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DEATH VALLEY 1° x 2° NTMS AREA CALIFORNIA AND NEVADA

DATA REPORT

NATIONAL URANIUM RESOURCE EVALUATION PROGRAM

HYDROGEOCHEMICAL AND STREAM SEDIMENT RECONNAISSANCE

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PREPARED FOR THE U. S. DEPARTMENT OF ENERGY UNDER CONTRACT DE AC09 76SR00001

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FOREWORD

This report is released without standard editorial and technical review in order to make the information available as soon as possible to interested organizations and to assist the search for uranium resources.

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SEDIMENT RECONNAISSANCE**

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ABSTRACT

This data report presents results of ground water and stream sediment reconnaissance in the National Topographic Map Series (NTMS) Death Valley 1° x 2° quadrangle. Stream sediment samples were collected from small streams at 649 sites or at a nominal density of one site per 20 square kilometers (eight square miles). Ground water samples were collected at 62 sites or at a nominal density of one site per 220 square kilometers (87 square miles). Neutron activation analysis (NAA) results are given for uranium and 16 other elements in sediments, and for uranium and 8 other elements in ground water and surface water. Mass spectrometry results are given for helium in ground water. Field measurements and observations are reported for each site. Analytical data and field measurements are presented in tables and maps. Statistical summaries of data and a brief description of results are given. A generalized geologic map and a summary of the geology of the area are included.

Key data are presented in page-sized hard copy. Supplementary data are on microfiche.

Key data from ground water sites (Appendix A) include (1) water chemistry measurements (pH, conductivity, and alkalinity), (2) scintillometer readings, and (3) elemental analyses (U, Br, Cl, F, He, Mn, Na, and V). Supplementary data include site descriptors, tabulated analytical data for Al, Dy, and Mg, and histograms and cumulative frequency plots for all elements.

Key data from stream sediment sites (Appendix B) include (1) water quality measurements (pH, conductivity, and alkalinity), (2) important elemental analyses (U, Th, Hf, Ce, Fe, Mn, Sc, Na, Ti, and V), and (3) scintillometer readings. Supplementary data from stream sediment sites include sample site descriptors (stream characteristics, vegetation, etc.), additional elemental analyses (Dy, Eu, La, Lu, Sm, and Yb), and histograms and cumulative frequency plots for all elements.

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DATA REPORT: DEATH VALLEY 1° x 2° NTMS QUADRANGLE:
CALIFORNIA AND NEVADA

INTRODUCTION

The National Uranium Resource Evaluation (NURE) program was established to evaluate domestic uranium resources in the continental United States and to identify areas favorable for uranium exploration. The Grand Junction Office (GJO) of the Department of Energy (DOE) is responsible for administering and coordinating NURE program efforts. The Savannah River Laboratory (SRL) has responsibility for hydrogeochemical and stream sediment reconnaissance (HSSR) of 3.9 million square kilometers (1,500,000 square miles) in 37 eastern and western states. Other DOE laboratories are responsible for similar reconnaissance in the rest of the continental United States including Alaska. The significance of the distribution of uranium in natural waters and stream sediments will be assessed as an indicator of areas favorable for the location of uranium deposits.

The principal objectives of the NURE program are:

- Increase geologic knowledge of U.S. uranium resources in regions where uranium ore bodies are known to exist and are candidate supplies under present and near-term market conditions.
- Complete assessment of lower cost potential uranium resources in the conterminous U.S. and Alaska.
- Improve reliability and validate resource estimates and increase confidence levels.
- Expand scope of uranium assessment to include higher cost and relatively unknown domestic resources that may be feasible uranium supply alternatives.
- Apply advanced technologies for detection and assessment of uranium resources.

DOE-GJO is responsible for administering and coordinating efforts to meet these objectives including distribution of reports.

Inputs to the NURE program come from DOE prime contractors, DOE-sponsored research and development, the uranium industry, U.S. Geological Survey, U.S. Bureau of Mines, other federal and state government agencies, and independent sources.

The NURE program consists of six parts:

1. Hydrogeochemical and Stream Sediment Reconnaissance Survey
2. Aerial Radiometric Survey
3. Intermediate Grade Resource Studies
4. World Class Geologic Studies
5. Subsurface Geologic Investigation
6. Technology Application

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

This report is one of a series presenting basic data obtained by SRL reconnaissance. In the interest of disseminating available data as soon as possible, only neutron activation analyses are reported here. Supplementary reports will be issued later. All data will be available on magnetic tape from:

GJOIS Project
UCC-ND Computer Applications Department
4500 North Building
Oak Ridge National Laboratory
P.O. Box X
Oak Ridge, Tenn. 37830

A brief description of sampling and analytical procedures and a detailed description of the maps, tables, and figures contained in this report are presented in the SRL document User's Guide to SRL Data Reports included as Appendix C in this report. A summary of the SRL development program in support of the reconnaissance is available in SRL-NURE progress reports (SRL-138). SRL data reports (SRL-146) have been open-filed for other quadrangles (Figure 1).

Figure 2 summarizes the quadrangle abbreviations used in SRL sample identification numbers.

FIGURE 1. Location Map for the Death Valley 1° x 2° NTMS Quadrangle

	A	B	C	D	E	F	G	H	37°
A	DVAA	DVAB	DVAC	DVAD	DVAE	DVAF	DVAG	DVAH	45'
B	DVBA	DVBB	DVBC	DVBD	DVBE	DVBF	DVBG	DVBH	30'
C	DVCA	DVCB	DVCC	DVCD	DVCE	DVCF	DVCG	DVCH	15'
D	DVDA	DVDB	DVDC	DVDD	DVDE	DVDF	DVDG	DVDH	36°
	118°	45'	30'	15'	119°	45'	30'	15'	116°

FIGURE 2. Codes for the 15' Quadrangles Used in the Death Valley
1° x 2° NTMS Quadrangle

GEOLOGIC SUMMARY AND URANIUM OCCURRENCES

Geology

Summary

The Death Valley 1° x 2° NTMS quadrangle area lies wholly within the Basin and Range physiographic province. The southern edge of the province terminates approximately along the Garlock Fault, about 50 km (30 mi) south of the area. The western limit of the Basin and Range Province terminates along the eastern edge of the Sierra Nevada Mountains, only a few miles west of the west edge of the area (Figure 3).

The rocks of the region are typical of those that occur in much of the southwestern part of the Basin and Range Province. The stratigraphic succession is moderately complete for rocks of late Precambrian through Paleozoic age. The strata rest on metamorphosed Precambrian rocks, are intruded by Mesozoic rocks, and are, in turn, overlain by Cenozoic sedimentary and volcanic flow rocks, and locally intruded by Cenozoic rocks (Hunt and Mabey, 1966; Streitz and Stinson, 1977).

The valleys and mountains are mostly fault-controlled, and most of the faults are probably younger than Miocene in age. Many displacements along faults have occurred during Quaternary time, as evidenced by the many scarps in Quaternary fan deposits. Many of the ranges have been tilted downward on the east caused by rotation on large normal faults. This rotation is demonstrated by the steep west slopes of the ranges, the common dip of strata to the east, and the common occurrence of the youngest strata on only the east slopes of ranges. The central parts of Death Valley and Panamint Valley have their lowest parts along the east side of the valleys, suggesting, too, that these valleys have been similarly rotated.

The most abundant of the recognized faults are normal faults that trend mainly north to northeast. The normal faults are closely related to northwest-trending lateral-slip faults, such as the Saline Valley fault zone and the northern Death Valley-Furnace Creek fault zone (Wright and Troxel, 1967, p. 948).

FIGURE 3. Location of the Death Valley Quadrangle on a Physiographic Province Map

Precambrian Rocks

Precambrian rocks in the Death Valley 1° x 2° NTMS quadrangle area are divided informally according to their relative age into three groups: Earlier Precambrian rocks, later Precambrian rocks, and even younger Precambrian strata that grade upward into Cambrian strata. The division of earlier and later Precambrian rocks is based, in part, on a strong contrast in the degree of metamorphism of rocks in the Death Valley region, as well as on a regional unconformity that separates them. The younger Precambrian rocks include sedimentary rocks that rest unconformably upon the earlier and later Precambrian rocks.

Some of the earlier Precambrian rocks that are exposed within the Death Valley quadrangle have been dated by radiometric methods. Rocks exposed in the east side of the Panamint Range, barely south of the south border of the quadrangle area, have yielded ages ranging from 1660 million years before the present (Myr BP) to 1780 Myr BP (Wasserberg and others, 1959; Silver and others, 1962). Because most of the rest of the earlier Precambrian rocks in this quadrangle are similar in composition and degree of metamorphism and lie beneath the regional unconformity, they are usually considered to be of the same general age.

Earlier Precambrian rocks are exposed low on the west side of the Panamint Range, in a small area of Tucki Mountain, and in the Black and Funeral Mountains. Diorite in the Black Mountains is shown on the geologic map (Plate 1-A) as being earlier Precambrian, but its age has not been confirmed by radiometric methods, and is more likely Cenozoic in age. In the eastern portion of the Death Valley quadrangle, older Precambrian gneiss and schist consisting of quartz-muscovite-feldspar gneiss and quartz-muscovite-biotite schist are found in the Bullfrog Hills (Cornwall and Kleinhampl, 1964).

The earlier Precambrian rocks are meta-igneous and metasedimentary in origin, and most are strongly foliated. These rocks probably include rocks of the highest density in the area.

The later Precambrian rocks include the sedimentary strata of the Pahrump Group, which is divisible into the Crystal Spring Formation, the Beck Spring Dolomite, and the Kingston Peak Formation. In the Death Valley quadrangle, most of the Pahrump rocks are moderately to strongly metamorphosed with metamorphism increasing from south to north. From a relatively unmetamorphosed state in the east flank of the southern part of the Panamint Range, the rocks progressively increase in metamorphic grade to their northernmost outcrop limit in the northern part of the Panamint Range.

in Tucki Mountain. Similar rocks in the Funeral Mountains are increasingly metamorphosed from south to north (Wright and Troxel, 1967). For instance, siltstone in the southern part of the Funeral Mountains is the stratigraphic equivalent of garnet-muscovite schist or staurolite-muscovite schist in the northern part of the range.

Rocks of the Pahrump Group are sedimentary in origin except for a sill of diabase that generally occurs wherever the lowest formation, the Crystal Spring Formation, is exposed. The Pahrump Group crops out mainly as a nearly continuous band along the upper west flank of the Panamint Range and as a less-continuous band in the Funeral Mountains. The rocks that overlie the Pahrump Group are sedimentary in origin also and are, in large part, silicic clastic rocks. This third group of Precambrian rocks, the succession of younger rocks that overlies the Pahrump Group, includes successively, the Noonday Dolomite, the Johnnie Formation, and the Stirling Quartzite.

The Johnnie Formation is up to 1400 m (4500 ft) thick (Nolan, 1929) and consists of a lower quartzite and an upper quartzitic shale with a few dolomitic layers (Nolan, 1929). This formation is 2,500-feet thick in the Nopah Range (Hazzard, 1937).

The Stirling Quartzite (Nolan, 1929) is 975 to 1025 m (3200 to 3400 ft) thick and may be wide-spread in the Basin and Range Province (Stewart, 1966). This formation consists principally of gray- to-pink quartzite with conglomerate, shale, and siltstone beds (Cornwall, 1972). The post-Pahrump sedimentary strata of Precambrian age underlie the entire crest and eastern flank of the Panamint Range, a large part of the Funeral Mountains, and small parts of the western flank of the Resting Spring Range.

The Wood Canyon Formation is of Precambrian and Cambrian age and consists of 640 m (2100 ft) of clastic material (Nolan, 1929). The unit has been divided into three members: a lower siltstone with quartzite and dolomitic beds, a middle quartzite with conglomeratic and siltstone beds, and an upper siltstone with shale and fine-grained quartzitic layers (Stewart, 1966).

Paleozoic Rocks

Paleozoic rocks exposed in the area of the Death Valley quadrangle are, for the most part, carbonate strata of marine origin. The carbonate strata tend to grade westward to clastic strata. Younger Paleozoic rocks contain less carbonate strata than older Paleozoic rocks. Paleozoic rocks are found in abundance in all

of the ranges of the Death Valley quadrangle except the Black Mountains, the Greenwater Range, the Coso Range, and the area of the Nevada Test Site. They appear to be unmetamorphosed nearly everywhere except near margins of intrusive igneous rock masses. Late Precambrian and Paleozoic strata comprise most of Bare Mountain, the Specter Range, and the Spring Mountains in Nevada.

Cambrian rocks of the quadrangle include the Zabriskie Quartzite, the Carrara Formation, the Bonanza King Formation, and the Nopah Formation. The Zabriskie Quartzite (Hazzard, 1937) varies from 6 m (20 ft) thick in the Spring Mountains to 350 m (1150 ft) thick in the Bullfrog Hills (Cornwall, 1972). The Carrara Formation (Cornwall and Kleinhampl, 1961) conformably overlies the Zabriskie Quartzite and consists predominantly of interlayered shale and siltstone as much as 600 m (1960 ft) thick (Barnes and others, 1962).

The Bonanza King Formation (Hazzard and Mason, 1936; Palmer and Hazzard, 1956) consists principally of thin-to-thick layered dolomite with some limestone, silty and sandy layers, and cherty zones (Cornwall and Kleinhampl, 1961). The unit is typically thick and is 923 m (3031 ft) thick in the Specter Range (Burchfiel, 1964). Barnes and others (1962) report a Middle and Late Cambrian Age for this formation from fossil studies at Yucca Flat.

The Nopah Formation (Hazzard, 1937) is 580 m (1900 ft) thick at Bare Mountain. It consists of three members, from bottom to top, the Dunderberg Shale, the Halfpint Member, and the Smokey Member. The Dunderberg Shale consists of about 30 m (100 ft) of paper-thin shale with some thin interbeds of limestone. The Halfpint Member varies greatly in thickness from 0- to 580 m (1900 ft) thick and consists of flaggy limestone and dolomite (Christiansen and Barnes, 1966). The Smokey Member is about 490 m (1600 ft) thick at Bare Mountain and consists dominantly of dolomite (Barnes and Christiansen, 1967).

Ordovician rocks include the Pogonip Group, the Ely Springs Dolomite, and Eureka Quartzite. In the Death Valley quadrangle, the Pogonip Group includes, from bottom to top, the Goodwin Limestone, the Ninemile Formation, and the Antelope Valley Limestone (Ross, 1964). These formations are not shown individually on the geologic map (Plate 1-A). The Goodwin Limestone is a medium-to-thick bedded, generally gray limestone varying in thickness from 358 feet at Bare Mountain (Ross, 1964), to 308 m (1010 ft) in the Belted Range a few miles north of the quadrangle (Cornwall, 1972). The Ninemile Formation is a thin-bedded limestone with increasing shale interlayers toward the bottom of the unit. The Antelope Valley Limestone ranges to 520 m (1700 ft) thick and consists of thick-bedded, gray limestone with irregular layers of silty limestone.

The Ely Springs Dolomite (Westgate and Knopf, 1932) and the Eureka Quartzite (Hague, 1883) have been combined for display on the geologic map (Plate 1-A). The Eureka Quartzite ranges in thickness from 30 to 140 m (100 to 460 ft) (Ross and Longwell, 1964) and consists of white-to-grayish orange, well-rounded, fine-grained, generally massive to faintly layered quartzite (Cornwall, 1972). The Ely Springs Dolomite ranges in thickness from 90 m (300 ft) at Bare Mountain to 140 m (450 ft) in the Specter Range and consists of medium- to dark-gray, thin-bedded, blocky dolomite with common chert (Poole and Christiansen, 1966).

Silurian rocks include the Roberts Mountain Formation, the Lone Mountain Dolomite, and undivided sedimentary rocks. The Roberts Mountain Formation (Merriam, 1940) is found in the Bullfrog Hills and on Bare Mountain in the Death Valley quadrangle and consists of 198 to 275 m (650 to 900 ft) of dolomite and limestone (Cornwall, 1972). Fossil studies by Merriam and Anderson (1942) indicate a Middle Silurian Age. The Lone Mountain Dolomite (Merriam, 1940) consists of about 975 m (3200 ft) of light-gray to dark-gray (lower part of the unit) dolomite (Cornwall, 1972).

Devonian rocks include the Devils Gate Limestone, the Nevada Formation, and undivided dolomitic sedimentary rocks. The Nevada Formation (Hague, 1883; 1892, Merriam, 1940) consists of a lower dolomite and quartzite member and an upper, massive dolomite with a combined thickness of 490 m (1605 ft) in the Specter Range (Burchfiel, 1964). The Devils Gate Limestone (Merriam, 1940) consists of more than 300 m (1000 ft) of blue-gray limestone and minor dolomite with sandstone or quartzite layers common in the upper part of the formation (Poole and others, 1967). The Devils Gate Limestone is of Middle and Late Devonian age (Nolan and others, 1956).

The Monte Cristo Limestone of Mississippian age (Hewett, 1931) outcrops in the Spring Mountains (Vincelette, 1964), where the unit consists of 300 m (1000 ft) of fossiliferous cherty limestone. Fossil studies indicate an Early Mississippian age for the unit (Cornwall, 1972).

The Pennsylvania Tippipah Limestone (Johnson and Hibbard, 1957) consists of 1100 m (3600 ft) of limestone and interlayered silty limestone. Fossil studies indicate an Early Pennsylvania age for the unit (Gordon and Poole, 1968).

Mesozoic Rocks

Mesozoic rocks, mainly intrusive igneous rocks of granitic composition, occur west of Death Valley. A relatively thin, southeast-trending band of Triassic marine sedimentary rocks and Jurassic-Triassic volcanic rocks crop out for a few miles along the southwest side of the Inyo Mountains. Isolated masses of metamorphosed sedimentary and volcanic rocks in the Coso Range also may be Mesozoic in age. Monolithic megabreccias of Mesozoic (?) or Tertiary (?) age are landslide masses composed almost entirely of dolomite and limestone from the Bonanza King Formation (Longwell, 1951; Kupfer, 1960). The largest is 3 km (2 mi) long and 1.5 km (1 mi) wide (Cornwall, 1972).

Tertiary Rocks

The Tertiary rocks comprise intrusive and extrusive igneous rocks and nonmarine sedimentary rocks. Intrusive igneous rocks in the form of small plutons occur in the southern part of the Greenwater Range, the Black Mountains, and in the Panamint Range.

Extrusive and associated shallow intrusive rocks are common throughout the area of the Death Valley quadrangle. These rocks comprise a series of flows and pyroclastic rocks of probable early to mid-Tertiary age that are generally basic to intermediate in composition; a series of intrusive rocks, flows and pyroclastic rocks of middle-to-late Tertiary age that are intermediate-to-acidic in composition; and basalt and andesite flows of very late Tertiary age. Because age determinations of most igneous rocks in the area are moderately scarce, ages of these rocks are not well established everywhere. Ages determined by the potassium-argon method for nine samples of Tertiary volcanic rocks from the Black Mountains range from 5.3 to 8.0 Myr BP (Fleck, 1970). Extrusive rocks in the southern part of the Greenwater Range have ages of 7 to 8.8 Myr BP (R. E. Brake, personal communication, 1979). Intrusive rocks in the Black Mountains are 22 Myr BP (Drewes, 1963) and in the Greenwater Range are 18.8 Myr BP (Chesterman, 1973). Most Tertiary volcanic rocks appear to have formed in highland areas.

Tertiary sedimentary rocks are estimated to range in age from Oligocene to Pliocene. Fine-grained lacustrine strata were laid down in several Tertiary basins which, for the most part, continue to be reflected by the modern topography. No single basin seems to have a complete section of Tertiary sedimentary rocks. The lake beds are subordinate to the coarse fan debris that was deposited over a much larger area than were the lake beds.

Important Tertiary rocks include the Titus Canyon Formation, the Salyer Formation, the Wahmonie Formation, the Indian Trail Formation, and the Paintbrush Tuff. The Titus Canyon Formation (Stock and Bode, 1935) is the basal Tertiary Unit along the California-Nevada border in the Death Valley quadrangle. The unit consists of terrestrial conglomerate, sandstone, siltstone, limestone, and tuff with a thickness ranging up to 900 m (3000 ft) (Cornwall and Kleinhampl, 1964).

The Salyer and Wahmonie Formations (Poole and others, 1965) are combined in the geologic map (Plate 1-A). These formations consist of a sequence of lava flows, volcanic breccia, tuff, and tuffaceous sandstones. The Salyer and Wahmonie Formations yield K-Ar dates of 12.5 to 12.9 Myr BP (Late Miocene age; Cornwall, 1972).

The Indian Trail Formation (Poole and McKeown, 1962) consists of ash-flow and ash-fall tuffs with an average thickness of 300 m (1000 ft). K-Ar age dates are reported at 16 Myr BP for the base of the formation (Orkild, 1965).

The Paintbrush Tuff (Orkild, 1965) consists of a wide variety of volcanic rocks which may have erupted from a caldera located concentrically around Timber Mountain, which is a few miles north of the Death Valley quadrangle in the vicinity of Yucca Mountain, Nevada. K-Ar dates ranging from 12.4 to 13.2 Myr BP indicate a Late Miocene age for the unit (Kistler, 1968).

Tectonic History

The structural history of the Death Valley quadrangle involves Mesozoic thrust faulting and Cenozoic normal and strike-slip faulting. Mesozoic intrusion followed or accompanied most of the thrust faulting, and Cenozoic extrusion is related to normal faulting. Strike-slip faulting is related to normal faulting.

The thrust faults are most common in ranges west of Death Valley, but some are exposed in the Grapevine Mountains, Nopah Range, Bare Mountain, and the Spring Mountains. All of the thrust faults were formed during Mesozoic compression, resulting in west-to-east overthrusting.

The normal faults bound most mountain ranges and form closely-spaced swarms within most ranges. Movement along the faults occurred mostly during mid-Miocene time or later. Where clearly exposed, most of the faults dip steeply westward and flatten down-dip. Many of them were formed by differential extension of blocks on opposite sides of strikeslip faults. Where extension has been extreme, volcanism accompanied extension, and perhaps some intrusion occurred. Rotation of some of the ranges accompanied normal faulting.

The Las Vegas Valley shear zone crosses the northeastern corner of the Death Valley quadrangle, entering the quadrangle in Mercury Valley, extending northwest into an geoflexural bend (Longwell, 1960). Locke and others (1940) believe the Las Vegas Valley shear zone connects to the northwest with the Walker Lane structural zone. The Las Vegas Valley shear zone displays right-lateral displacement of 44 to 66 km (25 to 40 mi) (Stewart and others, 1968).

Volcanic subsidence areas or calderas are located in the vicinity of the Bullfrog Hills, Nevada. Portions of two large calderas lie along the northern border of the Death Valley quadrangle in the vicinity of Yucca Mountain. The caldera centered on the Bullfrog Hills is approximately 17 to 22 km (10 to 13 mi) and is elongated in a northeasterly direction (Cornwall and Kleinhampl, 1964).

The large calderas associated with Timber Mountain (a few miles north of the Death Valley quadrangle) are overlapping, have an overall measurement of 25 by 33 km (15 by 20 mi) and are elongated northwest (Christiansen and others, 1965). The caldera at the Bullfrog Hills and those at Timber Mountain appear to have an age of about 11.0 to 12.4 Myr BP (Cornwall, 1972).

Mineral Occurrences

Uranium

Uranium-bearing minerals are not known to occur in abundance in the area of the Death Valley quadrangle, and published information is lacking on the few known occurrences. The principal uranium occurrences are in Tertiary sedimentary rocks in the Coso Range, in sedimentary rocks of the Kingston Peak Formation in the Panamint Range, and in the Bullfrog Hills near Beatty, Nevada (Troxel et al., 1957). Most of the granitic rocks within the limits of the Death Valley quadrangle have, at best, sparse pegmatite dikes. The basal conglomerate of the Precambrian Crystal Spring Formation may be a likely unit to seek radiometric refractory heavy minerals.

Beal (1978) reports three uranium claims staked during the period of 1976 and 1977 in the Death Valley quadrangle. These are the Ontario Prospect, located in Section 6, Township T 21 S, Range R 38 E, the Coso Claims located in Township T 20 S, Range R 37 E, and the Coso Range Claims located in Township T 19 S, Range R 37 E.

Other Minerals

A wide variety of both metallic and nonmetallic minerals and commercial rock materials occur or have been mined from deposits that lie within the limits of the area encompassed by the Death Valley 1° x 2° NTMS quadrangle (Plate 1-B). Those metals that have been of most economic significance (in approximate order of value) are lead, gold, silver, tungsten, zinc, antimony, and iron. The nonmetallic and commercial rock materials (again in approximate order of value) are borate minerals, saline minerals, talc, volcanic rocks, and carbonate rocks (Norman and Stewart, 1951).

Sulfide minerals and the oxide minerals derived from them have been the principal sources of antimony, copper, lead, silver, and zinc. Most of the economic deposits and lesser occurrences of these metals lie within a belt about 17 km (10 mi) wide that extends from the southern part of the Inyo Mountains southeastward to Galena Canyon on the east side of the Panamint Range. These deposits occur chiefly in Paleozoic carbonate host rocks.

Tungsten occurs in sedimentary strata adjacent to granitic rocks in the Panamint Range, Hunter Mountain, and the Inyo Mountains. The principal tungsten mineral is scheelite, which occurs both in disseminated form and in veins. The known occurrences of tungsten mineralization lie along the northeast margin of the belt of sulfide minerals.

Saline minerals, including borates, are associated mainly with Cenozoic lake-bed deposits. They occur at Owens Lake (soda), Saline Valley (salt), Furnace Creek Wash (borates), Death Valley (borates and salt), and near Shoshone (borates).

The principal areas of gold mineralization are in the Funeral Mountains, Panamint Range, Inyo Mountains, the Argus Range, and the area surrounding Rhyolite, Nevada. The gold deposits in California occur mainly in or adjacent to the northwest-trending belt of sulfide minerals, where it is usually found in quartz veins either in Mesozoic granitic intrusive rocks or in adjoining sedimentary rocks. At Rhyolite, Nevada, the gold occurs in Tertiary volcanic rocks.

Radiometric Age Determinations

Radiometric age determinations from the Death Valley quadrangle are presented in Table 1 and keyed to locations on Plate 1-B. A number of age dates are concentrated in the vicinity of the Nevada Test Site where intense geologic studies were made in support of nuclear armament testing.

Table 1

Radiometric Age Determinations from the Death Valley Quadrangle

<u>Site*</u>	<u>Age**</u>	<u>Rock Type</u>	<u>Mineral</u>	<u>Formation</u>
1	12.4(0.4)	Tuff	Biotite	Paintbrush Tuff
2	19.4(0.9)	Rhyolite	Sanidine	
3	22.8(1.3)	Tuff	Sanidine	
4	11.3(0.4)	Rhyolite	Biotite	
5a	11.6(0.4)	Tuff	Biotite	Tuff of Transvaal
5b	11.2(0.3)	Tuff	Sanidine	Tuff of Transvaal
6a	12.6(1.1)	Tuff	Feldspar	Paintbrush Tuff
6b	11.3(1.1)	Tuff	Feldspar	Tuff of Transvaal
7a	12.7(0.6)	Tuff	Biotite	Chocolate Mtn Tuff
7b	12.5(0.6)	Tuff	Feldspar	Chocolate Mtn Tuff
8a	13.1(0.4)	Tuff	Biotite	Crater Flat Tuff
8b	12.9(0.4)	Tuff	Biotite	Crater Flat Tuff
9a	13.8(0.4)	Tuff	Biotite	Crater Flat Tuff
9b	14.1(0.4)	Tuff	Biotite	Crater Flat Tuff
10	2.0(0.6)	Basalt	Whole Rock	
11	13.2(0.4)	Tuff	Biotite	Paintbrush Tuff
12	15.0(0.6)	Tuff	Biotite	
13	13.4(0.4)	Rhyolite	Biotite	Calico Hills Rhyolite
14	10.4(0.3)	Tuff	Sanidine	Timber Mtn Tuff
15	10.5(0.3)	Tuff	Sanidine	Timber Mtn Tuff
16a	10.8(0.3)	Tuff	Sanidine	Timber Mtn Tuff
16b	10.8(0.5)	Tuff	Sanidine	Timber Mtn Tuff

Table 1. (continued)

<u>Site*</u>	<u>Age**</u>	<u>Rock Type</u>	<u>Mineral</u>	<u>Formation</u>
17	10.9(0.4)	Tuff	Biotite	Timber Mtn Tuff
18	12.4(0.5)	Tuff	Biotite	Paintbrush Tuff
19a	13.3(0.4)	Tuff	Biotite	Paintbrush Tuff
19b	12.8(0.4)	Tuff	Feldspar	Paintbrush Tuff
20a	12.1(0.4)	Tuff	Biotite	Paintbrush Tuff
20b	13.0(0.3)	Tuff	Feldspar	Paintbrush Tuff
21	12.9(0.4)	Diorite	Biotite	Wahmonie Fm.
22	12.5(0.4)	Diorite	Biotite	Wahmonie Fm.
23	162.6	Granodiorite	Hornblende	

* Keyed to Plate 1-B.

** Age reported as Myr BP as determined by the K-Ar ratio; number in parentheses is the ± value of uncertainty (Marvin and others, 1973).

HYDROLOGY

Climate

The Death Valley 1° x 2° NTMS quadrangle area is hot and dry, having hot summers and mild winters. The average July temperature is about 32°C; and the average January temperature is about 9°C. The higher sections in the western part of the Death Valley quadrangle average about 6°C less, both summer and winter. The small amount of rainfall is fairly evenly distributed, ranging from about 50 mm in Death Valley to about 130 mm in the northwestern section. The area has almost no rainfall during the summer months (NOAA, 1977). Precipitation data for the months in which field sampling took place are presented in Table 2.

Table 2

Precipitation at Selected Weather Stations in the Death Valley 1° x 2° NTMS Quadrangle

Weather Station and Elevation, m	Average Monthly Precipitation, mm											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Death Valley -59.1	5.08	7.37	3.56	4.06	1.52	0.762	3.56	2.79	2.54	1.78	7.11	5.33
Independence 1204	30.2	22.6	7.11	8.64	3.30	1.52	3.81	3.30	3.81	5.59	17.5	30.5
Trona 516.6	18.0	17.8	11.2	5.59	1.52	1.52	3.56	6.35	4.32	3.30	8.13	10.2

Geography

The Death Valley quadrangle area is a good example of the topography of the Basin and Range Province. The contrast in slope between the valley floors and the flanking ridges is striking, and most of the valleys contain playas (Winograd and Thordarsen, 1975). Block-faulting during Pliocene and Pleistocene time has resulted in distinctive grabens, or down-faulted, trough-like valleys. The valleys do not appear to be filled with alluvium to the extent that other valleys are in other parts of the Basin and Range Province. Evidence of the down-faulting and incomplete filling of the valleys is indicated in Death Valley, where an extensive zone of land surface is below sea level. Pediments are scarce in the Nevada part of the map area.

A variety of Paleozoic rocks and Tertiary volcanic rocks make up the block mountains. The topographic relief between the north-trending mountain blocks and the intervening valleys is considerable. Peaks of Inyo Mountain in the northwest area rise to altitudes greater than 3200 m, whereas altitudes in the Saline Valley below are less than 400 m. The eastward sides of the mountain ranges tend to have slightly less topographic relief and have little or no vegetation.

During more humid Pleistocene time, several closed basins contained lakes. Evidence exists of the presence of Lake Manly drowning much of Death Valley during Pleistocene time (Thornbury, 1965). A century ago Owens Lake, at the extreme western part of the Death Valley quadrangle, had an area covering 300 km² (Thomas and Phoenix, 1976), but diversion of water for human consumption in areas draining to it has now caused it to be an artificial playa. Playas and alkali flats are common in the lower parts of several basins.

There are no agricultural activities in the area.

The population of the area is virtually zero (U. S. Bureau of Census, 1970). There are a few National Park Service personnel in the Monument area to assist the thousands of visitors each year.

Drainage and Hydrology

Surface drainage is almost totally ephemeral. There are no through-flowing streams. Drainage from mountain slopes (as a result of infrequent storm runoff or as small springs) moves through gulches and gravel-filled channels (Miller, 1977). This runoff soon goes underground as it moves toward the centers of the basins.

Darwin Creek near Darwin has a 15-year average discharge of $0.43 \text{ ft}^3/\text{s}$ ($0.0012 \text{ m}^3/\text{s}$) and is the municipal supply for Darwin. Salt Creek near Stovepipe Wells has had some measurable flow since 1974; but in dry years, will probably have no flow. Amargoso River at Tecopa has a discharge (15-year average) of $3.13 \text{ ft}^3/\text{s}$ ($0.089 \text{ m}^3/\text{s}$), but often has no flow.

The consolidated rocks of the mountains are not sources of large supplies of water. Fractures near the land's surface are commonly dry; and fractures at greater depth are generally small and have little storage space for water. Springs from coves near the bases of mountains furnish some water supplies. Some deep circulation is thought to occur locally along some fracture and fault zones to the extent that water may move from a higher basin to a lower basin. Winograd and Thordarson (1975) postulate inter-basin movement of water through fractured rocks from Amargosa Desert to Death Valley, and from the Nevada Test Site Area (in the northeast corner of the quadrangle) to a series of springs in Ash Meadow. The full extent of movement of water at great depths in the consolidated rocks has not been determined.

An inventory of the groundwater in storage in the intermontane basins has been made (California Resources Agency, 1975). As much as 11 million acre-feet of water is in storage in the alluvium of Death Valley; but as is the case in all of the closed basins, most of the water is too highly mineralized for use. Much fresh groundwater occurs in the eastern third of the quadrangle where the basins are partly drained. Freshwater discharge is by irrigation wells, chiefly in the Ash Meadows area, and by springs in the same area. Considerable evaporation of groundwater occurs in low valley areas where the water table is near land surface; playas and salt flats characterize these discharge areas. Saline Valley, in the northwest corner of the Death Valley quadrangle, is a completely closed basin having a typical saltflat where groundwater is discharged by evaporation.

The quality of ground water has not been mapped. Potable, or less mineralized water, tends to occur near the borders of the valley. The more mineralized water occurs at greater depths or in the low center parts of the valleys. Brines occur in the vicinity of many playas, and the brines in Owens Lake contain 31 percent total solids, 10 times seawater salinity (Thomas and Phoenix, 1976). Groundwater temperatures range from about 10° to 30°C .

Most of the water from springs at higher elevations is of fairly good quality, having a dissolved solids content of less than 1000 mg/L . The major ions in these waters vary with location, but generally are sodium chlorides and sulfates or are calcium and sodium bicarbonates.

QUALITY ASSURANCE

Sample Collection

At least five percent of the sampled sites were routinely checked by SRL personnel (or by a specified subcontractor) to assure that the reported field locations were accurate. Based on these quality assurance checks, about 97% of the sampled sites were judged to be located as accurately as they could be plotted on county road maps. No evidence has been discovered of deliberate malfeasance by the sampling teams. Most sites that were mapped incorrectly were within 300 meters of their correct locations. Thus, the goals of a regional reconnaissance have not been compromised by mapping errors. Details of the quality assurance program are given elsewhere (SRL-138).

Analytical Standards

Sediment Standards SRL 2.2, 3.1, and 4.1 were analyzed along with NURE sediment samples primarily to provide precision data and routine systems checks for the analytical equipment and software. Results for standards analyzed with sediment samples are presented in Tables 3, 4, and 5.

Three DOE intersite comparison standards were analyzed, one after each 230 sediment samples. An independent quality assurance program based on these standards is conducted for DOE by Ames (Iowa) Laboratory (D'Silva, et al.).

Every batch of twenty-five resin samples includes a blank resin sample. Resin blanks are not reacted with water samples. Every fifth batch includes a resin sample that was reacted with a standard solution containing nominally 0.278 ppb uranium. Resins reacted with DOE standard solutions were analyzed along with samples. See D'Silva, et al. for Ames Laboratory summary.

FACTORS AFFECTING THE DATA

Approximately one-half of the Death Valley 1° x 2° NTMS quadrangle was not available for sampling. The areas involved were the Death Valley National Monument and the Nevada Test Site. The number of samples was, therefore, one-half of what would normally be collected. The areal distribution of the samples that were collected was extremely discontinuous. Interpretation of such data on a regional basis, a goal of the HSSR program, is difficult at best.

TABLE 3

Statistical Summary of Analytical Results for SRL 2.2
Sediment Standard

<u>Element</u>	<u>Number</u>	<u>Mean, ppm</u>	<u>Coefficient of Variation, %</u>	<u>Accepted Value, ppm</u>
U	294	21.8	5.8	22.2
Th	295	114	15.2	125
Hf	296	146	18.1	173
Al	289	7000	10.8	6500
Ce	288	534	15.5	614
Fe	273	6600	26.2	6700
Mn	266	275	15.8	300
Sc	297	3.41	26.8	3.9
Na	278	150	36.3	145
Ti	271	12,400	20.6	13,200
V	282	33.7	16.9	34.7
Dy	275	27.3	38.0	<22
Eu	175	2.74	35.4	2.5
La	276	279	17.5	301
Lu	253	2.55	13.2	2.9
Sm	280	47.7	38.2	51.3
Yb	294	15.9	21.3	18.2

TABLE 4

Statistical Summary of Analytical Results for SRL 3.1
Sediment Standard

<u>Element</u>	<u>Number</u>	<u>Mean, ppm</u>	<u>Coefficient of Variation, %</u>	<u>Accepted Value, ppm</u>
U	162	42.0	5.0	41.3
Th	163	166	15.5	162
Hf	25	2	104.8	7.4
Al	132	37,000	16.6	30,600
Ce	149	913	17.5	903
Fe	160	16,000	19.3	15,200
Mn	156	283	16.4	289
Sc	169	4.55	36.7	4.19
Na	167	1030	30.6	901
Ti	114	5870	15.9	6100
V	147	50.6	17.0	54.4
Dy	135	71.2	20.9	50*
Eu	151	3.90	29.3	3.86
La	153	470	16.4	443
Lu	152	4.78	17.3	4.4
Sm	159	68.8	36.6	69.2
Yb	161	33.1	18.6	29.9

* Only one laboratory reported dysprosium value.

TABLE 5

Statistical Summary of Analytical Results for SRL 4.1
Sediment Standard

<u>Element</u>	<u>Number</u>	<u>Mean, ppm</u>	<u>Coefficient of Variation, %</u>	<u>Accepted Value, ppm</u>
U	159	0.56	11.8	0.58
Th	93	2.4	42.3	2.1
Hf	122	3.2	46.4	4.4
Al	112	71,000	15.7	66,700
Ce	105	59	22.8	44
Fe	156	85,500	14.6	87,300
Mn	141	1850	16.8	1970
Sc	158	20	34.4	21
Na	153	18,800	15.6	16,100
Ti	91	26,700	14.6	25,200
V	136	259	16.1	273
Dy	16	7.3	29.2	<22
Eu	79	1.47	37.2	1.16
La	157	18.2	18.1	18.6
Lu	129	0.22	31.4	0.28
Sm	152	3.4	24.6	4.2
Yb	60	2.1	47.8	1.6

Ground water samples were available at only 62 sites. In an area of this size, these represent too little data on which to base any conclusions, so none are made. The sparse analytical data are presented only for information (Table 6).

A summary of neutron activation analyses (NAA) above analytical detection limits is summarized in Table 7. The tabulated values are for sediments of less than 149 micrometers (U.S. Std. 100-mesh) collected from small streams. Sieved fractions of other sizes, or rock or soil samples, even though collected in the same region, might yield entirely different values because of mineralogical variations.

RESULTS AND DISCUSSION OF THE DATA

The highest uranium concentrations are associated with sediments derived from granites and acidic volcanics in the southwestern part of the Death Valley 1° x 2° NTMS quadrangle. Symbol plot maps of log U/Hf and U/Th, Figures 4 and 5, respectively, effectively define areas of high uranium associated with monazite and zircon, respectively. Figure 6 is a plot of the areal distribution of log U/(Th+HF). This figure shows an area in the western part of the quadrangle with a cluster of high values. The absolute uranium concentrations are not the greatest there, but the uranium is most likely not associated with the most common resistate minerals.

The symbol plot maps (on microfiche) show that iron, scandium, and vanadium have similar areal distributions. Iron and vanadium appear to correlate very closely; V^{+3} has substituted for the Fe^{+3} ion in magmas. The presence of vanadium in the weathering environment may provide a means of forming insoluble uranyl vanadates.

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TABLE 6

Statistical Summary of Field Measurements and Elemental Analyses - Ground Water

Variable	n*	Measured Values			Log Mean [†] ($\Sigma \log_{10} x$) n	Log Std. [‡] Deviation	Standard Deviation + 1 σ
		Maximum**	Minimum [†]	Mean ^{††}			
pH	62	9.3	6.6	7.9			0.5
Conductivity	62	5000	260		2.9	0.3	
Alkalinity	62	15.0	1.40		0.52	0.22	
U	62	102.1	0.334		0.27	0.4	
Al	62	3012	114		2.7	0.4	
Br	45	6510	33.1		2.3	0.5	
Cl	59	356,200	10,900		4.6	0.4	
Dy	4	1.7	0.14		-0.50	0.4	
F	53	4109	45.0		2.7	0.5	
Mn	33	1884	42.6		2.3	0.4	
Na	61	835,000	16,590		4.8	0.4	
V	43	18.0	1.0		0.5	0.3	

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

** Elemental concentrations in ppb; conductivity in mhos/cm; alkalinity in meq/L.

† Minimum or detection limit.

†† Mean of values above detection limit.

‡ Log units.

TABLE 7

Statistical Summary of Field Measurements and Elemental Analyses - Sediment

Element	n*	Measured Values		Log Mean†† $\left[\frac{\sum \text{Log}_{10} x}{n} \right]$	Log. Std. Deviation
		Maximum**	Minimum†		
U	622	25.5	0.7	0.58	0.15
Th	501	177.0	5.0	1.15	0.24
Hf	551	53.0	1.0	0.95	0.27
Al	585	115,700	1100	4.78	0.17
Ce	477	223	16	1.88	0.21
Fe	564	221,200	2,300	4.41	0.27
Sc	596	31.0	0.10	0.78	0.30
Ti	368	16,200	400	3.52	0.29
V	558	540	10	1.82	0.30
Dy	178	182	1.0	0.52	0.35
Eu	278	6.7	0.5	0.19	0.22
La	367	197	11.0	1.64	0.19
Lu	216	1.7	0.4	-0.27	0.13
Sm	310	828	1.0	0.78	0.33
Yb	213	42.5	1.1	0.48	0.25

* Number of observations.

** Elemental concentrations in ppm.

† Minimum of detection limit.

†† Mean of values above detection limit.

DEATH VALLEY 1x2' Sheet
LOG U/HF In Sediments
551 Values Above D.L.

LOG U/HF				
• < -0.79	○ -0.65--0.61	○ -0.49--0.43	⊙ -0.28--0.18	● 0.08- 0.31
• -0.79--0.73	○ -0.61--0.54	○ -0.43--0.35	⊙ -0.18--0.07	◆ 0.31- 0.57
• -0.73--0.65	○ -0.54--0.49	○ -0.35--0.28	⊙ -0.07- 0.08	★ > 0.57

FIGURE 4. Areal Distribution of log (U/Hf) in Stream Sediment

DEATH VALLEY 1x2 Sheet
LOG U/TH In Sediments
501 Values Above D.L.

LOG U/TH

- < -1.65	o -0.76--0.73	○ -0.65--0.60	⊙ -0.48--0.38	● -0.21--0.13
-1.65--0.85	o -0.73--0.69	○ -0.60--0.54	⊙ -0.38--0.29	◆ -0.13--0.08
-0.85--0.76	○ -0.69--0.65	○ -0.54--0.48	⊙ -0.29--0.21	★ > -0.08

FIGURE 5. Areal Distribution of log (U/Th) in Stream Sediment

DEATH VALLEY 1x2' Sheet
LOG U/TH+HF In Sediments
475 Values Above D.L.

LOG U/TH+HF				
+ < -1.66	○ -0.98--0.95	○ -0.88--0.82	○ -0.71--0.65	● -0.51--0.44
× -1.66--1.03	○ -0.95--0.91	○ -0.82--0.77	○ -0.65--0.58	◆ -0.44--0.33
• -1.03--0.98	○ -0.91--0.88	○ -0.77--0.71	⊙ -0.58--0.51	★ > -0.33

FIGURE 6. Areal Distribution of log (U/Th+Hf) in Stream Sediment

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No.	Period	SRL Doc. No.	DOE-GJO
			Doc. No.*
1	January-March 1975	DPST-75-138-1	GJBX-5(76)
2	April-June 1975	DPST-75-138-2	GJBX-6(76)
3	July-September 1975	DPST-75-138-3	GJBX-7(76)
4	October-December 1975	DPST-75-138-4	GJBX-8(76)
5	January-March 1976	DPST-76-138-1	GJBX-17(76)
6	April-June 1976	DPST-76-138-2	GJBX-27(76)
7	July-September 1976	DPST-76-138-3	GJBX-63(76)
8	October-December 1976	DPST-76-138-4	GJBX-6(77)
9	January-March 1977	DPST-77-138-1	GJBX-35(77)
10	April-June 1977	DPST-77-138-2	GJBX-55(77)
11	July-September 1977	DPST-77-138-3	GJBX-90(77)
12	October-December 1977	DPST-77-138-4	GJBX-37(78)
13	January-March 1978	DPST-78-138-1	GJBX-66(78)
14	April-September 1978	DPST-78-138-2	GJBX-13(79)
15	October 1978-March 1979	DPST-79-138-1	GJBX-86(79)
16	April-September 1979	DPST-79-138-2	GJBX-160(79)

SRL-146, SRL-NURE Data Reports, E. I. du Pont de Nemours & Co. Savannah River Laboratory, Aiken, S.C.

No.	NTMS 1° x 2° Quadrangle	SRL Doc. No.	DOE-GJO
			Doc. No.*
1	Winston-Salem†	DPST-77-146-1	GJBX-66(77)
2	Spartanburg	DPST-77-146-2	GJBX-09(78)
3	Charlotte	DPST-78-146-1	GJBX-40(78)
4	Greenville	DPST-78-146-2	GJBX-47(78)
5	Winston-Salem††	DPST-78-146-3	GJBX-58(78)
6	Greensboro	DPST-78-146-4	GJBX-74(78)
7	Knoxville	DPST-78-146-5	GJBX-75(79)
8	Scranton	DPST-78-146-6	GJBX-02(79)
9	Athens	DPST-78-146-7	GJBX-20(79)
10	Harrisburg	DPST-79-146-1	GJBX-31(79)
11	Portland	DPST-79-146-2	GJBX-28(79)
12	Glens Falls	DPST-79-146-3	GJBX-44(79)
13	Augusta	DPST-79-146-4	GJBX-45(79)
14	Dyersburg	DPST-79-146-5	GJBX-58(79)
15	Poplar Bluff	DPST-79-146-6	GJBX-63(79)
16	Hartford	DPST-79-146-7	GJBX-94(79)
17	Williamsport	DPST-79-146-8	GJBX-152(79)
18	Newark	DPST-79-146-9	(in process)
19	Albany	DPST-79-146-10	GJBX-140(79)
20	Atlanta	DPST-79-146-11	GJBX-129(79)
21	Delta, Richfield	DPST-79-146-12	GJBX-161(79)
22	Walker Lake	DPST-79-146-13	(in process)
23	McDermitt, Wells	DPST-79-146-14	(in process)
24	Reno	DPST-79-146-15	(in process)
25	Death Valley	DPST-79-146-16	(this report)

† Sediment only. †† Ground water only.

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* DOE-GJO reports are available on microfiche from the Grand Junction Office, DOE, for \$6.00. Prepaid orders should be sent to Bendix Field Engineering Corporation, Technical Library, P.O. Box 1569, Grand Junction, CO 81501. Checks or money orders should be made out to Bendix Field Engineering Corporation, the operations contractor for DOE's Grand Junction Office.

APPENDIX A: Ground Water Reconnaissance Data

Key data reported for ground water sites include:

- water chemistry measurements (pH, conductivity, and alkalinity)
- information on well water source
- elemental analyses (in order of appearance in figures) for U, Br, Cl, F, He, Mn, Na, and V.

FIGURES (on microfiche):

Areal Distribution, Log Histograms, and Cumulative Frequency Plots for pH, Conductivity, Alkalinity, U, Br, Cl, F, He, Mn, V, Al, Dy, and Mg.

TABLES

A-1 Key Field Measurements and Analytical Data - Ground Water

A-2 Supplementary Field and Analytical Data - Ground Water
(on microfiche)

TABLE A-1. TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA -GROUND WATER--DEATH VALLEY SHEET
 J BR CL F MN NA AND V ELEMENTAL CONCENTRATIONS IN PPB.
 HE IN PPM IN 2 CC AIR GAF ABOVE 300 CC H2O. SCINT IN CPS.

SPL I.D.	DOE I.C.	PH	COND. UM/CM	AKMXD MEQ/L	U	SCINT	BR	CL	F	HE	MN	NA	V	U/COND X 1000
DVAA501R	06-36.8091-117.7677-4-53-000	8.4	1800	9.90	0.334	40	1460.0	297000	.	.	1883.6	353400	-0.1	0.19
DVAC501P	32-36.9872-116.7534-4-52-000	7.6	340	1.80	1.176	85	-7.6	28800	7	7.0	62.5	49530	-0.1	3.46
DVAC502P	32-36.9450-116.7954-4-53-000	7.9	260	1.40	1.838	100	-6.3	18900	5	7.3	46.2	44680	-0.1	7.07
DVAC503P	32-36.9961-116.8556-4-53-000	7.6	370	2.00	2.399	95	-7.6	40800	4	.	66.5	65270	-0.1	6.48
DVAF501P	32-36.9187-116.7434-4-52-000	6.6	600	4.00	1.099	55	-31.7	33000	.	6.5	188.8	106160	-0.1	1.83
DVAF502P	32-36.9423-116.7282-4-52-000	7.7	520	2.60	3.382	50	203.0	28200	2	22.0	91.9	83220	-0.1	6.50
DVAF503P	32-36.9766-116.7214-4-52-000	7.9	770	3.50	5.074	56	1725.8	46900	3	65.0	89.1	114700	-0.1	6.59
DVBF501R	32-36.5139-116.5115-4-52-000	7.2	570	3.90	1.970	42	109.6	29300	2	16.0	138.1	79340	-0.1	3.46
DVBF502P	32-36.5697-116.5426-4-52-000	8.1	296	2.30	1.321	52	-16.9	27900	2	7.2	56.7	53590	-0.1	4.46
DVBF503R	32-36.5719-116.5812-4-52-000	7.7	780	3.60	2.416	52	58.8	19600	4	15.0	129.5	97780	-0.1	3.10
DVBF504P	32-36.5695-116.6054-4-52-000	7.6	1120	3.60	2.682	49	371.4	104800	3	19.0	283.6	139750	-0.1	2.39
DVBC501P	32-36.5287-116.4194-4-52-000	8.1	825	3.70	0.753	60	111.1	28900	1	6.9	133.7	82800	-0.1	0.91
DVBC502R	32-36.5542-116.4743-4-52-000	8.3	360	3.40	0.691	54	99.3	14800	2	6.4	48.3	33110	-0.1	1.92
DVBC503P	32-36.5810-116.4714-4-52-000	8.2	395	2.40	0.869	40	53.1	14900	3	6.7	53.3	35850	-0.1	2.20
DVBC504P	32-36.6428-116.3985-4-52-000	8.4	550	2.20	1.529	45	161.6	28300	7	7.9	67.2	83580	-0.1	2.78
DVBH501R	32-36.5069-116.1793-4-52-000	7.9	590	2.60	1.434	26	3912.0	31100	6	12.0	202.2	57580	-0.1	2.43
DVBH502R	32-36.5294-116.1917-4-52-000	7.7	505	1.90	1.146	26	-111.3	36300	2	6.5	167.2	58640	-0.1	2.27
DVBH503P	32-36.5889-116.0498-4-52-000	9.3	700	3.10	1.329	26	-18.6	33600	1	7.1	98.9	98360	-0.1	1.90
DVCA501R	06-36.4861-117.8743-4-52-000	8.2	1600	9.60	0.457	38	316.8	158800	.	330.0	323.8	269900	-0.1	0.29
DVCA502R	06-36.4470-117.8472-4-52-000	8.8	1400	6.70	1.109	45	213.5	233100	.	100.0	201.0	383250	-0.1	0.79
DVCA503R	06-36.3307-117.9484-4-52-000	6.9	5000	14.40	1.049	33	-355.6	M	.	520.0	-167.2	M	-0.1	0.21
DVCA504R	06-36.2879-117.9961-4-52-000	6.0	508	1.90	3.778	34	96.6	95000	.	50.0	-11.2	74420	-0.1	7.44
DVCA505R	06-36.4650-117.8639-4-52-000	6.3	3100	15.00	0.645	29	1090.0	356200	.	520.0	870.0	681600	-0.1	0.21
DVCA506R	06-36.2643-117.9965-4-52-000	6.0	625	2.90	5.936	55	-68.0	58700	5	14.0	156.6	65340	-0.1	9.50
DVCB501R	06-36.2810-117.5371-4-52-000	7.8	430	1.90	3.278	60	98.7	32000	16	94.0	99.7	41200	-0.1	7.62
DVCB502R	06-36.2910-117.5373-4-52-000	7.9	450	2.10	3.560	55	-70.7	28900	13	7.5	-3.2	38820	-0.1	7.91
DVCB503R	06-36.3131-117.5319-4-52-000	7.7	470	2.00	2.660	60	-8.9	32100	11	4.8	-4.9	40830	-0.1	5.66
DVCG501R	06-36.3047-116.4128-4-52-000	6.6	1410	9.20	3.028	43	-49.8	62700	18	15.0	227.5	236400	-0.1	2.15
DVCG502R	32-36.3751-116.2740-4-52-000	6.8	750	4.60	1.659	25	261.0	35700	1	76.0	211.4	89960	-0.1	2.21
DVCG503R	32-36.4015-116.2707-4-52-000	6.6	780	4.70	4.972	21	145.0	33200	.	6.1	-4.1	88960	-0.1	6.37
DVCG504R	32-36.4281-116.3037-4-52-000	7.8	730	4.60	1.647	35	92.6	30700	2	18.0	-3.4	68760	-0.1	2.26
DVCG505R	32-36.4207-116.3226-4-52-000	7.7	770	4.80	1.698	19	144.7	31100	2	16.0	175.2	67700	-0.1	2.21
DVCG506R	32-36.4798-116.3265-4-52-000	7.6	650	4.70	1.358	26	-31.5	21900	.	24.0	168.7	56100	-0.1	2.09
DVCH501R	32-36.4760-116.0349-4-52-000	7.5	1600	4.20	0.528	45	388.2	70300	1	9.5	-9.9	124950	-0.1	0.33
DVCH502R	32-36.4573-116.0253-4-52-000	8.3	800	2.90	1.565	35	158.7	35700	.	6.5	-5.5	44520	-0.1	1.96
DVCH503R	32-36.4850-116.1570-4-52-000	7.6	2700	3.30	8.542	20	2802.0	340600	.	8.3	1236.2	464800	-0.1	3.16
DVCH504R	32-36.4606-116.1804-4-52-000	8.3	1200	8.80	2.252	25	152.1	114300	.	6.7	496.3	239650	-0.1	1.88
DVCH505R	32-36.3433-116.0291-4-52-000	8.1	550	1.70	1.625	30	179.9	45300	7	.	-14.6	41540	-0.1	2.95
DVCH506R	32-36.3195-116.0313-4-52-000	7.8	410	2.70	1.293	25	110.9	19900	3	9.9	-11.7	18770	-0.1	3.15
DVCH507R	32-36.2785-116.0140-4-52-000	7.5	700	2.90	0.973	25	426.0	59700	3	5.9	-4.5	32040	-0.1	1.39
DVDA501R	06-36.2290-117.9696-4-52-000	8.6	260	1.90	3.180	60	-112.7	15900	5	5.7	111.1	37230	-0.1	12.23
DVDA502R	06-36.0851-117.9528-4-52-000	7.8	900	3.60	6.520	35	205.0	84000	14	9.4	-10.9	101440	-0.1	7.24
DVDB501R	06-36.1530-117.6684-4-53-000	8.8	950	3.70	9.478	65	33.1	28400	.	6.6	-2.1	23090	-0.1	9.98
DVDC501R	06-36.2085-117.4571-4-52-000	6.7	1230	3.00	102.100	50	228.2	88200	.	5.6	525.5	89700	-0.1	83.01
DVDD501R	06-36.0323-117.0976-4-52-000	7.8	900	3.00	0.520	140	302.4	24000	1	6.9	-3.1	31700	-0.1	0.58
DVDD502R	06-36.0308-117.1655-4-52-000	8.1	950	3.30	3.056	100	791.8	28900	1	6.9	-5.5	36120	-0.1	3.22
DVDD503R	06-36.0407-117.2230-4-52-000	7.6	4300	2.80	3.650	90	658.2	M	.	6.7	866.0	742200	-0.1	0.85
DVDD504P	06-36.1216-117.2147-4-52-000	7.5	5000	4.00	4.008	90	-94.5	M	.	7.3	1663.2	835000	-0.1	0.80
DVDD505R	06-36.1932-117.1768-4-52-000	8.3	600	3.80	0.870	120	71.0	12500	.	6.1	-9.1	26340	-0.1	1.45
DVDD506P	06-36.2167-117.2017-4-52-000	8.3	1200	3.50	1.751	130	136.0	42300	4	6.0	-20.4	70050	-0.1	1.46
DVDD507P	06-36.1134-117.1500-4-52-000	8.4	700	3.70	1.862	100	63.3	14200	.	9.7	-4.1	25960	-0.1	2.66
DVDD508P	06-36.1152-117.1298-4-52-000	7.9	600	3.40	1.519	190	123.6	14400	1	5.9	-11.4	25840	-0.1	2.53
DVDD509P	06-36.0681-117.1543-4-52-000	8.3	1100	4.40	19.060	120	171.9	58000	.	.	-15.9	77600	-0.1	17.33
DVDD501P	32-36.2491-116.0054-4-52-000	7.8	488	2.60	0.938	18	-8.6	12300	2	7.5	-3.1	23560	-0.1	1.92

TABLE A-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA -GROUND WATER--DEATH VALLEY SHEET
 U BR CL F MN NA AND V ELEMENTAL CONCENTRATIONS IN PPB.
 HE IN PPM IN 2 CC AIR GAP ABOVE 300 CC H2O. SCINT IN CPS.

SPL I.D.	DOE I.D.	PH	COND. UM/CM	AKMXD MCO/L	U	SCINT	BR	CL	F	HE	MN	NA	V	U/COND X 1000
DVDH502R	32-36.2436-116.0511-4-52-000	7.4	1300	1.80	1.259	26	-35.9	233100	2	12.0	-16.0	77000	-0.1	0.97
DVDH503P	32-36.2436-116.0853-4-52-000	7.6	410	2.20	0.514	16	69.0	14300	1	280.0	-2.3	21650	-0.1	1.25
DVDH504R	32-36.2070-116.0230-4-52-000	7.3	980	2.00	3.270	20	137.9	45900	2	5.4	-12.3	48900	-0.1	3.34
DVDH505P	32-36.2059-116.0555-4-52-000	7.5	498	2.00	1.553	21	88.6	23100	2	6.0	-1.0	16590	-0.1	3.12
DVDH506P	32-36.2021-116.0863-4-52-000	7.6	447	2.60	1.024	24	74.9	10900	2	7.1	-0.3	17350	-0.1	2.29
DVDH507P	32-36.1710-116.0871-4-52-000	7.7	449	2.20	1.352	26	97.1	21400	5	5.6	-1.1	17550	-0.1	3.01
DVDH508P	32-36.2364-116.1592-4-52-000	6.7	361	2.10	1.349	33	111.0	15600	4	130.0	-7.2	26000	-0.1	3.74
DVDH509R	06-36.0229-116.1544-4-52-000	8.0	725	3.10	0.601	32	6510.0	57700	2	7.9	-8.7	76820	-0.1	0.83

APPENDIX B: Stream Sediment Reconnaissance Data

Key data reported for stream sediment sites include:

- elemental analyses (in order of appearance in figures) for U, Th, Hf, Al, Ce, Fe, Mn, Sc, Na, Ti, and V
- analyses for the supplemental elements Dy, Eu, La, Lu, Sm, and Yb
- sampling site descriptors (stream characteristics, vegetation, etc.)

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- B-2 Areal Distribution of Thorium Concentrations in Stream Sediment
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- B-5 Areal Distribution of Cerium Concentrations in Stream Sediment
- B-6 Areal Distribution of Iron Concentrations in Stream Sediment
- B-7 Areal Distribution of Manganese Concentrations in Stream Sediment
- B-8 Areal Distribution of Scandium Concentrations in Stream Sediment
- B-9 Areal Distribution of Sodium Concentrations in Stream Sediment
- B-10 Areal Distribution of Titanium Concentrations in Stream Sediment
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Figures on Microfiche:

Log Histograms and Cumulative Frequency Plots for U, Th, Hf, Al, Ce, Fe, Mn, Sc, Na, Ti, and V for Stream Sediments.

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TABLE B-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA - SEDIMENTS-- DEATH VALLEY SHEET

SRL I.D. *****	DOE I.D.	PH	COND. UM/CM	AKMXD MEQ/L	U PPM	TH PPM	HF PPM	SCINT CPS	CE PPM	FE PPM	MN PPM	NA PPM	SC PPM	TI PPM	V PPM
JVAA001S1	06-36.7825-117.9711-4-61-000	.	.	.	4.8	19	13	50	114	36500	M	22900	12.8	M	M
JVAA002S1	06-36.8551-117.9488-4-59-000	.	.	.	5.7	36	21	40	171	51900	610	23200	12.0	M	-10
JVAA003S1	06-36.8758-117.9727-4-61-000	.	.	.	4.8	23	16	5	133	29600	2040	29600	8.4	M	-30
JVAA004S1	06-36.8713-117.9318-4-59-000	.	.	.	5.2	23	9	5	92	40700	1800	-100	9.2	M	80
JVAA005S1	06-36.9132-117.9363-4-61-000	.	.	.	2.3	12	4	10	-20	23200	420	6600	7.8	2400	40
JVAA006S1	06-36.9233-117.9816-4-61-000	.	.	.	3.2	9	7	30	66	26400	730	11200	5.5	M	50
JVAA007S1	06-36.9451-117.9293-4-59-000	.	.	.	4.5	19	15	20	112	34900	870	17600	11.0	M	0
JVAA008S1	06-36.9527-117.9751-4-59-000	.	.	.	4.0	10	7	30	51	21100	1470	-100	6.1	5700	90
JVAA009S1	06-36.9777-117.9590-4-61-000	.	.	.	4.2	16	9	20	86	35500	670	16500	7.2	4300	50
JVAA010S1	06-36.9817-117.9268-4-61-000	.	.	.	3.9	20	9	30	117	21900	-10	100	3.7	M	70
JVAA011S1	06-36.8106-117.9319-4-61-000	.	.	.	5.9	22	12	50	166	65600	830	19600	10.9	4100	130
JVAA012S1	06-36.7782-117.9346-4-61-000	.	.	.	6.4	30	20	50	139	64700	660	19600	19.8	6800	240
JVAA013S1	06-36.7701-117.8461-4-59-000	.	.	.	8.2	43	22	50	220	91300	820	22100	6.5	2800	170
JVAA014S1	06-36.7645-117.8939-4-61-000	.	.	.	4.4	14	14	10	123	80800	20	-100	26.6	M	210
JVAA015S1	06-36.8118-117.8936-4-61-000	.	.	.	10.8	35	22	50	170	99300	820	19000	12.6	10500	260
JVAA016S1	06-36.8115-117.8351-4-61-000	.	.	.	3.9	17	0	35	-20	30700	390	18600	7.8	3100	-10
JVAA017S1	06-36.8359-117.8418-4-61-000	.	.	.	3.0	14	6	30	-20	30300	490	23700	4.6	M	40
JVAA018S1	06-36.8419-117.8856-4-61-000	.	.	.	5.1	24	13	35	95	39900	M	100	11.0	M	M
JVAA019S1	06-36.8700-117.8953-4-61-000	.	.	.	3.1	13	6	25	78	27700	450	11900	6.3	M	20
JVAA020S1	06-36.8820-117.8458-4-59-000	.	.	.	2.9	8	3	40	49	22300	420	12300	6.4	M	0
JVAA021S1	06-36.9128-117.8321-4-59-000	.	.	.	5.4	21	14	40	95	39100	660	20100	11.3	6400	110
JVAA022S1	06-36.9113-117.8858-4-61-000	.	.	.	3.1	12	0	30	93	26500	20	100	7.6	9700	90
JVAA023S1	06-36.9455-117.8842-4-61-000	.	.	.	5.8	31	13	35	180	46000	640	20200	8.3	M	70
JVAA024S1	06-36.9563-117.8450-4-59-000	.	.	.	5.4	24	17	40	124	46500	680	18600	2.9	M	200
JVAA025S1	06-36.9830-117.8342-4-61-000	.	.	.	4.5	20	11	30	117	39900	780	24500	8.4	4500	120
JVAA026S1	06-36.9782-117.8847-4-61-000	.	.	.	3.6	10	6	35	66	20700	-30	-100	6.5	M	100
JVAA027S1	06-36.9865-117.7956-4-61-000	.	.	.	4.8	21	10	30	129	40000	580	20100	6.6	M	80
JVAA028S1	06-36.9470-117.7937-4-59-000	.	.	.	3.3	17	11	35	115	37600	380	17200	10.7	M	-20
JVAA029S1	06-36.9122-117.7920-4-61-000	.	.	.	4.1	16	10	30	137	35800	690	24000	10.7	M	60
JVAA030S1	06-36.8736-117.7957-4-59-000	.	.	.	5.0	21	19	30	118	45000	-40	-100	13.3	M	110
JVAA031S1	06-36.8410-117.7957-4-59-000	.	.	.	5.0	26	10	40	149	48200	670	19100	13.4	M	90
JVAA032S1	06-36.8073-117.7947-4-61-000	.	.	.	3.7	15	10	20	108	44000	1350	20700	6.5	M	110
JVAA033S1	06-36.7695-117.8013-4-59-000	.	.	.	3.3	-4	2	30	98	30100	-40	-100	8.5	16200	100
JVAA034S1	06-36.7660-117.7531-4-61-000	.	.	.	5.0	27	10	30	115	44800	1280	25500	5.6	M	130
JVAA035S1	06-36.8091-117.7677-4-59-000	.	.	.	1.9	8	0	25	55	22700	2070	-100	1.9	2800	50
JVAA036S1	06-36.9920-117.7511-4-61-000	.	.	.	4.4	16	0	25	-20	37500	-80	19400	11.0	M	80
JVAA037S1	06-36.8853-117.7658-4-59-000	.	.	.	3.7	17	8	25	92	38400	M	-100	11.1	M	M
JVAA038S1	06-36.9185-117.7519-4-59-000	.	.	.	3.4	9	7	30	60	20500	1190	21900	5.6	4900	60
JVAA039S1	06-36.9530-117.7533-4-59-000	.	.	.	4.1	14	14	30	121	35400	M	-100	2.4	M	M
JVAB001S1	06-36.9751-117.7239-4-61-000	.	.	.	3.7	13	8	40	90	35000	1530	20300	5.9	M	110
JVAB002S1	06-36.9395-117.7236-4-61-000	.	.	.	5.3	24	19	45	143	37300	70	-100	11.0	M	90
JVAB003S1	06-36.9094-117.7320-4-59-000	.	.	.	4.6	15	12	40	96	33000	1200	19700	11.1	M	60
JVAB004S1	06-36.8697-117.7254-4-59-000	.	.	.	4.4	19	12	30	107	32900	M	-100	10.9	M	M
JVAB005S1	06-36.8389-117.7227-4-61-000	.	.	.	M	M	M	30	M	M	M	M	M	M	M
JVAB006S1	06-36.8085-117.7398-4-61-000	.	.	.	7.0	35	17	50	138	36700	M	23400	9.7	M	M
JVAB007S1	06-36.7687-117.7240-4-61-000	.	.	.	9.3	65	16	40	140	46500	1560	24800	6.2	M	90
JVAB008S1	06-36.7761-117.6858-4-59-000	.	.	.	4.3	15	10	25	118	37300	M	100	11.2	M	M
JVAB009S1	06-36.8138-117.6856-4-61-000	.	.	.	4.3	16	6	30	109	40900	1140	30200	8.8	M	70
JVAB010S1	06-36.8418-117.6757-4-61-000	.	.	.	4.0	16	9	15	101	35100	M	13900	11.2	9400	M
JVAB011S1	06-36.8757-117.6919-4-61-000	.	.	.	3.5	20	6	30	105	30500	1040	-100	5.8	M	80
JVAB012S1	06-36.9099-117.6857-4-61-000	.	.	.	4.1	10	7	40	56	19000	-40	21900	3.2	M	120
JVAB014S1	06-36.9713-117.6319-4-59-000	.	.	.	3.8	18	13	30	104	35100	1830	-100	10.7	2100	120
JVAB015S1	06-36.9451-117.6363-4-61-000	.	.	.	2.4	7	4	20	56	23800	1240	13100	5.6	3400	60
JVAB016S1	06-36.9240-117.6492-4-61-000	.	.	.	2.4	12	4	20	74	28600	1210	116900	3.7	M	40
JVAB017S1	06-36.8733-117.6392-4-59-000	.	.	.	4.2	12	6	50	62	22100	M	-100	9.1	M	M

TABLE B-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA - SEDIMENTS-- DEATH VALLEY SHEET

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SRL I.D.	DOE I.D.	PH	COND. UM/CM	AKMXD MEQ/L	U PPM	TH PPM	HF PPM	SCINT CPS	CE PPM	FE PPM	MN PPM	NA PPM	SC PPM	TI PPM	V PPM
JVAB018S1	06-36.8392-117.6418-4-61-000	.	.	.	3.5	14	5	35	82	24200	440	16300	6.7	M	90
JVAB019S1	06-36.8103-117.6569-4-59-000	.	.	.	4.0	15	11	50	89	34800	580	18100	10.4	3800	0
JVAB020S1	06-36.7655-117.6500-4-59-000	.	.	.	4.6	22	13	45	123	39300	1370	-100	15.2	M	90
JVAE001S1	32-36.9311-116.7723-4-59-000	.	.	.	4.3	-4	9	100	37	6500	130	3400	4.8	500	10
JVAE002S1	32-36.9432-116.7975-4-59-000	.	.	.	4.5	-4	5	110	80	10600	280	11700	4.5	2100	30
JVAE003S1	32-36.9573-116.7875-4-59-000	.	.	.	4.1	21	12	100	155	25300	560	15600	3.6	4300	60
JVAE004S1	32-36.9851-116.7534-4-59-000	.	.	.	3.3	11	1	85	47	14400	270	13300	3.0	1300	20
JVAE005S1	32-36.9048-116.8289-4-59-000	.	.	.	3.6	9	9	85	48	25200	660	15200	5.5	2300	50
JVAE006S1	32-36.8910-116.8548-4-59-000	.	.	.	3.4	-4	2	75	M	M	300	8100	-0.2	-250	20
JVAE007S1	32-36.9196-116.8606-4-59-000	.	.	.	3.6	7	6	95	33	20300	580	13300	1.0	2500	40
JVAE008S1	32-36.9607-116.8779-4-59-000	.	.	.	3.4	9	5	85	55	14300	420	10000	3.9	1800	30
JVAE009S1	32-36.9949-116.8584-4-59-000	.	.	.	3.1	12	5	95	50	23600	610	16300	6.2	-400	40
JVAE010S1	32-36.8810-116.8192-4-59-000	.	.	.	4.8	15	8	85	69	28400	M	-100	6.1	-250	M
JVAE011S1	32-36.8484-116.8606-4-59-000	.	.	.	3.3	-4	0	85	-20	2500	210	5600	1.8	1000	20
JVAE012S1	32-36.8068-116.8622-4-59-000	.	.	.	8.9	7	28	65	M	13800	220	4000	7.9	1400	20
JVAE013S1	32-36.7793-116.8394-4-59-000	.	.	.	6.6	21	21	65	93	36100	720	13600	1.6	5700	90
JVAE014S1	32-36.7713-116.8094-4-59-000	.	.	.	M	M	M	55	M	M	M	M	M	M	M
JVAE015S1	32-36.8074-116.8154-4-59-000	.	.	.	3.5	M	0	60	M	M	-90	93500	-0.2	7100	90
JVAE016S1	32-36.8442-116.8227-4-59-000	.	.	.	M	M	M	80	M	M	M	M	M	M	M
JVAE017S0	32-36.8691-116.7686-4-58-000	.	.	.	3.8	7	10	75	55	13600	250	5700	6.8	5600	60
JVAE018S1	32-36.8560-116.7584-4-59-000	.	.	.	4.1	23	23	70	216	33400	690	19300	7.3	M	40
JVAE019S1	32-36.7933-116.7678-4-59-000	.	.	.	3.8	-4	0	85	M	M	550	17700	0.9	M	0
JVAE020S1	32-36.7815-116.7885-4-59-000	.	.	.	4.1	10	14	60	54	22400	0	16000	7.0	3000	100
JVAE021S1	32-36.9126-116.7566-4-59-000	.	.	.	3.0	M	7	100	M	M	370	82500	3.0	M	50
JVAF001S1	32-36.9209-116.7441-4-59-000	.	.	.	3.0	M	0	55	M	M	M	108100	-0.5	-400	M
JVAF002S1	32-36.9405-116.7220-4-59-000	.	.	.	M	M	M	53	M	M	M	M	M	M	M
JVAF003S1	32-36.9744-116.7237-4-59-000	.	.	.	3.4	14	10	50	100	26300	600	17600	7.1	3500	40
JVAF004S1	32-36.9563-116.6967-4-59-000	.	.	.	4.0	7	8	60	M	16800	670	12000	4.5	-300	50
JVAF005S1	32-36.9672-116.6691-4-59-000	.	.	.	2.6	-4	0	100	30	5900	120	5800	1.6	M	0
JVAF006S1	32-36.9688-116.6406-4-59-000	.	.	.	3.3	12	14	70	98	22500	280	13100	1.2	M	-10
JVAF007S1	32-36.8934-116.7485-4-59-000	.	.	.	3.0	-4	0	36	M	M	340	11600	-0.1	3800	0
JVAF008S1	32-36.8959-116.7135-4-59-000	.	.	.	8.0	13	16	33	113	23900	310	10000	5.0	M	100
JVAF009S1	32-36.8809-116.6709-4-59-000	.	.	.	5.1	10	6	36	50	19800	270	10500	5.8	M	90
JVAF010S1	32-36.8674-116.6455-4-59-000	.	.	.	2.6	-4	0	25	M	7400	80	2900	1.9	M	0
JVAF011S1	32-36.8468-116.6313-4-59-000	.	.	.	3.0	-4	0	28	M	M	190	7900	-0.1	M	0
JVAF012S1	32-36.8093-116.6031-4-59-000	.	.	.	2.7	-4	0	38	M	M	340	15000	-0.4	M	50
JVAF013S1	32-36.7825-116.6119-4-59-000	.	.	.	2.4	13	7	50	67	17700	420	16300	3.4	-250	50
JVAF014S1	32-36.7582-116.6271-4-59-000	.	.	.	2.8	14	16	38	M	20500	330	12900	5.2	M	60
JVAF015S1	32-36.7751-116.6878-4-59-000	.	.	.	4.3	-4	16	54	M	M	370	11100	0.1	11600	110
JVAF016S1	32-36.8101-116.6986-4-59-000	.	.	.	2.0	-4	-1	20	22	6800	110	4100	1.9	M	40
JVAF017S1	32-36.8267-116.6724-4-59-000	.	.	.	1.8	5	0	11	33	10300	1180	4300	2.6	M	50
JVAF018S1	32-36.8080-116.7346-4-59-000	.	.	.	3.7	15	15	45	114	27700	480	13000	6.5	M	0
JVAF019S1	32-36.7733-116.7214-4-59-000	.	.	.	4.7	21	15	60	96	36900	550	15900	6.7	5500	80
JVAF020S1	32-36.8301-116.7440-4-59-000	.	.	.	2.8	9	6	42	49	26200	410	11700	9.2	M	110
JVAF021S1	32-36.7586-116.5821-4-59-000	.	.	.	2.8	12	9	54	62	11300	190	7800	2.7	M	40
JVAF022S1	32-36.7537-116.5358-4-59-000	.	.	.	3.5	13	5	55	72	7100	190	7100	3.2	M	80
JVAF023S1	32-36.8400-116.5839-4-59-000	.	.	.	4.4	5	13	62	101	17700	280	9000	4.6	M	60
JVAF024S1	32-36.8707-116.5491-4-59-000	.	.	.	3.7	14	9	62	69	20200	470	16900	6.2	M	100
JVAF025S1	32-36.8953-116.5296-4-59-000	.	.	.	3.0	17	7	46	101	24200	390	14900	6.0	M	60
JVAF026S1	32-36.8660-116.5777-4-59-000	.	.	.	3.9	-4	11	52	M	M	310	13900	3.1	M	50
JVAF027S1	32-36.9160-116.5618-4-59-000	.	.	.	3.4	19	.	49	102	27200	490	17100	7.8	M	40
JVAF028S1	32-36.9325-116.5902-4-59-000	.	.	.	3.6	10	7	50	63	16200	440	14800	4.3	M	70
JVAF029S1	32-36.9194-116.6438-4-59-000	.	.	.	2.5	M	7	38	M	M	240	7700	3.4	2700	30
JVAF030S1	32-36.9032-116.6626-4-59-000	.	.	.	3.2	14	9	30	93	22300	360	15800	6.2	M	50
JVAF031S1	32-36.9407-116.6388-4-59-000	.	.	.	2.9	-4	0	50	30	6200	130	4900	0.9	M	60

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TABLE B-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA - SEDIMENTS-- DEATH VALLEY SHEET

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SRL I.D. *****	DOE I.D.	PH	COND. UM/CM	AKMXD REQ/L	U PPM	TH PPM	HF PPM	SCINT CPS	CE PPM	FE PPM	MN PPM	NA PPM	SC PPM	TI PPM	V PPM
DVAF032S1	32-36.9387-116.5448-4-59-000	.	.	.	6.0	19	9	61	64	12000	300	10700	3.4	M	50
DVBA001S1	06-36.5888-117.9872-4-61-000	.	.	.	3.8	15	0	30	54	39700	2380	12900	9.6	M	60
DVBA002S1	06-36.5612-117.9901-4-61-000	.	.	.	1.9	11	5	35	-20	14300	340	25600	3.5	M	40
DVBA003S1	06-36.5634-117.9444-4-61-000	.	.	.	4.0	14	11	40	83	29100	640	17500	10.4	M	0
DVBA004S1	06-36.5923-117.9430-4-61-000	.	.	.	3.5	8	6	40	51	23500	1430	100	8.0	M	90
DVBA005S1	06-36.5219-117.9901-4- -000	.	.	.	M	M	M	30	M	M	M	M	M	M	M
DVBA006S1	06-36.5199-117.9378-4- -000	.	.	.	M	M	M	35	M	M	M	M	M	M	M
DVBA007S1	06-36.5252-117.8943-4-59-000	.	.	.	M	M	M	45	M	M	M	M	M	M	M
DVBA008S1	06-36.5528-117.8925-4-61-000	.	.	.	M	M	M	40	M	M	M	M	M	M	M
DVBA009S1	06-36.5551-117.8562-4-61-000	.	.	.	M	M	M	50	M	M	M	M	M	M	M
DVBA010S1	06-36.5158-117.8549-4-61-000	.	.	.	3.8	15	6	30	69	25100	1020	8800	5.6	M	80
DVBA011S1	06-36.6307-117.9919-4-61-000	.	.	.	4.2	15	12	30	91	28600	-80	-100	10.3	3700	60
DVBA012S1	06-36.6552-117.9873-4-61-000	.	.	.	4.0	15	10	30	90	34700	1780	18400	6.6	M	110
DVBA013S1	06-36.7013-117.9887-4-61-000	.	.	.	4.3	10	5	10	71	33100	1630	-100	8.4	M	190
DVBA014S1	06-36.7423-117.9923-4-59-000	.	.	.	5.3	23	6	50	94	37400	1670	18900	4.5	M	70
DVBA015S1	06-36.7315-117.9234-4-61-000	.	.	.	4.8	25	14	40	115	35900	1670	-100	11.3	4500	100
DVBA016S1	06-36.6991-117.8874-4-61-000	.	.	.	3.6	11	0	20	81	25300	1350	13600	7.7	M	40
DVBA017S1	06-36.6600-117.8549-4-61-000	.	.	.	5.6	19	14	40	111	52500	-20	17900	13.2	M	180
DVBA018S1	06-36.6528-117.8053-4-61-000	.	.	.	5.2	16	8	30	-20	32900	1440	9900	4.8	M	90
DVBA019S1	06-36.6311-117.7975-4-61-000	.	.	.	3.0	11	4	20	100	67900	2040	-100	8.2	3000	120
DVBA020S1	06-36.5542-117.8086-4-59-000	.	.	.	3.5	13	10	15	62	37900	M	-100	10.7	5200	M
DVBA021S1	06-36.5954-117.8109-4-59-000	.	.	.	2.7	11	5	30	68	28100	1280	13800	6.3	4000	60
DVBA022S1	06-36.6024-117.8487-4-59-000	.	.	.	3.8	18	13	35	94	35900	-40	17900	11.7	M	110
DVBA023S1	06-36.5923-117.8855-4-59-000	.	.	.	3.9	13	6	50	80	28700	1550	-100	5.8	M	80
DVBA024S1	06-36.6242-117.9267-4-59-000	.	.	.	3.9	18	10	50	107	42100	-30	-100	13.6	M	130
DVBA025S1	06-36.6319-117.8930-4-59-000	.	.	.	3.9	13	8	35	71	25300	1390	9900	5.1	M	60
DVBA026S1	06-36.6294-117.8382-4-59-000	.	.	.	6.4	22	15	60	112	51000	-50	16900	12.2	M	200
DVBA027S1	06-36.6967-117.8468-4-59-000	.	.	.	3.6	18	6	40	77	33100	1780	16500	6.4	2700	70
DVBA028S1	06-36.7296-117.8465-4-61-000	.	.	.	5.0	20	15	50	121	44700	-60	-100	12.2	M	170
DVBA029S1	06-36.7308-117.8079-4-59-000	.	.	.	2.8	11	5	40	80	28100	1580	-100	5.6	3000	70
DVBA030S1	06-36.6953-117.8051-4-59-000	.	.	.	3.3	13	6	25	63	30200	2110	48600	9.0	M	80
DVBA031S1	06-36.6634-117.7701-4-61-000	.	.	.	5.2	19	0	65	97	28000	1820	-100	6.0	M	40
DVBA032S1	06-36.6998-117.7686-4-61-000	.	.	.	3.8	14	0	40	-20	33900	-40	-100	9.8	M	120
DVBA033S1	06-36.7300-117.7692-4-59-000	.	.	.	5.0	25	10	40	130	46200	1540	22400	7.2	5500	90
DVBB001S1	06-36.7279-117.7245-4-61-000	.	.	.	5.0	15	13	30	85	34000	2060	18800	9.3	M	170
DVBB002S1	06-36.6967-117.7284-4-61-000	.	.	.	5.8	17	14	30	89	35300	1670	17000	6.0	M	120
DVBB003S1	06-36.6580-117.7268-4-61-000	.	.	.	8.9	36	12	55	140	45700	M	100	6.3	M	M
DVBB004S1	06-36.6354-117.7231-4-61-000	.	.	.	13.1	55	21	50	147	67700	1740	22400	6.6	M	140
DVBB005S1	06-36.6275-117.6840-4-61-000	.	.	.	5.6	24	12	50	104	36400	-10	21300	9.4	M	100
DVBB006S1	06-36.6648-117.6879-4-61-000	.	.	.	12.9	63	24	50	167	106400	1780	16400	7.6	2600	210
DVBB007S1	06-36.6978-117.6777-4-61-000	.	.	.	5.3	21	16	45	116	41700	2110	-100	10.4	M	120
DVBB008S1	06-36.7276-117.6758-4-61-000	.	.	.	3.8	18	6	40	109	36400	1510	15500	5.8	M	100
DVBB009S1	06-36.7262-117.6365-4-59-000	.	.	.	5.1	22	9	35	94	37600	1670	15100	7.2	11100	110
DVBB010S1	06-36.6954-117.6461-4-59-000	.	.	.	5.6	20	15	50	123	45400	-40	18300	2.9	M	170
DVBB011S1	06-36.6544-117.6450-4-61-000	.	.	.	3.9	9	7	30	51	17700	1730	12500	4.9	4400	70
DVBB012S1	06-36.6251-117.6449-4-61-000	.	.	.	M	M	M	50	M	M	M	M	M	M	M
DVBB013S1	06-36.6277-117.6022-4-61-000	.	.	.	M	M	M	55	M	M	M	M	M	M	M
DVBB014S1	06-36.6272-117.5483-4-61-000	.	.	.	M	M	M	50	M	M	M	M	M	M	M
DVBB015S1	06-36.5988-117.5461-4-59-000	.	.	.	M	M	M	40	M	M	M	M	M	M	M
DVBB016S1	06-36.5941-117.5177-4-61-000	.	.	.	3.5	17	13	40	82	34200	-80	-100	5.3	2700	110
DVBB017S1	06-36.5634-117.5184-4-61-000	.	.	.	5.2	16	8	35	82	39100	1630	14100	8.8	M	110
DVBB018S1	06-36.5428-117.5442-4-61-000	.	.	.	6.6	29	21	55	137	72700	-110	-100	13.1	7200	220
DVBB019S1	06-36.5196-117.5576-4-59-000	.	.	.	2.9	14	10	50	84	30300	1500	17000	6.3	M	70
DVBB020S1	06-36.5583-117.5961-4-59-000	.	.	.	4.6	21	17	30	101	50900	-50	-100	11.4	M	100
DVBB021S1	06-36.5197-117.5033-4-59-000	.	.	.	4.1	15	12	40	87	41500	2010	21800	12.6	M	140

TABLE B-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA - SEDIMENTS-- DEATH VALLEY SHEET

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SRL I.D. *****	DOE I.D.	PH	COND. UM/CM	AKMXD MEQ/L	U PPM	TH PPM	HF PPM	SCINT CPS	CE PPM	FE PPM	MN PPM	NA PPM	SC PPM	TI PPM	V PPM
JV88022S1	06-36.5169-117.6396-4-61-000	.	.	.	4.7	25	16	50	124	62000	M	-100	13.1	M	M
JV88023S1	06-36.5478-117.6502-4-61-000	.	.	.	3.7	13	5	45	139	44100	1690	-100	8.5	M	130
JV88024S1	06-36.5519-117.6848-4-61-000	.	.	.	3.5	9	6	30	42	17400	1930	-100	5.6	M	120
JV88025S1	06-36.5247-117.6880-4-61-000	.	.	.	3.1	11	4	24	52	20600	1440	10400	5.4	M	60
JV88026S1	06-36.5234-117.7419-4-61-000	.	.	.	3.9	14	.	30	86	27800	M	100	9.0	M	M
JV88027S1	06-36.5541-117.7260-4-61-000	.	.	.	3.7	15	9	30	76	28200	1380	13300	9.3	7900	60
JV88028S1	06-36.5944-117.7309-4-59-000	.	.	.	5.6	18	15	35	93	35200	1890	-100	10.8	2600	100
JV88029S1	06-36.5930-117.6792-4-59-000	.	.	.	3.7	16	12	40	-20	34100	1830	15000	5.8	M	60
JV88030S1	06-36.5969-117.6448-4-61-000	.	.	.	5.0	27	13	50	96	62000	M	-100	2.8	M	M
JV88031S1	06-36.5899-117.5993-4-61-000	.	.	.	5.4	21	13	50	125	57200	1890	19600	13.4	M	140
JV8E001S1	32-36.7258-116.7585-4-59-000	.	.	.	3.0	-4	4	60	M	9500	220	6200	3.0	1300	20
JV8E002S1	32-36.7423-116.8017-4-59-000	.	.	.	2.6	12	6	55	78	16400	530	15000	4.6	2300	30
JV8E003S1	32-36.6982-116.7587-4-59-000	.	.	.	8.3	32	35	45	223	49500	610	10700	13.0	5000	80
JV8F001S1	32-36.7420-116.6477-4-59-000	.	.	.	3.1	16	8	50	117	21200	630	20300	4.6	4000	60
JV8F002S1	32-36.7200-116.6118-4-59-000	.	.	.	3.2	-4	0	55	-20	11000	180	5000	1.9	900	10
JV8F003S1	32-36.7053-116.5878-4-59-000	.	.	.	3.5	-4	12	55	M	6800	290	11300	4.7	1800	20
JV8F004S1	32-36.6944-116.5679-4-59-000	.	.	.	3.1	8	7	60	51	15500	290	8700	4.7	1600	20
JV8F005S1	32-36.7169-116.5524-4-59-000	.	.	.	3.5	13	12	60	164	20500	590	20400	3.2	3500	50
JV8F006S1	32-36.6792-116.5381-4-59-000	.	.	.	3.2	-4	5	55	44	12100	480	15700	3.6	2500	30
JV8F007S1	32-36.6866-116.5123-4-59-000	.	.	.	3.4	9	9	50	53	17000	470	17800	4.5	-400	30
JV8F008S1	32-36.6612-116.5502-4-59-000	.	.	.	3.4	-4	4	65	32	9100	150	4500	0.7	700	10
JV8F009S1	32-36.6303-116.5424-4-59-000	.	.	.	3.5	6	10	70	50	5800	160	5400	4.8	800	10
JV8F010S1	32-36.6337-116.5172-4-59-000	.	.	.	3.6	18	3	60	195	20100	550	14000	5.0	3900	60
JV8F011S1	32-36.7203-116.6741-4-59-000	.	.	.	3.7	13	9	70	93	22700	580	15700	7.0	-500	40
JV8F012S1	32-36.6933-116.6877-4-59-000	.	.	.	3.6	15	11	65	97	23900	370	10200	3.8	2100	30
JV8F013S1	32-36.7283-116.7306-4-59-000	.	.	.	3.6	M	2	70	M	M	-50	89800	-0.4	M	90
JV8F014S1	32-36.6960-116.7225-4-59-000	.	.	.	2.9	M	-1	.	M	M	M	76300	-0.5	M	M
JV8F015S1	32-36.6654-116.7289-4-59-000	.	.	.	4.9	16	15	50	98	29500	390	11700	6.5	3300	100
JV8F016S1	32-36.6518-116.6839-4-59-000	.	.	.	3.7	10	10	60	67	20800	500	10800	5.3	M	40
JV8F017S1	32-36.6274-116.6886-4-59-000	.	.	.	5.1	10	16	60	M	16600	300	7900	6.4	M	60
JV8F018S1	32-36.6125-116.6568-4-59-000	.	.	.	4.5	-4	5	50	23	12700	160	3900	3.2	M	130
JV8F019S1	32-36.5634-116.5069-4-59-000	.	.	.	3.2	M	14	48	36	8300	250	4800	1.6	M	0
JV8F020S1	32-36.5271-116.5068-4-59-000	.	.	.	M	M	M	60	M	M	M	M	M	M	M
JV8F021S1	32-36.5980-116.5071-4-59-000	.	.	.	M	M	M	48	M	M	M	M	M	M	M
JV8F022S1	32-36.5987-116.5414-4-59-000	.	.	.	M	M	M	49	M	M	M	M	M	M	M
JV8F023S1	32-36.5560-116.5433-4-59-000	.	.	.	M	M	M	50	M	M	M	M	M	M	M
JV8F024S1	32-36.5693-116.5784-4-59-000	.	.	.	4.1	9	8	58	53	13800	0	6400	5.5	-250	10
JV8F025S1	32-36.5710-116.6046-4-59-000	.	.	.	3.4	-4	6	49	47	9100	200	6000	2.6	800	10
JV8F026S1	32-36.6954-116.6520-4-59-000	.	.	.	3.6	-4	12	75	M	M	330	9100	5.0	6600	30
JV8F027S1	32-36.6697-116.6208-4-59-000	.	.	.	3.5	9	6	55	156	13400	0	9400	0.6	-250	20
JV8F028S1	32-36.6567-116.6133-4-59-000	.	.	.	4.3	-4	12	60	-20	4300	0	10600	4.0	2600	80
JV8F029S1	32-36.6288-116.5996-4-59-000	.	.	.	3.7	-4	8	60	59	9500	460	13000	1.5	2700	40
JV8F030S1	32-36.5896-116.6274-4-59-000	.	.	.	4.3	-4	14	55	-20	12400	0	8400	7.1	5400	40
JV8F031S1	32-36.5215-116.5540-4-59-000	.	.	.	3.9	12	13	60	91	19500	530	16300	5.3	2800	30
JV8G001S1	32-36.5261-116.4201-4-59-000	.	.	.	3.0	14	9	60	94	17100	0	10500	4.3	2400	30
JV8G002S1	32-36.5250-116.4587-4-59-000	.	.	.	3.2	9	8	58	51	12600	760	11100	3.0	3100	40
JV8G003S1	32-36.5247-116.3830-4-59-000	.	.	.	2.9	-4	8	60	48	13300	420	11600	5.1	2600	40
JV8G004S1	32-36.5564-116.3395-4-59-000	.	.	.	2.9	9	18	46	105	23400	600	18300	4.7	4400	50
JV8G005S1	32-36.5849-116.3252-4-59-000	.	.	.	2.8	12	12	46	80	21400	0	13200	6.1	-300	60
JV8G006S1	32-36.5671-116.3025-4-59-000	.	.	.	3.9	M	15	44	M	M	730	16900	4.7	2200	30
JV8G007S1	32-36.5517-116.2627-4-59-000	.	.	.	3.0	-4	3	43	21	7100	0	3600	2.0	-250	10
JV8G008S1	32-36.5338-116.2721-4-59-000	.	.	.	3.1	M	15	45	M	9100	190	5500	5.9	1400	30
JV8G009S1	32-36.5091-116.2980-4-59-000	.	.	.	3.3	15	19	42	113	22400	460	14700	7.2	3600	50
JV8G010S1	32-36.5303-116.3599-4-59-000	.	.	.	2.7	12	14	36	114	13300	520	13400	3.8	3100	60
JV8G011S1	32-36.5430-116.4025-4-59-000	.	.	.	3.3	13	10	40	73	23500	0	9900	6.3	3600	30

TABLE B-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA - SEDIMENTS-- DEATH VALLEY SHEET

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SRL I.D. *****	DOE I.D.	PH	COND. UM/CM	AKMXD MEQ/L	U PPM	TH PPM	HF PPM	SCINT CPS	CE PPM	FE PPM	MN PPM	NA PPM	SC PPM	TI PPM	V PPM
JVBG012S1	32-36.5462-116.4304-4-59-000	.	.	.	3.9	16	10	53	159	25200	500	15300	6.0	2800	40
JVBG013S1	32-36.5569-116.4718-4-59-000	.	.	.	3.3	M	0	45	M	M	130	3800	-0.2	500	10
JVBG014S1	32-36.5827-116.4727-4-59-000	.	.	.	3.4	-4	0	45	M	11100	370	10200	3.7	1960	30
JVBG015S1	32-36.6154-116.4949-4-59-000	.	.	.	3.7	22	20	55	179	29600	790	19000	4.1	4500	70
JVBG016S1	32-36.5858-116.4327-4-59-000	.	.	.	3.3	16	14	45	107	24500	490	15100	6.4	2500	40
JVBG017S1	32-36.5912-116.4051-4-59-000	.	.	.	3.1	140	3	50	-20	7000	140	5500	2.2	M	60
JVBG018S1	32-36.6278-116.4044-4-59-000	.	.	.	2.9	-4	2	50	-20	10100	130	5100	2.6	M	60
JVBG019S1	32-36.6278-116.4429-4-59-000	.	.	.	3.3	-4	11	48	27	6200	180	6900	4.8	M	80
JVBG020S1	32-36.6566-116.4375-4-59-000	.	.	.	3.8	21	18	42	107	31000	650	20300	6.2	4500	100
JVBG021S1	32-36.6790-116.4850-4-59-000	.	.	.	2.9	10	6	70	113	18900	240	10700	4.6	5000	50
JVBG022S1	32-36.6585-116.4729-4-59-000	.	.	.	3.4	15	13	73	117	21700	460	17400	5.4	M	0
JVBG023S1	32-36.6032-116.2552-4-59-000	.	.	.	3.2	10	15	33	43	21200	300	10700	5.0	3000	60
JVBG024S1	32-36.6633-116.4018-4-59-000	.	.	.	3.0	-4	0	64	30	7400	130	5200	2.4	1800	0
JVBG025S1	32-36.6331-116.3427-4-59-000	.	.	.	3.0	11	13	64	74	16100	190	6300	4.2	6700	40
JVBG026S1	32-36.6226-116.3004-4-59-000	.	.	.	2.9	15	13	65	130	28100	360	14500	7.4	M	70
JVBG027S1	32-36.6111-116.2722-4-59-000	.	.	.	3.1	16	11	60	108	28000	400	16600	5.6	M	60
JVBH001S1	32-36.6231-116.2290-4-59-000	.	.	.	2.7	13	2	26	91	19900	390	14400	6.5	M	70
JVBH002S1	32-36.6451-116.2099-4-59-000	.	.	.	2.8	-4	7	30	M	M	240	8800	4.5	M	40
JVBH003S1	32-36.6719-116.2031-4-59-000	.	.	.	2.4	110	0	28	M	9200	100	4100	2.2	6200	70
JVBH004S1	32-36.5917-116.2287-4-59-000	.	.	.	2.7	7	11	21	M	M	220	9000	4.3	10600	60
JVBH005S1	32-36.5749-116.1861-4-59-000	.	.	.	3.0	8	10	22	26	15100	320	10700	5.2	M	90
JVBH006S1	32-36.5177-116.1390-4-59-000	.	.	.	2.7	6	7	24	M	10300	140	4500	3.7	M	80
JVBH007S1	32-36.5110-116.1726-4-59-000	.	.	.	2.8	11	16	32	89	23900	340	10600	0.9	M	60
JVBH008S1	32-36.5516-116.1469-4-59-000	.	.	.	3.5	11	15	28	95	28700	330	12400	8.0	M	70
JVBH009S1	32-36.5452-116.1790-4-59-000	.	.	.	3.0	11	11	28	24	13000	190	5900	3.4	M	0
JVBH010S1	32-36.5284-116.2325-4-59-000	.	.	.	2.7	-4	10	20	M	M	230	11100	4.1	M	50
JVBH011S1	32-36.5536-116.2196-4-59-000	.	.	.	3.0	25	17	29	71	21800	360	14400	6.2	M	60
JVBH012S1	04-36.5602-116.0990-4-59-000	.	.	.	2.6	8	7	21	37	14900	210	6600	4.2	3000	30
JVBH013S1	32-36.5888-116.0497-4-59-000	.	.	.	2.7	12	10	26	101	29900	290	8700	6.3	M	30
JVBH014S1	32-36.5942-116.0089-4-59-000	.	.	.	3.6	14	14	26	100	28000	340	10800	1.6	8100	110
JVBH015S1	32-36.5234-116.1079-4-59-000	.	.	.	3.5	12	12	30	87	30800	390	12600	5.3	3600	60
JVBH016S1	32-36.6290-116.0100-4-59-000	.	.	.	2.1	M	0	20	M	M	140	5000	-0.3	M	40
JVBH017S1	32-36.6204-116.0306-4-59-000	.	.	.	2.3	152	8	18	53	15300	160	5400	4.9	3900	40
JVCA001S1	06-36.4942-117.8766-4-59-000	.	.	.	4.7	14	10	36	52	28100	440	18100	8.2	M	130
JVCA002S1	06-36.4752-117.8542-4-59-000	.	.	.	3.2	8	4	44	50	16900	450	14500	6.1	M	40
JVCA003S1	06-36.4743-117.8108-4-59-000	.	.	.	3.0	14	10	33	-20	35200	1210	13800	12.9	6900	120
JVCA004S1	06-36.4752-117.7897-4-59-000	.	.	.	5.0	6	4	45	38	19000	180	4600	7.8	M	120
JVCA005S1	06-36.4498-117.8434-4-59-000	.	.	.	4.1	M	2	37	M	M	130	5100	-0.3	M	80
JVCA006S1	06-36.4516-117.8110-4-59-000	.	.	.	4.1	-4	7	25	26	15100	220	6100	5.7	2600	50
JVCA007S1	06-36.4496-117.7781-4-59-000	.	.	.	3.1	6	4	27	25	17100	260	7600	6.4	M	140
JVCA008S1	06-36.4086-117.8467-4-59-000	.	.	.	4.3	9	11	35	60	23500	350	14500	5.4	M	70
JVCA009S1	06-36.3791-117.8817-4-59-000	.	.	.	6.2	22	20	40	82	30800	480	18600	7.6	M	100
JVCA010S1	06-36.3534-117.9070-4-59-000	.	.	.	5.6	7	10	42	37	15700	400	21900	4.7	4700	100
JVCA011S1	06-36.3347-117.9340-4-59-000	.	.	.	4.3	M	1	40	M	M	110	10700	0.5	2300	30
JVCA012S1	06-36.3178-117.9510-4-59-000	.	.	.	5.6	9	10	40	36	18900	910	14700	4.4	M	40
JVCA013S1	06-36.3036-117.9818-4-59-000	.	.	.	5.0	9	6	39	66	15500	320	28800	5.7	M	60
JVCA014S1	06-36.4115-117.8102-4-59-000	.	.	.	5.6	14	11	53	101	31700	520	23400	5.4	M	130
JVCA015S1	06-36.3757-117.8029-4-59-000	.	.	.	4.6	18	8	55	78	24600	-10	26400	7.5	M	120
JVCA016S1	06-36.3605-117.7775-4-59-000	.	.	.	7.5	-4	22	54	M	M	400	18900	6.3	9800	100
JVCA017S1	06-36.3391-117.7621-4-59-000	.	.	.	5.1	7	6	60	45	10500	240	9100	2.9	M	0
JVCA018S1	06-36.3059-117.9055-4-59-000	.	.	.	8.6	12	16	110	M	45300	580	17400	7.0	5800	100
JVCA019S1	06-36.2732-117.9828-4-59-000	.	.	.	4.1	-4	8	39	-20	2300	50	3000	0.8	-250	0
JVCA020S1	06-36.2780-117.9410-4-59-000	.	.	.	4.8	M	0	54	M	M	390	23200	-0.5	2500	40
JVCA021S1	06-36.2703-117.9091-4-59-000	.	.	.	25.5	11	14	250	56	10900	110	39700	3.4	2500	70
JVCA022S1	06-36.3694-117.8552-4-59-000	.	.	.	5.9	22	18	50	76	41100	700	18500	10.6	4300	90

TABLE B-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA - SEDIMENTS-- DEATH VALLEY SHEET

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SRL I.D. *****	DOE I.D.	PH	COND. UM/CM	AKMXD MEQ/L	U PPM	TH PPM	HF PPM	SCINT CPS	CE PPM	FE PPM	MN PPM	NA PPM	SC PPM	TI PPM	V PPM
JVCA023S1	06-36.3512-117.8349-4-59-000	.	.	.	5.8	-4	4	100	29	40500	2120	16100	16.6	4700	180
JVCA024S1	06-36.3385-117.8116-4-59-000	.	.	.	4.8	7	4	55	-20	17300	220	6200	4.0	1000	20
JVCA025S1	06-36.3081-117.7932-4-59-000	.	.	.	4.6	12	7	55	53	21500	550	14200	6.9	4600	60
JVCA026S1	06-36.3054-117.7672-4-59-000	.	.	.	4.4	15	10	42	-20	24400	600	15000	8.8	-400	80
JVCA027S1	06-36.2700-117.7653-4-59-000	.	.	.	3.5	5	6	49	M	18400	470	3600	6.1	-250	50
JVCB001S1	06-36.3343-117.7365-4-59-000	.	.	.	4.8	23	17	60	94	39300	570	15400	12.2	2600	70
JVCB002S1	06-36.3242-117.6953-4-59-000	.	.	.	5.0	18	10	65	82	35400	860	22800	7.8	4000	90
JVCB003S1	06-36.3151-117.6750-4-59-000	.	.	.	5.4	11	4	55	36	14100	240	6700	3.7	1000	20
JVCB004S1	06-36.3104-117.6494-4-59-000	.	.	.	3.5	-4	7	75	M	M	620	16400	6.1	4100	70
JVCB005S1	06-36.2700-117.5870-4-59-000	.	.	.	5.4	17	11	75	92	42700	670	11400	11.4	2800	60
JVCB006S1	06-36.2815-117.5358-4-59-000	.	.	.	3.9	17	9	60	112	39300	1020	24100	7.4	4300	120
JVCB007S1	06-36.3129-117.5319-4-59-000	.	.	.	6.6	17	11	55	49	23000	720	16200	1.9	3400	100
JVCB008S1	06-36.2977-117.5193-4-59-000	.	.	.	4.4	13	8	30	63	34200	610	12600	7.1	4600	150
JVCB009S1	06-36.3272-117.5130-4-59-000	.	.	.	4.6	7	4	40	21	14400	190	4700	4.1	800	20
JVCB010S1	06-36.3579-117.5275-4-59-000	.	.	.	4.1	11	6	35	47	26000	560	12300	6.8	3000	70
JVCB011S1	06-36.3506-117.5486-4-59-000	.	.	.	3.8	14	12	35	134	36000	670	14600	11.5	3700	80
JVCB012S1	06-36.3562-117.5750-4-59-000	.	.	.	4.5	18	10	30	102	35900	870	20800	7.8	4900	100
JVCB013S1	06-36.3797-117.5942-4-59-000	.	.	.	3.9	-4	0	30	M	M	400	9200	-0.6	2200	40
JVCB014S1	06-36.3776-117.6299-4-59-000	.	.	.	4.5	13	10	35	46	30200	670	13900	6.2	4000	120
JVCB015S1	06-36.4106-117.6341-4-59-000	.	.	.	5.4	-4	11	35	M	M	370	9700	-0.5	M	100
JVCB016S1	06-36.4099-117.6670-4-59-000	.	.	.	6.1	14	16	35	68	24200	450	10600	8.4	2700	50
JVCB017S1	06-36.3756-117.6762-4-59-000	.	.	.	5.6	-4	15	35	M	M	120	2900	9.1	-250	10
JVCB018S1	06-36.3066-117.6146-4-59-000	.	.	.	3.6	9	8	50	71	19800	440	11000	3.7	2900	70
JVCB019S1	06-36.3240-117.5974-4-59-000	.	.	.	4.0	-4	7	30	M	M	800	17700	9.1	-300	80
JVCB020S1	06-36.2652-117.6449-4-59-000	.	.	.	4.9	-4	17	60	M	M	450	9900	7.4	8900	80
JVCB021S1	06-36.2616-117.6851-4-59-000	.	.	.	5.0	21	13	75	94	45200	720	13900	12.5	3700	70
JVCB022S1	06-36.2734-117.7226-4-59-000	.	.	.	4.5	10	10	50	44	22200	580	10600	7.4	5100	80
JVCB023S1	06-36.2980-117.7415-4-59-000	.	.	.	4.7	10	13	35	53	29100	580	15100	6.9	3100	80
JVCB024S1	06-36.3380-117.6472-4-59-000	.	.	.	3.6	-4	2	35	M	3900	60	1700	5.0	-250	0
JVCB025S1	06-36.4382-117.6058-4-59-000	.	.	.	3.9	17	11	40	61	31500	650	13800	10.0	3600	70
JVCB026S2	06-36.4566-117.6241-4-59-000	.	.	.	5.5	20	12	35	73	45300	890	18900	8.5	5500	110
JVCB027S1	06-36.4862-117.6429-4-59-000	.	.	.	4.2	8	0	50	M	19900	280	7000	5.9	1600	40
JVCB028S1	06-36.4829-117.6097-4-59-000	.	.	.	4.2	16	13	30	103	42100	770	18100	12.7	5000	90
JVCB029S1	06-36.4457-117.6686-4-59-000	.	.	.	5.5	25	23	50	107	46700	860	17600	8.8	10300	120
JVCB030S1	06-36.4760-117.6875-4-59-000	.	.	.	5.0	8	11	35	45	21400	470	10000	6.3	3100	60
JVCB031S1	06-36.4879-117.7142-4-59-000	.	.	.	0.7	M	0	35	M	M	60	1200	-0.1	400	20
JVCB032S1	06-36.4182-117.7219-4-59-000	.	.	.	4.5	6	5	35	M	12100	200	7700	3.1	1000	20
JVCC001S1	06-36.3423-117.3887-4-59-000	.	.	.	3.7	10	11	30	75	30600	1210	7800	7.3	-250	70
JVCC002S1	06-36.3734-117.3929-4-59-000	.	.	.	3.2	10	9	30	40	34500	430	6700	1.4	3000	80
JVCC003S1	06-36.4128-117.4066-4-59-000	.	.	.	2.7	10	5	30	26	22900	600	11300	4.6	2800	60
JVCC004S1	06-36.4320-117.3915-4-59-000	.	.	.	1.2	-4	0	10	77	9400	490	3200	3.4	-250	20
JVCC005S1	06-36.3444-117.3521-4-59-000	.	.	.	3.9	-4	8	20	M	M	710	15100	7.0	3800	80
JVCC006S1	06-36.3470-117.3115-4-59-000	.	.	.	4.5	18	10	20	122	46300	890	18900	12.7	-300	110
JVCC007S1	06-36.3629-117.2887-4-59-000	.	.	.	2.5	-4	3	40	-20	27700	440	7500	14.4	-400	100
JVCC008S1	06-36.4008-117.2806-4-59-000	.	.	.	3.5	14	13	35	67	28800	820	14000	8.8	4000	80
JVCC009S1	06-36.3403-117.4232-4-59-000	.	.	.	5.9	18	13	45	39	28600	0	-100	6.8	5500	110
JVCC010S1	06-36.3405-117.4672-4-59-000	.	.	.	6.1	M	22	40	M	M	270	5100	8.0	1100	40
JVCC011S1	06-36.3002-117.3904-4-59-000	.	.	.	6.2	8	13	40	M	21000	330	6000	7.8	1700	50
JVCC012S1	06-36.2646-117.3587-4-59-000	.	.	.	4.4	6	.	45	M	17500	500	8700	5.5	2700	60
JVCC013S1	06-36.2955-117.4232-4-59-000	.	.	.	5.1	19	11	60	89	36200	710	15700	9.2	4100	90
JVCC014S1	06-36.2667-117.4256-4-59-000	.	.	.	3.1	5	0	55	M	10100	120	3300	2.5	500	10
JVCC015S1	06-36.2734-117.4705-4-59-000	.	.	.	2.2	-4	4	60	-20	5900	190	4100	3.9	900	30
JVCC016S1	06-36.2586-117.3028-4-59-000	.	.	.	4.1	8	8	80	118	39200	720	7700	10.2	4700	90
JVCC017S1	04-36.3892-117.3978-4-59-000	.	.	.	2.9	-4	3	25	M	18800	670	10700	6.2	-400	120
JVCF001S1	06-36.4867-116.5373-4-59-000	.	.	.	3.3	9	8	25	72	20800	410	15000	6.3	M	90

TABLE B-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA - SEDIMENTS-- DEATH VALLEY SHEET

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SRL I.D. *****	DOE I.D.	PH	COND. UM/CM	AKMXD MEQ/L	U PPM	TH PPM	HF PPM	SCINT CPS	CE PPM	FE PPM	MN PPM	NA PPM	SC PPM	TI PPM	V PPM
JVCF002SI	06-36.4675-116.5250-4-59-000	.	.	.	2.6	-4	7	30	M	M	350	12900	3.4	5200	30
JVCF003SI	06-36.4578-116.5368-4-59-000	.	.	.	2.7	21	4	25	51	17700	480	13200	1.5	M	20
JVCF004SI	06-36.4514-116.5021-4-59-000	.	.	.	3.6	10	5	25	49	12000	310	13000	4.7	M	50
JVCF005SI	06-36.4067-116.5069-4-59-000	.	.	.	4.0	5	5	25	M	8100	150	3700	1.0	6100	110
JVCF006SI	06-36.3895-116.5164-4-59-000	.	.	.	2.9	6	8	20	54	13300	230	8900	5.5	5600	20
JVCF007SI	06-36.3071-116.5170-4-59-000	.	.	.	3.0	7	1	30	74	33100	510	16600	10.2	4200	130
JVCF008SI	06-36.3254-116.5620-4-59-000	.	.	.	2.3	-4	5	20	M	M	280	9000	3.6	M	30
JVCF009SI	06-36.3152-116.5390-4-59-000	.	.	.	3.0	11	11	25	67	23600	430	11500	7.8	M	60
JVCF010SI	06-36.3401-116.5926-4-59-000	.	.	.	3.3	14	6	25	61	28700	470	13900	6.9	M	50
JVCF011SI	06-36.3514-116.6335-4-59-000	.	.	.	2.6	6	.	25	32	8100	130	4900	2.5	M	80
JVCF012SI	06-36.3620-116.651 -4-59-000	.	.	.	2.8	6	7	25	29	19200	210	5500	6.3	4600	50
JVCF013SI	06-36.3757-116.6727-4-59-000	.	.	.	2.3	-4	0	25	M	M	290	13000	-0.2	M	60
JVCG001SI	06-36.2666-116.434 -4-59-000	.	.	.	4.9	6	11	35	99	42100	570	10000	12.6	2400	60
JVCG002SI	06-36.2659-116.4638-4-59-000	.	.	.	3.4	8	9	35	M	30900	730	16100	9.0	4000	70
JVCG003SI	06-36.3044-116.4286-4-59-000	.	.	.	2.8	-4	2	24	16	8700	190	4400	1.2	900	20
JVCG004SI	06-36.3046-116.4745-4-59-000	.	.	.	3.1	-4	0	14	M	8600	320	7800	-0.3	1900	40
JVCG005SI	06-36.3451-116.4315-4-59-000	.	.	.	3.7	15	14	26	104	28300	750	15300	8.7	4300	80
JVCG006SI	06-36.3716-116.4205-4-59-000	.	.	.	3.0	7	4	38	65	18200	420	10400	4.8	2200	30
JVCG007SI	06-36.4044-116.4411-4-59-000	.	.	.	4.0	8	5	35	65	16500	460	22600	4.7	1500	30
JVCG008SI	06-36.4168-116.4728-4-59-000	.	.	.	3.2	-4	4	23	50	8900	140	3300	2.3	600	10
JVCG009SI	06-36.3904-116.4857-4-59-000	.	.	.	3.9	M	13	19	M	M	360	7500	4.4	2000	40
JVCG010SI	06-36.4418-116.4825-4-59-000	.	.	.	3.6	13	9	21	93	19700	490	16200	6.5	3100	50
JVCG011SI	32-36.4197-116.3952-4-59-000	.	.	.	3.2	10	15	46	86	19700	580	20200	4.3	3800	60
JVCG012SI	32-36.4395-116.4203-4-59-000	.	.	.	M	M	M	30	M	M	M	M	M	M	M
JVCG013SI	32-36.4535-116.4015-4-59-000	.	.	.	M	M	M	19	M	M	M	M	M	M	M
JVCG014SI	32-36.4875-116.3350-4-59-000	.	.	.	M	M	M	25	M	M	M	M	M	M	M
JVCG015SI	32-36.4927-116.4105-4-59-000	.	.	.	4.1	M	7	41	M	M	560	85100	3.7	M	50
JVCG016SI	32-36.4797-116.4448-4-59-000	.	.	.	3.6	-4	14	50	50	8800	0	4600	8.5	-250	10
JVCG017SI	32-36.4694-116.4688-4-59-000	.	.	.	4.1	12	11	53	93	18800	550	14900	5.4	4300	40
JVCG018SI	32-36.3103-116.3807-4-59-000	.	.	.	3.2	-4	0	64	19	6300	100	2900	1.2	1900	0
JVCG019SI	32-36.3313-116.3558-4-59-000	.	.	.	3.0	-4	11	41	55	10700	390	20200	4.3	4300	50
JVCG020SI	32-36.3140-116.3249-4-59-000	.	.	.	3.2	11	14	35	-20	21800	500	15700	5.9	4700	50
JVCG021SI	32-36.3489-116.3165-4-59-000	.	.	.	3.3	M	0	36	M	M	-10	96500	0.3	M	70
JVCG022SI	32-36.3410-116.2767-4-59-000	.	.	.	3.6	8	15	29	62	17800	270	8600	3.4	1400	20
JVCG023SI	32-36.3226-116.2511-4-59-000	.	.	.	2.7	5	5	23	32	11500	230	5100	3.6	5500	20
JVCG024SI	32-36.3750-116.2741-4-59-000	.	.	.	2.2	-4	7	25	-20	3100	80	5800	2.3	400	0
JVCG025SI	32-36.4015-116.2703-4-59-000	.	.	.	2.8	5	1	21	80	12100	310	13400	3.5	-250	30
JVCG026SI	32-36.3992-116.3003-4-59-000	.	.	.	3.7	6	7	24	17	10000	170	5400	3.0	900	20
JVCG027SI	32-36.3799-116.3021-4-59-000	.	.	.	2.0	-4	7	18	M	9600	230	13100	1.0	1700	20
JVCG028SI	32-36.4260-116.2911-4-59-000	.	.	.	3.4	5	11	17	-20	11700	410	12600	4.4	2300	30
JVCG029SI	32-36.4529-116.2607-4-59-000	.	.	.	3.6	5	10	21	33	9300	170	6000	3.5	1000	20
JVCG030SI	32-36.4243-116.3322-4-59-000	.	.	.	2.1	5	6	17	20	6700	190	9000	2.4	1000	20
JVCG031SI	32-36.4492-116.3343-4-59-000	.	.	.	2.2	10	18	28	125	12800	290	13200	2.9	-250	20
JVCG032SI	32-36.4788-116.3176-4-59-000	.	.	.	3.9	-4	0	26	M	6500	120	4900	2.1	600	10
JVCG033SI	32-36.4260-116.3694-4-59-000	.	.	.	2.8	-4	11	45	M	M	110	5900	2.8	600	10
JVCH001SI	32-36.4864-116.1123-4-59-000	.	.	.	4.4	21	19	30	146	39100	590	13700	11.2	-400	100
JVCH002SI	32-36.4799-116.0609-4-59-000	.	.	.	4.0	12	14	25	99	27000	500	11200	5.7	-250	50
JVCH003SI	32-36.4763-116.0363-4-59-000	.	.	.	4.1	5	4	45	M	12400	170	5000	4.3	1200	10
JVCH004SI	32-36.4503-116.0542-4-59-000	.	.	.	2.9	M	0	30	M	M	M	5000	0.0	-250	M
JVCH005SI	32-36.4571-116.0281-4-59-000	.	.	.	4.0	15	10	35	87	21900	410	8200	6.8	2600	40
JVCH006SI	32-36.4234-116.0618-4-59-000	.	.	.	3.4	-4	10	35	M	10900	1300	7200	5.5	-300	50
JVCH007SI	32-36.4287-116.0318-4-59-000	.	.	.	3.6	6	11	35	31	24300	480	10400	7.5	4400	40
JVCH008SI	32-36.4111-116.0925-4-59-000	.	.	.	2.8	7	8	55	M	27500	330	6700	7.4	2700	50
JVCH009SI	32-36.3764-116.0642-4-59-000	.	.	.	3.5	14	13	25	87	35300	530	14800	4.7	2700	100
JVCH010SI	32-36.4591-116.1087-4-59-000	.	.	.	3.7	13	1	25	85	22000	320	7700	6.4	1800	30

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TABLE B-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA - SEDIMENTS-- DEATH VALLEY SHEET

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SRL I.D. *****	DOE I.D.	PH	COND. UM/CM	AKMXD MEQ/L	U PPM	TH PPM	HF PPM	SCINT CPS	CE PPM	FE PPM	MN PPM	NA PPM	SC PPM	TI PPM	V PPM
JVCH011S1	32-36.4871-116.1555-4-59-000	.	.	.	3.1	7	9	20	66	22000	400	8500	4.9	2400	40
JVCH012S1	32-36.4907-116.1835-4-59-000	.	.	.	2.1	-4	1	30	-20	5100	110	3200	1.6	500	10
JVCH013S1	32-36.4787-116.2234-4-59-000	.	.	.	4.1	-4	0	30	0	M	390	9200	0.0	1900	50
JVCH014S1	32-36.4489-116.2366-4-59-000	.	.	.	2.4	11	0	25	100	11300	230	8500	4.1	1400	20
JVCH015S1	32-36.4172-116.2143-4-59-000	.	.	.	2.8	9	9	30	99	24700	530	102900	5.0	3200	60
JVCH016S1	32-36.4606-116.1805-4-59-000	.	.	.	2.2	-4	4	25	41	11500	230	8000	3.2	1400	20
JVCH017S1	32-36.4434-116.1573-4-59-000	.	.	.	4.2	13	12	30	114	26600	510	11800	6.0	5100	40
JVCH018S1	32-36.4258-116.1659-4-59-000	.	.	.	4.1	-4	0	30	M	M	150	3600	0.7	800	10
JVCH019S1	32-36.4239-116.1339-4-59-000	.	.	.	4.6	12	15	35	66	17300	300	6600	7.0	2300	40
JVCH020S1	32-36.3601-116.0939-4-59-000	.	.	.	2.5	8	6	30	51	17600	400	8800	5.0	2100	40
JVCH021S1	32-36.3501-116.1163-4-59-000	.	.	.	3.1	15	9	25	53	28200	640	13100	4.9	2700	60
JVCH022S1	32-36.3637-116.0354-4-59-000	.	.	.	3.1	M	0	30	M	M	330	7500	0.7	1900	30
JVCH023S1	32-36.3485-116.0492-4-59-000	.	.	.	3.9	7	14	20	M	23000	340	8600	4.0	2600	30
JVCH024S1	32-36.3374-116.0317-4-59-000	.	.	.	2.9	6	3	25	-20	7800	160	3900	2.6	900	10
JVCH025S1	32-36.3180-116.0324-4-59-000	.	.	.	2.8	-4	0	25	-20	8200	100	3600	1.6	3500	90
JVCH026S1	32-36.2631-116.0031-4-59-000	.	.	.	2.5	6	11	25	43	14700	220	7500	5.5	M	60
JVCH027S1	32-36.2643-116.0566-4-59-000	.	.	.	2.6	9	5	25	43	25400	540	8300	7.0	3600	50
JVCH028S1	32-36.2965-116.0599-4-59-000	.	.	.	2.5	-4	0	20	M	M	110	3800	-0.1	M	120
JVCH029S1	32-36.2875-116.0824-4-59-000	.	.	.	3.6	11	12	20	M	17000	200	4400	6.2	M	50
JVCH030S1	32-36.2653-116.1026-4-59-000	.	.	.	3.3	8	9	25	31	18700	320	10300	6.2	M	0
JVCH031S1	32-36.2753-116.1337-4-59-000	.	.	.	2.3	9	7	25	54	22800	340	11800	4.2	3600	50
JVCH032S1	32-36.2872-116.1550-4-59-000	.	.	.	3.1	7	5	25	34	15100	380	10800	4.8	M	-20
JVCH033S1	32-36.2681-116.2113-4-59-000	.	.	.	3.7	14	11	35	103	34400	380	11700	10.9	6600	70
JVCH034S1	32-36.2828-116.1855-4-59-000	.	.	.	2.5	5	8	20	-20	11900	140	4700	1.4	M	70
JVCH035S1	32-36.2997-116.1882-4-59-000	.	.	.	3.6	12	10	20	73	27200	430	11700	8.1	-300	70
JVCH036S1	32-36.3162-116.2120-4-59-000	.	.	.	3.6	9	8	20	30	24400	260	10100	6.1	5500	60
JVCH037S1	32-36.3384-116.2274-4-59-000	.	.	.	2.8	9	9	35	101	20800	330	11700	1.7	M	70
JVCH038S1	32-36.3655-116.2463-4-59-000	.	.	.	4.3	16	9	30	90	26000	340	11900	7.0	3300	50
JVCH039S1	32-36.3485-116.1944-4-59-000	.	.	.	2.7	5	6	20	20	4600	0	4400	2.7	M	50
JVCH040S1	32-36.3564-116.1709-4-59-000	.	.	.	3.5	6	9	28	64	15200	150	4200	5.8	15000	40
JVCH041S1	32-36.3626-116.1439-4-59-000	.	.	.	4.1	9	7	55	60	15000	310	8200	1.1	M	0
JVCH042S1	32-36.3457-116.1471-4-59-000	.	.	.	3.9	-4	12	35	M	M	400	12400	7.8	M	80
JVDA001S1	06-36.2309-117.9619-4-59-000	.	.	.	5.0	22	24	60	142	61900	1890	28000	13.3	M	140
JVDA002S1	06-36.2238-117.9357-4-59-000	.	.	.	4.0	12	13	60	93	31100	M	176300	9.0	M	M
JVDA003S1	06-36.2095-117.9186-4-59-000	.	.	.	4.8	15	8	55	73	19700	1550	26500	6.3	3400	70
JVDA004S1	06-36.2017-117.8933-4-59-000	.	.	.	3.5	6	7	60	49	21400	M	-100	6.2	5000	M
JVDA005S1	06-36.1856-117.8613-4-59-000	.	.	.	4.0	14	9	50	-20	46600	1660	23600	7.9	6500	120
JVDA006S1	06-36.1698-117.8590-4-59-000	.	.	.	4.6	17	18	55	95	47000	M	-100	15.9	M	M
JVDA007S1	06-36.1624-117.8827-4-59-000	.	.	.	2.6	9	11	50	74	48200	1970	21500	9.9	M	110
JVDA008S1	06-36.1467-117.8505-4-59-000	.	.	.	5.0	25	16	70	89	34500	M	-100	8.3	M	M
JVDA009S1	06-36.1358-117.9053-4-59-000	.	.	.	4.2	15	10	60	73	31500	1840	21100	9.6	M	70
JVDA010S1	06-36.1384-117.9489-4-59-000	.	.	.	3.9	12	3	65	63	31900	M	-100	12.1	M	M
JVDA011S1	06-36.0931-117.9619-4-59-000	.	.	.	3.8	20	8	50	98	56100	1720	27600	15.6	12300	160
JVDA012S1	06-36.0549-117.9382-4-59-000	.	.	.	3.9	16	18	50	100	54100	M	100	24.7	7800	M
JVDA013S1	06-36.0654-117.8839-4-59-000	.	.	.	4.0	18	14	50	100	46500	1420	22100	9.5	M	110
JVDA014S1	06-36.0880-117.8734-4-59-000	.	.	.	4.0	13	9	40	65	28800	-50	24000	9.4	2000	120
JVDA015S1	06-36.1013-117.8578-4-59-000	.	.	.	4.4	17	18	60	76	28100	1320	-100	6.8	M	40
JVDA016S1	06-36.0480-117.9758-4-59-000	.	.	.	5.3	15	18	45	76	45700	330	-100	19.5	M	0
JVDA017S1	06-36.0279-117.9697-4-59-000	.	.	.	4.1	13	18	50	104	56500	2170	16200	15.0	M	130
JVDA018S1	06-36.0229-117.9522-4-59-000	.	.	.	4.8	17	26	50	120	69200	M	-100	31.0	M	M
JVDA019S1	06-36.0853-117.9464-4-59-000	.	.	.	2.8	16	14	45	109	60400	M	25700	24.1	5200	M
JVDA020S1	06-36.1229-117.9727-4-59-000	.	.	.	2.9	14	13	35	97	72100	M	-100	27.7	M	M
JVDA021S1	06-36.1565-117.9771-4-59-000	.	.	.	2.4	13	8	35	109	57500	1630	20900	18.2	M	120
JVDA022S1	06-36.1883-117.9761-4-59-000	.	.	.	3.2	12	4	35	-20	36100	M	-100	1.9	M	M
JVDA023S1	06-36.2369-117.7516-4-59-000	.	.	.	3.6	18	16	42	84	50500	2160	18700	11.8	M	170

TABLE B-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA - SEDIMENTS-- DEATH VALLEY SHEET

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SRL I.D. *****	DOE I.D.	PH	COND. UM/CM	AKMXD MEQ/L	U PPM	TH PPM	HF PPM	SCINT CPS	CE PPM	FE PPM	MN PPM	NA PPM	SC PPM	TI PPM	V PPM
JVDA024S1	06-36.2189-117.8199-4-61-000	.	.	.	5.9	15	15	35	79	26100	1450	17200	8.4	M	80
JVDA025S1	06-36.2170-117.7774-4-59-000	.	.	.	3.9	12	15	40	79	57000	M	17000	16.2	1800	M
JVDA026S1	06-36.1882-117.7781-4-59-000	.	.	.	4.4	16	15	30	118	70900	1810	-100	9.2	M	110
JVDA027S1	06-36.1895-117.8112-4-61-000	.	.	.	3.7	17	6	50	73	53700	-20	12300	10.8	5300	100
JVDA028S1	06-36.1662-117.8257-4-59-000	.	.	.	3.5	14	7	40	98	33200	1540	12900	5.5	M	100
JVDA029S1	06-36.1555-117.7769-4-59-000	.	.	.	4.3	16	15	35	65	39400	M	19400	13.1	M	M
JVDA030S1	06-36.1275-117.7776-4-59-000	.	.	.	3.1	17	7	30	-20	42800	1560	15200	6.5	6600	80
JVDA031S1	06-36.1284-117.8088-4-61-000	.	.	.	5.5	25	3	55	88	44600	-40	17000	3.5	M	150
JVDA032S1	06-36.1048-117.8069-4-59-000	.	.	.	4.6	21	9	50	87	38800	1630	15400	9.1	4400	100
JVDA033S1	06-36.0970-117.8144-4-61-000	.	.	.	4.7	22	21	30	127	48000	2100	24200	16.9	6000	60
JVDA034S1	06-36.0962-117.7849-4-59-000	.	.	.	4.8	12	13	75	55	23600	1720	-100	8.0	M	30
JVDA035S1	06-36.0681-117.7791-4-61-000	.	.	.	4.2	21	18	40	91	55000	-60	17300	17.0	M	230
JVDA036S1	06-36.0838-117.8160-4-59-000	.	.	.	4.8	16	7	75	80	43100	1550	13700	10.8	5100	110
JVDA037S1	06-36.0416-117.8851-4-61-000	.	.	.	4.1	10	2	40	61	29200	M	22000	8.7	M	M
JVDA038S1	06-36.0395-117.8555-4-61-000	.	.	.	4.8	21	8	55	80	40600	1540	21800	12.9	5000	120
JVDA039S1	06-36.0106-117.8561-4-61-000	.	.	.	M	M	M	50	M	M	M	M	M	M	M
JVDA040S1	06-36.0089-117.8157-4-61-000	.	.	.	M	M	M	30	M	M	M	M	M	M	M
JVDA041S1	06-36.0092-117.7874-4-61-000	.	.	.	M	M	M	60	M	M	M	M	M	M	M
JVDA042S1	06-36.0688-117.8145-4-59-000	.	.	.	M	M	M	45	M	M	M	M	M	M	M
JVDA043S1	06-36.0611-117.8124-4-59-000	.	.	.	M	M	M	75	M	M	M	M	M	M	M
JVDA044S1	06-36.0555-117.8212-4-59-000	.	.	.	M	M	M	60	M	M	M	M	M	M	M
JVDA045S1	06-36.0530-117.8134-4-59-000	.	.	.	4.2	15	0	70	-20	42900	920	19500	15.0	4700	90
JVDB001S1	06-36.2166-117.7411-4-59-000	.	.	.	5.2	17	3	40	82	34700	520	17600	1.5	3600	70
JVDB002S1	06-36.1868-117.7423-4-61-000	.	.	.	3.7	12	9	30	80	32900	840	21500	7.5	4700	80
JVDB003S1	06-36.1578-117.7414-4-59-000	.	.	.	4.2	13	12	35	103	40000	810	28800	7.7	2200	120
JVDB004S1	06-36.1227-117.7388-4-61-000	.	.	.	3.3	10	11	30	58	19200	1010	26800	7.5	-400	90
JVDB005S1	06-36.0965-117.7415-4-61-000	.	.	.	3.4	11	8	35	90	43500	1130	25900	9.9	5800	120
JVDB006S1	06-36.0667-117.7386-4-61-000	.	.	.	3.5	18	14	35	115	69000	1050	31100	14.1	6900	210
JVDB007S1	06-36.0083-117.7413-4-61-000	.	.	.	2.3	10	5	30	65	51400	1370	20400	8.3	6400	170
JVDB008S1	06-36.0404-117.7375-4-61-000	.	.	.	2.5	6	4	30	36	27100	1090	23800	8.8	3500	130
JVDB009S1	06-36.0386-117.7033-4-61-000	.	.	.	4.2	16	12	40	96	45300	950	24700	8.4	6100	120
JVDB010S1	06-36.0364-117.6619-4-61-000	.	.	.	4.4	25	13	35	88	43800	1020	25200	8.4	5100	130
JVDB011S1	06-36.0674-117.6654-4-61-000	.	.	.	3.6	17	16	30	113	35200	950	25700	14.7	5500	110
JVDB012S1	06-36.0686-117.7022-4-61-000	.	.	.	3.9	16	10	35	113	40200	930	24400	12.3	4400	100
JVDB013S1	06-36.0973-117.7028-4-61-000	.	.	.	2.7	16	8	35	71	37600	900	22700	6.5	5200	110
JVDB014S1	06-36.1264-117.7018-4-61-000	.	.	.	5.3	21	0	40	-20	55900	850	25900	16.4	6200	160
JVDB015S1	06-36.1552-117.7071-4-61-000	.	.	.	5.2	9	9	35	77	28600	950	29500	9.6	7400	150
JVDB016S1	06-36.1847-117.7056-4-61-000	.	.	.	5.6	14	15	45	55	14400	470	16500	7.0	5900	70
JVDB017S1	06-36.2131-117.6902-4-61-000	.	.	.	5.6	25	18	50	-20	59300	1220	21800	9.3	8400	220
JVDB018S1	06-36.2112-117.6663-4-61-000	.	.	.	6.2	15	19	60	79	35600	1170	27000	7.6	11900	150
JVDB019S1	06-36.1812-117.6612-4-61-000	.	.	.	4.8	20	9	60	106	52000	1430	31400	9.5	7300	150
JVDB020S1	06-36.1587-117.6621-4-61-000	.	.	.	3.9	19	9	60	94	38100	870	25800	5.8	-400	110
JVDB021S1	06-36.1272-117.6619-4-61-000	.	.	.	7.1	35	14	50	118	37400	650	34400	8.9	6200	110
JVDB022S1	06-36.0982-117.6542-4-59-000	.	.	.	3.7	26	10	55	109	35700	770	22900	7.7	4300	80
JVDB023S1	06-36.0132-117.7941-4-61-000	.	.	.	4.3	21	9	30	84	49900	620	16100	12.4	3700	80
JVDB024S1	06-36.0150-117.6668-4-61-000	.	.	.	4.3	18	17	35	98	40000	940	25300	17.0	-400	110
JVDB025S1	06-36.0201-117.6156-4-61-000	.	.	.	4.2	17	9	40	-20	43300	500	12600	9.3	3100	80
JVDB026S1	06-36.0076-117.5354-4-61-000	.	.	.	3.3	12	0	30	94	39100	740	21900	13.6	4300	80
JVDB027S1	06-36.0392-117.5365-4-61-000	.	.	.	3.9	11	9	10	70	32200	750	23200	8.9	-500	100
JVDB028S1	06-36.0098-117.5532-4-61-000	.	.	.	2.9	11	12	25	76	39700	650	14600	14.5	3600	80
JVDB029S1	06-36.0404-117.5067-4-61-000	.	.	.	3.6	14	8	40	86	35600	920	26400	10.1	5200	110
JVDB030S1	06-36.0112-117.5096-4-61-000	.	.	.	5.8	30	44	30	148	221200	1140	16400	17.5	6600	540
JVDB031S1	06-36.0388-117.5426-4-61-000	.	.	.	4.8	25	14	30	-20	43600	890	25900	5.8	-400	100
JVDB032S1	06-36.0369-117.6270-4-61-000	.	.	.	3.0	7	8	30	51	30900	830	16500	10.9	4600	100
JVDB033S1	06-36.0697-117.6213-4-61-000	.	.	.	22.7	177	53	75	188	133700	1270	26200	11.8	9600	420

TABLE B-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA - SEDIMENTS-- DEATH VALLEY SHEET

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ERL I.D. *****	DOE I.D.	PH	COND. UM/CM	AKMXD MEQ/L	U PPM	TH PPM	HF PPM	SCINT CPS	CE PPM	FE PPM	MN PPM	NA PPM	SC PPM	TI PPM	V PPM
JVDB034S1	06-36.0651-117.5889-4-61-000	.	.	.	5.1	22	21	50	87	41400	620	23800	10.7	4200	120
JVDB035S1	06-36.0664-117.5541-4-61-000	.	.	.	5.6	34	13	50	118	49300	930	26700	9.4	-400	140
JVDB036S1	06-36.0664-117.5123-4-59-000	.	.	.	3.2	16	11	40	83	35900	690	12900	13.4	3000	70
JVDB037S1	06-36.0972-117.5104-4-61-000	.	.	.	4.6	19	12	40	97	48000	1080	21700	10.3	7000	160
JVDB038S1	06-36.1353-117.5170-4-61-000	.	.	.	4.9	20	15	20	85	49900	950	16900	20.2	5400	160
JVDB039S1	06-36.1640-117.5121-4-61-000	.	.	.	3.1	10	5	10	66	30400	820	17600	8.0	7000	100
JVDB040S1	06-36.1868-117.5195-4-61-000	.	.	.	7.0	32	22	40	125	60700	670	15300	14.3	3800	120
JVDB041S1	06-36.2152-117.5122-4-61-000	.	.	.	4.6	14	8	10	75	43600	800	18500	6.9	5100	120
JVDB042S1	06-36.2199-117.5473-4-59-000	.	.	.	5.3	16	10	30	66	31500	1170	26800	9.1	6700	150
JVDB043S1	06-36.1860-117.5485-4-61-000	.	.	.	8.5	42	2	35	134	61600	760	18100	17.0	4300	110
JVDB044S1	06-36.1598-117.5480-4-61-000	.	.	.	9.1	60	48	30	207	80500	1100	24800	23.4	6500	180
JVDB045S1	06-36.1298-117.5510-4-61-000	.	.	.	9.3	53	0	25	-20	91500	890	18000	21.0	5200	160
JVDB046S1	06-36.0927-117.5512-4-61-000	.	.	.	3.8	16	16	15	73	40200	1000	18500	16.1	5800	120
JVDB047S1	06-36.0966-117.5878-4-61-000	.	.	.	5.4	26	1	15	92	33300	690	20700	4.0	3700	90
JVDB048S1	06-36.1294-117.5889-4-61-000	.	.	.	6.1	16	15	30	65	26400	1180	25500	13.7	5900	160
JVDB049S1	06-36.1544-117.5895-4-61-000	.	.	.	4.7	21	12	20	98	35400	880	20800	7.4	-300	70
JVDB050S1	06-36.1849-117.5928-4-61-000	.	.	.	5.5	27	15	45	135	33500	1080	26400	6.4	6000	120
JVDB051S1	06-36.2194-117.5920-4-61-000	.	.	.	9.2	44	39	30	151	68500	1300	24800	8.9	3700	240
JVDB052S1	06-36.2187-117.6283-4-59-000	.	.	.	5.2	29	13	25	83	38400	1030	25600	10.8	3600	120
JVDB053S1	06-36.1808-117.6292-4-61-000	.	.	.	5.8	30	16	30	104	34100	1430	28300	6.1	6800	90
JVDB054S1	06-36.1574-117.6272-4-59-000	.	.	.	4.9	24	13	35	92	37100	1000	27300	5.9	6200	110
JVDB055S1	06-36.1250-117.6254-4-61-000	.	.	.	13.0	93	41	15	191	102600	1100	23300	9.8	3700	270
JVDB056S1	06-36.0932-117.6217-4-59-000	.	.	.	8.9	44	15	60	107	46100	1040	27000	8.9	5600	140
JVDC001S1	06-36.2402-117.3842-4-59-000	.	.	.	3.5	23	5	28	76	37800	750	11300	11.5	-500	100
JVDC002S1	06-36.2368-117.4257-4-59-000	.	.	.	6.2	30	10	48	-20	67200	3150	9600	3.7	4100	380
JVDC003S1	06-36.1981-117.3973-4-59-000	.	.	.	5.1	18	6	44	60	26500	890	14200	8.9	4500	110
JVDC004S1	06-36.1977-117.4268-4-59-000	.	.	.	4.7	22	13	32	111	49000	1270	22100	8.5	5900	170
JVDC005S1	06-36.2079-117.4550-4-59-000	.	.	.	6.5	25	10	50	74	37100	1000	15800	13.3	3800	100
JVDC006S1	06-36.1633-117.3865-4-59-000	.	.	.	5.4	42	10	44	115	44300	990	21000	4.7	5700	160
JVDC007S1	06-36.1343-117.3705-4-59-000	.	.	.	5.0	25	13	32	87	39700	960	17400	11.2	-300	120
JVDC008S1	06-36.1174-117.3546-4-59-000	.	.	.	4.0	20	5	37	79	30700	860	23500	5.9	4600	100
JVDC009S1	06-36.0894-117.3464-4-59-000	.	.	.	4.1	14	5	36	102	42000	980	21000	13.4	4400	110
JVDC010S1	06-36.1081-117.3843-4-59-000	.	.	.	5.2	30	10	38	-20	45300	950	23000	6.6	5500	120
JVDC011S1	06-36.1638-117.3099-4-59-000	.	.	.	5.5	22	11	48	73	31900	940	19000	7.2	-500	130
JVDC012S1	06-36.1962-117.3258-4-59-000	.	.	.	6.5	32	18	30	135	62100	1160	15100	8.4	8200	210
JVDC013S1	06-36.2303-117.3413-4-59-000	.	.	.	5.8	29	17	27	121	58000	1000	18100	8.0	3700	140
JVDC014S1	06-36.1945-117.2847-4-59-000	.	.	.	2.8	16	7	.	73	46600	1170	16300	7.0	7300	140
JVDC015S1	06-36.2155-117.2730-4-59-000	.	.	.	3.2	15	12	28	114	49400	1150	12700	15.5	7100	120
JVDC016S1	06-36.2431-117.2642-4-59-000	.	.	.	3.1	15	6	32	113	35700	930	11900	6.6	5600	90
JVDC017S1	06-36.1472-117.2606-4-59-000	.	.	.	3.5	25	8	28	-20	53600	1590	10400	7.5	11200	160
JVDC018S1	06-36.1368-117.2915-4-59-000	.	.	.	4.1	14	6	37	52	20400	550	14000	5.3	2500	70
JVDC019S1	06-36.0946-117.2844-4-59-000	.	.	.	3.6	24	7	35	94	45200	940	19900	4.7	4900	130
JVDC020S1	06-36.0506-117.2743-4-59-000	.	.	.	3.7	18	9	33	74	52900	1090	16400	10.7	6100	130
JVDC021S1	06-36.0284-117.2720-4-59-000	.	.	.	4.3	18	9	32	104	50700	910	21900	6.0	-400	120
JVDC022S1	06-36.0261-117.3148-4-59-000	.	.	.	4.8	28	23	25	131	52700	1090	20800	10.9	6200	130
JVDC023S1	06-36.0161-117.3359-4-59-000	.	.	.	4.7	23	15	38	95	37700	890	19400	12.8	6100	130
JVDC024S1	06-36.0457-117.3423-4-59-000	.	.	.	4.5	26	17	34	97	48800	1130	22500	9.5	7200	140
JVDC025S1	06-36.0537-117.3913-4-59-000	.	.	.	4.0	20	8	34	-20	50900	1150	19700	6.0	11400	140
JVDC026S1	06-36.0646-117.3011-4-59-000	.	.	.	5.8	15	15	33	73	29800	1170	20400	10.7	8100	140
JVDC027S1	06-36.0760-117.2693-4-59-000	.	.	.	4.0	13	12	36	77	36100	690	16700	6.9	-400	120
JVDC028S1	06-36.0116-117.4768-4-61-000	.	.	.	14.7	120	39	50	206	125300	1260	25300	12.6	8700	350
JVDC029S1	06-36.0062-117.4501-4-61-000	.	.	.	15.3	109	50	40	144	113500	950	18900	15.7	6000	280
JVDC030S1	06-36.0398-117.4461-4-61-000	.	.	.	5.4	28	16	45	127	62600	1160	19300	10.1	-400	160
JVDC031S1	06-36.0365-117.4779-4-59-000	.	.	.	3.2	16	0	40	95	46100	990	19600	16.2	5800	110
JVDC032S1	06-36.0643-117.4894-4-61-000	.	.	.	5.2	19	0	45	88	53100	820	17200	18.4	4300	90

TABLE B-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA - SEDIMENTS-- DEATH VALLEY SHEET

11

SRL I.D. *****	DOE I.D.	PH	COND. UM/CM	AKMXD MEQ/L	U PPH	TH PPH	HF PPH	SCINT CPS	CE PPH	FE PPH	MN PPH	NA PPH	SC PPH	TI PPH	V PPH
JVDC033S1	06-36.0688-117.4526-4-61-000	.	.	.	6.3	28	21	40	108	62200	1110	20200	19.5	6400	150
JVDC034S1	06-36.1157-117.4439-4-59-000	.	.	.	2.5	17	7	25	78	30500	910	13900	5.1	2600	90
JVDC035S1	06-36.0811-117.4963-4-61-000	.	.	.	7.5	31	43	35	169	75600	920	14900	26.5	5300	130
JVDD001S1	06-36.1269-117.2142-4-59-000	.	.	.	2.3	-4	6	80	M	37700	490	10400	5.7	M	70
JVDD002S1	06-36.0912-117.2282-4-59-000	.	.	.	3.0	13	6	80	88	39300	830	8900	11.2	5400	120
JVDD003S1	06-36.0310-117.2201-4-59-000	.	.	.	4.0	19	10	140	108	39000	480	7800	8.2	2400	110
JVDD004S1	06-36.0415-117.0715-4-59-000	.	.	.	4.0	6	6	120	M	26900	1040	11300	9.0	5400	80
JVDD005S1	06-36.0217-117.0693-4-59-000	.	.	.	3.1	6	5	100	49	9900	220	4400	3.3	4000	20
JVDD006S1	06-36.0325-117.0945-4-59-000	.	.	.	2.9	8	0	140	57	49000	540	6500	8.4	-400	70
JVDD007S1	06-36.0302-117.1385-4-59-000	.	.	.	2.1	8	5	140	-20	96500	910	2800	12.6	2400	70
JVDD008S1	06-36.0302-117.1683-4-59-000	.	.	.	2.8	12	5	100	162	56800	1350	8900	8.6	4500	100
JVDD009S1	06-36.0390-117.1985-4-59-000	.	.	.	2.8	5	0	160	M	31300	880	5700	8.1	3000	60
JVDD010S1	06-36.0496-117.2263-4-59-000	.	.	.	3.4	15	10	100	68	42000	930	10400	12.9	4100	90
JVDD011S1	06-36.1600-117.2305-4-59-000	.	.	.	2.4	-4	0	90	-20	10100	250	2100	4.1	800	20
JVDD012S1	06-36.1936-117.1825-4-59-000	.	.	.	3.2	-4	2	120	M	M	1180	5800	9.1	4100	100
JVDD013S1	06-36.1957-117.2294-4-59-000	.	.	.	3.9	16	.	100	82	41300	960	6500	13.4	5100	100
JVDD014S1	06-36.2152-117.2036-4-59-000	.	.	.	2.8	-4	0	130	-20	27900	1240	6700	8.3	3100	130
JVDD015S1	06-36.2175-117.2340-4-59-000	.	.	.	1.8	6	8	80	39	30000	490	4500	10.3	2300	60
JVDD016S1	06-36.0902-117.2026-4-59-000	.	.	.	3.0	6	7	80	75	42300	1040	7800	7.3	4200	90
JVDD017S1	06-36.1124-117.1762-4-59-000	.	.	.	3.0	-4	2	100	M	11400	380	1500	3.9	900	20
JVDD018S1	06-36.1134-117.1501-4-59-000	.	.	.	2.5	M	0	100	M	M	410	2300	2.7	1400	40
JVDD019S0	06-36.1167-117.0991-4-58-000	.	.	.	2.7	10	5	100	84	40200	670	5000	11.0	3200	70
JVDD020S1	06-36.0722-117.1350-4-59-000	.	.	.	4.1	9	5	180	81	46200	1050	4800	12.4	5100	110
JVDD021S1	06-36.0681-117.1544-4-59-000	.	.	.	4.3	9	5	120	54	31900	670	5800	10.4	3600	70
JVDF001S1	06-36.2349-116.6353-4-59-000	.	.	.	3.9	14	9	45	77	40100	790	21700	8.1	4800	110
JVDF002S1	06-36.2152-116.6170-4-59-000	.	.	.	3.0	-4	.	52	M	M	230	6800	-0.3	1200	20
JVDF003S1	06-36.2066-116.6419-4-59-000	.	.	.	2.9	-4	5	35	58	23000	420	10600	7.8	2700	60
JVDF004S1	06-36.1947-116.6026-4-59-000	.	.	.	3.2	13	12	35	82	26700	600	17300	9.6	3500	80
JVDF005S1	06-36.1716-116.6229-4-59-000	.	.	.	2.2	7	6	37	40	23400	440	11700	6.7	-300	70
JVDF006S1	06-36.1750-116.5989-4-59-000	.	.	.	2.9	9	8	39	-20	36400	810	20500	7.1	4600	80
JVDF007S1	06-36.1865-116.5638-4-59-000	.	.	.	2.2	15	5	24	64	31200	770	20300	3.3	4400	90
JVDF008S1	06-36.2226-116.5635-4-59-000	.	.	.	2.8	10	11	37	M	31900	640	16200	9.9	3900	70
JVDF009S1	06-36.1552-116.5633-4-59-000	.	.	.	3.5	12	7	45	78	34300	730	21400	5.8	13500	80
JVDF010S1	06-36.1204-116.5587-4-59-000	.	.	.	3.5	13	9	55	68	29000	630	18500	5.8	3400	60
JVDF011S1	06-36.0921-116.5487-4-59-000	.	.	.	2.9	15	14	48	68	38400	840	23500	10.0	5200	100
JVDF012S1	06-36.0571-116.5505-4-59-000	.	.	.	3.8	15	8	51	M	31400	800	21800	5.8	4300	80
JVDF013S1	06-36.0608-116.5798-4-59-000	.	.	.	2.8	8	6	63	M	27600	440	10100	6.8	1900	30
JVDF014S1	06-36.0314-116.5832-4-59-000	.	.	.	3.6	7	7	61	38	20200	730	20000	6.2	3900	70
JVDF015S1	06-36.0550-116.5080-4-59-000	.	.	.	3.1	-4	4	63	25	12100	230	7000	3.6	1000	20
JVDC001S1	06-36.2473-116.4913-4-59-000	.	.	.	3.6	14	12	34	90	36000	520	15100	10.0	M	0
JVDC002S1	32-36.2407-116.4531-4-59-000	.	.	.	3.5	9	8	38	82	36700	410	13600	7.3	M	120
JVDC003S1	32-36.2138-116.4018-4-59-000	.	.	.	3.4	9	3	45	40	12000	180	6500	3.4	1700	-10
JVDC004S1	32-36.1973-116.3734-4-59-000	.	.	.	4.1	6	6	43	49	12300	330	10900	4.2	M	120
JVDC005S1	32-36.1918-116.3474-4-59-000	.	.	.	3.4	16	10	23	65	25700	390	13800	6.5	M	70
JVDC006S1	32-36.1725-116.3285-4-59-000	.	.	.	3.3	M	0	38	M	M	M	13100	-0.5	M	M
JVDC007S1	32-36.1443-116.3178-4-59-000	.	.	.	3.9	15	8	40	93	30100	420	15600	5.4	M	50
JVDC008S1	32-36.0893-116.2973-4-59-000	.	.	.	2.7	6	4	40	80	7700	140	5900	2.0	2000	100
JVDC009S1	32-36.0462-116.2960-4-59-000	.	.	.	3.7	12	11	40	62	20400	220	8300	6.4	2500	60
JVDC010S1	32-36.0142-116.2951-4-59-000	.	.	.	4.0	16	4	54	87	29000	380	13100	8.8	M	130
JVDC011S1	32-36.0132-116.2639-4-59-000	.	.	.	3.1	12	7	40	59	25400	380	14400	6.6	M	50
JVDC012S1	06-36.1958-116.4220-4-59-000	.	.	.	4.0	-4	0	42	M	M	630	20800	-0.2	M	70
JVDC013S1	06-36.1719-116.4258-4-59-000	.	.	.	5.1	18	12	49	92	36300	380	13200	11.0	M	70
JVDC014S1	06-36.1687-116.4070-4-59-000	.	.	.	3.1	-4	1	48	-20	5900	150	5700	1.5	1900	0
JVDC015S1	06-36.1390-116.4271-4-59-000	.	.	.	3.5	17	9	42	91	33000	430	17300	8.2	M	80
JVDC016S1	06-36.1398-116.3984-4-59-000	.	.	.	3.7	-4	0	48	M	M	530	19900	0.6	12700	80

TABLE B-1 TABULATION OF KEY FIELD MEASUREMENTS AND ANALYTICAL DATA - SEDIMENTS-- DEATH VALLEY SHEET

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SRL I.D. *****	DOE I.D.	PH	COND. UM/CM	AKMXD MEQ/L	U PPM	TH PPM	HF PPM	SCINT CPS	CE PPM	FE PPM	MN PPM	NA PPM	SC PPM	TI PPM	V PPM
JVDG017S1	06-36.1103-116.4386-4-59-000	.	.	.	3.2	M	0	42	M	M	410	15400	-0.7	M	80
JVDG018S1	06-36.0984-116.4438-4-59-000	.	.	.	3.2	9	11	56	61	25900	450	17000	7.4	M	0
JVDG019S1	06-36.0745-116.4673-4-59-000	.	.	.	4.0	14	11	42	83	38200	490	20200	11.6	M	90
JVDG020S1	06-36.0494-116.4965-4-59-000	.	.	.	3.3	8	6	43	34	21000	340	10400	5.7	1900	30
JVDG021S1	06-36.0365-116.4575-4-59-000	.	.	.	7.7	12	9	42	71	32200	850	27800	6.1	-400	90
JVDG022S1	06-36.0215-116.4622-4-59-000	.	.	.	3.6	-4	3	50	-20	17100	460	14000	6.6	3300	50
JVDG023S1	06-36.0078-116.4470-4-59-000	.	.	.	2.4	12	6	45	77	18600	410	15400	4.5	2600	50
JVDG024S1	06-36.2335-116.3689-4-59-000	.	.	.	2.8	9	9	29	89	21300	430	16100	7.0	2400	40
JVDG025S1	06-36.2322-116.3200-4-59-000	.	.	.	2.7	7	4	36	59	18300	480	20400	5.3	2900	50
JVDG026S1	06-36.1938-116.3150-4-59-000	.	.	.	3.1	6	6	29	49	15700	190	5600	3.3	1300	20
JVDG027S1	06-36.1290-116.3027-4-59-000	.	.	.	3.1	-4	0	38	M	7700	410	13800	3.9	2200	40
JVDH001S1	32-36.2332-116.0141-4-59-000	.	.	.	1.7	-4	0	20	M	M	340	6400	-0.5	-250	20
JVDH002S1	32-36.2423-116.0553-4-59-000	.	.	.	2.2	-4	7	26	-20	13400	320	5600	4.5	1300	30
JVDH003S1	32-36.2437-116.0852-4-59-000	.	.	.	2.1	6	5	18	51	15300	370	15000	2.7	1700	40
JVDH004S1	32-36.2059-116.0228-4-59-000	.	.	.	2.0	10	6	20	98	14700	440	9200	6.0	1900	30
JVDH005S1	32-36.1917-116.0556-4-59-000	.	.	.	5.6	-4	6	29	M	M	680	11000	4.7	3200	70
JVDH006S1	32-36.1998-116.0865-4-59-000	.	.	.	3.4	-4	0	26	17	9100	170	2500	0.6	600	10
JVDH007S1	32-36.1593-116.0882-4-59-000	.	.	.	3.9	7	5	32	39	14600	420	10100	3.4	1900	30
JVDH008S1	32-36.1540-116.0580-4-59-000	.	.	.	2.8	-4	4	29	16	9400	350	10900	3.1	2200	40
JVDH009S1	32-36.1316-116.0544-4-59-000	.	.	.	2.7	-4	7	22	-20	12700	380	13700	4.5	2200	40
JVDH010S1	32-36.1443-116.0319-4-59-000	.	.	.	2.5	-4	0	32	M	M	330	9200	0.4	1700	30
JVDH011S1	32-36.1306-116.0115-4-59-000	.	.	.	2.8	9	7	26	78	21700	600	16600	8.9	3800	50
JVDH012S1	06-36.1611-116.1393-4-59-000	.	.	.	2.8	13	7	22	50	13300	220	6200	3.5	1300	20
JVDH013S1	06-36.1441-116.1670-4-59-000	.	.	.	2.9	M	8	22	M	M	610	15000	4.1	M	60
JVDH014S1	06-36.1219-116.1742-4-59-000	.	.	.	2.6	-4	7	29	54	14700	600	17000	4.8	-500	60
JVDH015S1	32-36.1951-116.1354-4-59-000	.	.	.	2.8	7	11	28	52	14300	570	17900	6.5	3500	70
JVDH016S1	32-36.2305-116.1492-4-59-000	.	.	.	2.8	8	9	26	39	13300	350	9800	5.3	1800	30
JVDH017S1	06-36.1880-116.1789-4-59-000	.	.	.	2.3	13	7	24	81	23100	580	15100	4.9	-500	60
JVDH018S1	06-36.2242-116.1919-4-59-000	.	.	.	3.1	17	8	25	73	21500	530	14200	6.8	-400	50
JVDH019S1	06-36.1304-116.1239-4-59-000	.	.	.	2.5	11	9	22	60	24200	720	18200	8.3	3900	70
JVDH020S1	06-36.1251-116.0998-4-59-000	.	.	.	3.3	13	8	23	55	24100	590	16700	5.5	3800	60
JVDH021S1	06-36.1012-116.0800-4-59-000	.	.	.	2.9	14	6	21	71	19800	520	13100	6.2	2600	50
JVDH022S1	06-36.0872-116.0579-4-59-000	.	.	.	2.4	11	8	22	57	21200	640	15100	3.4	7300	70
JVDH023S1	06-36.0505-116.0231-4-59-000	.	.	.	2.3	-4	3	18	-20	9900	240	5800	3.5	1500	20
JVDH024S1	06-36.0675-116.0402-4-59-000	.	.	.	2.2	6	5	26	112	18900	520	13500	4.8	-400	50
JVDH025S1	06-36.0071-116.1757-4-59-000	.	.	.	2.2	-4	0	33	M	M	270	11400	-0.2	2000	30
JVDH026S1	06-36.0229-116.1543-4-59-000	.	.	.	2.2	-4	10	32	30	13100	520	20900	5.8	3000	50
JVDH027S1	06-36.0425-116.1535-4-59-000	.	.	.	2.6	8	9	27	62	18600	380	10900	5.7	2100	40
JVDH028S1	06-36.0088-116.2038-4-59-000	.	.	.	3.7	13	10	47	79	27300	590	16600	7.4	-500	50
JVDH029S1	06-36.0390-116.2065-4-59-000	.	.	.	3.1	-4	1	24	30	11300	200	5400	3.8	1200	20
JVDH030S1	06-36.0916-116.1910-4-59-000	.	.	.	2.2	7	9	27	35	12200	1190	8500	4.2	2600	30
JVDH031S1	06-36.0612-116.1888-4-59-000	.	.	.	2.8	10	7	25	61	25200	610	17400	8.2	8100	70
JVDH032S1	06-36.0997-116.2109-4-59-000	.	.	.	3.6	13	11	34	39	27300	670	18500	6.6	4800	80

FIGURE B-1. Areal Distribution of Uranium Concentrations in Stream Sediment

DEATH VALLEY 1'x2' Sheet
Thorium In Sediments
501 Values Above D.L.

Thorium concentration - p.p.m.				
• < 5.0	◦ 6.0- 7.0	○ 10.0- 13.0	⊙ 18.0- 22.0	● 32.0- 55.0
• 5.0- 5.0	◦ 7.0- 8.0	○ 13.0- 15.0	⊙ 22.0- 26.0	◆ 55.0- 120.0
• 5.0- 6.0	◦ 8.0- 10.0	○ 15.0- 18.0	⊙ 26.0- 32.0	★ > 120.0

FIGURE B-2. Areal Distribution of Thorium Concentrations in Stream Sediment

DEATH VALLEY 1x2' Sheet
Hafnium In Sediments
551 Values Above D.L.

Hafnium concentration - p.p.m.				
• < .0	○ 3.0- 4.0	○ 7.0- 8.0	⊙ 13.0- 15.0	● 20.0- 24.0
• 1.0- 2.0	○ 4.0- 5.0	○ 8.0- 10.0	⊙ 15.0- 17.0	◆ 24.0- 44.0
• 2.0- 3.0	○ 5.0- 7.0	⊙ 10.0- 13.0	⊙ 17.0- 20.0	★ > 44.0

FIGURE B-3. Areal Distribution of Hafnium Concentrations in Stream Sediment

DEATH VALLEY 1'x2' Sheet
Aluminum In Sediments
585 Values Above D.L.

Aluminum concentration - p.p.m.

+ < 7000.0 • 35100.0- 42100.0 ○ 53600.0- 58600.0 ⊙ 72800.0- 83700.0 ● 95300.0- 101300.0
• 7000.0- 20600.0 ○ 42400.0- 47900.0 ○ 58600.0- 63500.0 ⊙ 83700.0- 89500.0 ◆ 101300.0- 110700.0
• 20600.0- 35100.0 ○ 47900.0- 53600.0 ⊙ 63500.0- 72800.0 ⊙ 89500.0- 95300.0 ★ > 110700.0

FIGURE B-4. Areal Distribution of Aluminum Concentrations in Stream Sediment

DEATH VALLEY 1x2' Sheet
Cerium In Sediments
477 Values Above D.L.

Cerium concentration - p.p.m					
• < 16.0	◦ 30.0- 37.0	○ 61.0- 74.0	⊙ 100.0- 114.0	● 146.0- 171.0	
• 16.0- 22.0	◦ 37.0- 49.0	○ 74.0- 89.0	⊙ 114.0- 129.0	◆ 171.0- 216.0	
• 22.0- 30.0	◦ 49.0- 61.0	○ 89.0- 100.0	⊙ 129.0- 146.0	★ > 216.0

FIGURE B-5. Areal Distribution of Cerium Concentrations in Stream Sediment

DEATH VALLEY 1'x2' Sheet
Iron In Sediments
564 Values Above D.L.

FIGURE B-6. Areal Distribution of Iron Concentrations in Stream Sediment

DEATH VALLEY 1x2' Sheet
Manganese In Sediments
551 Values Above D.L.

Manganese concentration - p.p.m.					
• < 50.0	• 140.0- 180.0	○ 360.0- 470.0	⊙ 890.0- 1170.0	● 1730.0- 2040.0	
• 50.0- 110.0	• 180.0- 240.0	○ 470.0- 650.0	⊙ 1170.0- 1540.0	◆ 2040.0- 2160.0	
• 110.0- 140.0	○ 240.0- 360.0	⊙ 650.0- 890.0	⊙ 1540.0- 1730.0	★ > 2160.0

FIGURE B-7. Areal Distribution of Manganese Concentrations in Stream Sediment

DEATH VALLEY 1x2' Sheet
Scandium In Sediments
596 Values Above D.L.

Scandium concentration - p.p.m.				
• < 0.4	• 1.6- 2.6	○ 4.7- 6.0	⊙ 8.9- 11.0	● 15.0- 18.4
▪ 0.4- 0.9	◊ 2.6- 3.5	○ 6.0- 7.2	⊙ 11.0- 12.9	◆ 18.4- 26.5
• 0.9- 1.6	○ 3.5- 4.7	○ 7.2- 8.9	⊙ 12.9- 15.0	★ > 26.5

FIGURE B-8. Areal Distribution of Scandium Concentrations in Stream Sediment

DEATH VALLEY 1'x2' Sheet
Sodium In Sediments
57 Values Above D.L.

Sodium concentration - p.p.m.	
< 100.0	3700.0- 4800.0
100.0- 1700.0	4800.0- 6200.0
1700.0- 3700.0	6200.0- 9600.0
9600.0- 12500.0	12600.0- 15400.0
12500.0- 18300.0	15400.0- 18300.0
18300.0- 21700.0	21700.0- 24500.0
21700.0- 26700.0	26700.0- 39700.0
39700.0- 102900.0	> 102900.0

FIGURE B-9. Areal Distribution of Sodium Concentrations in Stream Sediment

DEATH VALLEY 1x2' Sheet
Titanium In Sediments
368 Values Above D.L.

FIGURE B-10. Areal Distribution of Titanium Concentrations in Stream Sediment

DEATH VALLEY 1x2' Sheet
Vanadium In Sediments
558 Values Above D.L.

Vanadium concentration - p.p.m.					
• < 10.0	◦ 20.0- 20.0	○ 50.0- 60.0	⊙ 100.0- 120.0	● 170.0- 220.0	
◡ 10.0- 10.0	◦ 20.0- 30.0	○ 60.0- 80.0	⊙ 120.0- 140.0	◆ 220.0- 350.0	
• 10.0- 20.0	○ 30.0- 50.0	⊙ 80.0- 100.0	⊙ 140.0- 170.0	★ > 350.0

FIGURE E-11. Areal Distribution of Vanadium Concentrations in Stream Sediment

APPENDIX C: User's Guide to SRL Data Reports

ABSTRACT

This document provides a detailed description of Data Reports of the western quadrangles that have been prepared by Savannah River Laboratory (SRL) personnel for the National Uranium Resource Evaluation (NURE) program. The Guide includes descriptions of (1) sample collection and field measurements; (2) format, abbreviations, and codes used in data tables; (3) graphical presentation and maps; and (4) quality assurance programs for sample collection and analysis.

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INTRODUCTION

This document provides a detailed description of Data Reports of the western quadrangles that have been prepared by Savannah River Laboratory (SRL) personnel for the National Uranium Resource Evaluation (NURE) Program. The format described herein is that established for Data Reports in mid-1978. The descriptions of tables and figures are general enough to be applied to future Data Reports. However, some minor changes in format may be made as the program progresses.

SRL participation in the NURE Program is summarized in NURE-SRL progress reports (SRL-138).

SAMPLE COLLECTION AND FIELD MEASUREMENTS

Sampling personnel were trained by SRL staff members according to procedures in published SRL documents. In the western quadrangles, the principal document was the **Training Manual for Water and Sediment Geochemical Reconnaissance** (Price and Jones, 1979).

A minimum of five sediment sub-samples was composited from each stream site. An approximately 400-g sample of sediment passing a 420-micrometer screen (U.S. Std. 40 mesh) was collected at each site.

Dissolved ions in individual water samples were concentrated in the field on portions of ion exchange resin [GJBX-77(77)]. The resin was subsequently analyzed at SRL. Special procedures not included in the training manual were employed in certain areas. For example, ground water samples were collected for analysis of helium.

Figure C-1 illustrates the field form completed at each sample collection site. Entries are self-explanatory. The training manual (Price and Jones, 1979) describes in detail the equipment and techniques (including criteria for site selection) for collecting samples and for making field measurements.

Nominal density for ground water and stream sampling in rural areas varies from 13 to 25 square kilometers (5 to 10 sq mi) per site, depending upon the geology of the area. In areas of crystalline rock or few ground water sites, surface sampling is generally denser than ground water sampling. In areas of sedimentary rock, the converse is true. Supplemental samples may be collected at sites of high radioactivity or other locations considered by the sampler to be of relatively high uranium potential.

SRL FIELD DATA FORM

SITE CODE								DATE								TEAM NO.		SURFACE SITE DATA										Activities Contaminants (List up to four)		Formation		Odor							
Sheet	Map Code	Site Number						Mo.	Day	Yr.	Hr.					Sample Type	Rock Type	Sed Size	Width	Depth	Flow	Level	Veg Type	Veg Density	Relief	No. of Sample Composites													
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
HAVE A GOOD DAY																																							
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 $\mu\text{mhos/cm}$		WATER TEMP. °C		ALKALINITY		Drops H_2SO_4		ml Water		ml OF WATER ION-EXCHANGED		WELL DEPTH		WELL DATA		Condepth		Well Class.		Where Sample Taken		STATE		SCINTILLOMETER READING				Inform. Request.		DO NOT USE		CARD CODE					
Sheet								Map Code								Site Number								ADDRESS (use / to separate lines)															
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
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
IN THE CASE OF EACH CIRCLED ENTRY SPACE, ENTER MOST APPROPRIATE DESIGNATORS LISTED BELOW																																							
<p>20</p> <p>A Other sediment (8) B Other resin (9) C Well water (9) D Spring water (9) E Stream sediment + water (8) F Stream sediment only (8) G Soil (8) H Talus (8)</p>										<p>21</p> <p>1 Other (explain) 2 Volcanic - Felsic 3 Volcanic - Mafic 4 Plutonic - Felsic 5 Metamorphic 6 Clastics - coarse 7 Sandstone 8 Shale 9 Carbonate</p>										<p>22</p> <p>1 Other (explain) 2 Pebbles & coarser 3 Sand 4 Silt & clay 5 Organic muck</p>										<p>23 and 24</p> <p>1 Dry 2 < 1/4' 3 1/4' - 1' 4 1' - 2' 5 2' - 4' 6 4' - 8' 7 8' - 16'</p>									
<p>25</p> <p>1 Dry 2 Slow 3 Moderate 4 Fast 5 Torrent</p>										<p>26</p> <p>1 Dry 2 Low 3 Normal 4 High</p>										<p>27</p> <p>1 Other 2 Forest 3 Desert scrub 4 Grassland 5 Saltbush 6 Marsh</p>										<p>28</p> <p>1 Sparse 2 Moderate 3 Dense</p>									
<p>29</p> <p>1 0 - 10' 2 10 - 50' 3 50 - 200' 4 > 200'</p>										<p>30 thru 35</p> <p>1 Other 2 None 3 Chemical 4 Smelting 5 Mining 6 Garbage 7 Farming 8 Grazing 9 Oil Field</p>										<p>36</p> <p>1 Other 2 None 3 H_2S 4 Oil</p>										<p>37</p> <p>1 Certain 2 Probable 3 Possible 4 Educated guess 5 Unknown</p>									
<p>38</p> <p>1 Other 2 Domestic 3 Municipal 4 Livestock 5 Irrigation 6 Industrial - commercial</p>										<p>39</p> <p>1 Others 2 Immediately after storage tank 3 Before storage tank 4 Direct from pump 5 Direct from well or spring 6 From municipal system</p>										<p>40</p> <p>Enter "X" when analysis information is requested</p>										<p>41</p> <p>Enter number in parentheses () for column 20 options</p>									
Sampler(s) Signature(s)																				Field Supervisor (Initials)																			
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																																							

FIGURE C-1. SRL Field Data Form

Sampling site locations were marked precisely on compilation maps. The maps were returned to SRL for determination of geographic coordinates. An electronic digitizer (SRP-138) was used to measure and verify latitude and longitude for each site, and then these data were entered into the SRL-NURE data base. These data were recorded to four decimal places, but are considered reliable to only three decimal places.

Plate 2 is a 1:250,000 scale overlay of the 1° x 2° NTMS quadrangle showing ground water sampling sites and SRL identification (ID) numbers. On Plate 2, well and spring sites are distinguished by the use of a "plus" (+) for wells and a circle (o) for springs. Print modes for Plate 2 are shown in Figure C-2. Plate 3 is a 1:250,000 scale overlay of the quadrangle showing surface sampling sites and SRL ID numbers. Print modes for Plate 3 are shown on Figure C-3.

DATA PRESENTATION

In each SRL Data Report, the reconnaissance data are presented in appendices. Coordinates and the most important analytical data and field measurements are listed in full-size tables. Areal distributions of these measurements are also given in full-size figures. Other field and analytical data are given in tables on microfiche only. Statistical summaries for each element are given in figures on microfiche.

Detailed cumulative frequency plots are included in the margins of the 1:250,000 scale maps. Individual points are shown for the cumulative frequency plots and values are summed from highest to lowest for plots on the maps. These cumulative frequency plots also display the relationship between cumulative frequency and standard deviation and cover the complete range of samples.

The following section presents a brief explanation of the columnar entries for tables and descriptions of histograms, cumulative frequency plots and areal symbol plots in the Appendices and on microfiche.

I. Columnar Entries for Ground Water Data

The data for ground water normally will be presented in Table A-1 of Appendix A.

Print Modes for WELLS	Print Modes for SPRINGS
NCAS + 558	NCAS ○ 558
+ NCAS 558	○ NCAS 558
NCAS 558 +	NCAS 558 ○
NCAS 558	NCAS 558
+	○
+	○
NCAS 558	NCAS 558
NCAS	NCAS
+	○
558	558
+(Site Location)	○(Site Location)

FIGURE C-2. Print Modes for Ground Water Sampling Site Identifiers

Print Modes for SURFACE SITES
NCAS + 058
+ NCAS 058
NCAS 058 +
NCAS 058
+
+
NCAS 058
NCAS
+
058
+(Site Location)

FIGURE C-3. Print Modes for Surface Sampling Site Identification

SRL Identification Number

Each SRL identification (ID) site code consists of seven characters. The first two characters give the 1° x 2° NTMS quadrangle from which the sample was collected. Map codes are entered as Characters 3 and 4; these represent 15-minute quadrangles. Codes used are listed in Figure 2 of each report. Sites are numbered sequentially within each map unit (Characters 5, 6, and 7). Numbers begin with 501 in each map unit for ground water sites and generally are consecutive. Columns 8 and 9 represent the sample analyzed.

DOE Identification Number

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

- 1-2 State (See Table C-1)
- 4-10 Latitude of site
- 12-19 Longitude of site
- 21 Laboratory code (4 = SRL)
- 23-24 Sample type (See Table C-2)
- 26-28 Replication code. Generally only original samples (-000) are reported in the Data Releases.

pH

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

COND

Conductivity, measured in micromhos/cm.

AKMYD

Alkalinity as milliequivalents of sulfuric acid required per liter of sample (meq/L) to titrate to a pH of approximately 4.5 (bromcresol-green/methyl-red end-point).

TABLE C-1

State Codes Used in DOE Identification Number

<u>State</u>	<u>Code</u>	<u>State</u>	<u>Code</u>
Alabama	01	Nevada	32
Arizona	04	New Hampshire	33
Arkansas	05	New Jersey	34
California	06	New York	36
Connecticut	09	North Carolina	37
Delaware	10	Ohio	39
District of Columbia	11	Oklahoma	40
Florida	12	Oregon	41
Georgia	13	Pennsylvania	42
Idaho	16	Rhode Island	44
Illinois	17	South Carolina	45
Indiana	18	Tennessee	47
Kentucky	21	Texas	48
Louisiana	22	Utah	49
Maine	23	Vermont	50
Maryland	24	Virginia	51
Massachusetts	25	Washington	53
Michigan	26	West Virginia	54
Mississippi	28		
Missouri	29		

TABLE C-2

Type Codes Used in DOE Sample Identification Number*

<u>Digit</u>	<u>Sample Type</u>
50	Stream sediment from flowing stream, sieved <149 μ m and dried <110°C
51	Stream water, filtered through <0.8 μ m filter at the site
52	Well water, filtered through <0.8 μ m filter at the site
53	Spring water, filtered through <0.8 μ m filter at the site
54	Lake water, filtered through <0.8 μ m filter at the site
55	Lake sediment
56	Glacial till
57	Peat
58	Soil, sieved >149 μ m and <1000 μ m
59	Soil, sieved <149 μ m
60	Stream sediment from dry stream, sieved >149 μ m and <1000 μ m, and dried <110°C
61	Stream sediment from dry stream, sieved <149 μ m and dried <110°C.
62	Talus
63	Volcanic neck
64	Playa sediment
65	Hot springs, sinter
66-69	Spare numbers**

* The 28-character DOE-GJO identification number for NURE samples contains two digits to denote sample type. The digits 50 through 69 have been set aside for SRL use.

** To be noted in individual reports as needed.

DPTH

Depth of the well in feet, if known. These data are generally provided by the householder. An estimate of the confidence in this number is given in the microfiche Table A-2. "U" indicates that the well depth is not known. Springs are coded as having a depth of 0 feet.

U

Uranium in ground water is determined by delayed neutron counting after concentrating the uranium on ion exchange resin. U is reported in parts per billion (ppb).

Values have been rounded to appropriate significant figures. Values for uranium are reported for all samples analyzed; however, analyses <0.040 ppb exhibit a high coefficient of variation. Missing data are indicated by "M". Where all analytical data for a sample are missing, samples will generally be analyzed and reported in a supplementary report.

U/COND

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

Helium

Helium (^4He) is determined for selected quadrangles using a specially developed mass spectrometric procedure (SRP-138b). When available, helium values are reported in standard cubic centimeters of helium per 1000 liters of air ($\text{cm}^3\text{He}/1000\text{L}$, i.e., ppm by volume). The measurement is made on a 2-cm^3 air-gap above a 300-cm^3 water sample. This method introduces a nearly constant 5.2 ppm helium background from air; thus, all samples analyzed are above detection limit.

Other Key Elemental Analyses

Other elements analyzed were determined by neutron activation analysis (unless otherwise noted) and are listed alphabetically. Concentrations are reported in ppb. Values below detection limit are indicated by a minus (-). For example, -3 means that the sample contains less than 3 ppb of that element. If background is so high that an accurate estimate of the minimum detection limit

is not available, a period (.) is used to indicate not only that the element was not detected, but that the detection limit is unusually high for that sample. Missing data are indicated by "M". Where all analytical data for a sample are missing, samples will generally be analyzed and reported in a supplementary report.

II. Columnar Entries for Supplementary Ground Water Data.

These data are presented on microfiche only.

SRL Identification Number

Same as in Table A-1.

Supplementary Elemental Analyses

Same format as Table A-1.

SAMPDATE

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

TEAM

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

ROCKTYPE

This code identifies the predominant rock type present in immediate vicinity of the sample site. The types listed are:

1 Other	6 Clastic-coarse
2 Volcanic - Felsic	7 Sandstone
3 Volcanic - Mafic	8 Shale
4 Plutonic - Felsic	9 Carbonate
5 Metamorphic	0 Unconsolidated valley fill

CONTAMN

The activities/contaminants columns indicate those nearby activities which may influence the analytical results. It is a

very important entry, chosen from the list of numerical designators shown. The major activity and/or contamination is always listed under CONTAMN4. A second activity, if considered important, is listed under CONTAMN3, etc.

CONTAMN1	1 Other	6 Garbage
CONTAMN2	2 None	7 Farming
CONTAMN3	3 Chemical	8 Grazing
CONTAMN4	4 Smelting	9 Oil field
	5 Mining	

FORM

This code indicates the geologic formation surrounding the sampling site. The first letter and the next three consonants in the formation name are entered. Similarly the age is entered if the name of the formation is unknown. If neither formation or age are known, "UNKN" is entered.

ODOR

Odors in well water are noted. The entries in this column and their meanings are:

- 1 Other
- 2 None
- 3 H₂S (hydrogen sulfide)
- 4 Oil

TEMP

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

DEPTHCON

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

- 1 Certain
- 2 Probable
- 3 Possible
- 4 Educated Guess
- 5 Unknown

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

WELLOC

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

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

WELCLASS

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

1 Other	4 Livestock
2 Domestic	5 Irrigation
3 Municipal	6 Industrial - commercial

SCINT

A scintillometer reading in counts per second is recorded at the sampling site.

III. Columnar Entries for Sediment Data

Sediment data (and accompanying water quality measurements) will normally be presented in Tables B-1 (full-sized tables) and B-2 (microfiche tables).

SRL Identification Number

Each SRL identification (ID) site code consists of seven characters. The first two characters give the 1° x 2° NTMS quadrangle in which the sample was collected. Map codes are entered as Characters 3 and 4; these represent 15-minute quadrangles. Codes used are listed in Figure 2 of each report. Sites are numbered sequentially within each map unit (Characters 5, 6, and 7). Numbers begin with 001 in each map unit for stream sites and are

generally consecutive. Columns 8 and 9 represent the sample analyzed. In most reports, the S1 fraction [finer than 149 micrometers (U.S. Std. 100 mesh)] was analyzed. S0 and S2 mean that coarser (149 μ m to 1000 μ m) or finer (<149 μ m) fractions, respectively, were analyzed. Specific fractions will be identified in individual reports as necessary.

DOE Identification Number

Each sample is assigned a 28-Character DOE ID number as described for Table A-1 in Appendix A.

FORM, ODOR, pH; COND, UM/CM; AKMXD, MEQ/L

Same format as Table A-1.

Key Elemental Analyses

The first three elements are listed in order of importance; other key elements are listed alphabetically.

Concentrations of each element (in ppm) are determined by neutron activation analysis (unless otherwise noted). Values have been rounded to appropriate significant figures. Note that the elemental (not oxide) concentration is quoted in this table. Values below detection limit are indicated by a minus (-). For example, -3 means that the sample contains less than 3 ppm of that element. If background limit is not available, a period (.) is used to indicate not only that the element was not detected, but that the detection limit is unusually high for that sample. Missing data are indicated by "M". Where all analytical data for a sample are missing, samples will generally be analyzed and reported in a supplementary report.

IV. Columnar Entries for Supplementary Sediment Data

These data are presented on microfiche only.

SRL Identification Number

Same as in Table B-1.

Supplementary Elemental Analyses

Same format as Table B-1.

SAMPDATE

The date of sampling, month/day/year. For example, 7/15/79 is July 15, 1979.

TEAM

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

ROCKTYPE

This and following columns contain codes describing the sample site characteristics. Rocktype identifies the predominant rock type present in the immediate vicinity of the sample site. The types listed are:

1 Other	6 Clastic - coarse
2 Volcanic - Felsic	7 Sandstone
3 Volcanic - Mafic	8 Shale
4 Plutonic - Felsic	9 Carbonate
5 Metamorphic	0 Unconsolidated valley fill

SEDSIZE

This code reflects the nature of the loose sediment material at the sampled site.

1 Other	4 Silt and Clay
2 Pebbles and coarser	5 Organic muck
3 Sand	

STMWIDTH AND STMDEPTH

1 Dry	5 2 to 4 ft
2 <1/2 ft	6 4 to 8 ft
3 1/2 to 1 ft	7 8 to 16 ft
4 1 to 2 ft	

An estimate of the AVERAGE width and depth of the stream over the 100 to 200 feet of stream length where the sample was taken.

STMFLOW

- 1 Dry
- 2 Slow
- 3 Moderate
- 4 Fast
- 5 Torrent

STMLEVEL

- 1 Dry
- 2 Low
- 3 Normal
- 4 High

The water description provides an indication of the general condition of the water at the time of sampling. STMFLOW indicates the rate of flow using the listed descriptors at the sampled location [i.e., if a stream is sampled in rapids, the 4 (Fast) or 5 (Torrent) may apply; but if the same stream were sampled above or below the rapids, the 2 (Slow) or 3 (Moderate) descriptors might be more accurate]. STMLEVEL describes the water level relative to its apparent normal level.

VEGTYPE

- 1 Other
- 2 Forest
- 3 Desert Scrub
- 4 Grassland
- 5 Saltbush
- 6 Marsh

VEGDENS

- 1 Sparse
- 2 Moderate
- 3 Dense

These descriptions reflect the amount and type of plant growth in the immediate area of the sample location. The density is a subjective observation made in relation to visibility, ease of access, etc. The type of vegetation reflects the dominant plant type at or near the sample location.

RELIEF

- 1 0 to 10 ft
- 2 10 to 50 ft
- 3 50 to 200 ft
- 4 >200 ft

Relief is an indicator of local surface expression.

COMPOSIT

COMPOSIT refers to the number of subsamples taken at each site that are composited to give the sieved sample for that site.

CONTAMN

The activities/contaminants columns indicate those nearby activities which may influence the analytical results. It is a very important entry, chosen from the list of numerical designators shown. The major activity and/or contamination is always listed under CONTAMN4. A second activity, if considered important, is listed under CONTAMN3, etc.

CONTAMN1	1 Other	6 Garbage
CONTAMN2	2 None	7 Farming
CONTAMN3	3 Chemical	8 Grazing
CONTAMN4	4 Smelting	9 Oil field
	5 Mining	

WATERTEM

The water temperature, taken at the time of sampling, is coded under WATERTEM. The water temperature is recorded in degrees Celsius (°C) to the nearest whole degree.

V. Graphical Data and Maps

Areal distributions ("symbol plots") of all measurements in Tables A-1 and B-1 are presented in hard copy. Graphical summaries of elemental data in Tables A-2 and B-2 are on microfiche only. Histograms and cumulative frequency plots are given on microfiche. The symbols for the areal distribution plots are derived from the statistical distribution of the measurements within the quadrangle being reported (Table C-3). Symbols are based upon statistical distribution rather than absolute values to permit convenient comparison of elements with widely differing concentration ranges.

QUALITY ASSURANCE FOR SAMPLE COLLECTION

Three to ten percent of the sampled sites were routinely checked by SRL personnel or by a separate subcontractor to assure that the reported field locations were accurate. Based on these quality assurance checks, the vast majority of sampled sites were judged to be located as accurately as they could be plotted on available maps. Most sites that were mapped incorrectly were within 300 meters of their correct locations. Details of mapping errors are given in each Data Report in the section on **Factors Affecting the Data**. Thus, the goals of a regional reconnaissance have not been compromised by mapping errors. Details of the quality assurance program are given in NURE-SRL progress reports (SRL-138).

TABLE C-3

Statistical Distribution Symbols for Areal Maps

<i>Symbol</i>	<i>Percentile Range</i>	<i>Standard Deviation Above Mean^a</i>
★	>99.5	>2.6
◆	98.6 to 99.5	2.2 to 2.6
●	96.4 to 98.6	1.8 to 2.2
⊙	91.9 to 96.4	1.4 to 1.8
⊙	84.1 to 91.9	1.0 to 1.4
⊙	72.6 to 84.1	0.6 to 1.0
⊙	57.9 to 72.6	0.2 to 0.6
⊙	42.1 to 57.9	-0.2 to 0.2
⊙	27.4 to 42.1	-0.6 to -0.2
○	15.9 to 27.4	-1.0 to -0.6
○	8.1 to 15.9	-1.4 to -1.0
○	3.6 to 8.1	-1.8 to -1.4
•	1.4 to 3.6	-2.2 to -1.8
×	<1.4	<-2.2
+	-	below detection limit

a. Signs are reversed relative to cumulative frequency plots. In the cumulative frequency plots, values are accumulated from the largest to the smallest value to ensure that the largest value is plotted. "Percentile" assumes accumulation from the smallest to the largest value.

Field measurements were checked for approximately 2% of the sites. Where important variations occurred, the sampling subcontractor was required to repeat measurements for the area in question. Only the corrected values are reported. Questionable data that could not be corrected are discussed in individual reports or omitted, depending upon the severity of the potential error.

REFERENCES FOR APPENDIX C

GJBX-77(77), Proceedings of Symposium on Hydrogeochemical and Stream Sediment Reconnaissance for Uranium in the United States, Grand Junction, Colorado, March 16 and 17, 1977: DOE-GJO Document No. GJBX-77(77).*

Price, V., and Jones, P. L., 1979, Training Manual for Wastes and Sediment Geochemical Reconnaissance: SRL Document DPST-79-219, E. I. du Pont de Nemours & Co., Inc., Savannah River Laboratory, Aiken, South Carolina. DOE-GJO Document No. GJBX-XX(79).*

SRL-138, NURE-SRL progress reports:

1. Savannah River Laboratory Quarterly Reports; Hydrogeochemical and Stream Sediment Reconnaissance - Eastern United States; National Uranium Resource Evaluation Program: E. I. du Pont de Nemours & Co., Inc., Savannah River Laboratory, Aiken, South Carolina.

<u>No.</u>	<u>Quarter</u>	<u>SRL Document No.</u>	<u>DOE-GJO Document No.*</u>
a	January-March 1975	DPST-75-138-1	GJBX-5(76)
b	April-June 1975	DPST-75-138-2	GJBX-6(76)
c	July-September 1975	DPST-75-138-3	GJBX-7(76)
d	October-December 1975	DPST-75-138-4	GJBX-8(76)
e	January-March 1976	DPST-76-138-1	GJBX-17(76)
f	April-June 1976	DPST-76-138-2	GJBX-27(76)
g	July-September 1976	DPST-76-138-3	GJBX-63(76)
h	October-December 1976	DPST-76-138-4	GJBX-6(77)
i	January-March 1977	DPST-77-138-1	GJBX-35(77)
j	April-June 1977	DPST-77-138-2	GJBX-55(77)
k	July-September 1977	DPST-77-138-3	GJBX-90(77)
l	October-December 1977	DPST-77-138-4	GJBX-37(78)
m	January-March 1978	DPST-78-138-1	GJBX-66(78)

* DOE-GJO reports are available on microfiche from the Grand Junction Office, DOE, for \$6.00. Prepaid orders should be sent to: Bendix Field Engineering Corporation, Technical Library, P.O. Box 1569, Grand Junction, Colorado 81501. Checks or money orders should be made out to Bendix Field Engineering Corporation, the operating contractor for DOE's Grand Junction Office.

2. Savannah River Laboratory Semiannual Reports; Hydrogeochemical and Stream Sediment Reconnaissance - Eastern United States; National Uranium Resource Evaluation Program: E. I. du Pont de Nemours & Co., Inc., Savannah River Laboratory, Aiken, South Carolina.

No.	Period	SRL Document No.	DOE-GJO Document No.*
a	April-September 1978	DPST-78-138-2	GJBX-13(79)

3. Savannah River Laboratory Semiannual Reports; Hydrogeochemical and Stream Sediment Reconnaissance; National Uranium Resource Evaluation Program: E. I. du Pont de Nemours & Co., Inc., Savannah River Laboratory, Aiken, South Carolina.

No.	Period	SRL Document No.	DOE-GJO Document No.*
a	October 1978-March 1979	DPST-79-138-1	GJBX-86(79)
b	April-September 1979	DPST-77-138-2	GJBX-160(79)

* DOE-GJO reports are available on microfiche from the Grand Junction Office, DOE, for \$6.00. Prepaid orders should be sent to: Bendix Field Engineering Corporation, Technical Library, P. O. Box 1569, Grand Junction, Colorado 81501. Checks or money orders should be made out to Bendix Field Engineering Corporation, the operating contractor for DOE's Grand Junction Office.

- EXPLANATION
- Q QUATERNARY SEDIMENTARY DEPOSITS; Includes fan gravel, stream channel deposits and aeolian sand deposits.
- Q1 QUATERNARY PLAYA DEPOSITS.
- Qv QUATERNARY VOLCANIC ROCKS; Mostly basalt and andesite; may include some late Pliocene volcanic rocks.
- QP QUATERNARY AND PLIOCENE NONMARINE SEDIMENTARY ROCKS; Mostly Quaternary.
- Tc TERTIARY NONMARINE SEDIMENTARY ROCKS.
- Ti TERTIARY INTRUSIVE ROCKS; Mostly acidic plutons but includes shallow masses with volcanic textures.
- gr MESOZOIC INTRUSIVE ROCKS; Mostly granitic in composition but includes local patches of metamorphic rocks.
- bi MESOZOIC BASIC INTRUSIVE ROCKS.
- Pzv MESOZOIC VOLCANIC ROCKS; Mostly metamorphosed; varied composition.
- Ms MESOZOIC SEDIMENTARY ROCKS; Mostly marine Triassic clastic rocks.
- M UNDIVIDED PRE-CRETACEOUS SEDIMENTARY ROCKS; Mostly metamorphosed non-carbonate rocks.
- Pz UNDIVIDED PALEOZOIC SEDIMENTARY ROCKS; Mostly recrystallized carbonate rocks.
- DP DEVONIAN-PERMIAN MARINE SEDIMENTARY ROCKS; Mostly carbonate strata; Undivided.
- OS ORDOVICIAN-SILURIAN MARINE SEDIMENTARY ROCKS; Mostly carbonate strata; Undivided.
- E CAMBRIAN MARINE SEDIMENTARY ROCKS; Includes Wood Canyon Formation and younger Cambrian marine sedimentary rocks; Wood Canyon Formation mostly orthoquartzite, others are carbonate rocks.
- pe3 LATEST PRECAMBRIAN SEDIMENTARY ROCKS; Includes Noonday Dolomite, Johnnie Formation (mostly quartzite), and Stirling Quartzite.
- pe2 LATE PRECAMBRIAN SEDIMENTARY ROCKS; Includes Crystal Spring Formation (clastic sedimentary rocks, carbonate strata, and diabase sill), Beck Spring Dolomite, and Kingston Peak Formation (quartzite, shale, and conglomerate).
- pe1 OLDER PRECAMBRIAN METAMORPHIC ROCKS; Includes sedimentary, intrusive, and extrusive rocks; Mostly quartz diorite in average composition; Locally contains abundant pegmatite dikes.

Sedimentary or intrusive contact.

Fault contact; Solid line where accurately located, dashed where approximately located, dotted where concealed, bars on upper plate of thrust faults. NOTE: Many faults not shown where very closely spaced as in Funeral and Grapevine Mountains.

Principal Sources of Information.

Cornwall, H.A., 1972, Geology and mineral deposits of southern Nye County, Nevada: Nevada Bur. Mines and Geology, Bull. 77 Plate 1.

Streitz, Robert, and Stinson, H.C., 1974, Death Valley Sheet, Geologic Map of California: California Division of Mines and Geology, Scale 1:250,000.

GEOLOGY OF THE DEATH VALLEY QUADRANGLE

□ AGE DATE LOCATION

PLATE 1 - C

DEATH VALLEY, CALIFORNIA, NEVADA

PLATE 1 - C

PLATE 1 - C

[illegible]

Print Modes for WELLS	Print Modes for SPRINGS
NCAS + 558	NCAS ○ 558
+ NCAS 558	○ NCAS 558
NCAS 558 +	NCAS 558 ○
NCAS 558	NCAS 558
+	○
+	○
NCAS 558	NCAS 558
NCAS	NCAS
+	○
558	558
+ (Site Location)	○ (Site Location)

GROUND WATER SAMPLE SITE LOCATIONS IN THE *DEATH VALLEY* QUADRANGLE

PLATE 2

PLATE 3

Print Modes
for
SURFACE SITES
NCAS + 058
+ NCAS 058
NCAS 058 +
NCAS 058
+
NCAS 058
NCAS
+
058
+ (Site Location)

SURFACE SAMPLE SITE LOCATIONS

IN THE DEATH VALLEY QUADRANGLES

PLATE 3

PLATE 3

Uranium - parts per billion				
+ < D.L.	○ 0.457- 0.528	○ 1.109- 1.358	● 3.028- 3.650	● 9.478- 19.060
x < 0.334	○ 0.528- 0.869	○ 1.358- 1.751	● 3.650- 5.936	◆ 19.060- 102.100
○ 0.334- 0.457	○ 0.869- 1.109	○ 1.751- 3.028	● 5.936- 9.478	★ > 102.100

URANIUM DISTRIBUTION IN THE GROUND WATERS OF THE *DEATH VALLEY* QUADRANGLE

Uranium - parts per million					
+ < D.L.	○ 2.200- 2.500	○ 3.100- 3.500	⊙ 4.400- 5.100	● 7.500- 9.300	
× < 2.000	○ 2.500- 2.800	○ 3.500- 3.900	⊙ 5.100- 5.800	◆ 9.300- 14.700	
○ 2.000- 2.200	○ 2.800- 3.100	⊙ 3.900- 4.400	⊙ 5.800- 7.500	★ > 14.700	

URANIUM DISTRIBUTION IN THE SEDIMENTS OF THE *DEATH VALLEY* QUADRANGLE

Thorium - parts per million				
+ < D.L.	○ 6.0- 6.0	○ 10.0- 13.0	⊙ 18.0- 22.0	● 36.0- 65.0
x < 5.0	○ 6.0- 8.0	○ 13.0- 15.0	⊙ 22.0- 27.0	◆ 65.0- 140.0
○ 5.0- 6.0	○ 8.0- 10.0	⊙ 15.0- 18.0	⊙ 27.0- 36.0	★ > 140.0

THORIUM DISTRIBUTION IN THE SEDIMENTS OF THE *DEATH VALLEY* QUADRANGLE

CONDUCTIVITY DISTRIBUTION IN THE GROUND WATERS OF THE *DEATH VALLEY* QUADRANGLE