

UNITED STATES DEPARTMENT OF THE INTERIOR
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Progress report on geochemistry of the Butte
1⁰ x 2⁰ quadrangle, Montana

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This report is preliminary and has not been reviewed for conformity
with U.S. Geological Survey editorial standards.

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This open-file report includes nine 35-mm slides showing the status, as of June 1, 1982, of analyses of geochemical samples in the Butte 1⁰ x 2⁰ quadrangle, Montana. These analyses are from samples of fine-grained stream sediments, panned concentrates of stream sediments, and a great variety of rock types. The samples and analyses for the western two-thirds of the quadrangle represent extensive coverage of first- and second-order streams, but analyses are incomplete for the eastern one-third. Six-step semiquantitative spectrographic analyses and atomic-absorption analyses for Au and acid-soluble Ag, Bi, Cd, Cu, Pb, Sb, and Zn, are reported by Campbell, McDana1, and Hopkins (1982). Atomic-absorption analyses for Au for the entire quadrangle are reported by Campbell, Antweiler, and Nowlan (1982). Because the Au data represent more nearly complete sample coverage over the entire quadrangle than data for other elements, they are illustrated in more detail than is possible for other elements. Descriptions of the slides in this open-file report are as follows:

1. Status of analytical data available as of June 1, 1982, on geochemical samples of stream sediments, panned concentrates of stream sediments, and rocks from the Butte $1^{\circ} \times 2^{\circ}$ quadrangle.
2. Wilderness and Rare II Study Areas in the Butte, $1^{\circ} \times 2^{\circ}$ quadrangle designated by the u.S. Forest Service as of May 1978.
3. Localities of samples in the Butte $1^{\circ} \times 2^{\circ}$ quadrangle. Samples include panned concentrates of stream sediments and bedrock analyzed for Au. Gold content, in parts per million, is reported in five ranges (less than 0.1 ppm to 2000 ppm) and is indicated by sizes of symbols at sample locality sites.
4. Generalized geologic map of the Butte $1^{\circ} \times 2^{\circ}$ quadrangle, adapted from compilation of R. G. Schmidt (1982), overprinted with data from slide 3.
5. Computer-generated contour map showing abundance of Au in bedrock and panned-concentrate samples from the Butte $1^{\circ} \times 2^{\circ}$ quadrangle. Color boundaries are 0.05, 0.5, 5, and 50 ppm Au.
6. Computer-generated contour map showing abundance of Au in bedrock and panned-concentrate samples from the Butte $1^{\circ} \times 2^{\circ}$ quadrangle. Color boundaries are 0.5, 5, and 50 ppm Au.
7. Generalized geologic map of the Butte $1^{\circ} \times 2^{\circ}$ quadrangle, adapted from compilation of R. G. Schmidt (1982), overprinted with data from slide 6.
8. Map of Butte $1^{\circ} \times 2^{\circ}$ quadrangle showing fineness of Au (proportion of Au in natural Au-Ag alloy, expressed in parts per thousand) at several localities as determined by emission-spectrographic analyses.
9. Preliminary map of the Butte $1^{\circ} \times 2^{\circ}$ quadrangle, showing approximate location of some potential gold-bearing gravels of Tertiary age, some possible bedrock sources, and presumed transport directions, based on tentative compilation by J. E. Elliott, C. A. Wallace, J. C. Antweiler, W. L. Campbell, and published work from many sources.

REFERENCES

- Campbell, W. L., Antweiler, J. C., and Nowlan, G. A., 1982, Analytical data for gold in geological materials from the Butte, Montana $1^{\circ} \times 2^{\circ}$ quadrangle: U.S. Geological Survey Open-File Report 82-598, 1982 62p.
- Campbell, W. L., McDanal, S. R., and Hopkins, R. T., Jr. 1982, Sample localities and analyses of geochemical samples from the Butte, Montana $1^{\circ} \times 2^{\circ}$ quadrangle: U.S. Geological Survey Open-File Report 82-617, Chapters A-1. 411 p, 1982.
- Schmidt, R. G., 1982, Generalized geologic map of the Butte $1^{\circ} \times 2^{\circ}$ quadrangle, Montana: U.S. Geological Survey Open-File Report 82- , scale 1:250,000.
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