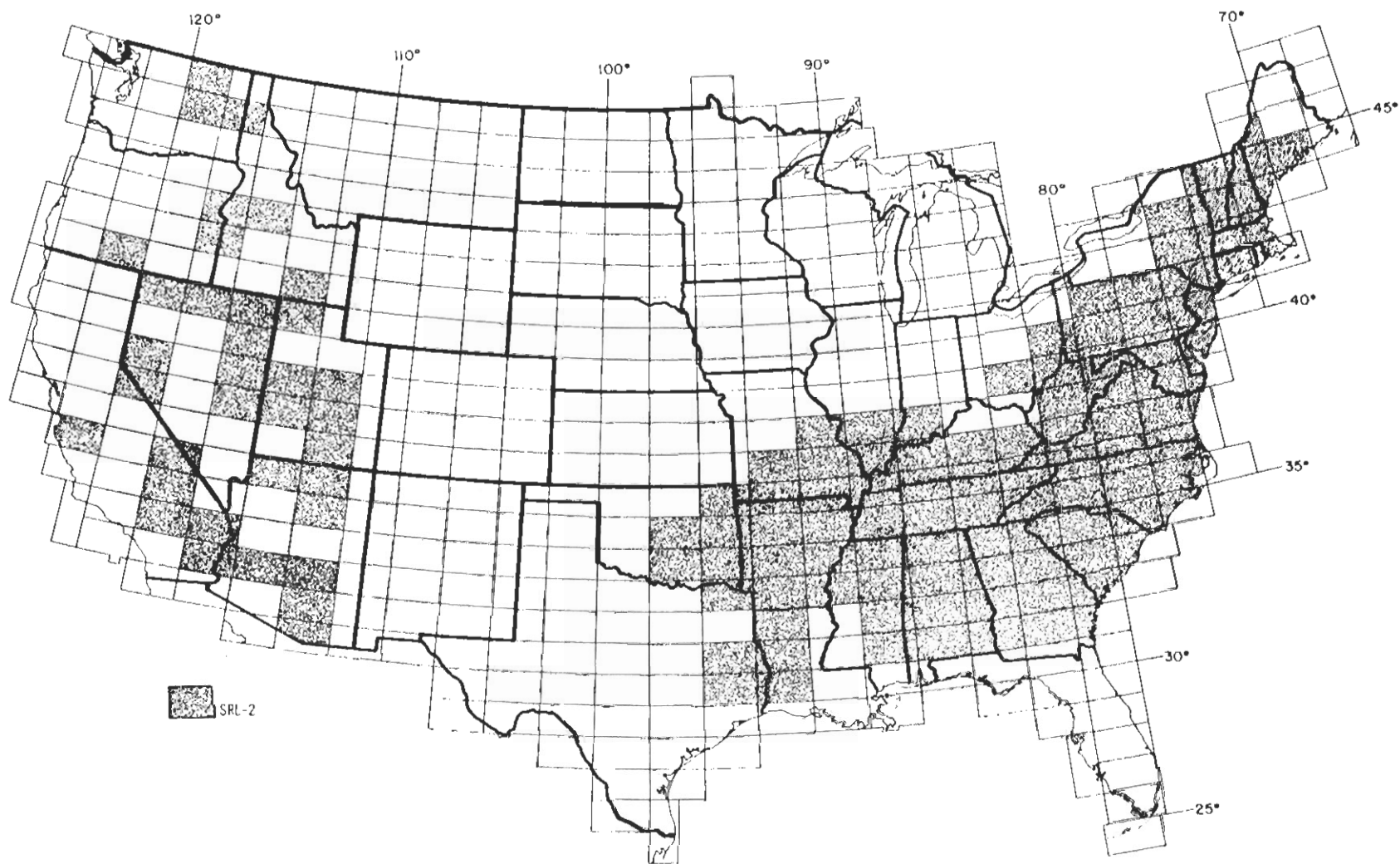


FIGURE 3.11
AREA COVERED BY ANALYTICAL PROCEDURE SRL 2

3.3.4.3 Atomic Absorption Analysis/Colorimetric Analysis/ Flame Emission Analysis (SRL 3)

Additional analysis was performed by atomic absorption (AA) analysis, colorimetric analysis (CA), and flame emission (FE) analysis as shown in figure 3.12.

Elements analyzed for:

<u>AA</u>	<u>CA</u>	<u>FE</u>
Ag	Nb	K
Ba	P	Li
Be	W	
Co		
Cr		
Cu		
Mg		
Mo		
Ni		
Pb		
Sn		
Sr		
Y		
Zn		

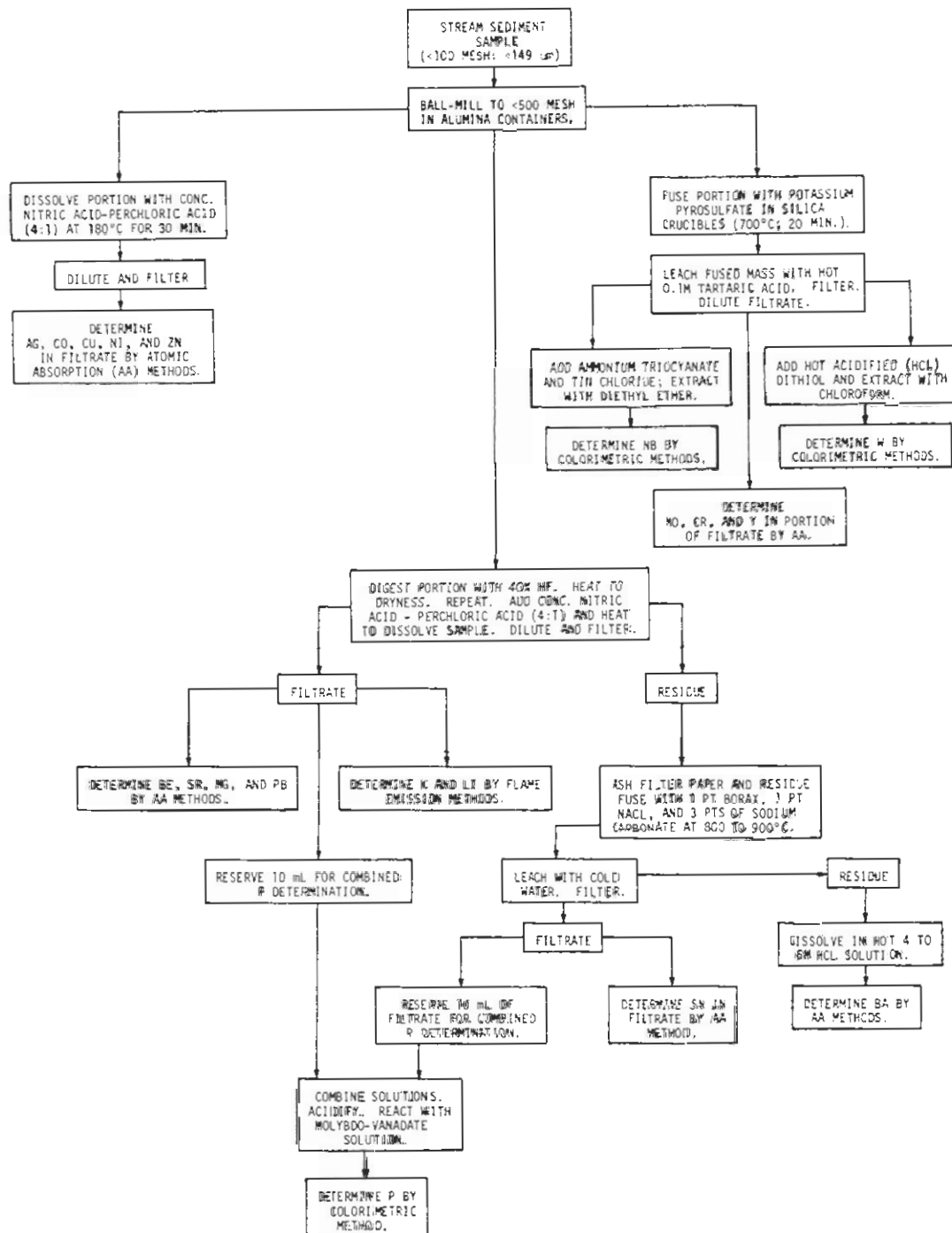


FIGURE 3.12
ANALYTICAL PLAN FOR PROCEDURE SRL 3

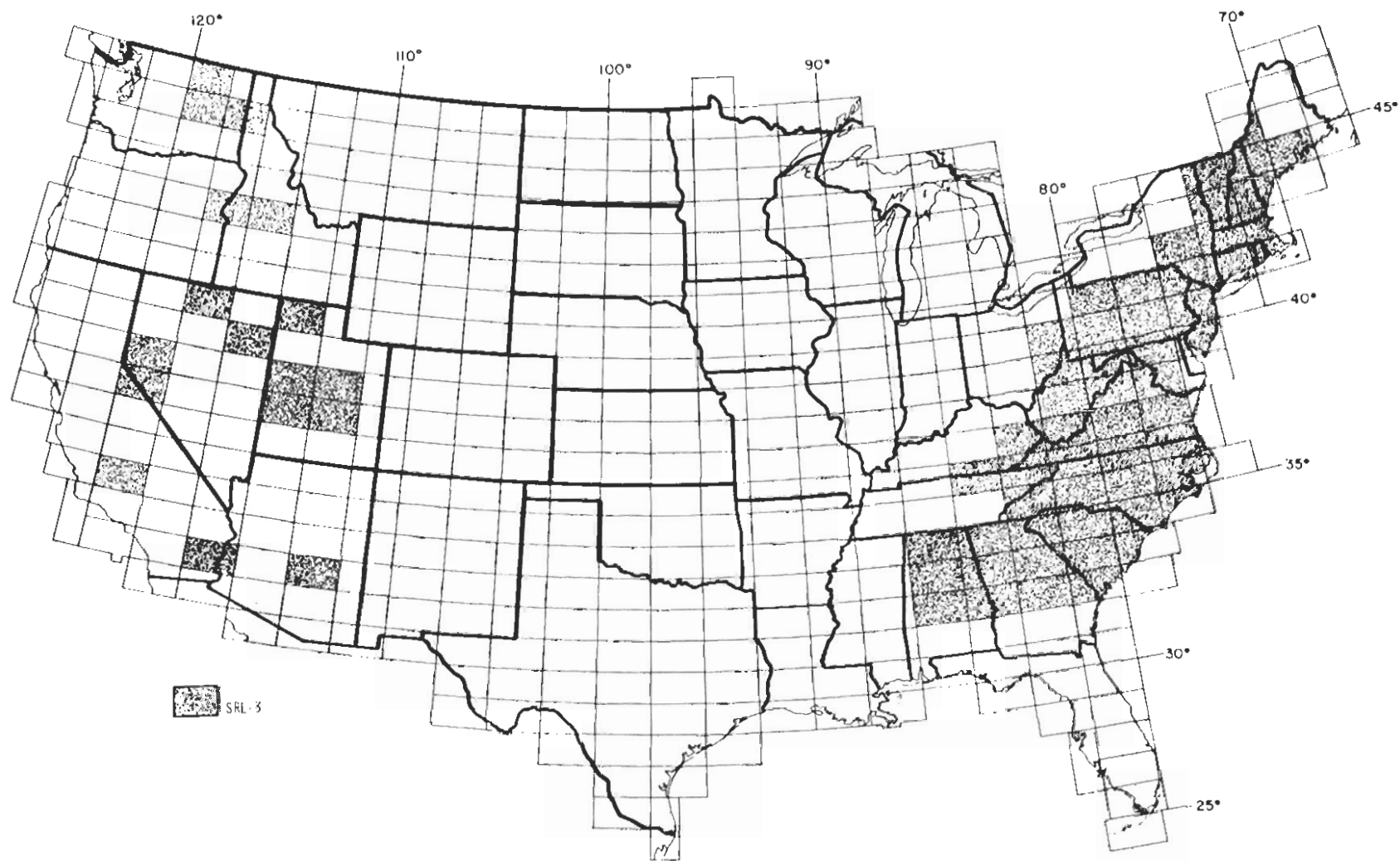


Figure 3.13
AREA COVERED BY ANALYTICAL PROCEDURE SRL 3

4.0 WATER SAMPLES

The following is a brief summary of the sample collection, preparation, and analytical procedures for each of the laboratories.

4.1 Sample Collection

4.1.1 LANL

Springs were sampled as near to their point of emergence as possible; stream waters were taken from the fast-flowing current away from the bank; ponds (including small lakes and reservoirs) were sampled from just below the surface, near their center; and well waters were taken near the wellhead if the well was pumping.

4.1.2 LLL

No information.

4.1.3 ORGDP

Water samples were collected in two 250 ml polyethylene bottles.

Stream water samples were collected from the center of the stream.

Groundwater samples were collected as close to the source as possible.

4.1.4 SRL

Water samples were collected in a 2 liter plastic collection bottle.

4.2 Sample Preparation

4.2.1 LANL

Water samples were field filtered through a 0.45 μm membrane filter (except in Alaska where this step was omitted) directly into one each, prewashed and sealed, 41 ml reactor 'rabbit' and 25 ml vial (both polyethylene). Water samples in both the rabbit and vial were then acidified to a pH <1 with 8N reagent-grade HNO_3 (except in Alaska where only the 25 ml vial was acidified).

4.2.2 LLL

Water samples were field acidified. A 20 ml aliquot was removed from each acidified water sample and the remainder was placed in an oven (in a polyethylene-bag-lined polyethylene bottle) until dry. The polyethylene bag was removed, rolled up and placed in a vial, and the vial was placed in a rabbit for DNC uranium analysis.

4.2.3 ORGDP

Water sample preparation was performed in a clean room to avoid contamination. The samples were vacuum filtered through 0.45 μm cellulose acetate paper and then submitted for analysis.

4.2.4 SRL

Water samples were pressure filtered in the field and mixed with 2 ounces of ion exchange resin for at least 10 min. For samples with a conductivity of less than 500 $\mu\text{mhos/cm}$, a full liter was used. If the conductivity was between 500 and 1000 $\mu\text{mhos/cm}$, then 500 ml was used. If the conductivity exceeded 1000 $\mu\text{mhos/cm}$, only 200 ml of the filtered water was used. The resin was submitted for analysis

4.3 Analysis - Reconnaissance Samples

4.3.1 LANL

4.3.1.1 Fluorometry/Delayed-Neutron Counting (LANL 6)

Under normal procedures, the 25 ml water vial was vigorously shaken and duplicate 0.20 ml aliquots of water were transferred to platinum dishes. The aliquots were evaporated under heat lamps and a 0.4 g pellet of 2% LiF-98% NaF flux was added to each dish. The pellets were first preheated under lamps, then fused over special propane burners. After each pellet/sample cools, it was excited with ultraviolet radiation in the fluorometer and the fluorescence was read and recorded. The uranium concentrations were determined by using a computer routine which compared the fluorescence from each pellet with those from other pellets, run at the same time, containing uranium-standard solutions and blanks. The uranium concentration of the sample was then the average obtained from the duplicate aliquots. When a sample run by the normal procedure was determined to have <0.2 ppb uranium, it was routinely reanalyzed using duplicate aliquots that had been put through an additional evaporative concentration step that provided a 10x concentration factor. When a uranium concentration lower than 0.02 ppb was found in an aliquot, it was arbitrarily assigned a value of 0.01 ppb.

Only waters with >40 ppb uranium (as determined by fluorometry) or those with impurities that cause interference with uranium-induced fluorescence were analyzed by delayed-neutron counting (DNC). Samples were received

in 4l ml or 25 ml vials and were transferred to clean 4l ml rabbits before being analyzed. Each water sample was weighed, and its weight (less that of the rabbit) were recorded. The vials were then loaded into a 25-sample transfer clip. The reactor pneumatic transfer system and background radiation levels were checked and four standards were run for calibration. The transfer clip was installed on the pneumatic feed line and the samples were cycled through the system (typically, a 60 sec irradiation, 30 sec delay, and 60 sec count cycle was used). The uranium concentration was automatically measured, converted to ppb, and entered into a computer data base.

Element analyzed for: U

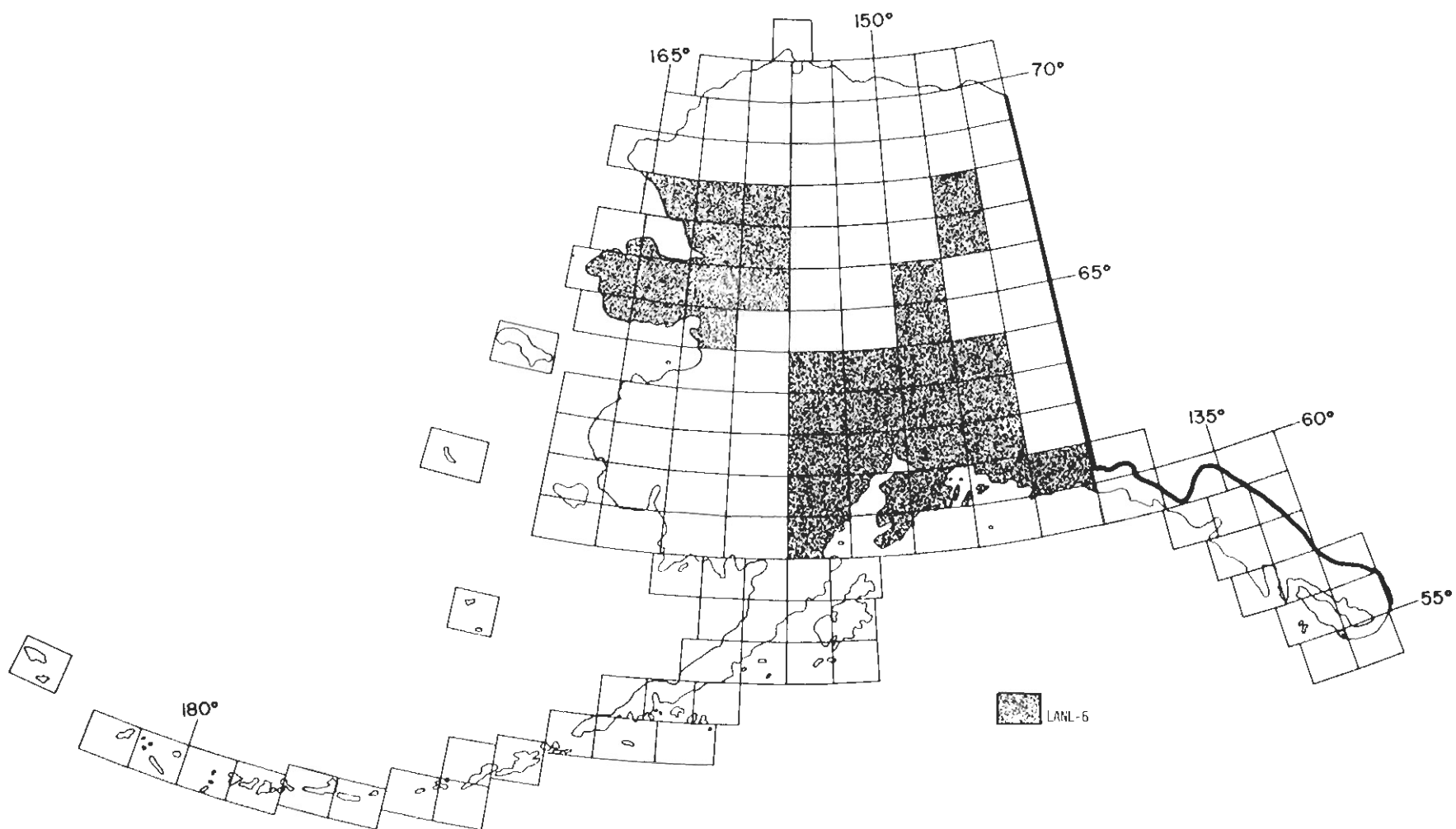


Figure 4.1
AREA COVERED BY ANALYTICAL PROCEDURE LANL 6

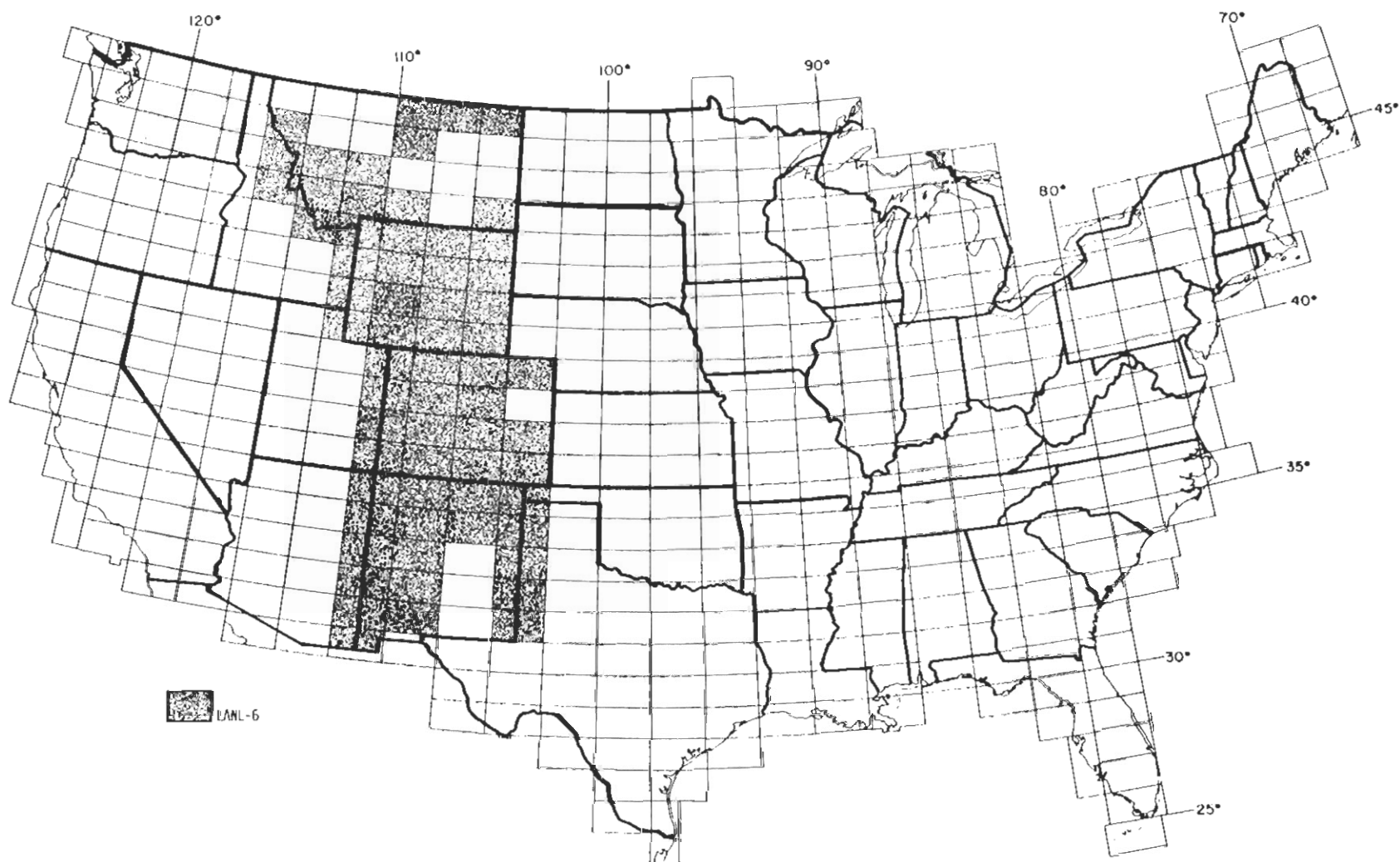


Figure 4.1, Continued
AREA COVERED BY ANALYTICAL PROCEDURE LANL 6

4.3.1.2 Emission Spectrochemical Analysis (LANL 7)

The sample solution was taken up from its container, nebulized, and injected into the plasma source at a rate of $9.2 \times 10^{-9} \text{ m}^3/\text{sec}$. After the computer determined that the photomultiplier tubes had stabilized, a 15 sec exposure of the resultant spectrum was made on a direct-reading spectrograph. The resulting signals were read directly into a computer and converted automatically to give the elemental concentrations. Corrections for interfering elements were made simultaneously by computer. When high (off-scale) results were obtained, the computer called for the insertion of a filter between the plasma source and the spectrograph, repeated the readings, and then converted and stored the corrected elemental concentrations.

Elements analyzed for: Ca, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Ti, and Zn

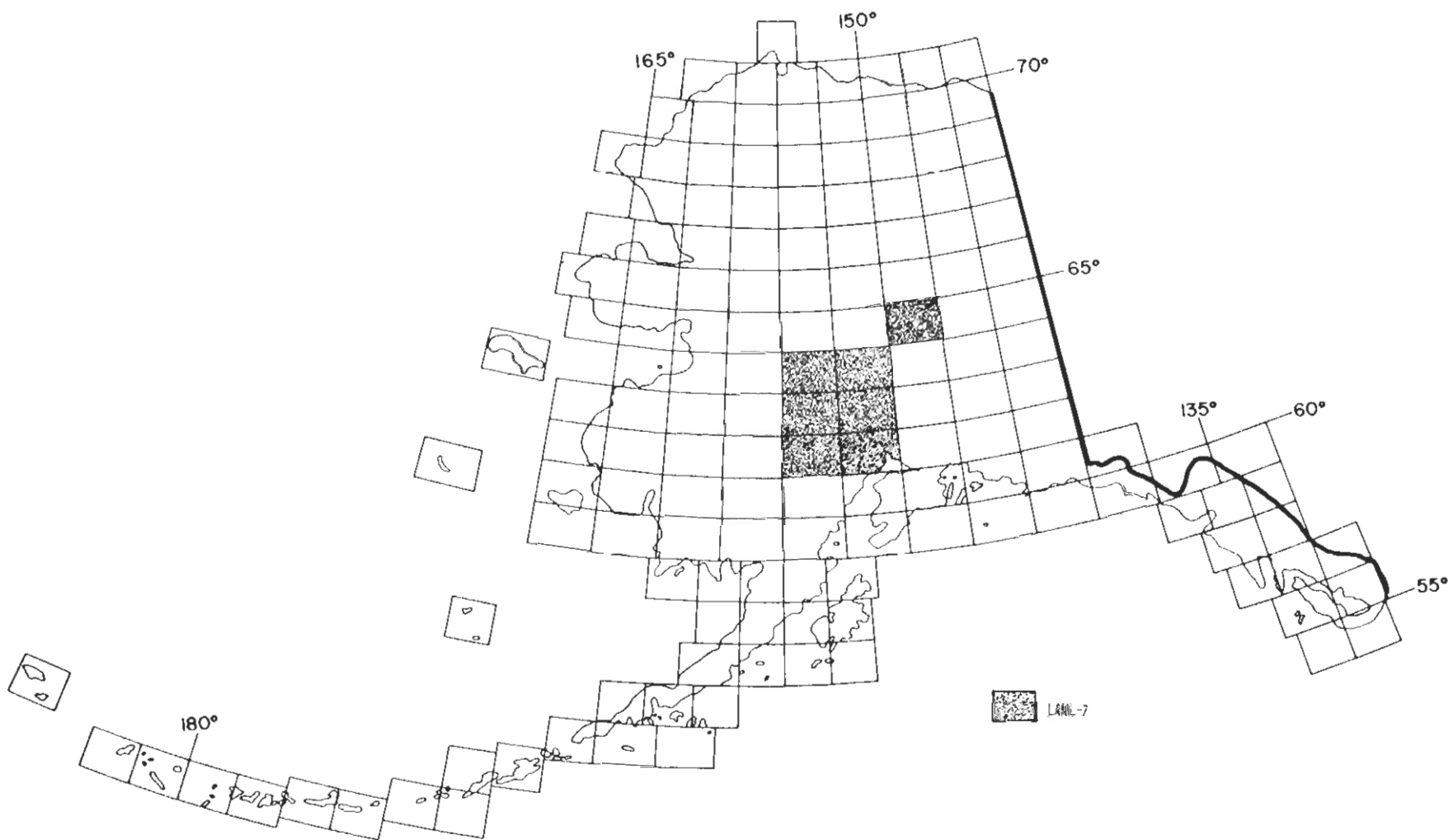


Figure 4.2
 AREA COVERED BY ANALYTICAL PROCEDURE LANL 7

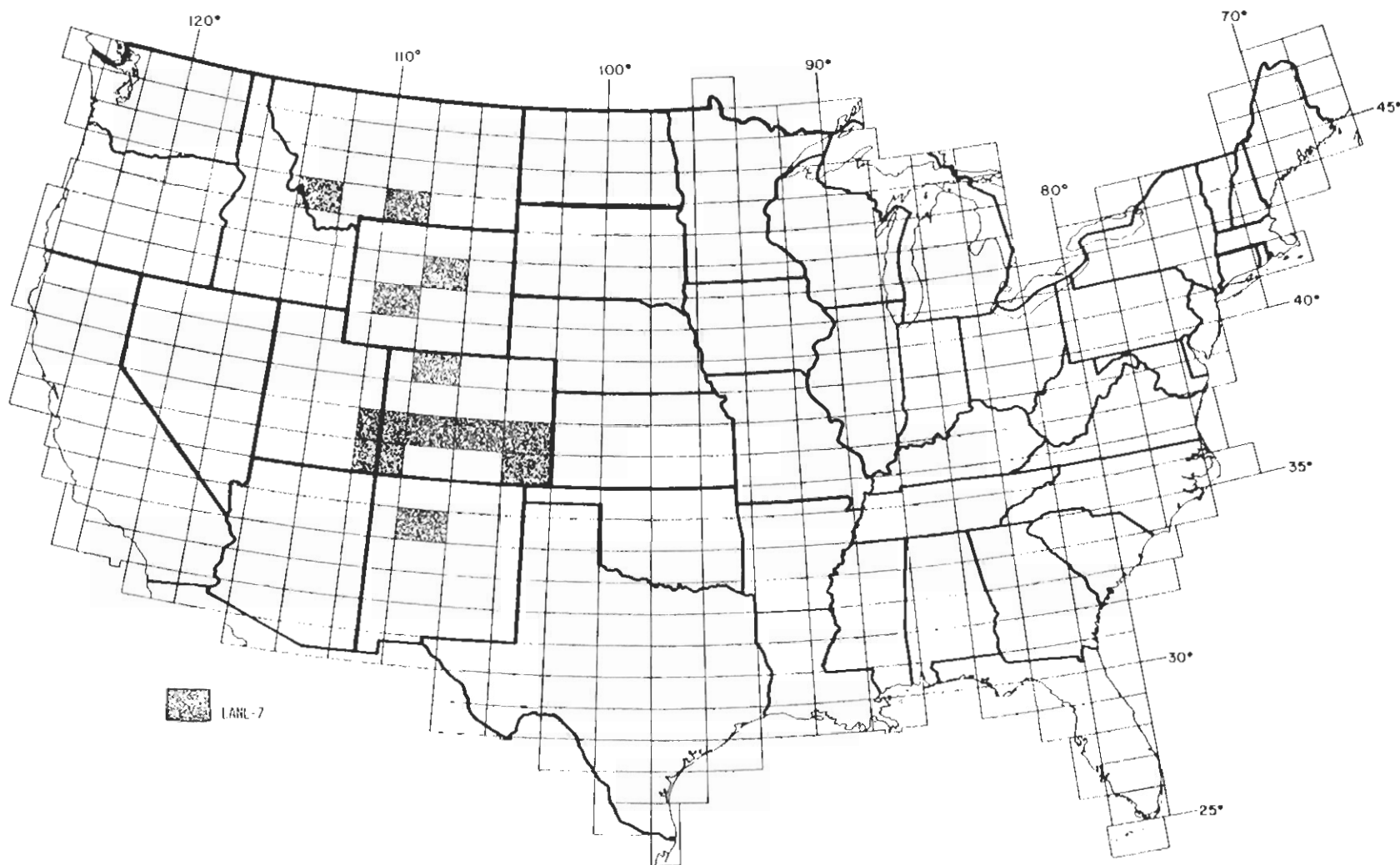


Figure 4.2, Continued
AREA COVERED BY ANALYTICAL PROCEDURE LANL 7

4.3.2 LLL

4.3.2.1 Delayed-Neutron Counting/Emission Spectrochemical Analysis/ Anion Optical Absorption Analysis (LLL 2)

The dried water samples were analyzed by irradiating the sample for a short time (30 sec) and determining the uranium content by delayed-neutron counting (DNC).

The induction-controlled plasma optical emission spectrograph (OES) was used to analyze the dissolved cations in acidified water samples.

Aliquots of each sample were placed in an automatic computer-controlled sample changer which sequentially readed an identifying computer card, transferred a premeasured amount of unknown to the plasma torch, rinsed the sample tube, and recorded the spectral output. This procedure was repeated three times for each sample and the average results were recorded on a floppy disk. A standard solution was run after each sixth sample to measure long-term instrumental drift. The composition was derived, considering such factors as the aliquot ratio and instrumental drift.

Chloride and sulfate analysis were performed with an instrument called a Technicon AutoAnalyzer (TAA) on unacidified water samples. This instrument automatically adds chemicals to aliquots of samples and determines the anions by photo absorption analysis.

Elements analyzed for:

<u>DNC</u>	<u>OES</u>	<u>TAA</u>
U	Al	Cl
	As	
	Ca	$\text{SO}_4^{=}$
	Cd	
	Cu	
	Fe	
	K	
	Li	
	Mg	
	Mo	
	Na	
	P	
	Si	
	Ti	
	V	
	Zn	

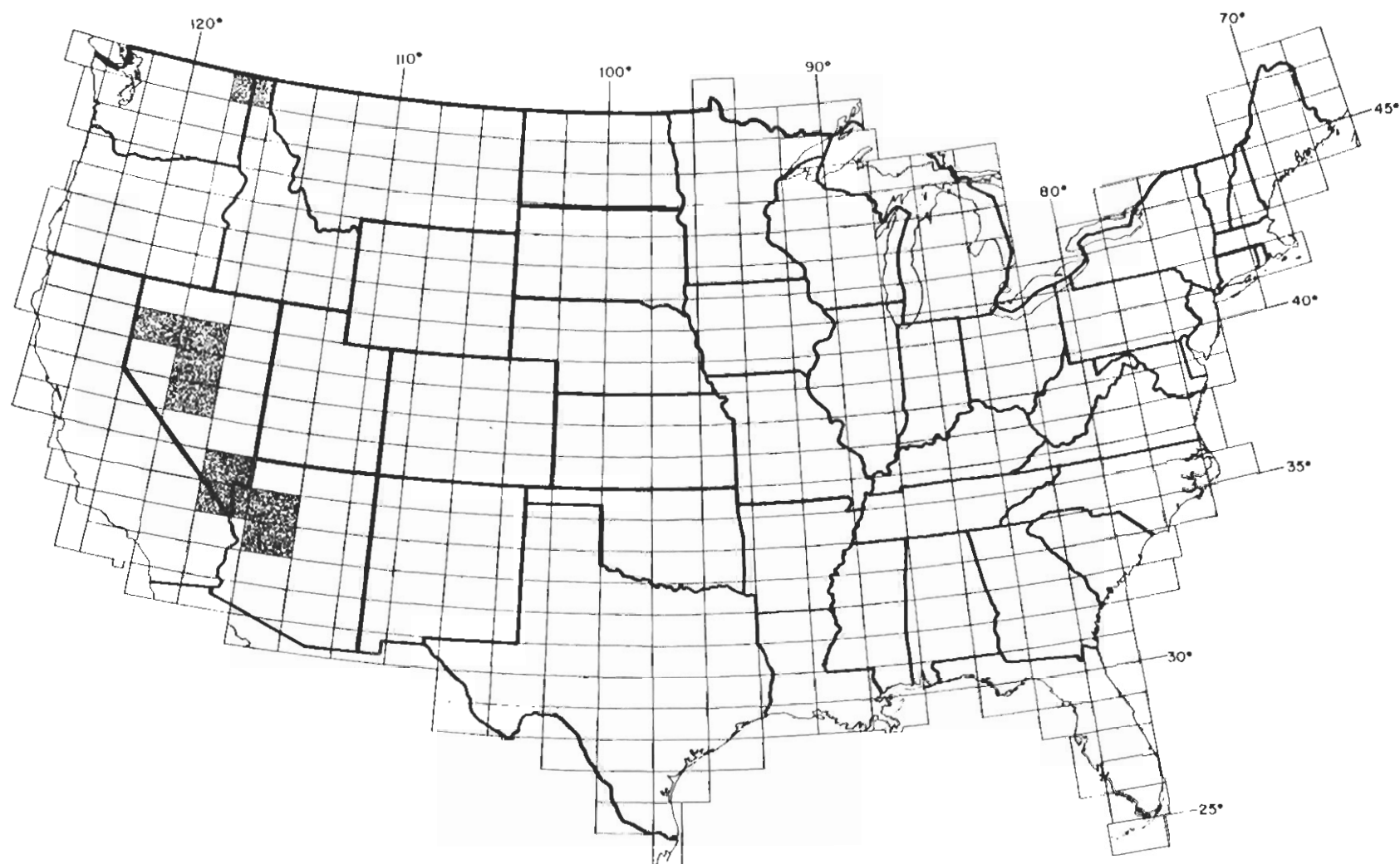


Figure 4.3
AREA COVERED BY ANALYTICAL PROCEDURE LLL 2

4.3.3 ORGDP

4.3.3.1 Fluorescence Spectroscopy/Mass Spectrometry (ORGDP 9)

Uranium was determined in water samples by fluorescence spectroscopy. A 40 ml aliquot of the filtered water sample was transferred to a 60 ml disposable plastic cone and acidified with 1 ml of concentrated nitric acid. The uranium was extracted by adding 1 ml of a 2% solution of Trioctylphosphine oxide (TOPO) in Varsol and then shaking the cone. A 50 μ l pipette was used to transfer an aliquant of the organic phase onto a sodium fluoride pellet which was then sintered for 20 min at 900°C. The fluorescence intensity of the sample and standard pellets were measured using an automated fluorometer. The intensity was read directly by the calculator, and the sample concentration was computed. Results were reported as ppb in the original water sample.

Water samples from regions where the uranium concentration was expected to be below the lower reporting limit of fluorometric analysis were analyzed by isotope dilution thermal emission (IDTE) mass spectrometry. The instrument used for this analysis was a 6-in, 60° magnetic sector instrument with photon counting which was designed and built in Oak Ridge. A 10 ml portion of a filtered water sample was spiked with 5 μ l of a 1 ppm solution of uranium-233 as an internal standard. The spiked sample was acidified with 100 μ l of concentrated nitric acid and extracted into 1 ml of 2% TOPO in carbon tetrachloride. The aqueous layer was removed and the organic phase was air dried, leaving the dry

TOPO and uranium. A 250 μ l portion of a 10% ammonium carbonate solution was added to dissolve the residue, and 2 μ l of this solution was placed on a rhenium filament for analysis. The uranium-233, -235, and -238 isotopes were measured. The uranium-233/uranium-238 value was used to calculate the concentration in the sample. Results were reported as ppb of the original sample.

Element analyzed for: U

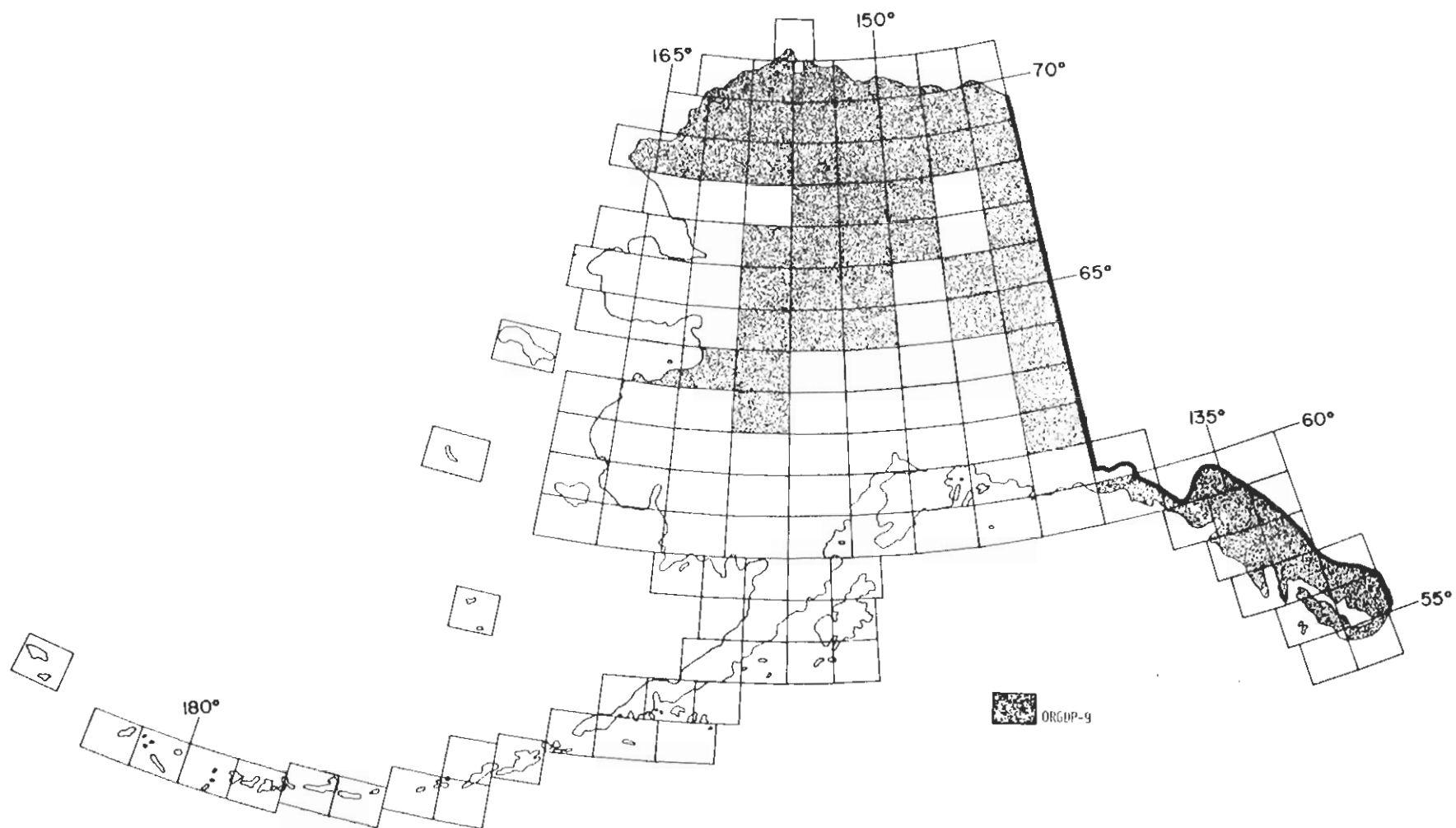


Figure 4.4
AREA COVERED BY ANALYTICAL PROCEDURE ORGDP 9

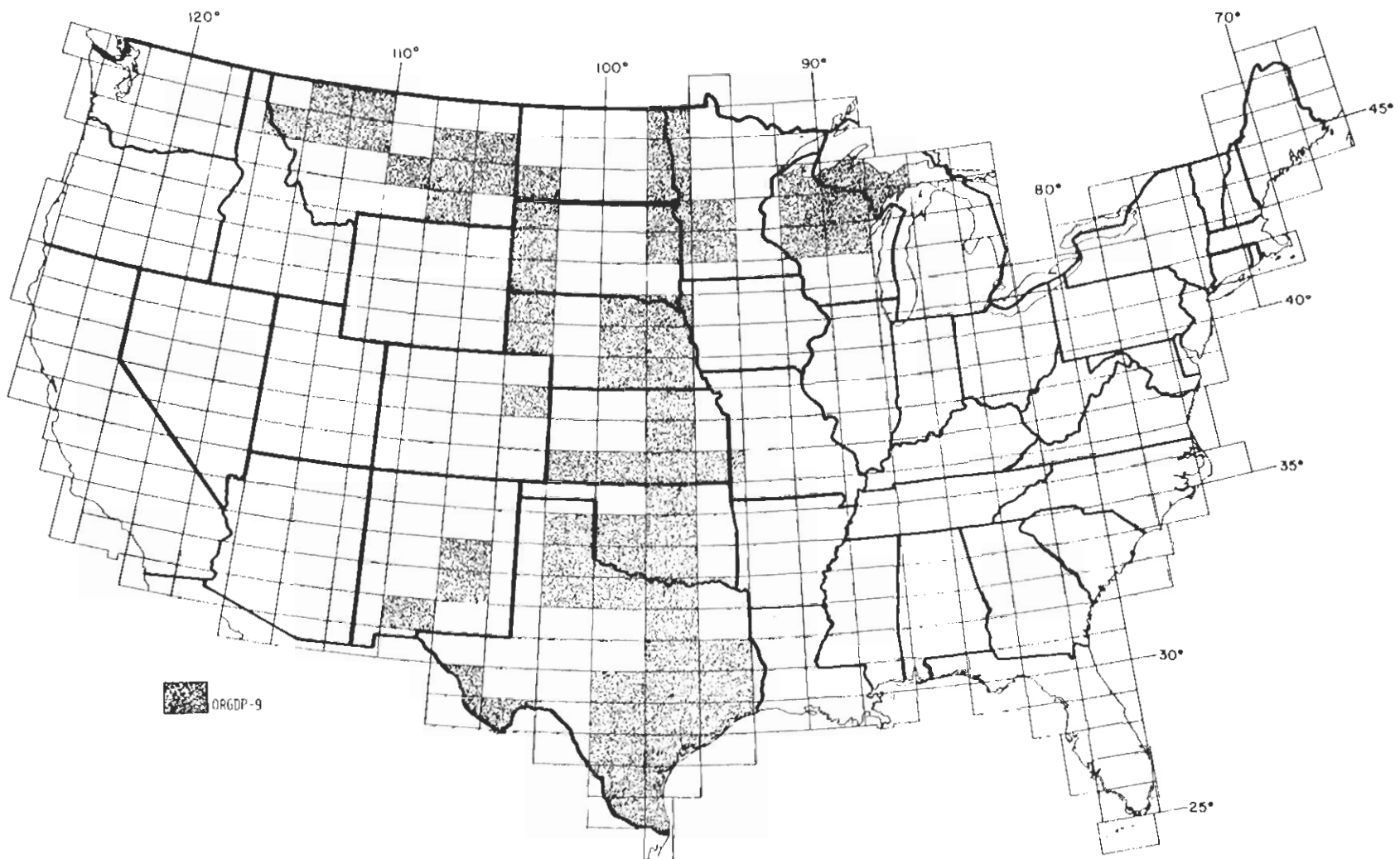


Figure 4.4, Continued
AREA COVERED BY ANALYTICAL PROCEDURE ORGDP 9

4.3.3.2 Emission Spectrochemical Analysis (ORGDP 10 - 13)

Water samples were analyzed spectrochemically using a direct-reading spectrograph with an Inductively Coupled Argon Plasma (ICAP) source. The sample was aspirated directly into the source with no additional preparation required.

Elements analyzed for:

<u>ORGDP 10</u>	<u>ORGDP 11</u>	<u>ORGDP 12</u>	<u>ORGDP 13</u>
Ag	Ag	Ag	Ag
Al	Al	Al	Al
Au			
B	B	B	B
Ba	Ba	Ba	Ba
	Be	Be	Be
	Ca	Ca	Ca
			Ce
Co	Co	Co	Co
Cr	Cr	Cr	Cr
Cu	Cu	Cu	Cu
Fe	Fe	Fe	Fe
			K
	Li	Li	Li
	Mg	Mg	Mg
Mn	Mn	Mn	Mn
Mo	Mo	Mo	Mo
	Na	Na	Na
Nb			
Ni	Ni		Ni
P	P	P	P
Pb			
Sc	Sc	Sc	Sc
			Si
			Sr
Th			
Ti	Ti	Ti	Ti
V	V	V	V
	Y	Y	Y
Zn	Zn	Zn	Zn
Zr	Zr	Zr	Zr

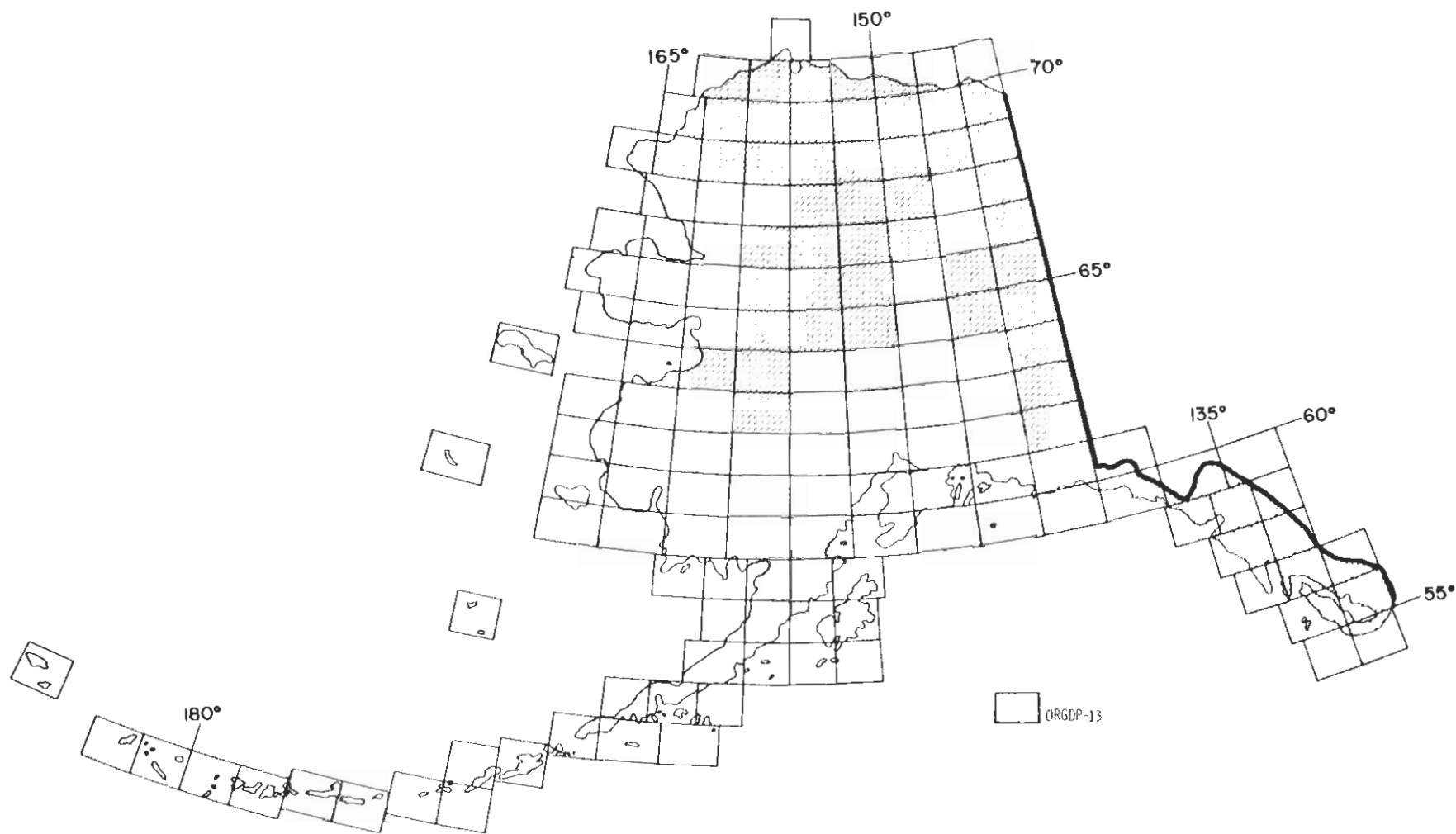


Figure 4.5
AREA COVERED BY ANALYTICAL PROCEDURES ORGDP 10 - 13

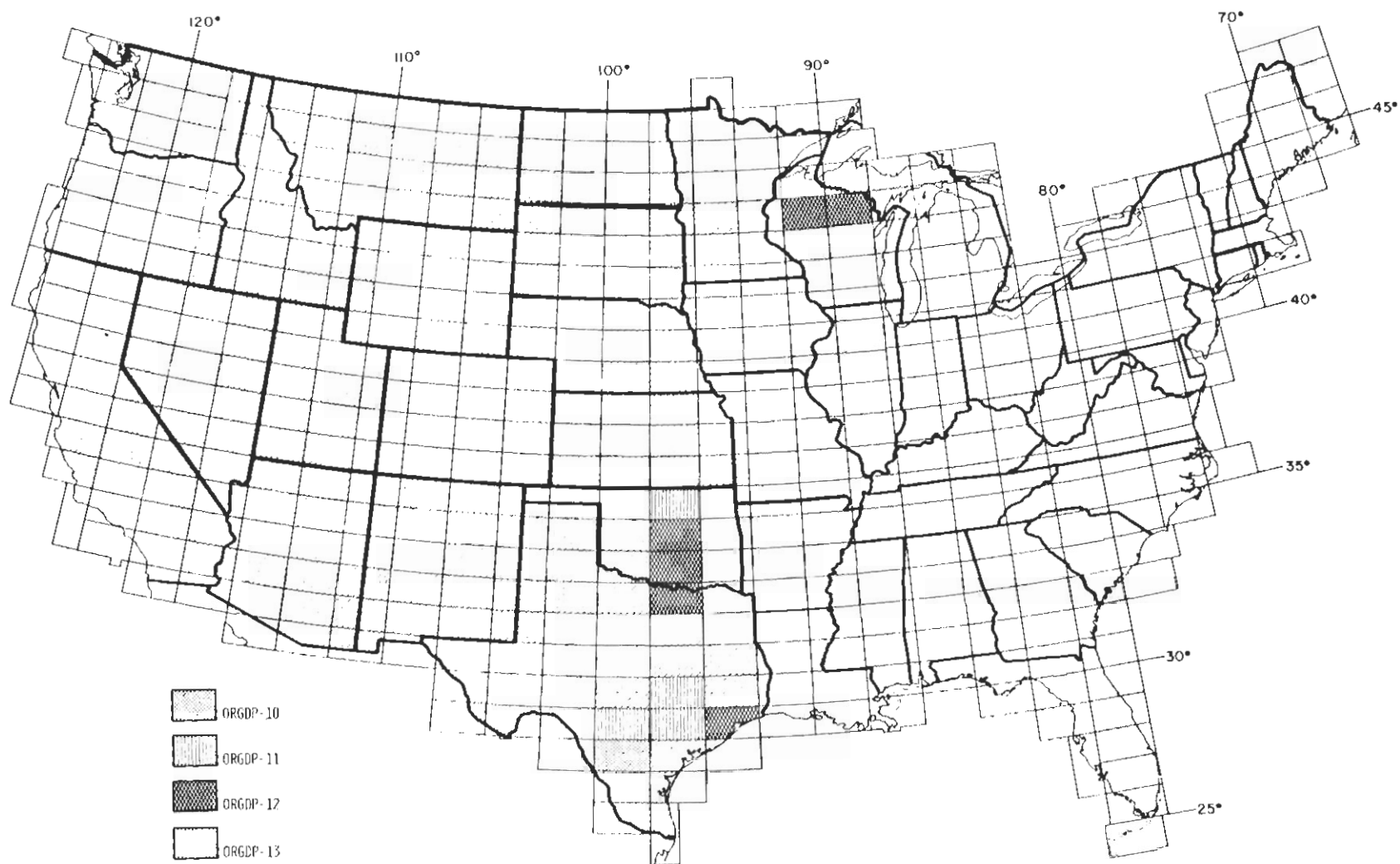


Figure 4.5, Continued
AREA COVERD BY ANALYTICAL PROCEDURE ORGDP 10 - 13

4.3.3.3 Turbidimetric Analysis/Colorimetric Analysis (ORGDP 14 - 16)

Sulfate and chloride concentrations in water were determined colorimetrically using a Technican Autoanalyzer. Samples were loaded into an automatic sample changer for simultaneous analysis. The sulfate analysis uses the methyl thymol blue-barium chloride reaction. A known quantity of barium was added to the water, and excess barium reacts with methyl thymol blue to form a colored complex. The chloride analysis uses the mercuric thiocyanate-ferric nitrate reaction. The chloride reacts with the mercury freeing the thiocyanate ion which forms a colored complex with iron. The intensity of the resulting color was measured for each procedure and compared to the appropriate calibration curve. The concentration was determined and factored to the original sample basis.

Sulfate concentration in water samples for some of the early quadrangles (ORGDP 14) was determined turbidimetrically. Five ml of the filtered water sample was diluted to 25 ml using an automatic diluter and the contents of a Sulfa-Ver powder pillow (Hach Chemical Co) was added to the aliquot. Standards containing 8 to 40 ppm sulfate were used to calibrate the concentration readout of the spectrophotometer at 420.0 nm. The concentration of samples was read and factored to the original sample basis. Samples exceeding 300 ppm sulfate were diluted and reanalyzed. For samples containing less than 50 ppm sulfate, the undiluted sample was analyzed.

Elements analyzed for:

<u>ORGDP 14</u>	<u>ORGDP 15</u>	<u>ORGDP 16</u>
$\text{SO}_4^{=}$	$\text{SO}_4^{=}$	$\text{SO}_4^{=}$
		Cl

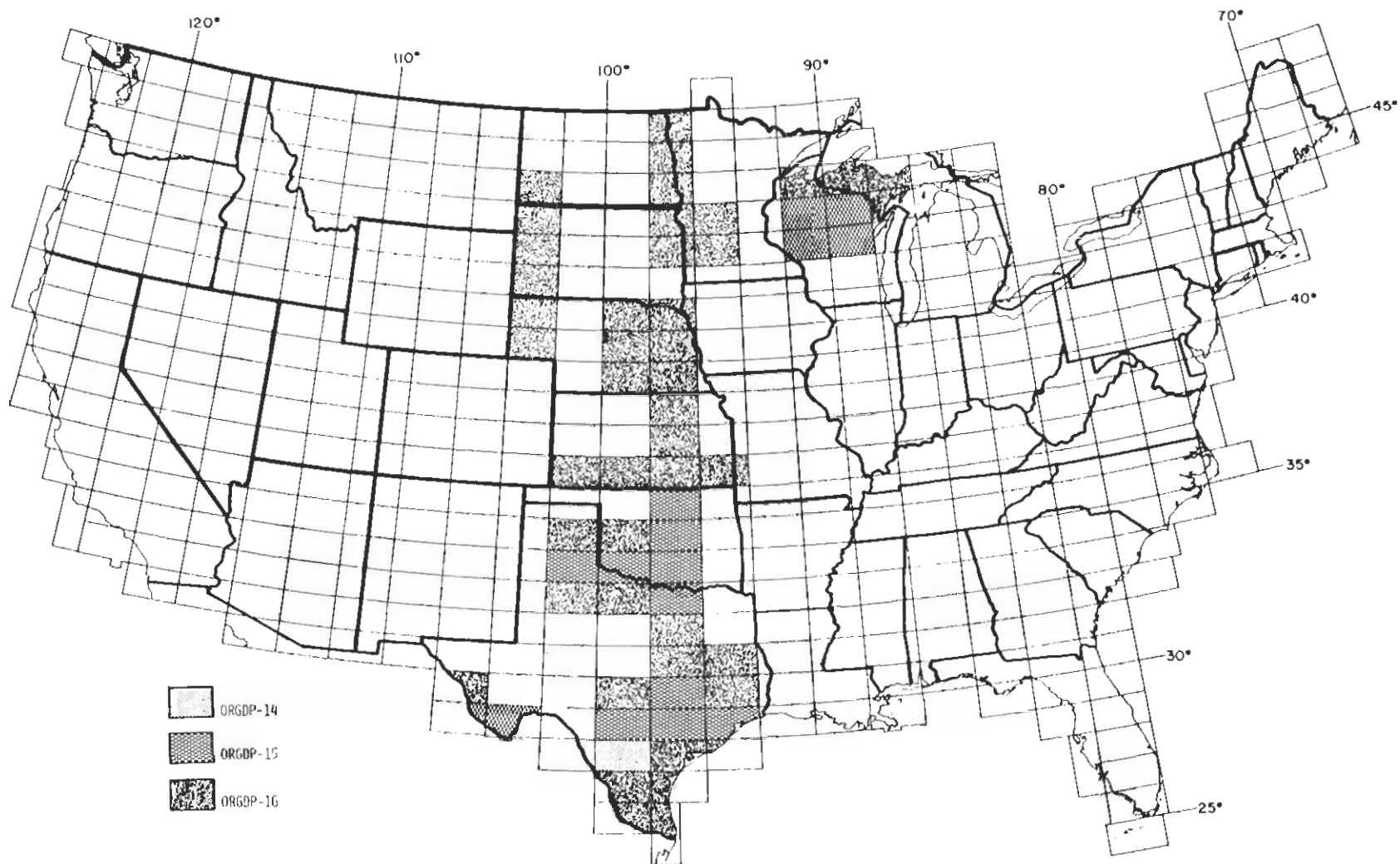


Figure 4.6
AREA COVERED BY ANALYTICAL PROCEDURES ORGDP 14 - 16

4.3.3.4 Atomic Absorption Spectroscopy (ORGDP 17)

Arsenic and selenium concentrations in water were determined using hydride generation flameless atomic absorption spectroscopy. An automated, microprocessor-controlled, atomic absorption spectrometer was used for the analysis. Eighty filtered water samples (diluted from 5 to 35 ml) were loaded in the sample changer. Twenty ml of each sample was pumped into the reactor followed by 15 ml of 15% sulfuric acid, and 10 ml of 0.20% sodium borohydride in 0.5% KOH. The arsenic and selenium hydrides and excess hydrogen gas were collected in a rubber balloon and after 45 sec were sparged through a quartz atomizer tube heated to 600°C. The absorption of the 193.7 nm arsenic line or the 196.0 nm selenium line was measured, and the resulting peak height was recorded. A series of solutions with standard concentrations was analyzed as described and a least-squares fit to a second-order equation applied to the observed heights. The calculated coefficients were then used to calculate sample concentrations. During normal operation, every tenth sample was a known standard.

Elements analyzed for: As and Se

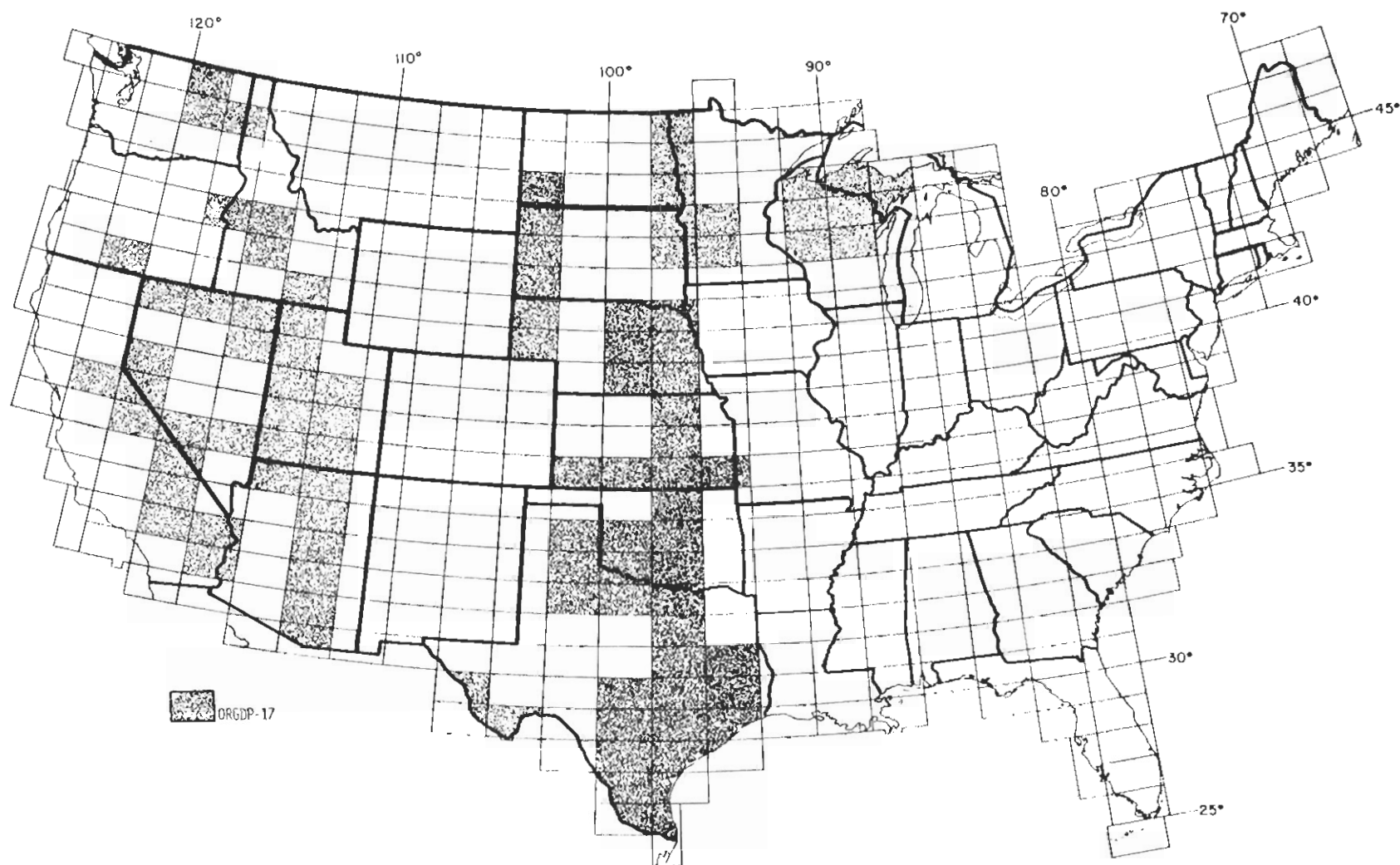


Figure 4.7
AREA COVERED BY ANALYTICAL PROCEDURE ORGDP 17

4.3.4 SRL

4.3.4.1 Neutron Activation Analysis (SRL 4)

Each resin sample received a 2 sec irradiation and 2 sec combined gamma-neutron count to ensure that the sample could safely undergo further irradiation. This test was immediately followed by 10 cycles of 6 sec irradiation and 6 sec gamma-neutron counts. Uranium concentrations were determined from the neutron counts.

Element analyzed for: U

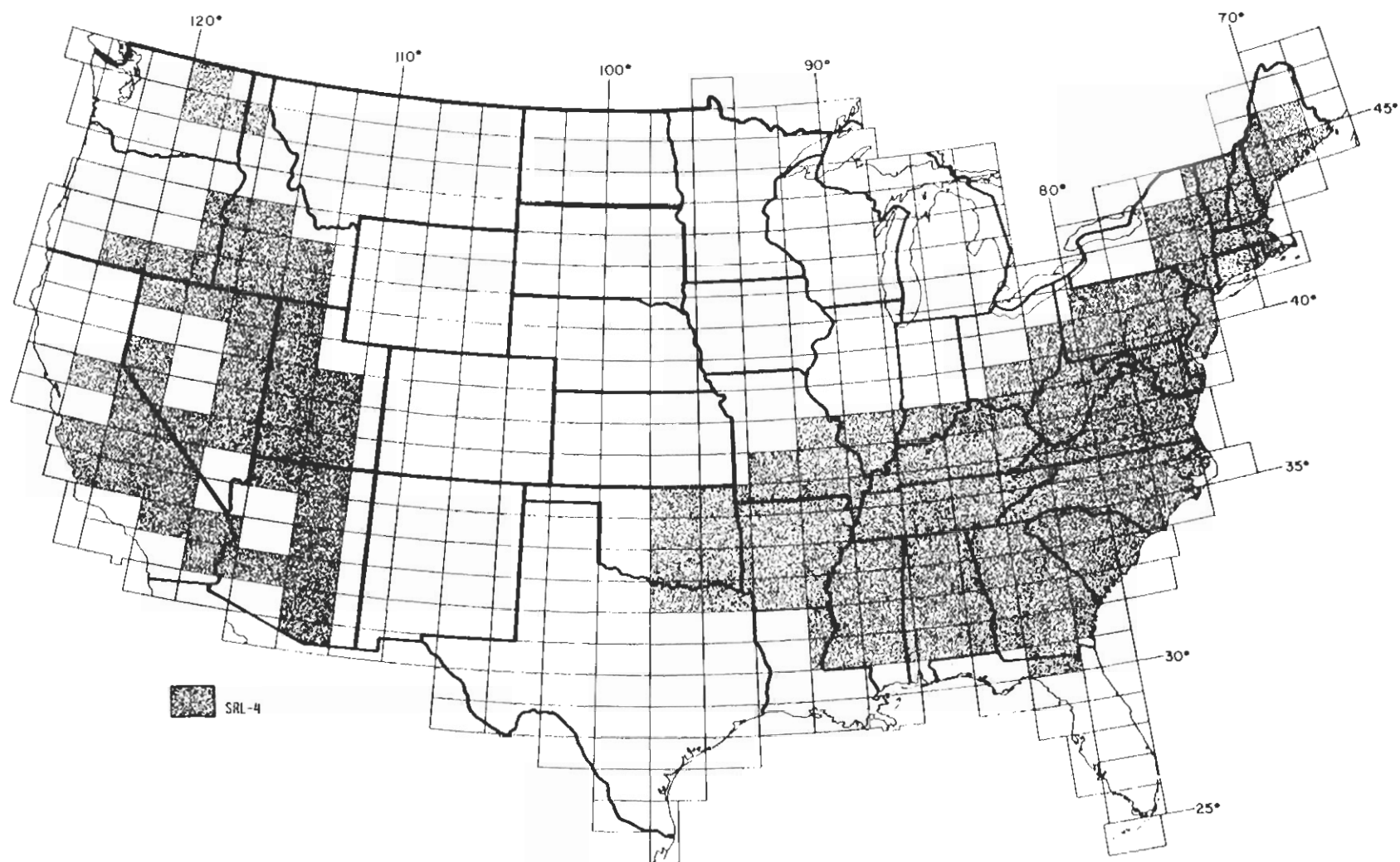


Figure 4.8
AREA COVERED BY ANALYTICAL PROCEDURE SRL 4

4.3.4.2 Neutron Activation Analysis (SRL 5 - 6)

At the same time that the uranium concentration was being determined by neutron counts (SRL 4), short-lived (<2 min) activation products were measured by the gamma counts.

Elements analyzed for:

<u>SRL 5</u>	<u>SRL 6</u>
Al	Al
Br	Br
Cl	Cl
Dy	Dy
F	F
	Mg
Mn	Mn
Na	Na
V	V

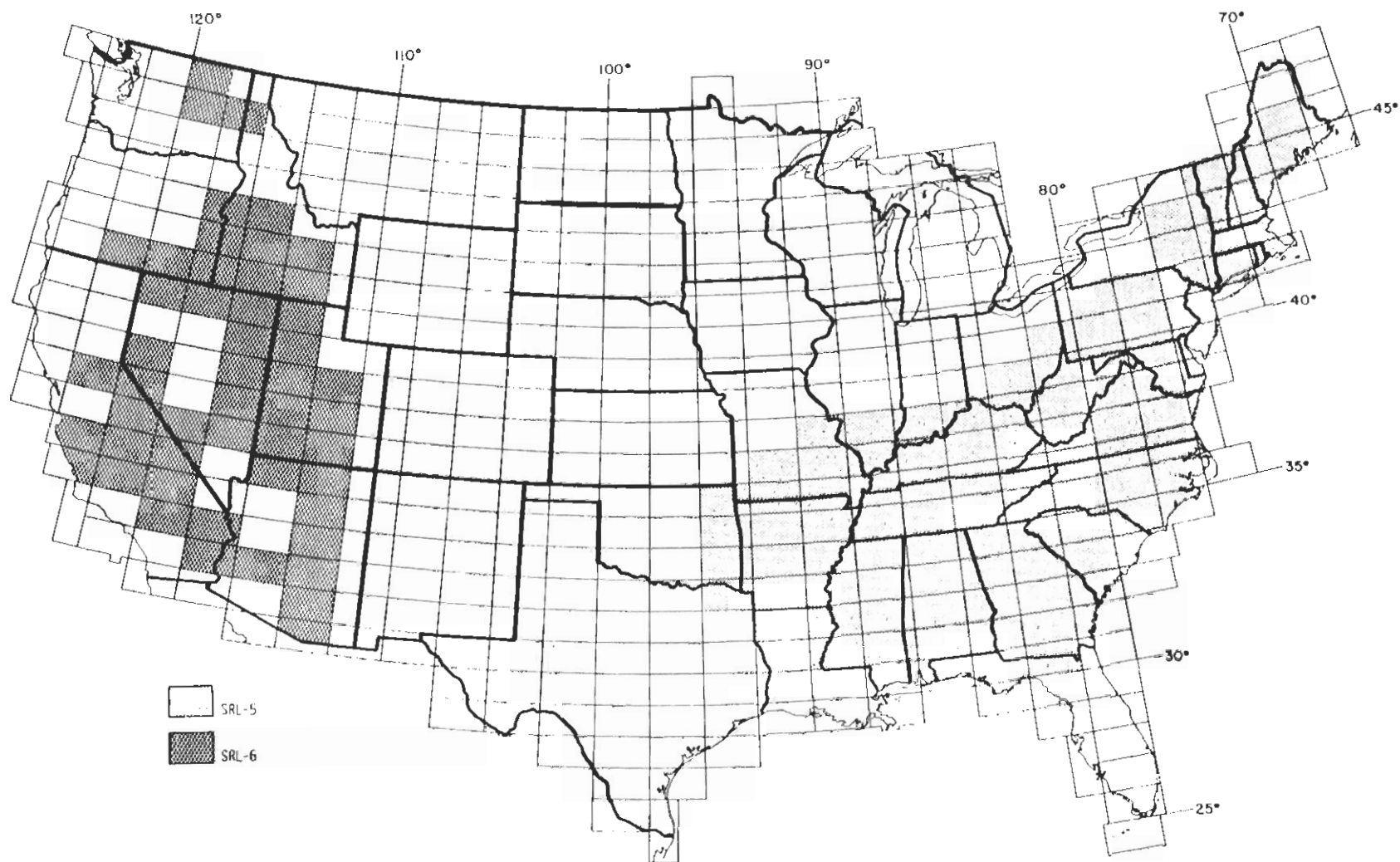


Figure 4.9
AREA COVERED BY ANALYTICAL PROCEDURES SRL 5 - 6

5.0 PILOT/ORIENTATION SAMPLES

Pilot/orientation samples were collected at the start of the program to develop the sampling and analytical methodology at the four laboratories. Figure 5.1 shows the location of the various surveys and Table 5.1 gives more specific information on the number and types of sample collected and the analysis performed.

Table 5.1
PILOT/ORIENTATION SURVEYS

MAP NUMBER	AREA	LABORATORY	SAMPLE TYPE	NUMBER OF SAMPLES COLLECTED	ANALYSIS
1	SMOKE CREEK DESERT BASIN	LLL	SEDIMENT	72	LLL (ABR.)
			WATER	27	LLL (ABR.)
2	WINNEMUCCA DRY LAKE BASIN	LLL	SEDIMENT	105	LLL (ABR.)
			WATER	12	LLL (ABR.)
3	WALKER RIVER BASIN	LLL	SEDIMENT	245	LLL (ABR.)
			WATER	169	LLL (ABR.)
4	CAVE VALLEY	LLL	SEDIMENT	76	LLL (ABR.)
			WATER	15	LLL (ABR.)
5	ROACH LAKE BASIN	LLL	SEDIMENT	56	LLL (ABR.)
			WATER	5	LLL (ABR.)
6	DEEP CREEK MOUNTAINS	LLL	SEDIMENT	155	LLL (ABR.)
			WATER	26	LLL (ABR.)
7	ARTILLERY PEAK	LLL	SEDIMENT	200	LLL (ABR.)
8	BOULDER BATHOLITH	LANL	SEDIMENT	931	LANL 1
			WATER	678	LANL 6
9	STERLING AND GREELEY NTMS QUADS	LANL	SEDIMENT	242	LANL 1, 2, 4, 5
			WATER	505	LANL 6, 7
10	DAKOTA	ORGDP	SEDIMENT	97	
			WATER	135	
			BOTANICAL	42	
11	KANSAS	ORGDP	SEDIMENT	123	
			WATER	122	
			BOTANICAL	19	
12	OKLAHOMA	ORGDP	SEDIMENT	101	ORGDP 1, 2, 3, 8
			WATER	167	ORGDP 9, 10, 14, 17
			BOTANICAL	316	ORGDP 1, 10
13	NORTHWEST TEXAS	ORGDP	SEDIMENT	131	ORGDP 1, 2, 3, 8
			WATER	192	ORGDP 9, 10, 14, 17
			BOTANICAL	116	ORGDP 1, 10
14	LLANO	ORGDP	SEDIMENT	122	ORGDP 1, 2, 3, 8
			WATER	140	ORGDP 9, 10, 14, 17
			BOTANICAL	266	ORGDP 1, 10

Table 5.1, Continued
PILOT/ORIENTATION SURVEYS

MAP NUMBER	AREA	LABORATORY	SAMPLE TYPE	NUMBER OF SAMPLES COLLECTED	ANALYSIS
15	MINNESOTA	ORGDP	SEDIMENT	43	
			WATER	135	
			BOTANICAL	51	
16	MICHIGAN	CRGDP	SEDIMENT	69	
			WATER	110	
			BOTANICAL	69	
17	KARNES COUNTY	SRL	SEDIMENT	54	SRL 1
			WATER	67	SRL 4
18	OUACHITA MOUNTAIN	SRL	WATER	102	SRL 4, 5
19	CHATTANOOGA SHALE	SRL	SEDIMENT	88	SRL 1, 2
			WATER	76	SRL 1, 5 (ABR.)
20	ALABAMA	SRL	SEDIMENT	70	SRL 1
			WATER	105	SRL 4
21	DOVER-FOXCROFT AND SKOWHEGAN	SRL	SEDIMENT	281	SRL 1, 2
			WATER	828	SRL 4, 5, ORGDP 13
22	MONTICELLO	SRL	SEDIMENT	491	SRL 1, 2 CRGDP 1, 7, 8
			WATER	995	SRL 4, 5 ORGDP 13, 17
23	WOLCOTT	SRL	SEDIMENT	38	SRL 1, 2
			WATER	72	SRL 4, 5
24	LAKE SWAPEE	SRL	SEDIMENT	70	SRL 1, 2
			WATER	186	SRL 4, 5
25	WILLIAMSPORT	SRL	SEDIMENT	115	SRL 1
			WATER	200	SRL 4
26	SPRUCE PINE	SRL	SEDIMENT	61	SRL 1, 2 (ABR.)
			WATER	346	SRL 4, 5 (EXT.)
27	MOORE	SRL	SEDIMENT	51	SRL 1, 2 (ABR.)
			WATER	100	SRL 4, 5 (EXT.)
28	JOHNSTON	SRL	SEDIMENT	62	SRL 1, 2 (ABR.)
			WATER	100	SRL 4, 5 (EXT.)
29	KINGS MOUNTAIN	SRL	SEDIMENT	99	SRL 1
			WATER	195	SRL 4

Table 5.1, Continued
PILOT/ORIENTATION SURVEYS

MAP NUMBER	AREA	LABORATORY	SAMPLE TYPE	NUMBER OF SAMPLES COLLECTED	ANALYSIS
30	LEESVILLE	SRL	SEDIMENT	43	SRL 1
			WATER	95	SRL 4, 5
31	JASPER AND HAMPTON COUNTIES	SRL	SEDIMENT	92	SRL 1, 2
			WATER	176	SRL 4, 5
32	HILLSBOROUGH AND POLK COUNTIES	SRL	SEDIMENT	60	SRL 1, 2
			WATER	354	SRL 4, 5

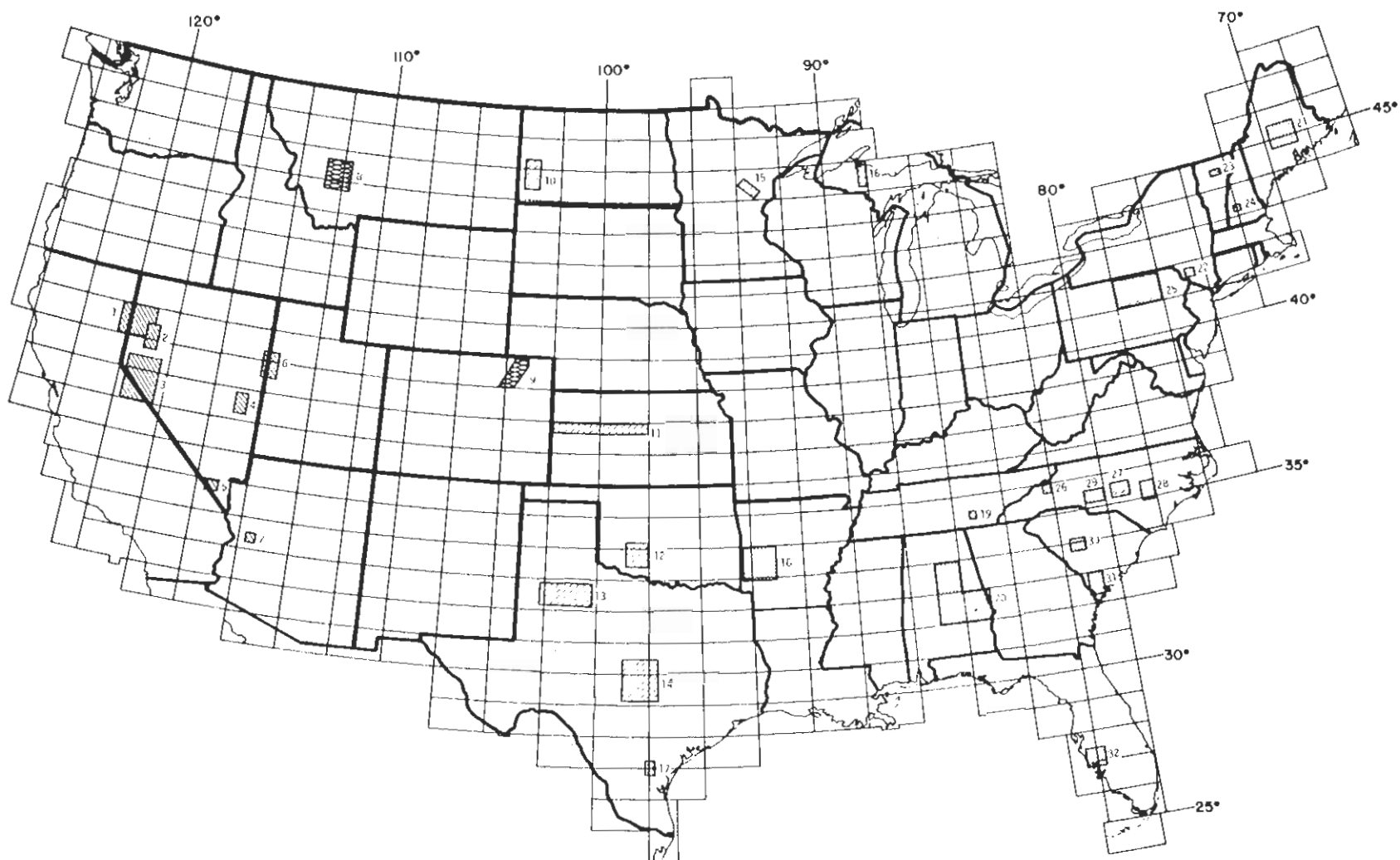


Figure 5.1
LOCATIONS OF PILOT/ORIENTATION SURVEYS

6.0 DETAILED SURVEY SAMPLES

Detailed survey samples were designed to characterize the hydrogeochemistry; stream sediment geochemistry; and/or radiometric pattern of known or potential uranium occurrences. Figure 6.1 shows the location of the various surveys and Table 6.1 gives more specific information on the number and type of samples collected and the analysis performed.

Table 6.1
DETAILED SURVEYS

MAP NUMBER	AREA	LABORATORY	SAMPLE TYPE	NUMBER OF SAMPLES COLLECTED	ANALYSIS
1	LAKEVIEW	ORGDP	SEDIMENT	878	ORGDP 1, 2, 7, 8
			WATER	535	ORGDP 9, 13, 16, 17
2	SONORA PASS	ORGDP	SEDIMENT	699	ORGDP 1, 2, 7, 8
			WATER	15	ORGDP 9, 13, 16, 17
3	THOMAS RANGE - WASATCH	ORGDP	SEDIMENT	561	ORGDP 1, 2, 7, 8
	THOMAS RANGE - SHEEPROCK MOUNTAIN	ORGDP	SEDIMENT	344	ORGDP 1, 2, 7, 8
	FARMINGTON		WATER	71	ORGDP 9, 13, 16, 17
	COTTONWOOD	ORGDP	SEDIMENT	78	ORGDP 1, 2, 7, 9
			WATER	15	ORGDP 9, 13, 16, 17
4	MARYSVALE	ORGDP	SEDIMENT	397	ORGDP 1, 2, 7, 8
5	DATE CREEK BASIN	ORGDP	SEDIMENT	239	ORGDP 1, 2, 7, 8
6	LARAMIE RANGE	ORGDP	SEDIMENT	860	ORGDP 1, 2, 7, 8
			WATER	163	ORGDP 9, 13, 16, 17
7	BUFFALO - LIGNITE CUSTER	ORGDP	SEDIMENT	314	ORGDP 1, 2, 7, 8
			WATER	59	ORGDP 9, 13, 16, 17
	SLIM BUTTES	ORGDP	SEDIMENT	346	ORGDP 1, 2, 7, 9
			WATER	104	ORGDP 9, 13, 16, 17
8	EDEMONT	ORGDP	SEDIMENT	419	ORGDP 1, 2, 7, 8
			WATER	109	ORGDP 9, 13, 16, 17
9	TRANS - PECOS TERRELL	ORGDP	SEDIMENT	155	ORGDP 1, 2, 7, 8
			WATER	36	ORGDP 9, 13, 16, 17
	SOLITARIO	ORGDP	SEDIMENT	519	ORGDP 1, 2, 7, 8
			WATER	119	ORGDP 9, 13, 16, 17
	SIERRA VIEJA	ORGDP	SEDIMENT	237	ORGDP 1, 2, 7, 8
			WATER	30	ORGDP 9, 13, 16, 17
	TASCOTAL	ORGDP	SEDIMENT	610	ORGDP 1, 2, 7, 8
			WATER	337	ORGDP 9, 13, 16, 17
	CHINATI MOUNTAINS	ORGDP	SEDIMENT	121	ORGDP 1, 2, 7, 8
			WATER	24	ORGDP 9, 13, 16, 17

Table 6.1, Continued
DETAILED SURVEYS

MAP NUMBER	AREA	LABORATORY	SAMPLE TYPE	NUMBER OF SAMPLES COLLECTED	ANALYSIS
	STILLWELL MOUNTAINS	ORGDP	SEDIMENT	228	ORGDP 1, 2, 7, 8
			WATER	10	ORGDP 9, 13, 16, 17
	DRYDEN	ORGDP	SEDIMENT	78	ORGDP 1, 2, 7, 8
			WATER	34	ORGDP 9, 13, 16, 17
10	WICHITA UPLIFT	ORGDP	SEDIMENT	425	ORGDP 1, 2, 7, 8
			WATER	546	ORGDP 9, 13, 16, 17
11	TEXAS GULF COAST	ORGDP	SEDIMENT	125	ORGDP 1, 2, 7, 8
			WATER	820	ORGDP 9, 13, 16, 17
12	EAST - CENTRAL MINNESOTA	ORGDP	SEDIMENT	200	ORGDP 1, 2, 7, 8
			WATER	883	ORGDP 9, 13, 16, 17
13	THREE FORKS BASIN, SPANISH PEAKS, AND BOULDER RIVER	LANL	SEDIMENT	1,275	LANL 1, 3, 4, 5
			WATER	531	LANL 6
14	SOUTHERN POWDER RIVER BASIN	LANL	WATER	946	LANL 6
15	RED CREEK QUARTZITE	LANL	SEDIMENT	140	LANL 1, 3, 4, 5
			WATER	22	LANL 6
16	CRAIG AND RAWLINS NTMS QUADS	LANL	SEDIMENT	1,199	LANL 1, 3, 4, 5
17	MONTROSE	LANL	SEDIMENT	2,087	LANL 1, 3, 4, 5
			WATER	1,034	LANL 6
18	TALLAHASSEE CREEK, BADGER CREEK, CASTLE ROCK GULCH, AND BUFFALO GULCH	LANL	SEDIMENT	620	LANL 1, 2, 4, 5
			WATER	62	LANL 6, 7
19	VALLECITO CREEK	LANL	SEDIMENT	545	LANL 1, 3, 4, 5
			WATER	541	LANL 6
20	GRANTS	LANL	SEDIMENT	2,579	LANL 1, 3, 5
			WATER	167	LANL 6
21	PIE TOWN	LANL	WATER	300	LANL 6, 7 (EXT.)
22	SAN ANDRES - OSCURA MOUNTAINS	LANL	SEDIMENT	916	LANL 1, 3, 4, 5
23	MIDNITE MINE	SRL	SEDIMENT	697	SRL 1, 2
			WATER	124	SRL 4, 6, ORGDP 13
			BOTANICAL	812	SPECIAL
24	KETTLE FALLS	SRL	SEDIMENT	2,415	SRL 1, 2
			WATER	414	SRL 4, 6, ORGDP 13

Table 6.1, Continued
DETAILED SURVEYS

MAP NUMBER	AREA	LABORATORY	SAMPLE TYPE	NUMBER OF SAMPLES COLLECTED	ANALYSIS
25	JEAN LAKE	SRL	SEDIMENT	1,030	SRL 1, 2
26	DAN RIVER - DANVILLE TRIASSIC BASIN	SRL	SEDIMENT	380	SRL 1, 2
27	AIKEN COUNTY GORCEIXITE	SRL	UNKNOWN	UNKNOWN	UNKNOWN (WATER - ORGDP 13)

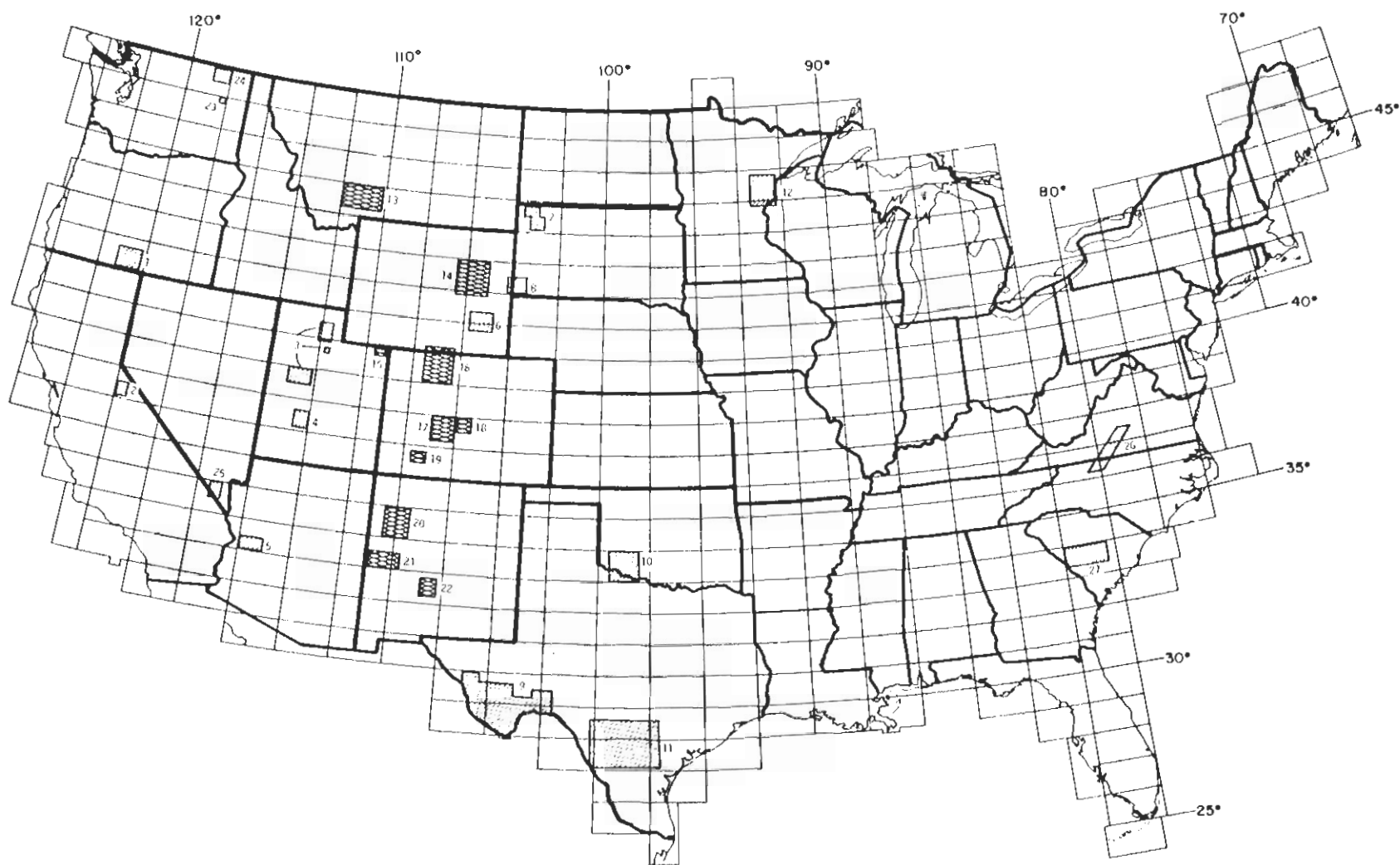


Figure 6.1
LOCATIONS OF DETAILED SURVEYS

7.0 BENDIX SAMPLES

Samples were collected by Bendix (or their contractors) as part of the 'world-class' and 'intermediate grade' special studies. Figure 7.1 shows the location of the various surveys and Table 7.1 gives the number of samples collected.

Table 7.1
BENDIX SPECIAL STUDIES

MAP NUMBER	NUMBER OF SAMPLES COLLECTED	AREA
BX01-77	149	
BX12-16	220	PENA BLANCA
BX21-77	2,826	WYOMING PRECAMBRIAN
BX32-01	15	COPPER MOUNTAIN
BX32-29	49	SAND WASH BASIN
BX33-01	124	BLACK HILLS PRECAMBRIAN
BX33-02	21	KINGSTON PEAK
BX33-03	406	UINTA ARCH
BX33-04	509	NEEDLE MOUNTAIN
BX33-05	115	GNEISSIC DOMES
BX33-06	348	SOUTHWEST NEW MEXICO VOLCANICS
BX33-07	542	NORTHWEST ARIZONA
BX33-08	331	VAN HORN PRECAMBRIAN UNCONFORMITY
BX33-09	525	WYOMING PRECAMBRIAN
BX33-10	293	CENTRAL ARIZONA ARCH
BX33-11	1,275	RAFT RIVER RANGE
BX33-12	489	SOUTHWEST MONTANA PRECAMBRIAN
BX33-13	84	CARBONITITE MODELING STUDY
BX33-14	169	METAMORPHIC CORE COMPLEXES
NK13-08	162	

APPENDIX A

COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

Table A-1
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM					MULTIELEMENT											
								ACID SOLUBLE	TOTAL				ACID SOLUBLE										TOTAL	
			LANL	L.L.	ORGOP	SRL-E	SRL-W	OR1	LANL1	LLL	OR2	S-L1	OR3	OR4	OR5	OR6	OR7	OR8	SRL3	LANL2	LANL3	LANL4	LANL5	LLL
ABERDEEN	45 - 46	98 - 100																						
ABILENE	32 - 33	98 - 100																						
ADAK	51 - 53	176 - 178																						
ADEL	42 - 43	118 - 120		40							7													7
							1277					1243					1249							
AFOGNAX	58 - 59	151 - 154																						
AJO	32 - 33	112 - 114																						
ALBANY	42 - 43	77 - 74				1334						57	1324				60		1326					1324
ALBUQUERQUE	35 - 36	106 - 108	1538							1538										1538		1538		
ALEXANDRIA	31 - 32	92 - 94				733		8				679	26				711							26
ALLIANCE	42 - 43	102 - 104			523			472				464					471	472						
ALPENA	45 - 46	82 - 84																						
ALTURAS	41 - 42	120 - 122		45							7													7
AMARILLO	35 - 36	100 - 102			580			580				576					580		578					
AMBLER RIVER	67 - 68	156 - 159	1114							1114										1087		1090	1114	
AMUKTA	52 - 53	170 - 172																						
ANCHORAGE	61 - 62	147 - 150	861							861										765		694	861	
ANGALUSIA	31 - 32	86 - 88				151						151												151
APALACHICOLA	29 - 30	84 - 86																						
ARCTIC	68 - 69	144 - 147	1085							1085										1038			1085	
ARGONORE	34 - 35	116 - 98			715			715				585				715		715						
						139						100	16					121						16
ARMINTO	43 - 44	106 - 108	1249							1249										1245		1249	1249	
ASHLAND	46 - 47	90 - 92			322			319				315				319		319						
ASHTON	44 - 45	110 - 112	1500							1500										1497		1495	1500	
ATHENS	33 - 34	82 - 84				1220						1209						1190						1209
ATKA	57 - 53	174 - 176																						
ATLANTA	33 - 34	84 - 86				1340						1325						1031						1325
ATLIN	59 - 60	132 - 135	7							6											6		6	

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM					MULTIELEMENT													
								ACID SOLUBLE	TOTAL				ACID SOLUBLE								TOTAL					
			LAM1	LLL	EGGP	SPL-E	SPL-W		OR1	LAM11	ELL	CA2	SAL1	GP3	OR4	OR5	G-6	OR6	OR8	SAL3	LAM12	LAM13	LAM14	LAM15	LLL	SAL2
ATIU	52 - 54	172 - 175*																								
AUGUSTA	13 - 34	80 - 82				772							771							353						771
AURORA	41 - 42	88 - 90																								
AUSTIN	30 - 31	96 - 98				601			601			505				601			601							
AZTEC	36 - 37	106 - 108	1744							1744								1693								
BAIRD INLET	60 - 61	162 - 165																								
BAIRD MOUNTAINS	57 - 66	159 - 162	859							859											830		830	869		
BAKER	44 - 45	116 - 118					1426						1424							250						1424
BAKERSFIELD	35 - 36	116 - 120		192								?													?	
							1602	1761				4					1780			826						
BALTIMORE	39 - 40	76 - 78				993							975							209						975
BANGOR	44 - 45	68 - 70					1511					1172	167				1249			185						107
BARROW	71 - 72	154 - 156	78							76												78		78		
BARTER ISLAND	70 - 71	141 - 144	24							24											23			24		
BATH	43 - 44	66 - 70					123						6													6
BATOR RIDGE	30 - 31	90 - 92				8						4						5								
BAY CITY	28 - 29	94 - 96			46			46				45				46			46							
BEAUFORT	34 - 35	76 - 78				188							186							31						188
BEAUMONT	30 - 31	94 - 96			552			552				546						552	552							
						26						25	7					25								7
BEAVER	65 - 67	147 - 150	644							644												627		644		
BEECHY POINT	70 - 71	147 - 150	212							212												196		212		
BELLEVILLE	28 - 29	96 - 98			164			364				346		119			356		364							
BELLEVILLE	38 - 39	88 - 90				157							157													157
BELLOIT	39 - 40	90 - 100																								
BENDJI	47 - 48	94 - 96																								
BEND	44 - 45	120 - 122																								
BENDELEBYN	65 - 66	162 - 165	643							643											65	412	251	642		
BERING GLACIER	60 - 61	141 - 144	406							406											397			406		
BETHEL	60 - 61	159 - 162																								

* East of Greenwich

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLE COLLECTED					URANIUM					MULTIELEMENT											
								ACID SOLUBLE	TOTAL				ACID SOLUBLE								TOTAL			
			LANL	LLL	ORGP	SRL-E	SRL-W	OR1	LANL1	LLL	OR2	SRL1	OR3	OR4	OR5	OR6	OR7	OR8	SRL3	LANL2	LANL3	LANL4	LANL5	LLL
BETLES	66 - 67	150 - 153	898							898										869		898		
BIG DELTA	64 - 65	144 - 147	1238							1238										1188		1238		
BIG SPRINGS	32 - 33	100 - 102																						
BILLINGS	45 - 46	108 - 110	1424							1424									1424		1424	1424		
BINGHAMTON	42 - 43	74 - 76				985						39	982			45		985						982
BIRMINGHAM	33 - 34	86 - 88				953							948					287						948
BISMARCK	46 - 47	100 - 102																						
BLACK	62 - 63	165 - 168																						
BLACK RIVER	66 - 67	141 - 144	636							636										604		636		
BLIND RIVER	46 - 47	82 - 84																						
BLUEFIELD	37 - 38	80 - 82				895							874					154						874
BUYING SOUND	59 - 60	147 - 150	78							78									39		39	78		
BYTHEVILLE	35 - 36	88 - 90				115							115											115
BOISE	43 - 44	116 - 118					1418					1329	14				1337							14
BOSTON	42 - 43	70 - 72				681							677					669						677
BOZEMAN	45 - 46	110 - 112	1536							1536									1527		1527	1535		
BRADFIELD CANAL	56 - 57	129 - 132	329							329										295		329		
BRAINERD	46 - 47	94 - 96																						
BRETON SOUND	28 - 30	88 - 90																						
BRIGHAM CITY	41 - 42	112 - 114		83								7											7	
							944					9	824					9		433				824
BRISTOL BAY	57 - 58	158 - 160																						
BROKEN BOW	41 - 42	98 - 100			427				427			426					427	427						
BROWNFIELD	38 - 39	102 - 104	353							353							351							
BROWNSVILLE	25 - 27	92 - 98			40				80			78					80	80						
BROWNWOOD	31 - 32	98 - 100																						
BRUNSWICK	31 - 32	80 - 82				55							55											55
BUFFALO	42 - 43	76 - 80																						
BURLINGTON	40 - 41	90 - 92																						
BURNS	43 - 44	118 - 120																						

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM					MULTIELEMENT													
								ACID SOLUBLE	TOTAL				ACID SOLUBLE										TOTAL			
			LAN.1	LAN.2	ORGOP	SRL-E	SRL-W		OR1	LAN.1	LAN.2	OR2	SRL1	OR3	OR4	OR5	OR6	OR7	OR8	SRL3	LAN.7	LAN.8	LAN.9	LAN.5	LAN.6	SRL2
BUTTE	46 - 47	112 - 114	1551							1551											1942		1947	1951		
CALIENTE	37 - 38	114 - 116		228								?													7	
CAMPBELLTON	47 - 48	65 - 68					1280	2				1254						1261								
CANDLE	65 - 66	157 - 162	719							719												592		701		
CANYON	40 - 41	00 - 82				857		1				451	197					485		221						197
CANYON CITY	44 - 45	118 - 120																								
CAPE FLATTERY	46 - 49	124 - 126																								
CAPE MENDENHALL	59 - 60	165 - 168																								
CARLSBAD	32 - 33	104 - 105	1690							1251							1690									
CASPER	42 - 43	105 - 108	1370							1370											1370		1370	1370		
CEDAR CITY	37 - 38	112 - 114					1772					1043						1717								
CENTERVILLE	40 - 41	92 - 94																								
CUMMIS	44 - 45	114 - 116					1511					39	1468					39		1474						1468
CHANDALAR	67 - 68	147 - 150	1247							1247											1241			1247		
CHANDLER LAKE	58 - 59	150 - 153	613							613												537		613		
CHARLESTON	36 - 39	82 - 82				867							842													842
CHARLEY RIVER	65 - 66	141 - 144	1253							1253												1151		1253		
CHARLOTTE	35 - 36	80 - 82				1254							1254							1241						1254
CHARLOTTESVILLE	38 - 39	76 - 80				1147							1143							198						1143
CHATTANOOGA	35 - 36	84 - 86				1149						216	638					218		66						638
CHEBOYGAN	45 - 45	84 - 86																								
CHEYENNE	41 - 42	104 - 106	590							590								596								
CHICAGO	41 - 42	86 - 88																								
CHICO	39 - 40	120 - 122																								
CHIGNIK	56 - 57	158 - 161																								
CHOTEAU	47 - 48	112 - 114	1559							1558												1950		1558		
CHRISTIAN	67 - 68	144 - 147	623							623											603			623		
CINCINNATI	39 - 40	64 - 66																								
CIRCLE	65 - 66	144 - 147	1249							1249												1206		1247		

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED						URANIUM				MATERIAL ELEMENT											
									ACID SOLUBLE	TOTAL			ACID SOLUBLE								TOTAL			
			LANE	ELL	ORGE	SRL-E	SRL-W	ORI		LANE1	ELL	C22	SRL1	OR3	OR4	OR5	OR6	OR7	OR8	SRL3	LANE2	LANE3	LANE4	LANE5
CLARKSBURG	39 - 40	80 - 82				1015					189	789					196		3					789
CLEVELAND	41 - 42	80 - 82				82					22	28					22		26					28
CLIFTON	33 - 34	108 - 110	913							913							900							
CLINTON	35 - 36	98 - 100			667			667			657				657		662							
CLUGVIS	34 - 35	132 - 104	302							302										177	125	177	302	
COOY	44 - 45	108 - 110	1482							1482										1440		1472	1460	
COLD BAY	55 - 56	162 - 164																						
COLEEN	67 - 68	141 - 144	617							617											603		617	
COLUMBIA	35 - 36	86 - 88				128					24	49					25							49
COLUMBUS	39 - 40	82 - 84				90					22	60					22							60
CONCRETE	48 - 49	120 - 122		434						7													7	
COOS BAY	42 - 44	124 - 125																						
COPALIS BEACH	46 - 48	124 - 125																						
CORBIN	36 - 37	84 - 86				856					371	430					392		51					430
CORDOVA	60 - 61	144 - 147	499							499										481			496	
CORPUS CHRISTI	27 - 28	96 - 98			57			56			57						56	56						
CORTEZ	37 - 38	108 - 110	1657							1657										1656		1651	1657	
CRAIG (CO)	40 - 41	106 - 108	1732							1732										1732		1732	1732	
CRAIG (AK)	55 - 56	132 - 135	140							140											135		140	
CRESCENT	43 - 44	120 - 122																						
CRYSTAL CITY	28 - 29	98 - 100			388			376			363		375					376						
CUMBERLAND	39 - 40	78 - 80				1047						1040							32					1040
CUTBANK	48 - 49	112 - 114	1446								1437						1445							
DALHART	35 - 37	102 - 104	503							503										499		500	503	
DALLAS	32 - 33	96 - 98			515			515			511						515	515						
DANVILLE	40 - 41	85 - 88																						
DAVENPORT	41 - 42	90 - 92																						
DAYTONA BEACH	29 - 30	80 - 82																						
DEATH VALLEY	35 - 37	116 - 118		809						7													7	
						650					649													649

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					ACID SOLUBLE	LEAVELM				MULTIELEMENT								TOTAL					
									TOTAL				ACID SOLUBLE													
			LANL	LLL	CRGDP	SRL-E	SRL-W	DR1	LANL1	LLL	DR2	SRL1	DR3	DR4	DR5	DR6	DR7	DR8	SP-3	LAN-2	LANL3	LANL4	LAN-5	LLL	SRL2	
DECATUR	39 - 40	88 - 90																								
DE LONG MOUNTAINS	68 - 69	162 - 165	630						630												626		630			
DEL RIO	29 - 30	100 - 102																								
DELTA	39 - 40	112 - 114		1169						7			1008											7	1008	
								1311					1310					1311							1310	
DEMARCATION POINT	69 - 70	141 - 144	522						522												512		522			
DENVER	39 - 40	104 - 106	1060						1060												998		1060			
DES MOINES	41 - 42	92 - 94																								
DETROIT	42 - 43	82 - 84																								
DEVILS LAKE	48 - 49	98 - 100																								
DICKINSON	46 - 47	102 - 104			532			532				520					532	632								
DILLINGHAM	59 - 60	156 - 159																								
DILLON	45 - 46	112 - 114	1721						1721											1706		1716	1721			
DIXON ENTRANCE	54 - 55	132 - 134	882						882												844	864	882			
DODGE CITY	37 - 38	100 - 102			296			295				289					295	295								
DOTHAN	31 - 32	84 - 86				160						154													156	
DOUGLAS	31 - 32	108 - 110	237						237								235									
DRIGGS	43 - 44	110 - 112	626						626								622									
DUBOIS	44 - 45	112 - 114	1600						1600												1592	1590	1600			
DUBUQUE	42 - 43	90 - 92																								
DULUTH	46 - 47	92 - 94																								
DURANGO	37 - 38	106 - 108	1604						1604												1602		1591	1604		
DYERSBURG	36 - 37	88 - 90				906							893												893	
EAGLE	64 - 65	141 - 144	1281						1281													1243		1281		
EAGLE PASS	28 - 29	100 - 102																								
EASTPORT	44 - 45	66 - 68					270						13												13	
EASTVILLE	39 - 38	75 - 76				67							67												67	
EAU CLAIRE	44 - 45	90 - 92			644			643				574			638			642								
EDMUNDSTON	47 - 48	68 - 70																								
EKALAKA	15 - 46	104 - 106	851						851								745									

Table A-1, Continued
 COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM					MULTIELEMENT													
								ACID SOLUBLE	TOTAL				ACID SOLUBLE								TOTAL					
			LANL	LLL	ORGP	SRL-E	SRL-W	CR1	LANL1	LLL	OR2	SRL1	OR3	CR4	OR5	CR6	OR7	CR8	SRL3	LANL2	LANL3	LANL4	LANL5	LLL	SRL2	
EL CENTRO	32 - 33	114 - 116																								
EL DORADO	33 - 34	92 - 94				806				685	272					736									272	
ELK CITY	45 - 46	114 - 116	1720						1720											1716	1712	1720				
ELKO	40 - 41	114 - 116		427						?										?			?			
							1724					1724						1724							1724	
ELMIRA	42 - 43	76 - 78				776				733	75					354		7							75	
EL PASO	31 - 32	106 - 108	781						201											247			249			
ELY	39 - 40	114 - 116		221						?													?			
							2034				1899	19				1937									19	
EMORY PEAK	28 - 30	102 - 104			473			473		470					472		473									
ENID	36 - 37	96 - 98			486			480			484				463		486									
						9					9					9										
ERIE	42 - 43	80 - 82																								
ESCALANTE	37 - 38	110 - 112					637				633														630	
ESCANABA	45 - 46	86 - 88			171			170			170					170	170									
ELREKA	47 - 48	124 - 125																								
EVANSVILLE	37 - 38	86 - 88				1376					959	142				1029									142	
FAIRBANKS	64 - 65	147 - 150	1435						1435										1429			1434	1424			
FAIRMONT	43 - 44	94 - 96																								
FALSE PASS	54 - 55	161 - 164																								
FARGO	46 - 47	96 - 98			237			237			211					237	237									
FLAGSTAFF	35 - 36	110 - 112					977					976													976	
FLAMMAN ISLAND	70 - 71	144 - 147	55							55										54			55			
FLINT	43 - 44	82 - 84																								
FLORENCE	36 - 37	78 - 80				765						764					240								764	
FORSYTH	46 - 47	106 - 108	1280								1256					1266										
FORT DODGE	42 - 43	94 - 96																								
FORT PIERCE	27 - 28	80 - 82																								
FORT SMITH	35 - 36	94 - 96				1001					217	732				228									732	
FORT STOCKTON	30 - 31	102 - 104																								

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				MULTIELEMENT							TOTAL					
								ACID SOLUBLE	TOTAL			ACID SOLUBLE												
			LAN-1	ULL	ORGDP	SAL-E	SRL-M		DRT	LAN-1	ULL	D-2	SR-1	DR3	DR4	DR5	DR6	DR7	DR8	SR-3	LAN-2	LAN-3	LAN-4	LAN-5
FORT SUMNER	34 - 35	104 - 105	1136								1127					1136								
FORT WAYNE	41 - 42	84 - 86																						
FORT YUKON	66 - 67	144 - 147	629							629									603				629	
FREDERICTON	45 - 46	66 - 68																						
FREMONT	41 - 42	96 - 98			560				560		556					560	560							
FRESNO	36 - 37	116 - 120					1042	36			959					1034								
GARDEN	34 - 35	86 - 88				776					2	774				2		236						774
GAINESVILLE	29 - 30	62 - 84																						
GALLUP	35 - 36	106 - 110	1403							1403									1400			1403	1403	
GARFIELD ISLAND	51 - 53	178 - 180																						
GEORGETOWN	33 - 34	77 - 80				302						302					112							302
GILLETT	44 - 45	104 - 106	843							843									838		843	843		
GLASGOW	42 - 49	106 - 108	1385							1365									1379			1385		
GLENDALE	47 - 48	104 - 106	1102								1094					1102								
GLEN FALLS	43 - 44	72 - 74				1240					285	1239				321		980						1239
GOLDFIELD	37 - 38	116 - 118		80							2													1
							925				780					730								
GOODLAND	33 - 40	100 - 102																						
GOODNEWS BAY	59 - 60	159 - 162																						
GRAND CANYON	35 - 37	112 - 114					1013					1001												1001
GRAND FORKS	47 - 48	96 - 98			201				201		201					201	201							
GRAND ISLAND	40 - 41	98 - 100			506				506		502					515	500							
GRAND JUNCTION	34 - 40	108 - 110	1450							1449									1435			1449		
GRAND RAPIDS	42 - 43	84 - 86																						
GRANGEVILLE	45 - 46	116 - 118																						
GREAT BEND	34 - 39	96 - 100																						
GREAT FALLS	47 - 48	110 - 112	1142								1134					1142								
GREELEY	40 - 41	104 - 106	954							954										954		984		
GREEN BAY	44 - 45	88 - 90			516				546		560					546	545							
GREENSBORO	35 - 37	78 - 80				1240						1234						1223						1234

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM					MULTIELEMENT											
								ACID SOLUBLE	TOTAL				ACID SOLUBLE								TOTAL			
			LAN.	LLL	ORGP	SRL-E	SRL-W	OR1	LAN.1	LLL	OR2	SAL.1	OR3	OR4	OR5	OR6	OR7	OR8	SRL3	LAN.2	LAN.3	LAN.4	LAN.5	LLL
GREENWILLE	35 - 35	82 - 84				1433					1431							1411						1431
GREENWOOD	33 - 38	90 - 92				77				77							77							
GULKANA	62 - 63	108 - 107	574							574									553		507	574		
HALEPETER ISLAND	58 - 59	160 - 163																						
HILLEY	43 - 44	114 - 116					1711			1206						1206								
HAMILTON	46 - 47	114 - 116	1821							1821											1821	1821	1821	
				25																				
HANCOCK	47 - 48	87 - 90																						
HARDEN	45 - 46	106 - 108	1241							1237						1241								
HARRISBURG	40 - 41	76 - 78				1021					1020							1011						1020
HARRISON	36 - 37	92 - 94				162					112	43				116								43
HARRISON BAY	70 - 71	150 - 153	340							340										316		340		
HARRISON	61 - 62	72 - 74				752					752							747						752
HATTIESBURG	31 - 32	68 - 90				27					27													27
HAYNE	46 - 47	108 - 110	1200							1200										1170		1200		
HEALY	63 - 64	147 - 150	1352							1351									1253		1351	1351		
HELENA	34 - 35	92 - 92				121					2	119				2								119
HILBING	47 - 48	92 - 94																						
HOBBS	32 - 33	102 - 104	561							561						559								
HOLBROOK	74 - 75	110 - 112					1949	1752								1275								
HOLY CROSS	62 - 63	159 - 162																						
HOOVER BAY	61 - 62	165 - 168																						
HOUQUIN	46 - 47	122 - 124																						
HOT SPRINGS	43 - 44	102 - 104			358			357			357					357	357							
HOUSTON	29 - 30	94 - 96			96			95			77				90		94							
HOWARD PIER	66 - 69	155 - 159	626							628										608		628		
HUGHES	65 - 67	153 - 156	636							636									624			636		
HUNTINGTON	38 - 39	82 - 84				88						88												88
HURON	44 - 45	98 - 100																						
HUTCHINSON	38 - 39	96 - 98			616			616			615					615	615							

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					DRILLUM					PERCENTILLMENT												
								ACID SOLUBLE	TOTAL				ACID SOLUBLE								TOTAL				
			LANL	LLL	GACSP	SRL-E	SRL-W		ORI	LANL1	LLL	GR2	SRL1	GR3	LANL	GR5	GR6	GR7	GR8	SRL3	LANL2	LANL3	LANL4	LANL5	LLL
ICY BAY	59 - 60	141 - 144	30							30										29			39		
IDAHO FALLS	43 - 44	112 - 114					1430	1308			2						1416								
EDITHAND	62 - 63	155 - 159	1393							1393											1300		1393		
IKFIRKUR RIVER	69 - 70	153 - 156				570				570											570		570		
ILIANA	59 - 60	153 - 156	451							451										290		290	451		
INDIANAPOLIS	39 - 40	86 - 88																							
INTERNATIONAL FALLS	48 - 49	92 - 94																							
IRON MOUNTAIN	45 - 46	88 - 90				369			369		249				366			366							
IRON RIVER	46 - 47	88 - 90				246			246		243						245	244							
JACKSON	32 - 33	90 - 92					52				34						44								
JACKSONVILLE	30 - 31	82 - 82																							
JAMES ISLAND	32 - 33	78 - 80					4				4													4	
JAMESTOWN	46 - 47	96 - 100																							
JEFFERSON CITY	38 - 39	92 - 94																							
JENKINS	37 - 38	82 - 84					1377				950	372					1007		2					372	
JOHNSON CITY	35 - 37	82 - 84					959					944							239					944	
JOPLIN	37 - 38	94 - 96					714		714		687					714		714							
							26				24						25								
JORDAN	47 - 48	106 - 108	1379								1363						1379								
JORDAN VALLEY	42 - 43	116 - 118					1287	1207			1						1252								
JUNEAO	58 - 59	134 - 136	394							394										348			394		
KAGUYAK	56 - 57	152 - 154																							
KALISPELL	48 - 49	114 - 116	1502														1502								
				1							7													7	
KANSAS CITY	39 - 40	94 - 96																							
KANTISHMA RIVER	64 - 65	150 - 153	648							648											634		648		
KARLUK	57 - 58	154 - 156																							
KATEEL RIVER	65 - 66	156 - 159	653							653											629		653		
KENAI	60 - 61	150 - 153	433							433										395		426	433		
KENDRA	49 - 50	94 - 96																							

Table A-1, Continued
 COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				MULTIELEMENT													
								ACID SOLUBLE	TOTAL			ACID SOLUBLE										TOTAL			
			LAN-1	LLL	ORDP	SRL-E	SRL-W	OR1	LAN-1	LLL	OR2	SRL1	CR3	CR4	CR5	OR6	OR7	OR8	SRL3	LAN-2	LAN-3	LAN-4	LAN-5	LLL	SRL2
KETCHIKAN	55 - 56	129 - 132	749							749											659		749		
KEY WEST	24 - 25	80 - 83																							
KILLIK RIVER	68 - 69	153 - 156	620							620											615		620		
KIRKMAN	35 - 36	114 - 116		1527							1527													1527	
KINGSTON	44 - 45	76 - 78				40						36					40								
KISKA	51 - 53	175 - 178*																							
KLAMATH FALLS	42 - 43	120 - 122					1413						1406												1406
KNOXVILLE	35 - 36	82 - 84				1430							1424					236							1424
KODIAK	57 - 58	152 - 154																							
KOTZEBUE	66 - 67	162 - 165	159							159										33	105	121	159		
KUSKOKWIM BAY	59 - 60	162 - 165																							
KWIGAK	62 - 63	162 - 165																							
LA CROSSE	43 - 44	93 - 92																							
LA JUNTA	37 - 38	102 - 104	655							655										651		655	656		
LAKE CHAMPLAIN	44 - 45	72 - 74				1196						71	1196				85		1196						1196
LAKE CHARLES	30 - 31	92 - 94				143						131	3				143								3
LAKE CLARK	60 - 61	153 - 156	636							636										603		626	636		
LAKE SUPERIOR	30 - 39	102 - 104	734							734										721		730	732		
LANDER	42 - 43	108 - 110	1376							1376										1272		1376	1376		
LAREDO	27 - 28	98 - 100			248				245			246					245	245							
LAS CRUCES	32 - 33	106 - 109	1817							1817							1817								
LAS VEGAS	36 - 37	114 - 116		1531							1530														1530
LAWRENCE	36 - 39	94 - 96																							
LAWTON	34 - 35	96 - 100			740				735			732				740			740						
LEADVILLE	33 - 40	106 - 108	1784							1784										1781		1783	1784		
LEHIGH	45 - 46	102 - 104			492				492			492						492	492						
LEWISTON	44 - 45	70 - 72				1168							1157						1166						1157
LEWISTOWN	47 - 48	108 - 110	1170							1170										1170		1170	1170		
LIME HILLS	61 - 62	153 - 156	667							657										619		666	657		
LIMON	29 - 40	102 - 104	363							353										352			353		

* East of Greenwich

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED						URANIUM					MULTIELEMENT											
														ACID SOLUBLE						TOTAL					
			LWC	LLL	ORGOP	SAL-E	SRL-M	OR1	LAM1	LLL	OR2	SRL1	OR3	OR4	OR5	OR6	OR7	OR8	SV-3	LAM2	LAM3	LAM4	LAM5	LLL	SRL2
LINCOLN	40 - 41	96 - 98			754			753			749						753	753							
LITTLE ROCK	34 - 35	92 - 94				243					64	943					77								943
LIVERGOOD	55 - 56	147 - 150																							
LLANO	37 - 38	98 - 100			651			651			637						653	651							
LONG BEACH	37 - 38	118 - 120																							
LOOKOUT RIDGE	69 - 70	156 - 159	575						575												566		575		
LOS ANGELES	34 - 35	118 - 120		288																					
LOUISVILLE	38 - 39	84 - 86																							
LOVELOCK	42 - 43	176 - 180		901						900														900	
LUBBOCK	33 - 34	100 - 102			602			602			596					601	602								
LUKEVILLE	31 - 32	112 - 114																							
LUND	38 - 39	114 - 116		215																					
							2027	1776				34					1795								34
MACOM	32 - 33	22 - 24				1014						967							14n						967
MADISON	42 - 44	86 - 90																							
MAMBATIAN	33 - 40	96 - 98			718			717			207					712		716							
MANITOWOC	44 - 45	86 - 88																							
MAYTEO	35 - 36	74 - 76				1						1													1
MARBLE CANYON	36 - 37	110 - 112					865					861													861
MARFA	32 - 33	104 - 106			219			219			217						219	218							
MARION	43 - 44	82 - 84				75					53	31					53								31
MARIPOSA	37 - 38	118 - 120					1422				1439						1439								
MARQUETTE	46 - 47	86 - 88			221			219			214						219	217							
MARSHALL	61 - 62	162 - 165																							
MARTIN	43 - 44	100 - 102																							
MASON CITY	43 - 44	92 - 94																							
MC ALISTER	34 - 35	94 - 96				784					405	515					444								515
MC ALLEN	26 - 27	96 - 100			91			91			91						91	91							
MC CARTHY	61 - 62	141 - 144	707						707												694		707		
MC CLUSKEY	47 - 48	100 - 102																							

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM					MULTIELEMENT													
								ACID SOLUBLE		TOTAL			ACID SOLUBLE										TOTAL			
			LAN	LL	ORIGP	SR-E	SR-W	OR	LAN.1	LL	OR2	SR.1	OR3	OR4	OR5	OR6	OR7	OR8	SR.2	LAN.2	LAN.3	LAN.4	LAN.5	LL1	SR.2	
MC COOK	40 - 41	100 - 102																								
MC ESWITT	41 - 42	116 - 118		1363						7		1089											7	1089		
							1340					1229						1339						1339		
MC GRATH	42 - 43	153 - 156	140						640											606		632	640			
MC INTOSH	45 - 46	100 - 102																								
MEADE RIVER	20 - 21	156 - 159	512						512												507		512			
MEDFORD	42 - 43	122 - 124																								
MEDORA	63 - 64	153 - 156	662						662										624		662	662				
MELQZITNA	65 - 66	153 - 156	665						665												631		665			
MEMPHIS	35 - 36	90 - 92				43						43											43			
MERIDIAN	32 - 33	88 - 90				113						113											113			
MESA	33 - 34	110 - 112					714					694						714					694			
MIAMI	25 - 26	20 - 22																								
MIDDLETON ISLAND	59 - 60	144 - 147	14						14												14		14			
MIDLAND	43 - 44	84 - 86																								
MIDBANK	45 - 46	96 - 98			319			319				319					319	319								
MILES CITY	46 - 47	104 - 106	1118									1108						1118								
MILLET	39 - 40	116 - 118		1319							1311												1311			
MILL INCKET	45 - 46	68 - 70																								
MILWAUKEE	43 - 44	86 - 88																								
MINOT	48 - 49	100 - 102																								
MISHNEGUC MOUNTAIN	68 - 69	159 - 162	630						630												621		630			
MITCHELL	43 - 44	98 - 100																								
MOAB	38 - 39	108 - 110	1755						1755										1754		1748	1755				
MOBERLY	39 - 40	92 - 94																								
MOBILE	30 - 31	88 - 90																								
MONTGOMERY	32 - 33	86 - 88				994						946						173					946			
MONTROSE	36 - 39	106 - 108	1857						1857										1856		1855	1857				
MOUNT FAIRWEATHER	58 - 59	136 - 139	30						30												22		30			
MOUNT HAYES	63 - 64	144 - 147	909						909										747		899	909				

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					ACID SOLUBLE	LITHIUM				MULTIELEMENT													
									TOTAL				ACID SOLUBLE								TOTAL					
			LAN.	LLL	ORGM	SRL-E	SR-M	OR1	LAN.1	LLL	OR2	SRL.1	OR3	OR4	OR5	OR6	OR7	OR8	SRL3	LAN.2	LAN.3	LAN.4	LAN.5	LLL	SRL2	
MOUNT KATPAI	58 - 59	154 - 156																								
MOUNT MC KINLEY	63 - 64	150 - 153	554							554									521		554	554				
MOUNT MICHELSON	69 - 70	144 - 147	571							571										562		571				
MOUNT SAINT ELIAS	60 - 61	139 - 141																								
MANITO	40 - 41	84 - 86																								
MABESNA	62 - 63	141 - 144	1210							1210										1193		1210				
MAKOK	56 - 59	155 - 158																								
NASHVILLE	35 - 37	86 - 88				126					43	20				43									82	
NATCHEZ	31 - 32	90 - 92				78					43					68										
NEBRASKA CITY	40 - 41	94 - 95																								
NEEDLES	34 - 35	114 - 116		1049							?													?		
							1672						1665												1665	
NEWARK	40 - 41	74 - 76				571							570					554							570	
NEWCASTLE	43 - 44	104 - 106	1226							1226									1226		1225	1226				
NEW ORLEANS	29 - 30	90 - 92																								
NEW ROCKFORD	47 - 48	95 - 100																								
NEW LHM	44 - 45	74 - 76			673			673			673				573		673									
NEW YORK	40 - 41	72 - 74																								
NDATAK	67 - 68	162 - 165	405							405									32	259	10	405				
NOGALIES	31 - 32	110 - 112					1195				1160	19			1172										19	
NOPE	64 - 65	165 - 166	143							143									135			143				
NORFOLK	36 - 37	76 - 78				835							833					333							633	
NORTH PLATTE	41 - 42	100 - 102																								
NORTON BAY	65 - 65	159 - 162	516							516									490			516				
NULATO	64 - 65	154 - 159	685							685										678		685				
NUNIVAK ISLAND	60 - 61	165 - 168																								
RUSHAGAK BAY	58 - 59	158 - 160																								
ODDEN	41 - 42	110 - 112	751							751							745									
ODDENSBURG	44 - 45	74 - 76				732						632	66				704								66	
OKANOGAN	48 - 49	118 - 120		1602							?													?		

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					LITHIUM					MULTIELEMENT											
								ACID SOLUBLE	TOTAL				ACID SOLUBLE								TOTAL			
			LANL	LLL	ORCOP	SRL-E	SRL-W	OR1	LANL1	LLL	OR2	SRL1	OR3	OR4	OR5	OR6	OR7	OR8	SRL3	LANL2	LANL3	LANL4	LANL5	LLL
						1111					1106						1110							1106
OKLAHOMA CITY	35 - 36	96 - 98			841			846			820				846			840						
						50					6	39					6							39
OMAHA	41 - 42	94 - 96																						
O'NEILL	42 - 43	95 - 100			292			292			265						292	292						
OPHIR	63 - 64	156 - 159	711						711											703			711	
ORLANDO	26 - 29	80 - 82																						
PADUCAH	37 - 38	88 - 90				920					62	918					62							918
PALESTINE	31 - 32	94 - 96			577			577			576					577		577						
						81					77	6					81							6
PECOS	31 - 32	102 - 104																						
PENDLETON	45 - 46	116 - 120																						
PENSACOLA	30 - 31	86 - 88																						
PEORIA	81 - 81	26 - 90																						
PERRYTON	36 - 37	101 - 102																						
PETERSBURG	56 - 57	132 - 134	419						419											404			419	
PHENIX CITY	32 - 33	84 - 86				1196						1172						342						1172
PHILIP SMITH MOUNTAINS	68 - 69	147 - 150	1216						1216										1190				1216	
PHOENIX	33 - 34	812 - 1114					1323					1386												1386
PIERRE	44 - 45	1000 - 1002																						
PITTSBURGH	40 - 41	78 - 80				342					62	273					64		196					273
PLAINVIEW	34 - 35	100 - 102			571			571			526				489			489						
PLANT CITY	28 - 29	82 - 84																						
POCATELLO	42 - 43	112 - 114					1706					1706												1706
POINT HOPE	68 - 69	165 - 166	221						221											216			220	
POINT LAY	69 - 70	162 - 165	220						220											217			220	
POPULAR BLUFF	36 - 37	90 - 92				678						678												678
PORT ALEXANDER	56 - 57	138 - 136	329						329											322			329	
PORT ARTHUR	29 - 30	92 - 94																						
PORTLAND	43 - 44	70 - 72				1074						1097						1074						1097

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUD	LONGITUDE	NUMBER OF SAMPLES COLLECTED					RANDOM					MULTIELEMENT											
								ACID SOLUBLE	TOTAL				ACID SOLUBLE									TOTAL		
			LANL	ELL	DRGP	SRL-E	SRL-M	GR1	LAN.1	ELL	DR2	SRL1	DR3	DR4	DR5	DR6	DR7	DR8	SRL3	LAN.2	LAN.3	LAN.4	LAN.5	ELL
PORT HOLLER	55 - 57	160 - 162																						
PRATT	37 - 38	98 - 100			562				562			658				662		655						
PRESOTT	34 - 35	112 - 114		2140							2140													2140
PRESIDIO	29 - 30	104 - 106			105				105			105				105		105						
PRESQUE ISLE	46 - 47	69 - 70																						
FAUSTON	42 - 43	110 - 112	707							707							702							
FRIBLOT ISLAND	56 - 58	162 - 171																						
PRICE	39 - 40	110 - 112					1451					1444						1451						1444
PRINCE RUPERT	54 - 55	130 - 132	89							89									4	82	5	89		
PROVIDENCE	41 - 42	69 - 72				318						324						296						304
PUEBLO	36 - 39	104 - 106	1060							1060											1037		1037	1058
PULLMAN	46 - 47	115 - 118		50																				
QUEBEC	46 - 47	70 - 72																						
QUETICO	48 - 49	90 - 92																						
QUINCY	29 - 40	92 - 92																						
RACINE	42 - 43	85 - 86																						
RALSTON	35 - 36	78 - 80				1199						1194						1156						1194
RAPID CITY	44 - 45	102 - 104			514				505			512					506	506						
RAT ISLAND	51 - 53	178 - 180*																						
RATON	36 - 37	104 - 106	1340							1340								1233						
RAWLINS	41 - 42	106 - 108	1281							1281								1279						
REDDING	40 - 41	122 - 124																						
RENO	39 - 40	118 - 120		193																				
							964					962						964						
RICE LAKE	45 - 46	90 - 92			540				540			455				537		534						
RICHFIELD	35 - 39	112 - 114		1190									1028											1026
							1546					1511						1544						1511
RICHMOND	37 - 38	76 - 78				610						610						81						610
RITZVILLE	47 - 48	118 - 120		144																				
							1064					1057						1052						1057

* East of Greenwich

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				MULTIELEMENT													
								ACID SOLUBLE	TOTAL				ACID SOLUBLE								TOTAL				
			LAN.1	LAN.2	ORGOP	SAL-E	SAL-W		LAN.1	LAN.2	ORG	SAL.1	ORG	CAN	ORG	ORG	ORG	ORG	SAL.3	LAN.2	LAN.3	LAN.4	LAN.5	LAN.1	SAL.2
ROANOKE	37 - 38	78 - 80				1235						1235							964						1235
ROCHESTER	43 - 44	76 - 78				277						277	1				277								1
ROCKFORD	42 - 43	84 - 90																							
ROCK SPRINGS	41 - 42	108 - 110	1774							1774										1787			1789	1794	
ROCKY MOUNT	35 - 36	76 - 78				500						500							106						500
ROLLA	37 - 38	90 - 92				876						835	834				331								834
ROME	34 - 35	88 - 88				1267						6	1267				6		324						1267
ROSEAU	48 - 49	94 - 96																							
ROSEBURG	43 - 44	122 - 124																							
ROSMELL	33 - 34	104 - 106	1270									1262					1270								
ROUNDUP	46 - 47	108 - 110	561									952					961								
RUSH	64 - 65	153 - 156	693							693											689		693		
RUSSELLVILLE	35 - 36	92 - 94				292						25	266				24								265
RUSSIAN MISSION	61 - 62	159 - 162																							
SACRAMENTO	38 - 39	120 - 127					1925	33				1862					1889								
SAGAWANUKTOK	69 - 70	147 - 150	569							569											544		569		
SAINT CLOUD	45 - 46	94 - 96			659							656				659		657							
SAINT JOHNS	34 - 35	108 - 110	1475							1475										1475		1475	1475		
SAINT LAWRENCE	62 - 64	166 - 172																							
SAINT LOUIS	38 - 39	90 - 92				99						99													99
SAINT MATTHEW	60 - 61	171 - 174																							
SAINT MICHAEL	63 - 64	162 - 165	160							160											160		160		
SAINT PAUL	44 - 45	92 - 94																							
SALEM	44 - 45	122 - 125																							
SALINA	39 - 39	110 - 112		15								7													7
							1410					1410							1410						1410
SALISBURY	38 - 39	74 - 76				292						1	272				1								272
SALT LAKE CITY	40 - 41	110 - 112																							
SALTON SEA	37 - 38	114 - 116		840								7													7
							1591					534							994						994

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					UPANTUM					MULTIELEMENT													
								ACID SOLUBLE	TOTAL				ACID SOLUBLE							TOTAL						
			LANL	LEL	ORSE	SHE-E	SAL-W	ORI	LANL1	LEL	OR2	SAL1	OR3	OR4	OR5	OR6	OR7	OR8	SPL3	LANL2	LANL3	LANL4	LANL5	LEL	SPL2	
SAMALGA ISLAND	52 - 53	168 - 170																								
SAN ANGELO	31 - 32	100 - 102																								
SAN ANTONIO	29 - 30	98 - 100			549			549			537					549		548								
SAN BERNARDINO	34 - 35	116 - 118		1019							2												2			
							1546						1511											1511		
SAN DIEGO	32 - 33	116 - 118																								
SANGPOINT	48 - 49	116 - 118		1840							1640												1840			
SAN FRANCISCO	37 - 38	122 - 124																								
SAN JOSE	37 - 38	120 - 122																								
SAN LUIS OBISPO	35 - 36	120 - 122					672	662								665										
SANTA ANA	33 - 34	116 - 118		15							2												2			
SANTA CRUZ	36 - 37	120 - 123					1270					1297												1297		
SANTA FE	35 - 36	104 - 106	1155							1155								1150		1152	1155					
SANTA MARIA	33 - 35	120 - 121																								
SANTA ROSA	36 - 39	122 - 124																								
SAULT SALETTE MARIE	46 - 47	84 - 86																								
SAVANNAH	32 - 33	80 - 82				492						463					63						465			
SCOTT CITY	36 - 39	100 - 102																								
SCOTTESBLUFF	41 - 42	102 - 104			402			402			375					402	402									
SCRANTON	41 - 42	74 - 76				980						275	919					980						919		
SEATTLE	47 - 48	122 - 124																								
SEGUAM	51 - 53	172 - 174																								
SEGUIN	29 - 30	96 - 98			595			595				575				594										
SELAWER	66 - 67	159 - 162	531							531								16	461	121	530					
SELDOVIA	58 - 60	150 - 153	199							199								135		136	199					
SEWARD	60 - 61	147 - 150	782							782								561		561	782					
SHELBY	48 - 49	110 - 112	1365									1034				1365										
SHERBROOKE	45 - 46	70 - 72				94						94					92							94		
SHERIDAN	42 - 45	166 - 169	526					526							526											
SHERMAN	33 - 34	96 - 98			727			727				693			726		720									

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					ACID SOLUBLE	URANIUM				MULTIELEMENT											
									TOTAL				ACID SOLUBLE										TOTAL	
			LANL	LEL	ORGOP	SRL-E	SRL-M	OR1	LANE1	LEL	OR2	SRL1	OR3	OR4	OR5	OR6	OR7	OR8	SRL3	LANE2	LANE3	LANE4	LANE5	LEL
						65					60					64				1676			1676	1676
SHIPROCK	36 - 37	108 - 110	1676							1676										1676			1676	1676
SHISHAREF	66 - 67	165 - 168	468							468										13	10	50	93	
SHIREVEPORT	32 - 33	92 - 94				167					152					160								
SHUNGNAK	66 - 67	155 - 159	857							857										24	806	301	857	
SILVER CITY	32 - 33	108 - 110	755							755						736								
SIMEONOF ISLAND	54 - 55	158 - 161																						
SIOUX CITY	42 - 43	96 - 98			546				546		541					546	546							
SIOUX FALLS	43 - 44	96 - 98																						
SITKA	57 - 58	134 - 137	290							290											266			290
SKAGWAY	59 - 60	135 - 138	346							346										340			346	
SLEETMUTE	61 - 62	156 - 159																						
SOCORRO	34 - 35	106 - 108	1384							1384									1384			1384	1384	
SOLOMON	64 - 65	162 - 165	275							275										272			275	
SOMORA	30 - 31	100 - 102																						
SPARTANBURG	34 - 35	80 - 82				1202					1202							1169						1202
SPOKANE	47 - 48	116 - 118		1118						7													?	
							1240					1335						1340						1335
SPRINGFIELD	37 - 38	92 - 94				130					77	40				106								40
STEROVAK BAY	55 - 56	156 - 160																						
STERLING	40 - 41	102 - 104	352							352											338			352
STILLWATER	45 - 46	92 - 94																						
SUNDOOM	57 - 58	132 - 134	55							55											55			55
SURVEY PASS	67 - 68	153 - 156	1249							1249									1241				1249	
SUSANVILLE	40 - 41	120 - 122																						
SUTWICK ISLAND	55 - 57	156 - 158																						
TABLE MOUNTAIN	68 - 69	141 - 144	1134							1134									1129				1134	
TAKU RIVER	58 - 59	132 - 134	207							207											192			207
TALKEENA	62 - 63	150 - 153	563							563									511			562	563	
TALKEENA MOUNTAINS	62 - 63	147 - 150	626							626									471	49	472	626		

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM					MULTIELEMENT											
								ACID SOLUBLE	TOTAL				ACID SOLUBLE								TOTAL			
			LANL	LLL	URG02	SRL-E	SRL-W	OR1	LANL1	LLL	URG2	SRL1	OR3	OR4	OR5	OR6	URG7	OR8	SRL3	LANL2	LANL3	LANL4	LANL5	LLL
TALLAHASSEE	30 - 31	84 - 86																						
TAMPA	26 - 28	82 - 83																						
TANACROSS	63 - 64	141 - 144	1183							1183										1178			1183	
TANANA	65 - 66	150 - 153	583							583										563			583	
TAMAS CITY	44 - 45	82 - 84																						
TAYLOR MOUNTAINS	60 - 61	156 - 159																						
TELLER	65 - 66	165 - 170	506							506										7	449	25	506	
TESHEKPUK	70 - 71	153 - 156	478							478										453			478	
TEZARKANA	33 - 34	94 - 96					237					163	8				115							8
THE DALLES	45 - 46	120 - 122																						
THERMOPOLIS	43 - 44	108 - 110	1821							1821										1802		1816	1821	
THIEF RIVER FALLS	48 - 49	96 - 98			342				342			336					421	342						
THUNDER BAY	68 - 69	80 - 90																						
TOLEDO	41 - 42	82 - 84																						
TONOPAH	38 - 39	116 - 118		1459						1459														1459
TOOELE	40 - 41	112 - 114		67						7														7
								900				645					853							
TORONTO	43 - 44	78 - 80																						
TORRINGTON	42 - 43	104 - 106	756							756										753		754	756	
TRAVERSE CITY	44 - 45	84 - 86																						
TRINIDAD	37 - 38	104 - 106	1240							1240										1239		1237	1239	
TRINITY ISLANDS	55 - 57	154 - 156																						
TRONA	35 - 36	116 - 118		1144						7														7
								1795				898												898
TUCSON	32 - 33	110 - 112						1817				1639	20				1801							20
TUCUMCARI	35 - 36	102 - 104	338							338										318		338	338	
TULAROSA	33 - 34	106 - 108	1877							1877							1847							
TULSA	36 - 37	94 - 96				999						820	74				849							74
TUPELO	34 - 35	88 - 90				69							69											69
TWIN FALLS	42 - 43	114 - 116					1510					1454					1463							

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED						CATION					MULTIELEMENT													
									ACID SOLUBLE		TOTAL			ACID SOLUBLE										TOTAL			
			LAN.1	ELL	ORGOP	SPE-E	SAL-W	OR1	LAN.1	ELL	OR2	SAL	OR3	OR4	OR5	OR6	OR7	OR8	SAL3	LAN.2	LAN.3	LAN.4	LAN.5	ELL	SAL7		
TWO HARBORS	47 - 48	90 - 92								40																	
TYLER	32 - 33	95 - 96				5						5					5										
TYONEK	61 - 62	150 - 153	502							502										443			502	501			
UGASHIK	57 - 58	156 - 158																									
UCIAH	39 - 40	122 - 124																									
UMIAT	69 - 70	150 - 153	566							569												553			568		
UMNAK	53 - 54	169 - 170																									
UMPAKLEET	63 - 64	159 - 162	591							591											568			591			
UNALASKA	53 - 55	166 - 168																									
UNIMAK	54 - 55	164 - 165																									
UTICA	43 - 44	74 - 76				1070						941	55					1008									55
UTLUK RIVER	69 - 70	159 - 162	580							580												577			580		
VALDEZ	61 - 62	144 - 147	971							971											902			879	971		
VALDOSTA	30 - 31	82 - 84																									
VALENTINE	42 - 43	100 - 102																									
VANCOUVER	45 - 46	122 - 124																									
VAN HORN	31 - 32	104 - 106																									
VERNAL	40 - 41	108 - 110	1552							1552											1547			1551	1552		
VICTORIA	48 - 49	122 - 124																									
VICENNES	38 - 39	86 - 88				29							29														29
VYA	41 - 42	118 - 120		1646								7															7
								1339				401	1329					409									1329
WACO	31 - 32	96 - 98			613				613			603						613	613								
WALNUT	70 - 71	159 - 163	284							284												281			284		
WALKER LAKE	38 - 39	118 - 120		303								7															7
								793					793						793								793
WALLACE	47 - 48	114 - 116	1971							1971											1968				1970		
				274								7															7
WALLA WALLA	46 - 47	118 - 120																									
WARREN	41 - 42	76 - 80				83						1	82						1								82

Table A-1, Continued
COMPILATION OF SEDIMENT GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED						URANIUM					MULTIELEMENT											
									ACID SOLUBLE		TOTAL			ACID SOLUBLE										TOTAL	
			LAM	ELL	ORGOP	SPL-E	SPL-W	ORG	LAM1	ELL	ORG	SPL	OP3	ORG	OP4	OP5	ORG	OP7	ORG	SPL	LAM2	LAM3	LAM4	LAM5	ELL
WASHINGTON	18 - 39	76 - 78				784						736								26					738
WATERLOO	42 - 43	92 - 94																							
WATERTOWN	44 - 45	96 - 98			603			102			601						602	602							
WATFORD CITY	17 - 48	102 - 104																							
WATCROSS	31 - 32	112 - 114				113						103													101
WEED	41 - 42	122 - 124																							
WELLS	41 - 42	114 - 116		1269																				?	553
								1357																	1336
WENATCHEE	17 - 48	120 - 122		26																				?	
WEST PALM BEACH	26 - 27	80 - 82																							
WEST POINT	33 - 34	88 - 90				102						102													102
WHITE SULPHUR SPRINGS	46 - 47	110 - 112	1756							1756												1709			1756
WICHITA	37 - 38	96 - 98			765				761			733					763	765							
WICHITA FALLS	33 - 34	98 - 100			740				743			735					740		740						
WILLIAMS	35 - 36	112 - 114		1463							1463														1463
WILLIAMSPORT	41 - 42	76 - 78				970						970							970						970
WILLISTON	48 - 49	102 - 104																							
WILMINGTON	39 - 40	74 - 76				203						27	198					27							198
WINCHESTER	37 - 38	84 - 86				1399						1222	35					1310							35
WINNEMUSCA	40 - 41	116 - 118		1005							1004														1004
WINSTON-SALEM	36 - 37	80 - 82				1423						1364							1308						1364
WISEMAN	67 - 68	150 - 153	1263							1263											1258				1263
WOLF POINT	48 - 49	104 - 106	1170							1170											1142				1170
WOODSTOCK	46 - 47	66 - 68																							
WOODWARD	36 - 37	98 - 100																							
YAKIMA	46 - 47	120 - 122																							
YAKUTAI	59 - 60	130 - 141	293								293										285				293
TOTAL			158753	30770	29365	66920	69645	30385	142845	13174	73297	93621	494	1762	62112	9560	85297	27144	46793	75747	47310	67033	126731	13174	93891

APPENDIX B

COMPILATION OF WATER GEOCHEMICAL INFORMATION

Table B-1
COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM					MULTIELEMENT										
			LAN	LLL	ORGP	SRL-E	SRL-M	LANL6	ELL	OR9	SRL4	LANL7	ELL	OR10	OR11	OR12	OR13	OR14	OR15	OR16	OR17	SRL5	SRL6
ABERDEEN	45 - 46	98 - 100																					
ABILENE	32 - 33	98 - 100																					
ADAK	51 - 53	176 - 178																					
ADEL	42 - 43	118 - 120		7						7					7								
								186							186								186
ATECHAK	50 - 59	151 - 154																					
AZO	32 - 33	112 - 114																					
ALBANY	47 - 43	72 - 74					1884					1884											1884
ALBUQUE RQUE	35 - 36	106 - 108	405					408					405										
ALEXANDRIA	31 - 32	92 - 94																					
ALLIANCE	47 - 43	102 - 104			543					543						543				543	543		
ALPENA	45 - 46	82 - 84																					
ALTURAS	41 - 42	120 - 122		24											9								
AMARILLO	35 - 36	100 - 102			1116					1112						1116				1115	1116		
AMBLER RIVER	67 - 68	156 - 159	1112					1112															
AMUKTA	52 - 53	170 - 172																					
ANCHORAGE	61 - 62	147 - 150	895					895															
ANDALUSIA	31 - 32	86 - 88					267					267											267
APACHE/COLA	29 - 30	84 - 86																					
ARCTIC	48 - 49	144 - 147	1098							1094						1098							
ARDMORE	34 - 35	96 - 98			745					745						743			745		745		164
												164											164
ARMINTO	43 - 44	106 - 108	570					569				565											
ASHLAND	46 - 47	90 - 92			312					312						312				312	312		
ASHTON	44 - 45	110 - 112	1141					1141															
ATHENS	33 - 34	82 - 84					825					825											825
ATKA	51 - 53	174 - 176																					
ATLANTA	33 - 34	84 - 86					918					918											918
ATLIN	59 - 60	132 - 135	7							7						7							

Table B-1, Continued
COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					GRAMM				MULTIELEMENT											
			LANL	LLL	DRGDP	SRL-E	SRL-W	LANL6	LLL	GR9	SRL4	LAN-7	LLL	DR10	CR11	DR12	CR13	DR14	DR15	CR16	DR17	SRL5	SRL6
ATTU	52 - 54	172 - 175 *																					
AUGUSTA	33 - 34	80 - 82				1796					1296											1296	
AURORA	41 - 42	88 - 90																					
AUSTIN	30 - 31	96 - 98			730					729					730				730		730		
AZTEC	36 - 37	106 - 108	336					338									331						
BAIRD INLET	60 - 61	162 - 165																					
BAIRD MOUNTAINS	67 - 68	153 - 162	869					869															
BAYER	44 - 45	116 - 116					745				745						434						745
BAKERSFIELD	35 - 36	118 - 120		27					7				7										
							455				455												455
BALTIMORE	39 - 40	76 - 78				1797					1796											1796	
BANGOR	44 - 45	68 - 70					2113				2113						1409				1409	2113	
BARKIN	71 - 72	154 - 158	82							77							82						
BARTER ISLAND	70 - 71	141 - 144	25							25							25						
BATH	41 - 44	68 - 70					177				177						30				50	177	
BATON ROUGE	33 - 31	90 - 92																					
BAY CITY	20 - 29	94 - 96			55					55						55			53		55		
BEALFORD	34 - 35	76 - 78				350					360											360	
BEAUMONT	30 - 31	94 - 96			707					707							707			707	707		
BEAVER	66 - 67	147 - 150	636							600							636						
BEECHY POINT	70 - 71	147 - 150	214							211							214						
BEEVILLE	28 - 29	96 - 98			373					373				117			370	117		372	373		
BELLEVILLE	38 - 39	88 - 90				350					327											327	
BELOIT	39 - 40	98 - 100																					
BENDJAI	47 - 48	94 - 96																					
BEND	44 - 45	120 - 122																					
BENDELEBEN	65 - 66	162 - 165	649					649															
BERING GLACIER	60 - 61	141 - 144	439					439															
BETHEL	60 - 61	159 - 162																					
BETTES	66 - 67	150 - 153	959							677							909						

* East of Greenwich

Table B-1, Continued
COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED						TRANSITION				MULTIELEMENT											
			LAV.	LLL	ORGOP	SRL-E	SRL-W	LAV-G	LLL	CR9	SRL4	LAV-7	LLL	OR10	CR11	CR12	OR13	OR14	CR15	OR16	OR17	SRL5	SRL6	
BIG DELTA	64 - 65	144 - 147	1354								1351							1354						
BIG SPRING	32 - 33	100 - 102																						
BILLINGS	45 - 46	108 - 110	1665						1655				1665											
BINGHAMTON	42 - 43	74 - 76				1050					1060											1060		
BIRMINGHAM	33 - 34	86 - 88				1733					1733											1733		
BISHAROCK	56 - 47	100 - 102																						
BLACK	62 - 63	165 - 168																						
BLACK RIVER	65 - 67	141 - 144	616							582							616							
BLIND RIVER	46 - 47	62 - 64																						
BLUEFIELD	37 - 38	80 - 82				1975					1975											1975		
BLUING SOUND	59 - 60	147 - 150	109						109															
BLUTHEVILLE	35 - 36	88 - 90				213					213											213		
BOISE	43 - 44	116 - 116						593			593						593						593	
BOSTON	42 - 43	70 - 72				845					845											845		
BOZEMAN	45 - 46	110 - 112	1251					1251																
BRADFIELD CANAL	56 - 57	129 - 132	326							324							326							
BRAINERD	46 - 47	94 - 96																						
BRETTON SOUND	28 - 30	88 - 90																						
BRIGHAM CITY	41 - 42	112 - 114		25					2				2											
								104			104						49						104	
BRISTOL BAY	57 - 58	158 - 160																						
BROKEW SOW	41 - 42	98 - 100			578					578							578		576	578				
BROWNFIELD	33 - 34	102 - 104	649					649									452							
BROWNSVILLE	25 - 27	97 - 98			112					112							112			112	112			
BROWNWOOD	31 - 32	90 - 100																						
BRUNSWICK	31 - 32	80 - 82				235					235											235		
BUFFALO	42 - 43	73 - 80																						
BURLINGTON	50 - 41	80 - 92																						
BURNS	43 - 44	118 - 120																						
BUTTE	46 - 47	112 - 114	1370					1370																

Table B-1, Continued
COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				M- ELEMENT											
			LAM.1	LLL	ORIGOP	SRL-1	SRL-M	LAM.6	LLL	ORIG	SRL-6	LAM.7	LLL	ORIG	OR11	OR12	OR13	OR14	OR15	OR16	OR17	SRL5	SRL6
CALIENTE	37 - 38	114 - 116		10					7				7										
CAMPBELLTON	47 - 48	64 - 64					186				186						184						184
CANDLER	65 - 66	155 - 162	712					712															
CANTON	40 - 41	80 - 82				2336					2335											2335	
CANTON CITY	44 - 45	115 - 120																					
CAPE FLATTERY	46 - 49	124 - 126																					
CAPE MENDEHALL	59 - 60	165 - 168																					
CARLSBAD	32 - 33	104 - 106	467					274									467						
CASPER	42 - 43	106 - 108	536					536															
CEDAR CITY	37 - 38	112 - 114					480				480						480						480
CENTERVILLE	40 - 41	92 - 94																					
CHARLIS	44 - 45	114 - 116					451				451						488						451
CHANDALAR	57 - 60	147 - 150	1195							1176							1189						
CHANDLER LAKE	58 - 59	150 - 153	516							607							616						
CHARLESTON	38 - 39	80 - 82				2089					2149											2089	
CHARLEY RIVER	55 - 56	141 - 144	1240							1240							1276						
CHARLOTTE	35 - 36	80 - 82					766				766											766	
CHARLOTTEVILLE	38 - 39	76 - 80				1918					1911											1916	
CHATTANOOGA	35 - 35	84 - 86				1659					1659											1659	
CHIBOTGAN	45 - 46	84 - 86																					
CHETENE	41 - 42	104 - 106	1136					1138									884						
CHICAGO	41 - 42	86 - 88																					
CHICO	39 - 40	120 - 122																					
CHICKEN	56 - 57	155 - 161																					
CHOTEAU	47 - 48	112 - 114	1097							1093							1097						
CHRISTIAN	67 - 68	144 - 147	603					603															
CINCINNATI	39 - 40	14 - 16																					
CIRCLE	55 - 56	144 - 147	1307							1303							1317						
CLARKSBURG	39 - 40	80 - 82				7425					7405											7405	

Table B-1, Continued
COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				MULTIELEMENT											
			LAN.	LLL	ONGOP	SRL-E	SRL-W	LAN-G	LLL	CR9	SRL-S	LAN-7	LLL	CR10	CR11	CR12	CR13	CR14	CR15	CR16	CR17	SRL-S	SRL-G
CLEVELAND	41 - 42	80 - 82				220					220												220
CLIFTON	33 - 34	108 - 110	469					469									451						
CLINTON	35 - 36	98 - 100			699					699							699			699	699		
CLOVIS	34 - 35	102 - 104	1720					1720															
COOY	44 - 45	108 - 110	627					627															
COLD BAY	55 - 56	162 - 164																					
COLLEEN	67 - 68	141 - 144	600							573							600						
COLUMBIA	35 - 36	85 - 88				251					251											251	
COLUMBUS	38 - 40	82 - 84				224					224											224	
CONCRETE	46 - 49	120 - 122		357					?				?										
COOS BAY	42 - 44	124 - 125																					
COPALIS BEACH	46 - 48	124 - 125																					
CORBIN	36 - 37	84 - 86				1947					1941											1941	
CORNOYA	60 - 61	144 - 147	580					580															
CORPUS CHRISTI	27 - 28	96 - 98			119					119							119			119	119		
CORTEZ	37 - 38	108 - 110	598					598				583											
CRAIG (CO)	40 - 41	106 - 108	1234					1234				1234											
CRAIG (AK)	55 - 56	132 - 135	137							137							134						
CRESCENT	43 - 44	120 - 122																					
CRYSTAL CITY	28 - 29	98 - 100			519					428				426				429			427		
CUMBERLAND	39 - 40	76 - 80				2252					2251											2251	
CYFBANK	48 - 49	112 - 114	1335							1222							1335						
DALHART	36 - 37	102 - 104	1593					1583															
DALLAS	32 - 33	96 - 98			284					284							284			284	284		
DANVILLE	40 - 41	86 - 88																					
DAVENPORT	41 - 42	90 - 92																					
DAYTONA BEACH	29 - 30	80 - 82																					
DEATH VALLEY	36 - 37	116 - 118		35					?				?										
								62			62						60						62
DECATUR	39 - 40	88 - 90																					

Table B-1, Continued
COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					GRANTON				MULTIELEMENT											
			LANE	LLL	ORIGOP	SRL-E	SRL-W	LANL6	LLL	OR9	SRL4	LANL7	LLL	OR10	OR11	OR12	OR13	OR14	OR15	OR16	OR17	SRL5	SRL6
DE LONG MOUNTAINS	68 - 69	162 - 165	626							621							626						
DEL RIO	29 - 30	100 - 102																					
DELTA	39 - 40	112 - 114		110					7				7										
							140				140						138						140
DEMARCATION POINT	69 - 70	141 - 144	520							520							519						
DENVER	39 - 40	104 - 106	1264					1264															
DES MOINES	41 - 42	92 - 94																					
DETROIT	42 - 43	82 - 84																					
DEVILS LAKE	48 - 49	98 - 100																					
DICKINSON	46 - 47	102 - 104			544					544							544			544	544		
DILLINGHAM	59 - 60	156 - 159																					
DILLON	45 - 46	112 - 114	1148					1148				1127											
DIXON ENTRANCE	54 - 55	132 - 134	383					383															
DODGE CITY	37 - 38	100 - 102			756					756							756			756	756		
DOTHAN	31 - 32	84 - 86				124					124											124	
DOUGLAS	31 - 32	108 - 110	181					181									161						
DREGGS	43 - 44	110 - 112	530					530									287						
DUBOIS	44 - 45	112 - 114	1024					1024															
DUBUQUE	42 - 43	90 - 92																					
DULUTH	45 - 47	92 - 94																					
DURANGO	37 - 38	106 - 108	1518					1518															
DYERSBURG	36 - 37	88 - 90				1674					1674											1674	
EAGLE	64 - 65	141 - 144	1375							1375							1313						
EAGLE PASS	28 - 29	100 - 102																					
EASTPORT	44 - 45	66 - 68					117				117						115				113	117	
EASTVILLE	36 - 38	75 - 76				131					131											131	
EAU CLAIRE	44 - 45	90 - 92			1196					1195					1195				1194		1195		
EDMUNDSTON	47 - 48	68 - 70																					
EKALAKA	45 - 46	104 - 106	710					710									797						
EL CENTRO	32 - 33	114 - 116																					

Table B-1, Continued
 COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				MULTIELEMENT												
			LAHL	ELL	ORGOP	SRL-E	SRL-W	LAHL-E	ELL	ORG	SRL-E	LAHL-7	ELL	ORG10	ORG11	ORG12	ORG13	ORG14	ORG15	ORG16	ORG17	SRL5	SRL6	
EL DORADO	33 - 34	92 - 94				1610					1607												1607	
ELK CITY	15 - 46	114 - 116	1580					1580																
ELKO	40 - 41	114 - 116		166					?				?											
								163			163						163						163	
ELNIWA	42 - 43	76 - 78				2003					2002											2002		
EL PASO	31 - 32	105 - 108	103					103																
ELY	39 - 40	114 - 116		67					?				?											
								284			284						281						282	
EMERY PEAK	28 - 30	102 - 104			193					193				193				193		193				
ENID	35 - 37	96 - 98			677					677				676				676		677				
						4					4											4		
ERIE	42 - 43	80 - 82																						
ESCALANTE	37 - 38	110 - 112					39				39						39						39	
ESCANABA	45 - 46	106 - 108			362					331							361		391	361				
EUREKA	40 - 42	124 - 125																						
EVANSVILLE	37 - 38	86 - 88				2624					2624											2624		
FAIRBANKS	64 - 65	142 - 150	1459					1459					1456											
FAIRMONT	43 - 44	94 - 96																						
FALSE PASS	54 - 55	161 - 164																						
FARGO	46 - 47	96 - 98			642					642							642			642	642			
FLAGSTAFF	35 - 36	110 - 112					45				45						44						45	
FLAXMAN ISLAND	70 - 71	144 - 147	55							55							55							
FLINT	43 - 44	102 - 104																						
FLORENCE	34 - 35	76 - 80				1324					1324											1324		
FORSYTH	75 - 47	106 - 108	659							654							669							
FORT DODGE	42 - 43	94 - 96																						
FORT PIERCE	27 - 28	80 - 82																						
FORT SMITH	35 - 36	94 - 96				1418					1416											1418		
FORT STOCKTON	30 - 31	102 - 104																						
FORT SUMNER	34 - 35	104 - 106	617							462							617							

Table B-1, Continued
 COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				MULTIELEMENT											
			LAW	ELL	ORGP	SRI-E	SRI-W	LAW.6	ELL	OR9	SP.4	LAW.7	ELL	OR10	OR11	OR12	OR13	OR14	OR15	OR16	OR17	SP.5	SP.6
FORT WAYNE	41 - 42	84 - 86																					
FORT YUKON	66 - 67	144 - 147	624					624															
FREDERICTON	45 - 46	66 - 68																					
FREMONT	41 - 42	96 - 98			567					567							567			567			
FRESNO	36 - 37	118 - 120					735				735						735						735
GADSDEN	34 - 35	86 - 88				2100					2100											2100	
GAINESVILLE	29 - 30	82 - 84																					
GALLUP	35 - 36	108 - 110	516					516															
GARRETT ISLAND	51 - 53	178 - 180																					
GEORGETOWN	33 - 34	72 - 80				554					554											554	
GILLETTE	44 - 45	104 - 106	752					752															
GLASGOW	48 - 49	106 - 108	364					364															
GLENDALE	47 - 48	104 - 106	954							954							954						
GLEN FALLS	43 - 44	72 - 74				1886					1886											1886	
GOLD FIELD	37 - 38	116 - 118		3																			
							119				119						109						119
GODDARD	39 - 40	100 - 102																					
GODFREYS LAY	59 - 60	159 - 162																					
GRAND CANYON	36 - 37	112 - 114					96				96						95						96
GRAND FORKS	47 - 48	96 - 98			585					585							585			585			
GRAND ISLAND	40 - 41	98 - 100			564					564							564			564			
GRAND JUNCTION	39 - 40	106 - 110	117					117															
GRAND RAPIDS	42 - 43	84 - 86																					
GRANGEVILLE	45 - 46	116 - 118																					
GREAT BEND	38 - 39	98 - 100																					
GREAT FALLS	47 - 48	110 - 112	1130							1107							1130						
GRELLEY	40 - 41	104 - 106	1210					1210															
GREEN BAY	44 - 45	88 - 90			1096					1093					1094				1096		1095		
GREENSBORO	35 - 37	76 - 80				840					840											840	
GREENVILLE	44 - 45	82 - 84				755					755											755	

Table B-1, Continued
COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				MULTIELEMENT											
			LANL	LLL	ORGOP	SRL-E	SRL-W	LANL6	LLL	OP9	SRL4	LANL7	LLL	OR10	OW11	GR12	OK13	OR14	OR15	OR16	GW17	SRL5	SRL6
GREENWOOD	33 - 34	90 - 92				153					153												153
GULKANA	62 - 63	144 - 147	606						606														
HAGEMEISTER ISLAND	50 - 59	160 - 163																					
HATLEY	43 - 44	114 - 116						909			909						892						909
HAMILTON	46 - 47	114 - 116	1475						1475														
				25						?				?									
HANCOCK	47 - 48	87 - 90																					
HARDEN	45 - 46	106 - 108	1000							929							1000						
HARRISBURG	40 - 41	76 - 78				2325					2316											2316	
HARRISON	36 - 37	92 - 94				347					347											347	
HARRISON BAY	70 - 71	150 - 153	328							324							326						
HARTFORD	41 - 42	72 - 74				1663					1662											1662	
HATTIESBURG	31 - 32	88 - 90				229					229											229	
HAYNE	48 - 49	108 - 110	652						652														
HEALY	63 - 64	147 - 150	1384						1384														
HELENA	34 - 35	90 - 92				300					300											300	
HIBBING	47 - 48	92 - 94																					
HOBBS	32 - 33	102 - 104	435						435								284						
HOLBROOK	34 - 35	110 - 112						281			281						281						281
HOLY CROSS	62 - 63	153 - 162																					
HOOPER BAY	61 - 62	165 - 168																					
HOQUIAN	46 - 47	122 - 124																					
HOT SPRINGS	43 - 44	102 - 104			340					340							340			340	340		
HOUSTON	29 - 30	94 - 96			508					508						508			508		508		
HOWARD PASS	65 - 69	156 - 159	626							626							626						
HUGHES	66 - 67	153 - 156	637							637							637						
HUNTINGTON	38 - 39	82 - 84				470					470											470	
HURON	44 - 45	98 - 100																					
HUTCHINSON	38 - 39	96 - 98			592					592							591			591	592		
ICY HAT	59 - 60	141 - 144	30						30														

Table B-1, Continued
COMPILATION OF WATER GEOCHEMICAL INFORMATION

URANIUM	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				MULTIELEMENT											
			LANE	ELL	ORGAP	SRL-E	SRL-W	LANE 6	ELL	ORG	SRL 4	LANE 2	ELL	ORG	OR11	OR12	OR13	OR14	OR15	OR16	OR17	SRL5	SRL6
IDAHO FALLS	43 - 44	112 - 114					567				567						553						567
IDITAROD	62 - 63	156 - 159	1409							1389							1409						
KPIKPIK RIVER	69 - 70	153 - 156	574							545							574						
ILLAPPA	59 - 60	153 - 156	547					547															
INDIANAPOLIS	39 - 40	86 - 88																					
INTERNATIONAL FALLS	48 - 49	92 - 94																					
IRON MOUNTAIN	45 - 46	88 - 90			868					868					865			865		865			
IRON RIVER	46 - 47	88 - 90			357					357							357			357			
JACKSON	32 - 33	90 - 92				27					27											27	
JACKSONVILLE	30 - 31	80 - 82																					
JAMES ISLAND	32 - 33	78 - 80				27					27											27	
JAMESTOWN	46 - 47	98 - 100																					
JEFFERSON CITY	38 - 39	92 - 94																					
JENKINS	37 - 38	82 - 84				2894					2894											2894	
JOHNSON CITY	36 - 37	82 - 84				1525					1524											1524	
JOPLIN	37 - 38	94 - 96			736					736							736			735	736		
						38					38											38	
JORDAN	47 - 48	106 - 108	431							427							431						
JORDAN VALLEY	42 - 43	116 - 118					245				245						244						245
JUNEAU	58 - 59	134 - 136	399							398							399						
KAGUYAK	56 - 57	152 - 154																					
KALISPELL	48 - 49	114 - 116	1455														1455						
KANSAS CITY	39 - 40	94 - 96																					
KANTISHNA RIVER	64 - 65	150 - 153	656							644							655						
KARLUK	57 - 58	154 - 156																					
KATELL RIVER	65 - 66	156 - 159	603						209	566							603						
KENAI	60 - 61	150 - 153	509						509														
KENORA	49 - 50	94 - 96																					
KETCHIKAN	55 - 56	129 - 132	751							750							758						
KEY WEST	24 - 25	80 - 83																					

Table B-1, Continued
COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					LITHIUM				MULTIELEMENT											
			LANL	ELL	ORGOP	SAL-E	SRL-W	LANL6	ELL	ORG	SRL4	LANL7	ELL	OR10	OR11	OR12	OR13	OR14	OR15	OR16	OR17	SRL5	SRL6
KILLIK BEVER	68 - 69	153 - 156	618							613							618						
KINGMAN	35 - 36	114 - 116		114					99				99										
KINGSTON	44 - 45	76 - 78				50					49											40	
KISKA	51 - 53	175 - 178*																					
KLAMATH FALLS	42 - 43	120 - 122					161				161						161						161
KNOXVILLE	35 - 36	87 - 88				791					790											790	
KODIAK	57 - 58	152 - 154																					
KOTZEBUE	66 - 67	162 - 165	591					591															
KUSKOKWIM BAY	59 - 60	162 - 165																					
KWIDUK	62 - 63	162 - 165																					
LA CROSSE	43 - 44	90 - 92																					
LA JUNTA	37 - 38	102 - 104	1351					1351				1350											
LAKE CHAMPLAIN	44 - 45	72 - 74				1835					1833											1833	
LAKE CHARLES	30 - 31	92 - 94																					
LAKE CLARK	60 - 61	153 - 156	649					649															
LAMAR	30 - 32	102 - 104	1043					1043				1041											
LANDER	42 - 43	108 - 110	355					355				353											
LAREDO	27 - 28	98 - 100			655					655							655			655	655		
LAS CRUCES	32 - 33	105 - 108	501					501									501						
LAS VEGAS	36 - 37	114 - 116		106					83				83										
LAWRENCE	35 - 39	94 - 96																					
LAWTON	34 - 35	98 - 100			703					702					703				703		702		
LEACHVILLE	39 - 40	106 - 108	1279					1279															
LEMON	45 - 46	102 - 104			565					565							565			565	565		
LEWISTON	44 - 45	20 - 22				1815					1815											1815	
LEWISTOWN	47 - 48	108 - 110	758					758															
LIME HILLS	61 - 62	153 - 156	671					671				671											
LIMON	39 - 40	102 - 104	1416							1395							1416						
LIMON	40 - 41	96 - 98			577					577							577			577	577		
LITTLE ROCK	34 - 35	92 - 94				1915					1905											1905	

* East of Greenwich

Table B-1, Continued
COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				MATERIAL ELEMENT											
			LANE	LEE	ORODP	SRL-E	SPI-W	LANE6	LEE	OR9	SRL4	LANE7	LEE	OR10	OR11	OR12	OR13	OR14	OR15	OR16	OR17	SRL5	SRL6
LIVINGOOD	65 - 66	117 - 119	715						715														
LLANO	70 - 71	98 - 100			161					161							161			161	161		
LONG BEACH	12 - 14	116 - 120																					
LOOKOUT RIDGE	69 - 70	156 - 159	580							576							580						
LOS ANGELES	34 - 35	116 - 120		32						2				2									
LOUISVILLE	38 - 39	84 - 86				109					189											189	
LOVELOCK	40 - 41	118 - 120		146						122				122									
LUBBOCK	33 - 35	100 - 102			994						994						994			994	994		
LUKEVILLE	31 - 32	112 - 114																					
LUND	38 - 39	114 - 116		42						2				2									
								295					295				293						295
MACON	32 - 33	82 - 84				1196						1196										1196	
MADISON	43 - 44	88 - 90																					
MANHATTAN	39 - 40	96 - 98			674						674						674			674	674		
MANITOWOC	44 - 45	86 - 88																					
MANITO	35 - 36	74 - 76				2					2											2	
MARBLE CANYON	36 - 37	110 - 112						2			2						2						2
MARFA	30 - 31	104 - 106			181						181						181			181	180		
MARION	40 - 41	82 - 84				215						215										215	
MARIPOSA	37 - 38	118 - 120						291				291					291						291
MARQUETTE	46 - 47	86 - 88			254						254						254			254	254		
MARSHALL	61 - 62	162 - 165																					
MARTIN	43 - 44	100 - 102																					
MASON CITY	43 - 44	92 - 94																					
MC ALESTER	34 - 35	94 - 96				1083						1083										1083	
MC ALLEN	26 - 27	90 - 100			315						315						315			315	314		
MC CARTHY	61 - 62	141 - 144	741								741						647						
MC CLUSKY	47 - 48	100 - 102																					
MC COOK	40 - 41	100 - 102																					
MC DEANETT	41 - 42	116 - 118		299						2				2									

Table B-1, Continued
COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				MULTIELEMENT											
			LANE	LLL	DRGDP	SRL-E	SRL-W	LAN-6	LLL	CR9	SRL-4	LAN-7	LLL	CR10	DR11	DR12	DR13	CR14	CR15	CR16	CR17	SRL5	SRL6
							302				302						302						302
MC GRATH	62 - 63	153 - 156	617						617			617											
MC INTOSH	45 - 46	100 - 102																					
MEADE RIVER	70 - 71	156 - 159	515							509							516						
MEDFORD	42 - 43	122 - 124																					
MEDFRA	63 - 64	153 - 156	696						696			695											
MELOZITNA	65 - 66	153 - 156	665							650							665						
MEMPHIS	35 - 36	92 - 92					105				105											105	
MERTIDAN	32 - 33	88 - 90					231				231											231	
MESA	33 - 34	110 - 112						365			365						48						365
MIAMI	25 - 26	80 - 82																					
MIDDLETON ISLAND	59 - 60	144 - 147	15						15														
MIDLAND	43 - 44	84 - 86																					
MILBANK	45 - 46	96 - 98			662					662							662		661	662			
MILES CITY	46 - 47	104 - 106	909							894							909						
MILLETT	39 - 40	116 - 118		363						276													
MILLINOCKET	45 - 46	68 - 70				5					5				276							5	
MILWAUKEE	43 - 44	86 - 88																					
MINOT	46 - 49	100 - 102																					
MISHEGUX MOUNTAIN	68 - 69	159 - 162	619							513							619						
MITCHELL	43 - 44	98 - 100																					
MOAB	36 - 39	108 - 110	442						442			441											
MOBERLY	39 - 40	92 - 94																					
MOBILE	32 - 31	86 - 92																					
MONTGOMERY	37 - 33	86 - 88					1341				1341											1341	
MONTROSE	38 - 39	106 - 108	1365						1365			1352											
MOUNT FAIRWEATHER	58 - 59	136 - 139	30							29							30						
MOUNT HAYES	63 - 64	144 - 147	1056						1056														
MOUNT KATHA	58 - 59	154 - 156																					
MOUNT MC KINLEY	63 - 64	150 - 153	582						582			582											

Table B-1, Continued
COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				MULTIELEMENT											
			LANL	LLL	ORGOP	SRL-E	SRL-W	LANL6	LLL	ORG	SRL6	LANL7	LLL	CR10	CR11	CR12	CR13	CR14	CR15	CR16	CR17	SRL5	SRL6
MOUNT MICHELSON	62 - 70	144 - 147	564							558							564						
MOUNT SAINT ELIAS	60 - 61	138 - 141																					
MUNCIE	40 - 41	84 - 86																					
NABESNA	62 - 63	141 - 144	1231							1220							1231						
NADNEK	58 - 59	156 - 158																					
NASHVILLE	36 - 37	86 - 88				672				672												672	
NATCHEZ	31 - 32	92 - 92				653				653												653	
NEBRASKA CITY	40 - 41	94 - 96																					
NEEDLES	34 - 35	114 - 116		53						?				?									
							49			49							49						49
NEWARK	40 - 41	74 - 76				2068				2066												2066	
NEWCASTLE	43 - 44	104 - 106	533						553														
NEW ORLEANS	29 - 30	90 - 92																					
NEW ROCKFORD	47 - 48	98 - 100																					
NEW LHM	44 - 45	94 - 96			738					738							738			738			
NEW YORK	40 - 41	72 - 74				1				1												1	
NOATAX	67 - 68	162 - 166	411						411														
NOGALES	31 - 32	110 - 112					241			241							241						241
NOME	64 - 65	165 - 168	162						162														
NORFOLK	36 - 37	76 - 78				971				971												971	
NORTH PLATTE	41 - 42	100 - 102																					
NORTON BAY	64 - 65	159 - 162	529						529														
NULATO	64 - 65	156 - 159	690							684							690						
NUNIVAK ISLAND	60 - 61	165 - 168																					
NUSAGAK BAY	50 - 59	158 - 160																					
ODGEN	41 - 42	110 - 112	225						225								123						
ODGENSBURG	41 - 45	74 - 76				787				787												787	
OKANOGAN	46 - 49	118 - 120		879					?				?										
								816				816					804						816
OKLAHOMA CITY	35 - 36	96 - 98			812					812						811			810		811		

Table B-1, Continued
 COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED				URANIUM				MULTIELEMENT												
			LANL	LLL	ORDOP	SRL-E	SRL-W	LANL6	LLL	ORD	SRL6	LANL7	LLL	ORD1	ORD11	ORD12	ORD13	ORD14	ORD15	ORD16	ORD17	SRL5	SRL6
						30					30												30
OMAHA	41 - 42	94 - 96																					
O'NEILL	42 - 43	98 - 100			23					23							23			23	23		
OPHER	63 - 64	156 - 159	727							727							727						
ORLANDO	28 - 29	80 - 82																					
PADUCAH	37 - 38	88 - 90				1738					1727											1727	
PALESTINE	31 - 32	94 - 96			714					714							714			714	714		
PECOS	31 - 32	102 - 104																					
PENDLETON	45 - 46	118 - 120																					
PENSACOLA	30 - 31	86 - 88																					
PEORIA	40 - 41	88 - 90																					
PERRYTON	36 - 37	100 - 102																					
PETERSBURG	56 - 57	132 - 134	435							427							435						
PHENIX CITY	32 - 33	84 - 86				958					958											958	
PHILIP SMITH MOUNTAINS	68 - 69	147 - 150	1121							1116							1121						
PHOENIX	33 - 34	112 - 114					155				155						155						155
PIERRE	44 - 45	100 - 102																					
PITTSBURGH	40 - 41	78 - 80				806					806											806	
PLAINVIEW	34 - 35	100 - 102			969					969					968			969		967			
PLANT CITY	28 - 29	82 - 84																					
POCATELLO	42 - 43	112 - 114					420				420						417					420	
POINT YNCE	68 - 69	165 - 168	211							211							210						
POINT LAY	69 - 70	162 - 165	219							219							217						
POPLAR BLUFF	36 - 37	90 - 92				1845					1845											1845	
PORT ALEXANDER	56 - 57	134 - 136	336							334							336						
PORT ARTHUR	29 - 30	92 - 94																					
PORTLAND	43 - 44	70 - 72				1652					1650											1650	
PORT MOLLER	55 - 57	160 - 162																					
PRAIRIE	37 - 38	98 - 100			611					611							611			611	611		
PRESBOTT	37 - 38	112 - 114		275						275					275								

Table B-1, Continued
 COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				MULTIELEMENT												
			LANL	LLL	ORGP	SRL-E	SRL-W	LAN6	ILL	OR9	SRL8	LAN7	LLL	OR10	OR11	OR12	OR13	OR14	OR15	OR16	OR17	SRL5	SRL6	
PRESIDIO	29 - 30	104 - 106				79					79					79				79		79		
PRESQUE ISLE	46 - 47	68 - 70																						
PRESTON	42 - 43	110 - 112	461						461								410							
PRIBILOF ISLANDS	56 - 58	169 - 171																						
PRICE	39 - 40	110 - 112						564			164						163						164	
PRINCE RUPERT	54 - 55	130 - 132	84						14		84						82							
PROVIDENCE	41 - 42	69 - 72					564					564										564		
PUBLICO	38 - 39	104 - 106	961						961				656											
PULLMAN	46 - 47	116 - 118		50						?				?										
QUEBEC	46 - 47	70 - 72																						
QUETICO	48 - 49	90 - 92																						
QUINCY	39 - 40	90 - 92																						
RACINE	47 - 48	96 - 98																						
RALIGH	75 - 76	78 - 80					1031				1031											1031		
RAPID CITY	44 - 45	102 - 104				417					417								417		417			
RAT ISLAND	51 - 53	178 - 180 *																						
RATON	35 - 37	104 - 106	824						824								776							
RAWLENS	41 - 42	106 - 108	570						570								454							
REDDING	49 - 51	122 - 124																						
RENO	39 - 40	118 - 120		11						?				?										
								43			43						45						43	
RICE LAKE	45 - 46	70 - 72				1002					1001					1001			1002		1001			
RICHFIELD	38 - 39	112 - 114		146						?				?										
									244			243					249						243	
RICHMOND	17 - 18	76 - 78				957					956											956		
RITZVILLE	49 - 48	118 - 120		61						?				?										
									946			946					946						946	
ROANOKE	37 - 38	78 - 80				1889					1811											1811		
ROCHESTER	43 - 44	76 - 78				675					675											675		
ROCKFORD	42 - 43	88 - 90																						

* Rest of Greenwich

Table B-1, Continued
COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				MULTIELEMENT											
			LAL	LL	ORGDP	SPL-E	SRI-W	LAL-6	LL	ORG	SRL4	LAL-7	LL	C210	C411	C412	OR13	C214	OR15	OR16	OR17	SRL5	SRL6
ROCK SPRINGS	41 - 42	108 - 110	397					397															
ROCKY MOUNT	35 - 36	76 - 78				899					899											899	
ROLLA	37 - 38	90 - 92				1833					1833											1833	
ROMA	34 - 35	84 - 86				1397					1397											1397	
ROSEAU	48 - 49	94 - 96																					
ROSEBURG	43 - 44	122 - 124																					
ROSMELL	33 - 34	104 - 106	832							800							832						
ROUNDUP	46 - 47	108 - 110	1260							1260							1256						
RUBY	64 - 65	153 - 156	692							662							692						
RUSSELLVILLE	35 - 36	92 - 94				605					605											605	
RUSSIAN MISSION	61 - 62	159 - 162																					
SACRAMENTO	38 - 39	120 - 122					673				673						673						673
SAGAVANIRKTOK	69 - 70	147 - 150	562							556							562						
SAINT CLOUD	45 - 46	94 - 96			676					676							676			676	676		
SAINT JOHNS	34 - 35	108 - 110	848					848															
SAINT LAWRENCE	62 - 64	166 - 172																					
SAINT LOUIS	38 - 39	92 - 92				212					212											212	
SAINT MATTHEW	60 - 61	171 - 174																					
SAINT MICHAEL	63 - 64	162 - 165	157							157							157						
SAINT PAUL	44 - 45	92 - 94																					
SALEM	44 - 45	122 - 125																					
SALINA	34 - 39	110 - 112					162				179						179						179
SALISBURY	39 - 39	74 - 76				462					462											462	
SALT LAKE CITY	40 - 41	110 - 112																					
SALON SEA	33 - 34	114 - 116		3					7				7										
							76				74						74						74
SAMALGA ISLAND	52 - 53	168 - 170																					
SAN ANGELO	31 - 32	100 - 102																					
SAN ANTONIO	29 - 30	98 - 100			1126					1124					1122				1124		1123		
SAN BERNARDINO	34 - 35	115 - 116		33					2				2										

Table B-1, Continued
 COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				NO. ELEMENT											
			LANL	LLL	CROGP	SRL-E	SRL-W	LANL6	LLL	OR9	SRL4	LANL7	LLL	OR10	OR11	OR12	OR13	OR14	OR15	GR16	OR17	SRL5	SRL6
							428				428						67						428
SAN DIEGO	32 - 33	116 - 118																					
SANDPOINT	48 - 49	116 - 118		1510					1494				1494										
SAN FRANCISCO	37 - 38	122 - 124																					
SAN JOSE	37 - 38	120 - 122																					
SAN LOUIS OBISPO	35 - 36	120 - 122					300				300						300						300
SANTA ANA	33 - 34	116 - 118																					
SANTA CRUZ	36 - 37	120 - 123					633				633						632						633
SANTA FE	35 - 36	104 - 106	982					982															
SANTA MARIA	33 - 35	120 - 121																					
SANTA ROSA	38 - 39	122 - 124																					
SAULT SAINTE MARIE	46 - 47	84 - 86																					
SAVANNAH	32 - 33	80 - 82					991				991											991	
SCOTT CITY	38 - 39	100 - 102																					
SCOTTSBLUFF	41 - 42	102 - 104			567					567							567			567	567		
SCRANTON	41 - 42	74 - 76				2227					2216											2216	
SEATTLE	47 - 48	122 - 124																					
SEGUIN	51 - 53	172 - 174																					
SEGUIN	29 - 30	96 - 98			1277					1277					1276				1275		1277		
SELWICK	66 - 67	159 - 162	562					562															
SELDOVIA	59 - 60	150 - 153	237					237															
SEWARD	60 - 61	147 - 150	931					931															
SHELBY	48 - 49	110 - 112	596							590							596						
SHERBROOKE	45 - 46	70 - 72				91					91											91	
SHERIDAN	44 - 45	106 - 108	582							582							582						
SHEKMAN	33 - 34	56 - 58			718					719					717				717	718			
							95				95											95	
SHIPROCK	36 - 37	108 - 110	372					372															
SHISHARET	66 - 67	165 - 166	475					475															
SHREVEPORT	32 - 33	92 - 94																					

Table B-1, Continued
COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				MULTIELEMENT											
			LANL	LLL	ORGOP	SRL-E	SRL-M	LANL6	LLL	ORG	SRL4	LANL7	LLL	OR10	OR11	OR12	OR13	OR14	CR15	CR16	OR17	SRL5	SRL6
SHUNGWAX	66 - 67	156 - 159	751						109		736							751					
SILVER CITY	32 - 33	108 - 110	474						474									405					
SIMMONS ISLAND	54 - 55	158 - 161																					
SIOUX CITY	42 - 43	96 - 98				119					119							119		119	119		
SIOUX FALLS	43 - 44	96 - 98																					
SITKA	57 - 58	134 - 137	290								288							290					
SKAGWAY	59 - 60	135 - 138	345								339							345					
SLEETMUTE	61 - 62	156 - 159																					
SOCORRO	34 - 35	106 - 108	650						650														
SOLOMON	64 - 65	162 - 165	733						293														
SONORA	30 - 31	100 - 102																					
SPARTANBURG	34 - 35	80 - 82					771					771									771		
SPOKANE	47 - 48	116 - 118		776																			
								1489				1489					1479						1489
SPRINGFIELD	37 - 38	92 - 94					275					275										275	
STEOVAK BAY	55 - 56	150 - 160																					
STERLING	40 - 41	102 - 104	1653						1653														
STILLWATER	45 - 46	92 - 94																					
SUMMIT	57 - 58	132 - 134	56								55							56					
SURVEY PASS	67 - 68	153 - 156	1224								1224							1202					
SUSANVILLE	40 - 41	120 - 122																					
SUTWIK ISLAND	55 - 57	156 - 158																					
TABLE MOUNTAIN	68 - 69	141 - 144	1123								1123							1121					
TAKU RIVER	58 - 59	132 - 134	205								205							205					
TALKEETNA	62 - 63	150 - 153	621						621				621										
TALKEETNA MOUNTAINS	62 - 63	147 - 150	723						723														
TALLAHASSEE	30 - 31	84 - 86																					
TAMPA	26 - 28	82 - 83																					
TANACROSS	63 - 64	141 - 144	1391								1388							1391					
TANANA	65 - 66	150 - 153	656								647							656					

Table B-1, Continued
COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				MULTIELEMENT											
			LAM6	ELL	ORGOP	SRL-E	SRL-W	LAM6	ELL	ORG	SRL-E	LAM7	ELL	GRD	Q411	Q412	Q413	Q414	Q415	Q416	Q417	SRL5	SRL6
TAMAS CITY	44 - 45	82 - 84																					
TAYLOR MOUNTAINS	60 - 61	156 - 159																					
TELLER	65 - 66	165 - 170	259					459															
TESHEKPUK	70 - 71	151 - 156	479						473								479						
TEKARKANA	33 - 34	94 - 96				366				366												366	
THE DALLES	45 - 46	120 - 122																					
THERMOPOLIS	13 - 44	108 - 110	920					920															
THREE RIVER FALLS	48 - 49	96 - 98			471				471								471			471	471		
THUNDER BAY	40 - 49	88 - 90																					
TOLEDO	11 - 42	82 - 84																					
TONGAH	38 - 39	116 - 118							238				238										
TOOLE	40 - 41	112 - 114		1					1				1										
								77				77					77						77
TORONTO	43 - 44	78 - 80																					
TORRINGTON	42 - 43	101 - 106	1319					1319															
TRANSVERSE CITY	44 - 45	84 - 86																					
TRINIDAD	37 - 38	104 - 106	1060					1060															
TRINITY ISLANDS	55 - 57	154 - 156																					
TRONA	35 - 36	116 - 118		47					?				?										
								99				99					95						99
TUCSON	32 - 33	110 - 112						406				406					886						406
TUCUMCARI	35 - 36	102 - 104	1304					1314															
TULAROSA	33 - 34	106 - 108	3388					338									284						
TULSA	36 - 37	94 - 96				1412					1412											1412	
TUPPER	34 - 35	111 - 113				164					164											164	
TWIN FALLS	42 - 43	114 - 116						451				451					451						451
TWO HARBORS	47 - 48	90 - 92																					
TYLER	32 - 33	94 - 96																					
TIMBER	61 - 62	150 - 152	575					575				575											
UGASHIK	57 - 58	156 - 158																					

Table B-1, Continued
COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				MULTIELEMENT											
			LANL	LLL	ORGP	SRL-E	SRL-W	LANL6	LLL	LR	SRL4	LANL7	LLL	OR10	OR11	OR12	OR13	OR14	OR15	OR16	OR17	SRL5	SRL6
UTAH	39 - 40	122 - 124																					
UNION	69 - 70	150 - 151	452							477							482						
UNION	53 - 54	168 - 170																					
UNALASKA	63 - 64	159 - 162	545							565							585						
UNALASKA	53 - 55	166 - 168																					
UNION	54 - 55	164 - 166																					
UTICA	43 - 44	74 - 76				1325					1324											1324	
UTLAK RIVER	69 - 70	159 - 162	578							566							570						
VALDEZ	61 - 62	144 - 147	1164					1169															
VALDOSTA	30 - 31	82 - 84				27					27											27	
VALENTINE	42 - 43	100 - 102																					
VANCOUVER	45 - 46	122 - 124																					
VAN HORN	31 - 32	104 - 106																					
VERNAL	40 - 41	108 - 110	422					422															
VICTORIA	48 - 49	122 - 124																					
VINCENNES	38 - 39	86 - 88				367					367											367	
VIA	41 - 42	118 - 120		236					?				?										
							463				463						275						463
VIADO	31 - 32	96 - 98			210					218							218			216	218		
WATNBRIGHT	70 - 71	159 - 163	291							291							293						
WALKER LAKE	38 - 39	118 - 120		5					?				?										
							74				74						74						74
WALLACE	47 - 48	114 - 116	1163					1163		964							1002						
				305					?				?										
WALLA WALLA	46 - 47	118 - 120																					
WARREN	41 - 42	78 - 80				196					196											196	
WASHINGTON	28 - 29	76 - 78				914					914											914	
WATERLOO	47 - 48	92 - 94																					
WATERLOO	44 - 45	96 - 98			711					711							711			711	711		
WATFORD CITY	47 - 48	102 - 104																					

Table B-1, Continued
COMPILATION OF WATER GEOCHEMICAL INFORMATION

QUADRANGLE	LATITUDE	LONGITUDE	NUMBER OF SAMPLES COLLECTED					URANIUM				MULTIELEMENT											
			LABL	LLL	OROP	SRL-E	SRL-W	LABL8	LLL	OR9	SRL4	LABL7	LLL	CR10	CR11	CR12	CR13	CR14	CR15	CR16	CR17	SALS	SAL6
WAYCROSS	31 - 32	82 - 84				914				914												914	
WEED	41 - 42	122 - 124																					
WELLS	41 - 42	114 - 116		472					7				7										
							147			147							146					147	
WEWATCHEE	47 - 48	120 - 122		16					7				7										
WEST PALM BEACH	26 - 27	80 - 82																					
WEST POINT	33 - 34	88 - 90				758				258												258	
WHITE SULPHUR SPRINGS	46 - 47	110 - 112	830					830															
WICHITA	37 - 38	96 - 98			741				741								741			741	741		
WICHITA FALLS	33 - 34	98 - 100			494				494								494			494	494		
WILLIAMS	35 - 36	112 - 114		148					134				134										
WILLIAMSPORT	41 - 42	76 - 78				2211				2211												2211	
WILLISTON	48 - 49	102 - 104																					
WILMINGTON	39 - 40	74 - 76				584				584												584	
WINCHESTER	37 - 38	84 - 86				2802				2802												2802	
WINNEMUECCA	40 - 41	116 - 118		197					189				189										
WINSTON-SALEM	36 - 37	80 - 82				784				780												780	
WISEMAN	67 - 68	150 - 153	1238							1238							1238						
WOLF POINT	48 - 49	104 - 106	663					663															
WOODSTOCK	36 - 37	65 - 66																					
WOODWARD	36 - 37	98 - 100																					
YAKIMA	46 - 47	120 - 122																					
YAKUTAT	59 - 60	138 - 141	296						296								296						
TOTAL			131457	7456	35719	104017	19344	77637	2460	88215	127268	16227	2850	543	2336	4703	100560	546	12022	23157	37224	110333	16933