Third-day supplemental road log 1

Lewis Land

2006, pp. 97-99. https://doi.org/10.56577/FFC-57.97

in:

Caves and Karst of Southeastern New Mexico, Land, Lewis; Lueth, Virgil W.; Raatz, William; Boston, Penny; Love, David L. [eds.], New Mexico Geological Society 57th Annual Fall Field Conference Guidebook, 344 p. https://doi.org/10.56577/FFC-57

This page is intentionally left blank to maintain order of facing pages.

WASHINGTON RANCH THROUGH SOUTH CARLSBAD AND HAPPY VALLEY, ACROSS TRACY DOME, TO INTERSECTION OF US 285

THIRD-DAY SUPPLEMENTAL ROAD LOG 1

LEWIS LAND

Begin: Washington Ranch Road near tufa dam

Distance: 33.3 miles

One stop

SUMMARY

The third day of the Field Conference begins at the base of Tracy Dome on the northwest side of Carlsbad, at the intersection of Miehls Drive and US 285. This supplemental roadlog provides directions from Washington Ranch and around Carlsbad by way of Happy Valley.

0.0 Assemble along the main Washington Ranch road near the tufa dam across the Black River. Proceed south, up the terrace riser. *0.1*

0.1 Crossing intermediate terrace of the Black River. *0.3*

0.4 Yield sign and gate to Washington Ranch. **Turn left** onto Washington Ranch Road and proceed toward US 62-180. *0.1*

0.5 Rise onto higher terrace of the Black River with well-cemented limestone cobble conglomerate exposed in road cuts. This conglomerate continues east to the junction with US 62-180. *0.3*

0.8 Headquarters complex of Carlsbad Caverns National Park visible on skyline at 9:00, atop the frontal scarp of the Guadalupe Mountains. The scarp consists of the Capitan Reef facies capped by backreef Tansill dolomite. *1.1*

1.9 Junction of Washington Ranch road with US 62-180. Note official historic marker. **Watch for traffic. Turn left** (northeast) onto US 62-180. *0.5*

2.4 Descend into valley of the Black River, passing exposures of conglomeratic well-cemented terrace gravels unconformably overlying Castile Gypsum (Figure S3.1). *0.2*

2.6 MP 11. *0.6*

3.2 Roadcuts expose well-cemented conglomerate and mudstone terrace deposits of the Black River. *0.6*

3.8 Crossing Black River. *3.3*

7.1 Exposures of terrace gravels beyond mouth of Walnut Canyon. *0.1*

7.2 Crossing channel of drainage from Walnut Canyon. Entering outskirts of Whites City, the gateway to Carlsbad Caverns National Park. *0.1*

7.3 Junction to left with NM 7 to "downtown" Whites City. **Stay straight**, and continue northeast on US 62-180. *0.8*

8.1 Apache Canyon Trading post to left (Figure S3.2). As we continue northeast, the Guadalupe Mountains decrease in stature to low-relief hills as the reef complex dips into the subsurface. The escarpment to the left is formed by Tansill Formation grainstones deposited behind the reef. The age-equivalent Capitan reef is lower on the slope and is mostly buried at this location. *3.7*

11.8 Route rounds bend to avoid hills capped by Tansill dolomite to northwest. *0.6*

12.4 Junction with NM 396/CR 720 to right leads to Black River Village and Malaga. **Continue straight.** Tansill Forma-

FIGURE S3.1 - Cemented Quaternary gravels on south side of Black River valley, rotated due to dissolution of underlying Castile gypsum.

tion dolomite exposed to left on northwest side of 62-180. The Capitan Reef is now in the shallow subsurface. A well drilled southeast of the road junction in 2003 intersected a cave in the "Capitan Massive" at 25 m below ground level, as indicated by a 3.5 m bit drop followed by persistent lost circulation problems, and eventual formation of a 5 m diameter sinkhole next to the rig. The operator never recovered circulation and was forced to dry-drill to the intermediate casing point at 127 m.

From this point southwest to the state line, Kelley (1971a) noted on aerial photographs a sharp linear change in vegetation patterns near the base of the escarpment to the left, and mapped a surface fault separating the Delaware Basin from the reef escarpment (Figure 1.1.4). Hayes and Bachman (1979) revisited localities where Kelley had reported surface faults and concluded that the steep dip observed along the Guadalupe Escarpment was unfaulted original sedimentary dip. Adams et al. (1993) suggest that the linear pattern marked by a vegetation change at the base of the slope probably reflects processes of reef front exhumation that have been occurring episodically since early Triassic time. *1.2*

13.6 MP 22. Route cuts east-dipping cuestas of the Culebra dolomite member of the Rustler Formation (upper Ochoan/Lopingian), overlying less resistant Salado siltstone and residual gypsum. *1.0*

14.6 MP 23. Culebra dolomite exposed in roadcuts exhibiting characteristic anhydrite molds caused by leaching of evaporites. Small-scale folding in the roadcut is probably not of tectonic origin but more likely due to subsurface dissolution of underlying evaporite beds (Figures 1.1.5 and 1.1.6). *2.5*

17.1 Junction with CR 408. **Continue straight.** This road provides access to Dark Canyon and the Day 1, Trips 1 and 4 routes north and west of the reef front. Capitan Reef facies and Tansill backreef beds are exposed at the mouth of Dark Canyon. *0.8*

17.9 Roadside park and weigh station to left. Frontier Hills to west contain Rustler dolomite overlying less resistant Rustler redbeds and gypsum and underlying Salado dissolution residue, forming a cuesta dipping southeast into Delaware Basin. *1.7*

19.6 MP 28. Low hills on horizon to west are thin-bedded dolomites and sandstones of the Tansill and Yates Formations immediately behind and overlying the Capitan Reef. The reef is now present in the subsurface as a karstic limestone aquifer that provides drinking water for the city of Carlsbad. *2.0*

21.6 MP 30. Cavern City Air Terminal to left. *2.0*

23.6 Happy's Diner to left (yellow and red sign). **Prepare to turn left.** *0.1*

23.7 **Turn left** (west) onto Hidalgo Rd, next to DOE-Skeen-Whitlock Building—beige and tan building with green roof (Figure S3.3). It will appear that you are turning into their parking lot. *0.3*

24.0 Stop sign. **Turn right** onto Boyd Road. *1.6*

25.6 Stop sign. **Turn left** onto Monterey Road. *0.1*

25.7 Crossing Dark Canyon Arroyo. After crossing, **turn right** onto Boyd Road and ascend terrace of Rocky Arroyo. *0.1*

25.8 Cemented Quaternary gravels in streambed of Rocky Arroyo to right (Figure S3.4). For the next several miles, the route drives across alluvial fill of the Carlsbad segment of the lower Pecos valley. *0.5*

26.3 Santa Catarina cemetery to right. *0.3*

26.6 Carlsbad cemetery to right. Conference attendees are invited to speculate on socioeconomic implications of two cemeteries in the same town, immediately adjacent to each other. *0.6*

27.2 Traffic light. Dominos Pizza to left. **Turn left** onto west Lea St. *0.9*

28.1 Crossing Carlsbad Irrigation District Southern Canal. *0.2*

28.3 Stop sign. Junction with Standpipe Rd/6th St. **Continue straight.** *0.8*

FIGURE S3.2. Apache Canyon Trading Post.

FIGURE S3.3. DOE Skeen-Whitlock Building. Prepare to turn left.

FIGURE S3.4. Cemented Quaternary gravels armoring streambed of Dark Canyon Arroyo, south of Carlsbad.

29.1 Road forks. **Bear right** onto Happy Valley Rd/CR 524. *0.6*

29.7 Entering community of Happy Valley. Pedogenic calcrete in roadcut to right. *0.9*

30.6 **Turn right** onto W. Church St. *0.4*

31.0 Road forks. **Bear left** onto Miehls Dr. and begin ascent of Tracy Dome. Tansill dolomite in arroyo to right.

Tracy Dome, known to local residents as C-Hill, is one of the Carlsbad Folds, and has been interpreted by various workers (e.g., Motts, 1962; Kelley, 1971a) as a biohermal mound superimposed upon the Ocotillo Hills anticline. Ohio Oil Co. drilled a 1,770 m dry hole to the Bone Spring Formation on Tracy Dome in s.34, 21S, 26E. *0.7*

31.7 Trailhead for Ocotillo Nature Trail to right. Scenic overlook of north Carlsbad, Pecos River valley, and the Carlsbad Flume (Figure S3.5). *0.4*

32.1 Living Desert State Park to right. *0.3*

32.4 Bear right and begin descent of Tracy Dome. Yates Formation exposed in walls of arroyos to left and right, capped by Tansill dolomite. *0.4*

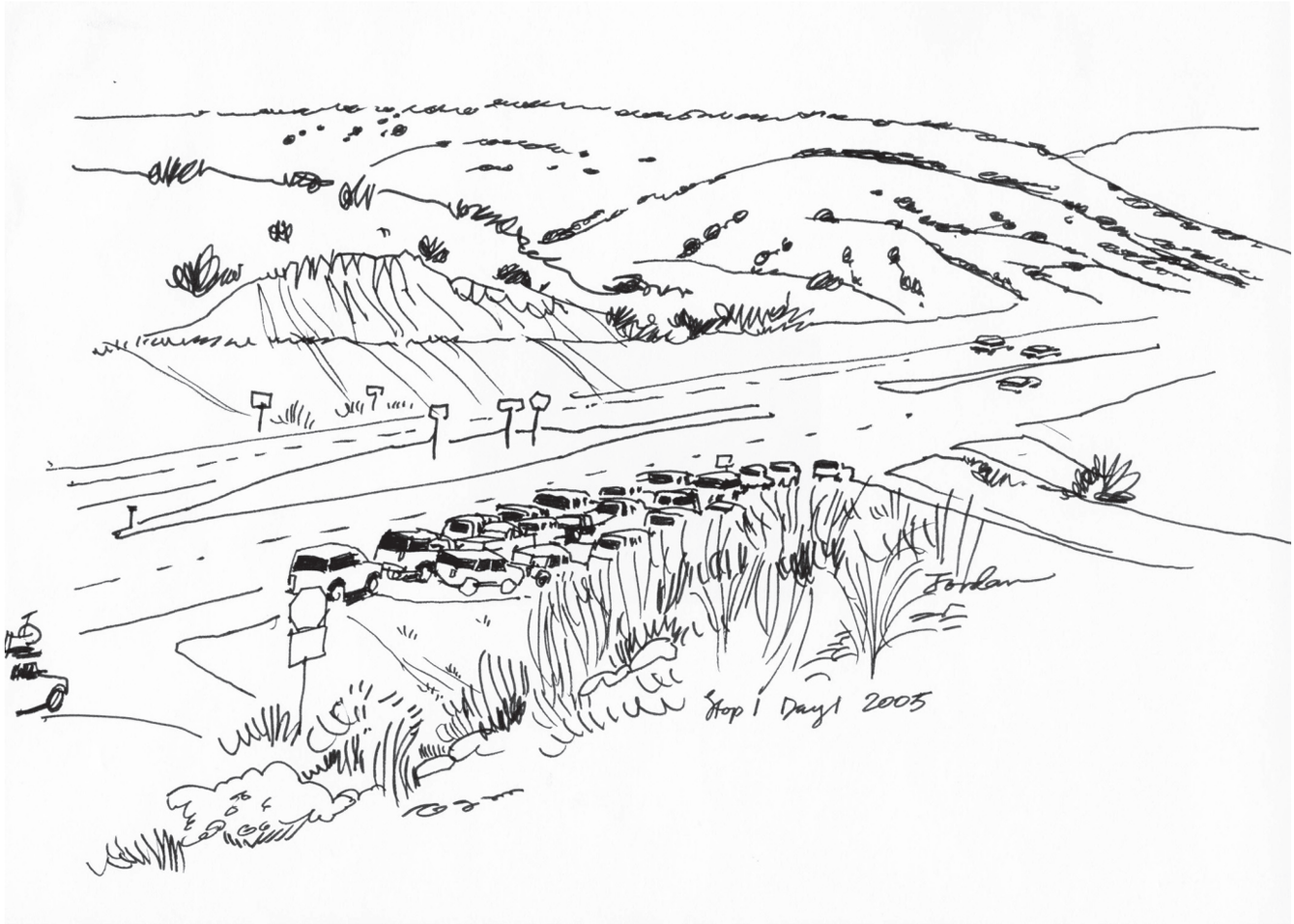
32.8 Yates-Tansill contact in roadcut to left: Upper Yates sand overlain by Tansill dolomite (Figure S3.6). *0.5*

33.3 Stop sign; junction with US 285. Living Desert State Park sign to right. Pecos River straight ahead. Carlsbad flume is visible at ~2:00, a large concrete aqueduct that crosses the Pecos and transports water of the Pecos River from Lake Avalon through the Carlsbad Irrigation District Southern Canal (thus, according to Ripley's Believe It or Not, "the river that crosses itself"). This concrete structure was built in 1903 to replace the original wooden flume that was destroyed by floods. Carlsbad spring, ~200 m downstream from the flume, is one of several springs that discharge into this reach of the Pecos River. Carlsbad spring used to discharge over 7,500 liters/min (~2000 gal/min), but its flow has been substantially reduced over the years due to pumping from the Capitan Reef aquifer, the principal source of drinking water for the City of Carlsbad.

FIGURE S3.5. Overlook of Pecos River valley on north side of Carlsbad. The Carlsbad Flume is visible in the middle distance.

End of Day 3 supplemental road log.
Resume field trip with Day 3 main road log. Set odometers to zero as your vehicle passes stop sign.

FIGURE S3.6. Tansill dolomite overlying upper Yates sand, dipping ~10º on the southeast flank of Tracy Dome.


Jordan
Stop 1 Day 1 2005