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**HYDROGEOCHEMICAL AND STREAM
SEDIMENT SPECIAL RECONNAISSANCE
REPORT FOR THE DEEP CREEK
MOUNTAINS, NEVADA AND UTAH**

B. Qualheim

April 1979

MASTER

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MS. date: April 1979

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HYDROGEOCHEMICAL AND STREAM SEDIMENT SPECIAL RECONNAISSANCE REPORT FOR THE DEEP CREEK MOUNTAINS, NEVADA AND UTAH

ABSTRACT

This report represents the results of the reconnaissance sampling of the Deep Creek Mountains of western Utah. The Deep Creek range is located in the northwest corner of the Delta NTMS 1:250,000 and the southwestern corner of the Tooele NTMS 1:250,000 sheets and covers an area of 1750 km². Samples collected in this study include dry and wet stream sediments and water from available streams, wells, and springs. The samples were analyzed for uranium, as well as 15 to 20 trace element, using neutron activation techniques. In addition, field and laboratory measurements were made on the water samples. Analytical data and field measurements are presented in tabular hard copy and fiche format. Water-sample site locations, water-sample uranium concentrations, sediment-sample site locations, and sediment-sample uranium concentrations are shown on separate overlays.

INTRODUCTION

The National Uranium Resource Evaluation (NURE) Program was established to evaluate domestic uranium resources in the continental U.S. and identify areas favorable for uranium exploration.

As part of this effort, Lawrence Livermore Laboratory (LLL) acquired a proper set of field samples in the designated field areas, processed and analyzed the materials, and compiled the data in a report. The resulting hydrogeochemical and stream sediment reconnaissance (HSSR) reports are made available to the public by the Grand Junction Office of the Department of Energy through simultaneous release at several locations. Before starting a major field reconnaissance coverage, LLL conducted one or more orientation studies in the geological province, providing a rational sediment- and water-sampling program sensitive to variable geological and climatic conditions that exist in the area.^{1,2} In this way, the sediment and water samples reflect as nearly as possible the metallogenic nature of the region with particular emphasis on uranium mineralization. A description of sample collection and processing methods is available.

The samples were analyzed for uranium by delayed neutron counting (DNC). Instrumental neutron activation analysis (INAA) was used to measure the trace- and major-element content of sediment samples as well as the uranium concentrations of some samples. An automated transport and detection system described by Smith³ performed the INAA and DNC. The GAMANAL code described by Gunnink and Niday⁴ was used to interpret the gamma spectra during data reduction of INAA results. The NURAB code described by Heft and Martin⁵ and McMillan and Carver⁶ produces the elemental concentration values.

An automated optical emission spectrometer equipped with an argon plasma source provided trace- and major-element analyses of water samples. A modified spectrophotometric analyzer was used to measure chloride and sulphate concentrations in water samples.

LOCATION AND GENERAL TOPOGRAPHY

The Deep Creek Range (Fig. 1) is located in the Basin and Range physiographic province along the Nevada-Utah border about 64 km south of Wendover, Utah, covering approximately 1750 km². It is an elongate mountain range bordered on the east by the alluvial Snake Valley and the Great Salt Lake Desert and on the west by the Ibapah Valley. Elevations range from 2500 m in the north to 3900 m in the south. The Snake and Ibapah Valleys are the main discharge basins for the Deep Creek Range. These two main drainage systems then flow north into the Great Salt Lake Desert.

FIG. 1. Location map of the Deep Creek area.

GEOLOGY OF THE DEEP CREEK MOUNTAINS

The Deep Creek Range is a horst, bounded by northwest-trending normal faults. The rocks range in age from Precambrian to Permian and consist of sedimentary and metasedimentary rocks; they are intruded by the Tertiary Gold Hill quartz monzonite stock at the north end and the Early Tertiary Ibapah granite stock in the south central section (Fig. 2). Tertiary and Quaternary extrusive rocks occur in the north and central parts of the range.

The Precambrian rocks can be divided into three distinct units: the Trout Creek Sequence, the Johnson Pass Sequence, and the Water Canyon Sequence. The Trout Creek Sequence consists of 2900 m of metasedimentary rocks ranging from schist to quartzite. The Johnson Pass Sequence is 3300 m thick and consists of schist, quartzite, and minor beds of quartzose marble and amphibolite. The Water Canyon Sequence is 1600 m of argillite, quartzite, and shale.

The Paleozoic section crops out on the west side of the range and is made up of limestone and dolomite with minor quartzite and shale.

The Gold Hill stock (Fig. 2) is located in the northern part of the range and crops out over approximately 64 km². The stock is composed of quartz monzonite and has been assigned a Late Eocene or Early Oligocene age.² The Ibapah stock (Fig. 2) in the south central part of the range covers approximately 102 km². This granitic stock contains numerous pegmatite, aplite, granite porphyry, and rhyolite dikes. In addition, three small alkali intrusions occur in the southern part near Trout Creek.

Tertiary and Quaternary volcanic flows and pyroclastic rocks are found in the northern and southern parts of the range. Additional geologic information can be obtained from Refs. 7 through 13.

MINERAL DEPOSITS

Mineral deposits fall into four types: pegmatite dikes, hydrothermal veins, hydrothermal replacement bodies, and contact metasomatic deposits. The mineral deposits are associated with intrusive bodies, particularly the northern Gold Hill quartz monzonite and quartz monzonite porphyry and the southern beryllium-bearing pegmatite dikes in the Ibapah stock. Mining in the Deep Creek Mountains produced significant quantities of gold, silver, lead, copper, zinc, arsenic, tungsten, and mercury. Mining activities began in the late 1800's and continued sporadically until the 1950's.

The only record of uranium mineralization is a 1977 investigation by the U.S. Bureau of Mines.^{14,15} This investigation indicates shallow uranium deposits along alluvial fans downslope from the granitic intrusives.

The Bureau of Land Management has recently (1977) tentatively withdrawn the Deep Creek Mountains as an emergency primitive area, although legislation on this tentative withdrawal is still pending.¹⁴ There is, however, considerable industrial interest in uranium exploration in the area. This report includes 78 sites that were previously sampled by Atlas Minerals Inc. These sites are located in the southern part of the range and are found in Appendix B (Nos. 15601-15679).

FIG. 2. Generalized geologic map of the Deep Creek Mountains.

SAMPLE SITE SELECTION AND COLLECTION

The selection of representative sample sites is the most important aspect of sample acquisition. In the site-selection process:

- Sites were chosen to measure the mobility of uranium in various geological environments.
- Sites were selected to minimize environmental contamination from agriculture, mining, etc.
- Sites were selected along range fronts to ensure minimum windblown contamination.
- Samples along the fan aprons and in lowlands were biased toward ground water with minimal surface sampling because of windblown contamination.
- Samples in small drainages were taken along the range fronts at the apex of alluvial fans.
- Sites in large drainages were placed up the canyons along tributaries to obtain representative coverage.
- Sediments were sieved to eliminate fines that may have resulted from windblown contamination.

Sediments sampled and reported are the fraction between 500 to 1000 μm .

We obtained an average sediment-site density of one site per 10 km^2 .

To minimize the temporal factor, available water was sampled over a short period during the summer of 1977. Because the region was at near-drought conditions, the uranium concentrations are probably at the maximum values. For this reason, sampling during a wetter year might result in uranium values lower than those collected in 1977.

Sites were selected by LLL geologists and sampling was done by contract geologists. Ground-water site selection and sampling was conducted by the University of Nevada—Desert Research Institute.

QUALITY ASSURANCE

FIELD SAMPLING

Lawrence Livermore Laboratory observers occasionally accompanied the contract sampling crews; LLL geologists resampled approximately 5% of the project sites. More than 95% of the resampled sites were accurately located on available maps or photos. The remaining sites were plotted within 200 m of the correct location.

Samples from the site revisits are reported in the tables by quality control cross-reference numbers and the alternate site numbers are tabulated. Analytical replicates were also run on about 10% of all samples. Comparison of the sediment replicate results with the original samples shows a 10% standard deviation in measurement values. This 10% is the natural variability of the sampling and analysis.

LABORATORY ANALYSIS

Instrumental neutron activation analysis (INAA) and delayed neutron counting (DNC) are performed using the automated transport and detection system installed at the Livermore Pool Type Reactor. Water samples are analyzed by optical emission spectrometry using an inductively coupled argon plasma (ICP) source.

We used the GAMANAL code⁴ to interpret the gamma spectra during data reduction of INAA results, while the NURDAC^{5,6} code produced elemental concentration values. Not all elements can be identified in every sample. Our experience suggests that, in general, the detection limits for elements reported here are those given in column 2 of Table 1.

The error associated with a DNC uranium measurement is typically 1% of the reported value for sediments and 2% for water analyses.

The emission spectrometer data is automatically referenced to a known laboratory standard analyzed between each group of six samples. System calibration against a second known standard solution precedes each batch of 72 samples. Water data from the region were taken from "lab acidified" samples. Unacidified, filtered (0.45- μ m) water samples were collected and returned to LLL, placed in storage for several months, acidified to approximately pH 1, and allowed to stand for two weeks prior to analysis. This procedure was applied after it was noted that in several of the plastic-bag-lined bottles, the plastic bags had broken. It is uncertain if lab acidification completely reversed precipitation of certain components or exchange reactions with the polyethylene container. Therefore, the user should be aware that some analyses may not be representative of the actual water composition.

Six types of samples are routinely run for calibration of the various analytical systems and as a quality-assurance measure:

- Elemental standards to establish emission spectrometry and spectrophotometry calibration and to determine physical parameters for the activation analysis system.
- Blanks that are processed along with samples and analyzed to detect any source of contamination. No significant amount of any element reported here has been detected.
- Splits of samples to determine whether the results of all analytical systems are reproducible. These data are included in the microfiche data tables. Reproducibility is generally found to be within the estimated standard deviations of the measurements.
- Quality-control samples, which are run by all systems at an approximate ratio of 1:30 to check precision of the measurements and to detect long-term drift. Results are summarized in Table 1, column 3. The accuracy of the measurements is generally comparable to the errors estimated from the analytical uncertainties.
- Standard reference materials to determine the accuracy of the measurements in actual samples. Results are tabulated in Table 2. In general, the bias is comparable to the precision of the measurement.
- Interlaboratory comparison samples for uranium are distributed under the auspices of DOE to the various laboratories participating in the NURE program. Analyses of these samples are collected and reported monthly by the Ames Laboratory.¹⁶ This data is summarized in Table 3.

While care has been taken to provide reliable sampling and analyses, verification of individual analyses is beyond the scope of this report. The data should be viewed statistically because "one-point anomalies" may be misleading. Regional trends, however, should be reliable.

TABLE 1. Instrumental neutron activation analysis sediment quality assurance data summary.

Element	Detection limit, ^a ppm	Precision, ^b %	Accuracy % bias ^c
Ag	500	ND ^d	ND
Al	50	10	-7
As	3	6	-1
Ba	100	13	ND
Br	5	ND	NR ^e
Cd	20,000	7	ND
Co	15	ND	NR
Cl	50	ND	NR
Cr	3	5	+6
Cr	30	8	+13
Ca	30	5	NR
Dy	0.2	10	NR
Eu	0.1	16	NR
Fe	2,000	5	5
Hf	1	14	NR
Hg	500	ND	NR
K	2,000	7	ND
La	0.3	4	NR
Lu	2	22	NR
Mg	50	10	+4
Mn	0.2	4	+11
Na	20	4	0
Rb	150	4	ND
Sb	0.5	4	-5
Se	0.1	5	-5
Sm	0.3	4	NR
Sr	40	ND	ND
Ta	3	20	NR
Tb	20	ND	NR
Th	2	4	-6
Ti	200	8	+2
U	2	12	-4
V	1	5	+4
W	30	ND	NR
Yb	3	13	-6
Zn	200	16	ND

^aApproximate lower limits for detection in "typical" sediment samples.

^bPrecision is an estimate of the reproducibility of analyses. Values entered are percent standard deviation of a measurement for 30 analyses of control samples over a five month period. (See footnote c, Table 3.)

^cAccuracy is a measure of analytical agreement with "known" values. Entries are the percent deviation from unity of the ratio of measured to known values, averaged for 15 measurements obtained over a five-month period. (See footnote d, Table 3.) Known values were obtained from the Canadian Association for Applied Spectroscopy.

^dND = not detected.

^eNR = not reported for standards.

TABLE 2. Optical emission spectrometry (ICP) water quality-assurance data summary.

Element	Detection limit, ^a ppb	Precision, ^b % bias
Al	12	+16
As	20	+34
Ca	30	+10
Cd	4	+2
Co	4	-1
Cu	4	+6
Fe	4	+5
K	70	+7
Mg	5	+5
Na	5	+5
Ni	50	-13
Pb	40	-2
V	4	+2
Zn	3	+20

^aApproximate lower limits of detection in water samples. Values given are four times the standard deviation of the background in each elemental channel.

^bPrecision is a measure of analytical agreement with known values. Entries are the percent deviation from unity of the ratio of measured to known values averaged for 15 measurements. (See footnote d, Table 3.) Known values were obtained from the Environmental Protection Agency.

TABLE 3. Delayed neutron assay for uranium analyses of DOE interlaboratory comparison samples during analytical activity for the Deep Creek Mountains.

	Water, ppb		Sediment, ppm		
	A2	B2	R1	S1	T1
Number of analyses	7	7	9	7	9
Recommended value ^a	0.98	9.98	5.33	11.2	96.2
Mean value ^b	1.12	10.4	5.32	10.7	92.9
Standard deviation ^c of a measurement, %	6.0	3.0	5.7	4.0	2.0
Bias, ±%	+14	+4	+0.2	+4.7	+3.6

^aRecommended values for samples A2 and B2 are from isotope dilution mass spectrometry (Ref. 16). Values for samples R1 and S1 are the average of results from two independent laboratories. The value for sample T1 is estimated from synthesis parameters.

^bMean of LLL measurements.

$$^c \frac{100}{\bar{x}} \left[\frac{\sum_{n=1}^n (x_n - \bar{x})^2}{(n-1)} \right]^{1/2}$$

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APPENDIX A

DATA ORGANIZATION AND DEFINITIONS

DATA PRESENTATION

ORGANIZATION

The numerical results of this reconnaissance survey are presented in three hardcopy tables (Appendix B), in microfiche tables (back cover pocket), and on six vellum overlays (back cover pocket). In addition, frequency histograms and cumulative frequency plots of the logarithm of the uranium and thorium concentrations and water conductivities plotted on the overlays are included in the back of Appendix A.

HARDCOPY TABLES

Selected results of this investigation are presented in the three tables in Appendix B. Additional data on the trace-element content for each of the samples are reported in the microfiche tables. The titles and data reported in each of the three tables are given below.

Sediment analysis, dry and stream sites given in Table B-1

LLL sample number
DOE sample number
Sample date
Sample source and condition
Sieve fraction size, upper limit
Sieve fraction size, lower limit
Possible contamination
Quality-control cross-reference number
Uranium concentration, ppm
Thorium concentration, ppm

Water analysis, river, stream, and lake sites given in Table B-2

LLL sample number
DOE sample number
Sample date
Sample source and condition
Water temperature, °C
pH meter
Specific conductance, $\mu\text{mho/cm}$
Total alkalinity
Phenolphthalein alkalinity
Possible contamination
Uranium concentration, ppb
Quality-control cross-reference site number

Water analyses, springs and wells given in Table B-3

LLL sample number
DOE sample number
Sample date
Sample source and condition
Water temperature, °C
Well depth-type-casing
pH meter
Specific conductance, $\mu\text{mho/cm}$
Total alkalinity
Phenolphthalein alkalinity
Possible contamination
Uranium concentration, ppb
Quality-control cross-reference site number

MICROFICHE TABLES

The additional element data gathered for each sample are presented in tables on microfiche film. These tables contain data from neutron activation analyses, special chemistry, and emission spectra analyses. The table titles are exactly as in the hardcopy tables, and the columnar entries of the hardcopy tables are repeated as the first part of each microfiche table. This is followed by the element values arranged in alphabetical order according to the element's proper name. Because of the amount of data, the tables are subdivided into several parts presented on separate pages.

OVERLAYS

Full-size vellum overlays for use with National Topographic Map Series (NTMS) 1:250,000 scale $1^{\circ} \times 2^{\circ}$ quadrangle are located in the rear pocket of this report. These may be used with the commercially available NTMS map for visual display of the sampling site locations and uranium concentration relative to local geographic features. The NTMS map name and number are given on the overlay. To limit the number of overlays that must be generated for each map, the information presented has been divided into two major classes—waters and sediments. The site number uranium concentration and thorium concentration of each sample are plotted on separate sheets for each class. Different sample site types (stream vs spring or well water, or wet vs dry sediment) are distinguished by using different symbols in association with the site number. The site type symbol is plotted over the geographic location with the site number plotted beside it. The corresponding concentration range value is indicated in a separate overlay by a symbol whose shape and size varies with the range value. The symbol set employed here is a slightly modified version of that employed by the Geological Survey of Canada in their hydrogeochemical surveys. Two sets of ranges are employed because the average uranium trace-element concentration is nearly a factor of 10^3 larger in sediments than in natural waters. The range assignments are shown in Figs. A-1 and A-2.

The overlays contained in the rear pocket of this report are:

- Overlay 1A. Site Locations, Water Samples
- Overlay 1B. Total Uranium Concentrations, Water Samples
- Overlay 1C. Field Conductivity, Water Samples
- Overlay 2A. Site Locations, Sediment Samples
- Overlay 2B. Total Uranium Concentrations, Sediment Samples
- Overlay 2C. Total Thorium Concentrations, Sediment Samples

Water Samples

FIG. A-1. Uranium concentrations in water samples.

Sediment Samples

FIG. A-2. Uranium concentrations in sediment samples.

HISTOGRAMS AND CUMULATIVE FREQUENCY PLOTS

Histograms and cumulative frequency plots of the uranium values shown in Overlays 1B and 2B are given in Fig. A-3 (water samples) and Fig. A-4 (sediment samples). The histogram and cumulative frequency plot of the thorium values shown in Overlay 2C are given in Fig. A-5. The histogram and cumulative frequency plot of the water sample conductivity values shown in Overlay 1C are presented in Fig. A-6. These are presented as the logarithm of the element concentrations.

FIG. A-3. Histogram (a) and cumulative frequency distribution (b) of uranium concentration for water samples plotted in Overlay 1B.

DEEP CREEK WATERS

LOG HISTOGRAM

DEEP CREEK WATERS

CUMULATIVE FREQUENCY DISTRIBUTION

FIG. A-4. Histogram (a) and cumulative frequency distribution (b) of field conductivities for water samples plotted in Overlay 1C.

DEEP CREEK SEDIMENTS

LOG HISTOGRAM

LOG1 URANIUM

DEEP CREEK SEDIMENTS

CUMULATIVE FREQUENCY DISTRIBUTION

FIG. A-5. Histogram (a) and cumulative frequency distribution (b) of uranium concentration for sediment samples plotted on Overlay 2B.

DEEP CREEK SEDIMENTS

LOG HISTOGRAM

LOG THORIUM

DEEP CREEK SEDIMENTS

CUMULATIVE FREQUENCY DISTRIBUTION

FIG. A-6. Histogram (a) and cumulative frequency distribution (b) of thorium concentrations for sediment samples plotted on Overlay 2C.

DATA DEFINITIONS

This section presents a brief explanation of the columnar entries for the hardcopy and microfiche data tables.

Blanks in the data tables indicate no measurement available. Detection limits for INAA determinations are given in the text. Emission spectrometry detection limits are indicated in the data tables by the "less than" sign (<).

DOE SAMPLE NUMBER

Each analyzed field sample is assigned a DOE number consisting of 28 characters. Five characters (dashes) are used to delineate the number of subdivisions. The subdivision assignments are:

<u>Position</u>		<u>Description</u>
1-2	ST,	State, the two-digit Federal Information Processing Standard (FIPS) designated for the state corresponding to the sample site location (AZ = 04, CA = 06, ID = 16, NV = 32, OR = 41, UT = 49, WA = 53).
4-10	LAT,	Latitude of site in decimal degrees.
12-19	LONG,	Longitude of site in decimal degrees.
21	L,	Originating laboratory (1 = LLL)
23-24	TY,	DOE Sample Type. A two-digit code describing the sample source, medium, and overall geochemical treatment (field and laboratory) prior to analysis. See DOE Sample Type Numbers below for specific assignments.
26-28	RPL,	Replication Code. Three-digits used to distinguish between samples from the same site. The first indicates sample type (1 = sediment, 2 = water), the second identifies the field duplicate, and the third identifies analytical splits.

TY, DOE, SAMPLE TYPE NUMBERS

<u>Number</u>	<u>Description</u>
01	<i>Spring water sample untreated.</i>
02	<i>River or stream water sample untreated.</i>
03	<i>Well water sample untreated.</i>
04	<i>Lake or reservoir water sample untreated.</i>
06	<i>Spring water sample filtered through a 0.45-μm membrane filter and acidified to a pH of ≤ 1 with high purity nitric acid (HNO_3).</i>
07	<i>River or stream water sample filtered through a 0.45-μm membrane filter and acidified to a pH of ≤ 1 with high purity nitric acid (HNO_3).</i>
08	<i>Well water sample filtered through a 0.45-μm membrane filter and acidified to a pH of ≤ 1 with high purity nitric acid (HNO_3).</i>
09	<i>Lake or reservoir water sample filtered through a 0.45-μm membrane filter and acidified to a pH of ≤ 1 with high purity nitric acid (HNO_3).</i>
21	<i>Spring water sample filtered through a 0.45-μm membrane filter.</i>
22	<i>River or stream water sample filtered through a 0.45-μm membrane filter.</i>
23	<i>Well water sample filtered through a 0.45-μm membrane filter.</i>
24	<i>Lake or reservoir water sample filtered through a 0.45-μm membrane filter.</i>
70	<i>Wet sediment sample dried at 110°C and sieved to the reported particle size range.</i>
71	<i>Lake or reservoir sediment sample dried at 110°C and sieved to the reported particle size range.</i>
72	<i>Dry sediment sample dried at 110°C and sieved to the reported particle size range.</i>
73	<i>Pitaya sediment sample taken by hand auger over the reported depth, dried at 100°C, and crushed to a fine powder.</i>
74	<i>Rock sample crushed and sieved to less than 250 μm.</i>

TEMPERATURE

Temperature. Measurement of water temperature *in situ* by mercury thermometer to nearest 0.1°C.

pH

Activity in pH units, reported to nearest 0.1 pH unit at ambient water temperature.

SP COND

Specific conductance. Measurements *in situ* with a commercial conductivity meter. Reported as conductance in micromhos per cm ($\mu\text{mho/cm}$) normalized to 25°C.

PHENO-ALK

Phenolphthalein alkalinity. Measurement by titration with standard sulphuric acid to a phenolphthalein indicator endpoint ($\text{pH} = 8.3$). Reported as an equivalent amount of CaCO_3 in mg/l, minimum detection 20 mg/l.

TOT-ALK

Total alkalinity. Measurement by titration with standard sulphuric acid to a bromcresol green-methyl red indicator endpoint ($\text{pH} = 4.8$). Reported as an equivalent amount of CaCO_3 in mg/l, minimum detection 20 mg/l.

POSSIBLE CONTAMINATION

The major possible contaminant types are indicated according to the following code: 1. none; 2. mining; 3. agricultural; 4. industrial; 5. sewage; 6. power generation; 7. urban; 8. recreation; 9. other.

URANIUM

The trace element concentration of uranium in the sample as determined by DNC is given in parts per billion (ppb) by weight for waters and in parts per million (ppm) by weight for sediments. Where DNC values are not available, INAA determinations have been substituted and flagged with an asterisk(*). The error column contains a statistical estimate of measurement uncertainty expressed as a percentage of the concentration.

OTHER ELEMENTS

The trace element concentration of each element in the sample is given in parts per billion (ppb) by weight for waters and in parts per million (ppm) by weight for sediments. The error column (ERR) gives a numerical estimate (expressed in trace-element concentration units) of the uncertainties associated with quantization of the elemental concentration.

APPENDIX B

NUMERICAL RESULTS OF RECONNAISSANCE SURVEY

DEEP CREEK REPORT, LAWRENCE LIVERMORE LABORATORY
TABLE 8-1. SEDIMENT ANALYSIS; DRY AND STREAM SITES

SITE	DOE	SAMPLE	DATE	SAMPLE	PARTICLE	SIZE	POS.	D. C.	URANIUM(DMC)	THORIUM(INAA)				
NUMBER	ST	LAT.	LONG.	L T Y RPL	MO-DA-YR	SOURCE/COND.	UPPER	LOWER	CONT	X-REF	PPM	%ERR	PPM	%ERR
7344	49-39.6638	-113.9166	-170-100		02/03/77	STREAM	WET	1000	0500	1	5.68	1.28	10.45	1.45
7346	49-39.5791	-113.9514	-170-100		02/04/77	STREAM	WET	1000	0500	1	2.74	1.46	13.76	1.35
7346	49-39.5791	-113.9514	-172-101			STREAM	DRY	1000	0500	1	2.59	1.44	12.25	1.18
15601	32-39.7276	-118.9346	-172-100			STREAM	DRY	1000	500	1	6.55	1.20	24.89	1.73
15601	32-39.7276	-118.9346	-177-500			STREAM	DRY	100	500	1	0.07	5.45		
15602	32-39.7266	-118.9369	-172-100			STREAM	DRY	1000	500	1	7.06	1.19	26.61	1.88
15602	32-39.7266	-118.9369	-177-500			STREAM	DRY	100	500	1	0.38	5.17		
15603	32-39.7266	-118.9392	-172-100			STREAM	DRY	1000	500	1	7.10	1.16	23.23	1.72
15603	32-39.7266	-118.9392	-177-500			STREAM	DRY	100	500	1	0.08	5.07		
15603	32-39.7266	-118.9392	-177-501			STREAM	DRY	1000	500	1				
15604	32-39.7274	-118.9427	-172-100			STREAM	DRY	1000	500	1	6.14	1.19	24.66	1.56
15604	32-39.7274	-118.9427	-177-500			STREAM	DRY	100	500	1	0.06	6.69		
15605	32-39.7274	-118.9451	-172-100			STREAM	DRY	1000	500	1	6.20	1.19	22.25	1.24
15605	32-39.7274	-118.9451	-177-500			STREAM	DRY	100	500	1	0.09	5.04		
15606	32-39.7228	-118.9519	-172-100			STREAM	DRY	1000	500	1	6.23	1.18	22.10	1.28
15606	32-39.7228	-118.9519	-177-500			STREAM	DRY	100	500	1	0.09	6.78		
15607	32-39.7218	-118.9531	-172-100			STREAM	DRY	1000	500	1	6.10	1.19	21.16	1.50
15607	32-39.7218	-118.9531	-177-500			STREAM	DRY	100	500	1	0.07	5.82		
15608	32-39.7209	-118.9542	-172-100			STREAM	DRY	1000	500	1	6.49	1.20	22.99	1.74
15608	32-39.7209	-118.9542	-177-500			STREAM	DRY	100	500	1	0.10	4.43		
15609	32-39.7218	-118.9524	-172-100			STREAM	DRY	1000	500	1	6.46	1.20	20.29	1.82
15609	32-39.7218	-118.9524	-177-500			STREAM	DRY	100	500	1	0.07	5.69		
15610	32-39.7263	-118.9544	-172-100			STREAM	DRY	1000	500	1	6.37	1.17	23.92	1.43
15610	32-39.7263	-118.9544	-177-500			STREAM	DRY	100	500	1	0.11	4.21		
15611	32-39.7273	-118.9497	-172-100			STREAM	DRY	1000	500	1	6.38	1.17	22.11	1.27
15611	32-39.7273	-118.9497	-177-500			STREAM	DRY	100	500	1	0.07	7.32		
15612	32-39.7273	-118.9497	-177-501			STREAM	DRY	1000	500	1				
15612	32-39.7262	-118.9498	-172-100			STREAM	DRY	1000	500	1	6.20	1.16	25.08	1.60
15612	32-39.7262	-118.9498	-177-500			STREAM	DRY	100	500	1	0.07	5.47		
15613	32-39.7291	-118.9498	-172-100			STREAM	DRY	1000	500	1	6.22	1.20	24.48	1.34
15613	32-39.7291	-118.9498	-177-500			STREAM	DRY	100	500	1	0.08	5.34		
15614	32-39.7327	-118.9499	-172-100			STREAM	DRY	1000	500	1	6.30	1.20	21.88	1.59
15614	32-39.7327	-118.9499	-177-500			STREAM	DRY	100	500	1	0.10	4.63		
15615	32-39.7336	-118.9488	-172-100			STREAM	DRY	1000	500	1	7.23	1.16	22.71	1.37
15615	32-39.7336	-118.9488	-177-500			STREAM	DRY	100	500	1	0.10	6.68		
15615	32-39.7336	-118.9488	-177-501			STREAM	DRY	1000	500	1				
15616	32-39.7346	-118.9476	-172-100			STREAM	DRY	1000	500	1	6.43	1.19	24.51	1.41
15616	32-39.7346	-118.9476	-177-500			STREAM	DRY	100	500	1	0.10	4.61		
15617	32-39.6169	-118.9816	-172-100			STREAM	DRY	1000	500	1	6.32	1.20	28.70	1.56
15617	32-39.6169	-118.9816	-177-500			STREAM	DRY	100	500	1	0.17	3.38		
15618	32-39.6159	-118.9839	-172-100			STREAM	DRY	1000	500	1	8.84	1.21	33.64	3.61
15618	32-39.6159	-118.9839	-177-500			STREAM	DRY	100	500	1	0.36	2.33		
15619	32-39.6159	-118.9874	-172-100			STREAM	DRY	1000	500	1	7.07	1.19	31.88	2.07
15619	32-39.6159	-118.9874	-177-500			STREAM	DRY	100	500	1	0.10	4.70		
15620	32-39.6149	-118.9897	-172-100			STREAM	DRY	1000	500	1	7.03	1.19	33.00	1.78
15620	32-39.6149	-118.9897	-177-500			STREAM	DRY	100	500	1	0.19	3.14		
15621	32-39.6094	-118.9977	-172-100			STREAM	DRY	1000	500	1	10.93	1.14	44.47	2.39
15621	32-39.6094	-118.9977	-177-500			STREAM	DRY	100	500	1	0.08	5.23		

DEEP CREEK REPORT, LAWRENCE LIVERMORE LABORATORY
 TABLE B-1. SEDIMENT ANALYSIS: DRY AND STREAM SITES

SITE NUMBER	ST	DOE SAMPLE NUMBER-----				DATE MO-DA-YR	SAMPLE SOURCE/COND.		PARTICLE SIZE		POS. UPPER LOWER	CONT	D. C. X-REF	URANIUM(DNC)		THORIUM(NAA)	
		LAT.	LONG.	L	T	RPL								PPM	ERR	PPM	ERR
15622	32-39.6076	-118.9976	-172-100				STREAM	DRY	1000	500	1			9.16	1.18	45.02	2.29
15622	32-39.6076	-118.9976	-177-500				STREAM	DRY	100	500	1			0.14	3.74		
15623	32-39.6040	-118.9952	-172-100				STREAM	DRY	1000	500	1			4.39	1.26	19.75	1.45
15623	32-39.6040	-118.9952	-177-500				STREAM	DRY	100	500	1			0.14	3.60		
15624	32-39.6041	-118.9905	-172-100				STREAM	DRY	1000	500	1			3.25	1.31	14.44	1.04
15624	32-39.6041	-118.9905	-177-500				STREAM	DRY	100	500	1			0.19	3.27		
15625	32-39.6050	-118.9871	-172-100				STREAM	DRY	1000	500	1			3.83	1.29	16.99	1.24
15625	32-39.6050	-118.9871	-177-500				STREAM	DRY	100	500	1			0.13	5.22		
15625	32-39.6050	-118.9871	-177-501				STREAM	DRY	1000	500							
15626	32-39.6051	-118.9859	-172-100				STREAM	DRY	1000	500	1			3.58	1.25	14.57	1.19
15626	32-39.6051	-118.9859	-177-500				STREAM	DRY	100	500	1			0.13	3.93		
15627	32-39.6080	-118.9813	-172-100				STREAM	DRY	1000	500	1			4.96	1.26	25.32	1.81
15627	32-39.6080	-118.9813	-177-500				STREAM	DRY	100	500	1			0.13	4.86		
15627	32-39.6060	-118.9813	-177-501				STREAM	DRY	1000	500							
15628	32-39.6081	-118.9801	-172-100				STREAM	DRY	1000	500	1			3.38	1.28	11.76	0.94
15628	32-39.6081	-118.9801	-177-500				STREAM	DRY	100	500	1			0.20	3.05		
15629	32-39.6033	-118.9859	-172-100				STREAM	DRY	1000	500	1			2.58	1.36	9.47	0.55
15629	32-39.6033	-118.9859	-177-500				STREAM	DRY	100	500	1			0.20	3.16		
15630	32-39.6014	-118.9916	-172-100				STREAM	DRY	1000	500	1			3.81	1.27	16.15	1.04
15630	32-39.6014	-118.9916	-177-500				STREAM	DRY	100	500	1			0.15	4.41		
15630	32-39.6014	-118.9916	-177-501				STREAM	DRY	1000	500							
15631	32-39.6023	-118.9882	-172-100				STREAM	DRY	1000	500	1			3.85	1.29	17.53	1.30
15631	32-39.6023	-118.9882	-177-500				STREAM	DRY	100	500	1			0.13	4.60		
15632	32-39.5968	-118.9962	-172-100				STREAM	DRY	1000	500	1			3.01	1.32	11.19	0.85
15632	32-39.5968	-118.9962	-177-500				STREAM	DRY	100	500	1			0.17	4.16		
15632	32-39.5968	-118.9962	-177-501				STREAM	DRY	1000	500							
15633	32-39.5959	-118.9973	-172-100				STREAM	DRY	1000	500	1			2.90	1.35	13.54	0.94
15633	32-39.5959	-118.9973	-177-500				STREAM	DRY	100	500	1			0.19	3.21		
15634	32-39.5941	-118.9961	-172-100				STREAM	DRY	1000	500	1						
15634	32-39.5941	-118.9961	-177-500				STREAM	DRY	100	500	1			0.14	3.93		
15635	32-39.5922	-118.9995	-172-100				STREAM	DRY	1000	500	1			2.84	1.36	14.75	1.10
15635	32-39.5922	-118.9995	-177-500				STREAM	DRY	100	500	1			0.23	3.55		
15635	32-39.5922	-118.9995	-177-501				STREAM	DRY	1000	500							
15636	49-39.7534	-113.8197	-172-100				STREAM	DRY	1000	500	1			3.71	1.33	22.81	1.54
15636	49-39.7534	-113.8197	-177-500				STREAM	DRY	100	500	1			0.48	2.07		
15637	49-39.7554	-113.8111	-172-100				STREAM	DRY	1000	500	1			22.99	1.32	297.00	14.20
15637	49-39.7554	-113.8111	-177-500				STREAM	DRY	100	500	1			0.33	2.45		
15637	49-39.7554	-113.8111	-177-501				STREAM	DRY	1000	500							
15638	49-39.7576	-113.8089	-172-100				STREAM	DRY	1000	500	1			1.63	1.57	13.62	0.95
15638	49-39.7576	-113.8089	-177-500				STREAM	DRY	100	500	1			0.14	3.72		
15639	49-39.7588	-113.8100	-172-100				STREAM	DRY	1000	500	1			1.62	1.79	22.08	1.79
15639	49-39.7588	-113.8100	-177-500				STREAM	DRY	100	500	1			0.15	3.51		
15640	49-39.7595	-113.8165	-172-100				STREAM	DRY	1000	500	1			2.50	1.63	33.93	1.91
15640	49-39.7595	-113.8165	-177-500				STREAM	DRY	100	500	1			0.12	4.02		
15641	49-39.7652	-113.8137	-172-100				STREAM	DRY	1000	500	1			2.63	1.26	13.54	0.97
15641	49-39.7652	-113.8137	-177-500				STREAM	DRY	100	500	1			0.11	4.31		
15642	49-39.7650	-113.8222	-172-100				STREAM	DRY	1000	500	1			1.78	1.84	27.79	1.79
15642	49-39.7650	-113.8222	-177-500				STREAM	DRY	100	500	1			0.12	4.21		
15643	49-39.7677	-113.8136	-172-100				STREAM	DRY	1000	500	1			1.69	1.69	23.71	1.45

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 TABLE B-1. SEDIMENT ANALYSIS; DRY AND STREAM SITES

SITE NUMBER	DOE SAMPLE LAT.	NUMBER LONG.	DATE L TY RPL	MO-DA-YR	SAMPLE SOURCE/COND.	PARTICLE SIZE		POS. CONT.	Q. C. X-REF	URANIUM(UNC)		THORIUM(NAA)	
						UPPER	LOWER			PPM	ERR	PPM	ERR
15643	49-39.7677	-113.8136	-1-77-500		STREAM DRY	100	500	1		0.12	4.12		
15644	49-39.7705	-113.8213	-1-72-100		STREAM DRY	1000	500	1		2.45	1.72	35.36	2.19
15644	49-39.7705	-113.8213	-1-77-500		STREAM DRY	100	500	1		0.18	3.23		
15645	49-39.7735	-113.8154	-1-72-100		STREAM DRY	1000	500	1		2.20	1.44	11.71	0.94
15645	49-39.7735	-113.8154	-1-77-500		STREAM DRY	100	500	1		0.18	3.27		
15646	49-39.7752	-113.8265	-1-72-100		STREAM DRY	1000	500	1		2.26	1.70	32.72	1.82
15646	49-39.7752	-113.8265	-1-77-500		STREAM DRY	100	500	1		0.13	3.89		
15647	49-39.7787	-113.8239	-1-72-100		STREAM DRY	1000	500	1		3.26	1.51	36.72	2.17
15647	49-39.7787	-113.8239	-1-77-500		STREAM DRY	100	500	1					
15648	49-39.7777	-113.8512	-1-72-100		STREAM DRY	1000	500	1		3.99	1.36	27.56	1.71
15648	49-39.7777	-113.8512	-1-77-500		STREAM DRY	100	500	1		0.61	1.87		
15649	49-39.7818	-113.8702	-1-72-100		STREAM DRY	1000	500	1		2.39	1.48	16.82	1.22
15649	49-39.7818	-113.8702	-1-77-500		STREAM DRY	100	500	1		0.75	1.74		
15650	49-39.7869	-113.8760	-1-72-100		STREAM DRY	1000	500	1		3.23	1.39	21.82	1.44
15650	49-39.7869	-113.8760	-1-77-500		STREAM DRY	100	500	1		1.35	1.45		
15651	49-39.7931	-113.8794	-1-72-100		STREAM DRY	1000	500	1		2.82	1.34	9.73	0.92
15651	49-39.7931	-113.8794	-1-77-500		STREAM DRY	100	500	1		1.11	1.52		
15652	49-39.7953	-113.8877	-1-72-100		STREAM DRY	1000	500	1		4.34	1.27	20.54	1.35
15652	49-39.7953	-113.8877	-1-77-500		STREAM DRY	100	500	1		0.57	1.95		
15653	49-39.7987	-113.8954	-1-72-100		STREAM DRY	1000	500	1		3.26	1.36	21.93	1.41
15653	49-39.7987	-113.8954	-1-77-500		STREAM DRY	100	500	1		0.92	1.63		
15654	49-39.8010	-113.9037	-1-72-100		STREAM DRY	1000	500	1		5.33	1.57	76.56	4.45
15654	49-39.8010	-113.9037	-1-77-500		STREAM DRY	100	500	1					
15655	49-39.8046	-113.9071	-1-72-100		STREAM DRY	1000	500	1		2.69	1.44	18.16	1.27
15655	49-39.8046	-113.9071	-1-77-500		STREAM DRY	100	500	1		0.59	1.89		
15656	49-39.8078	-113.9110	-1-72-100		STREAM DRY	1000	500	1		5.31	1.20	12.67	0.99
15656	49-39.8078	-113.9110	-1-77-500		STREAM DRY	100	500	1		2.09	1.31		
15657	49-39.8587	-113.7738	-1-72-100		STREAM DRY	1000	500	1		2.93	1.42	22.09	1.48
15657	49-39.8587	-113.7738	-1-77-500		STREAM DRY	100	500	1		0.42	2.20		
15658	49-39.8593	-113.7805	-1-72-100		STREAM DRY	1000	500	1		4.95	1.35	46.56	2.42
15658	49-39.8593	-113.7805	-1-77-500		STREAM DRY	100	500	1		0.85	1.67		
15659	49-39.8637	-113.7918	-1-72-100		STREAM DRY	1000	500	1		2.61	1.48	18.64	1.41
15659	49-39.8637	-113.7918	-1-77-500		STREAM DRY	100	500	1		0.42	2.17		
15660	49-39.8545	-113.7937	-1-72-100		STREAM DRY	1000	500	1		6.61	1.30	58.49	3.32
15660	49-39.8545	-113.7937	-1-77-500		STREAM DRY	100	500	1		0.59	1.93		
15661	49-39.8456	-113.7894	-1-72-100		STREAM DRY	1000	500	1		4.15	1.41	41.86	2.21
15661	49-39.8456	-113.7894	-1-77-500		STREAM DRY	100	500	1		2.18	1.30		
15662	49-39.8440	-113.8237	-1-72-100		STREAM DRY	1000	500	1		1.67	1.40	33.69	1.81
15662	49-39.8440	-113.8237	-1-77-500		STREAM DRY	100	500	1		0.72	1.77		
15663	49-39.8570	-113.8062	-1-72-100		STREAM DRY	1000	500	1		2.99	1.42	22.70	1.47
15663	49-39.8570	-113.8062	-1-77-500		STREAM DRY	100	500	1		0.87	1.66		
15664	49-39.8597	-113.8194	-1-72-100		STREAM DRY	1000	500	1		5.62	1.49	82.78	4.15
15664	49-39.8597	-113.8194	-1-77-500		STREAM DRY	100	500	1		0.69	1.79		
15665	49-39.8572	-113.8275	-1-72-100		STREAM DRY	1000	500	1		6.96	1.20	35.91	2.19
15665	49-39.8572	-113.8275	-1-77-500		STREAM DRY	100	500	1		0.62	1.89		
15666	49-39.8587	-113.8368	-1-72-100		STREAM DRY	1000	500	1		10.72	1.12	32.13	2.03
15666	49-39.8587	-113.8368	-1-77-500		STREAM DRY	100	500	1		1.19	1.51		
15667	49-39.8633	-113.8404	-1-72-100		STREAM DRY	1000	500	1		6.97	1.15	18.97	1.17
15667	49-39.8633	-113.8404	-1-77-500		STREAM DRY	100	500	1		2.48	1.26		

DEEP CREEK REPORT, LAWRENCE LIVERMORE LABORATORY
TABLE 8-1. SEDIMENT ANALYSIS; DRY AND STREAM SITES

SITE NUMBER	DOE ST	SAMPLE LAT.	NUMBER LONG.	DATE L T YR	DATE MO-DA-YR	SAMPLE SOURCE/COND.	PARTICLE UPPER	SIZE LOWER	POS. CONT	O. F. X-FEF	URANIUM(DNC) PPM	THORIUM(DNC) PPM	THORIUM(DNC) ERR		
15668	49-39	8658	-113.8543	-172-100		STREAM	DRY	1000	500	1	5.44	1.25	26.89	1.72	
15668	49-39	8658	-113.8543	-177-500		STREAM	DRY	100	500	1	2.54	1.25			
15669	49-39	8689	-113.8542	-172-100		STREAM	DRY	1000	500	1	5.26	1.24	27.29	1.69	
15669	49-39	8689	-113.8542	-177-500		STREAM	DRY	100	500	1	1.41	1.44			
15670	49-39	8681	-113.8683	-172-100		STREAM	DRY	1000	500	1	15.61	1.09	27.20	1.80	
15670	49-39	8681	-113.8683	-177-500		STREAM	DRY	100	500	1	5.78	1.12			
15671	49-39	8689	-113.8738	-172-100		STREAM	DRY	1000	500	1	6.03	1.15	13.85	0.99	
15671	49-39	8689	-113.8738	-177-500		STREAM	DRY	100	500	1	3.36	1.20			
15672	49-39	8707	-113.8747	-172-100		STREAM	DRY	1000	500	1	4.07	1.30	20.02	1.42	
15672	49-39	8707	-113.8747	-177-500		STREAM	DRY	100	500	1	1.15	1.52			
15673	49-39	8716	-113.8748	-172-100		STREAM	DRY	1000	500	1	5.82	1.18	15.70	1.17	
15673	49-39	8716	-113.8748	-177-500		STREAM	DRY	100	500	1	0.49	2.04			
15674	49-39	8737	-113.8869	-172-100		STREAM	DRY	1000	500	1	16.92	1.09	36.70	2.52	
15674	49-39	8737	-113.8869	-177-500		STREAM	DRY	100	500	1	1.33	1.46			
15675	49-39	8739	-113.8945	-172-100		STREAM	DRY	1000	500	1	5.33	1.19	15.96	1.14	
15675	49-39	8739	-113.8945	-177-500		STREAM	DRY	100	500	1	1.17	1.51			
15676	49-39	8766	-113.8981	-172-100		STREAM	DRY	1000	500	1	37.04	1.03	27.63	2.11	
15676	49-39	8766	-113.8981	-177-500		STREAM	DRY	100	500	1	1.06	1.56			
15677	49-39	8747	-113.9020	-172-100		STREAM	DRY	1000	500	1	6.61	1.23	39.34	2.29	
15677	49-39	8747	-113.9020	-177-500		STREAM	DRY	100	500	1	1.26	1.49			
15678	49-39	8809	-113.9035	-172-100		STREAM	DRY	1000	500	1	8.50	1.20	35.08	2.39	
15678	49-39	8809	-113.9035	-177-500		STREAM	DRY	100	500	1	2.42	1.27			
15679	32-33	6061	-118.9778	-172-100		STREAM	DRY	1000	500	1	3.78	1.29	14.56	1.09	
15679	32-33	6061	-118.9778	-177-500		STREAM	DRY	100	500	1	0.15	3.60			
15751	49-39	8394	-113.8095	-172-100	08/18/77	STREAM	DRY	1000	0500	1	17333	3.68	2.12	45.02	6.01
15752	49-40	8765	-113.8136	-172-100		STREAM	DRY	1000	0500	1	17178	3.88	1.33	24.09	1.35
15759	49-40	8778	-113.8603	-172-100		STREAM	DRY	1000	0500	5	2.44	1.31	3.51	0.62	
15769	49-39	8782	-113.9537	-172-100	09/13/77	STREAM	DRY	1000	0500	1	1.32	1.54	6.03	0.55	
15770	49-39	6200	-113.9392	-172-100	09/13/77	STREAM	DRY	1000	0500	1	3.26	1.34	15.85	1.19	
15771	49-39	6501	-113.9603	-172-100	09/13/77	STREAM	DRY	1000	0500	1	1.75	1.46	6.31	0.72	
15772	49-39	6647	-113.9527	-172-100	09/13/77	STREAM	DRY	1000	0500	1	1.92	1.44	3.76	0.57	
15773	49-39	6721	-113.9437	-172-100	09/13/77	STREAM	DRY	1000	0500	1	2.57	1.40	11.48	0.89	
15774	49-39	6832	-113.9314	-172-100	09/12/77	STREAM	DRY	1000	0500	1	1.52	1.55	6.45	0.87	
15775	49-39	6887	-113.9293	-172-100	09/13/77	STREAM	DRY	1000	0500	2	2.59	1.59	11.20	1.09	
15776	49-39	6970	-113.9226	-172-100	09/13/77	STREAM	DRY	1000	0500	1	4.35	1.27	23.73	1.68	
15777	49-39	7104	-113.8917	-172-100	09/13/77	STREAM	DRY	1000	0500	1	1.11	1.74	4.15	0.48	
15778	49-39	7217	-113.9062	-170-100	09/13/77	STREAM	WET	1000	0500	1	3.15	1.35	13.27	1.16	
15779	49-39	7294	-113.8867	-170-100	09/13/77	STREAM	WET	1000	0500	1	3.51	1.33	12.68	1.25	
15985	49-39	8933	-113.8152	-170-100	08/05/77	STREAM	WET	1000	0500	5	2.58	1.44	12.88	1.17	
15986	49-39	8575	-113.8044	-170-100	08/05/77	STREAM	WET	1000	0500	5	2.95	1.37	8.84	1.68	
15987	49-39	8445	-113.8237	-170-100	08/05/77	STREAM	WET	1000	0500	5	3.57	1.34	18.14	1.36	
15988	49-39	8173	-113.8273	-170-100	08/05/77	STREAM	WET	1000	0500	9	5.05	1.22	18.20	1.29	
15989	49-39	7860	-113.8452	-170-100	08/05/77	STREAM	WET	1000	0500	5	4.02	1.33	16.29	1.89	
15990	49-39	7812	-113.8578	-170-100	08/05/77	STREAM	WET	1000	0500	5	3.54	1.31	17.11	1.37	
15991	49-39	8012	-113.8990	-170-100	08/05/77	STREAM	WET	1000	0500	5	4.01	1.39	34.29	2.13	
15992	49-39	7612	-113.9102	-170-100	08/05/77	STREAM	WET	1000	0500	9	3.82	1.34	15.63	1.69	
17178	49-40	0555	-113.8135	-172-100	08/03/77	STREAM	DRY	1000	0500	1	7.29	1.35	1.99	0.35	
17179	49-40	0530	-113.8042	-172-100	08/03/77	STREAM	DRY	1000	0500	1	1.91	1.34	10.61	0.81	
17183	49-40	1260	-113.8412	-172-100	08/03/77	STREAM	DRY	1000	0500	5	0.80	0.26	9.74	1.13	

DEEP CREEK REPORT, LAWRENCE LIVERMORE LABORATORY
TABLE B-1. SEDIMENT ANALYSIS; DRY AND STREAM SITES

SITE NUMBER	ST	DOE SAMPLE NUMBER		DATE TY RPL	SAMPLE MO-DA-YR	SOURCE/COND.	PARTICLE UPPER	SIZE LOWER	POS. CONT	O. C. X-REF	URANIUM(UNC)		THORIUM(NAA)		
		LAT.	LONG.								PPM	ERR	PPM	ERR	
17184	49-40	1275	-113.8518	-1-72	100	08/03/77	STREAM	DRY	1000	0500	1	1.20	1.47	4.31	0.48
17191	49-40	2130	-113.8178	-1-72	100	08/03/77	STREAM	DRY	1000	0500	9	0.69	1.58	4.56	0.48
17193	49-40	2391	-113.9109	-1-72	100	08/03/77	STREAM	DRY	1000	0500	5	2.13	1.42	7.76	0.76
17194	49-40	2461	-113.8274	-1-72	100	08/03/77	STREAM	DRY	1000	0500	2	0.67	1.70	2.19	0.38
17195	49-39	8070	-113.9179	-1-72	100	08/04/77	STREAM	DRY	1000	0500	5	0.00	0.00	17.45	1.53
17196	49-39	8072	-113.9109	-1-70	100	08/04/77	STREAM	MET	1000	0500	5	3.38	1.25	15.60	1.17
17197	49-39	8002	-113.9025	-1-72	100	08/04/77	STREAM	DRY	1000	0500	5	0.00	0.00	17.58	2.25
17198	49-39	8002	-113.9025	-1-72	100	08/04/77	STREAM	DRY	1000	0500	5	6.88	1.17	39.45	2.26
17199	49-39	7958	-113.8953	-1-70	100	08/04/77	STREAM	MET	1000	0500	5	4.63	1.74	89.65	4.96
17200	49-39	7933	-113.8893	-1-72	100	08/04/77	STREAM	DRY	1000	0500	5	4.09	1.66	71.66	4.26
17327	49-39	7069	-113.8564	-1-72	100	08/04/77	STREAM	DRY	1000	0500	5	3.19	1.49	43.17	2.44
17329	49-39	7543	-113.8644	-1-72	100	08/04/77	STREAM	DRY	1000	0500	9	0.00	0.00	12.03	1.24
17329	49-39	7681	-113.8626	-1-72	100	08/04/77	STREAM	DRY	1000	0500	5	3.12	1.31	11.12	0.91
17330	49-39	8084	-113.8234	-1-70	100	08/04/77	STREAM	MET	1000	0500	5	5.92	1.61	51.48	5.68
17364	49-40	1604	-113.8321	-1-72	100	08/03/77	STREAM	DRY	1000	0500	5				
17370	49-40	0387	-113.8364	-1-72	100	08/03/77	STREAM	DRY	1000	0500	1	2.09	1.40	5.80	0.77
17371	49-40	0443	-113.8284	-1-72	100	08/03/77	STREAM	DRY	1000	0500	1	0.00	0.00	4.16	0.44
17372	49-40	0483	-113.7747	-1-72	100	08/03/77	STREAM	DRY	1000	0500	1	0.00	0.00	2.32	0.77
17374	49-40	0781	-113.7724	-1-72	100	08/03/77	STREAM	DRY	1000	0500	5	2.12	1.32	11.45	0.77
17376	49-40	1175	-113.7810	-1-72	100	08/03/77	STREAM	DRY	1000	0500	5	0.00	0.00		
17377	49-40	1205	-113.7705	-1-72	100	08/03/77	STREAM	DRY	1000	0500	1	0.00	0.00	25.46	1.80
17379	49-39	9881	-113.8437	-1-72	100	08/04/77	STREAM	DRY	1000	0500	1	1.89	1.37	10.85	0.85
17380	49-39	9745	-113.8489	-1-72	100	08/04/77	STREAM	DRY	1000	0500	1	1.28	1.45	6.23	0.55
17381	49-39	9498	-113.8257	-1-72	100	08/04/77	STREAM	DRY	1000	0500	1	2.52	1.59	10.57	1.14
17382	49-39	9419	-113.8172	-1-72	100	08/04/77	STREAM	DRY	1000	0500	1	2.48	1.37		
17383	49-39	9300	-113.7886	-1-72	100	08/04/77	STREAM	DRY	1000	0500	5	1.36	1.58	3.87	0.60
17384	49-39	9196	-113.8092	-1-72	100	08/04/77	STREAM	DRY	1000	0500	5	4.22	1.31	17.44	1.48
17385	49-39	9084	-113.8228	-1-72	100	08/04/77	STREAM	DRY	1000	0500	1	2.20	1.48	9.54	0.87
17386	49-39	8924	-113.8151	-1-72	100	08/04/77	STREAM	DRY	1000	0500	1	3.81	1.30	21.24	1.38
17387	49-39	8862	-113.8444	-1-72	100	08/04/77	STREAM	DRY	1000	0500	1	7.60	1.27	54.41	3.19
17388	49-39	8682	-113.8106	-1-70	100	08/04/77	STREAM	MET	1000	0500	5	2.68	1.85	45.15	2.91
17389	49-39	8808	-113.7726	-1-72	100	08/04/77	STREAM	DRY	1000	0500	5	2.82	1.25		
17390	49-39	8076	-113.7948	-1-72	100	08/04/77	STREAM	DRY	1000	0500	5	1.65	1.26		
17391	49-39	7530	-113.8060	-1-72	100	08/04/77	STREAM	DRY	1000	0500	5	4.24	1.30	23.42	1.63
18318	49-39	7594	-113.8978	-1-70	100	08/14/77	STREAM	MET	1000	0500	1	35.08	1.06	22.93	1.79
18319	49-39	8442	-113.7950	-1-70	100	08/14/77	STREAM	MET	1000	0500	1	8.95	1.21	39.53	3.25
18320	49-39	8350	-113.8039	-1-70	100	08/14/77	STREAM	MET	1000	0500	1	5.39	1.47	64.11	3.99
18321	49-39	8493	-113.8110	-1-70	100	08/14/77	STREAM	MET	1000	0500	9	37.92	1.08	20.66	2.09
18322	49-39	9155	-113.7927	-1-70	100	08/15/77	STREAM	MET	1000	0500	1	2.03	2.05	6.42	1.19
18323	49-39	9102	-113.8252	-1-70	100	08/15/77	STREAM	MET	1000	0500	1	4.80	1.29	9.82	1.05
18324	49-39	8861	-113.8511	-1-70	100	08/15/77	STREAM	MET	1000	0500	9	4.01	1.19		
18325	49-39	8787	-113.8153	-1-70	100	08/15/77	STREAM	MET	1000	0500	1	5.17	1.23	15.09	1.15
18326	49-39	8517	-113.8536	-1-70	100	08/15/77	STREAM	MET	1000	0500	1	18.10	1.08	30.49	2.10
18415	49-40	0887	-113.7822	-1-70	100	08/12/77	STREAM	MET	1000	0500	1	7.84	1.37	80.62	4.92
18416	49-40	0914	-113.7811	-1-72	100		STREAM	DRY	1000	0500	1	5.92	1.35	49.77	2.92
18419	49-40	1474	-113.8480	-1-70	100	08/12/77	STREAM	MET	1000	0500	1	3.54	1.71	8.35	3.98
18420	49-40	0077	-113.8527	-1-72	100	08/12/77	STREAM	DRY	1000	0500	1	2.33	1.63	11.78	1.32
18423	49-39	9914	-113.8243	-1-70	100	08/14/77	STREAM	MET	1000	0500	1	3.60	1.51	12.41	2.16
18424	49-39	9738	-113.8407	-1-70	100	08/14/77	STREAM	MET	1000	0500	1	3.03	1.45	10.12	0.97

DEEP CREEK REPORT, LAWRENCE LIVERMORE LABORATORY
TABLE B-2. WATER ANALYSIS: RIVERS, STREAMS & LAKES

SITE NUMBER	ST	DOE LAT.	SAMPLE LONG.	NUMBER L	DATE TY RPL	SAMPLE MO-DA-YR	TEMP C.	PH METR	SPEC UMHO/CM	COND MG/LITER	AKTOTL MG/LITER	AKPHEN MG/LITER	POS. CONT	URANIUM(DNC) PPB	ERR	D. C. X-REF
16985	49-39.8933-113.8152-1-22-200	08/05/77	STREAM	17.0		353.	100.	5	3.65	1.87						
16986	49-39.8975-113.8044-1-22-200	08/05/77	STREAM	16.0	7.7	94.	30.	5	1.50	2.57						
16987	49-39.8945-113.8237-1-22-200	08/05/77	STREAM	13.0	0.8	68.	20.	5	0.35	3.41						
16988	49-39.8173-113.8273-1-22-200	08/05/77	STREAM	16.0	7.1	88.	20.	9	1.64	2.43						
16989	49-39.7980-113.8452-1-22-200	08/05/77	STREAM	18.0	7.2	24.	90.	5	14.49	1.25						
16990	49-39.7812-113.8678-1-22-200	08/05/77	STREAM	16.0	7.9	81.	20.	5	0.93	3.36						
16991	49-39.8012-113.8990-1-22-201	08/05/77	STREAM	14.0		60.	20.	5	0.69	3.95						
16991	49-39.8012-113.8990-1-22-201		STREAM													
16992	49-39.7612-113.9102-1-22-200	08/05/77	STREAM	15.5	7.8	63.	20.	9	0.04	43.84						
16992	49-39.7612-113.9102-1-22-201		STREAM													

DEEP CREEK REPORT, LAWRENCE LIVERMORE LABORATORY
TABLE B-3. WATER ANALYSIS: SPRING AND WELL SITES

SITE NUMBER	DOE ST	SAMPLE LAT.	NUMBER LONG.	DATE L TY RPL	DATE MO-DA-YR	SAMPLE SOURCE	TEMP C.	MELL WELL C. DEPTH	MELL TYPE	MELL CASING	PH METR	SPEC COND UMHO/CM	AKTDTL MG/LITER
7344	49-39.6638	-113.9166	-1-21-200	02/03/77	SPRING	13.0					7.5	1229.	140.
7346	49-39.5791	-113.9514	-1-21-200	02/04/77	SPRING	12.0					7.5	1127.	200.
18318	49-39.7994	-113.8978	-1-21-200	08/14/77	SPRING	2.0					7.8	57.	20.
18319	49-39.8442	-113.7968	-1-21-200	08/14/77	SPRING	13.0					7.6	1038.	180.
18320	49-39.8350	-113.8034	-1-21-200	08/14/77	SPRING	28.5					8.8	677.	160.
18322	49-39.9155	-113.7927	-1-21-200	08/15/77	SPRING	11.0					7.6	522.	200.
18323	49-39.9102	-113.8252	-1-21-200	08/15/77	SPRING	6.0					7.5	519.	220.
18324	49-39.8861	-113.8511	-1-08-200	08/15/77	WELL	12.0					8.1	314.	140.
18325	49-39.8797	-113.8193	-1-21-200	08/15/77	SPRING	12.8					7.9	812.	240.
18326	49-39.8797	-113.8193	-1-21-201		SPRING								
18328	49-39.8617	-113.8536	-1-21-200	08/15/77	SPRING	13.3					7.8	327.	120.
18328	49-39.8617	-113.8536	-1-21-201		SPRING								
18416	49-40.0914	-113.7811	-1-21-200		SPRING	19.0					7.2	369.	120.
18417	49-40.0968	-113.7802	-1-21-200	08/12/77	SPRING	26.5					7.5	266.	200.
18418	49-40.1655	-113.8405	-1-21-200	08/12/77	SPRING	23.0					7.4	6280.	80.
18419	49-40.1474	-113.8480	-1-21-200	08/12/77	SPRING	11.5					6.5	243.	80.
18420	49-40.1084	-113.8604	-1-21-200	08/12/77	SPRING	28.0					7.3	4593.	200.
18421	49-40.0592	-113.8454	-1-21-200	08/12/77	SPRING	16.0					0.7	1001.	180.
18423	49-39.9914	-113.8543	-1-21-200	08/14/77	SPRING	13.0					7.7	601.	200.
18423	49-39.9914	-113.8543	-1-21-201		SPRING								
18425	49-39.9861	-113.7792	-1-21-200	08/14/77	SPRING	25.0					7.3	600.	160.
18425	49-39.9861	-113.7792	-1-21-201		SPRING								

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DEEP CREEK REPORT, LAWRENCE LIVERMORE LABORATORY
TABLE B-2. WATER ANALYSIS: SPRING AND WELL SITES

SITE NUMBER	RPL	TPTR	AKPHEN MG/LITER	POS. CONT	URANIUM(DNC) PPB	XERR	D. C. X-REF	DISSOLVED O2(PPM)	EH MV
7344	200	WSFO		1				4.20	60.00
7346	200	WSFO		1				7.60	50.00
18318	200	WSFO		1	0.11	13.47		7.80	180.00
18319	200	WSFO		1	17.66	1.20		6.35	150.00
18320	200	WSFO	40.	1	3.45	1.67		11.40	140.00
18322	200	WSFO		1	1.39	2.80		7.40	170.00
18323	200	WSFO		1	1.07	3.04		7.75	160.00
18324	200	WSFO		9	17.33	1.23			
18325	200	WSFO		1	38.12	1.08		7.20	135.00
18325	201	WSFO							
18326	200	WSFO		1	18.56	1.21		7.60	170.00
18326	201	WSFO							
18416	200	WSFO		1	19.90	1.22			75.00
18417	200	WSFO		1	78.11	1.05			75.00
18418	200	WSFO		1	7.11	1.45			80.00
18419	200	WSFO		1	3.66	1.83		5.40	80.00
18420	200	WSFO		1	6.18	1.54			80.00
18421	200	WSFO		1	1.48	2.66			70.00
18423	200	WSFO		1	1.19	3.02		6.00	80.00
18423	201	WSFO							
18425	200	WSFO		1	1.04	3.17			80.00
18425	201	WSFO							

114°00'

45'

40°00'

45'

30'

30'

15'

DELTA

113°00'

45'

30'

NJ 12

NJ 12-01

30'

15'

112°00'

40°00'

45'

30'

15'

39°00'

114°00'

45'

SYMBOL EXPLANATION

THORIUM(TOTAL)CONCENTRATIONS

1.00 2.00 5.00 10.0 20.0 50.0 100. 200. 500.
PARTS PER MILLION (PPM) BY WEIGHT

+ LESS THAN 1.00 PPM
(OR NOT DETECTED)

● GREATER THAN 500. PPM

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LABORATORY**

UNIVERSITY OF CALIFORNIA

SER NO. LLL,NURE,HSSR 16,03,05 U 03/01/79

PROJECT BOUNDARY

30'

15'

SCALE

5

0

5

5

0

5

10

THORIUM (TOTAL) CO
SEDIMENT

CONCENTRATIONS (PPM)
IENT SAMPLES

OVERLAY 2C
THORIUM(TOTAL)
CONCENTRATIONS(PPM)
(SEDIMENT SAMPLES)
DEEP CREEK
RECONNAISSANCE STUDY
DELTA
(NTMS QUAD)

DELTA

15'

113°00'

NJ 12-01

45'

30'

15'

NJ 12-01

30'

15'

112°00'

40°00'

45'

30'

SYMBOL EXPLANATION

CONDUCTIVITY ($\mu\text{MHO}/\text{CM}$)

- + LESS THAN 20.0 $\mu\text{MHO}/\text{CM}$
- GREATER THAN 10000. $\mu\text{MHO}/\text{CM}$

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LABORATORY**
UNIVERSITY OF CALIFORNIA

SER NO. LLL,NURE,HSSR 14,31,18 R 02/26/79

PROJECT BOUNDARY

CONDUCTIVITY (μ
WATER SAM

113°00'

E 1:250000

45'

30'

10

15

20 STATUTE MILES

15

20

25

30 KILOMETERS

TY (μ MHO/CM)

SAMPLES

OVERLAY 10

CONDUCTIVITY (μ MHO/CM)
(WATER SAMPLES)

DEEP CREEK
RECONNAISSANCE STUDY
DELTA
(NTMS QUAD)

114°00'

45'

30'

40°00'

45'

30'

DELTA

30'

15'

113°00'

NJ 12-01

45'

30'

15'

NJ 12-01

30'

15'

112°00'

40°00'

45'

30'

15'

39°00'

114°00'

45'

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LABORATORY**
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SYMBOL EXPLANATION

URANIUM (TOTAL) CONCENTRATIONS

0.50 1.00 2.00 5.00 10.0 20.0 50.0
PARTS PER MILLION (PPM) BY WEIGHT
+ LESS THAN 0.50 PPM
(OR NOT DETECTED)
● GREATER THAN 50.0 PPM

SER NO. LLL:NURE:HSSR 16:01:10 U 03/01/79

PROJECT BOUNDARY

URANIUM(TOTAL) CONCE
SEDIMENT SA

DET

113°00'

45'

30'

SCALE 1:250000

5

10

15

20 STATUTE MILES

10

15

20

25

30 KILOMETERS

CONCENTRATIONS (PPM)
ENT SAMPLES

OVERLAY 2B
URANIUM(TOTAL)
CONCENTRATIONS(PPM)
(SEDIMENT SAMPLES)
DEEP CREEK
RECONNAISSANCE STUDY
DELTA
(NTMS QUAD)

114°00'

45'

30'

40°00'

45'

30'

DELTA

15'

113°00'

NJ 12-01

45'

30'

15'

NJ 12-01

30'

15'

112°00'

40°00'

45'

30'

15'

39°00'

114°00'

45'

SYMBOL EXPLANATION

URANIUM (TOTAL) CONCENTRATIONS

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SER NO. LLL:NURE:HSSR 14:30:28 R 02/26/79

PROJECT BOUNDARY

30'

15'

SCALE

URANIUM (TOTAL) CO
WATER

CONCENTRATIONS (PPB)
WATER SAMPLES

OVERLAY 1B

URANIUM(TOTAL)
CONCENTRATIONS(PPB)
(WATER SAMPLES)

DEEP CREEK
RECONNAISSANCE STUDY

DELTA
(NTMS QUAD)

45'

18423 □ 18423
18423 ○ 17379
○ 18425
17380 ○ □ 18424

○ 17381
 ○ 17382
 ○ 17383

10323 17384 18323 18322 10323 17385 18322

Q 16988

15056 17196
17195 15655 17330 17390
15656 15683 16989
15651

15858507290 17327
15649 16990
15648 15646 15647
17329 15648 15645
15642 15642
16992 15640 15639
17328 15636 17391
15637 15636

□ 15779
□ 15778
○ 15777

☐ 15776
☐ 15775
☐ 15774

Q 15773

15772 O 7344 7344
O15771

15770

16769 7346.
7346

30'

DE

30'

15'

DELTA

NJ 12-

113°00'

45'

30'

NJ 12-01

30'

15'

112°00'

40°00'

45'

30'

15'

39°00'

114°00'

45'

SYMBOL EXPLANATION

SITE TYPES. SEDIMENT SAMPLES

□ WET

○ DRY

◇ SPRING

PROJECT BOUNDARY

LAWRENCE
LIVERMORE
LABORATORY
UNIVERSITY OF CALIFORNIA

30'

15'

113°00'

SCALE 1:25000

5

0

5

5

0

5

10

15

SITE LOCATIONS. SEDIMENT

00'
250000

45'

30'

10

15

20 STATUTE MILES

15

20

25

30 KILOMETERS

SEDIMENT SAMPLES

OVERLAY 2A

SITE LOCATIONS. SEDIMENT SAMPLING

DEEP CREEK
RECONNAISSANCE STUDY
DELTA
(NTMS QUAD)

114°00'

45'

30'

40°00'

Δ 16423

Δ 16426

Δ 16323

Δ 16322

▽ 16324

□ 16985

Δ 16325

Δ 16326

□ 16989

16987 □

Δ 16319

Δ 16320

□ 16388

16991 □ 16318

□ 16989

□ 16990

□ 16992

Δ 7344

Δ 7346

30'

DELTA

15'

113°00'

NJ 12-01

45'

30'

15'

NJ 12-01

30'

15'

112°00'

40°00'

45'

30'

SYMBOL EXPLANATION

SITE TYPES, WATER SAMPLES

□ RIVER/STREAM

△ SPRING

▽ WELL

◇ LAKE/RESERVOIR

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LIVERMORE
LABORATORY
UNIVERSITY OF CALIFORNIA

SITE LOCATIONS. WA

S. WATER SAMPLES

OVERLAY 1A

SITE LOCATIONS. WATER SAMPLES

DEEP CREEK
RECONNAISSANCE STUDY

DELTA

(NTMS QUAD)

114°00'

45'

30'

41°00'

45'

30'

TOOELE

15'

113°00'

NK 12-10

45'

30'

15'

NK 12-10

30'

15'

112°00'

41°00'

45'

30'

SYMBOL EXPLANATION

THORIUM (TOTAL) CONCENTRATIONS

100 200 500 10.0 20.0 50.0 100. 200. 500.
PARTS PER MILLION (PPM) BY WEIGHT

+ LESS THAN 1.00 PPM
(OR NOT DETECTED)

● GREATER THAN 500. PPM

■ PROJECT BOUNDARY

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LABORATORY**
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30'

15'

113°00'

SCALE 1:250

5

0

5

5

0

5

10

15

THORIUM(TOTAL) CONCE
SEDIMENT SA

CONCENTRATIONS (PPM)
NT SAMPLES

OVERLAY 2C

THORIUM(TOTAL)
CONCENTRATIONS(PPM)
(SEDIMENT SAMPLES)

DEEP CREEK
RECONNAISSANCE STUDY

TOOELE
(NTMS QUAD)

114°00'

45'

30'

41°00'

45'

30'

TOOELE

15'

113° 00'

NK 12-10

45'

30'

15'

NK 12-10

30'

15'

112°00'

41°00'

45'

30'

15'

40°00'

114°00'

45'

SYMBOL EXPLANATION

CONDUCTIVITY (μ MHO/CM)

+ LESS THAN 20.0 μ MHO/CM

● GREATER THAN 10000. μ MHO/CM

PROJECT BOUNDARY

LAWRENCE
LIVERMORE
LABORATORY
UNIVERSITY OF CALIFORNIA

30'

15'

113°00'

SCALE 1:2500

5

0

5

5

0

5

10

15

CONDUCTIVITY (μ)
WATER SAM

1°00'
1:250000
10 15 20 STATUTE MILES
15 20 25 30 KILOMETERS

Y (μ MHO/CM)
SAMPLES

OVERLAY 1C

CONDUCTIVITY (μ MHO/CM)
(WATER SAMPLES)

DEEP CREEK
RECONNAISSANCE STUDY

TOOELE
(NTMS QUAD)

114°00'

45'

30'

41°00'

45'

30'

TOOELE

15'

113°00'

NK 12-10

45'

30'

15'

NK 12-10

30'

15'

112°00'

41°00'

45'

30'

SYMBOL EXPLANATION

URANIUM (TOTAL) CONCENTRATIONS

PARTS PER MILLION (PPM) BY WEIGHT

+ LESS THAN 0.50 PPM
(OR NOT DETECTED)

● GREATER THAN 50.0 PPM

**LAWRENCE
LIVERMORE
LABORATORY**

UNIVERSITY OF CALIFORNIA

30'

15'

113°00'

SCALE 1:25

5

0

5

5

0

5

10

URANIUM (TOTAL) CONC
SEDIMENT S

113°00'
SCALE 1:250000

45'

30'

10

15

20 STATUTE MILES

10

15

20

25

30 KILOMETERS

CONCENTRATIONS (PPM)
NT SAMPLES

OVERLAY 2B
URANIUM(TOTAL)
CONCENTRATIONS(PPM)
(SEDIMENT SAMPLES)
DEEP CREEK
RECONNAISSANCE STUDY
TOOELE
(NTMS QUAD)

114°00'

45'

30'

41°00'

45'

30'

TOOELE

15'

113°00'

NK 12-10

45'

30'

15'

NK 12-10

30'

15'

112°00'

41°00'

45'

30'

SYMBOL EXPLANATION

URANIUM (TOTAL) CONCENTRATIONS

**LAWRENCE
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LABORATORY**
UNIVERSITY OF CALIFORNIA

9°00'

11.250000

45'

30'

10

15

20 STATUTE MILES

15

20

25

30 KILOMETERS

NCENTRATIONS (PPB)
SAMPLES

OVERLAY 1B
URANIUM(TOTAL)
CONCENTRATIONS(PPB)
(WATER SAMPLES)
DEEP CREEK
RECONNAISSANCE STUDY
TOOELE
(NTMS QUAD)

114°00'

45'

30'

41°00'

45'

30'

TOOELE

15'

113°00'

NK 12-10

45'

30'

15'

NK 12-10

30'

15'

112°00'

41°00'

45'

30'

SYMBOL EXPLANATION

SITE TYPES, SEDIMENT SAMPLES

□ WET

○ DRY

◇ SPRING

• PROJECT BOUNDARY

**LAWRENCE
LIVERMORE
LABORATORY**
UNIVERSITY OF CALIFORNIA

30'

15'

113°00'

SCALE 1:25

SITE LOCATIONS. SE

113°00'

45'

30'

E 1:250000

SEDIMENT SAMPLES

OVERLAY 2A

SITE LOCATIONS, SEDIMENT SAMPLES

DEEP CREEK
RECONNAISSANCE STUDY

TOOELE

(NTMS QUAD)

114°00'

45'

30'

41°00'

45'

30'

TOOELE

15'

113°00'

NK 12-10

45'

30'

15'

NK 12-10

30'

15'

112°00'

41°00'

45'

30'

SYMBOL EXPLANATION

SITE TYPES, WATER SAMPLES

□ RIVER/STREAM

Δ SPRING

▽ WELL

◇ LAKE/RESERVOIR

**LAWRENCE
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LABORATORY**
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30'

15'

113°00'

SCALE 1:2500

SITE LOCATIONS. WATER

13°00'
1:250000

45'

30'

10

15

20 STATUTE MILES

15

20

25

30

KILOMETERS

WATER SAMPLES

OVERLAY 1A

SITE LOCATIONS. WATER SAMPLES

DEEP CREEK
RECONNAISSANCE STUDY

TOOELE

(NTMS QUAD)