



Figure 18. Uppermost bed of sandstone in the Primrose Member of the Golf Course Formation (Unit 14, Fig. 14) exposed in the creek bed and valley east of the church at Stop 3. The contact between the Primrose Member and the lowermost shale of the Gene Autry Shale Member (Unit 15, Fig. 14) is shown by the arrow. Geologic pick is ~2 ft long.

cite as a framework cement is also characteristic of marine conditions. All of these characteristics prevail in a marine-shelf environment at depths generally just below wave base.

In the Academy Church Section, the Lake Ardmore is a very fine grained, noncalcareous, brownish black and dark reddish brown, thin-bedded, parallel-bedded, ripple-bedded sandstone with sharp upper and lower contacts (Fig. 17). This 2.4-ft-thick sandstone bed that crops out ~5 mi east of Springer, Oklahoma, is the only unit of the Lake Ardmore Sandstone Member exposed at Stop 3. Meek (1983, p. 2) reported that four sandstones occur in the Lake Ardmore east of Springer. McBride (1986, p. 135–137) measured multiple sandstone beds in the Lake Ardmore ~9 mi east of Springer. Apparently, in some areas of the Ardmore basin, additional discontinuous sand-

stones occur in the Lake Ardmore Member. However, only a single sandstone crops out at the type locality at Lake Ardmore. At Stop 6A (this guidebook), on the Caddo anticline ~1.5 mi northwest from the type locality, the Lake Ardmore Sandstone is a single 17-ft-thick unit.

## STOP 4

### ROD CLUB SANDSTONE MEMBER OF THE SPRINGER FORMATION (Trail Ranch Pond Section)

*Location: SE¼SE¼SE¼ sec. 33, T. 2 S., R. 1 E.,  
Carter County (Springer 7.5' quadrangle)*

This stop is on private property.  
Please contact Jim Trail, Ardmore, Oklahoma, phone  
(580) 226-4545, for permission to visit the outcrops.

**Directions:** From Interstate Highway 35, exit west at State Highway 53 and drive west ~2.25 mi to the site of an abandoned farm building site (on the north side of the road). Do not stop, but note good exposures of the Rod Club Sandstone in the low ridge just north of the road and west of the farm house. Continue ~0.25 mi west on S.H. 53 to a small, south-flowing stream. There are outcrops just north of the pond and in the spillway just south of the pond. The upper unit of the Rod Club Sandstone is well exposed for ~0.25 mi in the ridge east of the spillway. Examine it and note the similarities to the sandstone exposed near Overbrook (Stop 1).

Two sandstone units of the Rod Club Member of the Springer Formation are exposed near the ranch pond (Fig. 19). The two units are similar in appearance, but the older of the two (exposed at the north side of the pond) (Fig. 19, Unit 1; Fig. 20) is only ~9.0 ft thick, whereas the stratigraphically higher unit (exposed in the spillway) (Fig. 19, Unit 3; Fig. 21) is ~25 ft thick. Characteristics that are similar in the sandstones exposed at Stops 4 and 1 include grain size, friability, porosity, soft-sediment deformation features, bedding characteristics, color, and common Liesegang banding.

About 40 ft of an unnamed shale that occurs between the Rod Club and the Overbrook Members is exposed in the gully below the spillway. It is a medium dark gray shale that contains 1–2.5-in.-thick ironstone layers (Fig. 19, Unit 4; Fig. 22).

The Rod Club Sandstone exposed at the ranch pond is interpreted to be turbidite deposits of the lower (distal) to middle fan facies. Both the Rod Club at Stop 4 and the sandstone exposed near Overbrook (Stop 1) have fluvial channel characteristics, but neither is deltaic or flood plain in nature. The Rod Club Sandstone is interstratified with marine shale and is laterally persistent with very little change in thickness or character. The thinner nature, overall, of sandstone beds and individual sandstone units in the Rod Club here at Stop 4 indicates that the