



Supplemental road log 2: Nambe Falls to Nambe Lake

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SUPPLEMENTAL ROAD LOG 2, NAMBE FALLS TO NAMBE LAKE

GARY A. SMITH

SUMMARY

This supplemental log diverts us from the Day 1 road log eastward to the Sangre de Cristo Mountains front, where both depositional and purported fault contacts can be observed between the Santa Fe Group and Proterozoic granite. At scenic Nambe Falls, a short hike on fossiliferous limestones leads to a vantage point for overlooking the nonconformable contact between Proterozoic and Pennsylvanian rocks. Most of this route and the two suggested stops are on Nambe Pueblo. Access to Nambe Falls and Nambe Lake is permitted only during the summer season and requires payment of a fee.

Mileage

- 0.0 Junction, NM-503 and Nambe Falls Road; **turn right**. 1.8
- 1.8 Junction, road to Nambe Pueblo on right; continue straight. 0.6
- 2.4 Outcrops of Tesuque Formation (Nambe Member of Galusha and Blick, 1971). The Nambe White Ash is present in these outcrops. 0.9
- 3.3 Gate for Nambe Falls and Nambe Lake. Road is closed at this point from mid-October to mid-March. Beyond the gate are superb exposures of the Nambe Member of the Tesuque Formation. Dips steepen eastward from here from 10° to about 30° near Nambe Falls. 2.1
- 5.4 Nambe Falls Ranger Station. Fee charged to visit the waterfall or lake. Turn right just west of ranger station toward Nambe Falls trailhead. 0.5
- 5.9 Nambe Falls campground, picnic area, and parking for trailhead to Nambe Falls. Trail is at southeast corner of parking area.

STOP 1. Proterozoic-Pennsylvanian nonconformity at Nambe Falls. Hike to Nambe Falls overlook requires a modest climb on an improved trail and takes about 15 minutes. Excellent views are afforded from the trail over the moderately dipping strata of the Tesuque Formation, which rest unconformably on tilted Precambrian granite and Pennsylvanian strata above Nambe Dam, but are separated here by a fault in a strike valley in Kelley's (1978) portrayal of the structural geology at this location. Near the overlook, the trail passes through steeply west-dipping Lower Pennsylvanian beds of the La Pasada Formation and provides close examination of 6-13-ft-thick coarsening-upward, thickening-upward cycles of shale to thin-bedded wackestone to thick-bedded or massive packstone to sandstone. Limestones contain an abundant fauna of articulate brachiopods, crinoids and bryozoans. These thin, asymmetric transgressive-regressive cycles are the typical record of global glacio-eustasy in Pennsylvanian strata of north-central New Mexico (e.g., Wiberg and Smith, 1994). The dominance of limestone in this area suggests shallow-shelf conditions. Age-equivalent strata of the Flechado Formation 18 mi to the northeast contain coarse clastic facies that partly filled the Taos Trough adjacent to

the Uncompahgre uplift of the Ancestral Rocky Mountains. At the overlook, the Nambe Falls are visible where the discharge of Rio Nambe below Nambe Dam crosses a nickpoint within a narrow gorge incised along joints in the Precambrian granite. Across the gorge from the overlook is a superb exposure of the nonconformity between Precambrian granite and mixed clastic and limestone strata of the La Pasada Formation (Fig. S-2.1). Prominent springs emerge from a shaly interval above the unconformity.

Return to parking area and retrace route to ranger station. 0.5

- 6.4 Nambe Falls Ranger Station; **turn right (east)** toward Nambe Lake. 0.2
- 6.6 View to the south of two prominent strath terraces cut onto Tesuque Formation along the south side of Nambe Creek. 0.3
- 6.9 Outcrops of Tesuque Formation straight ahead and on left. 0.3



FIGURE S-2.1. View from Nambe Falls trail overlook of the nonconformity (marked by small, black arrows) between Proterozoic granite and Pennsylvanian La Pasada Formation. Nambe Falls is visible at lower right within a narrow slot canyon eroded along joints in the granite. Nambe Dam is at the top of the photo.

- 7.2 Crossing zone of landslides produced by bedding-plane slip in mudstone and sandstone of the Tesuque Formation, which is dipping 40° west. **0.3**
- 7.5 Pavement ends; well-graded gravel road continues. Road curves around the north and east side of the lake. The lake bed is on Precambrian granite that is unconformably overlain by the Tesuque Formation, which is exposed in low roadcuts and bluffs surrounding the reservoir. Quaternary gravel terraces are inset against the Tesuque Formation. **1.6**
- 9.1 Road ends at south abutment of Nambe Dam.

STOP 2. Overview of Española basin and Sangre de Cristo Mountain front from Nambe Dam. North abutment of Nambe Dam is against Precambrian and Pennsylvanian rocks seen at Nambe Falls. To the north, one can trace the approximate contact between light-colored, and variably west-dipping strata of the Tesuque Formation and dark, forested outcrops of Proterozoic granite. The near skyline to the east and northeast is a high-level pediment surface on Proterozoic rocks that was probably cut in the early Pleistocene. Most of the Phanerozoic cover strata, except for remnants such as the Pennsylvanian rocks seen below Nambe Falls, were stripped from the Sangre de Cristo uplift during and following the Eocene Laramide orogeny. The east side of the Eocene Sangre de Cristo uplift

is marked by steep east-vergent reverse faults and folds that are seen near Las Vegas in the Day 2 roadlog. The west side of the uplift was probably defined by a zone of west-vergent reverse faults coincident with the Neogene Pajarito normal-fault zone along the eastern base of the Jemez Mountains, which are visible on the western skyline (Cather, 1992). Cather (1992) hypothesized that the Laramide Pajarito reverse fault was reactivated as an east-dipping normal fault when Rio Grande rift extension began in the late Oligocene and early Miocene. The Sangre de Cristo block was tilted westward in the hanging wall of these normal faults and Precambrian rocks were partly buried beneath Neogene basin-fill sedimentary strata.

Looking west from the south abutment of the dam provides a scenic view down the Rio Nambe valley, across the badlands eroded in the Tesuque Formation, the Pojoaque Bluffs, and the northern Jemez Mountains and Pajarito Plateau. North of the Jemez Mountains is the eastward draining Rio Chama Valley, extending away to the Colorado Plateau on the northwestern skyline.

- Turn around and retrace route to NM-503. **8.0**
- 17.1 Junction with NM-503.

End of Supplemental Log 2.