WATER-RESOURCES INVESTIGATION REPORT 99–4043
Perspective views—SHEET 2 of 2
Gardner, J.V., Dartnell, Peter, Mayer, L.A., and Hughes Clarke, J.E., 1999
Bathymetry and selected perspective views of Lake Tahoe, California and Nevada

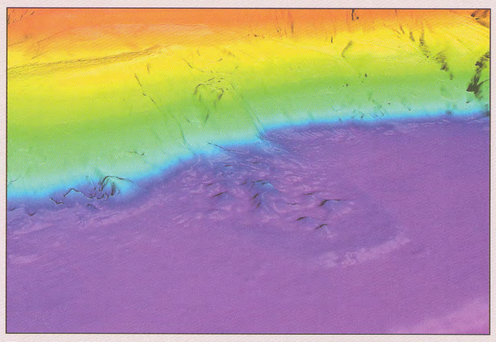


Figure 3.—Oblique view of northwest margin of Lake Tahoe, looking northwest into Carnelian Bay. Vertical exaggeration, 3X. Floor of lake in this area is at water depth of about 450 meters (1,500 feet), and tops of bluffs are at depth of about 140 meters (460 feet). Prominent debris flow, on floor of lake, is about 1,500 meters (4,900 feet) long and 1,000 meters (3,300 feet) wide. Main debris mass is about 5 meters (16 feet) thick, but individual blocks are as much as 25 meters (80 feet) high. Debris flow represents failure of bluff directly west of flow.

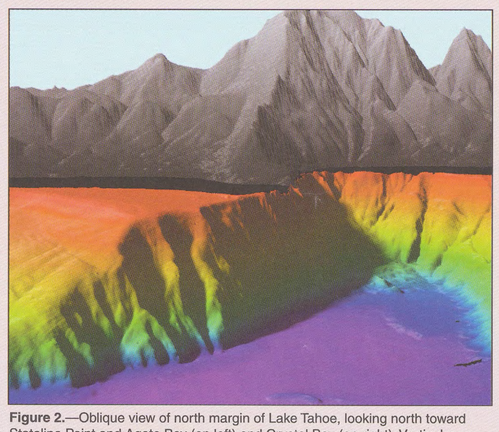


Figure 2.—Oblique view of north margin of Lake Tahoe, looking north toward Stateline Point and Agate Bay (on left) and Crystal Bay (on right). Vertical exaggeration, 3X. Note straight, very steep 430-meters-high (1,400-feet-high) cliff trending southwest from Stateline Point. This cliff appears to be fault scarp or result of rapid basin subsidence. Abruptness of change in slope at base of cliff suggests very low sedimentation at north end of lake.

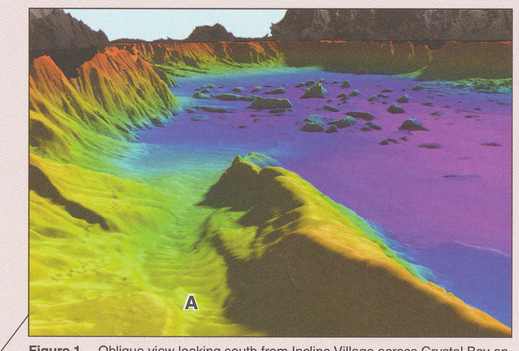


Figure 1.—Oblique view looking south from Incline Village across Crystal Bay on north margin of Lake Tahoe toward south end of lake. Vertical exaggeration, 3X. Perched channel (A) bounded on west by 250-meters-high (820-feet-high) fault ridge. Channel is 80 meters (260 feet) below crest of fault ridge. Sediments have been funneled down channel from area of Incline Village and have ponded out onto basin floor. Within-channel sand waves as much as 8 meters (26 feet) high and 150 meters (490 feet) between crests suggest that downslope movement has been vigorous. Background shows scattered large blocks that resulted from debris avalanche when middle of west margin collapsed (see figures 4 and 5).

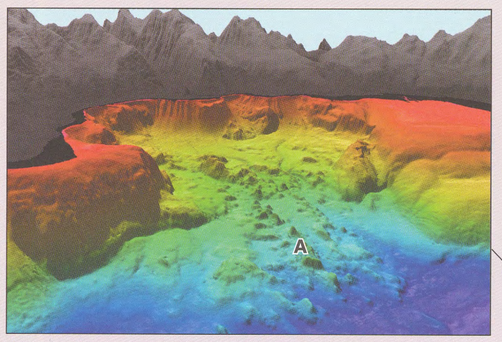


Figure 4.—Oblique view of middle of west margin of Lake Tahoe, looking west-northwest toward Tahoe Pines. Vertical exaggeration, 2X. Collapse of this central part of west margin sometime in past scattered very large blocks out across floor of lake. Debris tongue (A) is 7.5 kilometers (4.7 miles) wide and 9 kilometers (6 miles) long (also see A in fig. 5). Thin distal area is about 15 meters (49 feet) thick, and large blocks within debris tongue are as much as 20 meters (70 feet) high. Vertical extent of failure is 200 meters (660 feet). Large failures such as this are called debris avalanches, and this one is comparable in size to similar collapse features found along ocean margins in tectonically active areas and on volcanos.

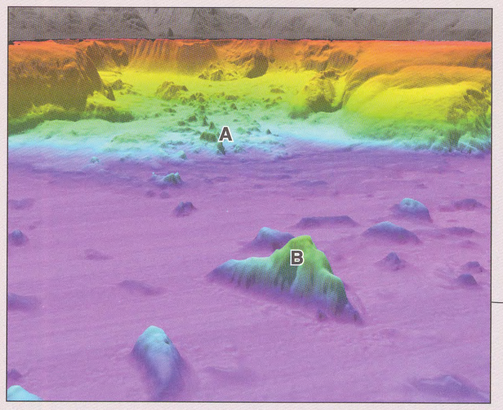


Figure 5.—Oblique view of middle of west margin looking west-northwest toward Tahoe Pines (vantage point farther east than for fig. 4). Vertical exaggeration, 3X. This view shows, in foreground, large debris blocks scattered on floor of lake (block B is 1,500 meters (4,900 feet) long; 630 meters (2,100 feet) wide; and 120 meters (400 feet) high), and, in background (A), remnants of large failure and sediment tongue.

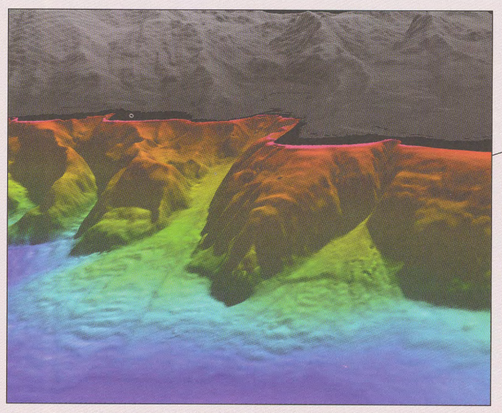
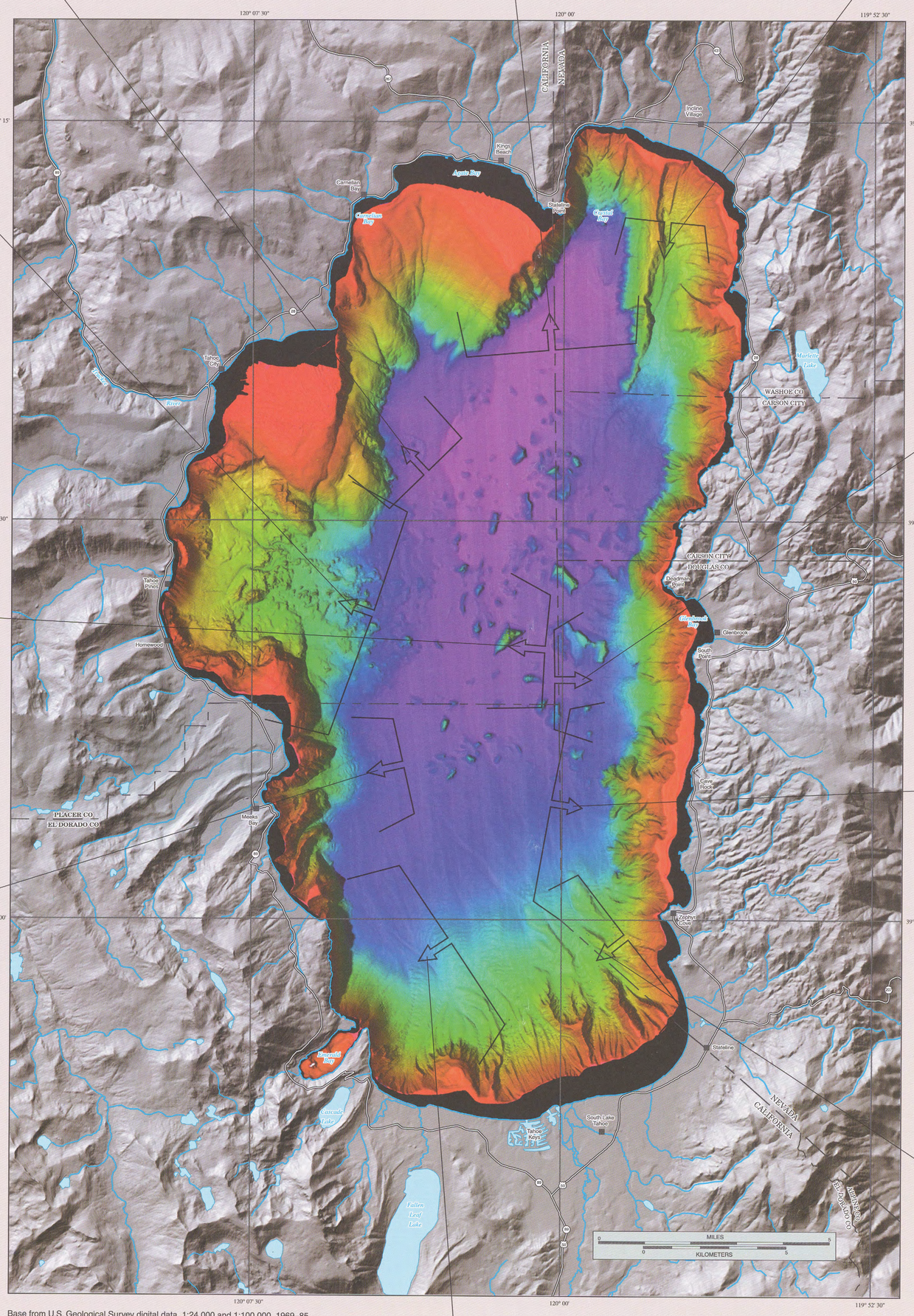


Figure 6.—Oblique view of southwest margin of Lake Tahoe, looking west-southwest toward Meeks Bay. Vertical exaggeration, 3X. This part of lake margin is composed of series of submerged headlands alternating with sediment chutes. Sediment that was transported down chutes has coalesced into broad apron at base of margin. Surface of aprons have bed forms as much as 5 meters (16 feet) high and 20 meters (66 feet) between crests.



Base from U.S. Geological Survey digital data, 1:24,000 and 1:100,000, 1969–85
Universal Transverse Mercator projection
Zone 10

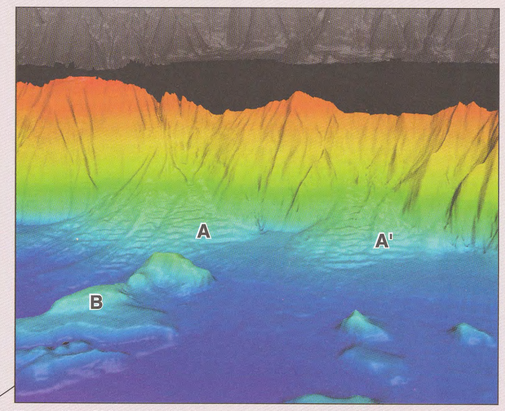


Figure 10.—Oblique view looking east-southeast toward Glenbrook Bay along steep east margin of Lake Tahoe. Vertical exaggeration, 4X. View shows area just south of Deadman Point on left to area of South Point on right. Foreground shows large blocks on lake floor (block B is 1,700 meters (5,600 feet) long; 1,200 meters (3,900 feet) wide; and 34 meters (110 feet) high) derived from debris avalanche (see figs. 4 and 5). Background shows two well-developed sediment aprons (A and A') formed at base of margin. Apron A is about 2 kilometers (1.2 miles) long and has 120 meters (390 feet) of relief. Apron A' is 1.2 kilometers (0.75 mile) long and also has 120 meters of relief. Both aprons have large transverse sand waves 5 meters (16 feet) high and about 100 meters (330 feet) between crests.

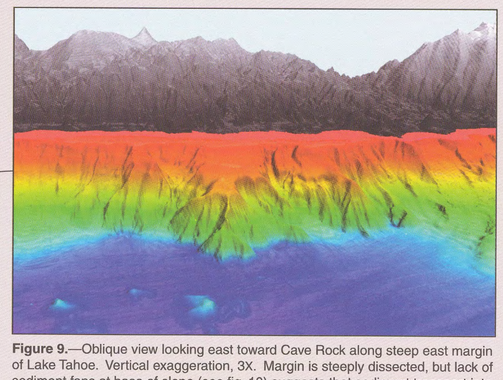


Figure 9.—Oblique view looking east toward Cave Rock along steep east margin of Lake Tahoe. Vertical exaggeration, 3X. Margin is steeply dissected, but lack of sediment fans at base of slope (see fig. 10) suggests that sediment transport into lake from east side was very localized. Blocks in foreground are related to debris avalanche from collapse of central west margin (see figs. 4 and 5).

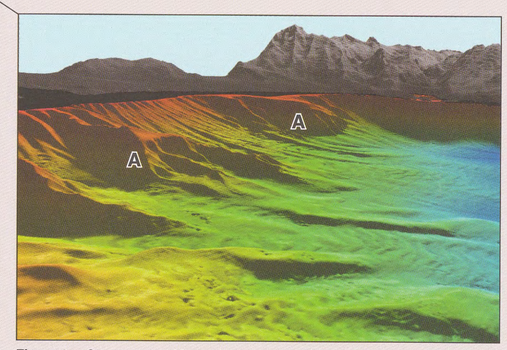


Figure 8.—Oblique view of floor of south margin of Lake Tahoe, looking southwest toward Emerald Bay. Vertical exaggeration, 3X. Margin of lake is draped by glacial-outwash sediment deposited in front of glaciers. Blocks of sediment (A) pushed to lake's margin by large glaciers about 160,000 years ago. Sediment that was transported around blocks has coalesced into broad apron at base of margin.

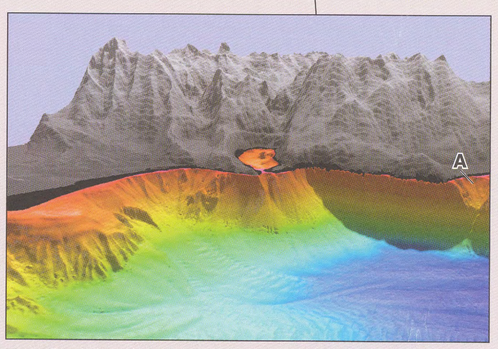


Figure 7.—Oblique view of southwest margin of Lake Tahoe, looking southwest toward Emerald Bay. Vertical exaggeration, 3X. Broad glacial-outwash fan blankets south margin of lake and is cut by series of channels. Series of small, linear gullies cut margin directly below Emerald Bay. Hanging valley (A), incised 180 meters (590 feet) below lake surface, is relict of glacier that once fed directly into lake basin.

EXPLANATION

No bathymetric data

Depth—In feet below highest legal lake-surface altitude (6,229 feet above Bureau of Reclamation datum of 1929)

0
500
1,000
1,500
1,636

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