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# DEVELOPMENT OF SPECTRAL MAPS FOR SOIL-VEGETATION MAPPING IN THE BIG DESERT AREA, IDAHO

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Spectral maps were developed using unsupervised digital classification techniques for 1.5 million acres in Idaho to aid the USDA/Soil Conservation Service in preparing a third order soil survey. The area of interest is roughly bounded by 112°45' and 114°00' west and 43°00' and 43°45' north. Mixed alluvium with minor amounts of loess and cinders are the principal soil parent materials of the area which is characterized by rough lava flows, cinder cones, mountains, alluvial fans and valleys of low relief. The soil temperature regime is frigid and the soil moisture regimes vary from aridic to xeric. The native vegetation consists primarily of juniper, sage, grasses and forbs. Rangeland and some irrigated agriculture are the principal land uses in the area.

Geometrically corrected Landsat data collected August 23, 1978 were used for the analyses. To facilitate analysis procedures, the area was divided into two roughly equal parts, eastern and western. A systematic procedure was used to sample and cluster data representing 2% of the area. The resulting cluster classes were merged until the divergences between classes were generally greater than 1500. This resulted in 22 and 19 separable spectral classes for the eastern and western parts, respectively. The final classification was made using a minimum distance to the mean classification algorithm. Maps were provided to the user (USDA/SCS) at a scale of 1:24,000 in units approximating 7½ minute USGS quadrangles. Although detailed evaluation of the usefulness of spectral maps in field mapping of the area has not been completed, some preliminary evaluation of the spectral data based on field reconnaissance and selected order three soil maps of a small portion of the area are presented.

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