U.S. DEPARTMENT OF THE INTERIOR

U.S. GEOLOGICAL SURVEY

Analytical results and sample locality map of rock and soil samples, and samples of the ash of big sagebrush, rabbit brush, and western juniper from the Badlands Wilderness Study Area and the Badlands Wilderness Study Area Additions, (OR-005-021) Crook and Deschutes Counties, Oregon

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STUDIES RELATED TO WILDERNESS

Bureau of Land Management Wilderness Study Areas

The Federal Land Policy and Management Act (Public Law 94-579, October 21, 1979) requires the U.S. Geological Survey and the U.S. Bureau of Mines to conduct mineral surveys on certain areas to determine their mineral resource potential, if any. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a geochemical survey of the Badlands Wilderness Study Area (OR-005-021) and the Badlands Wilderness Study Area Additions (OR-005-021), Crook and Deschutes Counties, Oregon.

INTRODUCTION

In 1986, 1988, and 1989, the U.S. Geological Survey conducted a reconnaissance geochemical survey of the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions (OR-005-021), Crook and Deschutes Counties, Oregon.

The Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions comprise about 50 mi^2 (80 km^2) in the west side of Crook County and the east side of Deschutes County, Oregon, and lie about 8 mi (12.9 km) southeast of Bend and about 1 mi (1.6 km) south of the small town of Alfalfa (see fig. 1). Access to the study area is provided by U.S. Highway 20, which forms about 7.8 mi (12.6 km) of the study area's southwest boundary; on the north, access is provided by graded, well-maintained roads leading eastward from Highway 20. Dirt roads follow the eastern and southern boundaries, providing access from those directions. A number of dirt roads and jeep trails extend into, or traverse, the interior of the study area.

The study area is in the High Lava Plains region of central Oregon, an area that is somewhat transitional between the Basin and Range and the Cascades physiographic provinces. The geology of the study area is lithologically and structurally uncomplicated. The area is underlain by lava flows of Miocene to Holocene(?) age, with many flow features still evident. Unconsolidated Holocene deposits of sand and lesser amounts of silt and gravel mantle large parts of the study area, with eolian sands predominating in the higher elevations. The individual formations have been described by Peterson and others (1976), and by Bergquist and others (1990).

The topographic relief of the study area is low, about 540 ft (165 m). Elevations increase gradually southward from a low of about 3,360 ft (1,024 m) at the northern end of the study area up to 3,900 ft (1,189 m) at the top of a 150-ft (46 m) volcanic cinder cone located in the southeast corner of the study area. Climate in the area is arid to semi-arid high desert.

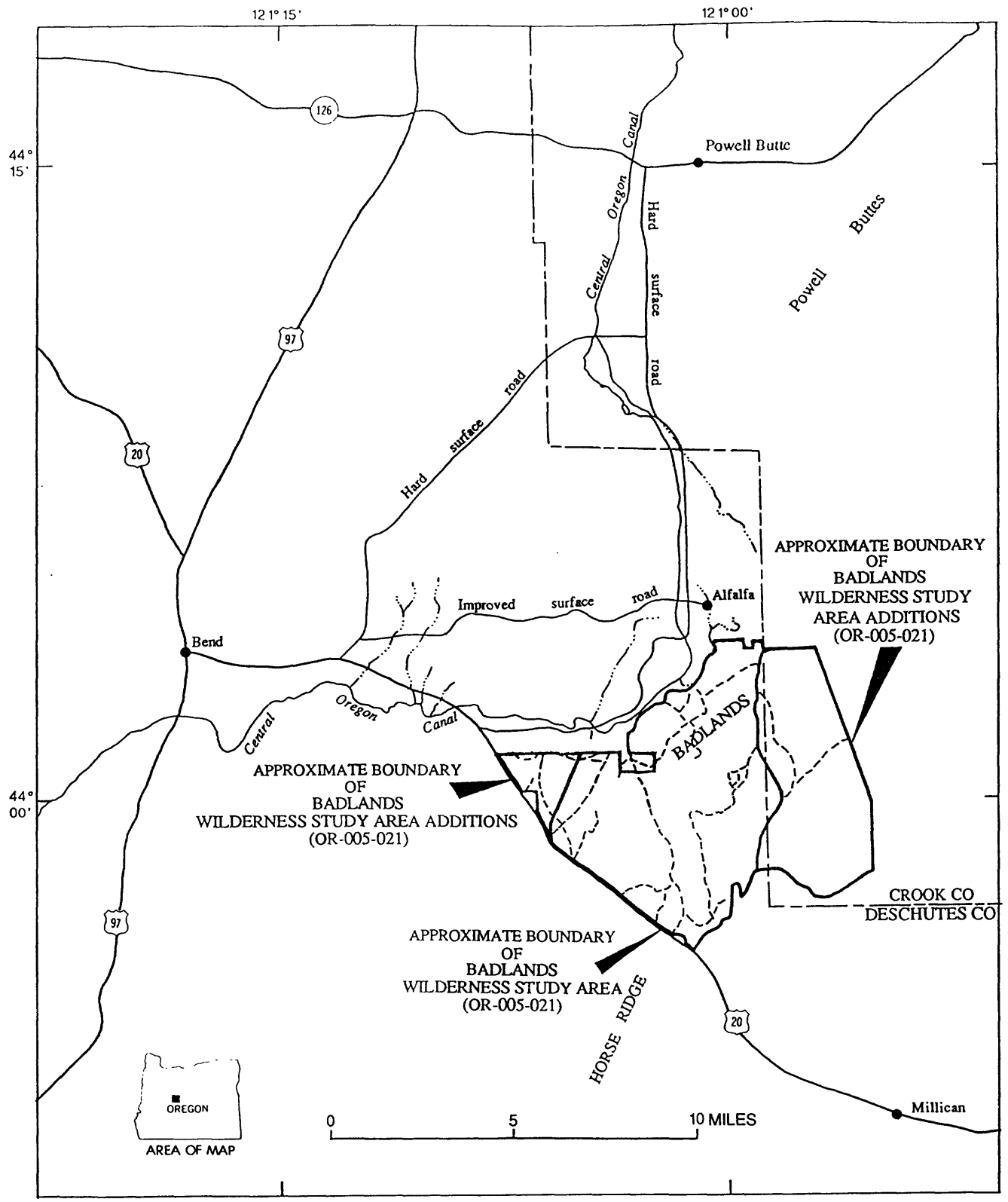

Figure 1. Index map showing location of Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon. Dashed lines denote jeep trails.

METHODS OF STUDY

Sample media

The study area was found to lack stream drainages suitable for stream-sediment or heavy-mineral-concentrate sampling. Rocks, vegetation, and soils were used as the sample media.

Analyses of unaltered or unmineralized rock samples provide background geochemical data for individual rock units. On the other hand, analyses of altered or mineralized rocks, where present, may provide useful geochemical information about the major- and trace-element assemblages associated with a mineralizing system. Altered or mineralized rocks were looked for but not found. Most rock samples were collected to see if analyses might reveal any indications of mineralized rock not otherwise recognizable.

The vegetation samples include big sagebrush (Artemisia tridentata Nutt.), western juniper (Juniperus occidentalis), and rabbit brush (Chrysothamnus sp.). The purpose of the vegetation sampling was to look for any evidence of concealed mineralized rock underlying clastic surficial deposits. Plants growing over, or in the vicinity of concealed mineral deposits, may take up elements related to those deposits through their root systems, and translocate the elements to various parts of the plants. Sampling and analysis of those plant parts may provide information indicating the presence of the deposits.

The primary purpose of the soil sampling in this study was to obtain information to aid in the evaluation of analytical data for the big sagebrush.

Sample collection

Samples were collected from 126 sites and include 60 rock, 64 big sagebrush, 45 western juniper, three rabbit brush, and eight soil samples (fig. 2). All except one of the 60 rock samples were from sites where no other samples were taken. The juniper samples were collected at sites where big sagebrush or rabbit brush samples were collected. Soil samples were collected at each of eight of the big sagebrush sample sites. Sampling density was about 1 sample site per 0.8 mi^2 (2 km^2) for the rock samples. Vegetation samples were only collected in the eastern and southern parts of the study area, an area of roughly 25 mi^2 (65 km^2). Sampling density within that portion of the study area was about 1 sample site per 0.6 mi^2 (1.6 km^2) for big sagebrush and western juniper. A cluster of about 20 big sagebrush sample sites within an area of about a mi^2 (2.6 km^2) was excluded from the calculation.

Rock samples

Rock samples were collected chiefly from outcrops or exposures and also from float (loose surface rock) in the vicinity of the plotted site location. Samples were collected

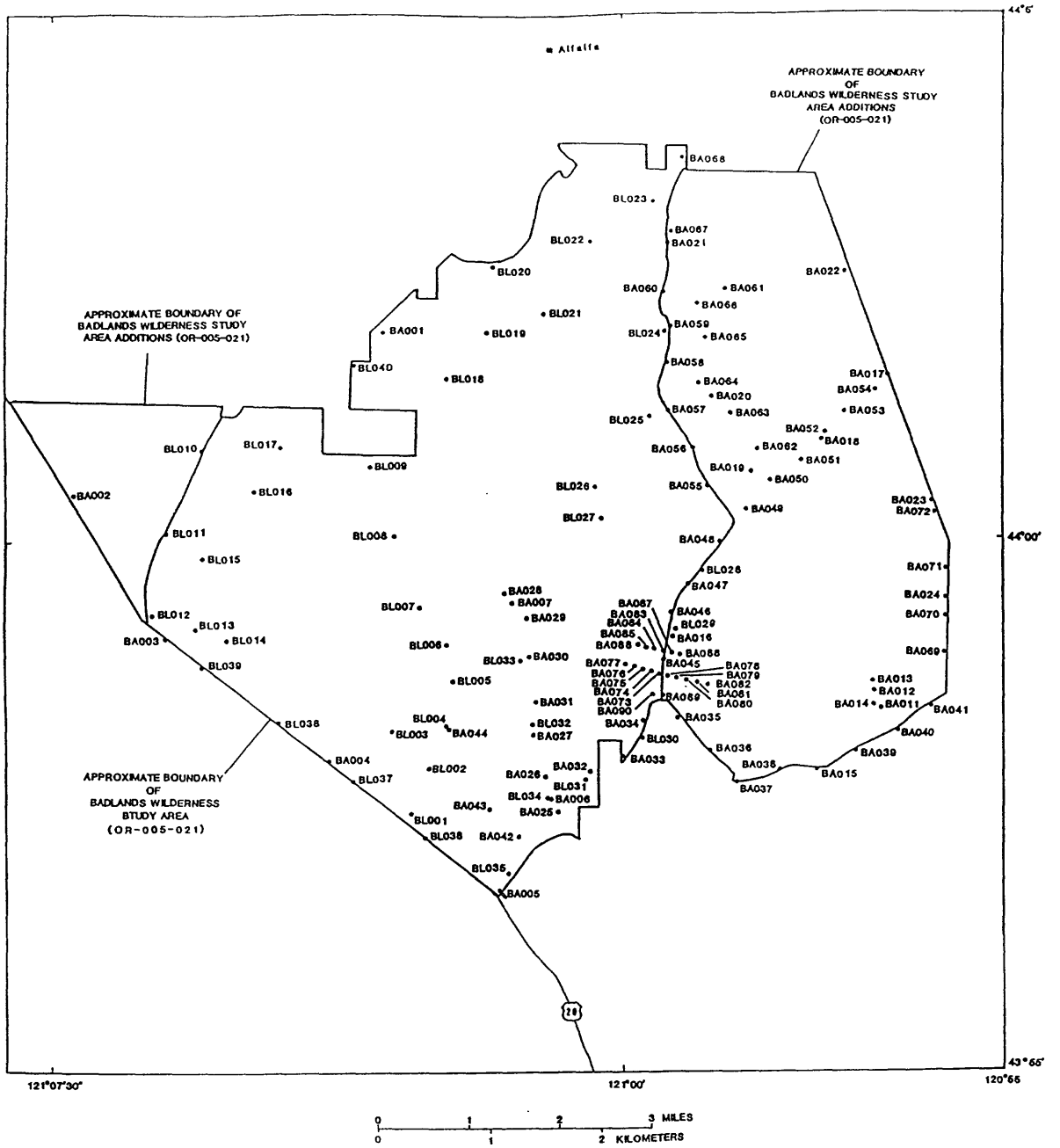

Figure 2. Sample locality map of the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon

from unaltered and unmineralized rocks. All rock samples consist of dark gray basalt with the exception of samples BA011R, BA012R, BA013R, BA014R, and BA016R, which are grayish red or dark gray basaltic cinder.

Soil samples

The soil samples were collected at eight of the big sagebrush sample sites. The interval collected was from the surface to a depth of 4 in.(10 cm). Surficial organic material was excluded.

Vegetation samples

Sagebrush samples were collected by clipping, with pruning shears, new growth, including stems with attached leaves, from three to six healthy plants within an area of up to about 30 ft (9.1 m) in diameter. Samples were collected in 11 x 17-in. cloth sample bags that were filled over half full for each sample. The plants sampled were generally about 3 ft (0.91 m), but ranged from about 1.5 ft (0.46 m) up to 6 ft (1.8 m). The rabbit brush samples were collected in similar fashion. In collecting the juniper samples, stems with attached leaves were clipped from several sides of two adjacent trees until an 11 x 17 in. cloth bag was filled. For uniformity, stems greater than about 1/8 in. (3.2 mm) diameter were excluded. The samples were taken from trees with trunk diameters ranging from about 1-4 ft (0.3-1.2 m) and averaging just under 2 ft (0.61 m).

Sample Preparation

The rock samples were crushed and then pulverized to minus-0.15 mm with ceramic plates. The soil samples were sieved with an 80-mesh (0.18 mm) stainless steel sieve and the minus-80 mesh fraction was used for analysis.

Plant samples were washed in tap water, dried in an oven at 40° C, and then pulverized in a Wiley mill. Splits of the dry, pulverized plant material were ashed in a muffle furnace during a 24-hour period with a maximum temperature of 450° C.

Sample Analysis

Spectrographic method

The rock samples collected during 1986 were analyzed for 31 elements using a semiquantitative, direct-current arc emission spectrographic method (modification of Grimes and Marranzino, 1968). Rock and soil samples collected during 1988 were analyzed for four additional elements with some minor changes in limits of determination for several elements using a semiquantitative, direct-current arc emission spectrographic method (modification of Grimes and Marranzino, 1968). The 31 elements analyzed and their limits of determination are listed in table 1; the 35 elements analyzed and their limits of determination are listed in table 2. Spectrographic results were obtained by visual

comparison of spectra derived from the sample against spectra obtained from standards made from pure oxides and carbonates. Standard concentrations are geometrically spaced over any given order of magnitude of concentration as follows: 100, 50, 20, 10, and so forth. Samples whose concentrations are estimated to fall between those values are assigned values of 70, 30, 15, and so forth. The precision of the analytical method is approximately plus or minus one reporting interval at the 83 percent confidence level and plus or minus two reporting intervals at the 96 percent confidence level (Motooka and Grimes, 1976). Values determined for the major elements, iron, magnesium, calcium, and titanium, are given in weight percent; all others are given in parts per million (micrograms/gram). Analytical data for samples from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions are listed in tables 5-7.

Chemical methods

The rock and soil samples were also analyzed for antimony, arsenic, bismuth, cadmium, and zinc by inductively coupled plasma-atomic emission spectrometry (ICP-AES)(Crock and others, 1987) and for mercury by cold vapor atomic absorption spectrophotometry (Koirtyohann and Khalil, 1976). Rock samples were also analyzed for gold by atomic absorption spectrophotometry (modification of Thompson and others, 1968), and soil samples were analyzed for gold by flameless atomic absorption with graphite furnace atomizer (O'Leary and Meier, 1986).

The samples of ash of big sagebrush, rabbit brush, and western juniper were analyzed for 40 elements by the ICP-AES method of Lichte and others, 1987. These samples were also analyzed by another ICP-AES method (Motooka, 1988) for arsenic, gold, silver, bismuth, cadmium, copper, molybdenum, lead, antimony, and zinc. This method was used to obtain lower limits of determination than the Lichte and others' method. Gold was analyzed in the plant ash samples by flameless atomic absorption spectrophotometry with graphite furnace atomizer, using a slightly modified version of the method described in O'Leary and Meier (1986). This method provided a lower limit of determination of 0.001 ppm (parts per million) gold. The 40 elements analyzed by the Lichte and others' method and their lower limits of determination are listed in table 3. The lower limits of determination for the other chemical methods are listed in table 4.

Analytical results for rock and soil samples and samples of ash of big sagebrush, rabbit brush, and western juniper are listed in tables 5-10.

DATA STORAGE SYSTEM

Upon completion of all analytical work, the analytical results were entered into the Branch of Geochemistry's computer data base. This data base contains both descriptive geological information and analytical data. Any or all of this information may be retrieved and converted to a binary form (STATPAC) for

computerized statistical analysis or publication (VanTrump and Miesch, 1977).

DESCRIPTION OF DATA TABLES

Tables 5-10 list the results of analyses for the samples of rock collected in 1986, rock collected in 1988, soil, ash of big sagebrush, ash of rabbit brush, and ash of western juniper, respectively. For the six tables, the data are arranged so that column 1 contains the USGS-assigned sample numbers. These numbers correspond to the numbers shown on the site location map (fig. 2) as follows: For rock samples BL001-BL040, the sample site numbers shown on the map correspond exactly with the sample numbers in table 5. For all other samples, the BA001-BA090 portion of the sample numbers (tables 5-10) corresponds with the sample site number shown on the map. For tables 5 and 6, columns in which the element headings show the letter "S" indicate the analyses are emission spectrographic analyses; for tables 7-10, the "S" in the column headings indicates the analyses are the 40-element method of inductively coupled plasma-atomic emission spectrometry (ICP-AES). Columns in which the element headings show "ICP-5" indicate the analyses are the 5-element method of ICP-AES; "ICP-10" indicates the 10-element method of ICP-AES; "AA" indicates atomic absorption spectrophotometric analysis; "CVAA" indicates cold vapor atomic absorption spectrophotometry; "AA-HGA" or "FAA-HGA" indicates flameless atomic absorption spectrophotometric analysis with heated graphite atomizer. A letter "N" in the tables indicates that a given element was looked for but not detected at the lower limit of determination shown for that element in tables 1-4. For emission spectrographic analyses, a "less than" symbol (<) entered in the tables in front of the lower limit of determination indicates that an element was observed but was below the lowest reporting value. For AA and ICP-AES analyses, a "less than" symbol (<) entered in the tables in front of the lower limit of determination indicates that an element was below the lowest reporting value. If an element was observed but was above the highest reporting value, a "greater than" symbol (>) was entered in the tables in front of the upper limit of determination.

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REFERENCES CITED

Bergquist, J.R., King, H.D., Blakely, R.J., and Sawatzky, D.L., U.S. Geological Survey, and Olson, J.E., U.S. Bureau of Mines, 1990, Mineral resources of the Badlands Wilderness Study Area and the Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon: U.S. Geological Survey Bulletin 1744, Chapter B, 14 p.

Crock, J.G., Briggs, P.H., Jackson, L.L., and Lichte, F.E., 1987, Analytical methods for the analysis of stream sediments and rocks from wilderness study areas: U.S. Geological Survey Open-File Report 87-84, 35 p.

Grimes, D.J., and Marranzino, A.P., 1968, Direct-current arc and alternating-current spark emission spectrographic field methods for the semiquantitative analysis of geologic materials: U.S. Geological Survey Circular 591, 6 p.

Koirtyohann, S.R., and Khalil, Moheb, 1976, Variables in the determination of mercury by cold vapor atomic absorption: Analytical Chemistry, 48, p. 136-139.

Lichte, F.E., Golightly D.W., and Lamothe, P.J., 1987, Inductively coupled plasma-atomic emission spectrometry, in Baedecker, P.A., ed., Methods for Geochemical Analysis, p. B1-B10: U.S. Geological Survey Bulletin 1770.

Motooka, J.M., 1988, An exploration geochemical technique for the determination of preconcentrated organometallic halides by ICP-AES: Applied Spectroscopy, v. 42, no. 7, p. 1293-1296.

Motooka, J.M., and Grimes, D.J., 1976, Analytical precision of one-sixth order semiquantitative spectrographic analyses: U.S. Geological Survey Circular 7381, 25 p.

O'Leary, R.M., and Meier, A.L., 1986, Analytical methods used in geochemical exploration, 1984: U.S. Geological Survey Circular 948, 48 p.

Peterson, N.V., Groh, E.A., Taylor, E.M., and Stensland, D.E., 1976, Geology and mineral resources of Deschutes County, Oregon: Oregon Department of Geology and Mineral Industries Bulletin 89, 66 p., map scale 1:192,308.

Thompson, C.E., Nakagawa, H.M., and VanSickle, G.H., 1968, Rapid analysis for gold in geologic materials, in Geological Survey Resesarch 1968: U.S. Geological Survey Professional Paper 600-B, p. B130-B132.

VanTrump, George, Jr., and Miesch, A.T., 1977, The U.S. Geological Survey RASS-STATPAC system for management and statistical reduction of geochemical data: Computers and Geosciences, v. 3, p. 475-488.

Table 1.--Limits of determination for optical emission spectrographic analysis of rock samples collected in 1986

Elements	Lower determination limit	Upper determination limit
	Percent	
Calcium (CA)	0.05	20
Iron (Fe)	0.05	20
Magnesium (Mg)	0.02	10
Titanium (Ti)	0.002	1
	Parts per million	
Silver (Ag)	0.5	5,000
Arsenic (As)	200	10,000
Gold (Au)	10	500
Boron (B)	10	2,000
Barium (Ba)	20	5,000
Beryllium (Be)	1	1,000
Bismuth (Bi)	10	1,000
Cadmium (Cd)	20	500
Cobalt (Co)	5	2,000
Chromium (Cd)	10	5,000
Copper (Cu)	5	20,000
Lanthanum (La)	20	1,000
Manganese (Mn)	10	5,000
Molybdenum (Mo)	5	2,000
Niobium (Nb)	20	2,000
Nickel (Ni)	5	5,000
Lead (Pb)	10	20,000
Antimony (Sb)	100	10,000
Scandium (Sc)	5	100
Tin (Sn)	10	1,000
Strontium (Sr)	100	5,000
Thorium (Th)	100	2,000
Vanadium (V)	10	10,000
Tungsten (W)	50	10,000
Yttrium (Y)	10	2,000
Zinc (Zn)	200	10,000
Zirconium (Zr)	10	1,000

Table 2.--Limits of determination for optical emission spectrographic analysis of rock and soil samples collected in 1988

Elements	Lower determination limit	Upper determination limit
	Percent	
Calcium (CA)	0.05	20
Iron (Fe)	0.05	20
Magnesium (Mg)	0.02	10
Sodium (Na)	0.2	5
Phosphorus (P)	0.2	10
Titanium (Ti)	0.002	1
	Parts per million	
Silver (Ag)	0.5	5,000
Arsenic (As)	200	10,000
Gold (Au)	10	500
Boron (B)	10	2,000
Barium (Ba)	20	5,000
Beryllium (Be)	1	1,000
Bismuth (Bi)	10	1,000
Cadmium (Cd)	20	500
Cobalt (Co)	5	2,000
Chromium (Cd)	10	5,000
Copper (Cu)	5	20,000
Gallium (Ga)	5	500
Germanium (Ge)	10	100
Lanthanum (La)	20	1,000
Manganese (Mn)	10	5,000
Molybdenum (Mo)	5	2,000
Niobium (Nb)	20	2,000
Nickel (Ni)	5	5,000
Lead (Pb)	10	20,000
Antimony (Sb)	100	10,000
Scandium (Sc)	5	100
Tin (Sn)	10	1,000
Strontium (Sr)	100	5,000
Thorium (Th)	100	2,000
Vanadium (V)	10	10,000
Tungsten (W)	50	10,000
Yttrium (Y)	10	2,000
Zinc (Zn)	200	10,000
Zirconium (Zr)	10	1,000

Table 3.--Limits of determination for the inductively coupled plasma-atomic emission spectrometric (ICP) analysis of samples of ash of big sagebrush, rabbit brush, and western juniper, based on a 0.100-g sample.

Elements	Lower determination limit	Upper determination limit
	Percent	
Aluminum (Al)	0.01	100
Calcium (Ca)	0.01	100
Iron (Fe)	0.01	50
Potassium (K)	0.01	100
Magnesium (Mg)	0.01	10
Sodium (Na)	0.01	100
Phosphorous (P)	0.01	100
Titanium (Ti)	0.01	50
	Parts per million	
Silver (Ag)	4.0	20,000
Arsenic (As)	20.	100,000
Gold (Au)	20.	100,000
Barium (Ba)	2.0	70,000
Beryllium (Be)	2.0	10,000
Bismuth (Bi)	20.	100,000
Cadmium (Cd)	4.0	50,000
Cerium (Ce)	8.0	100,000
Cobalt (Co)	2.0	50,000
Chromium (Cr)	2.0	100,000
Copper (Cu)	2.0	30,000
Europium (Eu)	4.0	10,000
Gallium (Ga)	8.0	100,000
Holmium (Ho)	8.0	10,000
Lanthanum (La)	4.0	100,000
Lithium (Li)	4.0	100,000
Manganese (Mn)	8.0	100,000
Molybdenum (Mo)	4.0	100,000
Niobium (Nb)	8.0	100,000
Neodymium (Nd)	8.0	100,000
Nickel (Ni)	4.0	100,000
Lead (Pb)	8.0	100,000
Scandium (Sc)	4.0	100,000
Tin (Sn)	20.	100,000
Strontium (Sr)	4.0	30,000
Tantalum (Ta)	80.	100,000
Uranium (U)	200.	200,000
Vanadium (V)	4.0	60,000
Yttrium (Y)	4.0	50,000
Ytterbium (Yb)	2.0	10,000
Zinc (Zn)	4.0	30,000

Table 4.--Other methods used and their limits of determination

[AA=flame atomic absorption spectrophotometry; FAA-HGA=flameless atomic absorption spectrophotometry with heated graphite atomizer; CVAA=cold vapor atomic absorption spectrophotometry; ICP-AES=inductively coupled plasma-atomic emission spectrometry]

Element or constituent determined	Sample type	Method	Determination limit (micrograms/gram or ppm	Reference
Gold(Au)	rocks	AA	.1	Modification of Thompson and others, 1968
Gold(Au)	soils	FAA-HGA	.001	O'Leary and Meier, 1986
Gold(Au)	plants,	FAA-HGA	.001	Modification of O'Leary and Meier, 1986
Mercury(Hg)	rocks, soils	CVAA	.02	Koirtyohann and Khalil, 1976
Arsenic(As)	rocks,	ICP-AES	5	Crock and others,
Antimony(Sb)	soils	ICP-AES	2	1987.
Bismuth(Bi)		ICP-AES	2	
Cadmium(Cd)		ICP-AES	0.1	
Zinc(Zn)		ICP-AES	2	
Arsenic(As)	plants	ICP-AES	.60	Motooka, 1988
Gold(Au)		ICP-AES	.15	
Silver(Ag)		ICP-AES	.045	
Antimony(Sb)		ICP-AES	.60	
Zinc(Zn)		ICP-AES	.050	
Bismuth(Bi)		ICP-AES	.60	
Cadmium(Cd)		ICP-AES	.030	
Copper(Cu)		ICP-AES	.050	
Molybdenum(Mo)		ICP-AES	.090	
Lead(Pb)		ICP-AES	.60	

Table 5. Results of analyses of rock samples collected in 1986 from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon

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

Sample	LATITUDE	LONGITUDE	S-Fe%	S-Mg%	S-Ca%	S-Ti%	S-Mn	S-Ag	S-As	S-Au	S-B	S-Ba
BL001	43 57 28	121 2 48	5	7	7	>1	1,000	N	N	N	<10	200
BL002	43 57 55	121 2 34	7	7	7	>1	700	N	N	N	<10	200
BL003	43 58 15	121 3 4	7	7	7	>1	700	N	N	N	<10	300
BL004	43 58 19	121 2 21	5	5	7	>1	1,000	N	N	N	<10	200
BL005	43 58 44	121 2 18	5	5	5	>1	700	N	N	N	<10	200
BL006	43 59 5	121 2 21	7	7	7	>1	700	N	N	N	<10	300
BL007	43 59 25	121 2 42	5	7	7	1	1,000	N	N	N	<10	200
BL008	44 0 3	121 3 1	5	7	5	>1	700	N	N	N	<10	200
BL009	44 0 42	121 3 21	7	7	5	>1	1,000	N	N	N	<10	200
BL010	44 0 52	121 5 32	7	7	7	>1	700	N	N	N	<10	300
BL011	44 0 4	121 6 0	7	7	7	>1	1,000	N	N	N	<10	200
BL012	43 59 20	121 6 12	7	7	7	>1	1,000	N	N	N	<10	200
BL013	43 59 11	121 5 37	7	7	7	>1	1,000	N	N	N	<10	200
BL014	43 59 5	121 5 15	5	5	7	>1	700	N	N	N	<10	200
BL015	43 59 52	121 5 33	7	7	7	>1	1,000	N	N	N	<10	200
BL016	44 11 26	121 4 53	7	7	7	>1	700	N	N	N	<10	200
BL017	44 0 55	121 4 31	7	7	7	>1	1,000	N	N	N	<10	300
BL018	44 1 31	121 2 21	7	7	7	>1	1,000	N	N	N	<10	200
BL019	44 1 57	121 1 47	10	7	10	>1	1,000	N	N	N	<10	300
BL020	44 2 35	121 1 42	7	7	7	>1	1,500	N	N	N	<10	100
BL021	44 2 6	121 1 3	5	7	5	>1	700	N	N	N	<10	200
BL022	44 2 49	121 0 27	5	7	5	>1	1,000	N	N	N	<10	200
BL023	44 3 12	120 59 36	5	7	5	>1	700	N	N	N	<10	300
BL024	44 1 59	120 59 27	5	7	5	>1	1,000	N	N	N	<10	200
BL025	44 1 11	120 59 37	5	7	5	>1	1,000	N	N	N	<10	200
BL026	44 0 31	121 0 20	5	7	5	>1	1,000	N	N	N	<10	200
BL027	44 0 12	121 0 16	5	7	5	>1	700	N	N	N	<10	200
BL028	43 59 42	120 58 56	5	5	5	>1	1,000	N	N	N	<10	200
BL029	43 59 8	120 59 18	5	5	5	>1	1,000	N	N	N	<10	200
BL030	43 58 8	120 59 42	5	7	5	>1	1,000	N	N	N	<10	200
BL031	43 57 49	121 0 28	5	7	5	>1	1,000	N	N	N	<10	200
BL032	43 58 19	121 1 11	5	7	5	>1	1,000	N	N	N	<10	200
BL033	43 58 57	121 1 21	5	7	5	>1	1,000	N	N	N	<10	200
BL034	43 57 36	121 0 59	7	7	5	>1	1,000	N	N	N	<10	200
BL035	43 56 55	121 1 33	7	7	5	>1	1,000	N	N	N	<10	200
BL036	43 57 14	121 2 38	5	7	5	>1	1,000	N	N	N	<10	200
BL037	43 57 46	12 3 35	5	7	5	>1	700	N	N	N	<10	200
BL038	43 58 18	121 4 33	7	7	5	>1	1,000	N	N	N	<10	200
BL039	43 58 50	121 5 33	5	5	5	>1	1,000	N	N	N	<10	200
BL040	44 1 41	121 3 34	7	7	5	>1	1,000	N	N	N	<10	200
BA001JR	44 1 57	121 3 12	5	5	7	1	700	N	N	N	<10	200
BA003JR	43 59 6	121 6 4	5	5	5	1	700	N	N	N	<10	150
BA004SR	43 57 57	121 3 57	5	5	5	1	1,000	N	N	N	<10	200
BA005JR	43 56 43	121 1 40	5	5	5	1	700	N	N	N	<10	200
BA006SR	43 57 33	121 0 57	7	3	7	>1	1,000	N	N	N	<10	150
BA007JR	43 59 24	121 1 30	5	5	3	1	700	N	N	N	10	200

Table 5. Results of analyses of rock samples collected in 1986 from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon--Continued

Sample	S-Be	S-Bi	S-Cd	S-Co	S-Cr	S-Cu	S-La	S-Mo	S-Nb	S-Ni	S-Pb	S-Sb	S-Sc	S-Sn	S-Sr
BL001	<1	N	N	30	200	100	N	N	N	100	<10	N	20	N	500
BL002	<1	N	N	30	200	100	N	N	N	100	<10	N	20	N	500
BL003	<1	N	N	30	150	100	N	N	N	100	<10	N	20	N	500
BL004	<1	N	N	30	200	100	N	N	N	100	<10	N	20	N	500
BL005	<1	N	N	30	200	100	N	N	N	100	<10	N	20	N	500
BL006	<1	N	N	30	300	100	N	N	N	100	<10	N	20	N	500
BL007	<1	N	N	30	500	50	N	N	N	100	<10	N	20	N	500
BL008	<1	N	N	30	200	100	N	N	N	150	<10	N	20	N	500
BL009	<1	N	N	30	300	100	N	N	N	100	<10	N	20	N	500
BL010	<1	N	N	30	300	50	N	N	N	100	<10	N	20	N	500
BL011	<1	N	N	30	300	100	N	N	N	100	<10	N	20	N	500
BL012	<1	N	N	30	300	70	N	N	N	100	<10	N	20	N	500
BL013	<1	N	N	30	300	100	N	N	N	100	<10	N	20	N	500
BL014	<1	N	N	30	200	100	N	N	N	100	<10	N	20	N	500
BL015	<1	N	N	30	300	100	N	N	N	100	<10	N	20	N	500
BL016	<1	N	N	30	300	100	N	N	N	100	<10	N	20	N	500
BL017	<1	N	N	30	300	70	N	N	N	100	<10	N	20	N	500
BL018	<1	N	N	30	300	70	N	N	N	150	<10	N	20	N	500
BL019	<1	N	N	30	300	70	N	N	N	150	<10	N	20	N	500
BL020	<1	N	N	30	500	70	N	N	N	150	<10	N	20	N	200
BL021	<1	N	N	30	300	50	N	N	N	100	<10	N	20	N	300
BL022	<1	N	N	30	300	70	N	N	N	100	<10	N	20	N	500
BL023	<1	N	N	30	300	70	N	N	N	100	<10	N	20	N	500
BL024	<1	N	N	30	300	100	N	N	N	100	<10	N	20	N	500
BL025	<1	N	N	30	300	100	N	N	N	100	<10	N	20	N	500
BL026	<1	N	N	30	300	50	N	N	N	100	<10	N	20	N	500
BL027	<1	N	N	30	300	70	N	N	N	100	<10	N	20	N	500
BL028	<1	N	N	30	300	70	N	N	N	100	<10	N	20	N	500
BL029	<1	N	N	30	200	50	N	N	N	100	<10	N	20	N	500
BL030	<1	N	N	30	300	70	N	N	N	100	<10	N	20	N	500
BL031	<1	N	N	30	300	70	N	N	N	100	<10	N	20	N	500
BL032	<1	N	N	30	300	100	N	N	N	100	<10	N	20	N	500
BL033	<1	N	N	30	300	70	N	N	N	100	<10	N	20	N	500
BL034	<1	N	N	30	200	70	N	N	N	70	<10	N	20	N	500
BL035	<1	N	N	30	300	100	N	N	N	150	<10	N	20	N	500
BL036	<1	N	N	20	300	70	N	N	N	100	<10	N	20	N	500
BL037	<1	N	N	30	300	100	N	N	N	100	<10	N	20	N	500
BL038	<1	N	N	30	300	70	N	N	N	100	<10	N	20	N	500
BL039	<1	N	N	30	300	50	N	N	N	100	<10	N	20	N	500
BL040	<1	N	N	30	200	100	N	N	N	100	<10	N	20	N	500
BA001JR	N	N	N	30	200	100	N	N	N	150	<10	N	20	N	500
BA003JR	N	N	N	30	200	50	N	N	N	150	<10	N	20	N	300
BA004SR	N	N	N	30	200	70	N	N	N	100	<10	N	20	N	500
BA005JR	N	N	N	30	200	70	N	N	N	100	<10	N	20	N	500
BA006SR	N	N	N	30	200	100	N	N	N	70	<10	N	30	N	500
BA007JR	N	N	N	30	200	70	N	N	N	100	<10	N	20	N	500

Table 5. Results of analyses of rock samples collected in 1986 from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon--Continued

Sample	S-Th	S-V	S-W	S-Y	S-Zn	S-Zr	As ICP-5	Bi ICP-5	Cd ICP-5	Sb ICP-5	Zn ICP-5	Hg CVAA	Au AA
BL001	N	150	N	20	<200	100	<5	<2	.2	3	30	<.02	<.1
BL002	N	150	N	20	<200	100	<5	2	.2	4	29	<.02	<.1
BL003	N	150	N	15	<200	100	<5	<2	.2	4	30	<.02	<.1
BL004	N	150	N	20	<200	100	<5	<2	.2	3	30	<.02	<.1
BL005	N	150	N	20	<200	100	<5	<2	.3	4	35	<.02	<.1
BL006	N	150	N	20	<200	100	<5	<2	.4	4	40	<.02	<.1
BL007	N	150	N	15	<200	100	<5	<2	.4	3	39	<.02	<.1
BL008	N	150	N	15	<200	100	<5	<2	.4	4	39	<.02	<.1
BL009	N	150	N	20	<200	50	<5	<2	.5	5	41	<.02	<.1
BL010	N	150	N	20	<200	100	<5	<2	.8	4	56	<.02	<.1
BL011	N	150	N	20	<200	100	<5	<2	.4	4	32	<.02	<.1
BL012	N	150	N	20	<200	100	<5	<2	.4	3	39	<.02	<.1
BL013	N	150	N	20	<200	100	<5	<2	.4	5	34	<.02	<.1
BL014	N	150	N	15	<200	50	<5	<2	.4	5	35	<.02	<.1
BL015	N	150	N	20	<200	50	<5	<2	.5	5	37	<.02	<.1
BL016	N	150	N	20	<200	50	<5	<2	.5	4	41	<.02	<.1
BL017	N	150	N	15	<200	50	<5	<2	.5	5	39	<.02	<.1
BL018	N	150	N	20	<200	50	<5	<2	.4	5	38	<.02	<.1
BL019	N	150	N	20	<200	50	<5	<2	.6	4	43	<.02	<.1
BL020	N	150	N	20	<200	50	<5	<2	.8	4	46	<.02	<.1
BL021	N	150	N	15	<200	100	<5	<2	.3	3	34	<.02	<.1
BL022	N	150	N	20	<200	100	<5	<2	.4	5	34	<.02	<.1
BL023	N	150	N	20	<200	100	<5	<2	.4	5	34	<.02	<.1
BL024	N	150	N	20	<200	100	<5	<2	.6	5	39	<.02	<.1
BL025	N	150	N	20	<200	100	<5	<2	.5	4	41	.18	<.1
BL026	N	150	N	20	<200	100	<5	<2	.4	5	36	<.02	<.1
BL027	N	150	N	20	<200	100	<5	<2	.5	5	37	<.02	<.1
BL028	N	150	N	20	<200	100	<5	<2	.9	3	49	<.02	<.1
BL029	N	150	N	20	<200	100	<5	<2	.8	2	48	<.02	<.1
BL030	N	150	N	20	<200	100	<5	<2	.5	5	40	<.02	<.1
BL031	N	150	N	20	<200	100	<5	<2	.5	5	34	<.02	<.1
BL032	N	150	N	20	<200	100	<5	<2	.5	3	44	<.02	<.1
BL033	N	150	N	20	<200	100	<5	<2	.5	4	41	<.02	<.1
BL034	N	150	N	30	<200	100	<5	<2	.6	<2	52	<.02	<.1
BL035	N	150	N	20	<200	100	<5	<2	.4	5	35	<.02	<.1
BL036	N	150	N	20	<200	100	<5	<2	.5	4	41	<.02	<.1
BL037	N	150	N	20	<200	100	<5	<2	.4	4	33	<.02	<.1
BL038	N	150	N	20	<200	100	<5	<2	.5	3	44	<.02	<.1
BL039	N	150	N	20	<200	100	<5	<2	.5	5	36	<.02	<.1
BL040	N	150	N	20	<200	100	<5	<2	.6	5	37	<.02	<.1
BA001JR	N	100	N	20	<200	70	<5	<2	.2	<2	28	.04	<.1
BA003JR	N	100	N	20	<200	50	<5	<2	.5	<2	38	.02	<.1
BA004SR	N	100	N	20	<200	70	<5	<2	.3	<2	35	.02	<.1
BA005JR	N	100	N	20	<200	70	<5	<2	.4	<2	31	.02	<.1
BA006SR	N	150	N	30	<200	100	<5	<2	.5	<2	42	.02	<.1
BA007JR	N	150	N	20	<200	70	<5	<2	.2	<2	28	.02	<.1

Table 6. Results of analyses of rock samples collected in 1988 from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon

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

Sample	LATITUDE	LONGITUDE	CA %-S	FE %-S	MG %-S	NA %-S	P %-S	TI %-S	AG PPM-S	AS PPM-S	AU PPM-S
BA011R	43 58 25	120 56 34	2	5	1.5	1.5	.2	.5	N	N	N
BA012R	43 58 34	120 56 39	2	5	2	2	<.2	.5	N	N	N
BA013R	43 58 39	120 56 41	1.5	3	1.5	1.5	<.2	.3	N	N	N
BA014R	43 58 25	120 56 43	1.5	3	1.5	1.5	<.2	.5	N	N	N
BA015R	43 57 51	120 57 27	1.5	5	2	2	<.2	.5	N	N	N
BA016R	43 59 4	120 59 20	2	3	1.5	1.5	<.2	.5	N	N	N
BA017R	44 1 34	120 56 30	1.5	3	2	1.5	<.2	.5	N	N	N
BA018R	44 0 55	120 57 23	2	5	2	2	<.2	.7	N	N	N
BA019R	44 0 38	120 58 18	1	3	1.5	2	N	.3	N	N	N
BA020R	44 1 23	120 58 50	2	5	2	1.5	<.2	.5	N	N	N
BA021R	44 2 48	120 59 24	1.5	5	2	2	<.2	.7	N	N	N
BA022R	44 2 31	120 57 5	1.5	5	2	2	<.2	.5	N	N	N
BA023R	44 0 21	120 55 57	2	5	2	1.5	<.2	.5	N	N	N
BA024R	43 59 27	120 55 47	1.5	5	2	2	<.2	.5	N	N	N

Sample	B PPM-S	BA PPM-S	BE PPM-S	BI PPM-S	CD PPM-S	CO PPM-S	CR PPM-S	CU PPM-S	GA PPM-S	GE PPM-S	LA PPM-S
BA011R	10	300	N	N	N	70	100	150	20	N	N
BA012R	10	150	N	N	N	70	100	100	20	N	N
BA013R	<10	150	N	N	N	50	70	70	20	N	N
BA014R	<10	150	N	N	N	70	70	70	20	N	N
BA015R	<10	150	N	N	N	100	70	150	30	N	N
BA016R	<10	200	N	N	N	70	70	100	20	N	N
BA017R	<10	150	N	N	N	70	50	50	20	N	N
BA018R	<10	150	N	N	N	100	70	70	30	N	N
BA019R	<10	150	N	N	N	70	50	50	20	N	N
BA020R	<10	150	N	N	N	70	100	50	20	N	N
BA021R	<10	150	N	N	N	100	100	100	30	N	N
BA022R	<10	150	N	N	N	70	70	30	20	N	N
BA023R	<10	150	N	N	N	70	70	70	20	N	N
BA024R	<10	300	N	N	N	70	50	50	30	N	N

Table 6. Results of analyses of rock samples collected in 1988 from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon--Continued

Sample	MN PPM-S	MO PPM-S	NB PPM-S	NI PPM-S	PB PPM-S	SB PPM-S	SC PPM-S	SN PPM-S	SR PPM-S	TH PPM-S	V PPM-S
BA011R	500	N	N	200	N	N	30	N	200	N	100
BA012R	500	N	N	200	N	N	20	N	200	N	100
BA013R	500	N	N	100	N	N	15	N	200	N	70
BA014R	300	N	N	150	N	N	20	N	200	N	70
BA015R	500	N	N	200	N	N	30	N	200	N	150
BA016R	500	N	N	150	N	N	20	N	200	N	150
BA017R	300	N	N	150	N	N	20	N	200	N	100
BA018R	500	N	N	200	N	N	30	N	300	N	150
BA019R	200	N	N	150	N	N	15	N	150	N	100
BA020R	500	N	N	150	N	N	20	N	200	N	150
BA021R	300	N	N	200	N	N	30	N	200	N	150
BA022R	300	N	N	200	N	N	20	N	200	N	100
BA023R	500	N	N	150	N	N	20	N	300	N	100
BA024R	300	N	N	150	N	N	20	N	200	N	150

Sample	W PPM-S	Y PPM-S	ZN PPM-S	ZR PPM-S	As PPM ICP-5	Bi PPM ICP-5	Cd PPM ICP-5	Sb PPM ICP-5	Zn PPM ICP-5	HG PPM CVAA	AU PPM AA
BA011R	N	30	N	70	<5	<2	.3	<2	44	.02	N
BA012R	N	20	N	50	<5	<2	.5	<2	36	.04	N
BA013R	N	15	N	50	<5	<2	.3	<2	27	.04	N
BA014R	N	20	N	70	<5	<2	.4	<2	37	N	N
BA015R	N	20	N	70	<5	<2	.5	<2	44	.12	N
BA016R	N	30	N	70	<5	<2	.6	<2	41	.02	N
BA017R	N	15	N	50	<5	<2	.5	<2	52	N	N
BA018R	N	20	N	50	<5	<2	.6	<2	54	.04	N
BA019R	N	15	N	30	<5	<2	.5	<2	53	N	N
BA020R	N	20	N	50	<5	<2	.5	<2	47	N	N
BA021R	N	30	N	70	<5	<2	.6	<2	37	.02	N
BA022R	N	20	N	50	<5	<2	.5	<2	58	N	N
BA023R	N	20	N	50	<5	<2	.4	<2	45	N	N
BA024R	N	20	N	50	<5	<2	.5	<2	47	.04	N

Table 7. Results of analyses of soil samples from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon

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

Sample	LATITUDE	LONGITUDE	FE %-S	MG %-S	NA %-S	P %-S	TI %-S	AG PPM-S	AS PPM-S	AU PPM-S	B PPM-S
BA083D	43 58 57	120 59 27	5	1.5	2	N	.7	N	N	N	10
BA084D	43 58 59	120 59 33	7	1.5	2	N	.7	N	N	N	10
BA085D	43 59 0	120 59 40	5	1.5	2	<.2	.7	N	N	N	10
BA086D	43 59 1	120 59 47	5	1	1.5	<.2	.5	N	N	N	10
BA087D	43 58 56	120 59 20	3	1	2	<.2	.3	N	N	N	10
BA088D	43 58 55	120 59 13	5	1.5	2	<.2	.5	N	N	N	10
BA089D	43 58 30	120 59 25	5	1	2	N	.5	N	N	N	10
BA090D	43 58 28	120 59 38	5	1.5	2	N	.5	N	N	N	10

Sample	BA PPM-S	BE PPM-S	BI PPM-S	CD PPM-S	CO PPM-S	CR PPM-S	CU PPM-S	GA PPM-S	GE PPM-S	LA PPM-S
BA083D	700	<1	N	N	30	100	30	30	N	N
BA084D	700	1	N	N	30	100	50	50	N	N
BA085D	700	1	N	N	20	70	30	30	N	<50
BA086D	500	1.5	N	N	20	100	30	30	N	<50
BA087D	500	1.5	N	N	20	50	30	20	N	<50
BA088D	500	1	N	N	20	100	30	30	N	<50
BA089D	700	1.5	N	N	20	100	30	30	N	<50
BA090D	500	1.5	N	N	20	100	30	30	N	<50

Sample	MN PPM-S	MO PPM-S	NB PPM-S	NI PPM-S	PB PPM-S	SB PPM-S	SC PPM-S	SN PPM-S	SR PPM-S	TH PPM-S	V PPM-S
BA083D	1,000	N	<20	50	30	N	20	N	500	N	150
BA084D	1,000	N	<20	50	30	N	20	N	500	N	150
BA085D	1,000	N	<20	30	30	N	15	N	500	N	150
BA086D	700	N	<20	30	20	N	15	N	500	N	150
BA087D	1,000	N	<20	20	20	N	15	N	500	N	100
BA088D	1,000	N	<20	30	30	N	20	N	500	N	150
BA089D	1,000	N	<20	30	30	N	20	N	500	N	150
BA090D	1,000	N	<20	30	30	N	15	N	500	N	150

Sample	W PPM-S	Y PPM-S	ZN PPM-S	ZR PPM-S	As PPM ICP-5	Bi PPM ICP-5	Cd PPM ICP-5	Sb PPM ICP-5	Zn PPM ICP-5	HG PPM CVAA	AU PPM AA-HGA
BA083D	N	30	N	200	<5	<2	.3	<2	53	N	N
BA084D	N	30	N	200	<5	<2	.3	<2	60	.02	N
BA085D	N	30	N	150	<5	<2	.3	<2	55	.02	N
BA086D	N	20	N	150	<5	<2	.3	<2	56	N	.004
BA087D	N	20	N	150	<5	<2	.2	<2	43	.02	N
BA088D	N	30	N	150	<5	<2	.2	<2	54	.02	N
BA089D	N	30	N	150	<5	<2	.2	<2	47	N	N
BA090D	N	30	N	200	<5	<2	.2	<2	41	.02	N

Table 8. Results of analyses of samples of ash of big sagebrush from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon

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

Sample	LATITUDE	LONGITUDE	AL %-S	CA %-S	FE %-S	K %-S	MG %-S	NA %-S	P %-S	TI %-S	MN PPM-S
BA 015 A	43 57 51	120 57 27	.24	11	.17	27	3	.11	7.5	.01	680
BA 025 A	43 57 26	121 0 53	.23	9.7	.18	36	2.8	.1	6.5	.01	750
BA 026 A	43 57 46	121 1 3	.11	11	.11	34	2.4	.07	8.1	<.01	940
BA 027 A	43 58 11	121 1 13	.2	12	.17	34	3.1	.09	7.2	.01	740
BA 029 A	43 59 15	121 1 19	.12	8.1	.11	36	2.6	.07	6.1	<.01	480
BA 032 A	43 57 50	121 0 26	.29	9.1	.21	34	3.5	.12	6	.01	570
BA 033 A	43 57 56	120 59 58	.31	12	.23	31	3.6	.14	8.1	.02	640
BA 034 A	43 58 18	120 59 41	.32	9.8	.23	33	3.6	.14	7.4	.02	580
BA 035 A	43 58 20	120 59 13	.41	11	.25	33	3	.15	6.8	.02	720
BA 036 A	43 58 1	120 58 51	.42	10	.27	34	3.2	.15	6.9	.02	1,500
BA 037 A	43 57 42	120 58 30	.48	10	.3	32	3.3	.17	7.2	.02	1,200
BA 038 A	43 57 48	120 57 27	.35	10	.24	33	3.1	.14	7.2	.02	720
BA 039 A	43 58 0	120 56 55	.24	11	.19	33	3.8	.1	6.2	.01	880
BA 040 A	43 58 13	121 56 21	.19	12	.16	32	3	.08	6.2	.01	820
BA 041 A	43 58 26	120 55 57	.19	11	.17	32	3.1	.08	6.8	.01	920
BA 042 A	43 57 14	121 1 23	.19	11	.16	35	3.2	.09	6.5	.01	700
BA 043 A	43 57 28	121 1 48	.18	9.5	.15	35	2.6	.08	7	.01	670
BA 044 A	43 58 14	121 2 20	.17	12	.15	31	2.9	.09	6.1	.01	990
BA 045 A	43 58 52	120 59 27	.26	9.4	.19	33	3.2	.11	7.7	.02	630
BA 046 A	43 59 18	120 59 21	.24	9.7	.2	34	3.1	.1	7.2	.01	540
BA 047 A	43 59 34	120 59 8	.22	10	.18	34	3.1	.1	6.7	.01	520
BA 048 A	43 59 57	120 58 43	.16	11	.14	32	3.3	.09	6.3	.01	630
BA 049 A	44 0 17	120 58 22	.22	12	.17	31	3.1	.13	6.7	.01	730
BA 050 A	44 0 34	120 58 3	.16	9.5	.14	34	3.3	.1	6.7	.01	570
BA 051 A	44 0 45	120 57 39	.21	11	.17	32	3.6	.12	7.9	.01	740
BA 052 A	44 1 1	120 57 20	.23	11	.18	32	3.2	.1	7.6	.01	660
BA 053 A	44 1 15	120 57 1	.19	12	.16	32	3.1	.1	7.3	.01	580
BA 054 A	44 1 23	120 56 41	.18	9.9	.15	33	3.2	.08	6	<.01	530
BA 055 A	44 0 30	120 58 52	.25	11	.19	33	3.8	.11	6.8	<.01	610
BA 056 A	44 0 52	120 59 5	.28	11	.2	33	3.4	.11	5.7	<.01	650
BA 057 A	44 1 14	120 59 23	.29	9.1	.21	34	3.4	.12	6.4	<.01	590
BA 058 A	44 1 38	120 59 26	.31	8.8	.22	34	3.1	.13	7	<.01	660
BA 059 A	44 2 0	120 59 21	.25	9.6	.19	33	3.4	.1	6.7	<.01	490
BA 060 A	44 2 20	120 59 26	.2	10	.17	33	3.3	.09	6.1	<.01	380
BA 061 A	44 2 20	120 58 39	.24	9.7	.17	33	2.9	.11	5.9	<.01	660
BA 062 A	44 0 52	120 58 15	.24	11	.18	33	3.4	.1	7.3	.01	510
BA 063 A	44 1 12	120 58 35	.18	10	.14	33	3.4	.1	6.2	<.01	560
BA 064 A	44 1 29	120 59 0	.25	10	.18	34	3.2	.1	6.4	<.01	550
BA 065 A	44 1 54	120 58 55	.19	9.5	.16	33	3.4	.12	5.6	<.01	980
BA 066 A	44 2 13	120 59 1	.23	9.5	.18	33	3.6	.1	6.5	<.01	470
BA 067 A	44 2 54	120 59 23	.41	10	.26	33	3.5	.15	6.5	<.01	690
BA 068 A	44 3 37	120 59 14	.53	9.3	.3	32	3.3	.18	6.9	<.01	640
BA 069 A	43 58 52	120 55 48	.23	10	.18	33	3.5	.09	7.4	<.01	810
BA 070 A	43 59 17	120 55 47	.17	10	.16	32	3.6	.08	6.7	<.01	1,100
BA 071 A	43 59 43	120 55 48	.19	11	.15	33	3.2	.08	6.2	<.01	710
BA 072 A	44 0 14	120 55 56	.2	9.8	.17	34	3.2	.09	6.9	.01	800
BA073AT	43 58 45	120 59 30	.2	7	.16	28.6	1.85	.09	6.35	.01	458
BA074AT	43 58 46	120 59 37	.16	8.85	.14	26.7	2.49	.07	6.29	.01	396
BA075AT	43 58 48	120 59 43	.17	7.44	.15	27.1	2.05	.07	6.52	.01	435
BA076AT	43 58 50	120 59 49	.15	7.05	.14	28.2	1.84	.07	7.4	.01	408
BA077AT	43 58 51	120 59 56	.18	8.4	.16	29.2	1.92	.08	6.47	.01	466
BA078AT	43 58 44	120 59 23	.14	7.51	.13	34.9	2.22	.07	7	.01	403
BA079AT	43 58 43	120 59 17	.14	8.89	.13	28	2.03	.06	6.82	<.01	906
BA080AT	43 58 41	120 59 9	.16	6.42	.15	29.3	1.81	.08	6.37	.01	702
BA081AT	43 58 40	120 59 1	.16	6.62	.14	27.2	1.73	.08	6.97	.01	860
BA082AT	43 58 39	120 58 53	.21	8.91	.16	30.6	2.41	.08	7.13	<.01	545
BA083AT	43 58 57	120 59 27	.21	8.64	.18	32.6	2.23	.08	6.4	.02	551
BA084AT	43 58 59	120 59 33	.12	7.91	.11	28.6	2.47	.06	6.63	<.01	418
BA085AT	43 59 0	120 59 40	.13	8.45	.12	32.7	2.4	.06	6.1	<.01	414
BA086AT	43 59 1	120 59 47	.11	9.68	.11	33.2	2.44	.05	7.68	<.01	388

Table 8. Results of analyses of samples of ash of big sagebrush from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon--Continued

Sample	AG PPM-S	AS PPM-S	AU PPM-S	BA PPM-S	BE PPM-S	BI PPM-S	CD PPM-S	CE PPM-S	CO PPM-S	CR PPM-S	CU PPM-S
BA 015 A	<4	<20	<20	160	<2	<20	<4	<8	4	6	190
BA 025 A	<4	<20	<20	120	<2	<20	<4	<8	3	6	130
BA 026 A	<4	<20	<20	100	<2	<20	<4	<8	2	6	170
BA 027 A	<4	<20	<20	110	<2	<20	<4	8	4	7	180
BA 029 A	<4	<20	<20	110	<2	<20	<4	17	3	5	170
BA 032 A	<4	<20	<20	100	<2	<20	<4	<8	3	6	170
BA 033 A	<4	<20	<20	180	<2	<20	<4	<8	5	9	260
BA 034 A	<4	<20	<20	120	<2	<20	<4	<8	3	7	270
BA 035 A	<4	<20	<20	170	<2	<20	<4	<8	4	7	170
BA 036 A	<4	<20	<20	170	<2	<20	<4	9	4	8	170
BA 037 A	<4	<20	<20	150	<2	<20	<4	<8	5	8	150
BA 038 A	<4	<20	<20	91	<2	<20	<4	12	4	8	190
BA 039 A	<4	<20	<20	120	<2	<20	<4	<8	4	6	140
BA 040 A	<4	<20	<20	130	<2	<20	<4	<8	4	6	160
BA 041 A	<4	<20	<20	140	<2	<20	<4	<8	3	7	130
BA 042 A	<4	<20	<20	96	<2	<20	<4	<8	<2	3	180
BA 043 A	<4	<20	<20	100	<2	<20	<4	<8	4	6	210
BA 044 A	<4	<20	<20	130	<2	<20	<4	<8	3	4	130
BA 045 A	<4	<20	<20	130	<2	<20	<4	<8	4	6	210
BA 046 A	<4	<20	<20	87	<2	<20	<4	<8	2	5	210
BA 047 A	<4	<20	<20	73	<2	<20	<4	<8	2	5	160
BA 048 A	<4	<20	<20	92	<2	<20	<4	<8	3	6	130
BA 049 A	<4	<20	<20	130	<2	<20	<4	<8	4	6	150
BA 050 A	<4	<20	<20	100	<2	<20	<4	<8	4	5	200
BA 051 A	4	<20	<20	120	<2	<20	<4	24	2	9	180
BA 052 A	<4	<20	<20	110	<2	<20	<4	17	4	8	200
BA 053 A	<4	<20	<20	120	<2	<20	<4	<8	3	6	170
BA 054 A	<4	<20	<20	100	<2	<20	<4	<8	3	6	140
BA 055 A	<4	<20	<20	170	<2	<20	<4	<8	3	6	180
BA 056 A	<4	<20	<20	130	<2	<20	<4	<8	<2	5	140
BA 057 A	<4	<20	<20	130	<2	<20	<4	<8	3	6	190
BA 058 A	<4	<20	<20	130	<2	<20	<4	<8	<2	6	190
BA 059 A	<4	<20	<20	140	<2	<20	<4	<8	<2	4	170
BA 060 A	<4	<20	<20	120	<2	<20	<4	10	4	7	220
BA 061 A	<4	<20	<20	130	<2	<20	<4	<8	3	6	150
BA 062 A	<4	<20	<20	100	<2	<20	<4	<8	<2	5	220
BA 063 A	<4	<20	<20	99	<2	<20	<4	<8	<2	4	180
BA 064 A	<4	<20	<20	94	<2	<20	<4	<8	3	6	160
BA 065 A	<4	<20	<20	110	<2	<20	<4	<8	3	4	130
BA 066 A	<4	<20	<20	120	<2	<20	<4	8	3	7	170
BA 067 A	<4	<20	<20	130	<2	<20	<4	13	4	8	200
BA 068 A	<4	<20	<20	220	<2	<20	<4	20	4	9	180
BA 069 A	<4	<20	<20	140	<2	<20	<4	<8	3	7	190
BA 070 A	<4	<20	<20	130	<2	<20	<4	15	3	7	160
BA 071 A	<4	<20	<20	150	<2	<20	<4	<8	2	5	120
BA 072 A	<4	<20	<20	130	<2	<20	<4	<8	2	6	170
BA073AT	<4	<20	<20	101	<2	<20	<4	<8	2	6	154
BA074AT	<4	<20	<20	123	<2	<20	<4	<8	2	5	171
BA075AT	<4	<20	<20	82	<2	<20	<4	<8	3	6	186
BA076AT	<4	<20	<20	81	<2	<20	<4	<8	3	5	166
BA077AT	<4	<20	<20	79	<2	<20	<4	<8	3	5	196
BA078AT	<4	<20	<20	79	<2	<20	<4	<8	<2	4	141
BA079AT	<4	<20	<20	123	<2	<20	<4	<8	2	5	149
BA080AT	<4	<20	<20	63	<2	<20	<4	<8	3	5	109
BA081AT	<4	<20	<20	82	<2	<20	<4	<8	3	5	160
BA082AT	<4	<20	<20	96	<2	<20	<4	<8	3	5	198
BA083AT	<4	<20	<20	130	<2	<20	<4	<8	3	5	160
BA084AT	<4	<20	<20	93	<2	<20	<4	<8	<2	5	162
BA085AT	<4	<20	<20	122	<2	<20	<4	<8	<2	4	134
BA086AT	<4	<20	<20	81	<2	<20	<4	<8	2	5	140

Table 8. Results of analyses of samples of ash of big sagebrush from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon--Continued

Sample	EU PPM-S	GA PPM-S	HO PPM-S	LA PPM-S	LI PPM-S	MO PPM-S	NB PPM-S	ND PPM-S	NI PPM-S	PB PPM-S	SC PPM-S
BA 015 A	<4	<8	<8	<4	<4	<4	<8	<8	32	<8	<4
BA 025 A	<4	<8	<8	4	<4	4	<8	<8	32	<8	<4
BA 026 A	<4	<8	<8	<4	<4	12	<8	<8	19	<8	<4
BA 027 A	<4	<8	<8	4	<4	6	<8	<8	20	<8	<4
BA 029 A	<4	<8	<8	9	<4	6	<8	<8	23	<8	<4
BA 032 A	<4	<8	<8	6	<4	11	<8	<8	22	<8	<4
BA 033 A	<4	<8	<8	5	<4	13	<8	21	25	<8	<4
BA 034 A	<4	<8	<8	<4	<4	9	<8	<8	23	<8	<4
BA 035 A	<4	<8	<8	6	<4	11	<8	<8	33	<8	<4
BA 036 A	<4	<8	<8	<4	<4	5	<8	<8	37	<8	<4
BA 037 A	<4	<8	<8	5	<4	7	<8	<8	28	<8	<4
BA 038 A	<4	<8	<8	<4	<4	8	<8	<8	29	<8	<4
BA 039 A	<4	<8	<8	<4	<4	7	<8	<8	47	<8	<4
BA 040 A	<4	<8	<8	4	<4	10	<8	15	21	<8	<4
BA 041 A	<4	<8	<8	<4	<4	7	<8	23	32	<8	<4
BA 042 A	<4	<8	<8	5	<4	16	<8	<8	26	<8	<4
BA 043 A	<4	<8	<8	4	<4	7	<8	20	17	<8	<4
BA 044 A	<4	<8	<8	6	<4	5	<8	<8	17	<8	<4
BA 045 A	<4	<8	<8	6	<4	8	<8	<8	30	<8	<4
BA 046 A	<4	<8	<8	<4	<4	9	<8	<8	22	<8	<4
BA 047 A	<4	<8	<8	<4	<4	11	<8	<8	19	<8	<4
BA 048 A	<4	<8	<8	<4	<4	6	<8	<8	15	<8	<4
BA 049 A	<4	<8	<8	7	<4	16	<8	<8	37	<8	<4
BA 050 A	<4	<8	<8	4	<4	10	<8	<8	26	<8	<4
BA 051 A	<4	15	<8	<4	<4	6	<8	29	32	<8	<4
BA 052 A	<4	10	<8	6	<4	7	<8	8	23	9	<4
BA 053 A	<4	<8	<8	7	<4	9	<8	<8	21	<8	<4
BA 054 A	<4	<8	<8	5	<4	7	<8	<8	32	<8	<4
BA 055 A	<4	<8	<8	5	<4	8	<8	<8	29	<8	<4
BA 056 A	<4	<8	<8	6	<4	6	<8	<8	24	<8	<4
BA 057 A	<4	<8	<8	5	<4	9	<8	<8	24	<8	<4
BA 058 A	<4	<8	<8	5	<4	6	<8	<8	20	<8	<4
BA 059 A	<4	<8	<8	4	<4	11	<8	<8	25	<8	<4
BA 060 A	<4	10	<8	5	<4	8	<8	15	19	<8	<4
BA 061 A	<4	<8	<8	5	<4	6	<8	9	25	<8	<4
BA 062 A	<4	<8	<8	<4	<4	6	<8	<8	34	<8	<4
BA 063 A	<4	<8	<8	<4	<4	9	<8	<8	26	<8	<4
BA 064 A	<4	<8	<8	6	<4	7	<8	<8	25	<8	<4
BA 065 A	<4	<8	<8	4	<4	6	<8	<8	27	<8	<4
BA 066 A	<4	<8	<8	<4	<4	5	<8	9	24	<8	<4
BA 067 A	<4	<8	<8	7	<4	10	<8	<8	33	8	<4
BA 068 A	<4	11	<8	7	<4	16	<8	9	26	9	<4
BA 069 A	<4	<8	<8	5	<4	9	<8	<8	33	<8	<4
BA 070 A	<4	<8	<8	6	<4	7	<8	<8	37	<8	<4
BA 071 A	<4	<8	<8	<4	<4	6	<8	<8	26	<8	<4
BA 072 A	<4	<8	<8	<4	<4	5	<8	15	35	<8	<4
BA073AT	<4	<8	<8	4	<4	<4	<8	<8	19	<8	<4
BA074AT	<4	<8	<8	5	<4	<4	<8	<8	14	<8	<4
BA075AT	<4	<8	<8	<4	<4	5	<8	<8	13	<8	<4
BA076AT	<4	<8	<8	<4	<4	<4	<8	<8	15	<8	<4
BA077AT	<4	<8	<8	5	<4	<4	<8	<8	19	<8	<4
BA078AT	<4	<8	<8	<4	<4	<4	<8	<8	16	<8	<4
BA079AT	<4	<8	<8	4	<4	<4	<8	<8	19	<8	<4
BA080AT	<4	<8	<8	<4	<4	<4	<8	<8	14	<8	<4
BA081AT	<4	<8	<8	<4	<4	<4	<8	<8	21	<8	<4
BA082AT	<4	<8	<8	5	<4	<4	<8	<8	12	<8	<4
BA083AT	<4	<8	<8	4	<4	6	<8	<8	15	<8	<4
BA084AT	<4	<8	<8	<4	<4	5	<8	<8	19	<8	<4
BA085AT	<4	<8	<8	<4	<4	5	<8	<8	13	<8	<4
BA086AT	<4	<8	<8	4	<4	5	<8	<8	13	<8	<4

Table 8. Results of analyses of samples of ash of big sagebrush from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon--Continued

Sample	SN PPM-S	SR PPM-S	TA PPM-S	TH PPM-S	U PPM-S	V PPM-S	Y PPM-S	YB PPM-S	ZN PPM-S	Ag PPM ICP-10
BA 015 A	<20	660	<80	<8	<200	<4	<4	<2	560	N
BA 025 A	<20	490	<80	<8	<200	<4	<4	<2	560	N
BA 026 A	<20	670	<80	<8	<200	<4	<4	<2	490	N
BA 027 A	<20	580	<80	<8	<200	<4	<4	<2	540	N
BA 029 A	<20	510	<80	<8	<200	<4	<4	<2	450	N
BA 032 A	<20	470	<80	<8	<200	<4	<4	<2	290	N
BA 033 A	<20	750	<80	12	<200	5	<4	<2	530	N
BA 034 A	<20	500	<80	<8	<200	<4	<4	<2	500	N
BA 035 A	<20	610	<80	<8	<200	<4	<4	<2	490	N
BA 036 A	<20	580	<80	<8	<200	4	<4	<2	720	N
BA 037 A	<20	570	<80	<8	<200	4	<4	<2	580	N
BA 038 A	<20	520	<80	<8	<200	<4	<4	<2	610	N
BA 039 A	<20	590	<80	<8	<200	<4	<4	<2	480	N
BA 040 A	<20	610	<80	14	<200	<4	<4	<2	390	N
BA 041 A	<20	640	<80	22	<200	<4	<4	<2	450	N
BA 042 A	<20	580	<80	<8	<200	<4	<4	<2	470	N
BA 043 A	<20	520	<80	16	<200	<4	<4	<2	520	N
BA 044 A	<20	790	<80	<8	<200	<4	<4	<2	470	N
BA 045 A	<20	540	<80	<8	<200	<4	<4	<2	530	N
BA 046 A	<20	510	<80	<8	<200	<4	<4	<2	550	N
BA 047 A	<20	490	<80	<8	<200	<4	<4	<2	410	N
BA 048 A	<20	630	<80	<8	<200	<4	<4	<2	450	N
BA 049 A	<20	670	<80	<8	<200	<4	<4	<2	410	N
BA 050 A	<20	470	<80	<8	<200	<4	<4	<2	430	N
BA 051 A	<20	630	<80	20	<200	5	<4	<2	640	N
BA 052 A	<20	580	<80	<8	<200	<4	<4	<2	520	N
BA 053 A	<20	680	<80	<8	<200	<4	<4	<2	560	N
BA 054 A	<20	590	<80	<8	<200	<4	<4	<2	410	N
BA 055 A	<20	620	<80	<8	<200	<4	<4	<2	620	N
BA 056 A	<20	600	<80	<8	<200	<4	<4	<2	470	N
BA 057 A	<20	530	<80	<8	<200	<4	<4	<2	520	N
BA 058 A	<20	500	<80	<8	<200	<4	<4	<2	560	N
BA 059 A	<20	630	<80	<8	<200	<4	<4	<2	570	N
BA 060 A	<20	580	<80	9	<200	<4	<4	<2	500	N
BA 061 A	<20	590	<80	<8	<200	<4	<4	<2	410	N
BA 062 A	<20	490	<80	<8	<200	<4	<4	<2	550	N
BA 063 A	<20	520	<80	<8	<200	<4	<4	<2	500	N
BA 064 A	<20	570	<80	<8	<200	<4	<4	<2	550	N
BA 065 A	<20	550	<80	<8	<200	<4	<4	<2	510	N
BA 066 A	<20	550	<80	<8	<200	<4	<4	<2	490	N
BA 067 A	<20	600	<80	<8	<200	4	<4	<2	590	N
BA 068 A	<20	550	<80	<8	<200	6	<4	<2	640	N
BA 069 A	<20	580	<80	<8	<200	<4	<4	<2	560	N
BA 070 A	<20	600	<80	<8	<200	<4	<4	<2	730	N
BA 071 A	<20	650	<80	<8	<200	<4	<4	<2	430	N
BA 072 A	<20	560	<80	<8	<200	<4	<4	<2	650	N
BA073AT	<20	404	<80	<8	<200	<4	<4	<2	370	.09
BA074AT	<20	478	<80	<8	<200	<4	<4	<2	424	.07
BA075AT	<20	383	<80	<8	<200	<4	<4	<2	385	.07
BA076AT	<20	346	<80	<8	<200	<4	<4	<2	451	.06
BA077AT	<20	442	<80	<8	<200	<4	<4	<2	341	<.05
BA078AT	<20	427	<80	<8	<200	<4	<4	<2	388	<.05
BA079AT	<20	498	<80	<8	<200	<4	<4	<2	502	<.05
BA080AT	<20	294	<80	<8	<200	<4	<4	<2	396	<.05
BA081AT	<20	328	<80	<8	<200	<4	<4	<2	550	<.05
BA082AT	<20	463	<80	<8	<200	<4	<4	<2	440	.05
BA083AT	<20	518	<80	<8	<200	<4	<4	<2	409	<.05
BA084AT	<20	425	<80	<8	<200	<4	<4	<2	407	.05
BA085AT	<20	499	<80	<8	<200	<4	<4	<2	400	.05
BA086AT	<20	508	<80	<8	<200	<4	<4	<2	382	<.05

Table 8. Results of analyses of samples of ash of big sagebrush from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon--Continued

Sample	As PPM ICP-10	Au PPM ICP-10	Bi PPM ICP-10	Cd PPM ICP-10	Cu PPM ICP-10	Mo PPM ICP-10	Pb PPM ICP-10	Sb PPM ICP-10	Zn PPM ICP-10	AU PPM FAA-HGA	ASH %
BA 015 A	N	N	N	1.1	210	3.8	N	N	480	.006	5.8
BA 025 A	N	N	N	1.1	140	5.9	N	N	450	.002	5.9
BA 026 A	N	N	N	1.9	190	16	N	N	430	.002	5
BA 027 A	N	N	N	1.3	200	7.5	N	N	450	.006	4.8
BA 029 A	N	N	N	1	200	6.2	N	N	410	.004	5
BA 032 A	N	N	N	.54	190	13	N	N	250	.004	5.4
BA 033 A	N	N	N	2.2	310	17	N	N	470	.005	5.7
BA 034 A	N	N	N	1	300	12	N	N	410	.017	5.1
BA 035 A	N	N	N	1.3	190	15	N	N	420	.015	5.7
BA 036 A	N	N	N	2	180	7.2	N	N	600	.002	5.9
BA 037 A	N	N	N	1.1	160	8.2	N	N	500	.005	5.6
BA 038 A	N	N	N	.69	210	11	N	N	500	.005	5.9
BA 039 A	N	N	N	1.6	150	10	N	N	410	.005	4.7
BA 040 A	N	N	N	1.6	160	11	N	N	330	.004	5
BA 041 A	N	N	N	1.6	140	8.5	N	N	380	.005	4.8
BA 042 A	N	N	N	1.4	200	20	N	N	390	.005	4.9
BA 043 A	N	N	N	.97	230	7.9	N	N	430	.007	4.8
BA 044 A	N	N	N	1.2	150	7.2	N	N	400	.016	5.1
BA 045 A	N	N	N	1	240	11	N	N	460	.031	5.9
BA 046 A	N	N	N	1.1	240	13	N	N	480	.004	5.8
BA 047 A	N	N	N	.73	180	15	N	N	350	.004	5.9
BA 048 A	N	N	N	1	140	8.1	N	N	390	.004	4.6
BA 049 A	N	N	N	1.4	170	19	N	N	360	.005	5.1
BA 050 A	N	N	N	1.3	230	12	N	N	370	.002	5.6
BA 051 A	N	N	N	1.4	190	7.3	N	N	510	.007	5.9
BA 052 A	N	N	N	1.4	230	8.4	N	N	450	.006	5.5
BA 053 A	N	N	N	1.4	190	11	N	N	480	.005	5.4
BA 054 A	N	N	N	1.2	150	7.4	N	N	370	.005	5.8
BA 055 A	N	N	N	2	180	8.7	N	N	520	.011	5.2
BA 056 A	N	N	N	1.4	130	7	N	N	390	.007	4.8
BA 057 A	N	N	N	1.4	200	9.7	N	N	470	.002	5.6
BA 058 A	N	N	N	1.1	190	6.5	N	N	480	.006	5.4
BA 059 A	N	N	N	1.5	170	12	N	N	490	.006	5.6
BA 060 A	N	N	N	.9	210	7.4	N	N	410	.026	5.4
BA 061 A	N	N	N	1.4	150	6.2	N	N	360	.013	5
BA 062 A	N	N	N	1.4	220	7.3	N	N	460	.011	5.5
BA 063 A	N	N	N	1.1	180	10	N	N	430	.005	5.4
BA 064 A	N	N	N	1.2	150	7.3	N	N	480	.006	5.4
BA 065 A	N	N	N	1.2	130	6.2	N	N	440	.004	4.8
BA 066 A	N	N	N	1	170	5.3	N	N	430	.002	5.5
BA 067 A	N	N	N	1	190	9.1	N	N	480	.005	5.2
BA 068 A	N	N	N	1.6	190	17	N	N	540	.009	5.7
BA 069 A	N	N	N	1.4	190	10	N	N	470	.004	5.3
BA 070 A	N	N	N	1.2	150	5.9	N	N	590	.004	4.9
BA 071 A	.89	N	N	1.3	120	6.8	N	N	360	.016	4.3
BA 072 A	N	N	N	1.3	170	5.6	N	N	520	.002	5.4
BA073AT	<.6	<.15	<.6	1.2	130	3.8	<.6	<.6	250	.001	7.03
BA074AT	<.6	<.15	<.6	1.3	150	4.8	<.6	<.6	290	N	6.46
BA075AT	<.6	<.15	<.6	.85	160	6.5	<.6	<.6	260	.001	6.9
BA076AT	<.6	<.15	<.6	.86	150	4.2	<.6	<.6	300	N	6.54
BA077AT	<.6	<.15	<.6	.55	170	3.9	<.6	<.6	230	N	6.5
BA078AT	<.6	<.15	<.6	.88	130	4.4	<.6	<.6	280	N	6.15
BA079AT	<.6	<.15	<.6	1.8	130	3.7	<.6	<.6	330	N	6.88
BA080AT	<.6	<.15	<.6	.73	98	2.8	.62	<.6	260	N	6.71
BA081AT	<.6	<.15	<.6	1.2	130	3.4	.6	<.6	350	N	6.72
BA082AT	<.6	<.15	<.6	1.2	170	4.9	.72	<.6	320	N	7.08
BA083AT	<.6	<.15	<.6	1.1	150	8.3	.71	<.6	300	N	7.33
BA084AT	<.6	<.15	<.6	.8	140	6.4	<.6	<.6	260	.001	6.42
BA085AT	<.6	<.15	<.6	1	120	6.5	<.6	<.6	280	N	6.84
BA086AT	<.6	<.15	<.6	.68	120	6.7	<.6	<.6	260	N	6.77

Table 8. Results of analyses of samples of ash of big sagebrush from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon--Continued

Sample	LATITUDE	LONGITUDE	AL %-S	CA %-S	FE %-S	K %-S	MG %-S	NA %-S	P %-S	TI %-S	MN PPM-S
BA087AT	43 58 56	120 59 20	.24	7.84	.13	34.4	1.86	.07	6.42	.01	483
BA088AT	43 58 55	120 59 13	.16	7.12	.14	35.2	2.32	.07	6.13	.01	472
BA089AT	43 58 30	120 59 25	.18	7.04	.15	33.3	2.25	.07	6.14	.01	491
BA090AT	43 58 28	120 59 38	.26	6.66	.2	33.5	1.81	.09	6.56	.02	713

Sample	AG PPM-S	AS PPM-S	AU PPM-S	BA PPM-S	BE PPM-S	BI PPM-S	CD PPM-S	CE PPM-S	CO PPM-S	CR PPM-S	CU PPM-S
BA087AT	<4	<20	<20	102	<2	<20	<4	<8	2	5	145
BA088AT	<4	<20	<20	70	<2	<20	<4	<8	2	5	126
BA089AT	<4	<20	<20	98	<2	<20	<4	<8	2	5	172
BA090AT	<4	<20	<20	80	<2	<20	<4	<8	2	6	178

Sample	EU PPM-S	GA PPM-S	HO PPM-S	LA PPM-S	LI PPM-S	MO PPM-S	NB PPM-S	ND PPM-S	NI PPM-S	PB PPM-S	SC PPM-S
BA087AT	<4	<8	<8	<4	<4	<4	<8	<8	18	<8	<4
BA088AT	<4	<8	<8	<4	<4	<4	<8	<8	19	<8	<4
BA089AT	<4	<8	<8	<4	<4	<4	<8	<8	30	<8	<4
BA090AT	<4	<8	<8	4	<4	4	<8	<8	19	<8	<4

Sample	SN PPM-S	SR PPM-S	TA PPM-S	TH PPM-S	U PPM-S	V PPM-S	Y PPM-S	YB PPM-S	ZN PPM-S	Ag PPM ICP-10
BA087AT	<20	431	<80	<8	<200	<4	<4	<2	400	.05
BA088AT	<20	374	<80	<8	<200	<4	<4	<2	392	.06
BA089AT	<20	377	<80	<8	<200	<4	<4	<2	506	.05
BA090AT	<20	318	<80	<8	<200	<4	<4	<2	399	.05

Sample	As PPM ICP-10	Au PPM ICP-10	Bi PPM ICP-10	Cd PPM ICP-10	Cu PPM ICP-10	Mo PPM ICP-10	Pb PPM ICP-10	Sb PPM ICP-10	Zn PPM ICP-10	AU PPM FAA-HGA	ASH %
BA087AT	<.6	<.15	<.6	.84	130	3.5	<.6	<.6	260	.031	6.71
BA088AT	<.6	<.15	<.6	.79	110	5	<.6	<.6	270	.001	6.99
BA089AT	<.6	<.15	<.6	1.4	150	4.2	<.6	<.6	350	N	7.15
BA090AT	<.6	<.15	<.6	.79	160	5.6	.61	<.6	270	N	6.92

Table 9. Results of analyses of samples of ash of rabbit brush from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon

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

Sample	LATITUDE	LONGITUDE	AL %-S	CA %-S	FE %-S	K %-S	MG %-S	NA %-S	P %-S	TI %-S	MN PPM-S
BA 028 R	43 59 29	121 1 35	.07	7.7	.08	39	2	.04	5.7	<.01	320
BA 030 R	43 58 54	121 1 17	.15	8.9	.14	37	2.5	.08	5.4	<.01	410
BA 031 R	43 58 27	121 1 12	.14	8.8	.12	36	2.4	.07	5.2	.01	410

Sample	AG PPM-S	AS PPM-S	AU PPM-S	BA PPM-S	BE PPM-S	BI PPM-S	CD PPM-S	CE PPM-S	CO PPM-S	CR PPM-S	CU PPM-S
BA 028 R	<4	<20	<20	50	<2	<20	<4	<8	<2	3	170
BA 030 R	<4	<20	<20	52	<2	<20	<4	<8	3	6	140
BA 031 R	<4	<20	<20	78	<2	<20	<4	<8	2	5	170

Sample	EU PPM-S	GA PPM-S	HO PPM-S	LA PPM-S	LI PPM-S	MO PPM-S	NB PPM-S	ND PPM-S	NI PPM-S	PB PPM-S	SC PPM-S
BA 028 R	<4	<8	<8	5	<4	6	<8	<8	13	<8	<4
BA 030 R	<4	<8	<8	<4	<4	9	<8	13	19	<8	<4
BA 031 R	<4	<8	<8	<4	<4	6	<8	9	30	<8	<4

Sample	SN PPM-S	SR PPM-S	TA PPM-S	TH PPM-S	U PPM-S	V PPM-S	Y PPM-S	YB PPM-S	ZN PPM-S	Ag PPM ICP-10
BA 028 R	<20	350	<80	<8	<200	<4	<4	<2	320	N
BA 030 R	<20	430	<80	<8	<200	<4	<4	<2	330	N
BA 031 R	<20	450	<80	<8	<200	<4	<4	<2	300	N

Sample	As PPM ICP-10	Au PPM ICP-10	Bi PPM ICP-10	Cd PPM ICP-10	Cu PPM ICP-10	Mo PPM ICP-10	Pb PPM ICP-10	Sb PPM ICP-10	Zn PPM ICP-10	AU PPM FAA-HGA	ASH %
BA 028 R	N	N	N	.38	180	8.1	N	N	270	.004	7.1
BA 030 R	N	N	N	.39	160	12	N	N	280	.001	6.2
BA 031 R	N	N	N	.75	200	7.2	N	N	260	.001	6.7

Table 10. Results of analyses of samples of ash of western juniper from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon

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

Sample	LATITUDE	LONGITUDE	AL %-S	CA %-S	FE %-S	K %-S	MG %-S	NA %-S	P %-S	TI %-S	MN PPM-S
BA 015 J	43 57 51	120 57 27	.55	26	.29	9	4.4	.16	3	.03	440
BA 025 J	43 57 26	121 0 53	.69	25	.4	9	4.1	.2	2.6	.04	570
BA 026 J	43 57 46	121 1 3	.47	24	.31	14	3.4	.15	3.1	.03	380
BA 027 J	43 58 11	121 1 13	.45	26	.29	9.8	3.9	.14	3	.02	300
BA 028 J	43 59 29	121 1 35	.34	24	.22	13	3.8	.11	3.4	.01	340
BA 029 J	43 59 15	121 1 19	.27	25	.18	12	3.9	.09	3.3	<.01	370
BA 030 J	43 58 54	121 1 17	.33	25	.22	12	3.2	.11	3.8	.01	390
BA 031 J	43 58 27	121 1 12	.35	25	.24	10	4.7	.11	3.3	.02	510
BA 032 J	43 57 50	121 0 26	.4	25	.25	10	4.1	.13	3.1	.01	490
BA 033 J	43 57 56	120 59 58	.66	24	.38	12	3.6	.21	3.3	.02	390
BA 036 J	43 58 1	120 58 51	.82	22	.48	11	4.6	.23	3.5	.03	480
BA 037 J	43 57 42	120 58 30	.42	28	.26	8.9	3	.12	2.6	.02	510
BA 038 J	43 57 48	120 57 27	.52	25	.31	12	3.3	.15	3.3	.01	620
BA 039 J	43 58 0	120 56 55	.46	25	.29	12	3	.14	3.2	.03	420
BA 040 J	43 58 13	120 56 21	.32	28	.21	9	2.8	.1	2.8	.02	290
BA 041 J	43 58 26	120 55 57	.33	27	.22	9.9	2.9	.11	2.6	.02	350
BA 042 J	43 57 14	121 1 23	.4	25	.27	11	3.9	.14	3.3	.01	440
BA 043 J	43 57 28	121 1 48	.31	24	.21	10	4.6	.1	3.2	.01	320
BA 044 J	43 58 14	121 2 20	.26	26	.17	11	3.5	.09	2.8	.02	410
BA 046 J	43 59 18	120 59 21	.47	23	.29	14	3.8	.15	3.9	.02	400
BA 047 J	43 59 34	120 59 8	.37	25	.24	12	3.9	.12	3.1	.02	390
BA 048 J	43 59 57	120 58 43	.43	27	.27	8.7	3.7	.14	2.7	.03	390
BA 049 J	44 0 17	120 58 22	.36	26	.23	9.8	4	.12	3.6	.02	330
BA 050 J	44 0 34	120 58 3	.45	23	.29	12	4.8	.14	4.6	.01	310
BA 051 J	44 0 45	120 57 39	.32	24	.22	14	3.4	.11	3.4	.02	370
BA 052 J	44 1 1	120 57 20	.38	26	.25	10	3.8	.13	2.6	.02	390
BA 053 J	44 1 15	120 57 1	.32	26	.23	11	3.7	.11	3.3	.02	280
BA 054 J	44 1 23	120 56 41	.28	27	.2	9.6	4.1	.09	2.6	.02	350
BA 055 J	44 0 30	120 58 52	.37	25	.24	13	3.1	.12	3.3	.01	370
BA 056 J	44 0 52	120 59 5	.33	24	.22	12	4.4	.11	3.7	.01	400
BA 057 J	44 1 14	120 59 23	.8	25	.45	12	3	.28	3	.05	390
BA 058 J	44 1 38	120 59 26	.61	24	.36	14	3.4	.2	4.3	.03	350
BA 059 J	44 2 0	120 59 21	.53	26	.32	12	3.2	.17	3.2	.03	390
BA 060 J	44 2 20	120 59 26	.3	26	.2	13	3.7	.1	3.8	.02	430
BA 061 J	44 2 20	120 58 39	.52	26	.32	12	3.5	.15	2.8	.04	390
BA 062 J	44 0 52	120 58 15	.29	25	.22	13	4	.11	3.6	.02	420
BA 063 J	44 1 12	120 58 35	.55	25	.33	14	3.5	.16	3.5	.03	430
BA 064 J	44 1 29	120 59 0	.44	26	.26	11	3.7	.14	3.1	.03	340
BA 065 J	44 1 54	120 58 55	.46	24	.28	13	3.8	.15	3.5	.03	410
BA 066 J	44 2 13	120 59 1	.48	25	.29	12	3.3	.15	3.7	.03	380
BA 067 J	44 2 54	120 59 23	.4	22	.26	15	4.8	.13	4.2	.02	320
BA 069 J	43 58 56	120 55 48	.26	25	.18	14	4.2	.18	3.9	.02	500
BA 070 J	43 59 17	120 55 47	.26	25	.18	14	3.7	.09	3.9	.01	340
BA 071 J	43 59 43	120 55 48	.23	28	.16	11	3.5	.08	2.5	.02	460
BA 072 J	44 0 14	120 55 56	.28	27	.22	11	3.5	.09	3	.02	370

Table 10. Results of analyses of samples of ash of western juniper from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon--Continued

Sample	AG PPM-S	AS PPM-S	AU PPM-S	BA PPM-S	BE PPM-S	BI PPM-S	CD PPM-S	CE PPM-S	CO PPM-S	CR PPM-S	CU PPM-S
BA 015 J	<4	<20	<20	460	<2	<20	<4	<8	5	12	42
BA 025 J	<4	<20	<20	490	<2	<20	<4	<8	6	12	49
BA 026 J	<4	<20	<20	360	<2	<20	<4	<8	6	10	54
BA 027 J	<4	<20	<20	330	<2	<20	<4	<8	5	9	56
BA 028 J	<4	<20	<20	410	<2	<20	<4	<8	6	7	53
BA 029 J	<4	<20	<20	290	<2	<20	<4	<8	4	6	59
BA 030 J	<4	<20	<20	450	<2	<20	<4	<8	5	9	66
BA 031 J	<4	<20	<20	420	<2	<20	<4	<8	5	9	57
BA 032 J	<4	<20	<20	490	<2	<20	<4	<8	6	9	49
BA 033 J	<4	<20	<20	350	<2	<20	<4	<8	5	12	64
BA 036 J	<4	<20	<20	370	<2	<20	<4	<8	5	14	57
BA 037 J	<4	<20	<20	330	<2	<20	<4	<8	5	10	46
BA 038 J	<4	<20	<20	380	<2	<20	<4	<8	5	11	61
BA 039 J	<4	<20	<20	280	<2	<20	<4	<8	4	10	65
BA 040 J	<4	<20	<20	310	<2	<20	<4	<8	4	7	41
BA 041 J	<4	<20	<20	490	<2	<20	<4	<8	4	8	44
BA 042 J	<4	<20	<20	230	<2	<20	<4	<8	5	10	53
BA 043 J	<4	<20	<20	350	<2	<20	<4	<8	4	10	51
BA 044 J	<4	<20	<20	480	<2	<20	<4	<8	5	6	46
BA 046 J	<4	<20	<20	240	<2	<20	<4	<8	4	10	65
BA 047 J	<4	<20	<20	150	<2	<20	<4	<8	5	8	53
BA 048 J	<4	<20	<20	220	<2	<20	<4	<8	4	9	37
BA 049 J	<4	<20	<20	270	<2	<20	<4	<8	5	8	62
BA 050 J	<4	<20	<20	260	<2	<20	<4	<8	5	11	83
BA 051 J	<4	<20	<20	300	<2	<20	<4	<8	5	8	64
BA 052 J	<4	<20	<20	380	<2	<20	<4	<8	5	9	48
BA 053 J	<4	<20	<20	310	<2	<20	<4	<8	5	10	57
BA 054 J	<4	<20	<20	280	<2	<20	<4	<8	4	8	41
BA 055 J	<4	<20	<20	330	<2	<20	<4	<8	4	10	53
BA 056 J	<4	<20	<20	250	<2	<20	<4	<8	5	9	79
BA 057 J	<4	<20	<20	420	<2	<20	<4	<8	5	15	47
BA 058 J	<4	<20	<20	260	<2	<20	<4	<8	5	12	57
BA 059 J	<4	<20	<20	380	<2	<20	<4	<8	6	13	56
BA 060 J	<4	<20	<20	360	<2	<20	<4	<8	4	9	45
BA 061 J	<4	<20	<20	330	<2	<20	<4	<8	5	10	40
BA 062 J	<4	<20	<20	300	<2	<20	<4	<8	4	8	48
BA 063 J	<4	<20	<20	340	<2	<20	<4	<8	6	10	61
BA 064 J	<4	<20	<20	270	<2	<20	<4	<8	5	9	39
BA 065 J	<4	<20	<20	330	<2	<20	<4	<8	4	10	58
BA 066 J	<4	<20	<20	340	<2	<20	<4	<8	5	12	55
BA 067 J	<4	<20	<20	230	<2	<20	<4	<8	5	10	73
BA 069 J	<4	<20	<20	430	<2	<20	<4	<8	6	9	41
BA 070 J	<4	<20	<20	290	<2	<20	<4	<8	4	8	48
BA 071 J	<4	<20	<20	490	<2	<20	<4	<8	4	8	34
BA 072 J	<4	<20	<20	380	<2	<20	<4	<8	4	7	40

Table 10. Results of analyses of samples of ash of western juniper from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon--Continued

Sample	EU PPM-S	GA PPM-S	HO PPM-S	LA PPM-S	LI PPM-S	MO PPM-S	NB PPM-S	ND PPM-S	NI PPM-S	PB PPM-S	SC PPM-S
BA 015 J	<4	<8	<8	7	4	8	<8	9	13	<8	<4
BA 025 J	<4	<8	<8	10	<4	6	<8	<8	31	<8	<4
BA 026 J	<4	<8	<8	10	<4	9	<8	<8	26	<8	<4
BA 027 J	<4	<8	<8	7	4	6	<8	9	17	<8	<4
BA 028 J	<4	<8	<8	7	<4	6	<8	<8	23	<8	<4
BA 029 J	<4	<8	<8	8	<4	7	<8	<8	18	<8	<4
BA 030 J	<4	<8	<8	8	<4	6	<8	<8	21	<8	<4
BA 031 J	<4	<8	<8	8	<4	5	<8	<8	28	<8	<4
BA 032 J	<4	<8	<8	8	<4	5	<8	<8	26	<8	<4
BA 033 J	<4	<8	<8	7	4	5	<8	<8	18	<8	<4
BA 036 J	<4	<8	<8	6	5	5	<8	9	21	<8	<4
BA 037 J	<4	<8	<8	7	<4	7	<8	<8	14	<8	<4
BA 038 J	<4	<8	<8	9	4	7	<8	<8	14	<8	<4
BA 039 J	<4	<8	<8	7	4	8	<8	<8	19	<8	<4
BA 040 J	<4	<8	<8	6	<4	7	<8	<8	14	<8	<4
BA 041 J	<4	<8	<8	8	<4	6	<8	<8	11	<8	<4
BA 042 J	<4	<8	<8	11	<4	6	<8	<8	13	<8	<4
BA 043 J	<4	<8	<8	7	<4	8	<8	<8	11	<8	<4
BA 044 J	<4	<8	<8	7	<4	7	<8	<8	21	<8	<4
BA 046 J	<4	<8	<8	4	5	9	<8	<8	18	<8	<4
BA 047 J	<4	<8	<8	8	<4	5	<8	<8	17	<8	<4
BA 048 J	<4	<8	<8	8	<4	8	<8	<8	10	<8	<4
BA 049 J	<4	<8	<8	7	<4	<4	<8	<8	17	<8	<4
BA 050 J	<4	<8	<8	7	5	7	<8	<8	29	<8	<4
BA 051 J	<4	<8	<8	8	<4	7	<8	<8	27	<8	<4
BA 052 J	<4	<8	<8	8	<4	4	<8	<8	19	<8	<4
BA 053 J	<4	<8	<8	6	<4	8	<8	<8	15	<8	<4
BA 054 J	<4	<8	<8	7	<4	6	<8	<8	9	<8	<4
BA 055 J	<4	<8	<8	7	<4	5	<8	10	19	<8	<4
BA 056 J	<4	<8	<8	8	<4	6	<8	<8	23	<8	<4
BA 057 J	<4	<8	<8	7	5	5	<8	9	18	<8	<4
BA 058 J	<4	<8	<8	7	<4	8	<8	9	15	<8	<4
BA 059 J	<4	<8	<8	7	<4	6	<8	9	16	<8	<4
BA 060 J	<4	<8	<8	<4	<4	7	<8	9	15	<8	<4
BA 061 J	<4	<8	<8	8	<4	7	<8	<8	14	<8	<4
BA 062 J	<4	<8	<8	6	<4	7	<8	<8	25	<8	<4
BA 063 J	<4	<8	<8	8	<4	6	<8	<8	25	<8	<4
BA 064 J	<4	<8	<8	8	4	<4	<8	<8	25	<8	<4
BA 065 J	<4	<8	<8	5	<4	8	<8	<8	15	<8	<4
BA 066 J	<4	<8	<8	5	4	7	<8	18	17	<8	<4
BA 067 J	<4	<8	<8	9	<4	6	<8	<8	28	<8	<4
BA 069 J	<4	<8	<8	8	<4	10	<8	<8	24	<8	<4
BA 070 J	<4	<8	<8	5	<4	7	<8	<8	13	<8	<4
BA 071 J	<4	<8	<8	6	<4	5	<8	<8	18	<8	<4
BA 072 J	<4	<8	<8	6	<4	5	<8	<8	13	<8	<4

Table 10. Results of analyses of samples of ash of western juniper from the Badlands Wilderness Study Area and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon--Continued

Sample	SN PPM-S	SR PPM-S	TA PPM-S	TH PPM-S	U PPM-S	V PPM-S	Y PPM-S	YB PPM-S	ZN PPM-S	Ag PPM ICP-10
BA 015 J	<20	2,000	<80	<8	<200	6	<4	<2	190	N
BA 025 J	<20	1,900	<80	<8	<200	8	<4	<2	160	N
BA 026 J	<20	1,700	<80	<8	<200	6	<4	<2	200	N
BA 027 J	<20	1,800	<80	<8	<200	5	<4	<2	160	N
BA 028 J	<20	1,800	<80	<8	<200	<4	<4	<2	200	N
BA 029 J	<20	1,800	<80	<8	<200	<4	<4	<2	200	N
BA 030 J	<20	2,000	<80	<8	<200	<4	<4	<2	230	N
BA 031 J	<20	1,800	<80	<8	<200	<4	<4	<2	170	N
BA 032 J	<20	1,900	<80	<8	<200	4	<4	<2	170	N
BA 033 J	<20	1,700	<80	<8	<200	6	<4	<2	160	N
BA 036 J	<20	1,500	<80	<8	<200	8	<4	<2	160	N
BA 037 J	<20	2,100	<80	<8	<200	<4	<4	<2	140	N
BA 038 J	<20	1,800	<80	<8	<200	5	<4	<2	240	N
BA 039 J	<20	1,700	<80	<8	<200	5	<4	<2	210	N
BA 040 J	<20	1,900	<80	<8	<200	<4	<4	<2	140	N
BA 041 J	<20	2,100	<80	<8	<200	<4	<4	<2	170	N
BA 042 J	<20	1,900	<80	<8	<200	5	<4	<2	230	N
BA 043 J	<20	2,000	<80	<8	<200	<4	<4	<2	180	N
BA 044 J	<20	2,200	<80	<8	<200	<4	<4	<2	220	N
BA 046 J	<20	1,500	<80	<8	<200	6	<4	<2	250	N
BA 047 J	<20	1,500	<80	<8	<200	4	<4	<2	180	N
BA 048 J	<20	1,900	<80	<8	<200	5	<4	<2	150	N
BA 049 J	<20	1,600	<80	<8	<200	<4	<4	<2	190	N
BA 050 J	<20	1,600	<80	<8	<200	5	<4	<2	250	N
BA 051 J	<20	2,000	<80	<8	<200	<4	<4	<2	190	N
BA 052 J	<20	1,800	<80	<8	<200	4	<4	<2	170	N
BA 053 J	<20	1,700	<80	<8	<200	<4	<4	<2	200	N
BA 054 J	<20	2,000	<80	<8	<200	<4	<4	<2	160	N
BA 055 J	<20	1,800	<80	<8	<200	4	<4	<2	210	N
BA 056 J	<20	1,800	<80	<8	<200	<4	<4	<2	200	N
BA 057 J	<20	1,600	<80	<8	<200	9	<4	<2	160	N
BA 058 J	<20	1,600	<80	<8	<200	7	<4	<2	200	N
BA 059 J	<20	1,900	<80	<8	<200	6	<4	<2	180	N
BA 060 J	<20	2,200	<80	<8	<200	<4	<4	<2	200	N
BA 061 J	<20	2,100	<80	<8	<200	6	<4	<2	160	N
BA 062 J	<20	1,600	<80	<8	<200	<4	<4	<2	200	N
BA 063 J	<20	1,700	<80	<8	<200	6	<4	<2	230	N
BA 064 J	<20	1,700	<80	<8	<200	5	<4	<2	170	N
BA 065 J	<20	1,800	<80	<8	<200	5	<4	<2	210	N
BA 066 J	<20	2,100	<80	10	<200	7	<4	<2	200	N
BA 067 J	<20	1,500	<80	<8	<200	4	<4	<2	240	N
BA 069 J	<20	1,900	<80	<8	<200	<4	<4	<2	240	N
BA 070 J	<20	1,800	<80	<8	<200	<4	<4	<2	210	N
BA 071 J	<20	2,400	<80	<8	<200	<4	<4	<2	190	N
BA 072 J	<20	2,100	<80	<8	<200	<4	<4	<2	200	N

Table 10. Results of analyses of samples of ash of western juniper from the Badlands Wilderness Study and Badlands Wilderness Study Area Additions, Crook and Deschutes Counties, Oregon--Continued

Sample	As PPM ICP-10	Au PPM ICP-10	Bi PPM ICP-10	Cd PPM ICP-10	Cu PPM ICP-10	Mo PPM ICP-10	Pb PPM ICP-10	Sb PPM ICP-10	Zn PPM ICP-10	AU PPM FAA-HGA	ASH %
BA 015 J	N	N	N	.11	36	8.5	N	N	150	.004	4.9
BA 025 J	N	N	N	.14	39	6.6	3.5	N	110	.002	5.3
BA 026 J	N	N	N	.15	45	9.3	2.6	N	150	.007	4.5
BA 027 J	N	N	N	.12	43	7.4	2.9	N	120	.007	5.5
BA 028 J	N	N	N	.18	47	6.9	N	N	160	.009	4.8
BA 029 J	N	N	N	.24	51	7.2	N	N	160	.002	4.9
BA 030 J	N	N	N	.31	58	5.8	N	N	180	.006	4.8
BA 031 J	N	N	N	.27	46	5.3	3.2	N	140	.006	5
BA 032 J	N	N	N	.24	43	5.6	2.1	N	130	.022	4.8
BA 033 J	N	N	N	.14	59	6.3	2.8	N	130	.015	5
BA 036 J	N	N	N	.22	52	5.7	2.5	N	140	.008	4.5
BA 037 J	N	N	N	.12	41	7.2	N	N	110	.009	6.2
BA 038 J	N	N	N	.23	53	7.8	2.3	N	190	.016	4.4
BA 039 J	N	N	N	.18	59	9.6	2.4	N	170	.004	4.6
BA 040 J	N	N	N	N	35	8.1	2	N	110	.002	5.6
BA 041 J	N	N	N	.17	36	7.1	2	N	140	.002	4.9
BA 042 J	N	N	N	.17	46	7.6	3.4	N	190	.005	4.4
BA 043 J	N	N	N	.22	42	9.6	2.3	N	150	.004	5.1
BA 044 J	N	N	N	.2	42	7.8	N	N	180	.005	5.4
BA 046 J	N	N	N	.3	57	10	2.4	N	200	.021	4.3
BA 047 J	N	N	N	.22	50	6.3	2.3	N	150	.01	4.8
BA 048 J	N	N	N	.25	34	8.4	2.7	N	120	.005	5.7
BA 049 J	N	N	N	.22	56	5.1	2.1	N	140	.007	5.1
BA 050 J	N	N	N	.27	73	7.9	2.6	N	210	.013	4.7
BA 051 J	N	N	N	.19	53	7.6	2.3	N	160	.011	5
BA 052 J	N	N	N	.31	38	5.4	2.9	N	140	.003	5.6
BA 053 J	N	N	N	.17	46	8.4	2.2	N	160	.012	4.5
BA 054 J	N	N	N	.16	34	6.2	2.5	N	140	.002	5.8
BA 055 J	N	N	N	.29	42	6.3	2.5	N	170	.003	5.6
BA 056 J	N	N	N	.41	70	6.6	2	N	170	.007	4.6
BA 057 J	N	N	N	.43	46	7	3.7	N	140	.004	5.6
BA 058 J	N	N	N	.31	54	8.4	2.6	N	160	.01	5
BA 059 J	N	N	N	.56	52	7.3	3.1	N	150	.002	5.2
BA 060 J	N	N	N	.3	47	8.7	N	N	170	.003	5.2
BA 061 J	N	N	N	.22	40	8.4	2.4	N	130	.007	4.5
BA 062 J	N	N	N	.44	46	7.9	N	N	160	.004	4.8
BA 063 J	N	N	N	.24	54	6.5	2	N	180	.005	4.8
BA 064 J	N	N	N	.13	39	4.6	N	N	150	.001	5.4
BA 065 J	N	N	N	.21	49	9.3	2.6	N	170	.001	4.9
BA 066 J	N	N	N	.28	57	7.5	2.8	N	150	.002	5
BA 067 J	N	N	N	.62	72	5.4	N	N	180	.009	4.4
BA 069 J	N	N	N	.28	42	11	N	N	180	.002	5
BA 070 J	N	N	N	.23	46	8.4	N	N	150	.004	4.6
BA 071 J	N	N	N	.26	31	6.9	N	N	140	.002	6
BA 072 J	N	N	N	.22	36	5.4	N	N	140	.002	4.8