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Reconnaissance Geochemical Assessment of Metallic Mineral Resource Potential, Riordan's Well Wilderness Study Area (NV 040-166), Nye County, Nevada

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ABSTRACT

The Riordan's Well Wilderness Study Area (WSA) covers about 90 square miles, and is located in the Grant Range, Nye County, Nevada.

A total of 119 stream-sediment, 114 heavy-mineral-concentrate, and 8 rock samples was collected and analyzed for 31 elements by emission spectrography and for Ag-As-Sb by atomic absorption spectrophotometry (AA). Rock samples were also analyzed for Au using AA. Eighteen spring water samples were collected and analyzed for 14 elements (Ag, As, Li, Ca, Cu, Fe, Mn, K, Mg, Mo, Na, Pb, Sb, and Zn) by AA and for Cl, F, and SO_4 by ion chromatography. The specific conductivity and alkalinity were also measured.

Elements and/or anions most effective in outlining mineralized areas are as follows: As, B, and Zn in stream sediments; Bi, Co, Mo, Pb, Sn, Th, W, and Zn in heavy-mineral concentrates; As, F, and SO_4 in spring waters; and Ag, As, Au, B, Mo, Pb, Sb, and Zn in rock samples.

Two areas classified 3C (moderate favorability and certainty) have the potential for Au-W mineralization, such as occurs in the nearby Troy mining district. These areas are located along the southwest margin and at the northwest boundary of the study area. These areas were outlined by anomalous concentrations of one or more of the elements W, Sn, Mo, Bi, Pb, and Zn in heavy-mineral concentrates, Au and Pb in rocks, and As in stream sediments.

Two other areas classified 3C have potential for epithermal precious-metal mineralization and are located in the south-central and north-central parts of the study area. These areas were outlined by anomalous values of one or more of the elements As, Zn, B, and Ag in stream sediments, Zn in heavy-mineral concentrates, As and SO_4 in spring water, and Au, Ag, As, Sb, B, Zn, Cu, and Mo in rocks.

The remainder of the study area is classified at lower levels of favorability and certainty, e.g. 2B (low favorability and certainty) and 1B (no favorability and low certainty).

INTRODUCTION

The Federal Land Management Policy Act of 1976 specifies that lands administered by the Bureau of Land Management (BLM) must be reviewed for suitability for preservation as Wilderness (Fisher and Juilliand, 1983). One aspect of the review process is the evaluation of metallic mineral resource potential. A Geology-Energy-Minerals (GEM) report (Great Basin GEM Joint Venture, 1983), a survey of existing literature, initiated evaluation of the Riordan's Well Wilderness Study Area (WSA) NV 040-166, Nye County, Nevada (fig. 1). Based on recommendations made in the GEM report, a reconnaissance geochemical survey was undertaken to locate areas of metallic mineral resource potential not previously identified by prospects, claims, or private exploration. The geochemical survey is the subject of this report, and in conjunction with the GEM report, will provide the BLM with the information needed to make an initial recommendation of suitability for Wilderness designation (Fisher and Juilliand, 1983).

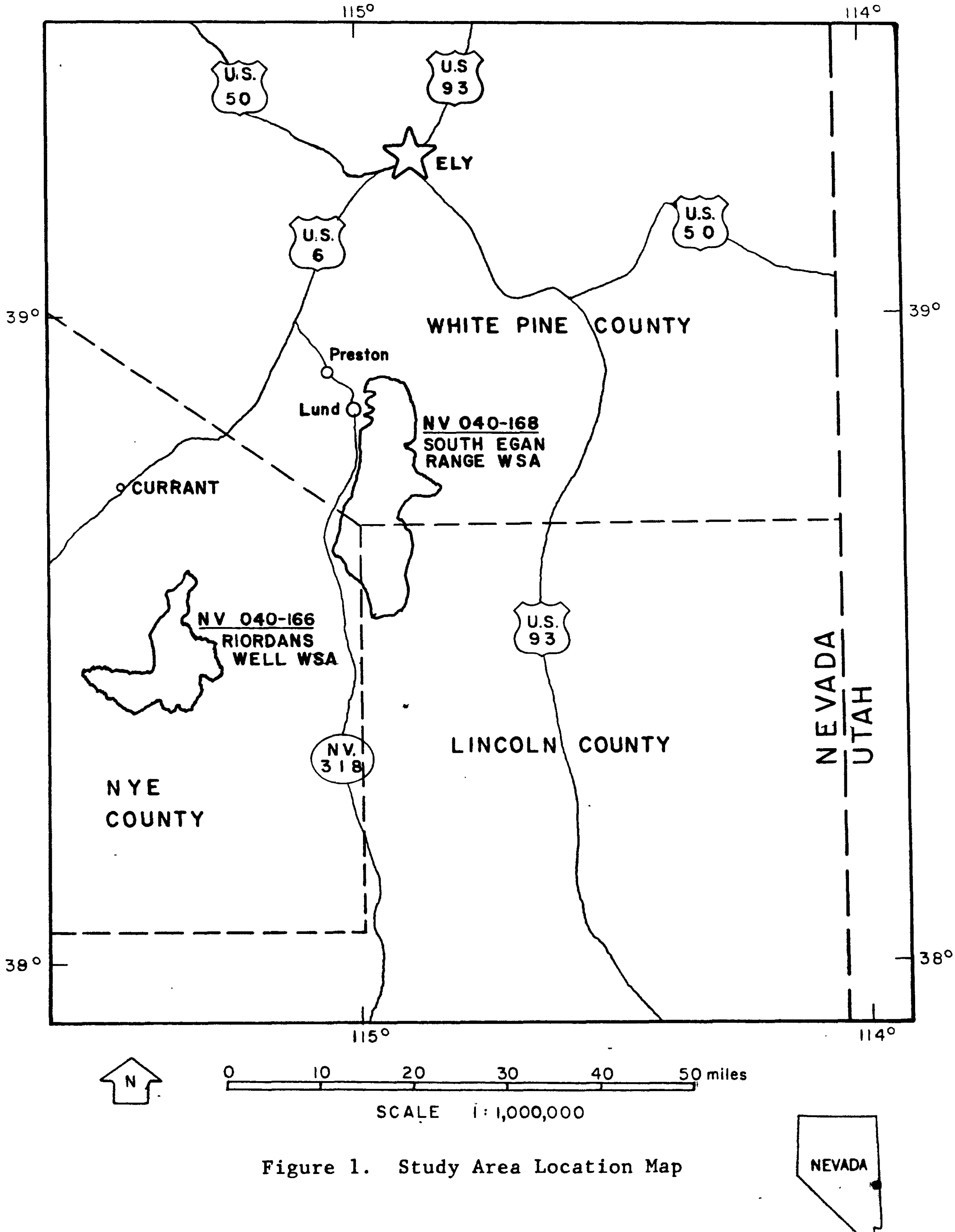

Figure 1. Study Area Location Map

Stream sediment, spring water, and rock samples (fig. 2) were collected in June 1983 with the assistance of G. B. Allen. Chemical analyses of stream sediment and rock samples were performed by G. W. Day and R. W. Leinz; water samples were analyzed by W. H. Ficklin. Manipulation of data and statistical analysis were performed by B. Chazin and R. J. Goldfarb. The results of this study have allowed regions within the Riordan's Well WSA to be ranked according to their metallic mineral resource potential using the classification scheme outlined in table 1.

LOCATION AND PHYSIOGRAPHY

The Riordan's Well WSA is located in east-central Nevada (fig. 1) and covers approximately 90 sq mi. The northern boundary of the area is 12 mi southeast of the town of Currant. Access to the area from U.S. Highway 6 to the west and from Nevada Highway 318 to the east (fig. 1) is by dirt roads and jeep trails.

U.S. Geological Survey topographic maps covering the area include the Currant, Blue Eagle Springs, Forest Home, and Troy Canyon 15-minute quadrangles. Relief in the area reaches 3,500 feet in the most mountainous portions of the Grant Range. The mountainous area is concentrated in the central and southwestern portions of the study area and includes at least 18 peaks over 8,000 feet, the highest of which is Heath Peak at 9,352 feet. The remainder of the study area consists of lower hills and gently sloping alluvial fans. The area is drained by ephemeral streams which discharge to the west into the Railroad Valley and to the east into the White River Valley. The climate is arid to semiarid. Vegetation consists primarily of mixed conifers, Juniper-Pinyon woodland, and sagebrush.

GEOLOGIC SETTING

The Grant Range is a north-trending range bounded by alluviated valleys near the center of the Basin and Range Province. It is the topographic expression of a tilted fault block bounded by west-dipping listric(?) normal faults, developed as a result of regional east-west extension during Miocene time. The core of the range consists of Cambrian through Pennsylvanian carbonates, quartzites, and shales. Locally, these rocks are overlain by thin deposits of lacustrine limestone, sandstone, and siltstone of Eocene age. Portions of the range, including the northern half and eastern flank of the Riordan's Well WSA, are covered by Oligocene and Eocene volcanic rocks composed predominantly of calc-alkaline ignimbrites. Prior to Basin and Range extension, during Oligocene time, these rocks were all disrupted by listric(?) imbricate low-angle faults developed in response to crustal extension oriented approximately N65W-S65E (Gans and Miller, 1983). Quaternary basalt, located east of Bald Mountain (see topographic base map, plates 1-3) in the north-central part of the WSA, is the youngest rock unit in the study area.

Details of the stratigraphy, structure, paleontology, and historical geology of the Riordan's Well WSA are given in: Kral (1951), Kirkpatrick (1960), Huttrer (1963), Hyde (1963), Kleinhampl and Ziony (1967), Hyde and Huttrer (1970), Gans and Miller (1983), and the Great Basin GEM Joint Venture (1983).

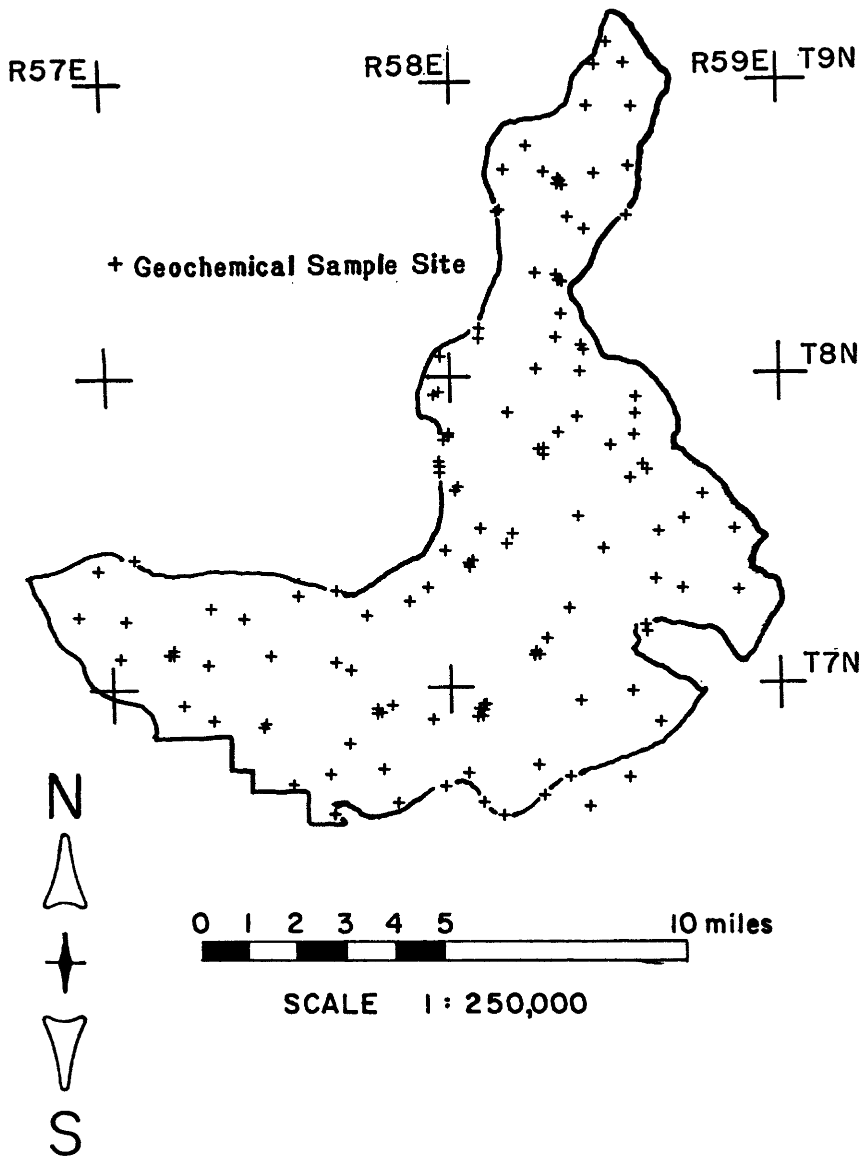

Figure 2. Geochemical Sample Sites--Riordan's Well Wilderness Study Area

TABLE 1.--Resource potential classification scheme (Fisher and Juilliand, 1983)

I. Level of favorability	II. Level of certainty
1. The geologic environment and the inferred geologic processes do not indicate favorability for accumulation of mineral resources.	A. The available data are insufficient and/or cannot be considered as direct or indirect evidence to support or refute the possible existence of mineral resources within the respective area.
2. The geologic environment and the inferred geologic processes indicate low favorability for accumulation of mineral resources.	B. The available data provide indirect evidence to support or refute the possible existence of mineral resources.
3. The geologic environment, the inferred geologic processes and the reported mineral occurrences or valid geochemical/geophysical anomaly indicate moderate favorability for accumulation of mineral resources.	C. The available data provide direct evidence, but are quantitatively minimal to support or refute the possible existence of mineral resources.
4. The geologic environment, the inferred geologic processes, the reported mineral occurrences, and/or valid geochemical/ geophysical anomaly, and the known mines or deposits indicate high favorability for accumulation of mineral resources.	D. The available data provide abundant direct and indirect evidence to support or refute the possible existence of mineral resources.

METALLIC MINERAL RESOURCES

Known mineral deposits, prospects, mineral occurrences, mining claims, and mineral deposit types

There is no recorded mineral production, mineral deposits, or prospects within the Riordan's Well WSA. However, Kral (1951) reported Pb-Ag occurrences and a Mn occurrence in Grant Canyon, along the southeast margin of the WSA. These occurrences may be related to the Troy mining district, southwest of the WSA which is reported to have produced one million dollars worth of gold and an unknown quantity of tungsten (Kral, 1951). Tungsten production was primarily from the Nye and Terrell mines from skarn deposits in carbonate rocks adjacent to a Tertiary intrusion. Gold was produced from quartz veins associated with the same intrusive complex. Some of the claims covering the Troy mining district extend into the southwest corner of the study area.

Just east of the northern end of the study area is a disseminated gold occurrence. Some of the claims covering this area are within the study area.

Two other claim blocks occur within the study area; one near the southeast margin, and one in the east-central part of the study area. The type(s) of mineralization associated with these claim blocks is unknown. A claim block north of Heath Canyon is adjacent to the study area, but again the type of mineralization is unknown.

Based on mineral occurrences within the Riordan's Well WSA and in the surrounding regions, several types of mineralization may possibly occur within the study area, including: (1) epithermal deposits of precious metals, mercury, or uranium, as veins or disseminations; (2) base-metal veins or replacements; (3) W-Mo-Sn or Cu-bearing skarn deposits; and (4) Mo and/or Cu porphyry deposits. Major components and trace elements associated with these deposit types are presented in table 2.

GEOCHEMISTRY

Introduction

The purpose of this reconnaissance geochemical survey is to identify new regions of potentially significant mineralization within the Riordan's Well WSA. Because no previous geologic or geochemical exploration results are known to exist for the study area, the GEM report classified the metallic mineral resource favorability for the entire area 2B (see classification scheme, table 1). The results of the present study permit the study area to be further subdivided and reclassified with greater certainty.

A total of 119 sediment samples, and 114 heavy-mineral-concentrate samples from stream sediments, 18 spring water samples, and 8 rock samples was collected and analyzed by semiquantitative direct-current arc emission spectrography and atomic-absorption spectrophotometry. The results were entered into the U.S. Geological Survey's computerized archive, the Rock Analysis Storage System (RASS), and are tabulated in appendix A.

TABLE 2.--Elements associated with different deposit types

(Rose, Hawkes, and Webb, 1979)

Type of deposit	Major components	Associated elements
Hydrothermal deposits		
Porphyry copper (Bingham)	Cu, S	Mo, Au, Ag, Re, As, Pb, Zn, K
Porphyry molybdenum (Climax)	Mo, S	W, Sn, F, Cu
Skarn-Cu (Yerington)	Cu, Fe, S	Au, Ag
Skarn-Pb (Hanover)	Pb, Zn, S	Cu, Co
Skarn-W-Mo-Sn (Bishop)	W, Mo, Sn	F, S, Cu, Be, Bi
Base-metal veins	Pb, Zn, Cu, S	Ag, Au, As, Sb, Mn
"Epithermal" precious metal	Au, Ag	Sb, As, Hg, Te, Se, S, U
Mercury	Hg, S	Sb, As
Uranium vein	U	Mo, Pb, F

Sampling Design

Stream-sediment sample sites were chosen to provide representative coverage for a geochemical assessment of the occurrence of mineral resources in the study area. The study area was divided into one-square-mile cells. In a given cell, if there was more than one appropriate site, one was chosen at random as representative of the cell. Sites were generally located in first-order or small second-order streams draining areas of approximately 1/2 to 3/4 sq mi. Differences in sediment geochemistry between sample sites should permit detection of geochemical halos surrounding major mineralized regions. Two areas of known mineralization in the adjacent South Egan Range, a subeconomic disseminated gold occurrence and a base- and precious-metal vein deposit, were both clearly identified using the sampling methods of this study (Rowan and others, 1984). However, the sample density of one site per square mile represents a compromise between sensitivity in detecting weaker, more dispersed geochemical halos, the probability of missing anomalies, and time and cost limitations. The sample density used permits identification of geochemically anomalous regions where more detailed geochemical and geologic exploration should be focused.

Sample collection

Bulk sediment and heavy-mineral concentrate samples were collected from 119 stream sediment sites. Due to insufficient sample size, only 114 of the concentrate samples could be analyzed. At each stream site a composite bulk sediment sample was collected from a 50-foot stretch of channel. Each sample was passed through a 10-mesh (2-mm) sieve and placed into a cloth sample bag. Larger samples (about 8 lbs) for analysis of the heavy minerals were collected from sites within the stream channel where heavy minerals were likely to accumulate. Later, these samples were panned and the heavy fraction saved.

Spring water samples were collected from 18 locations identified on topographic maps and from the air. A 400-ml sample was taken at each site and stored in a new untreated plastic bottle. In addition, a 60-ml sample was filtered through a 0.45 micrometer filter, acidified with reagent grade concentrated nitric acid to pH 2, and stored in an acid-rinsed polyethylene bottle. Water temperature and pH were measured at each site.

Eight rock samples showing evidence of mineralization were collected from outcrops and float. Descriptions of rock samples containing anomalous concentrations of ore-related elements are presented in appendix B.

Sample preparation

The bulk sediment samples were passed through an 80-mesh (0.18-mm) stainless steel sieve and the fine fraction retained. This fraction contains clay, silt, fine sand, hydroxides, and organic matter. Previous work has shown that this size fraction has a high capacity for metal ion adsorption and that secondary minerals of ore deposits, particularly iron and manganese oxides, tend to be friable and break down to this size.

The heavy-mineral (panned) concentrates were passed through a 35-mesh (0.5-mm) stainless steel sieve, then separated in bromoform (specific gravity 2.8) to remove any remaining light minerals (quartz, feldspar, etc.). The heavy minerals were separated into three fractions using a large electromagnet. The most magnetic material (largely magnetite) was discarded; the second fraction, largely ferromagnesian silicates and iron oxides, was saved for possible future analysis; and the third fraction, the least magnetic material, including zircon, sphene, rutile, some sulfates, carbonates, oxides, and sulfides, was divided using a Jones splitter. One split was hand ground for spectrographic analysis and the other saved for possible future mineralogical study.

Water samples required no preparation beyond that done in the process of collecting them. Rock samples were crushed and then pulverized with ceramic plates to minus 0.15 mm.

Analytical Procedures

Emission spectrography, as outlined by Grimes and Marranzino (1968), was used to analyze all bulk sediment samples, heavy-mineral concentrates, and rocks for 31 elements. The lower limit of detection for each element in the analysis is given in table 3a. In general, the precision is plus or minus one reporting value of the actual value 83% of the time and within two intervals approximately 96% of the time (Motooka and Grimes, 1976).

The semiquantitative spectrographic analyses are reported as "six-step" geometric midpoints (...1, 1.5, 2, 3, 5, 7, 10, 15...) of increasing geometric intervals (...0.83-1.2, 1.2-1.8, 1.8-2.6, 2.6-3.8, 3.8-5.6, 5.6-8.3, 8.3-12, 12-18...). These intervals represent logarithmic class widths of 0.16667. The line density on the spectrographic plate is approximately proportional to the log of the amount of the element present. Consequently, the expected error in reading line densities is logarithmically related to the element concentration. Geometric classes are advantageous because the error variance is somewhat proportional to the concentration of the element detected (Miesch, 1976).

Arsenic, antimony, and silver are potentially important pathfinders for the types of precious-metal mineralization known to occur in the geologic setting of the study area. Due to their relatively low natural concentrations and their relatively high spectrographic lower detection limits (table 3a), they are rarely detected in spectrographic analyses. Atomic absorption analysis (modification of Viets, 1978) of the bulk sediment samples was performed in order to obtain meaningful values for As, Sb, and Ag (table 3a).

Rock samples were analyzed spectrographically for 31 elements and by atomic absorption for Au (Thompson and others, 1968) as well as As, Sb, and Ag (table 3a). Lower detection limits for analyses performed on water samples are listed in table 3b. The results of chemical analysis of bulk sediment, heavy-mineral concentrate, rock, and spring water samples are listed in appendix A.

TABLE 3a.--Lower detection limits for sediment, heavy-mineral concentrate, and rock analyses

Element	Method	Lower detection limit for sediments (ppm) and rock	Lower detection limit for heavy-mineral concentrates (ppm)
Iron (Fe)	Emission Spec.	0.05%	.1%
Magnesium (Mg)		.02%	.05%
Calcium (Ca)	(Grimes and	.05%	.1%
Titanium (Ti)	Marranzino, 1968)	.002%	.005
Manganese (Mn)		10	20
Silver (Ag)		0.5	1
Arsenic (As)		200	500
Gold (Au)		10	20
Boron (B)		10	20
Barium (Ba)		20	50
Beryllium (Be)		1	2
Bismuth (Bi)		10	20
Cadmium (Cd)		20	50
Cobalt (Co)		5	10
Chromium (Cr)		10	20
Copper (Cu)		5	10
Lanthanum (La)		20	50
Molybdenum (Mo)		5	10
Niobium (Nb)		20	50
Nickel (Ni)		5	10
Lead (Pb)		10	20
Antimony (Sb)		100	200
Scandium (Sc)		5	10
Tin (Sn)		10	20
Strontium (Sr)		100	200
Vanadium (V)		10	20
Tungsten (W)		50	100
Yttrium (Y)		10	20
Zinc (Zn)		200	500
Zirconium (Zr)		10	20
Thorium (Th)		100	200
Arsenic (As)	Atomic Absorption	5	
Antimony (Sb)		1	
Silver (Ag)	(Modification of	0.05	
Gold (Au)	Viets, 1978)	0.05	

TABLE 3b.--Lower detection limits for water analyses

Element or constituent determined	Method	Detection limit (ppb)	Reference
Ag	GFAA	.2	Perkin-Elmer, 1977
As	GFAA	1	Aruscavage, 1977
Li	FAA	10	Perkin-Elmer, 1976
Ca	FAA	100	Perkin-Elmer, 1976
Cu	GFAA	1	Perkin-Elmer, 1977
Fe	GFAA	1	Perkin-Elmer, 1977
Mn	GFAA	1	Perkin-Elmer, 1977
K	FAA	100	Perkin-Elmer, 1976
Mg	FAA	100	Perkin-Elmer, 1976
Mo	GFAA	1	Perkin-Elmer, 1977
Na	FAA	100	Perkin-Elmer, 1976
Pb	GFAA	1	Perkin-Elmer, 1977
Sb	GFAA	1	Perkin-Elmer, 1977
Zn	GFAA	.5	Perkin-Elmer, 1977
SO_4	Ion Chromatography	100	Fishman and Pyen, 1979
Alkalinity[1]	Grans Plot, Titration	1000	Orion Research, 1973
F	Ion Chromatography	10	Fishman and Pyen, 1979
Cl	Ion Chromatography	50	Fishman and Pyen, 1979
Sp. Cond.	Specific Conductivity Bridge	--	Skougstad and others 1979

GFAA Graphite furnace atomic absorption (Perkin-Elmer Corporation, 1977)

FAA Flame atomic absorption

1 As bicarbonate

Threshold Determination

The main objective in exploration geochemistry is the detection of chemical patterns or geochemical anomalies related to mineralization. In order to distinguish values related to mineralization from background values, a threshold value for each element is established. Threshold is defined as the upper limit of background values. Values higher than threshold are considered anomalous and worthy of careful scrutiny. For the purpose of threshold determinations and statistical interpretation, the geochemical data for Riordan's Well was combined with that of the South Egan Range Wilderness Study Area, WSA NV 040-168 (Rowan and others, 1984), because the geology and types of mineralization are similar in both areas, and the statistics are generally more meaningful for a large data base. The threshold values for each element were determined from cumulative frequency tables and percent frequency histograms, supplied by STATPAC program A470 (VanTrump and Miesch, 1977), which provide a quick method for visual representation of the data. Modes can be easily recognized and the frequency distribution of the data is apparent.

For elements with normal distributions the threshold was placed in the right tail, generally between the 95th and 99th percentiles, at breaks in the frequency distribution of the data, if present. When multimodal distributions were identified, the threshold value was placed at the point between populations thought to represent the background values of the lithology, and the remaining values thought to represent mineralized rock. The threshold values used in this study and the percentage of samples classified as background, i.e. below threshold, are listed in table 4.

A total of 34 rock samples was obtained from both study areas, and because many of these were collected from mine dumps, the determinations of threshold values for rocks were based upon: (1) comparison of the data with average background abundances of the elements in different rock types (table 4); and (2) published surveys of known mineralized areas.

Element Associations and Factor Analysis

Because certain groups of elements respond similarly to a given set of environmental conditions, it follows that associations of different elements may serve to identify more clearly the geochemical variations present in the geological environment. Associations of some elements may be related to rock type while others may be related to a particular type of mineralization (table 2).

Although data for a large number of chemical elements were acquired, geochemical associations permit the simplification of this larger data set into a smaller set of new variables, each variable consisting of a suite of elements. Factor analysis is a mathematical technique for deriving these new variables. R-mode factor analysis, (VanTrump and Miesch, 1976; Davis, 1973) with varimax rotation, was used to define geochemical associations in the sediment, concentrate, and groundwater data bases. This type of factor analysis collects the experimental variables (elements) that tend to behave similarly into groups termed factors. Specific types of mineral deposits frequently contain a characteristic geochemical signature composed of a characteristic suite of trace elements. Therefore certain factors can be used

TABLE 4.--Threshold values and average elemental abundances

Element	Threshold values (ppm) for anomalous concentrations (lower percentile limit in parentheses)				Average elemental abundances (ppm) (Rose, Hawkes, and Webb, 1979)			
	Stream Sediment	Heavy-mineral concentrate	Rock	Water**	Granite	Limestone	Shale	Fresh Water
Mn	1500 (98)	2000 (99)	--	--	3901100	850	0.015	
Th	--	1000 (99)	--	--	20 .1.7	12	0.0001	
Cr	150 (99)	--	1000	--	4.111	90	0.001	
Ni	50 (98)	100 (99)	500	--	4.520	68	--	
Co	--	30 (96)	--	--	1 .0.1	19	0.0001	
Pb	100 (99.5)	300 (92)	70	.001*	18 ..5	25	.003	
Zn	200* (99)	500* (97.5)	300	.013	51 .21	100	.020	
B	100 (99)	200 (98)	70	--	10 .20	100	--	
Bi	10* (98)	20* (99)	15	--	.3--	1	--	
Mo	7 (99)	10* (96)	15	.005	1.30.4	2.6	.0015	
Sn	15 (99)	20* (94)	30	--	3 --	6	--	
W	--	100* (98)	200	--	1.5..5	1.8	--	
Cd	--	70 (99)	100	--	0Q1035	0.3	--	
As	30 (98)	500* (99)	90	.007	2.11.1	12	.002	
Au	--	20* (99.5)	.05*	--	.0023	.005	.004	--
Ag	.3 (97)	1* (97.5)	.5	--	.037	0.1	0.19	--
Sb	3 (92)	200* (98)	3	--	0.20.3	1-2	--	
$SO_4^{=}$	--	--	--	50	-- --	--	3.74	
F^-	--	--	--	.6	-- --	--	0.1	
Cu	150 (99.5)	100 (98)	150	.009	12 ..5	42	.003	

* Lower detection limit

** Water samples were analyzed by methods listed on table 3b to define and recognize rock types and/or deposit types occurring within the study area. Factor analysis helped in choosing which elements to plot and in the recognition of geochemical anomalies controlled by lithology. Conventional methods of element correlation on a data set of this size (31 elements times approximately 300 sites for the two study areas), such as using overlays of element plots, would require vast amounts of time and may have missed subtle correlations.

The suite of elements that makes up a factor is determined through interpretation of the factor loadings which depict the influence of each factor on a variable (i.e. element), and may be interpreted similarly to correlation coefficients. In other words, a high positive or negative loading denotes, respectively, a positive or negative geochemical correlation between the element and the factor. Related to the loadings are the factor scores, which measure the magnitude of the factor's effect on each individual sample. Tables 5, 6, and 7 show the factor loadings for the factors determined to be significant (eigenvalues greater than one) within the sediment, concentrate, and groundwater data bases, respectively. Due to the small size of the rock data set, factor analysis was not applicable.

In stream sediments, the first two factors are related to lithology. Most of the elements in factor 1 (Y, Ti, V, Mn, Sc, Zr, Fe, Sr, Ba, La, Co, Be) are associated with felsic and alkalic igneous rocks (Rose, Hawkes, and Webb, 1979) and elements in factor 2 (Ca, Mg, Pb) are indicative of carbonates (table 5). Factors 1 and 2 allow the study area to be divided into a northern half, characterized by samples with strong factor 1 scores, and a southern half, characterized by strong factor 2 scores (plate 1). The geochemical boundary between factors 1 and 2 correlates well with the contact between Tertiary volcanics and Paleozoic sediments (Great Basin GEM Joint Venture, 1983). This geological and geochemical framework aids interpretation of possibly ore-related anomalies (plate 1). Suites of elements in factors 3, 4, and 5 are less obviously attributable to a discrete lithology, and represent mixes of both mineralized and unmineralized rock sources. Factor 3 defined the association Ni, Cu, As (table 5). None of the sediment samples within the Riordan's Well WSA showed strong factor 3 scores although As alone was important in helping define several of the anomalous regions. Factor 4 defined the association Cr, Ni, B, Ag and factor 5, Zn (table 5). Anomalous amounts of the important constituents of factors 3, 4, and 5 are plotted on plate 1 together with other ore-related elements such as Mo, Pb, and Sn.

In concentrates, the element associations defined by factors 1-5 are probably related to lithologic controls (table 6). Factor 6, however, shows a strong loading for Zn and weaker Pb, Cu, and Co loadings, defining a suite of elements often associated with metallic mineralization. Plate 2 shows sample sites enriched in these elements and in other elements not included in the factor analysis but possibly related to mineralization including Bi, Mo, Sb, Sn, and W.

In spring waters, factors 4 and 5 are the most likely to be representative of mineralization (table 7). Factor 4 has strong positive loadings for Zn and Cu, while factor 5 has strong positive loadings for F^- and SO_4^{-2}. Sites anomalous in these elements are plotted on plate 3. The factor 4 association (Zn, Cu) may be related to base and/or precious-metal

TABLE 5.--Factor loadings for stream sediments, R-mode factor analysis, VARIMAX factor rotation

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Fe%	0.8248	-0.0677	0.0556	0.1276	0.3547
Mg%	-0.2446	0.8071	-0.2142	0.0595	0.0113
Ca%	-0.1554	0.7940	0.1538	0.0627	-0.1712
Ti%	0.8676	-0.1294	0.1736	0.0347	0.2004
Mn	0.8553	0.1885	0.1173	0.1991	0.1306
B	0.4567	0.1754	0.2865	0.6395	-0.2360
Ba	0.8025	0.2842	-0.1936	0.2502	-0.1228
Be	0.5779	0.2851	-0.2370	0.3654	-0.3144
Co	0.6862	-0.2105	0.0950	0.3256	0.2852
Cr	0.4760	0.2953	0.0263	0.6471	0.0700
Cu	0.2421	0.1978	0.7136	-0.2070	0.2576
La	0.7978	-0.1687	-0.1625	-0.1193	-0.0152
Ni	0.2057	0.0048	0.5653	0.6479	-0.0863
Pb	0.3896	0.6863	0.0497	0.1239	0.0481
Sc	0.8505	-0.0448	0.0010	0.2071	0.0751
Sr	0.8084	0.1332	-0.0803	0.1201	-0.1310
V	0.8565	0.0088	0.1375	0.2094	0.2805
Y	0.8682	-0.0012	0.0362	0.3125	0.0352
Zn	0.2269	-0.0782	0.0021	0.0792	0.8739
Zr	0.8277	-0.0793	0.1296	-0.0032	0.0412
As	-0.1810	-0.1340	0.6855	0.0839	-0.1061
Ag	0.0220	0.0323	-0.2257	0.7782	0.2275
Percent of total data variance explained (75.51%)	43.65%	12.14%	8.05%	6.26%	5.41%
Element Assoc.	Y, Ti, V, Mn, Sc, Zr, Fe, Sr, Ba, La, Co, Be	Mg, Ca, Pb	Cu, As, Ni	Ag, Ni, Cr, B	Zn

TABLE 6.--Factor loadings for heavy-mineral concentrates R-Mode factor analysis, VARIMAX factor rotation

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Fe%	0.7776	0.2799	-0.0051	0.2664	0.0775	-0.0195
Mg%	-0.0634	0.1008	-0.4296	0.7621	-0.2479	0.0188
Ca%	0.2754	-0.3404	0.1361	0.7416	0.1682	-0.0120
Ti%	0.5040	0.7095	0.0800	-0.0500	-0.0014	-0.0194
Mn	0.7487	0.2832	-0.1321	-0.1383	-0.1516	0.1202
B	0.6242	-0.1809	0.1172	0.0284	0.2943	0.2168
Ba	0.1771	0.1099	0.0506	0.0514	0.8590	0.0424
Be	-0.1390	0.1449	0.7602	0.0343	-0.1266	0.0690
Co	0.6788	0.2325	-0.1810	-0.0868	-0.1370	0.3046
Cr	0.6583	0.0799	0.1735	0.3719	0.0645	-0.1414
Cu	0.7224	0.0065	-0.0024	0.1066	0.1458	0.3005
La	0.6177	0.3939	0.4304	-0.0590	0.0557	-0.2311
Nb	0.0972	0.6324	0.1713	0.2097	-0.2897	0.1470
Ni	0.7939	-0.1010	0.0992	0.1177	0.1438	-0.1017
Pb	0.2859	0.1451	0.1608	0.4746	0.1011	0.4989
Sc	0.1709	0.7369	0.0573	-0.1827	0.0894	-0.1619
Sr	0.1432	-0.1452	0.6451	-0.1005	0.5073	-0.0356
V	0.7973	0.3779	0.0125	0.1072	0.1015	-0.0354
Y	0.4738	0.4283	0.5303	0.0094	0.2432	-0.2488
Zn	0.0664	-0.1334	-0.0610	-0.0356	-0.0023	0.8049
Zr	-0.0240	0.6877	-0.0776	-0.0537	0.4741	-0.0559
Percent of total data variance explained (70.76%)	31.47%	12.16%	10.11%	6.52%	5.28%	5.22%
Element Assoc.	V, Ni, Fe, Mn, Cu, Co, Cr, B, La, Ti	Sc, Ti, Zr, Nb	Be, Sr, Y	Mg, Ca	Ba, Sr	Zn, (Pb), (Co), (Cu)

TABLE 7.--Factor loadings for spring and well waters
R-Mode factor analysis, VARIMAX factor rotation

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
As	0.5383	-0.0045	0.2213	-0.5029	-0.3251
Li	0.5837	0.1865	0.2243	0.1954	0.2517
Ca	0.1767	-0.0303	0.8920	-0.1112	0.0439
Cu	-0.0580	0.4471	0.1098	0.7045	-0.0525
Fe	-0.0310	0.8272	0.0679	0.1968	-0.1397
Mn	-0.0807	0.8539	-0.1681	0.106	0.0007
K	0.7168	0.0262	-0.0252	-0.0177	-0.0327
Mg	-0.0010	-0.4300	0.5987	0.2872	0.3509
Mo	0.5070	0.4523	0.0209	-0.2429	0.4662
Na	0.8929	-0.1641	0.0846	-0.1204	0.1000
Pb	0.0230	0.2898	-0.3243	0.1299	-0.5559
Zn	0.0068	-0.0006	-0.0687	0.9010	0.0960
SO_4	0.6274	-0.0400	0.3043	-0.0633	0.5101
Alkalinity	0.1951	-0.0915	0.9152	-0.0354	0.0525
F^-	0.5415	0.0021	0.2524	0.0601	0.6317
Cl^-	0.8388	-0.1236	0.2662	-0.0215	0.0845
Sp. Cond.	0.3419	-0.1308	0.8827	0.0151	0.2323
Percent of total data variance explained (72.92%)	33.49%	14.05%	12.39%	7.27%	5.72%
Element Assoc.	Na, Cl, K, SO_4, Li, F, As, Mo	Mn, Fe	Alk., Ca, Mg	Zn, Cu,	F, SO_4 Mo

mineralization, whereas factor 5 (F^-, SO_4^{-2}, Mo) may be suggestive of porphyry Mo or epithermal uranium mineralization.

Factor analysis was not applicable to the rock data due to the small number of samples. Locations of rock samples containing anomalous concentrations of the elements Ag, As, Au, B, Bi, Cd, Cu, Cr, Mo, Ni, Pb, Sb, Sn, W, and Zn are plotted on plate 3.

Interpretation of Geochemical Anomalies

Under ideal conditions, the occurrence of anomalously high concentrations of an ore-related element, or a specific association of elements in a sample, may indicate that economic mineralization is present. Anomalies not related to mineralization may be caused by: (1) rock types having high background concentrations of ore-related elements; (2) concentration of normal background abundances of ore elements by coprecipitation with iron and manganese oxides and adsorption by clays and organics; (3) contamination; (4) sampling or analytical errors; and (5) random statistical variation.

The absence of an anomaly does not necessarily mean that a mineral deposit does not exist. The deposit may occur too deep or below an impervious layer that prevents transport of elements into the sample medium. In stream sediments and ground waters, dilution and/or immobilization of elements may cause samples collected in the vicinity of mineralization to show only background values. In this study more confidence is assigned to anomalies at sites where two or more elements occur in anomalous concentrations, where there are clusters of sites with anomalous concentrations of elements, or where anomalies occur in different sample media (e.g. stream sediments, heavy-mineral concentrates, spring waters, and rocks).

The Riordan's Well WSA is in substantially natural condition and possible contamination from roads, ranching, and mining are minimal. Roads intrude only into the margins of the area (see topo-base, plates 1-3) and contamination from ranching (e.g. from trace chemicals added to livestock feed) is possible only at the northern end of the area. No mines or prospect pits have been recognized in the study area.

Examination of plates 1, 2, and 3 (geochemical anomaly maps) reveals an interesting distribution of samples with anomalous trace element contents. For discussion purposes, anomalous areas of particular interest are designated A-1, A-2, etc. The suffixes BS, PC, R, and W denote the sample type (bulk stream-sediment, heavy-mineral, panned, concentrate, rock or water) collected at a given site. For example, R040BS is a bulk stream-sediment sample collected at site number 040 in the Riordan's Well WSA as indicated by the prefix R.

A-1. Anomalous Area 1 is in the southeastern part of the study area where two sediment samples, R156BS and R041BS (plate 1), contain anomalous As and are surrounded by sediment samples containing anomalous B (R2163BS, R227BS, R155BS, and R157BS, plate 1). Immediately to the north six concentrate samples contain anomalous Zn and show strong factor 6 (Zn, Pb, Cu, Co) scores at sites R100PC, R101PC, R102PC, R103PC, R104PC, and R005PC (plate 2). Sample R101PC also contains anomalous B. Sediment samples containing anomalous B (plate 1) occur to the east (R002BS) and west

(R203BS, R213-215BS) of the Zn anomaly in concentrates. Five mineralized rock samples obtained from area A-1 (R159R, R160R, R164R, R1164R, and R100R, plate 3) contain anomalous concentrations of one or more of the elements As, Zn, B, Au, Ag, Sb, Cu, Mo, Ni, and Cr. Anomalous rock samples are described in appendix B. At lower elevations, 1.5 miles southeast of the As stream sediment anomaly is a spring (R027W, plate 3), discharging at the contact between alluvium and bedrock, also anomalous in As.

The occurrence of anomalous concentrations of these ore-related elements (table 2), in different sample media in the same vicinity, is significant and most likely indicates the presence of metallic mineralization. In the South Egan Range WSA, the association of anomalous concentrations of As in sediments and rocks, and Zn in concentrates, defined an area known to contain disseminated precious-metal mineralization (Rowan and others, 1984). The association in A-1 of As-Zn, surrounded by samples with anomalous B, with mineralized rocks enriched in Au, Ag, As, Sb, B, Zn, Cu, Mo, Ni, and Cr is considered here to be evidence of precious-metal mineralization. The formations outcropping in A-1 (Guilmette Formation, Joana Limestone, Chainman-Diamond Peak Formation, and Ely Limestone) are known to be favorable hosts for precious metal mineralization in the surrounding region.

A-2. Anomalous Area A-2, just north of A-1, has several sediment samples containing anomalous concentrations of elements that define the factor 4 associations (table 5), especially B, Cr, and Ni (R169BS, R119BS, R205-207BS, R203BS, R213-215BS, plate 1). In the South Egan Range WSA (Rowan and others, 1984) the concentrations of these elements were found to be related to high background values in sediments derived from the Joana Limestone, Chainman Shale, and Ely Limestone. These formations also outcrop along the eastern margin of A-2 and may account for the anomalous values.

Also occurring in A-2 are sediment samples anomalous in Mo (R119BS and R205BS), Zn (R2213BS and R203BS), and Pb (R217BS). Two samples of concentrates are anomalous, one in Zn (R119PC) and one in Sn (R206PC). Five spring water samples are anomalous, one in Mo (R025W), three in SO_4^{-2} (R024W, R031W, R034W), and one in SO_4^{-2} and Cu (R035W). SO_4^{-2} is a common oxidation product of sulfide and sulfosalt minerals.

Although suggestive of mineralization, the element association B, Cr, Ni, Zn, Pb, Cu, Mo, Sn, SO_4^{-2} is not characteristic of a single deposit type, and is inconclusive (table 2). The anomalous samples occurring in A-2 may be related to lithology, to mineralization defining a northerly continuation of the As, Zn, B anomaly occurring to the south (A-1), to a different type of mineralization (e.g. base-metal or Mo-W occurrences), or to a combination of these.

A-3. Anomalous Area A-3 is in the northern portion of the study area where sediment sample R243BS contains anomalous concentrations of Ag, As, and Zn with surrounding sediment samples containing anomalous Zn (R242BS, R236BS, R217BS). Several sediment samples are anomalous in Mn (see plate 1). A heavy-mineral concentrate from this area is anomalous in Sn and Co (R244PC). A rock sample (described in appendix B) (R175R) contains anomalous Au, Ag, As, and Sb and spring waters (R028W and R029W) are anomalous in As and F^-.

The Zn anomalies could be due to concentration of normal background abundances by coprecipitation with and adsorption by hydrous Fe and Mn oxides. However, the element association Au, Ag, As, Sb, Zn, Co, Sn, Mn, F, provided by sediment, water, and rock samples, is suggestive of epithermal precious-metal mineralization.

A-4. Anomalous Area 4 contains scattered sediment samples anomalous in Mn, Cr, or Ni (R239BS, R237BS, R179BS, R110BS, R114BS, R115BS, R116BS, R111BS), two anomalous in Zn and Sn (R237BS, R179BS), and two in Zn (R106BS, R110BS). Two samples of heavy-mineral concentrate are anomalous in Th (R179PC and R106PC).

The anomalous concentration of Mn, Cr, and Ni in these sediment samples is probably related to high background values in the Tertiary volcanics outcropping in the area. The high Zn values may be related to adsorption and/or coprecipitation with Fe and Mn oxides. Three of the samples (R179, R237, and R106) anomalous in Zn, Sn, and Th are adjacent and may be indicative of mineralization.

A-5. Anomalous Area A-5 is at the extreme north end of the study area where a concentrate sample (R168PC) contains anomalous Pb, Mo, Co, Ni, and Mn. Although unlikely, the anomalous concentration of these elements may be related to a disseminated Au occurrence known to exist just to the east but outside of the study area (Great Basin GEM Joint Venture, 1983).

A-6. Anomalous Area A-6 is located along the southwest boundary of the study area where concentrate samples exhibit a zonation pattern from W, Bi on the west (R127PC, R224PC, R223PC) through Pb, Zn (R223PC, R222PC, R125PC, R212PC, R008PC, R011PC, R012PC, R150PC) to Sn, W, Bi on the east (R152PC and R153PC). A sediment sample, located in the Pb-Zn zone, is anomalous in As (R013BS). A rock sample (described in appendix B) from the same area (R011R) contains anomalous Pb and Au. A-6 is just northeast of the Troy mining district which has produced W from skarns and Au from quartz veins. Kral (1951) reported Pb-Ag occurrences in Grant Canyon, at the northern margin of the Troy district near the southern margin of the study area. Two important W mines in the Troy district, the Nye and Terrell mines, are located just south of two concentrate samples (R127PC and R224PC) containing anomalous W. Au veins in the Troy district are located south of the rock sample containing anomalous Au, Pb, and the sediment sample containing anomalous As. The anomalous samples which define A-6 are probably all related to mineralization in the adjacent Troy mining district and may outline a northern extension of the district.

A-7. Anomalous Area A-7 occurs to the north of A-6 where a concentrate sample (R122PC) contains anomalous Mo and a mineralized rock sample (described in table B) contains anomalous Au and Pb (R122R). The element association Mo, Au, Pb, is suggestive of W-Au mineralization such as occurs in the Troy mining district.

To summarize, the anomalous areas discussed above can be ranked according to their relative significance. Anomalous areas A-1, A-3, A-6 and A-7 are the most significant in the study area because they contain rock samples which provide direct evidence of mineralization. Of these, A-6 and A-7 are the most important due to their proximity to the Troy mining district. Anomalous area

A-5 may be significant due to its proximity to known precious-metal mineralization, although the element association is unusual for one of these deposits. Anomalous Area A-2 is moderately significant based upon the occurrence of anomalous concentrations of ore-related elements in sediments, concentrates, and spring waters, although the possibility remains that this anomaly is related to lithology. Anomalous Area A-4 most likely reflects local high background, although three samples may be indicative of mineralization.

STRATEGIC AND CRITICAL MINERALS AND METALS

Tungsten, a strategic and critical mineral, has been produced from mines in the Troy district within one mile of the study area. Geochemical anomalies of one or more of the elements W-Sn-Mo-Bi-F-SO_4 occur within the study area (see plates 1-3) and may indicate areas of tungsten mineralization. To determine whether or not potentially mineable accumulations are present would require a follow-up study of the anomalous areas entailing more closely spaced geochemical sampling and detailed mapping of the geology.

METALLIC MINERAL RESOURCE FAVORABILITY

Based on the geochemical survey the resource favorability of areas within the Riordan's Well WSA have been reclassified using the scheme outlined on table 1. A prefix designation, e.g. Ml, is given to each area for purposes of discussion (see fig. 3).

Ml-3C. This area (fig. 3) contains anomalous concentrations of the following ore-related elements in stream sediments, heavy-mineral concentrates, spring water, and rocks: Au; Ag; As; B; Sb; Zn; Cu; Mo; Ni; and Cr. This element association is characteristic of precious-metal deposits. The rock samples provide direct evidence of mineralization. The geologic formations occurring in the area host precious-metal deposits in the surrounding region.

M2-2B. This area (fig. 3) contains anomalous concentrations of one or more of the elements B, Ni, Zn, Pb, Cu, Mo, Sn, SO_4^{-2} in stream sediments, heavy-mineral concentrates, and spring waters. A similar geochemical signature in the adjacent South Egan Range WSA is believed to be related to lithology, although here the element association could also reflect precious-metal, base-metal, or Mo-Sn-W mineralization.

M3-3C. This area (fig. 3) contains anomalous concentrations of ore-related elements in samples of stream sediment, heavy-mineral concentrate, spring water, and rock. The rock sample provides direct evidence of mineralization. The element association Au, Ag, As, Sb, Zn, Mn, Sn, F^- is characteristic of precious-metal deposits The volcanic rocks which outcrop in M-2 host disseminated precious-metal mineralization in the South Egan Range WSA (Great Basin GEM Joint Venture, 1983).

M4-2B. This area (fig. 3) contains occurrences of anomalous Mn, Zn, Sn, Ni, and Cr in stream sediments and Th in heavy-mineral concentrates. These elements are most likely derived from the volcanic rocks outcropping in this area, although three adjacent samples anomalous in Zn, Th, and Sn may be indicative of mineralization.

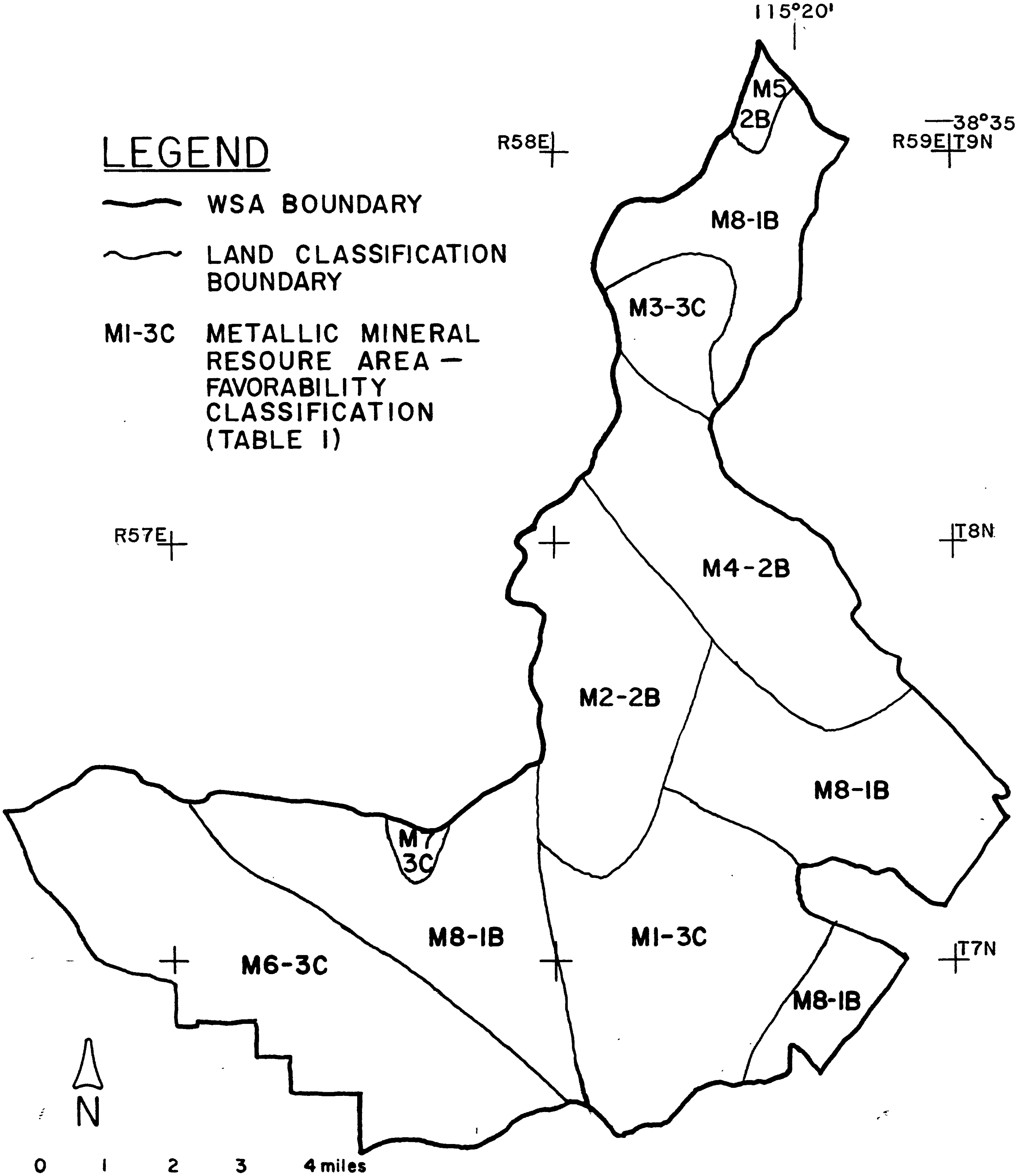

FIGURE 3–METALLIC MINERAL RESOURCE FAVORABILITY MAP, RIORDAN'S WELL WSA (NV 040-166), NYE COUNTY, NEVADA

M5-2B. A heavy-mineral concentrate sample from this area (fig. 3) is anomalous in Pb, Mo, Co, Mn, and Ni. This sample may reflect mineralization related to a known epithermal precious-metal occurrence, near the eastern margin of the study area.

M6-3C. This area (fig. 3) contains anomalous concentrations of ore-related elements in stream sediments, heavy-mineral concentrates, and rock samples. One rock sample provides direct evidence of mineralization. The element association of W, Sn, Bi, Pb, Zn, Au, and As is characteristic of W-skarns, Pb-Zn veins, and Au veins, all of which are reported in the adjacent Troy mining district to the south (Kral, 1951). The zonation of anomalous elements in M6 reflects the zonation of mineral occurrences in the adjacent Troy mining district.

M7-3C. A heavy-mineral concentrate sample in this area (fig. 3) is anomalous in Mo. A rock sample containing anomalous Au and Pb provides direct evidence of mineralization. The element association Mo, Pb, Au is characteristic of W-Au mineralization occurring in the Troy mining district to the south.

M8-1B. These areas (fig. 3) did not contain anomalous concentrations of any ore-related elements in either stream sediments or heavy-mineral concentrates.

RECOMMENDATIONS

Areas classified 3C deserve more detailed study involving detailed geologic mapping of anomalous areas and more closely spaced geochemical sampling of sediments, soils, and rocks. Geophysical methods might also be useful in detecting buried mineral deposits.

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APPENDIX A.--Results of Chemical Analyses

Table A-1 -- Spectrographic and Atomic Absorption Analyses of Stream-Sediment Samples from Riordan's Well Study Area, Nye County, Nevada

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
R001BS	38 24 21	115 18 59	3	1.0	1	.30	500	N	N	N	50	500	2
R002BS	38 24 54	115 19 37	3	1.0	5	.20	500	N	N	N	100	500	3
R003BS	38 23 22	115 19 41	2	1.0	3	.20	500	N	N	N	50	500	2
R004BS	38 23 34	115 21 45	2	1.0	5	.20	300	N	N	N	50	300	2
R005BS	38 24 43	115 20 48	2	1.0	3	.20	500	N	N	N	50	300	2
R006BS	38 23 2	115 21 37	2	1.0	5	.20	500	N	N	N	30	700	3
R008BS	38 25 18	115 29 17	2	5.0	7	.20	500	N	N	N	50	500	2
R009BS	38 25 22	115 26 22	2	5.0	7	.10	300	N	N	N	50	300	2
R010BS	38 25 14	115 26 2	2	3.0	3	.20	500	N	N	N	70	700	2
R011BS	38 24 35	115 29 50	2	2.0	7	.20	500	N	N	N	70	500	2
R012BS	38 24 19	115 29 9	1	3.0	7	.10	500	N	N	N	30	300	1
R013BS	38 24 12	115 28 0	2	5.0	7	.20	500	N	N	N	50	300	1
R100BS	38 25 31	115 21 51	1	3.0	10	.10	300	N	N	N	30	200	1
R101BS	38 25 33	115 21 49	1	5.0	10	.10	300	N	N	N	30	300	1
R102BS	38 25 32	115 21 44	1	5.0	7	.10	300	N	N	N	30	300	2
R103BS	38 25 49	115 21 34	1	3.0	5	.10	200	N	N	N	30	200	2
R104BS	38 26 21	115 21 4	1	5.0	10	.10	200	N	N	N	10	100	1
R105BS	38 26 4	115 19 20	3	3.0	10	.50	500	N	N	N	50	1,000	2
R106BS	38 29 46	115 20 55	5	.7	1	.50	700	N	N	N	20	1,000	1
R107BS	38 29 16	115 20 9	2	.5	2	.50	500	N	N	N	10	1,500	2
R108BS	38 28 41	115 19 42	3	1.0	2	.20	500	N	N	N	30	1,500	3
R109BS	38 28 56	115 19 25	5	1.0	2	.50	700	N	N	N	20	1,000	2
R110BS	38 28 50	115 19 19	10	1.0	2	.70	1,000	N	N	N	50	1,000	1
R111BS	38 27 44	115 19 3	10	1.0	2	>1.00	700	N	N	N	30	1,000	1
R112BS	38 27 59	115 20 53	1	.7	2	.10	300	.5	N	N	20	700	3
R113BS	38 27 25	115 20 18	2	1.0	3	.20	700	N	N	N	70	700	3
R114BS	38 27 30	115 18 29	5	1.0	3	1.00	1,000	N	N	N	30	1,000	2
R115BS	38 28 24	115 18 3	3	1.0	3	.30	500	N	N	N	50	700	3
R116BS	38 29 50	115 19 36	5	2.0	3	.50	700	N	N	N	30	1,000	3
R117BS	38 29 50	115 22 30	2	.7	2	.20	500	N	N	N	50	700	3
R118BS	38 29 20	115 23 57	2	1.0	2	.20	500	N	N	N	70	300	2
R119BS	38 28 45	115 24 2	3	1.0	2	.50	700	N	N	N	100	300	3
R120BS	38 28 30	115 23 37	3	2.0	3	.20	500	N	N	N	70	700	3
R121BS	38 26 27	115 24 42	1	5.0	10	.10	200	N	N	N	20	200	2
R122BS	38 26 38	115 26 22	2	2.0	10	.20	500	N	N	N	70	500	3
R123BS	38 26 18	115 29 14	1	5.0	5	.10	200	N	N	N	30	300	1
R124BS	38 25 33	115 30 4	2	3.0	7	.20	500	N	N	N	50	500	2
R125BS	38 25 28	115 30 10	2	3.0	10	.20	500	.7	N	N	30	500	2
R126BS	38 26 3	115 31 10	3	2.0	5	.30	700	N	N	N	70	700	3
R127BS	38 26 56	115 31 48	2	3.0	10	.20	500	N	N	N	50	700	3
R134BS	38 34 13	115 19 46	2	3.0	5	.20	500	N	N	N	30	500	2
R150BS	38 23 11	115 27 19	2	3.0	5	.20	500	N	N	N	70	500	2
R151BS	38 23 23	115 26 29	1	5.0	7	.10	500	N	N	N	70	500	1
R152BS	38 22 40	115 26 23	2	1.0	5	.20	500	N	N	N	70	500	2
R153BS	38 22 53	115 24 56	1	5.0	7	.20	300	N	N	N	70	500	2

Table A-1.--Spectrographic and Atomic Absorption Analyses of Stream-Sediment Samples from Riordan's Well Study Area, Nye County, Nevada

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s
R001BS	N	N	5	50	10	200	N	N	10	30	N	7	N
R002BS	N	N	10	100	15	50	N	N	30	50	N	10	N
R003DS	N	N	7	50	10	50	N	N	15	30	N	7	N
R004DS	N	N	5	50	10	20	N	N	20	30	N	7	N
R005BS	N	N	5	50	15	20	N	N	10	50	N	7	N
R006BS	N	N	7	100	15	150	N	N	30	50	N	7	N
R008BS	N	N	5	50	15	20	N	N	15	70	N	7	N
R009BS	N	N	5	50	15	20	N	N	15	70	N	5	N
R010DS	N	N	7	70	15	20	N	N	20	50	N	7	N
R011BS	N	N	5	70	15	20	N	N	20	70	N	7	N
R012BS	N	N	N	50	15	20	N	N	10	70	N	5	N
R013BS	N	N	5	50	15	20	N	N	10	50	N	7	N
R100BS	N	N	N	20	10	N	N	N	10	50	N	5	N
R101BS	N	N	5	50	10	N	N	N	10	70	N	5	N
R102BS	N	N	5	70	15	20	N	N	10	70	N	5	N
R103BS	N	N	5	20	10	N	N	N	10	30	N	5	N
R104BS	N	N	N	20	5	N	N	N	5	30	N	5	N
R105BS	N	N	10	70	20	100	N	N	10	70	N	10	N
R106DS	N	N	15	70	10	150	N	50	10	30	N	15	N
R107DS	N	N	5	20	<5	1,000	N	<20	<5	30	N	7	N
R108BS	N	N	7	30	5	300	N	N	5	50	N	7	N
R109DS	N	N	10	50	5	200	N	<20	5	30	N	10	N
R110DS	N	N	20	70	5	200	N	20	15	30	N	15	N
R111BS	N	N	30	200	20	500	N	20	10	30	N	20	N
R112BS	N	N	5	30	5	N	N	N	20	50	N	7	N
R113BS	N	N	10	70	15	20	N	N	30	70	N	7	N
R114DS	N	N	10	100	10	700	N	30	10	30	N	10	N
R115DS	N	N	15	100	15	70	5	N	50	50	N	10	N
R116DS	N	N	30	150	15	100	N	<20	20	30	N	20	N
R117DS	N	N	7	30	15	70	N	N	10	70	N	10	N
R118BS	N	N	10	100	15	20	N	N	15	50	N	7	N
R119DS	N	N	15	150	15	50	7	N	70	30	N	15	N
R120BS	N	N	5	70	15	20	N	N	15	50	N	7	N
R121DS	N	N	N	50	15	N	N	N	15	70	N	5	N
R122BS	N	N	7	100	15	20	N	N	20	50	N	7	N
R123BS	N	N	N	50	10	N	N	N	5	70	N	5	N
R124BS	N	N	5	50	15	20	N	N	15	70	N	7	N
R125BS	N	N	7	70	20	30	N	N	10	70	N	7	N
R126BS	N	N	30	100	20	70	N	N	30	50	N	10	N
R127DS	N	N	5	70	15	20	N	N	20	50	N	7	N
R134DS	N	N	7	50	10	200	N	N	20	50	N	7	N
R150DS	N	N	5	50	10	20	N	N	30	50	N	7	N
R151DS	N	N	7	70	15	N	N	N	10	50	N	5	N
R152BS	N	N	5	50	10	30	N	N	30	20	N	7	N
R153BS	N	N	7	70	10	20	N	N	10	30	N	5	N

Table A-1 -- Spectrographic and Atomic Absorption Analyses of Stream-Sediment Samples from Riordan's Well Study Area, Nye County, Nevada

Sample	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	As-ppm aa	Ag-ppm aa	Sb-ppm aa
R001BS	200	100	N	20	N	200	N	N	10	N	N
R002BS	300	100	N	30	N	200	N	--	N	.18	N
R003DS	200	70	N	20	N	200	N	N	20	.10	N
R004BS	200	50	N	20	N	700	N	N	30	N	N
R005BS	200	30	N	20	N	100	N	N	10	N	N
R006BS	200	70	N	20	N	200	N	--	20	.16	N
R008BS	200	50	N	20	N	200	N	--	5	.15	N
R009BS	150	50	N	15	N	70	N	--	N	.12	N
R010BS	200	70	N	20	N	100	N	--	10	.13	N
R011BS	500	50	N	20	N	200	N	--	N	.14	N
R012BS	200	50	N	15	N	100	N	--	N	.12	N
R013BS	200	50	N	15	N	100	N	--	50	.17	N
R100BS	100	20	N	15	N	70	N	N	20	N	N
R101DS	100	20	N	15	N	100	N	--	15	.14	N
R102BS	100	30	N	15	N	70	N	--	<5	.10	N
R103BS	100	20	N	10	N	70	N	N	15	N	N
R104BS	100	20	N	10	N	50	N	N	10	N	N
R105BS	300	100	N	30	N	500	N	--	<5	.12	N
R106DS	500	200	N	30	<200	200	N	--	N	.12	N
R107BS	500	100	N	50	N	500	N	--	N	.11	N
R108BS	1,000	70	N	20	N	200	N	--	N	.06	N
R109DS	500	150	N	50	N	200	N	--	N	.10	N
R110BS	500	500	N	70	200	1,000	N	--	10	.10	N
R111BS	700	500	N	70	N	300	N	--	N	.07	N
R112DS	500	30	N	20	N	150	N	--	N	.12	N
R113BS	200	70	N	20	N	200	N	--	N	.15	N
R114DS	500	200	N	50	N	500	N	--	5	<.05	N
R115BS	500	100	N	30	N	200	N	--	15	.13	1
R116DS	700	200	N	70	N	500	N	--	N	.10	N
R117BS	500	70	N	30	N	150	N	--	N	.05	N
R118DS	200	50	N	20	N	100	N	N	15	N	N
R119DS	200	150	N	30	N	200	N	--	10	.27	N
R120DS	300	70	N	15	N	200	N	--	5	.10	N
R121BS	100	20	N	10	N	70	N	--	N	.14	N
R122BS	200	70	N	20	N	100	N	--	N	.12	N
R123DS	100	20	N	10	N	50	N	--	N	.12	N
R124BS	300	50	N	20	N	150	N	--	5	.25	N
R125BS	200	50	N	20	N	200	N	--	5	.13	N
R126BS	300	70	N	30	N	200	N	--	N	.07	N
R127BS	500	50	N	20	N	200	N	--	N	.06	N
R134BS	200	70	N	20	N	300	N	--	N	.12	N
R150BS	200	50	N	20	N	300	N	--	5	.13	N
R151BS	200	50	N	15	N	100	N	--	N	.10	N
R152DS	300	50	N	30	N	150	N	N	20	N	N
R153BS	200	70	N	15	N	200	N	--	N	.06	1

Table A-1 -- Spectrographic and Atomic Absorption Analyses of Stream-Sediment Samples from Riordan's Well Study Area, Nye County, Nevada--continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
R154BS	38 23 29	115 25 16	2	3.0	5	.20	300	N	N	N	50	300	2
R155BS	38 23 11	115 23 52	1	2.0	7	.20	500	N	N	N	100	1,000	2
R156BS	38 23 25	115 23 20	2	1.0	3	.20	500	N	N	N	70	500	2
R157BS	38 22 54	115 22 59	2	1.0	5	.20	700	N	N	N	100	1,000	3
R158BS	38 23 56	115 26 3	2	5.0	5	.20	500	N	N	N	70	500	2
R161BS	38 24 25	115 23 8	2	2.0	5	.20	500	N	N	N	50	500	2
R162BS	38 24 26	115 23 1	2	2.0	5	.20	500	N	N	N	70	300	2
R163BS	38 24 34	115 23 6	2	2.0	5	.20	500	N	N	N	70	700	3
R165BS	38 23 22	115 21 2	3	2.0	2	.30	700	N	N	N	50	700	2
R166BS	38 36 25	115 20 17	2	2.0	7	.20	700	N	N	N	70	500	2
R167BS	38 36 3	115 19 53	2	2.0	7	.10	500	N	N	N	50	500	2
R168BS	38 36 1	115 20 33	2	2.0	5	.10	500	N	N	N	30	500	1
R169BS	38 30 11	115 24 4	3	1.0	1	.20	500	N	N	N	150	500	2
R170BS	38 33 23	115 22 46	3	1.0	2	1.00	500	N	N	N	30	1,000	2
R171BS	38 34 34	115 22 6	2	1.0	1	.20	700	N	N	N	50	700	3
R172BS	38 35 17	115 19 43	2	3.0	5	.20	500	N	N	N	50	300	2
R173BS	38 34 5	115 20 33	2	2.0	5	.20	500	N	N	N	50	300	2
R174BS	38 33 20	115 19 48	3	2.0	3	.20	500	N	N	N	50	1,000	2
R176BS	38 33 59	115 21 22	5	.7	1	.50	500	N	N	N	20	500	1
R177BS	38 33 57	115 21 19	3	1.0	2	.50	1,000	N	N	N	50	700	3
R178BS	38 33 52	115 21 16	3	1.0	2	.70	700	N	N	N	50	700	2
R179BS	38 30 8	115 19 35	10	1.0	1	1.00	1,000	N	N	N	20	1,000	1
R201BS	38 27 40	115 22 22	2	2.0	5	.20	500	N	N	N	50	300	2
R202BS	38 27 29	115 22 30	2	2.0	3	.20	500	N	N	N	50	300	1
R203BS	38 27 45	115 23 6	2	1.0	5	.20	500	N	N	N	100	500	3
R204BS	38 25 57	115 19 18	2	2.0	7	.20	700	N	N	N	50	500	2
R205BS	38 29 5	115 21 40	3	1.0	1	.30	500	N	N	N	200	500	3
R206BS	38 29 11	115 21 47	2	1.0	2	.30	500	N	N	N	100	700	2
R207BS	38 29 12	115 21 40	2	1.0	3	.30	500	N	N	N	100	500	2
R208BS	38 29 29	115 21 20	10	2.0	2	.50	700	N	N	N	50	700	2
R209BS	38 26 53	115 19 7	3	2.0	7	.30	700	1.0	N	N	30	1,000	3
R2101BS	38 25 35	115 21 49	1	5.0	10	.10	300	N	N	N	50	300	1
R2105BS	38 26 4	115 19 20	2	3.0	7	.20	500	N	N	N	70	1,000	2
R210BS	38 26 43	115 18 30	2	1.0	2	.20	500	N	N	N	50	700	3
R211BS	38 26 42	115 17 13	2	1.0	2	.20	700	N	N	N	50	1,000	3
R212BS	38 27 47	115 17 19	3	1.0	2	.50	500	N	N	N	70	1,000	3
R213BS	38 27 4	115 23 20	2	5.0	5	.20	500	1.0	N	N	100	500	2
R214BS	38 27 8	115 23 22	2	3.0	5	.20	500	.7	N	N	100	500	3
R215BS	38 27 11	115 23 16	2	2.0	3	.20	500	N	N	N	100	700	2
R2163BS	38 24 34	115 23 6	2	3.0	5	.20	500	N	N	N	100	700	2
R216BS	38 27 22	115 23 54	3	2.0	2	.20	500	N	N	N	70	300	2
R2178BS	38 33 52	115 21 16	5	1.0	2	.50	700	N	N	N	30	1,000	2
R217BS	38 26 42	115 24 17	2	5.0	10	.20	500	N	N	N	30	500	2
R218BS	38 26 12	115 25 40	1	7.0	10	.10	300	N	N	N	20	300	2
R219BS	38 26 32	115 27 14	1	5.0	7	.05	200	.5	N	N	20	200	1

Table A-1 -- Spectrographic and Atomic Absorption Analyses of Stream-Sediment Samples from Riordan's Well Study Area, Nye County, Nevada--continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s
R154BS	N	N	10	100	15	50	N	N	30	30	N	7	N
R155BS	N	N	7	70	20	20	N	N	20	70	N	10	N
R156BS	N	N	5	150	15	20	N	N	30	50	N	7	N
R157BS	N	N	10	70	20	50	N	N	30	70	N	10	N
R158BS	N	N	7	70	15	20	N	N	15	70	N	7	N
R161BS	N	N	7	100	15	20	N	N	20	50	N	7	N
R162BS	N	N	7	70	15	20	N	N	30	70	N	7	N
R163BS	N	N	7	100	20	20	N	N	20	70	N	7	N
R165BS	N	N	15	70	10	200	N	N	20	30	N	15	15
R166BS	N	N	5	100	10	20	N	N	15	50	N	5	N
R167BS	N	N	5	70	7	20	N	N	15	30	N	5	N
R168BS	N	N	5	70	7	20	N	N	15	50	N	5	N
R169BS	N	N	10	100	20	20	N	N	30	30	N	10	N
R170BS	N	N	7	70	10	150	N	N	5	50	N	10	N
R171BS	N	N	10	70	20	50	N	N	15	70	N	7	N
R172BS	N	N	5	50	10	20	N	N	20	30	N	7	N
R173BS	N	N	10	50	10	150	N	N	20	30	N	10	N
R174BS	N	N	7	70	15	N	N	N	10	70	N	7	N
R176BS	N	N	10	70	10	30	N	N	5	30	N	10	N
R177BS	N	N	20	100	20	70	N	N	10	70	N	20	N
R178BS	N	N	20	70	20	70	N	30	7	50	N	15	N
R179BS	N	N	15	100	20	300	N	70	10	30	N	20	15
R201BS	N	N	5	50	15	N	N	N	30	30	N	7	N
R202BS	N	N	5	70	15	20	N	N	15	30	N	7	N
R203BS	N	N	10	200	20	30	N	N	50	50	N	10	N
R204BS	N	N	10	50	15	30	N	N	10	70	N	10	N
R205BS	N	N	20	150	20	50	7	N	50	50	N	15	N
R206BS	N	N	15	100	15	20	N	N	30	50	N	10	N
R207BS	N	N	7	100	10	100	N	N	30	30	N	10	N
R208BS	N	N	20	100	15	150	N	20	20	50	N	15	N
R209BS	N	N	10	70	15	70	N	N	15	70	N	10	N
R2101BS	N	N	N	70	15	N	N	N	10	70	N	5	N
R2105BS	N	N	7	50	15	150	N	N	10	70	N	7	N
R210BS	N	N	7	50	10	100	N	N	20	30	N	10	N
R211BS	N	N	7	70	20	50	N	N	20	50	N	10	N
R212BS	N	N	10	70	15	100	N	20	30	50	N	10	N
R213BS	N	N	7	70	15	20	N	N	20	50	N	7	N
R214BS	N	N	10	150	20	70	N	N	50	30	N	10	N
R215BS	N	N	10	70	15	20	N	N	20	70	N	10	N
R2163BS	N	N	7	70	20	20	N	N	20	70	N	7	N
R216BS	N	N	10	70	15	20	N	N	20	30	N	10	N
R2178BS	N	N	15	70	15	70	N	20	10	50	N	15	N
R217BS	N	N	7	100	20	50	N	N	20	100	N	7	N
R218BS	N	N	7	50	10	100	N	N	10	50	N	7	N
R219BS	N	N	N	50	10	N	N	N	5	70	N	5	N

Table A-1.--Spectrographic and Atomic Absorption Analyses of Stream-Sediment Samples from Riordan's Well Study Area, Nye County, Nevada--continued

Sample	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	As-ppm aa	Ag-ppm aa	Sb-ppm aa
R154BS	200	70	N	20	N	200	N	--	5	.10	N
R155BS	300	70	N	30	N	200	N	--	5	.10	N
R156BS	200	100	N	20	N	100	N	N	40	N	N
R157DS	500	70	N	30	N	200	N	--	10	.09	N
R158BS	200	50	N	20	N	100	N	--	<5	.10	N
R161BS	300	70	N	30	N	200	N	--	N	.13	N
R162BS	200	50	N	20	N	200	N	--	<5	.10	N
R163BS	200	70	N	20	N	100	N	--	15	.15	1
R165BS	300	200	N	30	N	300	N	--	N	.22	N
R166DS	300	70	N	20	N	100	N	--	5	.29	N
R167BS	200	70	N	20	N	300	N	--	N	.12	N
R168US	200	50	N	20	N	200	N	--	N	.10	N
R169BS	100	70	N	30	N	150	N	--	N	.12	N
R170BS	500	200	N	30	N	300	N	--	<5	.06	N
R171BS	500	70	N	30	N	200	N	--	N	<.05	N
R172BS	200	50	N	30	N	100	N	N	10	N	N
R173BS	200	50	N	20	N	200	N	N	10	N	N
R174DS	300	70	N	20	N	100	N	--	<5	.05	N
R176BS	200	100	N	20	N	100	N	N	5	N	N
R177DS	500	100	N	30	N	200	N	--	10	.12	N
R178BS	500	100	N	30	<200	200	N	--	N	.16	N
R179DS	500	200	N	50	200	1,000	N	--	N	.10	N
R201BS	150	30	N	20	N	100	N	N	15	N	N
R202DS	150	50	N	20	N	100	N	N	20	N	N
R203DS	200	100	N	50	<200	150	N	--	<5	.11	N
R204BS	150	70	N	20	N	150	N	--	5	.17	N
R205BS	200	100	N	30	N	150	N	--	N	.16	N
R206BS	300	100	N	30	N	200	N	--	N	.12	N
R207BS	300	100	N	30	N	300	N	--	N	.13	N
R208BS	500	200	N	30	N	1,000	N	--	N	.06	N
R209DS	500	70	N	30	N	200	N	--	N	.19	1
R21016S	150	30	N	10	N	70	N	--	5	.14	N
R21058S	500	70	N	30	N	300	N	--	10	.12	N
R2100S	300	70	N	30	N	200	N	--	5	.16	N
R211DS	500	70	N	30	N	200	N	--	5	.10	N
R212BS	500	100	N	30	N	200	N	--	N	.13	N
R213DS	100	50	N	20	N	100	N	--	15	.16	N
R214DS	200	150	N	50	N	200	N	--	N	.12	N
R215DS	200	70	N	30	N	100	N	--	20	.08	N
R2163BS	200	70	N	30	N	150	N	--	20	.12	N
R216BS	150	50	N	20	N	100	N	N	20	N	N
R2178DS	500	100	N	30	N	200	N	--	N	.14	N
R217BS	100	50	N	20	N	100	N	--	5	.14	N
R218DS	100	30	N	20	N	100	N	--	N	.10	N
R219BS	100	20	N	10	N	50	N	--	5	.24	N

Table A-1 -- Spectrographic and Atomic Absorption Analyses of Stream-Sediment Samples from Riordan's Well Study Area, Nye County, Nevada--continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
R2206DS	38 29 11	115 21 47	2	1.0	2	.20	500	N	N	N	100	1,000	3
R2208S	38 26 7	115 28 28	1	5.0	7	.10	200	N	N	N	50	500	1
R2213BS	38 27 4	115 23 20	2	3.0	5	.20	500	N	N	N	100	700	2
R2218S	38 25 28	115 30 4	2	5.0	10	.20	500	N	N	N	50	700	2
R2221BS	38 25 28	115 30 4	2	5.0	10	.20	500	N	N	N	50	700	2
R2228BS	38 24 33	115 25 25	2	5.0	5	.20	500	N	N	N	70	1,000	3
R2228S	38 25 23	115 31 17	3	2.0	7	.20	500	N	N	N	100	500	2
R2238S	38 26 7	115 32 14	2	3.0	7	.20	500	N	N	N	50	500	2
R22428S	38 32 16	115 21 24	10	1.0	2	1.00	1,500	N	N	N	70	1,000	2
R2248S	38 27 8	115 30 59	2	2.0	5	.20	500	N	N	N	50	700	3
R2258S	38 25 28	115 27 51	1	5.0	7	.10	300	N	N	N	30	303	1
R2268S	38 24 37	115 25 5	2	5.0	7	.10	300	N	N	N	30	303	1
R2278S	38 24 22	115 24 9	3	3.0	5	.20	500	N	N	N	100	500	2
R2288S	38 24 33	115 25 25	2	5.0	5	.20	700	N	N	N	70	700	2
R2290S	38 24 29	115 25 19	2	3.0	5	.20	500	N	N	N	50	500	2
R2308S	38 24 28	115 25 25	2	3.0	3	.10	500	N	N	N	50	500	2
R2310S	38 31 19	115 23 9	2	1.0	5	.20	200	N	N	N	70	500	1
R2328S	38 34 8	115 22 37	2	1.0	1	.20	500	N	N	N	30	1,000	3
R2338S	38 35 17	115 20 44	2	2.0	7	.50	500	N	N	N	50	700	2
R2358S	38 33 5	115 20 46	3	1.0	2	.50	700	N	N	N	30	700	2
R2368S	38 33 18	115 21 9	7	2.0	2	.70	700	N	N	N	50	700	1
R2378S	38 30 34	115 20 51	10	1.0	1	1.00	1,500	N	N	N	20	1,000	1
R2380S	38 30 36	115 21 51	2	.7	2	.20	500	N	N	N	30	1,000	3
R2398S	38 31 10	115 21 24	3	1.0	2	.70	1,000	N	N	N	20	1,003	2
R2408S	38 31 35	115 21 17	5	1.0	2	.30	700	N	N	N	50	1,000	2
R2418S	38 32 18	115 21 33	2	1.0	2	.50	700	N	N	N	50	700	2
R2428S	38 32 16	115 21 24	10	1.0	2	.50	1,000	N	N	N	50	1,000	2
R2438S	38 32 10	115 21 21	10	1.0	1	1.00	1,000	N	N	N	70	700	1
R2440S	38 32 9	115 21 16	2	1.0	1	.50	700	N	N	N	20	1,000	2

Table A-1 -- Spectrographic and Atomic Absorption Analyses of Stream-Sediment Samples from Riordan's Well Study Area, Nye County, Nevada--continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s
R2206BS	N	N	10	150	15	50	N	N	30	20	N	10	N
R220BS	N	N	5	50	10	N	N	N	50	70	N	5	N
R2213BS	N	N	10	70	15	20	N	N	20	70	N	7	N
R221BS	N	N	10	70	15	20	N	N	10	70	N	7	N
R2221BS	N	N	7	70	15	20	N	N	10	50	N	7	N
R2228BS	N	N	7	70	15	20	N	N	15	70	N	7	N
R222BS	N	N	30	70	15	30	N	N	30	50	N	10	N
R223BS	N	N	7	50	10	20	N	N	15	50	N	7	N
R2242BS	N	N	30	100	20	300	N	20	10	30	N	20	N
R224BS	N	N	7	50	15	70	N	N	15	70	N	7	N
R225BS	N	N	5	30	10	20	N	N	10	70	N	5	N
R226BS	N	N	5	50	10	20	N	N	15	50	N	7	N
R227BS	N	N	7	70	15	30	N	N	15	70	N	7	N
R228BS	N	N	7	70	10	50	N	N	20	70	N	7	N
R229BS	N	N	5	50	15	20	N	N	15	70	N	7	N
R230BS	N	N	5	70	15	20	N	N	15	70	N	7	N
R231BS	N	N	5	100	10	70	N	N	20	30	N	7	N
R232BS	N	N	5	30	5	70	N	N	5	50	N	5	N
R233BS	N	N	15	100	10	300	N	20	20	50	N	15	N
R235BS	N	N	10	50	10	50	N	N	20	30	N	10	N
R236BS	N	N	30	100	15	30	N	20	10	20	N	20	N
R237BS	N	N	20	100	10	200	N	100	5	20	N	20	15
R238BS	N	N	5	50	10	70	N	N	5	50	N	7	N
R239BS	N	N	7	50	10	150	N	N	5	30	N	10	N
R240BS	N	N	10	50	10	100	N	<20	5	50	N	10	N
R241BS	N	N	15	70	20	100	N	20	5	30	N	15	N
R242BS	N	N	20	70	15	150	N	<20	10	50	N	10	N
R243BS	N	N	30	100	20	200	N	30	10	30	N	20	N
R244BS	N	N	10	70	10	50	N	20	5	50	N	10	N

Table A-1 -- Spectrographic and Atomic Absorption Analyses of Stream-Sediment Samples from Riordan's Well Study Area, Nye County, Nevada--continued

Sample	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	As-ppm aa	Ag-ppm aa	Sb-ppm aa
R2206BS	200	70	N	30	N	300	N	--	N	.09	N
R2209S	100	30	N	20	N	100	N	--	N	.11	N
R2213DS	200	70	N	20	<200	100	N	--	10	.08	N
R2218S	300	50	N	20	N	100	N	--	N	.15	N
R2221BS	300	70	N	20	N	200	N	--	<5	.11	N
R2228BS	200	70	N	20	N	150	N	--	<5	.16	N
R2220S	1,000	70	N	30	N	150	N	--	N	.10	N
R2238S	300	70	N	20	N	200	N	--	N	.10	N
R22428S	300	300	N	30	300	500	N	--	N	.09	N
R2248S	500	50	N	20	N	200	N	--	<5	.10	N
R2258S	200	50	N	15	N	70	N	--	5	.19	N
R2260S	100	50	N	15	N	100	N	--	N	.13	N
R2278S	200	70	N	30	N	150	N	--	N	.01	N
R2288S	200	70	N	20	N	200	N	--	N	.11	N
R229DS	200	70	N	15	N	150	N	--	<5	.06	N
R2308S	150	50	N	15	N	150	N	--	N	.12	N
R2318S	200	70	N	30	N	500	N	--	N	.12	N
R2328S	300	70	N	20	N	100	N	--	N	<.05	N
R2330S	300	150	N	30	N	100	N	--	10	.07	N
R2358S	300	100	N	20	N	200	N	--	N	.14	N
R2360S	300	200	N	30	<200	200	N	--	N	.06	N
R2378S	500	300	N	50	300	300	N	--	N	<.05	N
R2388S	500	50	N	30	N	200	N	--	N	<.05	N
R2398S	500	150	N	30	N	700	N	--	N	.05	N
R2408S	500	100	N	30	N	500	N	--	N	.07	N
R2418S	500	150	N	30	N	500	N	--	N	.05	N
R2428S	500	200	N	20	200	300	N	--	N	.12	N
R2438S	500	200	N	50	200	1,000	N	--	70	.50	N
R244DS	500	100	N	20	N	300	N	--	N	.05	N

Table A-2 -- Spectrographic Analyses of Panned-Concentrates from Stream Sediment Samples from Riordan's Well Study Area, Nye County, Nevada

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s
R001PC	38 24 21	115 18 59	.20	.50	5.0	.07	200	N	N	N	<20	700
R002PC	38 24 34	115 19 37	.50	2.00	20.0	.10	500	N	N	N	30	300
R003PC	38 23 22	115 19 41	.20	1.00	7.0	.30	200	N	N	N	<20	300
R004PC	38 23 34	115 21 45	.50	1.00	10.0	.20	300	N	N	N	50	2,000
R005PC	38 24 43	115 20 48	.50	.20	2.0	.10	300	N	N	N	20	7,000
R006PC	38 23 2	115 21 37	.20	.20	7.0	.15	300	N	N	N	20	7,000
R008PC	38 23 18	115 29 17	.20	2.00	10.0	.10	300	N	N	N	20	150
R009PC	38 25 22	115 26 22	.50	5.00	10.0	.03	100	N	N	N	20	300
R010PC	38 25 14	115 26 2	.20	5.00	10.0	.05	200	N	N	N	20	100
R011PC	38 24 35	115 29 50	2.00	2.00	20.0	.20	500	N	N	N	70	500
R012PC	38 24 19	115 29 9	.20	2.00	20.0	.10	300	N	N	N	20	200
R013PC	38 24 12	115 28 0	2.00	2.00	10.0	2.00	150	N	N	N	70	1,000
R100PC	38 25 31	115 21 51	.50	2.00	20.0	.20	300	N	N	N	50	1,000
R101PC	38 25 35	115 21 49	2.00	7.00	30.0	.20	200	N	N	N	500	2,000
R102PC	38 25 32	115 21 44	.20	2.00	20.0	.07	200	N	N	N	20	1,500
R103PC	38 25 49	115 21 34	.15	5.00	20.0	.05	200	N	N	N	20	200
R104PC	38 26 21	115 21 4	.15	5.00	20.0	.10	200	N	N	N	20	>10,000
R105PC	38 26 4	115 19 20	1.00	2.00	10.0	1.00	200	N	N	N	<20	5,000
R106PC	38 29 46	115 20 55	2.00	2.00	5.0	1.00	1,000	N	N	N	<20	1,000
R107PC	38 29 16	115 20 9	.20	.10	2.0	.20	200	N	N	N	20	1,500
R108PC	38 28 41	115 19 42	.20	.10	1.5	.02	150	N	N	N	20	1,500
R109PC	38 28 56	115 19 25	.50	.50	7.0	2.00	200	N	N	N	<20	1,500
R110PC	38 28 50	115 19 19	.50	.15	7.0	1.00	200	N	N	N	<20	1,500
R111PC	38 27 44	115 19 3	.20	.20	2.0	.07	150	N	N	N	20	1,000
R112PC	38 27 59	115 20 53	.50	.20	2.0	.10	200	N	N	N	20	3,000
R113PC	38 27 25	115 20 18	2.00	1.00	10.0	.10	300	N	N	N	20	2,000
R114PC	38 27 58	115 18 29	.20	.50	7.0	.50	200	N	N	N	20	5,000
R115PC	38 28 24	115 18 3	2.00	.50	7.0	1.00	500	N	N	N	70	700
R116PC	38 29 50	115 19 36	.30	.10	2.0	.07	200	N	N	N	<20	500
R117PC	38 29 50	115 22 30	<.10	.05	1.0	.05	100	N	N	N	<20	700
R118PC	38 29 20	115 23 57	.50	.20	10.0	.20	300	N	N	N	70	300
R119PC	38 28 45	115 24 2	2.00	.20	5.0	.20	1,000	N	N	N	70	1,000
R120PC	38 28 30	115 23 37	.50	.20	10.0	.20	300	N	N	N	50	5,000
R121PC	38 26 27	115 24 42	.50	10.00	20.0	.05	100	N	N	N	<20	50
R122PC	38 26 38	115 26 22	5.00	10.00	20.0	.15	100	N	N	N	20	2,000
R124PC	38 25 33	115 30 4	.20	5.00	20.0	.20	500	N	N	N	20	100
R125PC	38 25 28	115 30 10	5.00	7.00	20.0	.50	500	N	N	N	100	200
R127PC	38 26 56	115 31 48	1.00	5.00	30.0	.20	200	N	N	N	20	300
R134PC	38 34 13	115 19 46	2.00	10.00	15.0	.50	500	N	N	N	20	300
R150PC	38 23 11	115 27 19	.20	.10	1.0	.20	150	N	N	N	50	700
R150PC	38 23 11	115 27 19	1.00	2.00	7.0	2.00	200	N	N	N	150	1,000
R151PC	38 23 23	115 26 29	1.00	5.00	10.0	.50	1,000	N	N	N	50	300
R152PC	38 22 40	115 26 23	1.00	1.00	10.0	>2.00	200	N	N	N	500	1,500
R153PC	38 22 53	115 24 56	2.00	1.00	2.0	2.00	1,500	N	N	N	20	700
R155PC	38 23 11	115 23 52	5.00	2.00	10.0	1.50	700	N	N	N	50	1,500

Table A-2 -- Spectrographic Analyses of Panned-Concentrates from Stream Sediment Samples from Riordan's Well Study Area, Nye County, Nevada

Sample	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s
R001PC	5	N	N	N	N	<10	N	N	N	N	N
R002PC	2	N	N	N	50	<10	50	N	N	N	20
R003PC	2	N	N	N	N	<10	50	N	N	N	N
R004PC	N	N	N	N	N	<10	70	N	N	N	N
R005PC	2	N	N	N	N	<10	50	N	N	N	N
R006PC	2	N	N	N	N	<10	150	N	N	N	N
R008PC	N	N	N	N	N	<10	N	N	N	20	200
R009PC	N	N	N	N	N	30	100	N	N	10	20
R010PC	N	N	N	N	N	<10	N	N	N	10	N
R011PC	2	N	N	10	50	10	150	N	N	10	500
R012PC	N	N	N	N	50	<10	N	N	N	N	70
R013PC	2	N	N	10	100	50	300	N	N	50	50
R100PC	N	N	N	N	N	<10	50	N	N	N	20
R101PC	<2	N	N	20	50	10	N	N	N	10	70
R102PC	N	N	N	N	50	<10	N	N	N	N	N
R103PC	N	N	N	N	50	<10	N	N	N	N	N
R104PC	N	N	N	N	N	<10	N	N	N	N	N
R105PC	2	N	N	N	N	<10	500	N	150	10	30
R106PC	N	N	N	15	100	<10	>2,000	N	70	N	N
R107PC	5	N	N	N	N	20	150	N	N	N	<20
R108PC	5	N	N	N	N	<10	N	N	N	N	<20
R109PC	5	N	N	N	N	<10	200	N	150	10	20
R110PC	5	N	N	10	50	<10	300	N	100	10	20
R111PC	2	N	N	N	N	<10	50	N	N	N	N
R112PC	2	N	N	N	N	10	50	N	N	10	30
R113PC	N	N	N	N	150	<10	N	N	N	N	N
R114PC	2	N	N	N	N	<10	150	N	N	N	N
R115PC	N	N	N	10	100	10	300	N	N	N	N
R116PC	2	N	N	N	N	<10	50	N	N	N	N
R117PC	2	N	N	N	N	<10	N	N	N	N	N
R118PC	N	N	N	N	150	<10	50	N	N	N	N
R119PC	2	N	N	15	100	15	200	N	N	70	<20
R120PC	2	N	N	N	50	<10	50	N	N	N	20
R121PC	N	N	N	N	N	20	N	N	N	10	50
R122PC	<2	N	N	N	100	10	N	30	N	30	50
R124PC	<2	N	N	10	N	10	100	N	N	10	70
R125PC	7	N	N	30	150	50	150	N	300	70	150
R127PC	2	N	N	N	100	<10	N	N	N	10	20
R134PC	<2	N	N	N	150	<10	500	N	N	10	30
R150PC	2	N	N	N	N	<10	100	N	N	N	N
R150PC	<2	N	N	10	100	10	100	N	150	10	300
R151PC	<2	N	N	N	N	70	100	N	N	50	70
R152PC	2	500	N	15	150	70	500	N	300	10	100
R153PC	2	N	N	N	N	20	300	N	N	10	N
R155PC	<2	N	N	15	150	50	700	N	70	70	70

Table A-2 -- Spectrographic Analyses of Panned-Concentrates from Stream Sediment Samples from Riordan's Well Study Area, Nye County, Nevada

Sample	Sb-ppm	Sc-ppm	Sn-ppm	Sr-ppm	V-ppm	W-ppm	Y-ppm	Zn-ppm	Zr-ppm	Th-ppm
	s	s	s	s	s	s	s	s	s	s
R001PC	N	30	N	700	20	N	70	N	>2,000	N
R002PC	N	<10	N	200	20	N	30	N	700	N
R003PC	N	20	N	700	20	N	100	N	>2,000	N
R004PC	N	20	N	700	50	N	70	N	>2,000	N
R005PC	N	20	N	700	20	N	70	700	2,000	N
R006PC	N	20	N	1,000	20	N	100	N	>2,000	N
R008PC	N	N	N	200	70	N	20	1,000	500	N
R009PC	N	15	N	N	20	N	50	N	>2,000	N
R010PC	N	N	N	200	20	N	20	N	1,000	N
R011PC	N	10	N	1,000	50	N	30	N	500	N
R012PC	N	N	N	500	20	N	20	1,500	700	N
R013PC	N	10	N	200	150	N	500	N	>2,000	N
R100PC	N	10	N	200	30	N	70	500	1,500	N
R101PC	N	N	N	300	50	N	30	3,000	2,000	N
R102PC	N	N	N	N	<20	N	20	500	1,000	N
R103PC	N	N	N	N	<20	N	N	500	700	N
R104PC	N	20	N	2,000	20	N	50	3,000	>2,000	N
R105PC	N	10	N	700	70	N	300	N	>2,000	N
R106PC	N	20	N	500	150	N	300	N	2,000	1,000
R107PC	N	20	N	1,000	20	N	200	N	>2,000	N
R108PC	N	20	N	1,000	<20	N	<20	N	>2,000	N
R109PC	N	30	N	1,000	70	N	200	N	>2,000	N
R110PC	N	30	N	1,000	30	N	200	N	>2,000	N
R111PC	N	20	N	1,000	20	N	50	N	2,000	N
R112PC	N	20	N	700	20	N	150	N	>2,000	N
R113PC	N	30	N	N	20	N	70	N	>2,000	N
R114PC	N	30	N	700	50	N	300	N	>2,000	N
R115PC	N	20	N	1,000	150	N	300	N	>2,000	N
R116PC	N	20	N	1,500	20	N	70	N	>2,000	N
R117PC	N	10	N	700	20	N	20	N	>2,000	N
R118PC	N	15	N	500	20	N	70	N	2,000	N
R119PC	N	10	N	700	150	N	50	<500	500	N
R120PC	N	20	N	700	50	N	100	N	>2,000	N
R121PC	N	N	N	N	20	N	20	N	700	N
R122PC	N	N	N	200	50	N	30	N	2,000	N
R124PC	N	10	N	700	20	N	70	N	2,000	N
R125PC	N	20	N	300	100	N	150	1,500	>2,000	N
R127PC	N	10	N	300	30	100	70	N	>2,000	N
R134PC	N	20	N	200	70	N	150	N	>2,000	N
R150PC	N	30	N	700	20	N	300	N	>2,000	N
R130PC	700	50	N	200	100	N	150	N	>2,000	N
R151PC	N	10	N	N	70	N	100	N	>2,000	N
R152PC	N	30	50	2,000	150	2,000	200	N	>2,000	N
R153PC	N	50	150	500	200	N	1,500	N	>2,000	N
R155PC	N	70	N	500	150	N	300	N	>2,000	N

Table A-2 -- Spectrographic Analyses of Panned-Concentrates from Stream Sediment Samples from Riordan's Well Study Area, Nye County, Nevada--continued

Sample	Latitude	Longitude	Fe-pct. S	Mg-pct. S	Ca-pct. S	Ti-pct. S	Mn-ppm S	Ag-ppm S	As-ppm S	Au-ppm S	B-ppm S	Ba-ppm S
R156PC	38 23 25	115 23 20	2.00	2.00	10.0	.50	200	N	N	N	50	1,500
R157PC	38 22 54	115 22 59	.50	.50	15.0	.20	200	N	N	N	<20	>10,000
R161PC	38 24 25	115 23 8	2.00	7.00	20.0	.20	200	N	N	N	20	10,000
R162PC	38 24 26	115 23 1	1.50	5.00	20.0	.20	300	N	N	N	50	100
R163PC	38 24 34	115 23 6	2.00	5.00	20.0	.10	200	N	N	N	20	2,000
R165PC	38 23 22	115 21 2	1.00	5.00	10.0	.20	200	N	N	N	<20	1,000
R166PC	38 36 25	115 20 17	1.50	.50	20.0	.50	500	N	N	N	50	1,000
R167PC	38 36 3	115 19 53	1.00	5.00	10.0	1.00	300	N	N	N	20	>10,000
R168PC	38 36 1	115 20 33	10.00	5.00	10.0	.50	10,000	N	N	N	100	5,000
R169PC	38 30 11	115 24 4	2.00	.50	50.0	.10	500	N	N	N	70	200
R170PC	38 33 23	115 22 46	2.00	.50	5.0	1.00	500	N	N	N	<20	1,500
R171PC	38 34 34	115 22 6	1.00	.50	2.0	.10	500	N	N	N	20	1,500
R172PC	38 35 17	115 19 43	1.00	2.00	20.0	.70	300	N	N	N	20	500
R173PC	38 34 5	115 20 33	.70	5.00	10.0	.50	200	N	N	N	70	1,000
R174PC	38 33 20	115 19 48	.50	5.00	10.0	.70	200	N	N	N	<20	500
R176PC	38 33 59	115 21 22	1.00	1.00	5.0	.20	300	N	N	N	<20	1,000
R177PC	38 33 57	115 21 19	1.00	1.00	5.0	.15	100	N	N	N	20	1,000
R178PC	38 33 52	115 21 16	2.00	2.00	7.0	1.00	700	N	N	N	20	1,000
R179PC	38 30 8	115 19 35	2.00	1.00	5.0	.70	300	N	N	N	20	1,000
R201PC	38 27 40	115 22 22	.50	2.00	10.0	.20	300	N	N	N	20	1,500
R202PC	38 27 29	115 22 30	1.00	2.00	20.0	.10	150	N	N	N	70	10,000
R203PC	38 27 45	115 23 6	1.00	.50	10.0	.20	200	N	N	N	50	>10,000
R204PC	38 25 57	115 19 18	1.00	2.00	10.0	.50	300	N	N	N	20	1,000
R205PC	38 29 5	115 21 40	.50	.20	2.0	.10	150	N	N	N	70	>10,000
R206PC	38 29 11	115 21 47	2.00	1.50	10.0	.50	300	N	N	N	20	>10,000
R207PC	39 29 12	115 21 40	.50	.20	10.0	.07	300	N	N	N	50	7,000
R208PC	38 29 29	115 21 20	.20	.20	2.0	.30	200	N	N	N	20	>10,000
R209PC	38 26 53	115 19 7	.50	.20	5.0	.10	300	N	N	N	20	1,000
R2101PC	38 25 35	115 21 49	1.00	5.00	20.0	.10	200	N	N	N	<20	300
R2105PC	38 26 4	115 19 20	1.00	1.50	10.0	1.00	300	N	N	N	20	1,500
R210PC	38 26 43	115 18 30	1.00	.20	2.0	1.00	1,500	N	N	N	20	1,000
R211PC	38 26 42	115 17 13	1.00	.20	2.0	.50	300	N	N	N	20	1,500
R212PC	38 27 47	115 17 19	.50	.20	1.0	.10	200	N	N	N	20	1,000
R213PC	38 27 4	115 23 20	2.00	10.00	20.0	.10	300	N	N	N	<20	7,000
R214PC	38 27 8	115 23 22	1.00	.20	50.0	.07	200	N	N	N	50	200
R215PC	38 27 11	115 23 16	.50	5.00	10.0	.07	200	N	N	N	20	3,000
R2163PC	38 24 34	115 23 6	2.00	7.00	20.0	.10	300	N	N	N	50	700
R216PC	38 27 22	115 23 54	5.00	1.00	50.0	.50	700	N	N	N	70	10,000
R2178PC	38 33 52	115 21 16	2.00	2.00	7.0	1.00	500	N	N	N	<20	5,000
R217PC	38 26 42	115 24 17	1.50	10.00	20.0	.10	200	N	N	N	20	200
R2206PC	38 29 11	115 21 47	.50	.50	7.0	.15	200	N	N	N	<20	>10,000
R220PC	38 26 7	115 28 28	1.00	10.00	10.0	.10	200	N	N	N	30	200
R2213PC	38 27 4	115 23 20	1.00	7.00	20.0	.10	300	N	N	N	20	7,000
R221PC	38 25 28	115 30 4	2.00	5.00	30.0	.20	200	N	N	N	20	300
R2221PC	38 25 28	115 30 4	1.00	5.00	20.0	.10	1,000	N	N	N	20	300

Table A-2 -- Spectrographic Analyses of Panned-Concentrates from Stream Sediment Samples from Riordan's Well Study Area, Nye County, Nevada--continued

Sample	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s
R156PC	2	N	N	N	300	15	100	N	N	10	50
R157PC	N	N	N	N	N	50	N	N	N	10	20
R161PC	<2	N	N	N	500	10	200	N	N	10	30
R162PC	2	N	N	N	70	15	N	N	50	10	50
R163PC	<2	N	N	N	100	20	N	N	N	10	20
R165PC	5	N	N	N	N	<10	100	N	N	10	30
R166PC	2	N	N	N	150	10	700	N	N	50	70
R167PC	2	N	N	N	70	30	150	N	<50	10	50
R168PC	5	N	N	150	150	70	>2,000	30	50	150	700
R169PC	5	N	N	10	200	20	2,000	N	N	70	100
R170PC	2	N	N	10	100	<10	1,500	N	<50	10	20
R171PC	2	N	N	N	N	10	500	N	N	10	50
R172PC	5	N	N	N	70	10	700	N	N	10	20
R173PC	2	N	N	N	70	<10	200	N	N	10	20
R174PC	2	N	N	N	50	<10	200	N	N	10	20
R176PC	2	N	N	N	N	<10	100	N	N	10	50
R177PC	2	N	N	N	50	<10	N	N	N	10	30
R178PC	2	N	N	10	150	20	200	N	N	10	50
R179PC	5	N	N	N	50	<10	>2,000	N	N	10	30
R201PC	N	N	N	N	50	<10	50	N	N	10	N
R202PC	2	N	N	N	150	10	700	N	N	50	20
R203PC	2	N	N	N	200	20	300	N	N	30	70
R204PC	2	N	N	N	N	10	100	N	<50	10	30
R205PC	2	N	N	N	N	20	50	N	N	N	<20
R206PC	2	N	N	15	70	50	150	N	N	10	70
R207PC	N	N	N	N	N	<10	100	N	N	N	20
R208PC	N	N	N	N	N	10	100	N	N	N	20
R209PC	2	N	N	N	N	<10	N	N	N	N	<20
R2101PC	N	N	N	N	N	20	N	N	N	10	50
R2105PC	2	N	N	N	N	30	500	N	150	10	50
R210PC	5	N	N	N	N	20	150	N	N	10	N
R211PC	2	N	N	N	N	50	100	N	N	10	70
R212PC	2	N	N	N	N	<10	50	N	N	N	N
R213PC	<2	N	N	N	50	10	100	N	N	10	30
R214PC	N	N	N	N	150	50	500	N	N	70	N
R215PC	<2	N	N	N	50	<10	150	N	N	N	N
R2163PC	<2	N	N	N	50	20	N	N	N	10	20
R216PC	2	N	N	10	300	50	700	N	N	70	200
R2178PC	<2	N	N	10	50	20	150	N	50	10	70
R217PC	<2	N	N	N	50	<10	N	N	N	10	50
R2206PC	2	N	N	N	N	10	N	N	N	10	50
R220PC	N	N	N	N	50	<10	N	N	N	10	20
R2213PC	<2	N	N	N	150	50	N	N	N	70	50
R221PC	2	N	N	N	100	10	N	N	N	10	70
R2221PC	<2	N	N	20	N	50	N	N	N	10	100

Table A-2-- Spectrographic Analyses of Panned-Concentrates from Stream Sediment Samples from Riordan's Well Study Area, Nye County, Nevada--continued

Sample	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s
R156PC	N	20	N	700	200	N	200	N	>2,000	N
R157PC	N	N	N	5,000	20	N	50	N	2,000	N
R161PC	N	10	N	1,000	200	N	300	N	>2,000	N
R162PC	N	15	N	200	70	N	50	N	>2,000	N
R163PC	N	10	N	700	70	N	50	N	>2,000	N
R165PC	N	30	N	1,000	20	N	100	N	>2,000	N
R166PC	N	30	N	1,000	100	N	700	N	>2,000	N
R167PC	N	50	N	200	70	N	500	N	>2,000	N
R168PC	N	50	N	200	500	N	300	N	>2,000	300
R169PC	N	10	N	2,000	70	N	1,500	N	200	N
R170PC	N	70	N	500	150	N	700	N	>2,000	200
R171PC	N	20	N	700	20	N	150	N	>2,000	N
R172PC	N	10	N	700	50	N	500	N	>2,000	N
R173PC	N	10	N	200	30	N	300	N	>2,000	N
R174PC	N	50	N	200	50	N	500	N	>2,000	N
R175PC	N	10	N	700	50	N	100	N	>2,000	N
R177PC	N	20	N	700	20	N	70	N	>2,000	N
R178PC	N	50	N	700	100	N	500	N	>2,000	N
R179PC	N	15	N	700	50	N	500	N	>2,000	3,000
R201PC	N	20	N	500	20	N	70	N	>2,000	N
R202PC	N	10	N	1,000	70	N	500	N	700	N
R203PC	N	30	N	1,000	100	N	300	N	>2,000	N
R204PC	N	20	N	500	50	N	300	N	>2,000	N
R205PC	N	20	N	1,500	50	N	70	N	>2,000	N
R206PC	N	10	1,000	5,000	100	N	200	N	>2,000	N
R207PC	N	20	N	1,500	20	N	70	N	>2,000	N
R208PC	N	20	N	1,000	50	N	200	N	>2,000	N
R209PC	N	10	N	1,000	20	N	20	N	2,000	N
R2101PC	N	N	N	N	70	N	20	N	700	N
R2105PC	N	15	N	500	70	N	200	N	>2,000	N
R210PC	N	50	N	500	150	N	1,000	N	>2,000	N
R211PC	N	10	N	500	50	N	200	N	>2,000	N
R212PC	N	20	N	700	20	N	70	N	>2,000	N
R213PC	N	N	N	200	50	N	50	N	>2,000	N
R214PC	N	N	N	1,000	70	N	700	N	200	N
R215PC	N	10	N	N	20	N	20	N	2,000	N
R2163PC	N	10	N	200	70	N	50	N	>2,000	N
R216PC	N	30	N	2,000	150	N	700	N	>2,000	N
R2178PC	N	50	N	500	150	N	300	N	>2,000	N
R217PC	N	10	N	N	30	N	50	N	>2,000	N
R2206PC	N	30	N	700	30	N	150	N	>2,000	N
R220PC	N	10	N	N	20	N	30	N	>2,000	N
R2213PC	N	10	N	N	100	N	150	N	>2,000	N
R221PC	N	N	N	500	50	N	30	N	2,000	N
R2221PC	N	10	N	200	20	N	30	N	1,500	N

Table A-2.--Spectrographic Analyses of Panned-Concentrates from Stream Sediment Samples from Riordan's Well Study Area, Nye County, Nevada--continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s
R2228PC	38 24 33	115 25 25	1.00	2.00	15.0	.20	200	N	N	N	50	2,000
R222PC	38 25 23	115 31 17	5.00	1.00	15.0	2.00	700	N	N	N	70	1,000
R223PC	38 26 7	115 32 14	2.00	5.00	20.0	2.00	500	N	N	N	70	10,000
R2242PC	38 32 16	115 21 24	1.00	2.00	5.0	.50	300	N	N	N	<20	1,000
R224PC	38 27 8	115 30 59	2.00	2.00	20.0	2.00	500	N	N	N	150	10,000
R225PC	38 25 28	115 27 51	.15	5.00	10.0	.10	200	N	N	N	20	300
R226PC	38 24 37	115 25 5	.20	5.00	20.0	.07	200	N	N	N	20	50
R227PC	38 24 22	115 24 9	.50	2.00	10.0	.10	300	N	N	N	20	200
R228PC	38 24 33	115 25 25	1.00	2.00	20.0	.50	500	N	N	N	50	2,000
R229PC	38 24 29	115 25 19	.10	5.00	5.0	.02	150	N	N	N	20	200
R230PC	38 24 28	115 25 25	.20	5.00	7.0	.05	200	N	N	N	20	500
R231PC	38 31 19	115 23 9	2.00	1.50	30.0	.20	100	N	N	N	100	7,000
R232PC	38 34 8	115 22 37	1.50	1.50	5.0	.15	1,500	N	N	N	20	1,500
R233PC	38 35 17	115 20 44	2.00	5.00	15.0	1.00	300	N	N	N	<20	>10,000
R235PC	38 33 5	115 20 46	5.00	2.00	5.0	1.50	700	N	N	N	<20	1,000
R236PC	38 33 18	115 21 9	.50	1.00	7.0	.50	200	N	N	N	<20	700
R237PC	38 30 34	115 20 51	.50	.20	10.0	.10	500	N	N	N	<20	1,000
R238PC	38 30 36	115 21 51	.70	.50	5.0	.50	200	N	N	N	20	10,000
R239PC	38 31 10	115 21 24	1.50	.50	1.0	.70	500	N	N	N	<20	1,500
R240PC	38 31 35	115 21 17	1.50	1.00	5.0	2.00	700	N	N	N	20	1,000
R241PC	38 32 18	115 21 53	2.00	1.50	5.0	.70	200	N	N	N	20	1,500
R242PC	38 32 16	115 21 24	.70	2.00	2.0	.50	200	N	N	N	<20	1,500
R243PC	38 32 10	115 21 21	1.00	1.50	7.0	.70	300	N	N	N	<20	1,000
R244PC	38 32 9	115 21 16	7.00	5.00	7.0	2.00	2,000	N	N	N	20	700

Table A-2 -- Spectrographic Analyses of Panned-Concentrates from Stream Sediment Samples from Riordan's Well Study Area, Nye County, Nevada--continued

Sample	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s
R2228PC	2	N	N	10	100	10	500	N	N	20	200
R2222PC	5	N	N	15	70	70	100	N	N	10	50
R2223PC	5	20	N	10	150	20	700	N	70	10	2,000
R22242PC	2	N	N	N	N	<10	500	N	100	10	50
R2224PC	2	N	N	10	150	50	700	N	150	50	50
R225PC	N	N	N	N	70	<10	N	N	N	N	N
R226PC	N	N	N	N	N	10	50	N	N	10	20
R227PC	<2	N	N	N	50	20	N	N	N	N	<20
R228PC	<2	N	N	N	N	50	200	N	N	10	50
R229PC	N	N	N	N	N	N	N	N	N	N	N
R230PC	N	N	N	N	N	<10	N	N	N	N	N
R231PC	2	N	N	N	200	10	700	N	N	10	50
R232PC	2	N	N	N	100	<10	1,500	N	N	10	70
R233PC	2	N	N	N	70	10	200	N	50	10	70
R235PC	2	N	N	20	300	10	>2,000	N	150	10	20
R236PC	2	N	N	N	N	<10	100	N	N	10	N
R237PC	2	N	N	N	N	<10	1,500	N	N	10	20
R238PC	2	N	N	N	150	50	300	N	N	10	200
R239PC	5	N	N	N	50	<10	1,500	N	N	10	20
R240PC	2	N	N	N	150	15	2,000	N	N	10	20
R241PC	2	N	N	N	100	<10	150	N	N	10	100
R242PC	2	N	N	N	N	<10	150	N	<50	10	20
R243PC	2	N	N	10	100	10	150	N	N	10	20
R244PC	<2	N	N	50	1,000	20	2,000	N	150	70	20

Table A-2.-- Spectrographic Analyses of Panned-Concentrates from Stream Sediment Samples from Riordan's Well Study Area, Nye County, Nevada--continued

Sample	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s
R2228PC	N	15	N	5,000	50	N	700	N	>2,000	N
R222PC	N	10	N	1,500	70	N	70	N	1,500	N
R223PC	N	30	N	1,500	200	N	200	N	>2,000	N
R2242PC	N	30	N	500	50	N	300	N	>2,000	200
R224PC	N	20	N	500	150	1,500	300	N	>2,000	N
R225PC	N	20	N	N	20	N	30	N	>2,000	N
R226PC	N	N	N	200	20	N	70	N	1,000	N
R227PC	N	15	N	N	20	N	20	N	2,000	N
R228PC	N	10	N	1,500	70	N	300	N	>2,000	N
R229PC	N	N	N	N	20	N	N	N	500	N
R230PC	N	10	N	N	<20	N	20	N	1,500	N
R231PC	N	30	N	1,000	100	N	1,000	N	>2,000	N
R232PC	N	20	N	500	70	N	100	N	>2,000	200
R233PC	N	50	N	500	100	N	500	N	>2,000	N
R235PC	N	70	N	700	200	N	500	N	>2,000	200
R236PC	N	30	N	1,000	20	N	70	N	>2,000	N
R237PC	N	30	N	1,000	20	N	500	N	>2,000	200
R238PC	N	70	N	200	70	N	700	N	>2,000	<200
R239PC	N	70	N	200	70	N	700	N	>2,000	200
R240PC	N	70	70	700	100	N	1,000	N	>2,000	200
R241PC	N	50	N	700	50	N	150	N	>2,000	N
R242PC	N	10	N	500	50	N	200	N	>2,000	N
R243PC	N	10	N	700	30	N	200	N	>2,000	N
R244PC	N	150	70	200	200	N	500	N	>2,000	200

Table A-3 -- Atomic Absorption Analyses of Water Samples from Riordan's Well Study Area, Nye County, Nevada

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	Latitude	Longitude	Ag-ppb aa	As-ppb aa	Li-ppm aa	Ca-ppm aa	Cu-ppb aa	Fe-ppb aa	Mn-ppb aa	K-ppm aa	Mg-ppm aa
R020W	38 34 6	115 21 42	<.2	2.6	<.01	54	2.8	36.0	10.0	1	7.0
R021W	38 31 2	115 20 50	<.2	6.1	.02	53	<1.0	23.0	1.7	3	5.0
R022W	38 31 2	115 20 50	<.2	5.4	.03	51	<1.0	20.0	1.9	3	4.0
R023W	38 30 57	115 20 46	<.2	3.2	<.01	43	1.0	27.0	9.4	3	4.0
R024W	38 31 8	115 23 10	<.2	1.2	.03	110	3.8	20.0	4.6	7	24.0
R025W	38 30 8	115 24 11	<.2	4.5	.02	52	2.9	33.0	1.6	3	15.0
R026W	38 29 27	115 19 37	<.2	2.3	.02	18	3.9	23.0	4.6	6	4.0
R027W	38 22 50	115 20 35	<.2	7.9	.03	96	1.9	300.0	2.3	12	21.0
R028W	38 33 25	115 22 42	<.2	6.7	.03	79	2.8	31.0	3.1	4	.5
R029W	38 33 25	115 22 42	<.2	7.8	.03	81	5.0	18.0	2.1	4	15.0
R030W	38 30 49	115 24 2	<.2	2.2	<.01	60	6.0	100.0	3.2	4	11.0
R031W	38 29 24	115 23 50	<.2	1.5	.01	88	5.4	50.0	1.5	2	13.0
R032W	38 29 27	115 23 50	<.2	1.1	.01	89	1.8	1.1	1.0	2	12.0
R033W	38 28 57	115 24 3	<.2	2.6	<.01	72	4.2	41.0	31.0	4	10.0
R034W	38 28 52	115 24 2	<.2	2.6	.03	98	2.5	42.0	1.1	6	22.0
R035W	38 28 26	115 23 41	<.2	2.1	.03	79	9.0	52.0	4.3	8	20.0
R036W	38 22 40	115 22 32	<.2	2.1	<.01	63	1.8	28.0	1.6	2	24.0
R037W	38 22 40	115 22 32	<.2	2.0	<.01	63	3.0	29.0	1.0	2	26.0

Table A-3 -- Atomic Absorption Analyses of Water Samples from Riordan's Well Study Area, Nye County, Nevada

Sample	Mo-ppb AA	Na-ppm AA	Pb-ppb AA	Sb-ppb AA	Zn-ppb AA	SO4--ppm	ALKALINE-ppm	F-ppm	CL--ppm	SP COND-µs
R020W	1	29	<1	<1	5.2	16	220	.2	11.0	410
R021W	2	78	<1	<1	4.8	36	340	.5	19.0	540
R022W	<1	76	<1	<1	3.7	36	230	.5	19.0	550
R023W	2	58	<1	<1	2.6	24	220	.2	15.0	480
R024W	<1	40	<1	<1	4.1	81	340	.4	20.0	880
R025W	8	44	<1	<1	3.7	47	230	.4	15.0	550
R026W	2	45	<1	<1	8.8	19	130	.2	8.0	350
R027W	2	50	<1	<1	7.3	46	380	.5	31.0	850
R028W	3	50	<1	<1	5.4	34	350	.6	12.0	660
R029W	3	49	<1	<1	9.4	33	350	.4	12.0	660
R030W	<1	19	<1	<1	5.9	32	220	.3	8.9	370
R031W	1	32	<1	<1	5.5	51	300	.2	17.0	670
R032W	2	37	<1	<1	4.9	48	310	.6	17.0	690
R033W	4	27	<1	<1	3.9	49	230	.4	12.0	550
R034W	2	73	<1	<1	3.8	99	360	.5	25.0	900
R035W	3	68	<1	<1	10.0	62	350	.5	21.0	800
R036W	2	11	<1	<1	9.1	15	390	.5	5.1	540
R037W	3	11	<1	<1	8.5	17	280	.3	5.9	530

Table A-4 -- Spectrographic and Atomic Absorption Analyses of Rock Samples from Riordan's Well Study Area, Nye County, Nevada

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
R011R	38 24 16	115 27 57	3	1.00	20.0	.300	1,000	N	N	N	50	300	2
R100R	38 25 31	115 21 51	20	.20	1.0	.030	200	N	N	N	200	200	2
R1164R	38 24 33	115 23 0	20	.30	1.0	.200	20	N	500	N	300	500	2
R122R	38 26 38	115 26 22	1	5.00	20.0	.020	200	N	N	N	<10	20	1
R159R	38 24 38	115 23 0	15	.10	1.0	.070	20	N	N	N	200	300	N
R160R	38 24 39	115 22 57	3	.05	.2	.005	<10	N	N	N	50	20	N
R164R	38 24 33	115 23 0	2	.20	.5	.200	20	N	N	N	70	300	N
R175R	38 33 53	115 21 23	10	.30	3.0	.050	100	N	500	N	70	500	3

Table A-4.--Spectrographic and Atomic Absorption Analyses of Rock Samples from Riordan's Well Study Area, Nye County, Nevada

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s
R011R	N	N	15	50	10	20	N	N	10	70	N	10	N
R100R	N	N	50	70	20	N	N	N	100	10	N	N	N
R1164R	N	N	5	1,000	150	70	70	N	500	30	N	10	N
R122R	N	N	N	20	5	N	N	N	5	70	N	<5	N
R159R	N	N	N	500	30	N	N	N	20	15	N	N	N
R160R	N	N	N	100	10	N	15	N	30	N	N	N	N
R164R	N	N	N	1,500	20	70	N	<20	30	70	N	5	N
R175R	N	N	N	150	30	100	N	N	10	10	N	5	N

Table A-4-- Spectrographic and Atomic Absorption Analyses of Rock Samples from Riordan's Well Study Area, Nye County, Nevada

Sample	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	As-ppm aa	Ag-ppm aa	Sb-ppm aa
R011R	5,000	50	N	70	N	300	N	.05	N	.10	N
R100R	N	70	N	300	2,000	30	N	<.05	100	.23	5
R1164R	5,000	700	N	100	2,000	500	N	N	>200	.63	7
R122R	300	10	N	15	N	100	N	.06	N	.09	N
R159R	100	500	N	20	N	70	N	<.05	<5	.11	N
R160R	N	500	N	20	N	N	N	<.05	220	.22	N
R164R	700	1,000	N	20	N	200	N	<.05	30	.51	4
R175R	700	500	N	70	N	50	N	<.05	>200	.30	3

APPENDIX B.--Descriptions of Anomalous Rock Samples

Sample	Description
R159R	Outcrop, red brecciated jasperoid
R160R	Outcrop, reddish brown gossan within jasperoid
R164R	Outcrop, green jasperoid with blue coatings on fracture surfaces
R1164R	Outcrop, tan silty shale with red liesegang bands
R100R	Float, brown gossan
R175R	Float, red and brown jasperoid
R011R	Outcrop, light brown phyllite with 2-3 mm euhedral pyrite (porphyroblasts?)
R122R	Float, quartz-calcite vein material with milky quartz crystals approximately 7.5 cm across and salmon-colored calcite crystals approximately 5 cm across