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Analyses and Descriptions of Geochemical Samples, Dolly Ann Roadless Area, Alleghany County, Virginia

by

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A. L. Meier, J. M. Motooka, and D. F. Siems

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ABSTRACT

Semiquantitative spectrographic analyses for 34 elements and atomic-absorption analyses for zinc on 39 stream-sediment, 17 soil, and 120 rock samples from the Dolly Ann Roadless Area, Alleghany County, Va., are reported here in detail. Localities for all samples are given in Universal Transverse Mercator (UTM) coordinates. Brief descriptions of rock samples are also included. Rocks analyzed include sandstone, shale, and limestone. The iron-rich sandstones of the Rose Hill Formation of Silurian age are a low-grade iron resource. The sandy limonite samples from the so-called Oriskany iron deposits in the Lower Devonian have a small potential for iron in the study area. High concentrations of zinc in a few stream-sediment samples are related to the Upper Silurian and Lower Devonian limestones and the limonite deposits in the Lower Devonian, all of which contain trace amounts of zinc. The data include no other obviously anomalous concentrations that might be related to mineralized rock.

INTRODUCTION

The analyses reported in this report (table 1) are of 39 stream-sediment, 17 soil, and 120 rock samples from the Dolly Ann Roadless Area, Alleghany County, Va., collected by F. G. Lesure and M. B. Longacre, May 17-18, 1979, and Lesure and A. E. Grosz, April 8-11, 1980. Rock samples analyzed are described briefly in a separate section of this report. All but four are chip samples of representative material collected from outcrops or road cuts; the exceptions are composite samples of chips from several boulders of float. Some of the rock is partly weathered, but generally the freshest material available was sampled. The soil samples are from the A_2 or upper B soil zone, just below the organic-rich surface soil or A_1 zone. Maps showing sample localities and discussion of the results of the analytical work are given by Lesure (in press).

ANALYTICAL TECHNIQUES

Rock samples were crushed to approximately 0.25 in (6 mm) and pulverized to minus 140-mesh (0.105 mm) in a vertical grinder having ceramic plates. Stream sediments and soils were dried and sieved to minus 80-mesh (0.177 mm) and then pulverized.

Each sample was analyzed semiquantitatively for 34 elements by a six-step, direct-current-arc, optical-emission spectrographic method (Grimes and Marranzino, 1968) by Shannon Gore as part of a contract with Specomp Services, Inc., Hayden, Colo., or for 31 elements by D. F. Siems, U.S. Geological Survey (USGS) laboratories, Denver, Colo. In addition, each sample was analyzed for zinc by an atomic-absorption technique (Ward and others, 1969, p.20) by B. F. Arbogast, Karl Krill, and J. D. Sharkey, USGS laboratories, Denver, Colo., and for uranium by a spectrofluoremetric method by J. D. Mensik, as part of a contract with Geoco, Inc., Wheat Ridge, Colo.

The semiquantitative spectrographic values are reported as six steps per order of magnitude (1, 0.7, 0.5, 0.3, 0.2, 0.15, or multiples of 10 of these numbers) and are approximate geometric midpoints of the concentration ranges. The expected precision is within one adjoining reporting interval on each side of the reported value 83 percent of the time and within two adjoining intervals 96 percent of the time (Motooka and Grimes, 1976).

Iron-rich sandstones were analyzed for iron and phosphorus by A. L. Meier and J. M. Motooka using aqua regia digestion and inductively coupled plasma techniques.

ROCK DESCRIPTIONS

Sample No.	Description
VDA 001	2-m chip sample, medium-grained quartzite. Tuscarora Quartzite.
VDA 002	2-m chip sample, blackish-red, fine-grained, hematitic sandstone; minor clay galls, slabby. Rose Hill Formation. sp gr 2.82.
VDA 005	1-m chip sample, blackish-red, fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 3.00.
VDA 006	2-m chip sample, dusky-red, fine- to medium-grained, hematitic sandstone; minor clay galls, crossbedded, slabby. Rose Hill Formation. sp gr 2.67.
VDA 008	1-m chip sample, blackish-red, medium-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.90.
VDA 011	2-m chip sample, pale-red, fine-grained sandstone; slabby. Juniata Formation. sp gr 2.60.
VDA 012	1-m chip sample, grayish-orange-pink, medium-grained sandstone. Juniata Formation.
VDA 013	2-m chip sample, pinkish-gray, fine-grained, hard, quartzitic sandstone. Tuscarora Quartzite.
VDA 014	2-m chip sample, blackish-red, medium-grained, hematitic sandstone. Rose Hill Formation. sp gr 3.09.
VDA 015	1-m chip sample, blackish-red, medium- to coarse-grained, hematitic sandstone; clay galls. Rose Hill Formation. sp gr 3.13.

Sample No.	Description
VDA 016	1-m chip sample, blackish-red, fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.94.
VDA 017	2-m chip sample, blackish-red, fine-grained, hematitic sandstone; minor clay galls. Rose Hill Formation. sp gr 3.33.
VDA 018	1-m chip sample, blackish-red, fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.90.
VDA 020	2-m chip sample, grayish-orange-pink, fine-grained, quartzitic sandstone. Keefer Sandstone.
VDA 021	2-m chip sample, very pale-orange to pale-red, fine-grained, argillaceous limestone and calcareous shale. Tonoloway Limestone.
VDA 023	1-m chip sample, grayish-red, medium-grained, hematitic sandstone; crossbedded. Rose Hill Formation. sp gr 2.63.
VDA 024	1-m chip sample, grayish-red, fine-grained, hematitic sandstone; minor clay galls. Rose Hill Formation. sp gr 2.68.
VDA 025	2-m chip sample, blackish-red, fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.94.
VDA 026	1-m chip sample, blackish-red, fine-grained, hematitic sandstone; hard, slabby, crossbedded. Rose Hill Formation. sp gr 2.91.
VDA 027	1-m chip sample, blackish-red, fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.86.
VDA 028	1-m chip sample, blackish-red, very fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.85.
VDA 029	2-m chip sample, medium-dark-gray, fissile shale. Millboro Shale Member of Romney Shale.
VDA 030	0.6-m chip sample, medium-gray, moderate-red seams, thin-layered limestone; cherty. Licking Creek Limestone.
VDA 031	2-m channel sample, weathered, soft, friable sandstone. Healing Springs Sandstone.
VDA 032	0.3-m chip sample, limonite. Typical Oriskany iron ore.
VDA 034	2-m chip sample, pinkish-gray, fine-grained quartzitic sandstone. Keefer Sandstone.
VDA 036	1-m chip sample, light-gray fossiliferous limestone. Licking Creek Limestone.
VDA 037	2-m chip sample, white to light-gray, stained grayish-orange, porous, quartzitic sandstone. Healing Springs Sandstone.
VDA 038	2-m chip sample, blackish-red, fine-grained, hematitic sandstone; minor clay galls. Rose Hill Formation. sp gr 2.93.
VDA 039	2-m chip sample, blackish-red, fine-grained, hematitic sandstone; hard. Rose Hill Formation. sp gr 2.95.
VDA 040	3-m chip sample, thin-bedded, slabby, blackish-red, hematitic sandstone and interbedded dark reddish shale. Rose Hill Formation. sp gr of sandstone 2.81.
VDA 041	2-m chip sample, blackish-red, massive, fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.94.

Sample No.	Description
VDA 042	2-m chip sample, blackish-red, fine-grained, hard, hematitic sandstone; minor clay galls. Rose Hill Formation. sp gr 2.77.
VDA 043	1-m chip sample, blackish-red, fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.87.
VDA 044	0.5-m chip sample, weathered, porous, white- to yellow-brown-stained, fine-grained, quartzose sandstone. Clifton Forge Sandstone Member of Keyser Limestone.
VDA 045	2-m chip sample, weathered, white- to brown-stained, porous, fine-grained, quartzitic sandstone. Keefer Sandstone.
VDA 046	1-m chip sample, grayish-red-purple to grayish-red shale. Rose Hill Formation. sp gr 2.52.
VDA 047	Composite sample from scattered boulders of sandy limonite, footwall of Oriskany iron ore, pit 25, Iron Mountain mine, Alleghany County, Va. sp gr 2.72.
VDA 048	2-m chip sample, grayish-red, limonite-cemented, quartz sandstone. Ridgeley Sandstone. sp gr 2.63.
VDA 049	1-m chip sample, blackish-red, hard, fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.96.
VDA 050	2-m chip sample, blackish-red, medium-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.84.
VDA 052	2-m chip sample, moderate-brown, limonite-cemented, medium-grained sandstone. Hanging wall of Oriskany iron ore zone. sp gr 2.93.
VDA 053	1-m chip sample, light- to dusky-brown, sandy limonite. Typical Oriskany iron ore. sp gr 2.92.
VDA 054	2-m chip sample, light-olive-gray, fine-grained, argillaceous limestone; weathers moderate reddish orange. Tonoloway Limestone.
VDA 055	1-m chip sample, grayish-red, sandy limonite. Ridgeley Sandstone. sp gr 3.14.
VDA 057	1-m chip sample, light-gray, medium-grained, quartz sandstone; stained grayish orange and pale reddish brown where weathered. Clifton Forge Sandstone Member of Keyser Limestone.
VDA 059	2-m chip sample, light- to moderate-brown, limonite-cemented sandstone. Ridgeley Sandstone.
VDA 060	1-m chip sample, blackish-red, fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 3.22.
VDA 061	1-m chip sample, light- to pinkish-gray, fine- to medium-grained, quartzose sandstone. Tuscarora Quartzite.
VDA 063	2-m chip sample, dark-yellowish-brown, phosphatic siltstone interlayered with greenish-gray shaly limestone. Martinsburg Shale.
VDA 064	1-m chip sample, grayish-red, interlayered fine-grained sandstone and siltstone. Juniata Formation.
VDA 065	2-m chip sample, white to grayish-pink, fine- to coarse-grained quartzitic sandstone. Tuscarora Quartzite.

Sample No.	Description
VDA 067	0.5-m chip sample, very dusky-red, medium- to coarse-grained, hematitic sandstone; minor clay galls and white argillaceous pellets. Rose Hill Formation. sp gr 2.99.
VDA 069	2-m chip sample, dusky-red, fine-grained, hematitic sandstone; clay galls. Rose Hill Formation. sp gr 2.98.
VDA 070	1-m chip sample, weathered, dark-yellowish-orange siltstone interlayered with shale. Keefer Sandstone.
VDA 072	1-m chip sample, pale-orange, friable, fine-grained quartz sandstone; weathered. Clifton Forge Sandstone Member of Keyser Limestone.
VDA 073	1-m chip sample, dusky-red, fine-grained, hematitic sandstone; minor clay galls. Rose Hill Formation. sp gr 2.94.
VDA 075	1-m chip sample, light-olive-gray to yellowish-gray, argillaceous limestone; thin-bedded and laminated. Tonoloway Limestone.
VDA 077	2-m chip sample, blackish-red, fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.88.
VDA 078	1-m chip sample, blackish-red, fine-grained, hematitic sandstone; grayish-red shale chips. Rose Hill Formation. sp gr 2.89.
VDA 079	2-m chip sample, dusky-red, medium-grained, hematitic sandstone, coarse-grained, grayish-pink, argillaceous pellets. Rose Hill Formation. sp gr 2.89.
VDA 080	2-m chip sample, medium-light-gray, weathering light-olive-gray, sandy, medium-grained, fragmental limestone. Licking Creek Limestone.
VDA 081	1.5-m chip sample, calcareous tufa.
VDA 082	2-m chip sample, calcareous tufa.
VDA 083	1-m chip sample, dark-gray siltstone. Martinsburg Shale.
VDA 084	1-m chip sample, dark-gray siltstone. Martinsburg Shale.
VDA 085	1.5-m chip sample, calcareous, fossiliferous siltstone. Martinsburg Shale.
VDA 086	0.05-m chip sample, fossiliferous limestone. Martinsburg Shale.
VDA 087	1-m chip sample, gray, fossiliferous siltstone, Martinsburg Shale.
VDA 201	2-m chip sample, white to light-brown, medium-grained, quartzitic sandstone. Tuscarora Quartzite.
VDA 202	1-m chip sample, white to light-gray, fine-grained, quartzitic sandstone. Tuscarora Quartzite.
VDA 203	1-m chip sample, white to light-gray, fine-grained, quartzitic sandstone. Tuscarora Quartzite.
VDA 205	1-m chip sample, yellowish-brown, shaly siltstone. Martinsburg Shale.
VDA 206	1-m chip sample, white to light-gray, fine- to medium-grained, quartzitic sandstone. Tuscarora Quartzite.

Sample No.	Description
VDA 207	1-m chip sample, pale-red, fine-grained, feldspathic quartz sandstone. Juniata Formation. sp gr 2.51.
VDA 208	2-m chip sample, dusky-red, fine-grained, hematitic sandstone. Rose Hill Formation.
VDA 209	2-m chip sample, blackish-red, fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.65.
VDA 211	1-m chip sample, grayish-orange, fine-grained, quartzitic sandstone. Keefer Sandstone.
VDA 211A	1-m chip sample, moderate-yellowish-brown, fine-grained, quartzitic sandstone; minor opaque grains. Keefer Sandstone.
VDA 212	1-m chip sample, grayish-orange, fine-grained, quartzitic sandstone. Keefer Sandstone.
VDA 216	1-m chip sample, olive-gray shale. Romney Shale.
VDA 219	1-m chip sample, medium-light-gray shale, weathers pale orange. Romney Shale.
VDA 220	Composite sample, several 0.05-0.1 m thick, medium-gray calcareous concretions. Romney Shale.
VDA 221	1-m chip sample, grayish-orange-pink and pale-reddish-brown, fine-grained, quartz sandstone. Tuscarora Quartzite.
VDA 222	1.5-m chip sample, white, fine-grained, quartzitic sandstone; stained moderate red and light brown. Keefer Sandstone.
VDA 223	2-m chip sample, blackish-red, fine-grained, hematitic sandstone. Rose Hill Formation. Sp.G. 2.66.
VDA 224	2-m chip sample, white, medium-grained, quartzitic sandstone. Tuscarora Quartzite.
VDA 226	2-m chip sample, blackish-red, fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.67.
VDA 227	1-m chip sample, blackish-red, fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.91.
VDA 229	2-m chip sample, light-brown weathered shale. Romney Shale.
VDA 230	1-m chip sample, brownish-gray, fissile to massive shale and interbedded siltstone. Romney Shale.
VDA 231	1-m chip sample, pale-orange, fine-grained, quartzitic sandstone. Keefer Sandstone.
VDA 235	2-m chip sample, blackish-red, fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.99.
VDA 236	1-m chip sample, light-red, thin-layered, argillaceous limestone. Licking Creek Limestone.
VDA 240	1-m chip sample, pale-yellowish-orange, friable, porous, medium-grained quartz sandstone. Healing Springs Sandstone.
VDA 241	1-m chip sample, gray to olive shale; fissile, weathers pale yellowish orange. Romney Shale.
VDA 242	1-m chip sample, white to light-gray, fine-grained, quartzitic sandstone. Keefer Sandstone.
VDA 243	1-m chip sample, blackish-red, fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.63.

Sample No.	Description
VDA 244	3-m chip sample, white to light-gray, medium-grained, quartzitic sandstone. Tuscarora Quartzite.
VDA 245	1-m chip sample, light-gray, fine-grained, quartzitic sandstone. Juniata Formation.
VDA 247	1-m chip sample, grayish-red to yellowish-orange, fine-grained, quartzitic sandstone. Juniata Formation.
VDA 248	1-m chip sample, blackish-red, fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.70.
VDA 256	Composite, red to dark-reddish-brown limonite. Oriskany iron ore, Cut 12, Iron Mountain mine, Alleghany County, Va. sp gr 3.20.
VDA 257	Composite, limonitic sandstone and limonite. Cut 14, Iron Mountain mine, Alleghany County, Va. sp gr 2.33.
VDA 262	1-m chip sample, light-yellowish-orange, weathered, friable, fine-grained quartz sandstone. Clifton Forge Sandstone Member of the Keyser Limestone.
VDA 267	2-m chip sample, dark-gray, fragmental limestone. Tonoloway Limestone.
VDA 269	1-m chip sample, pale-orange, fine-grained, quartzitic sandstone. Keefer Sandstone.
VDA 270	1-m chip sample, grayish-red, fine-grained, hematitic sandstone. Rose Hill Formation. sp gr 2.58.
VDA 271	1-m chip sample, white, fine-grained, quartzitic sandstone; stained light brown. Tuscarora Quartzite.
VDA 272	1-m chip sample, olive-gray, fine-grained, quartzitic sandstone. Juniata Formation.
VDA 273	1-m chip sample, olive-gray, argillaceous, shaly limestone. Martinsburg Shale.
VDA 276	1-m chip sample, brownish-gray, calcareous siltstone. Martinsburg Shale.
VDA 286	1-m chip sample, light-gray to white, fine-grained, quartzitic sandstone. Keefer Sandstone.
VDA 287	1-m chip sample, blackish-red, fine-grained, hematitic, sandstone; minor clay galls. Rose Hill Formation. sp gr 2.93.
VDA 291	1-m chip sample, medium-gray, fossiliferous, cherty limestone. Licking Creek Limestone.
VDA 292	1-m chip sample, dark-gray, fossiliferous shale. Martinsburg Shale.
VDA 293	0.2-m chip sample, gray, fossiliferous limestone. Martinsburg Shale.
VDA 294	1-m chip sample, dark-gray siltstone. Martinsburg Shale.
VDA 295	1-m chip sample, dark-gray shale. Martinsburg Shale.

EXPLANATION OF TABLE

The X and Y coordinates are Universal Transverse Mercator (UTM) grid, zone 17. The X coordinate is the easting value, in meters; the Y is the northing, in meters.

Iron, magnesium, calcium, titanium, sodium, and aluminum concentrations are reported in percent (pct); all others are in parts per million (ppm). Letters below chemical symbols indicate the method of analysis: s, six-step semiquantitative spectrographic method; aa, atomic absorption. Other symbols on the table are: N, not detected; --, not determined; <, amount detected is below the lower limit of determination, which is number shown; >, amount detected is above the upper limit of determination, which is number shown; ICP, inductively-coupled plasma.

Elements looked for spectrographically but not found, except as noted, and the lower limits of determination are, for stream sediments: Ag(0.5); As(200); Au(10); Bi(10); Cd(20); Li(100); Mo(5); Sb(100); Sn(10); Th(100); and W(50). For soils: Ag(0.5); As(200); Au(10); Bi(10); Cd(20); Li(100); Mo(5); Sb(100); Sn(10); Th(100); W(50); and Zn(200). For rock samples: As(200); Au(10); Bi(10); Cd(20); Li(100); Mo(5); Sb(100); Sn(10); Th(100); and W(50). Exceptions: rock samples VDA 029 and 293 reported to contain 10 ppm Mo and sample VDA 241 reported to contain 30 ppm Mo; rock samples VDA 216 and 219 reported to contain 10 ppm Sn; and rock samples VDA 046, 061, and 065 reported to contain 100 ppm Th.

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Table 1.--Analyses of rock, stream-sediment, and soil samples

[Explanation of symbols used in table and additional analytical data are given in the text of this report under the heading "Explanation of Table"]

Dolly Ann Iron-rich Rock

Sample	X coordinate	Y coordinate	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	B-ppm s	Ba-ppm s	Be-ppm s	Co-ppm s	Cr-ppm s	ICP-P pct.	Zr-ppm s
VDA002	594,920	4,187,960	10	.10	.30	.15	70	50	100	3	10	50	.59	300
VDA005	593,710	4,189,100	15	.05	.20	.10	70	50	70	2	5	50	.67	200
VDA006	593,160	4,189,070	10	<.02	<.05	.07	500	15	150	3	N	30	.55	200
VDA008	591,690	4,190,070	15	.10	<.05	.15	70	20	70	2	15	50	.32	500
VDA014	592,670	4,189,610	20	.07	.30	.07	70	50	150	3	5	50	.92	200
VDA015	592,800	4,188,720	20	.10	.07	.10	100	50	300	3	10	70	.68	100
VDA016	592,800	4,188,540	15	.05	.05	.15	70	30	70	2	N	50	.36	500
VDA017	591,700	4,189,160	15	.07	.10	.10	70	30	100	3	5	50	.64	300
VDA018	591,610	4,189,180	15	.05	.05	.10	70	30	150	2	N	50	.40	100
VDA023	593,900	4,188,340	7	<.02	N	.07	50	10	N	<1	N	20	.34	100
VDA024	593,990	4,187,190	15	.05	<.05	.10	150	50	150	3	5	70	.42	200
VDA025	592,650	4,187,820	15	.03	.05	.10	70	30	300	3	5	70	.42	500
VDA026	592,780	4,187,570	15	.03	<.05	.10	50	30	300	2	N	50	.40	150
VDA027	591,730	4,186,290	15	.10	.05	.15	100	50	150	2	5	70	.38	200
VDA028	591,480	4,186,120	15	.07	.05	.15	150	30	300	2	10	70	.40	200
VDA038	590,500	4,187,500	15	.07	.07	.10	200	50	100	3	5	70	.55	500
VDA039	590,570	4,187,500	20	.07	.07	.10	70	30	100	1	5	70	.52	300
VDA040	590,740	4,187,430	10	.15	.05	.15	150	70	200	3	15	70	.35	200
VDA041	590,760	4,187,400	15	.07	.15	.07	150	20	150	2	5	50	.70	200
VDA042	590,830	4,186,720	10	.15	<.05	.20	70	30	200	2	10	70	.33	300
VDA043	591,620	4,187,310	15	.02	<.05	.10	70	15	150	1	N	70	.38	300
VDA046	590,300	4,186,380	5	.50	<.05	.30	1,000	70	500	3	50	150	.36	150
VDA049	596,120	4,187,320	15	.07	.07	.15	70	50	100	1	10	70	.50	700
VDA050	595,990	4,187,400	15	.07	.07	.07	150	30	150	2	5	70	.43	300
VDA060	595,210	4,186,390	15	.07	.07	.07	100	20	150	1	5	50	.48	200
VDA067	593,230	4,185,980	15	.07	.10	.07	100	20	70	2	5	50	.65	300
VDA069	593,040	4,185,340	20	.07	.07	.10	100	20	150	2	10	70	.47	700
VDA073	591,800	4,184,200	15	.07	.05	.15	150	30	150	2	5	70	.37	500
VDA077	590,890	4,185,500	10	.05	.07	.10	70	50	100	1	5	30	.39	300
VDA078	590,990	4,186,260	15	.15	.15	.15	100	20	150	2	10	50	.53	200
VDA079	590,220	4,185,820	15	.05	<.05	.10	70	20	200	1	N	50	.37	200
VDA208	592,690	4,189,700	7	<.02	<.05	.10	200	10	150	1	N	30	--	700
VDA209	592,690	4,189,650	7	<.02	<.05	.07	70	10	50	1	N	20	--	200
VDA223	594,010	4,187,150	10	.15	.20	.10	100	30	150	2	5	30	.52	200
VDA226	592,570	4,187,660	10	.02	.07	.07	70	30	20	2	N	30	.39	300
VDA227	592,280	4,187,540	10	.05	.07	.07	300	20	150	2	N	30	.45	150
VDA235	591,020	4,188,330	15	.07	.07	.10	100	30	20	2	5	50	.40	500
VDA243	590,740	4,187,430	5	.05	.10	.07	50	15	70	3	N	20	--	200
VDA248	590,880	4,187,460	7	.10	.05	.30	100	20	50	2	10	70	--	700
VDA270	595,130	4,186,530	3	.10	.07	.15	50	10	150	1	5	30	--	300
VDA287	590,940	4,185,340	7	.03	.05	.05	30	20	N	<1	5	30	--	100
VDA032	590,780	4,189,120	>20	.02	<.05	.02	700	20	500	15	100	200	1.80	20
VDA047	596,910	4,187,100	20	<.02	<.05	.02	500	30	20	10	70	50	.58	50
VDA048	596,400	4,187,060	10	<.02	<.05	.03	500	15	300	7	10	30	.45	150
VDA052	596,150	4,186,800	20	.02	<.05	.07	300	20	700	20	20	70	1.30	200

Table 1.--Analyses of rock, stream-sediment, and soil samples--Continued

Dolly Ann Iron-rich Rock

Sample	Cu-ppm s	La-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sc-ppm s	Sr-ppm s	U-ppm s	V-ppm s	Y-ppm s	Y-ppm s	Al-pct. s	Na-pct. s	Zn-ppm aa	ICP-FE pct.
VDA002	<5	100	N	15	N	15	100	<1	70	70	70	3	.15	20	16.1
VDA005	<5	70	<20	15	N	15	100	<1	100	70	70	3	N	15	21.4
VDA006	15	50	<20	7	N	10	<100	<1	70	30	30	3	N	10	13.4
VDA008	5	100	<20	50	N	10	<100	<1	100	70	70	3	N	35	14.9
VDA014	<5	70	N	20	N	15	100	4	100	70	70	3	.15	20	28.1
VDA015	15	100	N	30	N	15	200	1	100	100	100	3	.15	20	28.2
VDA016	<5	100	<20	5	N	10	<100	<1	70	70	70	2	N	5	20.4
VDA017	5	100	N	20	N	15	100	<1	100	100	100	3	.15	10	28.0
VDA018	<5	70	<20	7	N	10	<100	<1	100	70	70	2	N	5	19.5
VDA023	7	50	N	5	N	N	<100	<1	70	30	30	1	N	5	7.3
VDA024	5	100	N	20	N	15	100	<1	100	70	70	3	.15	5	16.1
VDA025	5	100	<20	20	N	15	100	<1	100	100	100	2	N	10	18.3
VDA026	5	100	N	5	N	10	100	<1	100	70	70	2	N	5	17.0
VDA027	5	100	N	30	N	10	100	<1	100	150	150	3	N	25	16.2
VDA028	5	100	<20	30	N	10	<100	<1	100	70	70	3	N	20	14.8
VDA038	<5	100	<20	20	N	15	<100	<1	100	100	100	3	N	15	20.9
VDA039	<5	100	<20	15	N	15	<100	<1	100	100	100	3	N	5	18.6
VDA040	7	70	<20	30	N	10	200	<1	100	70	70	4	.20	25	11.2
VDA041	<5	100	N	15	N	10	100	<1	100	70	70	2	N	10	19.3
VDA042	5	70	<20	30	N	10	100	<1	100	70	70	4	.20	20	10.7
VDA043	<5	70	<20	7	N	10	N	<1	150	50	50	2	N	5	14.3
VDA046	30	100	<20	100	20	20	200	<1	100	70	70	7	.70	40	3.9
VDA049	<5	100	<20	20	N	10	N	<1	150	70	70	2	.15	15	18.7
VDA050	<5	100	<20	10	N	10	<100	<1	100	70	70	2	.15	5	16.5
VDA060	<5	100	N	10	N	10	N	1	100	700	700	2	.15	15	16.0
VDA067	<5	100	<20	10	N	5	<100	1	70	70	70	2	.15	10	21.1
VDA069	<5	100	<20	20	N	15	100	<1	100	100	100	3	.15	30	18.5
VDA073	5	150	<20	15	N	15	100	<1	150	70	70	3	.15	10	16.3
VDA077	N	70	N	15	N	10	100	<1	100	100	100	2	N	5	15.9
VDA078	5	100	<20	20	N	10	100	<1	70	50	50	3	N	15	13.1
VDA079	5	70	N	10	N	10	<100	<1	70	50	50	2	N	10	14.3
VDA208	10	50	N	<5	N	10	N	<1	70	70	70	2	N	10	--
VDA209	10	20	N	7	10	10	N	<1	70	30	30	2	N	5	--
VDA223	7	50	N	15	N	5	100	<1	70	50	50	3	.15	20	16.3
VDA226	<5	70	N	7	N	N	100	<1	70	50	50	2	N	10	15.7
VDA227	5	70	N	7	N	5	100	1	70	70	70	2	N	10	17.0
VDA235	5	70	<20	20	N	10	100	<1	100	70	70	2	N	15	17.0
VDA243	7	20	N	10	N	N	<100	<1	70	20	20	2	N	10	--
VDA248	7	70	<20	20	<10	10	N	<1	100	70	70	3	<.15	20	--
VDA270	<5	50	N	10	10	5	<100	<1	70	30	30	2	N	60	--
VDA287	<5	20	N	20	10	N	N	<1	70	20	20	2	N	20	--
VDA032	15	100	N	150	200	5	N	8	70	70	70	2	N	690	58.8
VDA047	10	50	N	150	70	N	N	2	20	30	30	1	N	690	57.1
VDA048	30	20	N	70	N	N	N	1	30	20	20	1	N	75	17.6
VDA052	100	100	N	100	150	5	100	9	70	50	50	2	N	140	33.5

Table 1.--Analyses of rock, stream-sediment, and soil samples--Continued

Dolly Ann Iron-rich Rock--continued

Sample	X coordinate	Y coordinate	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	B-ppm s	Ba-ppm s	Be-ppm s	Co-ppm s	Cr-ppm s
VDA053	595,780	4,186,250	>20	<.02	<.05	.03	300	20	500	30	30	50
VDA055	594,720	4,185,330	20	<.02	N	.03	500	15	N	10	70	20
VDA059	591,580	4,183,270	10	.03	<.05	.05	200	15	300	7	10	20
VDA256	595,800	4,186,200	20	<.02	N	.01	200	20	50	7	50	30
VDA257	595,860	4,186,250	15	<.02	<.05	.02	500	15	200	10	70	30

Dolly Ann Iron-rich Rock--continued

Sample	Cu-ppm s	La-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sc-ppm s	Sr-ppm s	U-ppm s	V-ppm s	Y-ppm s	Y-ppm s	Al-pct. s	Na-pct. s
VDA053	50	70	N	150	100	15	<100	22	100	100	100	3	N
VDA055	5	20	N	150	50	N	N	1	20	50	50	1	N
VDA059	10	20	N	70	20	N	<100	1	30	20	20	2	N
VDA256	7	50	N	100	30	N	<100	<1	20	50	50	1	.15
VDA257	<5	50	N	150	20	N	<100	10	15	50	50	1	.15

Dolly Ann Iron-rich Rock--continued

Sample	Zn-ppm aa	ICP-FE pct.	ICP-P pct.	Zr-ppm s
VDA053	250	51.0	1.60	20
VDA055	290	57.1	.46	100
VDA059	160	15.0	.96	100
VDA256	510	--	--	50
VDA257	190	--	--	50

Table 1.--Analyses of rock, stream-sediment, and soil samples--Continued

Dolly Ann Rock

Sample	X coordinate	Y coordinate	Fe-pct.s	Mg-pct.s	Ca-pct.s	Ti-pct.s	Mn-ppms	Ag-ppms	B-ppms	Ba-ppms	Be-ppms	Co-ppms
VDA001	594,880	4,188,200	.050	.02	N	.050	N	N	10	N	<1.0	N
VDA011	592,600	4,191,600	1.500	.20	<.05	.500	100	N	15	300	1.0	5
VDA012	592,720	4,189,940	1.000	.03	<.05	.100	15	N	N	100	1.0	N
VDA013	592,670	4,189,730	.150	.05	<.05	.300	15	N	15	20	1.0	N
VDA020	591,380	4,189,240	.150	.02	<.05	.030	15	N	N	50	1.0	N
VDA021	591,010	4,189,280	.700	5.00	15.00	.030	300	N	<10	70	<1.0	N
VDA029	591,220	4,191,600	2.000	.30	.15	.300	30	N	70	700	3.0	5
VDA030	591,210	4,189,700	.500	.50	>20.00	.050	300	N	20	50	1.0	N
VDA031	590,820	4,189,120	.070	.02	.20	.070	700	N	N	70	<1.0	5
VDA034	591,360	4,188,480	.050	<.02	<.05	.015	N	N	10	N	<1.0	N
VDA036	589,330	4,185,250	.500	.20	20.00	.050	300	N	10	20	<1.0	N
VDA037	589,340	4,185,210	.150	.02	.10	.020	30	N	N	N	<1.0	N
VDA044	590,260	4,187,420	1.500	.10	2.00	.150	70	.5	20	200	2.0	15
VDA045	590,340	4,187,000	.200	.02	.07	.050	70	N	<10	20	<1.0	5
VDA054	594,810	4,185,430	1.500	1.00	20.00	.100	700	N	20	150	1.0	N
VDA057	592,820	4,183,930	.300	.05	.10	.200	30	N	N	N	<1.0	N
VDA061	595,050	4,186,860	.070	.05	<.05	.050	N	N	10	50	<1.0	N
VDA063	594,670	4,187,120	3.000	.70	1.00	.500	1,000	N	20	700	2.0	20
VDA064	594,440	4,188,600	2.000	.50	.10	.300	300	N	30	300	3.0	15
VDA065	593,780	4,187,780	.070	.02	<.05	.030	N	N	N	N	<1.0	N
VDA070	592,360	4,185,420	.300	.30	.05	.500	1,500	N	70	500	5.0	20
VDA072	591,070	4,183,910	.015	.05	<.05	.050	3,000	N	15	150	<1.0	70
VDA075	590,550	4,184,210	.700	.70	20.00	.100	700	N	15	70	<1.0	N
VDA080	594,030	4,181,710	.700	1.50	>20.00	.030	1,500	N	10	70	<1.0	N
VDA081	592,560	4,191,440	.700	.70	>20.00	.050	1,000	N	10	70	1.0	7
VDA082	592,590	4,191,460	.500	.70	>20.00	.050	1,000	N	<10	70	1.0	5
VDA083	594,450	4,187,460	5.000	2.00	15.00	.500	1,500	N	100	500	1.0	20
VDA084	594,450	4,187,460	3.000	2.00	15.00	.300	1,000	N	100	300	1.0	15
VDA085	594,540	4,187,280	7.000	2.00	15.00	.500	1,000	N	150	500	2.0	20
VDA086	594,540	4,187,300	5.000	2.00	>20.00	.300	1,500	N	70	300	1.0	15
VDA087	594,540	4,187,300	7.000	2.00	15.00	.700	1,500	N	150	500	2.0	20
VDA201	595,280	4,188,920	.070	.03	.20	.070	N	N	<10	50	<1.0	N
VDA202	593,940	4,189,310	.300	.07	.10	.300	50	.5	20	150	<1.0	N
VDA203	593,130	4,189,110	.070	.03	<.05	.100	15	N	<10	50	<1.0	N
VDA205	592,130	4,192,400	3.000	1.50	.10	.300	500	N	70	500	5.0	20
VDA206	591,920	4,193,400	.070	.05	<.05	.150	N	N	<10	50	<1.0	N
VDA207	592,620	4,190,230	2.000	.30	<.05	.300	100	N	15	200	1.0	5
VDA211	592,100	4,189,460	1.500	.20	<.05	.300	100	N	20	100	2.0	5
VDA211A	592,100	4,189,460	2.000	.30	<.05	.500	200	N	70	700	5.0	10
VDA212	592,020	4,189,580	.500	.02	<.05	.300	N	.5	15	20	<1.0	N
VDA216	591,070	4,190,000	2.000	.70	.07	.300	300	N	70	700	7.0	15
VDA219	590,900	4,189,560	2.000	1.00	<.05	.500	300	N	70	700	5.0	10
VDA220	599,510	4,189,490	3.000	1.50	10.00	.100	3,000	N	30	300	1.0	10
VDA221	593,500	4,187,870	.300	<.02	N	.030	500	N	<10	N	<1.0	N
VDA222	593,640	4,187,690	.070	<.02	.10	.050	15	N	N	N	<1.0	N

Table 1.--Analyses of rock, stream-sediment, and soil samples--Continued

Dolly Ann Rock

Sample	Cr-ppm s	Cu-ppm s	La-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sc-ppm s	Sr-ppm s	V-ppm s	Y-ppm s	Zn-ppm s	Al-pct. s	Na-pct. s	Zn-ppm aa	Zr-ppm s
VDA001	10	<5	N	N	10	10	N	N	10	N	N	1.0	N	<5	70
VDA011	30	20	20	<20	15	10	5	<100	70	30	N	4.0	.50	15	700
VDA012	20	5	N	N	10	10	N	N	15	10	N	1.0	.15	<5	200
VDA013	20	<5	N	N	5	20	N	N	20	10	N	1.0	N	N	700
VDA020	10	<5	N	N	<5	20	N	N	N	N	N	.5	N	<5	200
VDA021	20	5	N	N	N	<10	N	200	15	10	N	1.0	.20	55	70
VDA029	150	30	70	<20	15	50	20	100	200	30	N	7.0	.70	10	100
VDA030	10	5	50	N	<5	<10	N	300	30	10	200	2.0	.30	160	50
VDA031	10	<5	N	N	15	20	N	N	15	N	N	.7	N	10	200
VDA034	10	5	N	N	10	20	N	N	<10	N	N	.5	N	5	50
VDA036	30	<5	50	N	15	100	N	500	15	10	<200	2.0	.20	100	70
VDA037	10	<5	N	N	15	10	N	N	10	N	N	.5	N	30	100
VDA044	50	10	70	<20	30	300	N	100	70	70	200	2.0	.15	85	300
VDA045	20	<5	N	<20	7	10	N	N	10	N	N	1.0	<.15	15	700
VDA054	30	5	70	<20	20	<10	N	100	20	30	700	3.0	.20	640	100
VDA057	10	<5	N	N	15	10	N	N	15	N	N	1.0	N	20	150
VDA061	10	<5	N	N	7	30	N	N	10	N	N	1.0	N	<5	100
VDA063	70	30	50	<20	50	50	20	100	100	70	N	7.0	1.50	50	300
VDA064	70	15	70	<20	30	20	10	<100	70	30	N	7.0	1.00	35	150
VDA065	10	<5	N	N	7	20	N	N	<10	N	N	.5	N	<5	100
VDA070	100	20	100	<20	70	20	30	100	150	70	<200	7.0	.70	85	200
VDA072	10	15	N	N	70	20	N	N	15	N	N	1.0	N	10	150
VDA075	30	5	70	<20	30	150	N	200	30	30	500	4.0	.50	480	100
VDA080	30	N	50	<20	N	<10	N	700	15	10	N	.7	.20	25	20
VDA081	20	5	20	N	10	10	<5	1,000	20	10	N	--	--	15	20
VDA082	20	5	<20	N	5	10	<5	1,000	20	10	N	--	--	15	20
VDA083	70	50	70	<20	50	30	15	300	150	30	N	--	--	110	150
VDA084	70	50	50	N	30	20	15	300	150	30	N	--	--	75	100
VDA085	70	30	70	N	50	20	20	300	150	30	N	--	--	120	150
VDA086	50	15	50	N	20	20	15	1,000	70	30	N	--	--	100	100
VDA087	70	30	70	<20	30	15	15	300	150	30	N	--	--	50	150
VDA201	20	<5	N	N	7	30	N	N	10	N	N	1.0	<.15	5	100
VDA202	30	5	N	<20	7	10	N	N	30	20	N	2.0	<.15	<5	700
VDA203	20	<5	N	<20	7	20	N	N	15	10	N	1.0	N	10	300
VDA205	100	15	150	<20	50	20	30	<100	100	70	N	7.0	1.00	60	150
VDA206	20	5	N	N	7	10	N	N	15	N	N	1.0	<.15	5	100
VDA207	30	7	20	<20	20	10	5	N	50	50	N	5.0	.50	15	500
VDA211	30	15	20	<20	20	20	5	N	70	20	N	3.0	.15	10	150
VDA211A	70	15	100	<20	30	10	20	<100	100	70	N	7.0	.50	40	300
VDA212	10	10	N	N	<5	20	N	N	10	N	N	1.0	N	10	1,000
VDA216	100	100	100	<20	70	70	30	N	200	70	500	7.0	.50	320	100
VDA219	150	50	100	<20	100	30	30	100	150	70	300	7.0	.70	210	150
VDA220	50	20	50	<20	30	N	5	100	70	70	<200	4.0	.30	95	50
VDA221	10	N	N	N	7	10	N	N	N	N	N	.5	N	5	N
VDA222	10	N	20	N	7	20	N	N	10	10	N	1.0	N	10	150

Table 1.--Analyses of rock, stream-sediment, and soil samples--Continued

Dolly Ann Rock--continued

Sample	X coordinate	Y coordinate	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	B-ppm s	Ba-ppm s	Be-ppm s	Co-ppm s
VDA224	594,000	4,187,600	.150	<.02	<.05	.030	N	N	N	20	<1.0	N
VDA229	590,730	4,189,520	3.000	.30	<.05	.700	70	N	50	700	5.0	10
VDA230	590,620	4,189,340	3.000	.30	.10	.300	1,500	N	30	300	2.0	20
VDA231	590,960	4,188,780	.050	<.02	<.05	.100	30	N	N	N	N	N
VDA236	590,510	4,188,370	.300	.50	20.00	.030	500	N	N	70	<1.0	N
VDA240	589,360	4,185,260	.300	.05	.10	.050	100	N	10	N	<1.0	N
VDA241	589,400	4,185,500	5.000	.20	.05	.300	70	2.0	70	500	3.0	5
VDA242	590,450	4,187,510	1.000	.02	<.05	.030	150	N	<10	20	3.0	N
VDA244	590,830	4,187,370	.200	.02	N	.070	20	N	<10	100	<1.0	N
VDA245	590,960	4,187,300	1.500	.30	.05	.300	100	N	15	200	2.0	5
VDA247	591,280	4,187,380	1.500	.02	<.05	.100	70	N	15	150	1.0	N
VDA262	594,360	4,184,850	1.000	.02	.10	.020	>5,000	N	<10	1,500	1.0	100
VDA267	593,060	4,184,600	.700	.50	>20.00	.050	1,000	N	15	70	<1.0	N
VDA269	595,290	4,186,300	.200	.05	N	.050	N	N	15	N	<1.0	N
VDA271	595,050	4,186,760	.070	.02	.15	.020	70	N	15	50	N	N
VDA272	594,790	4,187,500	2.000	.30	.05	.300	300	N	30	200	2.0	15
VDA273	594,530	4,187,390	2.000	.70	2.00	.300	700	N	20	200	2.0	10
VDA276	594,340	4,187,630	3.000	1.00	2.00	.300	1,500	.5	70	500	3.0	30
VDA286	590,950	4,184,980	1.000	.07	.07	.200	30	N	20	20	1.0	N
VDA291	594,030	4,181,710	.200	.30	15.00	.050	500	N	15	50	<1.0	N
VDA292	594,530	4,187,340	7.000	2.00	15.00	.500	1,500	N	100	500	2.0	20
VDA293	594,530	4,187,340	1.500	1.00	>20.00	.070	2,000	N	10	50	<1.0	10
VDA294	594,530	4,187,230	7.000	2.00	15.00	.500	1,500	N	150	500	1.5	30
VDA295	594,530	4,187,230	5.000	2.00	15.00	.500	1,000	N	100	500	1.0	20

Table 1.--Analyses of rock, stream-sediment, and soil samples--Continued

Dolly Ann Rock--continued

Sample	Cr-ppm s	Cu-ppm s	La-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sc-ppm s	Sr-ppm s	V-ppm s	Y-ppm s	Zn-ppm s	Al-pct. s	Na-pct. s	Zn-ppm aa	Zr-ppm s
VDA224	30	<5	N	N	7	30	N	N	10	N	N	.5	N	<5	100
VDA229	150	30	150	<20	50	20	30	100	200	70	N	7.0	1.00	55	300
VDA230	70	100	50	<20	70	30	15	<100	100	50	N	6.0	.70	60	200
VDA231	10	N	N	N	7	30	N	N	<10	N	N	.5	N	5	50
VDA236	20	<5	70	<20	N	<10	N	100	15	10	200	1.0	.20	180	N
VDA240	20	<5	N	N	10	20	N	N	15	N	N	.5	<.15	40	100
VDA241	150	100	70	N	30	70	20	100	300	70	200	7.0	.50	110	100
VDA242	10	<5	N	N	5	10	N	N	10	10	N	1.0	N	20	1,000
VDA244	10	5	N	N	7	20	N	N	10	10	N	1.0	N	<5	100
VDA245	50	5	20	N	20	10	5	<100	70	20	N	6.0	.30	20	300
VDA247	20	30	N	N	7	50	N	<100	15	10	N	1.0	N	5	500
VDA262	10	10	N	N	70	20	N	N	30	10	500	1.0	<.15	130	100
VDA267	20	<5	70	<20	<5	10	N	700	20	10	N	1.0	.30	25	20
VDA269	10	<5	N	N	5	20	N	<100	10	N	N	1.0	<.15	10	100
VDA271	10	<5	N	N	10	70	N	N	<10	N	N	.5	<.15	10	70
VDA272	50	7	N	<20	30	10	10	<100	70	30	N	6.0	.50	30	300
VDA273	70	70	50	<20	30	10	15	<100	70	30	N	6.0	1.50	85	150
VDA276	100	150	100	<20	70	70	30	200	100	70	<200	7.0	1.50	80	200
VDA286	20	N	N	<20	7	10	N	N	20	10	N	1.0	N	10	700
VDA291	20	<5	50	N	5	30	N	500	15	10	700	1.0	N	550	20
VDA292	70	30	70	<20	50	15	20	200	200	30	N	--	--	50	200
VDA293	20	5	20	N	7	10	5	1,000	30	15	N	--	--	20	20
VDA294	70	50	100	<20	50	15	20	200	200	50	N	--	--	50	200
VDA295	70	30	70	N	50	10	15	200	150	30	N	--	--	55	150

Table 1.--Analyses of rock, stream-sediment, and soil samples--Continued

Dolly Ann Stream Sediments

Sample	X coordinate	Y coordinate	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	B-ppm s	Ba-ppm s	Be-ppm s	Co-ppm s	Cr-ppm s
VDA009	591,820	4,191,100	2.0	.30	.20	.30	1,500	15	500	2	20	70
VDA022	591,210	4,189,460	1.5	.15	.07	.30	700	30	300	3	15	50
VDA033	591,010	4,188,390	1.5	.15	.07	.30	700	30	200	2	10	30
VDA035	590,560	4,188,420	2.0	.20	.20	.30	1,500	30	300	5	10	50
VDA056	593,200	4,183,940	2.0	.15	.07	.30	1,000	50	300	3	20	50
VDA058	591,530	4,183,250	2.0	.30	.30	.30	1,500	50	500	3	20	70
VDA062	594,890	4,187,000	3.0	.20	.15	.30	2,000	50	500	10	30	70
VDA066	594,290	4,187,640	3.0	.20	.10	.50	700	50	300	5	15	70
VDA071	591,280	4,184,740	2.0	.20	.07	.30	3,000	50	300	7	20	70
VDA215	591,250	4,189,800	2.0	.20	.07	.30	2,000	50	300	5	50	70
VDA232	590,580	4,188,800	2.0	.15	.07	.50	700	50	200	3	10	30
VDA234	590,980	4,188,370	3.0	.20	.20	.30	1,500	70	500	5	20	70
VDA246	591,190	4,187,310	3.0	.20	.10	.30	1,500	70	500	5	20	70
VDA249	592,700	4,187,630	2.0	.15	.10	.30	1,000	70	300	5	15	30
VDA250	590,080	4,187,140	3.0	.30	.50	.50	2,000	70	500	7	20	70
VDA251	590,000	4,187,700	2.0	.15	.15	.50	300	50	150	1	10	50
VDA252	589,740	4,186,150	3.0	.20	.15	.30	1,000	50	500	3	20	100
VDA253	596,520	4,186,940	2.0	.15	.07	.30	700	30	300	5	20	50
VDA254	596,290	4,186,730	3.0	.20	.30	.20	1,500	50	300	5	50	50
VDA255	595,620	4,186,800	.7	.05	<.05	.10	70	30	50	1	N	20
VDA258	595,270	4,185,640	5.0	.07	.07	.10	1,000	30	300	5	30	30
VDA259	594,950	4,185,320	1.0	.10	.07	.20	700	50	150	3	15	30
VDA260	594,630	4,184,830	5.0	.15	.20	.20	1,500	30	300	10	30	50
VDA261	594,470	4,184,820	3.0	.10	.07	.15	700	30	300	5	15	30
VDA263	594,060	4,184,500	3.0	.20	.07	.30	2,000	50	200	5	50	70
VDA264	593,800	4,184,220	5.0	.15	.07	.30	700	30	300	7	30	70
VDA265	592,410	4,183,340	1.5	.30	.50	.20	1,500	50	300	7	15	50
VDA266	592,680	4,183,580	1.5	.15	.15	.30	700	30	200	5	15	30
VDA268	591,600	4,183,190	5.0	.15	.05	.30	2,000	30	300	7	70	50
VDA274	594,480	4,188,300	1.0	.10	<.05	.30	700	15	150	3	30	30
VDA275	594,410	4,188,350	1.5	.15	<.05	.50	700	20	150	3	50	30
VDA277	593,060	4,186,800	1.0	.10	<.05	.20	700	50	100	2	15	20
VDA278	593,020	4,186,110	1.5	.15	.05	.30	700	70	150	2	15	20
VDA279	591,990	4,185,380	.7	.07	<.05	.50	300	70	100	1	20	20
VDA283	591,230	4,184,120	2.0	.20	.07	.30	1,500	70	300	3	20	50
VDA284	590,550	4,184,200	1.5	.15	.30	.20	1,500	20	150	2	10	30
VDA288	589,540	4,185,200	1.0	.10	.05	.30	300	20	100	2	10	20
VDA289	589,380	4,184,350	.3	.07	.05	.30	200	10	20	2	5	10
VDA290	589,450	4,185,660	1.0	.07	.05	.30	700	70	50	1	10	20

Table 1.--Analyses of rock, stream-sediment, and soil samples--Continued

Dolly Ann Stream Sediments

Sample	Cu-ppm s	La-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sc-ppm s	Sr-ppm s	U-ppm s	V-ppm s	Y-ppm s	Zn-ppm s	Sc-ppm s	Na-pct. s	Zn-ppm aa	Zr-ppm s
VDA009	20	100	<20	50	30	10	<100	<1	70	50	N	10	.70	45.0	300
VDA022	20	70	<20	30	30	10	<100	<1	70	50	N	10	.30	25.0	500
VDA033	7	50	<20	30	20	10	<100	<1	70	70	N	10	.30	15.0	700
VDA035	15	150	<20	30	30	15	100	1	70	70	N	15	.30	40.0	200
VDA056	10	70	<20	30	70	10	100	<1	70	70	N	10	.30	60.0	700
VDA058	15	100	<20	100	100	15	100	<1	100	70	700	15	.30	290.0	300
VDA062	10	100	<20	70	50	15	100	<1	70	50	N	15	.30	85.0	300
VDA066	10	100	20	30	30	20	100	<1	100	70	N	20	.50	35.0	700
VDA071	15	150	<20	50	70	15	100	<1	70	70	<200	15	.30	60.0	300
VDA215	50	70	<20	30	30	5	100	<1	70	70	N	5	.30	35.0	300
VDA232	7	50	<20	30	30	5	100	<1	70	30	N	5	.15	22.0	700
VDA234	20	100	<20	30	30	15	100	1	70	70	N	15	.30	--	200
VDA246	15	70	<20	30	30	15	100	<1	70	70	N	15	.30	45.0	150
VDA249	15	50	<20	30	30	10	100	<1	70	30	N	10	.30	50.0	300
VDA250	15	150	<20	70	100	15	200	1	100	70	500	15	.30	210.0	500
VDA251	7	50	<20	15	30	10	100	<1	70	70	N	10	.20	15.0	1,000
VDA252	15	100	<20	50	100	15	200	<1	100	70	N	15	.30	65.0	500
VDA253	7	50	<20	30	100	10	100	<1	100	70	200	10	.15	110.0	700
VDA254	10	50	<20	70	100	10	100	<1	70	70	500	10	.15	160.0	300
VDA255	N	N	N	15	20	N	N	<1	20	10	N	N	N	25.0	300
VDA258	10	20	<20	100	70	N	<100	<1	70	30	700	N	.15	270.0	300
VDA259	5	20	N	30	30	5	N	<1	30	20	N	5	.20	95.0	200
VDA260	15	20	<20	150	150	10	<100	2	70	70	1,500	10	.20	690.0	300
VDA261	7	20	<20	100	50	N	100	<1	50	30	700	N	.20	290.0	300
VDA263	10	70	N	30	70	10	100	<1	70	70	<200	10	.30	85.0	500
VDA264	30	50	<20	50	200	15	100	3	70	70	500	15	.20	160.0	300
VDA265	10	50	N	70	100	5	100	<1	50	30	700	5	.30	440.0	100
VDA266	7	50	<20	70	70	10	<100	<1	70	50	300	10	.20	230.0	700
VDA268	20	50	<20	150	200	10	<100	<1	70	70	1,500	10	.30	390.0	500
VDA274	7	20	<20	15	30	5	<100	<1	50	20	N	5	.15	25.0	300
VDA275	7	N	<20	10	20	5	<100	<1	70	20	N	5	.20	15.0	500
VDA277	5	20	N	15	30	5	<100	<1	50	10	N	5	.20	15.0	300
VDA278	5	20	<20	30	10	5	<100	<1	70	50	N	5	.15	25.0	700
VDA279	5	70	<20	7	20	5	<100	<1	50	50	N	5	.20	15.0	700
VDA283	7	50	N	50	20	10	<100	<1	70	30	N	10	.30	35.0	300
VDA284	7	20	N	30	70	5	<100	<1	50	30	500	5	.20	280.0	300
VDA288	7	N	<20	10	20	5	<100	<1	50	30	N	5	.15	25.0	700
VDA289	<5	N	N	15	10	5	<100	<1	15	10	N	5	.20	25.0	500
VDA290	5	N	N	15	10	N	<100	<1	50	10	N	N	.15	20.0	300

Table 1.--Analyses of rock, stream-sediment, and soil samples--Continued

Dolly Ann Soil

Sample	X coordinate	Y coordinate	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	B-ppm s	Ba-ppm s	Be-ppm s	Co-ppm s	Cr-ppm s
VDA003	595,220	4,188,970	2.0	.20	.05	.7	100	30	300	1	5	70
VDA004	594,830	4,189,230	2.0	.15	.07	.3	300	20	300	1	5	70
VDA007	594,990	4,189,180	2.0	.15	<.05	.7	200	30	300	1	5	70
VDA010	592,310	4,195,500	2.0	.30	.10	1.0	500	20	500	2	20	70
VDA019	591,470	4,189,230	3.0	.20	.07	.7	1,000	30	700	2	15	100
VDA051	596,210	4,186,940	1.5	.07	<.05	.3	50	15	150	<1	N	30
VDA068	593,140	4,185,450	2.0	.30	.05	.7	2,000	20	700	3	30	150
VDA074	590,820	4,183,580	1.5	.15	.10	.5	300	10	300	1	10	70
VDA076	590,620	4,184,980	1.5	.15	.10	.7	500	20	500	2	10	70
VDA204	592,830	4,189,100	1.5	.10	<.05	.7	500	20	200	1	10	50
VDA210	592,740	4,189,320	2.0	.15	.05	1.0	1,000	20	700	1	5	70
VDA225	593,870	4,187,220	2.0	.15	<.05	.2	1,000	15	300	1	5	70
VDA228	591,140	4,185,630	3.0	.50	.20	.7	1,000	50	700	2	20	150
VDA280	591,420	4,183,860	1.5	.20	.07	.7	1,500	50	500	2	10	70
VDA281	591,740	4,184,180	3.0	.30	.10	.5	3,000	30	700	3	30	100
VDA282	591,130	4,183,810	3.0	.20	.07	>1.0	500	30	300	2	50	70
VDA285	590,740	4,184,420	1.5	.10	.05	.3	100	20	100	1	15	50

Dolly Ann Soil

Sample	Cu-ppm s	La-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sc-ppm s	Sr-ppm s	V-ppm s	Al-pct. s	Na-pct. s	Zn-ppm aa	Zr-ppm s
VDA003	7	100	30	10	30	15	<100	70	7	.50	30	700
VDA004	15	100	<20	15	30	10	<100	100	5	.30	25	300
VDA007	7	100	20	5	30	10	<100	70	5	.30	25	1,000
VDA010	10	150	20	30	30	15	100	70	7	.50	25	700
VDA019	10	150	20	30	30	15	100	70	7	.50	40	700
VDA051	5	70	N	10	50	5	<100	70	3	.15	15	500
VDA068	20	150	<20	50	30	20	200	150	7	.50	35	500
VDA074	10	100	20	30	70	10	<100	70	5	.30	30	700
VDA076	10	100	20	10	30	15	100	70	5	.50	30	1,000
VDA204	10	70	<20	10	30	10	<100	70	3	.20	35	500
VDA210	10	150	30	10	20	15	N	70	5	.30	30	1,000
VDA225	7	100	<20	15	30	5	N	70	5	.30	50	700
VDA228	15	150	20	30	30	30	200	150	7	.50	30	300
VDA280	15	100	20	20	100	15	100	70	6	.30	30	700
VDA281	15	150	N	50	50	20	100	100	6	.50	40	200
VDA282	10	100	50	30	70	20	100	100	6	.30	110	>1,000
VDA285	15	50	<20	30	70	5	<100	70	5	.20	25	700