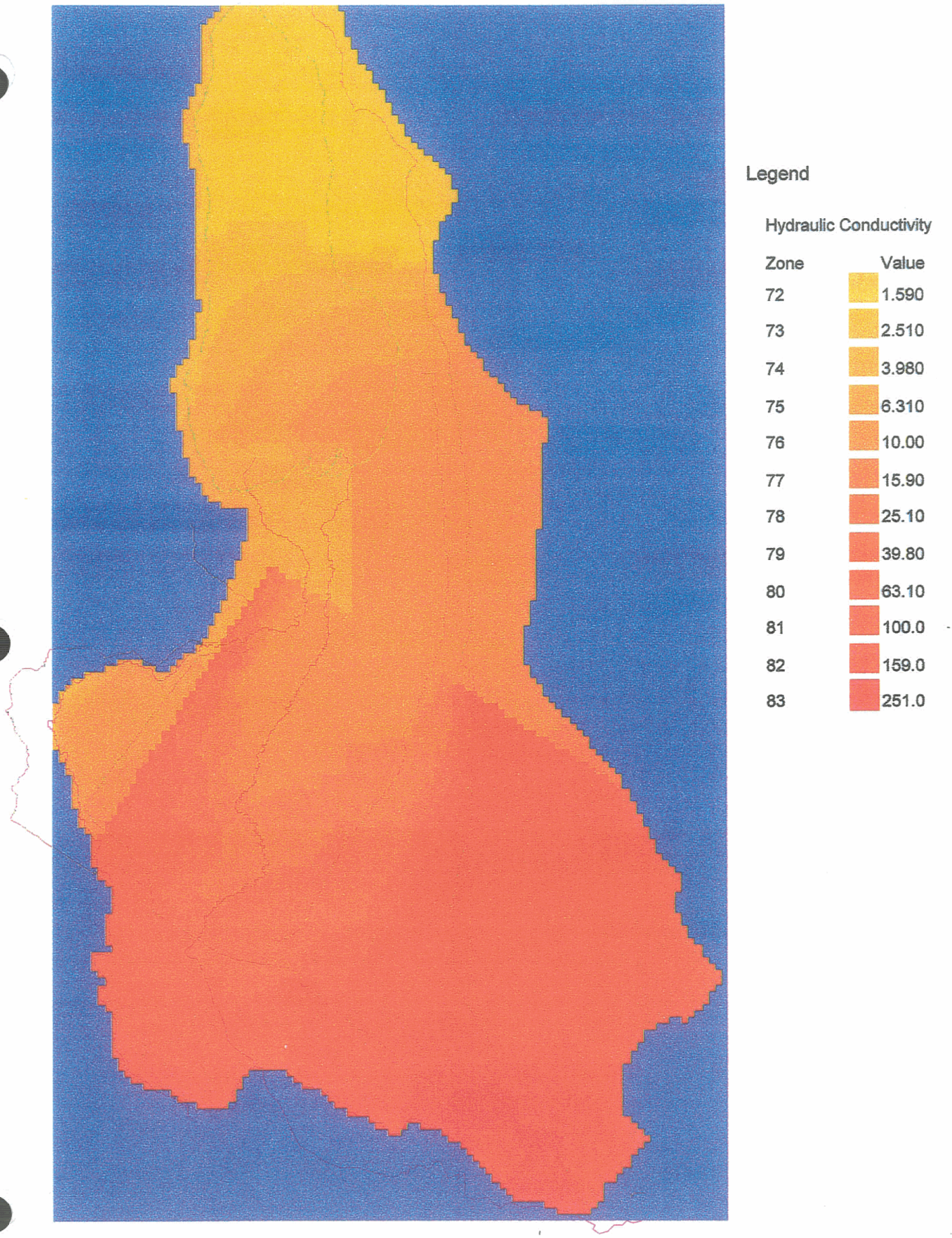

Figure 6-8. Calibrated Hydraulic Conductivity (ft/day) for Layer 3

6.1.2.3 Storativity and Specific Yield

Initial storativity and specific yield values for the model aquifer layers were defined based on the storativity and specific yield data in the USBR and Imperial County Groundwater models and the USGS data (Loeltz *et al.* 1976; Le Roy Crandall and Associates 1983). The final calibrated specific yield values for Layer 1 are given in Figure 6-9, and the final calibrated storativity values for Layer 2 are given in Figure 6-10 (constant values were used in Layer 3). The specific yield in all three sources show similar values of 0.20 to 0.30 reflecting the well drained coarse sediments in the East Mesa. The storativity in all three sources show similar values of 0.0001 (specific storage), which is typical of unconsolidated sediments.

The model storage coefficients were then modified within these pre-established upper and lower parameter bounds during model calibration in order to match the observed water level and water budget data in the model area (see Section 6.2). The final specific yield values for Layer 1 are 0.1 to 0.3, and storage coefficients for Layers 2 and 3 are approximately 2×10^{-5} to 4×10^{-4} and 1×10^{-5}, respectively. The calibrated values agree fairly well with the available storage coefficient data and geologic controls.

6.1.2.4 Aquitard, Canal, and Drain Leakance Values

Aquitard leakance values (vcont) are calculated to range from approximately 0.0001 to 0.001 day^{-1} using the layer hydraulic conductivity and thickness values given above. These values reflect the ratio of the typical aquitard hydraulic conductivity of 0.04 feet/day to the typical aquitard thickness of 125 feet.

Canal bed conductances were estimated using the canal stage and invert elevations to achieve the known canal seepage rates given in Sections 4 and 5. Modeled canal bed conductances varied with high values of approximately 7,000 to 20,000 ft^2/d in the high seepage reaches of the eastern AAC, the lower CB, and the CB units C and D; lower values from 1,000 to 4,000 ft^2/d in the moderate seepage reaches of the west AAC (Drop 2 to the EHC), the East Highline Canal, and the CB in unit B; and very low values of 50 to 500 ft^2/d in the low seepage reaches of the CB in units A and E, the Westside Main Canal, and the Central Main Canal.

Drain bed conductances were estimated by model calibration to approximate the groundwater discharge rates estimated for the New and Alamo Rivers. Modeled drain bed conductances were in the range from approximately 3,000 to 8,000 ft^2/d for the Alamo River and from 100 to 1,000 ft^2/d for the New River. These drain bed conductances reflect the river characteristics, where the Alamo River gains a large volume of flow from groundwater, while the New River gains a smaller volume of flow from groundwater. New River drain flow was calibrated to match the component of observed drain flow attributed to the active model area. This accounts for the New River Reaches that coincide with the model boundary.

6.1.2.5 Canal, Stream, Drain, and Lake Bed Elevations

Drain bed elevation data for the New and Alamo Rivers were derived from river topographic data given in the Imperial County Model and on USGS quad sheets. Canal stage and invert data for the AAC, CB, and East Highline canals were derived from canal topographic data given in the Imperial County Model, the AAC and CB EIS/EIR reports (Bureau of Reclamation 1991, 1993), and as given by Ms. Vickie Doyle (1999). Lakebed elevation data for the Salton Sea were derived from bathimetry data given in the University of Redlands GIS database.

6.1.2.6 Mountain Front and Rainfall Recharge

Net precipitation recharge in unirrigated areas was specified as diffuse recharge at a rate of 0.02 inches per year. Mountain front recharge rates were estimated based on the mountain front catchment basin area and an estimated net percolation rate of 0.3 inches per year in mountain front catchment basins. In some mountain front areas in the East Salton Sea with known geothermal conditions (Salt Creek and Hot Mineral Spa/Frink Springs), additional recharge was applied to the model along the mountain front to account for upwelling geothermal water. Geothermal upwelling rates were estimated using net water balance calculations for the sub-area of interest (see Table 3-3).

6.1.2.7 Evapotranspiration

Evapotranspiration was simulated for the wetland areas identified in Section 2 using evapotranspiration rates which were established to match the observed annual evapotranspiration volume for each wetlands

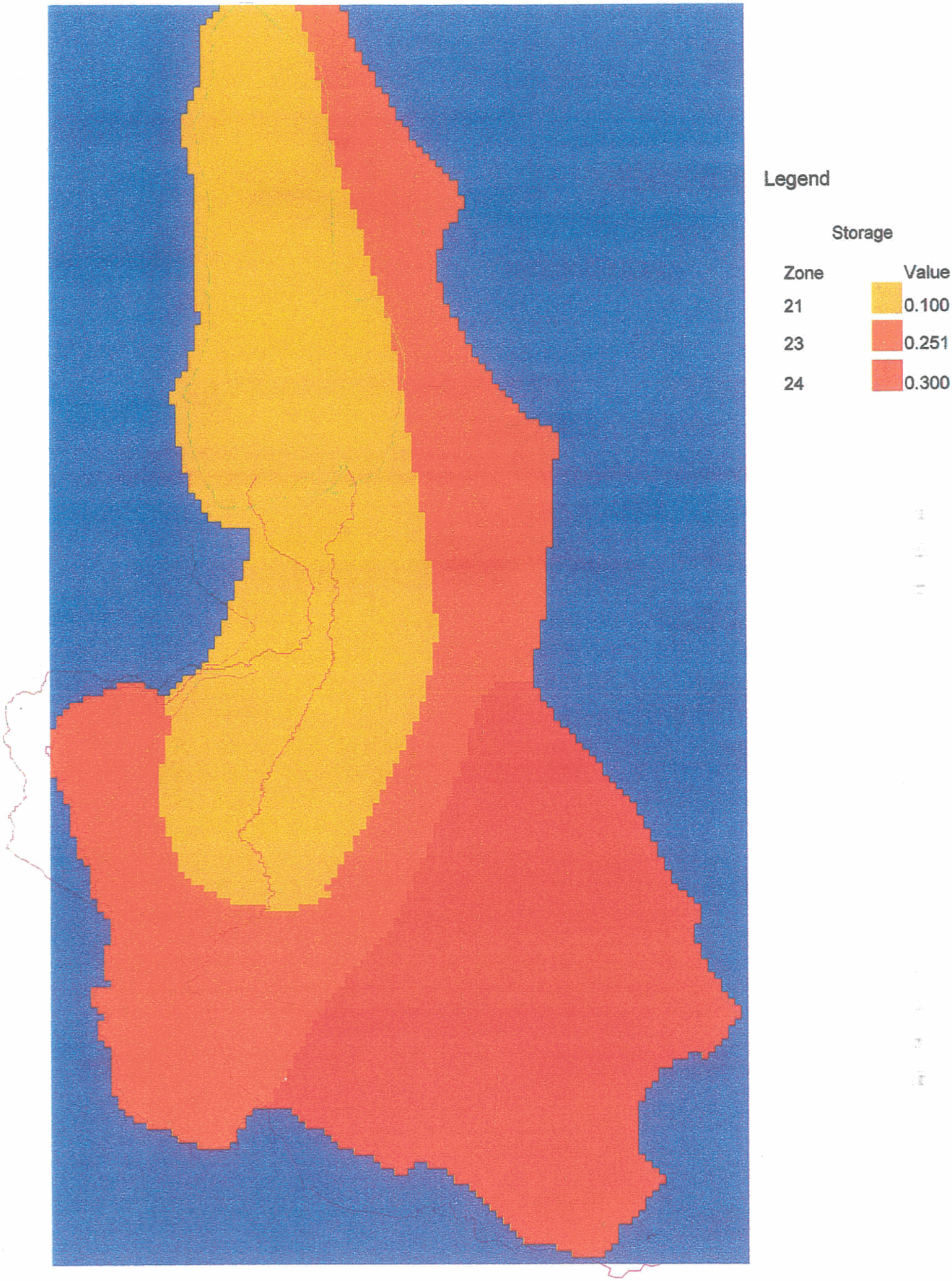

Figure 6-9. Calibrated Specific Yield for Layer 1