

Supplementary Table 2

Field property data for selected Cienega Amarilla and Cottonwood Canyon profiles.

Strat. unit	Soil horizon ^a	Depth (cm)	Sedimentological description and misc. soil traits	Munsell color (dry)	Structure ^b	CaCO ₃ (reaction to HCl) ^c
<i>Profile 11-37 (Cienega Amarilla)</i>						
V	1A	0–14	SILTY SAND; massive	10YR 5/2	1 g	e
	1C1	14–33	SILTY SAND; very thin, horizontal beds (faint);	10YR 6/3	m	e
	1C2	33–52	SANDY MUD; laminated	10YR 6/3	m	es
IV	2ABb1	52–86	MUD; massive	7.5YR 5/2	2 abk	es
	2Bwkb1	86–115	MUD; massive; increasing sand with depth; common to many, soft, <5-mm-dia. carbonate masses	7.5YR 6/2	2 abk	es
	3Ckb1	115–165/175	SILTY SAND to SAND; thickly laminated to very thinly bedded; high-angle cross-beds in small scour fill at base; upper 30 cm appears weakly cemented with groundwater carbonate	7.5YR 7/2	m	es
IIIc	4ABsskyb2	165/175–192	CLAY; massive; many 3–5 mm gypsum crystal masses; few to common slickensides	10YR 5.5/2	3 abk	es
IIIb ₄	4CBky1b2	192–254	CLAY; very thinly bedded (faint); many 5–10 mm dia. gypsum crystal masses; common carbonate filaments; 1-cm-thick layers of dispersed charcoal at 215 cm and 235 cm	7.5YR 7/2	2 abk	es
IIIb ₃	4CBkyoxb2	254–265	CLAY; very thinly bedded (faint); many <3 mm dia. gypsum and carbonate masses and filaments; small oxidation mottles	10YR 6/2 to 5Y 6/2	1 abk	es
	4CBky2b2	265–308	CLAY; very thinly bedded (faint); many <3 mm dia. gypsum and carbonate masses and filaments	10YR 6/2	1 abk	es
IIIb ₂	4ACky1b3	308–330	CLAY; thinly bedded; common <3 mm dia. gypsum and carbonate masses and filaments; common plant macrofossils	10YR 6/1	2 abk	es
	4ACky2b3	330–340	MUD interlaminated with sand and silty sand; many plant macrofossils, esp. at base	10YR 5/1	m	es
	4ACky3b3	340–360	CLAY; thinly bedded; few to common carbonate and gypsum filaments and small masses; common plant macrofossils	10YR 5/1	2 abk	es
	4ABkyb3	360–375	CLAY; massive; many <5 mm dia. gypsum and carbonate masses and filaments; few to common plant macrofossils; oxidized root traces	10YR 5/1	2 abk	es
IIIb ₁	4Bkyb3	375–416	CLAY; massive; many <5 mm dia. gypsum and carbonate masses and filaments	7.5YR 4.5/2	2 abk	es
		416–433	CLAY; massive; many <5 mm dia. gypsum and carbonate masses and filaments	5YR 5/2	2 abk	es
IIIa	5Cb3	433–445	SILTY SAND; laminated	5YR 7/2	m	es
II	6ABkjb4	445–475	CLAY; massive; few to common gypsum and carbonate masses and filaments	7.5YR 5.5/2	2 abk	es
	6Bw1b4	475–534	MUD; massive; few large oxidation mottles	7.5YR 6/2	2 abk	es
	6Bw2b4	534–547	CLAY; massive; oxidized rootlets	5YR 6/2	2 abk	es
	7Cb4	547–583	SILTY SAND; massive	7.5YR 7/2	m	es
	8ABb5	583–613	MUD; massive; oxidized rootlets	7.5YR 5.5/2	2 abk	es
	9C1b5	613–645	SAND; fining upward	7.5YR 7/3	m	es
	9C2b5	645–670	SILTY SAND; very thin to thin beds, interbedded with laminated mud; dispersed charcoal flecks	7.5YR 7/2	m	es
	9Coxb5	670–748	SAND; fining upward; pebble lenses near base; large oxidation mottles	7.5YR 7/3	m	es
	10Bwb6	748–756	MUD; massive; few carbonate filaments	7.5YR 7/2	2 abk	es
	11C1b6	756–795	SAND/SILTY SAND; thin to medium beds; interbedded with laminated mud	7.5YR 7/2	m	es
	11C2b6	795–850	SILTY SAND; massive	7.5YR 7/3	m	es
I	ABb7	850–980+	SILTY CLAY; massive; few slickensides; few carbonate filaments; common oxidized rootlets	7.5YR 5/2	3 abk	es
<i>Profile 11-39 (Cienega Amarilla spring mound)</i>						
IV/V	1Km	0–30	Spongy TUFA, relatively dense	5YR 7/2	m	ev
	1Cox	30–45	Sandy, detrital TUFA; grades laterally into spongy tufa; oxidation mottling; minor amount of organic (plant) material	5YR 7/2	m	ev
IIIc	2ACKb1	45–82	Sandy, detrital TUFA; thinly bedded; some dispersed organics and faint bands of organic-rich sediment	7.5YR 7/2	m	ev
	2Coxk1b1	82–95	Sandy, detrital TUFA with pockets of spongy tufa; very thinly bedded; oxidation mottling	7.5YR 7/2	m	ev

	2Coxk2b1	95–121	Sandy, detrital TUFAs; faint, thin to medium beds; oxidation mottling; locally common plant macrofossils; thin, 2-cm-thick, spongy tufa layer at base	10YR 8/3	m	ev
IIIb	3Akb2	121–165	Powdery TUFAs; faint, thin to very thin beds; organic-rich	10YR 5/2	m	ev
	3C/Akb2	165–215	Sandy, detrital TUFAs; thinly bedded; 2 beds are somewhat darkened with organics, otherwise sparse organics dispersed throughout; common mollusks	10YR 6/3	m	es
	4Kmb2	215–247	Spongy TUFAs	7.5YR 7/2	m	ev
	5C/Akb2	247–262	Sandy, detrital TUFAs; thinly bedded; 2 beds are somewhat darkened with organics; inset into sandy, detrital tufa	10YR 5/2	m	es
	6Kmb2	262–281	Spongy TUFAs; with interbedded fine sand	7.5YR 7/3	m	ev
	7CAkb2	281–301	Sandy, detrital TUFAs with localized areas of spongy tufa; contains an organic-rich layer	10YR 6/3	m	es
	8Kmb2	301–311	Spongy TUFAs	7.5YR 7/3	m	ev
	9Ckb2	311–322	Sandy, detrital TUFAs with common areas of spongy tufa	7.5YR 6/2	m	ev
	9ACkb3	322–365	Sandy, detrital TUFAs; very thinly bedded; variable amounts of organic matter throughout; common areas of spongy tufa including thick lens at base	10YR 5/2	m	es
	9CAkb3	365–405	Sandy, detrital TUFAs interbedded with mud; very thinly bedded; variable amounts of organic matter throughout; increasing sand with depth	7.5YR 5/3	m	es
	10ACkyb4	405–433	SILTY CLAY; thickly laminated (faint); common plant macrofossils, some oxidized; locally common, small gypsum(?) crystal masses; common carbonate small nodules	7.5YR 4.5/2	2 abk	es
	10CAkb4	433–470	SILTY CLAY; thickly laminated (faint); common plant macrofossils, some oxidized; locally common, common carbonate small nodules	5YR 5/2	2 abk	es
IIIa	11Ckb4	470–490	SILTY SAND interbedded with MUD; common plant macrofossils; few to common carbonate filaments	5YR 7/2	m	es
II	12ABwb5	490–507	MUD; common plant macrofossils; common oxidized root traces; common carbonate small soft masses	7.5YR 5.5/2	2 abk	es
	13Coxb5	507–600+	SAND; medium, horizontal beds; fining upward; distinct 1–5 cm dia. oxidation mottles	7.5YR 6/3	m	es
<i>Profile 11-23 (Cottonwood Canyon)</i>						
VI	1C	0–70	SAND; horizontally bedded with lenses of laminated silt, mud, and organic flotsam	7.5YR 6/4	m	es
V	2ABwb1	70–120	MUD; massive; upper part locally scoured.	7.5YR 5/2	3 abk	es
	3C1b1	120–140	MUDDY SAND; horizontally bedded (faint)	7.5YR 6/3	m	e
	4C2b1	140–160	MUD; laminated; with interlaminated fine sand	7.5YR 6/3	m	es
	3C3b1	140–165	SAND; massive; broad lens that pinches out to north and south of profile; occasional pebbles at base	2.5YR 6/3	m	es
	IIIc	5Bwb2	165–180	SANDY MUD; massive	2.5YR 6/2	1–2 abk/sbk
	6Cb2	180–190/200	Sand; massive	5YR 6/3	m	es
	7ABwb3	190–200	SANDY MUD; massive; discontinuous soil horizon	7.5YR 6/3	1 sbk	es
	7Cb3	200–210	MUD and fine SAND; laminated, locally massive	7.5YR 7/3	m	es
	7ABb4	210–220	MUDDY SAND; massive	7.5YR 6/2	1 sbk	es
	7CBb4	220–230	MUDDY SAND; massive	7.5YR 6/2	m	es
IIIb	7Cæ ^d	230–250	SILTY SAND; feature cleanout or archaeological midden	7.5YR 5/2	m	es
	7Bwb5	250–270	MUDDY SAND; massive; few filaments of pedogenic carbonate	7.5YR 6/3	1 sbk	es
IIIa	8Cb5	270–310/334	SAND; with occasional pebble lenses; massive	7.5YR 6/3	m	es
I	9Btjkb6	310/334–500+	MUDDY SAND; massive; common filaments of pedogenic carbonate; few to common thin pedogenic clay ped coatings and grain bridges; relatively dense	5YR 5/3	2 sbk	es

^a Notations from Soil Survey Staff (1993) and Birkeland (1999:Table 1.1).

^b Grade: 1 = weak, 2 = moderate, 3 = strong. Shape: abk = angular blocky, g = granular, m = massive, pl = platy, sg = single grain, weg = wedge.

^c Reaction to dilute HCl: n = noneffervescent, e = weakly effervescent, es = strongly effervescent, ev = violently effervescent.

^d æ = archaeological midden deposits.

References:

Birkeland, P.W., 1999. Soils and Geomorphology. Oxford Univ. Press, New York.

Soil Survey Division Staff, 1993. Soil Survey Manual. 2nd ed. USDA Handbook No. 18. U.S. Government Printing Office, Washington, D.C.