

San Francisco Dune Sheet, California

UTM Sector and Datum (xx/yr), Northing, Easting, Estimated Error (EPE +-m), DEM Altitude (Alt m MSL).

Exposure Type: Active (AC), Trench (TR), Auger (AU), Road Cut (RC), Creek Cut (CC), Sea Cliff (SC), Slope (SL).

Units: Age: Tertiary (T), Pleistocene (P), Holocene (H), Wave-cut Platform (W); Parent Material; Soil Horizon

Parent Material: Eolian Dune (D), Loess (L), Colluvium (U), Peat (P), Alluvial/Fluvial (V), Lagoonal/Estuary (N),

Beach Shoreface (S), Basal Conglomerate (M).

Note: Loess (L) is designated where it overlies bedrock, colluvium, or pre-existing Bw/Bt horizons.

Soil Horizon: Organic (A), Leached (E), Accumulation (B), Fe+3 Accumulation (Bw),

Incipient Clay Accumulation (Btj), Clay Accumulation (Bt), Humate Accumulation (Bh),

Calcrete (Bk), Silcrete (Bq), Reduced Glade Layer (Bg), Subsoil Calcrete (K),

Dune Parent (C), Oxidized Parent (Cox).

Subsurface depth (cm); Dominant Grain Size: Silt, Sand, Pebbles, Cobbles (default is sand)

Sand sizes (Coarse U/L, Medium U/L, Fine U/L, VeryFine U/L)

Bedding: Cross Beds (XB,dipxx), Planar Beds (PB), Fluidization (FL), Heavy Mineral Laminae (HM)

Munsell Maximum Color (field condition: moist)

Penetrometer: (P. kg/square cm) unconfined compressive strength.

Structure: loose, very weak blocky, weak blocky, strong blocky, columnar/prismatic.

Diagenesis: Fe-ortstein, Fe-humate, allophane, gibbsite, calcrete, silcrete

Dune Sheet	Zone/NAD	UTM-N	UTM-E	EPE (m)	Alt (m)	Date	Exposure
SANF1	10S/83	4185120	555840		10	53	2/9/03 RC

Site Notes: This site is about halfway to the top of Yerba Buena Island, on the east side, at the officers quarters.

Units	Depth cm	Grain Size	Bedding	Color	P.kg/cm ²	Structure	Diagenesis
Disturbed	0-50						
HDCox	50-200	FU		2.5y7/4		0.5 VeryWeak B.	
HDBw	200-215	FU				1 Weak Blocky	
HDCox	215-250	FU				0.5 Very Weak B.	
HDBw	250-275	FU		10yr5/6		1.5 Weak Bocky	
HDCox	275-350	FU				1 Very Weak B.	

Dune Sheet	Zone/NAD	UTM-N	UTM-E	EPE (m)	Alt (m)	Date	Exposure
SANF2	10S/1927	4184240	563660		9	11	AU

Site Notes: Merrit sand and topsoil profile at NE end of Pardee House lot (TL Sample OAK taken at 230 cm depth).

Pardee home dates from 1800's so this site represents a rare undisturbed section in the downtown Oakland area.

Units	Depth cm	Grain Size	Bedding	Color	P.kg/cm ²	Structure	Diagenesis
Disturbed	0-20						
PDBw	20-40	Size					
PDBtj	40-60					2.75 Weak Blocky	
PDCox	60-150	Size					
PDBtj	150-160					Weak Blocky	
PDCox	160-175	FU				Very Weak B.	
PDE	175-205						
PDBtj	205-220					Weak Blocky	
PDCox	220-230	FU				Very Weak B.	

Dune Sheet	Zone/NAD	UTM-N	UTM-E	EPE (m)	Alt (m)	Date	Exposure
SANF3	10S/83	4183500	545700		5	31	2/15/03 SC

Site Notes: This site is located at the NE end of Baker Beach.

TL sample Baker collected at (830-850 cm). Dune deposits below 14 m are too hard (cemented) to auger by hand.

Units	Depth cm	Grain Size	Bedding	Color	P.kg/cm ²	Structure	Diagenesis
HDA	0-3						
HDC	3-55	FU		10YR6/4		0.5 Loose	
HDBw	55-68			7.5YR/4/6		1 Very Weak B.	
HDCox	68-210	FU				0.5 Very Weak B.	

HDBw	210-235		7.5YR5/4	1.5	Very Weak B.
HDC	235-335			0.5	
HDBw	335-375	FU	7.5YR5/8	1.5	Very Weak B.
HDCox	375-410			0.5	
HDA	410-415			0.5	
HDBw	415-420			1	
HDCox	420-500			0.5	
HDBw	500-540	FU	7.5YR4/6	2.25	Weak Blocky
HDCox	540-730				
LBw	730-750	Silty			
PD/UBtj	750-780		7.5YR5/6	4	Weak Blocky
PDBw	780-830	FU	10YR5/6		
PDCox	830-1370				
PDBw	1370-1410			4.5	Strong Blocky
PDCox	1410-1650			4.5	
PDBw	1650-1700			4.5	
PDCox	1700-2000			4.5	gibbsite
Cover	2000-2500				

Dune Sheet	Zone/NAD	UTM-N	UTM-E	EPE (m)	Alt (m)	Date	Exposure
SANF4	10S/1927	4180220	547430	10	81	2/15/03	AU
Site Notes: East of museum, in bottom of interdune valley (TL Sample GCPark 475 and 650 cm depths). Plaster artifact(s) at 200-250 cm might represent brief period of habitation (1906 earthquake/fire?).							
Units	Depth cm	Grain Size	Bedding	Color	P.kg/cm ²	Structure	Diagenesis
Disturbed	0-300						
HDCox	300-540						
PDBtj	540-560						
PDCox	560-700	ML					

Dune Sheet	Zone/NAD	UTM-N	UTM-E	EPE (m)	Alt (m)	Date	Exposure
SANF5	10S/1927	4180106	543300	6	10	2/15/03	AU
Site Notes: Located at NW corner of soccer field, just south of northern Windmill TL Sample 400 cm).							
Units	Depth cm	Grain Size	Bedding	Color	P.kg/cm ²	Structure	Diagenesis
HDA	0-20						
HDBw	20-40	ML				1.25	Loose
HDCox	40-280	ML					
HDC	280-420						

Dune Sheet	Zone/NAD	UTM-N	UTM-E	EPE (m)	Alt (m)	Date	Exposure
SANF6	10S/83	4178930	546520	6	181	2/15/03	SL
Site Notes: This measured section site is located on the north side of Grandview Hill (near chert outcrop).							
Units	Depth cm	Grain Size	Bedding	Color	P.kg/cm ²	Structure	Diagenesis
Disturbed	0-20						
HDA	20-35					0.5	Loose
HDBw	35-55			7.5YR5/6		1	Very Weak B.
HDCox	55-115			10YR6/4		0.5	Loose
HDA	115-120					0.5	
HDC	120-150						

Dune Sheet	Zone/NAD	UTM-N	UTM-E	EPE (m)	Alt (m)	Date	Exposure
SANF7	10S/83	4177860	546750	9	191	2/15/03	SL
Site Notes: This site is located on the west side of Hawk Hill, 6 blocks east of 19th Ave.							
Units	Depth cm	Grain Size	Bedding	Color	P.kg/cm ²	Structure	Diagenesis
HDA	0-5						
HDBw	5-30	FU		7.5YR5/6		0.5	Loose

HDCox 30-50 FU 0.5 Loose

Dune Sheet	Zone/NAD	UTM-N	UTM-E	EPE (m)	Alt (m)	Date	Exposure
SANF8	10S/1927	4175310	543580	7	23		SC

Site Notes: Site is south of parking lot, and North Fort Funston Merced section.
 Holocene dunes 0-200 cm depth overlie Colma dune strata 200-400 cm depth (Unit Z of Clifton and Hunter, 1999).
 The Colma beds (PDBh, PDCox, and PDBw) are preserved as valley insets within uppermost Merced units.
 The upper Colma beds show substantial truncation by deflation. Granule/pebble laminae are deflation/runoff lags.
 An ash layer was sampled by Clifton and Hunter (1999) in the exposed Colma section (about 3 m depth).
 The ash layer (Colma-1) was submitted by Hunter and Clifton (2000) to the USGS tephrachronology lab.
 Trace element analysis of the sample (T419-7) correlates to a Newberry Volcanic eruption (55-75 ka).
 The correlative eruptive units were identified as Olema ash bed (Sarna-Wojcicki and others, 1988),
 and Paulina Lakes tephra (S. Kuhn, PhD Thesis, WSU), Sarna-Wojcicki correspondence to Hunter 8/28/2000.
 The shoreface deposits (PS 450-1000 cm) correspond to the uppermost Unit Y of the Merced Fm.

Units	Depth cm	Grain Size	Bedding	Color	P.kg/cm ²	Structure	Diagenesis
HD	0-200	ML				0.5 Loose	
PDBh	200-250	MU	Truncated	7.5yr4/2		1.25 Very Weak B.	
PDCox	250-400	CL				1	
PDBw	400-450	ML	Truncated	7.5yr4/6		3.25 Very Weak B.	
PSCox	450-600	ML				2.75	
PSC	600-1000	CL				2.75	

Dune Sheet	Zone/NAD	UTM-N	UTM-E	EPE (m)	Alt (m)	Date	Exposure
SANF9	10S/83	4162380	544150	7	17	2/15/03	SC

Site Notes: This site is on the northside of Rockaway Hill, at the south end of Rockaway Beach.
 These perched dunes are isolated from the dune ramp (truncated) that once supplied sand to the terrace top.

Units	Depth cm	Grain Size	Bedding	Color	P.kg/cm ²	Structure	Diagenesis
HDA	0-5			10YR3/3		0.5 Loose	
HDBw	5-10	Truncated		10YR5/4		0.5 Loose	
HDCox	10-50			2.5Y5/4		0.5 Loose	
PUA	50-97			5YR3/1		4.5 Strong Blocky	
PUBw	97-167			10YR5/4		4.5 Strong Blocky	
PUC	167-250			2.5Y6/4		4.5 Weak Blocky	

Dune Sheet	Zone/NAD	UTM-N	UTM-E	EPE (m)	Alt (m)	Date	Exposure
SANF10	10S/83	4162380	544120	6	26	2/15/03	SL

Site Notes: This site is about halfway up the north side of Rockaway Hill.

Units	Depth cm	Grain Size	Bedding	Color	P.kg/cm ²	Structure	Diagenesis
HDA	0-5						
HDBw	10-May			10YR5/6		0.5 Loose	
HDCox	10-120	FU		10YR6/6		0.5 Loose	
HDBw	120-135			7.5YR6/6		1 Very Weak B.	
HDCox	135-160					1 Very Weak B.	
PUA	160-180					Weak Blocky	
PUBw	180-200					4 Strong Blocky	

