UNITED STATES DEPARTMENT OF THE INTERIOR
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DESCRIPTIONS OF DART CORE SAMPLES R/V SAMUEL P. LEE CRUISE L2-78-SC, MAY 1978 CALIFORNIA CONTINENTAL BORDERLAND

By

J. G. Vedder, R. E. Arnal, David Bukry, J. A. Barron, and F. Lee-Wong

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This report is preliminary and has not been edited or reviewed for conformity with U.S. Geological Survey standards and nomenclature.

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As part of the U.S. Geological Survey resource appraisal and environmental studies on the Outer Continental Shelf (OCS) of southern California, the Research Vessel SAMUEL P. LEE completed a 10-day seafloor sampling cruise in May, 1978. Samples were taken entirely by dart corers (drop corers). Navigation was done using an integrated Satellite-Loran C-Doppler Sonar system supported by Mini-ranger and shipboard radar. At some sites, recorded depths (uncorrected for sound velocity variations in seawater) do not conform to bathymetric contours on published maps because of navigation inaccuracies on pre-1940 hydrographic surveys.

Most of the described samples are from six general areas: 1) Santa Cruz-Catalina Ridge and Crespi and Emery Knolls, 2) eastern Blake Knolls, 3) Cortes Bank and unnamed ridges south of it, 4) Garrett Ridge, Hancock Bank, and southeastern Patton Ridge, 5) saddle between Santa Cruz and San Nicolas Basins, and 6) Trask Knoll and northern Santa Rosa-Cortes Ridge (Fig. 1).

These descriptions supplement those published in other borderland reports (Vedder and others, 1974, 1976a, 1976b, and 1977). Unlike the earlier reports, Quaternary samples are included, as these cores may contain material derived from underlying bedrock or adjacent seafloor outcrops. Rock names are based chiefly upon examination of bulk and disaggregated samples under low-magnification binocular microscope. Selected cores of coarse clastic, volcanic, and metamorphic rocks were sectioned and studied petrographically. The thin sections are designated by T numbers in the last column of the table. Rock colors

are coded after Goddard and others (1948) and apply to dried samples. Splits for paleontologic study were taken from the bottom 5 cm of the cores except where noted otherwise.

R. E. Arnal identified the foraminifers; his zonation and age correlations of the Miocene and Plicoene foraminifers are shown in Figure 2 and follow the usage of Kleinpell (1938) and Natland (1952). David Bukry identified the coccoliths and silicoflagellates and used the zonation shown in Figure 3. J. A. Barron identified the diatoms, and used his zonation (Barron, in press), which is shown in part in Figure 4. J. G. Vedder identified the Quaternary mollusks. Queried Quaternary ages are based upon sediment composition, lack of cementation, color, and degree of coherence of the core rather than on contained fossils. Hyphens in the Age/stage/zone column of the table signify unfossiliferous samples or those devoid of age-diagnostic species. In general, cores in which zonation is based upon two or more kinds of organism, calcareous nannofossil determinations are listed first, followed by foraminiferan, diatom, and silicoflagellate determinations.

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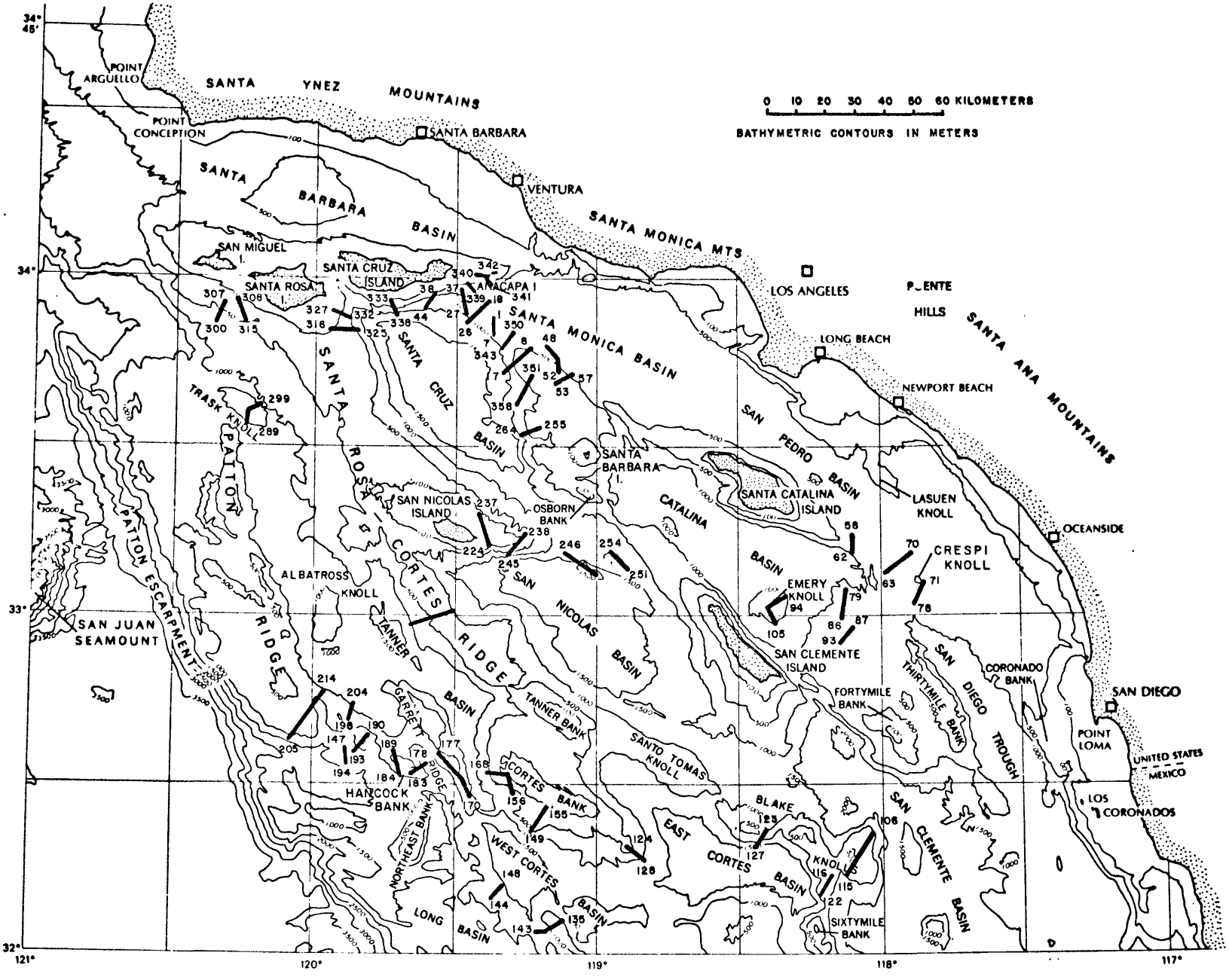

Figure 1. Map of the northern part of the California Continental Borderland showing approximate location of sample track lines for cruise L2-78-SC. Sample-number sequences are indicated at the end of the track lines.

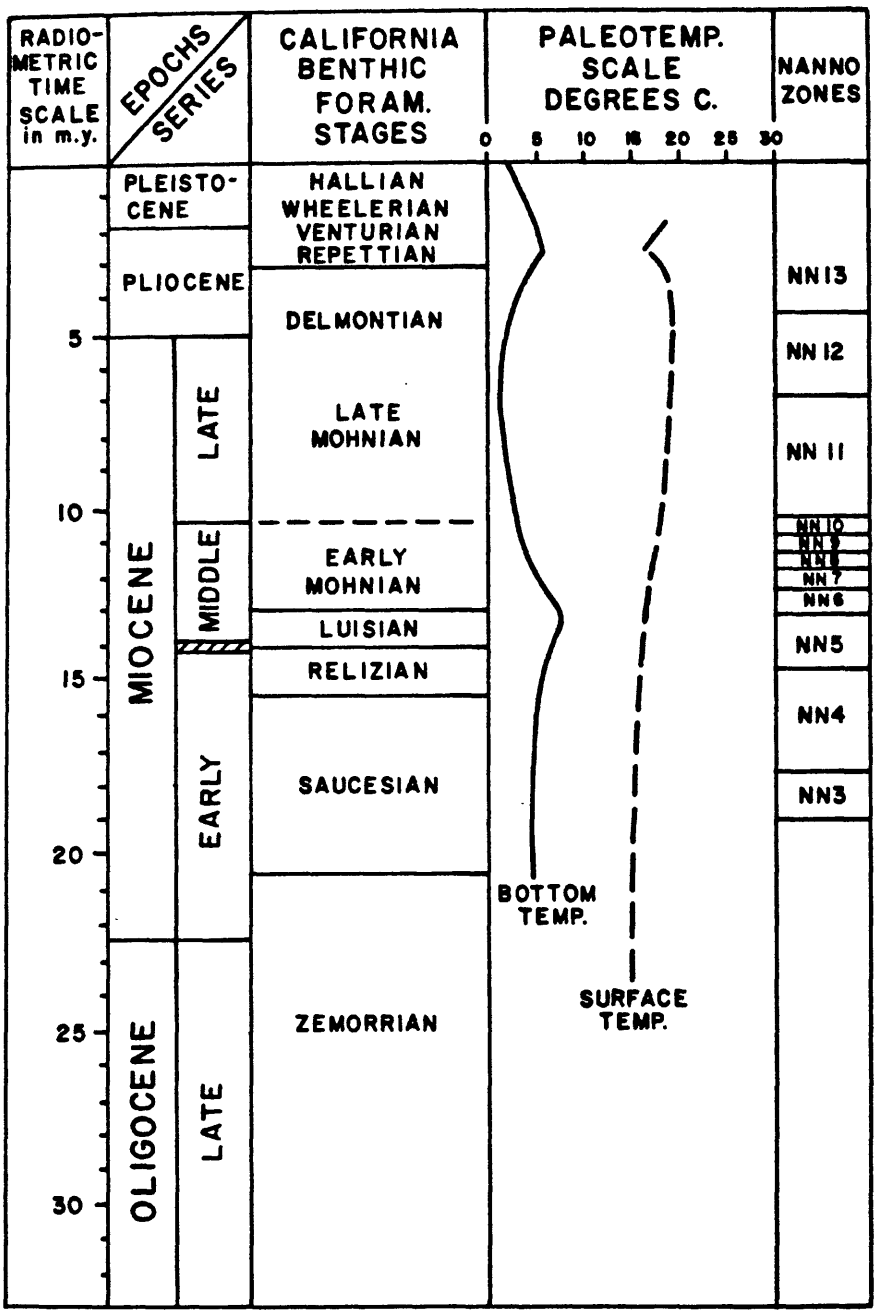

Figure 2. Benthic foraminiferal stages and correlations (Arnal, 1976) used for cruise L2-78-SC.

AGE		ZONE	SUBZONE	ZONE		ZONE
Quaternary		*Emiliania huxleyi*		--		--
		Gephyrocapsa oceanica	*Ceratolithus cristatus*			
			Emiliania ovata			
		Crenalithus doronicoides	*Gephyrocapsa caribbeanica*			
			Emiliania annula			
Pliocene	late	*Discoaster brouweri*	*Cyclococcolithina macintyrei*			*Distephanus speculum*
			Discoaster pentaradiatus			
			Discoaster surculus			
			Discoaster tamalis			
	early	*Reticulofenestra pseudoumbilica*	*Discoaster asymmetricus*			
			Sphenolithus neoabies			
		Amaurolithus tricorniculatus	*Ceratolithus rugosus*			
			Ceratolithus acutus			
			Triquetrorhabdulus rugosus			
Miocene	late	*Discoaster quinqueramus*	*Amaurolithus primus*			
			Discoaster berggrenii			*Distephanus pseudofibula*
		Discoaster neohamatus	*Discoaster neorectus*	*Discoaster variabilis*	upper	
			Discoaster bellus			
	middle	*Discoaster hamatus*	*Catinaster calyculus*		lower	--
			Helicosphaera carteri			
		Catinaster coalitus				
		Discoaster exilis	*Discoaster kugleri*			
			Coccolithus miopelagicus			
		Sphenolithus heteromorphus		--		*Corbisema triacantha*
		Helicosphaera ampliaperta				
	early	*Sphenolithus belemnos*				
		Triquetrorhabdulus carinatus	*Discoaster druggii*			
			Discoaster deflandrei			
			Cyclicargolithus abisectus			
Oligocene	late	*Sphenolithus ciperoensis*	*Dictyococcites bisectus*			--
			Cyclicargolithus floridanus			
		Sphenolithus distentus				
	early	*Sphenolithus predistentus*				
		Helicosphaera reticulata	*Reticulofenestra hillae*			
			Coccolithus formosus			
			Coccolithus subdistichus			

Figure 3. Zonation of coccoliths and silicoflagellates used for cruise L2-78-SC (Bukry 1973a, b; 1975).

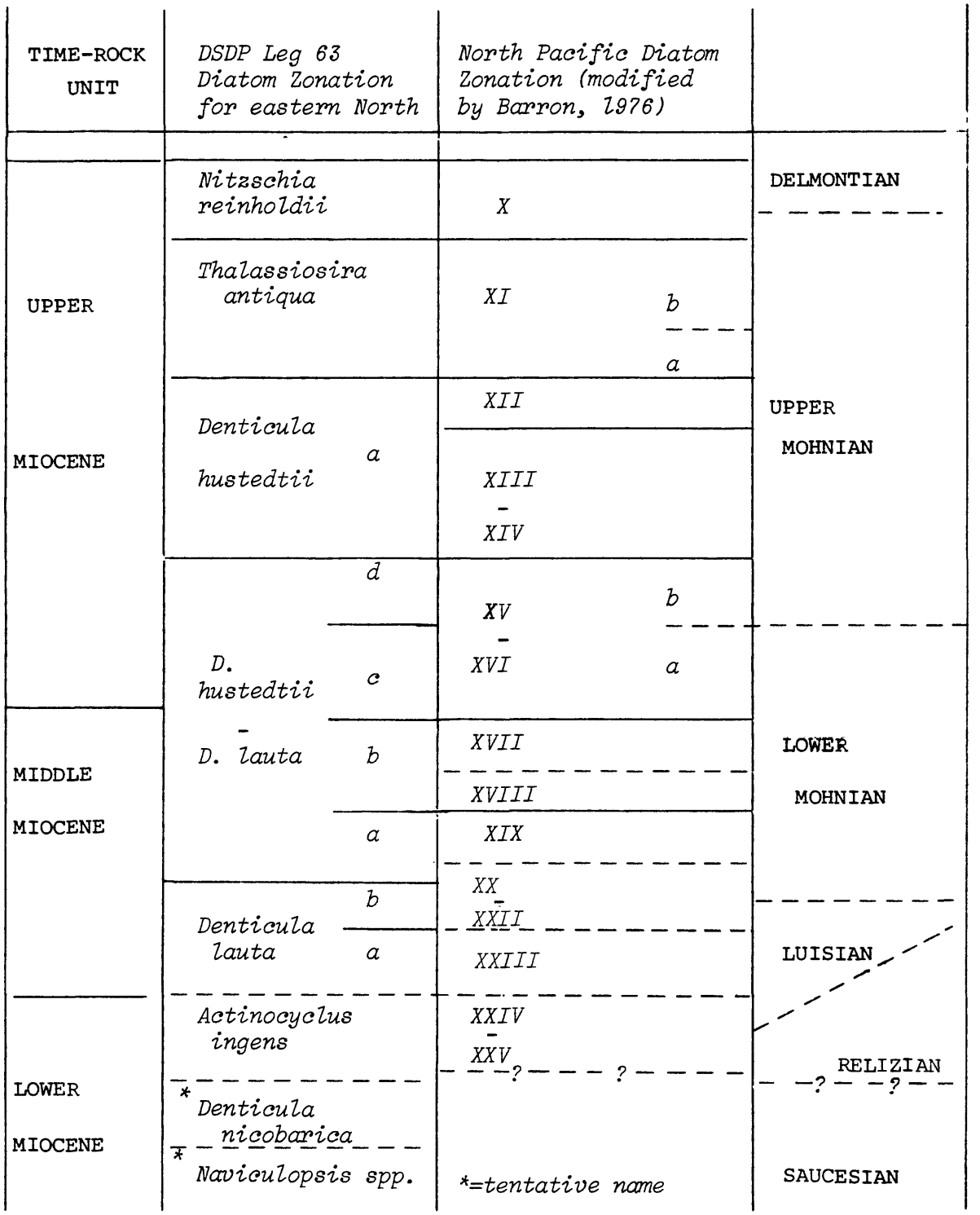

Figure 4. Zonation of diatoms used for cruise L2-78-SC (Barron, in press).

TABLE

N Lat Lambert X	W. Long Lambert Y	Uncorrected depth (meters)	Description	Age, Stage or Zone	Sample Number
33°53.1′ 1049130	119°23.0′ 639510	743	Sandstone, (lithic wacke) fine to very coarse-grained, pebbly, tuffaceous; includes abundant angular to rounded clasts of andesitic and basaltic rocks, glaucophane and quartz schist, pumice; poorly-sorted silty clay matrix. 5GY 7/2 to 5B 7/1; massive, similar to rock types in lower part of Blanca Formation of Weaver and others (1969).	--	1 T 940
33°52.4′ 1049010	119°23.0′ 635260	663	Sandstone, (lithic wacke), fine to very coarse grained, conglomeratic, tuffaceous; includes subangular to rounded clasts of andesitic rocks as large as 2.4 cm and pumice and rare amphibolite and hornblende schist fragments; 5 GY 7/2 to 10 GY7/2; massive; similar to rock types in the Blanca Formation of Weaver and others (1969)	--	2 T 941
33°52.0′ 1048930	119°23.0′ 632840	670	Sandstone, fine to very coarse grained, pebbly, tuffaceous; poorly sorted; includes angular to subangular clasts of dacitic (?) rocks as large as 1.5 cm; 5Y6/4 to 5Y8/1; massive; similar to rock types in the Blanca Formation of Weaver and others (1969).	--	3
33°51.4′ 1048820	119°23.0′ 629200	700	Silt to coarse grained sand, glauconitic; contains rounded to subangular clasts of volcaniclastic and dacitic(?) rocks as large as 4mm; 5Y411; probably locally derived from rocks similar to the Blanca Formation of Weaver and others (1969).	--	4

33°50.5′ 1049670	119°22.8′ 623720	808	Mud, sparsely glauconitic; 5Y4/1; contains probable volcanic rock fragments, subangular; possibly locally derived.	--	6
33°50.0′ 1050090	119°22.7′ 620670	840	Claystone, silty, laminated; 5Y2/1 and 5Y5/1; Lome laminae tuffaceous; low density.	Luisian foraminifers; subzone b, Denticula lauta	7
33°48.6′ 1088800	119°15.0′ 611030	850+	Silt, clayey to sandy, sparsely glauconitic, micaceous; 5Y5/2; contains sparse subangular lithic fragments.	Quaternary (?)	8
33°48.1′ 1086180	119°15.5′ 608080	550	Mud, sandy, glauconitic, foraminiferal; contains abundant subangular to subrounded lithic fragments and mineral grains probably locally derived from volcanic or volcaniclastic rocks.	Quaternary (?)	9
33°45.7′ 1073610	119°17.9′ 593880	450	Sand, silty, calcareous; 5Y8/4 to 5Y6/4; contains abundant subrounded light and dark volcanic and volcaniclastic(?) fragments; probably locally derived.	--	13
33°44.6′ 1070880	119°18.4′ 587290	485	Sandstone (lithic wacke), fine to coarse grained, angular to subrounded, friable, volcaniclastic(?); 5Y5/1; large clasts (3-5 mm) include basalt, quartz-mica schist, and siltstone, probably locally derived.	--	14 T942
33°45.2′ 1067950	119°19.0′ 591010	700	Silt, clayey to sandy, glauconitic (pelletal), foraminiferal; 5Y5/2; sparse subangular lithic fragments of volcanic rocks.	Quaternary(?)	15
33°44.8′ 1064840	119°19.6′ 588680	820	Mudstone, micaceous, clayey, 5GY6/1; massive; low density.	Late Pliocene to Holocene (possibly Venturian) foraminifers	16

33°44.3′ 1062220	119°20.1′ 585720	1023	Mudstone, clayey; 5GY6/1; massive; low density	Quaternary coccoliths ;contains reworked Eocene coccoliths and Miocene diatoms; late Pliocene to Holocene foraminifers	17
33°55.5′ 1045530	119°23.8′ 654180	610	Siltstone, clayey, micaceous; 5GY6/1; massive; low density.	Quaternary coccoliths; late Pliocene to Holocene foraminifers	18
33°53.3′ 1041960	119°24.5′ 653070	480	Siltstone, clayey, micaceous, slightly tuffaceous; 5Y5/1; faintly laminated; fractured, low density.	Middle Miocene to middle Pliocene coccoliths Mohnian foraminifers.	19
33°55.0′ 1040380	119°24.8′ 651300	480	Mudstone, sandy, glauconitic; contains angular to subrounded dark volcanic(?) rock fragments.	--	20
33°54.6′ 1038040	119°25.2′ 648940	660	Sand, silty, glauconitic, contains pebbles of phosphorite and angular fragments of vesicular andesite(?) as large as 3 cm.	Quaternary?	21
33°54.1′ 1035160	119°25.8′ 646000	635	Sand, glauconitic, phosphoritic, contains abundant angular to round pebbles of greenish-gray schist (1.5cm) and volcanic rocks (2cm)	--	22
33°54.0 1031600	119°26.5′ 645500	580	Sand, silty, very fine to medium grained, glauconitic, contains abundant angular to subrounded lithic fragments and mineral grains probably derived from volcanic rocks.	Quaternary(?)	23
33°53.9′ 1029570	119°26.9′ 644950	580	Sand, silty, very fine to medium grained glauconitic, foraminiferal; sparse lithic fragments and mineral grains probably derived from volcanic or volcaniclastic rocks.	Late Pliocene to Holocene foraminifers.	24

33°53.4′ 1026940	119°27.4′ 642000	755	Siltstone, clayey, micaceous, tuffaceous (?); 5GY6/1; massive; low density.	Quaternary and rare reworked Eocene coccoliths; late Pliocene to Holocene (possibly Venturian) foramin-′ ifers	25
33°52.9′ 1024830	119°27.8′ 639030	1025	Siltstone, clayey, micaceous; 5GY 6/1; massive; minute mottling in part; low density	Quaternary coccoliths; late Pliocene to Holocene (possibly Venturian) foraminifers	26
33°53.6′ 1024450	119°27.9′ 643290	833	Siltstone, clayey, phosphoritic; 5Y8/1 and 5Y6/1; laminated; sheared; low density	Middle Miocene coccoliths and diatoms; Luisian foraminifers	27
33°54.2′ 1023590	119°28.1′ 646660	703	Siltstone, clayey, glauconitic, micaceous; 5GY 6/1; massive, low density	Late Pliocene to Holocene foraminifers	28
33°54.7′ 1023140	119°28.2′ 650010	575	Siltstone, clayey, 5Y8/1 and 5Y6/1; indistinctly laminated; low density; crystal tuff lamina (1mm) 30 cm from bottom	Sphenolithus heteromorphus; Relizian foraminifers; middle Miocene diatoms	29
33°54.9′ 1023110	119°28.2′ 651510	390	Mud, foraminiferal, sparsely glauconitic; 5Y6/1; massive	Late Pliocene to Holocene foraminifers	30
33°55.4′ 1022770	119°28.3′ 654260	315	Altered volcanic or volcaniclastic rock, weathered fragments; 5YR4/4 to 5R6/2	--	31
33°55.8′ 1022840	119°28.3′ 656690	460	Siltstone, clayey, calcareous; 5Y8/1; embedded in glauconitic sandy mud containing volcanic(?) rock detritus; 10YR5/4	--	32

33°56.3 1021920	119°28.5; 659750	580	Sand, silty, glauconitic, phosphoritic, foraminiferal; 5Y5/2; sparse rounded fragments of volcanic rocks	Quaternary(?)	33
33°56.8′ 1021010	119°28.7′ 662820	520	Silt, clayey to sandy, glauconitic, foraminiferal; 5Y5/2; massive	Quaternary(?)	34
33°57.3′ 1020600	119°28.8′ 665860	365	Sand, silty glauconitic, foraminiferal; 5Y5/2; sparse mineral grains and rare lithic fragments	Quaternary(?)	35
33°57.8′ 1020180	119°28.9′ 668910	128	Mudstone, sandy, tuffaceous, probably weathered volcaniclastic rock; 10YR5/4; includes light-colored volcanic grains; may be equivalent to Blanca Formation of Weaver and others (1969)	--	36
33°58.1′ 1019090	119°29.1 670790	255	Sand, glauconitic, foraminiferal; contains rounded fragments of grayish-green schist and tuffaceous sandstone as large as 0.5 cm; possibly derived from Blanca Formation of Weaver and others (1969)	Quaternary(?)	37
33°57.8′ 994410	119°34.0′ 66942	150	Sand, calcareous, clayey; 5Y8/1; contains shell fragments and weathered volcaniclastic (?) material possibly derived from the Blanca Formation of Weaver and others (1969)	Quaternary mollusks	38
33°57.2′ 991780	119°34.5′ 666160	380	Siltstone, sandy, calcareous, tuffaceous(?) 5R6/2 to 5RP6/2; possibly weathered fine-grained equivalent of Weaver and others′ (1969) Blanca Formation	--	39
33°56.6′ 988130	119°35.2′ 662630	580	Sand, foraminiferal, lithic; abundant round to angular fragments of grayish-green schist, dacite(?), vitric tuff, and limy siltstone as large as 2.7 cm; shallow-water mollusks indicate downslope transport (slump?) of material presumably derived from the Monterey Shale and the Blanca Formation of Weaver and others (1969)	Quaternary mollusks	40

33°56.1′ 986510	119°35.5′ 659650	720	Sand, silty, calcareous; 5GY6/1; contains abundant shell fragments and common granules and pebbles of dacite(?), diorite(?), limy siltstone, laminated shale, and schist as large as 1.8cm; shallow-water mollusks indicate downslope transport	Quaternary mollusks	41
33°55.6′ 984900	119°35.8′ 656670	810	Siltstone, clayey, micaceous; 5Y6/1; streaked and mottled; mixed with foraminiferal sandy silt; 5Y5/2	Quaternary coccoliths; contains reworked Miocene/Pliocene silicoflagellates and diatoms; late Pliocene to Holocene foraminifers	42
33°55.0′ 983270	119°36.1′ 653080	860	Sand, very fine to fine grained, clayey, micaceous, foraminiferal, sparsely glauconitic; contains sparse volcanic(?) detritu; 5Y6/2; streaked and mottled in part	Late Pliocene to Holocene foraminifers	43
33°54.6′ 982690	119°36.2′ 650670	960	Siltstone, sandy, micaceous; 5GY6/2; sparse mollusk shell fragments; massive	Quaternary coccoliths; late Pliocene to Holocene foraminifers	44
33°47.1′ 1099170	119°12,9′ 601630	760	Siltstone, clayey, micaceous; 5Y6/1; massive, low density	Quaternary coccoliths; contains reworked Miocene to Pliocene diatoms; late Pliocene (probably Venturian) and possibly reworked Mohnian foraminifers	45

33°46.0 1106070	119°11.5′ 594770	500	Sand, pebbly, silty, poorly sorted; 5Y5/2; abundant subrounded to angular clasts of altered porphyritic andesite, albitized basalt; dacite(?), quartzite, minor amounts of mica schist, talc(?) schist, and amphibolite(?); andesitic rocks constitute about 50 percent of clasts larger than 3 mm; displaced shallow-water mollusks, echinoids, and bryozoans indicate downslope transport	Quaternary mollusks	46 T943A T943B
33°45.3′ 1117340	119°09.3′ 590210	735	Siltstone, clayey, micaceous; 5GY6/1; contains rare subrounded lithic fragments, massive; low density	Late Pliocene to Holocene foraminifers	48
33°42.6′ 1130820	119°06.5′ 573450	405	Sand, fine grained, glauconitic, foraminiferal; 5Y5/2; subrounded to subangular lithic fragments, chiefly volcanic rocks	Pleistocene foraminifers	56
33°42.8′ 1135410	119°05.6′ 574530	565	Sand, fine-grained, silty, foraminiferal, micaceous; 5Y6/2; sparse subangular to subrounded lithic fragments of volcanic(?) and metamorphic rocks as large as 2mm	Pliocene, (possibly Venturian) foraminifers	57
33°11.3′ 1434030	118°06.0′ 376440	610	Claystone, silty, micaceous; 5Y6/1	Late Pliocene to Holocene foraminifers	59
33°11.8′ 1433070	118°06.2′ 379800	730	Volcanic rock fragments, weathered; 5YR4/4; probably represent andesitic(?) flows or possibly volcaniclastic sandstone	--	60
33°11.2′ 1432490	118°06.3′ 376160	965	Siltstone, micaceous, tuffaceous(?); 5GY6/1 to 5GY8/1; mottled in part; massive, low density	Pleistocene to Holocene foraminifers	61
33°10.4′ 1432410	118°06.3′ 371310	1015	Siltstone, clayey; sandstone, fine to very fine grained, feldspathic, micaceous; N7 to 5GY6/1; laminated; fractured, low density	Discoaster neo hamatus? late Pliocene to Holocene foraminifers	62

33°06.3′ 1469720	117°58.9′ 345810	865	Mudstone, sparsely glauconitic, foraminiferal, micaceous; 5Y6/2;massive	Late Pliocene to Holocene foraminifers	63
33°06.6′ 1473330	117°58.2′ 347570	700	Mudstone, clayey, micaceous, sparsely glauconitic; 5Y4/1 and 5GY6/1; indistinctly laminated and mottled in part; low density	Amaurolithus primus or Amaurolithus tricorniculatus; Pliocene (probably Repettian) foraminifers	64
33°06.9′ 1476420	117°57.6′ 349330	740	Sandstone, quartzofeldspathic, very fine-grained, micaceous; 5Y6/1; and siltstone, clayey, micaceous, 5Y5/2; indistinctly laminated	Repettian foraminifers	65
33°08.0′ 1489280	117°55.1′ 355790	730	Claystone, silty, micaceous, phosphoritic(?); N4 and 5Y6/1; indistinctly laminated to mottled, low density	Discoaster neohamatus?; Mohnian; probably upper, foraminifers	66
33°08.2′ 1492370	117°54.5′ 356960	680	Siltstone, clayey, micaceous; 5Y4/1; thin laminae and streaks of silty, very fine-grained sandstone; indistinctly laminated, mottled in part	Sphenolithus heteromorphus; subzone b, Denticula lauta	67
33°08.6′ 1497500	117°53.5′ 359310	660	Claystone, silty, and siltstone, clayey, micaceous, phosphoritic streaks; 5YR2/1, 5Y4/1, 5Y6/1; laminated and color banded; low density	Upper Mohnian foraminifers at bottom of core, Repettian above	68
33°09.0′ 1501620	117°52.7′ 361670	650	Sand, glauconitic, phosphoritic; 5Y3/2 to 5Y5/2; contains thin laminae of foraminiferal clay; 5Y8/1; indistinctly laminated and color banded	Repettian foraminifers	69
33°09.5′ 1505750	117°51.9′ 364630	750	Volcaniclastic sandstone and crystal tuff, pebbly; clasts of pumice(?) hyaloclastite(?), and andesite; some parts filled with glass shards; 10YR6/2 to 10YR7/4; massive, fractured	—	70 T944

33°07.8′ 1509670	117°51.1′ 354270	705	Siltstone, micaceous, sparsely glauconitic; 5GY6/1; angular and subangular fragments of volcanic rocks (0.3 to 2.2 cm); massive	Late Pliocene to Holocene foraminifers	71
33°07.3; 1510130	117°51.0′ 351220	610	Sand, glauconitic, foraminiferal; 5Y5/1; sparse lithic grains in lower part; massive	Quaternary(?)	72
33°06.4′ 1509030	117°51.2′ 345780	630	Claystone, silty, micaceous, phosphoritic; 5Y4/1; low density	Discoaster variabilis; upper Mohnian foraminifers	73
33°06.1′ 1504920	117°52.0′ 344030	540	Claystone, silty, micaceous, phosphoritic; N3,5Y4/1,5Y6/1; laminated and color banded; low density	Middle or late Miocene coccoliths; upper Mohnian foraminifers	74
33°5.6′ 1502830	117°52.4′ 341020	380	Hyaloclastite(?); coarse-grained fragments of olivine basalt in a glassy and vesicular matrix; possibly palagonitic; 10YR6/6 to 5Y3/2; spherulitic; weakly cemented	--	75 T945
33°05.1 1500740	117°52.8′ 338030	540	Sand, silty, glauconitic, foraminiferal; 5Y3/2	Quaternary(?)	76
33°04.6′ 1498140	117°53.3′ 335040	610	Siltstone, clayey, micaceous; thin laminae of vitric tuff; 5Y4/1 to 5Y6/1; mottled, massive	Discoaster neohamatus?; upper Mohnian foraminifers	77
33°03.8′ 1497560	117°53.4′ 330190	650	Weathered glassy volcanic rock fragments; 5Y6/4; probably a hyaloclastite or possibly a volcaniclastic rock	--	78
33°06.0′ 1424270	118°7.8′ 344770	985	Siltstone, clayey, micaceous; common angular grains of quartz, feldspar, and granitic rocks (0.5-1.5mm); 5GY6/1; mottled in part; massive; low density	Quaternary coccoliths; late Pliocene to Holocene foraminifers	79
33°04.9′ 1424670	118°7.7′ 338090	900	Sand and silt, clayey, glauconitic, foraminiferal, micaceous; 5Y5/2 to 5Y4/2; bioturbated(?)	Late Pliocene to Holocene foraminifers	80

33°04.0′ 1424670	118°07.5′ 332620	855	Sand and silt, clayey, foraminiferal, glauconitic, micaceous, 5Y5/2 to 5Y6/1; color banded and streaked, bioturbated in part; contains 2.5-cm phosphorite nodule	Late Pliocene to Holocene foraminifers	81
33°03.2′ 1423970	118°07.8′ 327790	760	Claystone, silty, micaceous; 5Y6/1	Quaternary coccoliths	82
33°02.8′ 1423930	118°07.8′ 325370	850	Silt and sand, clayey, glauconitic, micaceous, foraminiferal; 5Y5/2	Quaternary coccoliths	83
33°01.5′ 1422760	118°.08.0′ 317510	800	Mud, micaceous, clayey; 5Y6/1; includes pieces of calcareous clayey silt, 5YR5/2	Quaternary? coccoliths	84
33°00.5′ 1420610	118°08.4′ 311480	815	Claystone, silty, micaceous; 5Y4/1 and 5Y6/1	Late middle Miocene to early Pliocene coccoliths, possibly early Pliocene	85
32°59.6′ 1420510	118°08.4′ 306030	738	Siltstone, sandy, micaceous, pyritiferous, sparsely glauconitic; 5Y3/1; bioturbated, few indistinct laminae	Mohnian(?) foraminifers	86
32°56.7′ 1435020	118°05.5′ 288180	530	Small fragments, weathered, light-colored altered volcanic or schistose rock; 5Y8/1 to 10Y8/2	--	88
32°55.2′ 1427190	118°07.0′ 279220	535	Silt, foraminiferal, micaceous, sparsely glauconitic; 5Y6/1; contains lithic fragments of volcanic (?) rocks and schist (?)	Quaternary coccoliths; late Pliocene to Holocene foraminifers	91
32°54.7′ 1420480	118°08.3′ 276310	735	Sand and silt, clayey, glauconitic, foraminiferal; 5Y4/1 to 5Y61; angular to subrounded mineral and lithic grains and glass shards probably locally derived from volcanic rocks; indistinctly layered, bioturbated in part	Possibly late Miocene to early Pliocene foraminifers (redeposited?); most abundant species range from late Pliocene to Holocene	93

33°04.1′ 1365360	118°19.3′ 334360	1060	Siltstone, clayey, micaceous, thin micaceous siltstone laminae; 5Y6/1 to 5GY6/1; mottled in part; massive	Quaternary coccoliths with reworked Eocene; Pliocene to Holocene foraminifers	94
33°04.0′ 1362800	118°19.8′ 333810	1000	Mudstone, silty, micaceous; 5GY6/1; massive; low density	Quaternary coccoliths; Pliocene to Holocene foraminifers; subzone b, Denticula lauta (redeposited?)	95
33°03.6′ 1359680	118°20.4′ 331450	840	Silt, clayey, sandy in part, glauconitic micaceous, foraminiferal; 5Y5/2; sparse subrounded volcanic (landesite?) grains as large as 3mm	Quaternary(?)	96
33°03.2′ 1354020	118°21.5′ 329130	780	Silt, clayey, sparsely glauconitic and phosphoritic, 5Y4/1	Quaternary	97
33°02.4; 1341670	118°23.9′ 324530	670	Quartz-chlorite-muscovite schist, angular fragment (4.5x4.0x2.0cm) in glauconitic, foraminiferal, phosphoritic pellet sand with sparse angular to subrounded metamorphic and porphyritic volcanic rock fragments as large as 6mm	--	100 T946
32°59.5′ 1342320	118°23.7′ 306940	895	Mudstone, foraminiferal, sparsely glauconitic (pelletal); 5Y5/2 to 5Y7/2; thin laminae of medium to coarse-grained sand with angular to subrounded clasts of andesite(?), quartzite, quartz, quartz schist(?), chert, and indeterminate metamorphic(?) rocks as large as 5mm	Middle Miocene to early Pliocene coccoliths; late Pliocene to Holocene foraminifers	103 T947
32°59.0′ 1343280	118°23.5′ 303880	955	Sand, glauconitic, foraminiferal, pebbly; 5Y7/2 to 5Y3/2; 10-15 percent lithic fragments including andesitic and basaltic rocks, spilite, quartz schist, quartz, and indeterminate metamorphic rocks as large as 4mm	Pleistocene to Holocene foraminifers	104 T948

32°59.1 1345850	118°23.0′ 304440	805	Silt, clayey to sandy, glauconitic (pelletal); 5Y5/2; subangular sand size fragments of chloritic phyllite(?), quartz schist(?) and muscovite	Quaternary(?)	105
32°22.1′ 1448200	118°02.2′ 78330	1010	Siltstone (or silt), clayey, phosphoritic, pelletal; 10YR4/2;	Quaternary coccoliths	106
32°21.4′ 1445990	118°02.6 74180	680	Volcanic breccia, altered; recrystallized; includes hyaloclastite(?) oxidized andesite fragments, bentonitic(?) tuff; 10YR7/4 to 5YR5/2; vesicular in part	--	107 T949
32°20.6′ 1442550	118°03.3′ 68990	565	Fragments; indeterminate, possibly altered volcanic rock; 10YR5/4	--	108
32°18.9′ 1434690	118°04.8′ 58940	480	Sand, foraminiferal, glauconitic, sparse rounded fragments of volcanic rocks and 4.5 x 4.0 x 2.5 cm phophorite-coated pebble of oxidized andesite (T950)		110 T950
32°17.1′ 1426940	118°06.2′ 47850	463	Silt and sand, clayey, phosphoritic (pelletal), sparsely glauconitic; 10YR6/2; contains sand size subangular to subrounded mineral and lithic grains possibly derived from volcanic rocks	--	112
32°15.5′ 1421080	118°07.3′ 38450	805	Silt and sand, glauconitic phosphoritic, foraminiferal; 10YR6/2; sparse angular to subround mineral grains and lithic fragments as large as 1.5 mm probably derived from volcanic rocks	Quaternary coccoliths	114
32°14.5′ 1418070	118°10.5′ 32780	860	Silt, clayey, phosphoritic (pelletal), micaceous; 5Y5/1; sparse mineral and lithic grains of unknown derivation	Quaternary coccoliths	115
32°15.1′ 1404730	118°10.5′ 36360	695	Fragments embedded in core barrel; glauconite, phosphorite(?), volcanic(?) detritus	--	116

32°14.3′ 1402520	118°10.9′ 31740	645	Mud, phosphoritic (pellets), sparsely glauconitic; 10YR4/2; abundant angular to subrounded mineral grains and lithic(?) fragments possibly derived from volcanic rocks	Late Pliocene to Holocene foraminifers	117
32°13.4′ 1399530	118°11.5′ 25980	660	Claystone, silty, micaceous, sparsely phosphoritic (pelletal); 10YR6/2	--	118
32°12.6′ 1396840	118°12.0′ 21270	590	Sandstone, fine to very fine grained, silty, micaceous; 5Y8/1; massive, friable; contains multi-colored lithic fragments and abundant large (0.5-1mm) white mica flakes	--	119
32°11.6′ 1394050	118°12.5′ 15290	555	Fragments embedded in core barrel; glauconite, phosphorite(?), quartz grains, and volcanic(?) rock fragments	--	120
32°10.9 1391950	118°12.9′ 11060	625	Siltstone, clayey, micaceous, calcareous; 10YR5/4 to 10YR6/2; sugary texture	--	121
32°10.2′ 1391310	118°13.0′ 6670	920	Fragments, possibly silty claystone; 10YR6/2 to 5Y6/1; mixed with phosphoritic(?) rock and sparse glauconite pellets	--	122
32°21.8′ 1332570	118°24.7′ 78260	720	Claystone, silty, diatomaceous,minute clay-filled fractures; 5Y8/1 to 5Y4/1; indistinctly laminated in part; low density	Discoaster exilis; lowermost Repettian foraminifers; subzone b, Denticula hustedtii-D. lauta	123
32°21.1′ 1331740	118°24.8 74190	600	Claystone, silty, micaceous, diatomaceous; thin laminae of vitric tuff; N8 to 5Y6/1; indistinctly laminated and color-banded; minute clay-filled fractures; low density	Helicosphaera amplia-perta to Discoaster exilis; probably lowermost Repettian foraminifers; subzone a, Denticula hustedtii-D. lauta	124

32°20.6′ 1329670	118°25.2′ 71380	590	Siltstone, micaceous, sugary texture; 5Y8/1 to 5Y6/1; massive; fractured	Helicosphaera amplia-pertata to Discoaster exilis	125
32°20.1′ 1328840	118°25.4′ 67960	900	Siltstone, glauconitic, micaceous, 5GY8/1 to 5GY5/1; bioturbated, mottled and streaked possibly tuffaceous	Amaurolithus primus; Pliocene (probably Repettian) foraminifers	126
32°19.5′ 1328260	118°25.5′ 64790	1240	Siltstone, clayey, glauconitic, micaceous, abundant glass shards and fecal pellets; 5GY811 to 5GY6/1; mottled; bioturbated in part; low density	Lowermost Repettian foraminifers (could be uppermost Miocene); sub-subzone b, Denticula-hustedtii-D. lauta	127
32°17.2′ 1201150	118°50.1 53550	1050	Claystone, silty, glauconitic, micaceous, phosphoritic fecal pellets; 5Y6/1 to 5Y3/1; mottled; low density	Lowermost Pliocene or uppermost Miocene foraminifers	129
32°17.5′ 1199740	118°50.4′ 55320	1010	Mud, glauconitic, foraminiferal; 10Y4/2 to 10Y6/2; bioturbated	Late Pliocene to Holocene foraminifers	130
32°17.9′ 1198580	118°50.6′ 57850	950	Mud, glauconitic, foraminiferal; 5Y3/2 to 5GY6/1; phosphorite pellets and nodules as large as 8 mm and volcanic rock fragments (basaltic?) as large as 1.8 cm.	Quaternary(?)	131
32°18.3 1197270	118°50.9′ 60240	850	Siltstone, clayey, micaceous; glauconitic; pyritiferous, 5Y8/1 to 5Y4/1; mottled; massive; fractured; bioturbated in part	--	132
32°18.7′ 1194300	118°51.5′ 62830	640	Claystone, silty, micaceous; 5Y6/1; mottled, low density	Coccolithus miope-lagicus; probably middle Miocene foraminifers	133
32°19.4′ 1189770	118°52.4′ 67280	482	Claystone, silty, diatomaceous, micaceous; 5Y4/1 and 5Y8/1; indistinctly laminated; color banded; streaks of foraminiferan sand; low density	Probably upper Pelizian or lower Luisian foraminifers; subzone b, Denticula lauta	134

32°05.7′ South of Lambert Grid Zone 6	119°06.2′	1185	Clay, silty, globogerinid; 5Y7/1; massive; indistinctly color banded, low density	Late Pliocene to Holocene foraminifers	135
32°05.3′ South of Lambert Grid Zone 6	119°07.7′	820	Silt, clayey, glauconitic, phosphoritic, globogerinid; 5Y6/1	Quaternary(?)	137
32°05.1′ South of Lambert Grid Zone 6	119°08.0′	790	Mud, glauconitic, sparsely phosphoritic; 5Y4/1	Helicosphaera ampliaperta or Sphenolithus heteromorphus mixed with minor Quaternary; Luisian foraminifers	138
32°04.6′ South of Lambert Grid Zone 6	119°08.4′	760	Siltstone, clayey, calcareous; 5Y6/1; sugary texture; mixed with glauconitic foraminiferal mud	Neogene coccoliths	139
32°04.7′ South of Lambert Grid Zone 6	119°09.5′	800	Sandstone, very fine grained and siltstone, clayey, micaceous; scattered glass shards and glauconite pellets; 5Y6/1 and 5Y8/1; deformed, bioturbated(?), low density	Sphenolithus belemnos upper Saucesian to Relizian foraminifers Naviculopsis (early Miocene silicoflagellate)	140
32°04.2′ South of Lambert Grid Zone 6	119°11.4′	1130	Claystone, silty, sparsely glauconitic, slightly micaceous; 5Y6/1; massive; low density	Coccolithus miopelagicus; Luisian or lower Mohnian foraminifers	141
32°04.5′ South of Lambert Grid Zone 6	119°11.8′	1130	Hyaloclastite(?) altered, clayey, brecciated; includes glass spherules, fragments of black glass, and lapilli and crystal tuff with plagioclase and olivine; 10YR8/2 to 10YR6/6; friable	--	142 T951
32°08.9′ 1030890	119°22.9′ 7960	1250	Sand, very fine to medium grained, silty; 5Y5/2; angular to subrounded mineral grains and lithic fragments probably derived from volcanic rocks	Late Pliocene to Holocene foraminifers	144

32°09.3′ 1034550	119°22.2′ 10410	1090	Claystone, silty, micaceous; 5Y6/1; minute sugary texture, massive, fractured, low density	Sphenolithus belemnos; early Miocene (Saucesian?) foraminifers; Naviculopsis	145
32°10.3′ 1039120	119°21.3′ 16210	1325	Clay, silty, globogerinid, sparsely glauconitic; 5Y7/2; massive	Late Pliocene to Holo-foraminifers	146
32°11.3′ 1043040	119°20.6 22330	988	Claystone, silty, 5Y5/1; contains sparse phosphoritic pellets	Quaternary coccoliths; Pliocene to Holocene (possibly early Pliocene) foraminifers	147
32°12.0′ 1045380	119°20.2′ 26430	1235	Siltstone, clayey, micaceous, 5Y6/1; relatively hard, fractured; mottled in part	Probably Eocene foraminifers	148
32°20.7′ 1072990	119°15.1′ 78270	1180	Claystone, silty, phosphatic; N2 and 5Y6/1; indistinctly laminated; mottled in part; low density	Discoaster variabilis; lower Mohnian(Bulimina uvigerinaformis zone) foraminifers	149
32°21.9′ 1076330	119°14.5′ 85190	710	Siltstone, clayey, sparsely micaceous; 5Y6/1	Discoaster exilis?; middle Miocene foraminifers; middle Miocene diatoms	150
32°23.7′ 1082180	119°13.4′ 96100	345	Sand, fine grained, silty, foraminiferal; 5Y5/2; abundant mollusk shell fragments and angular grains of quartz and feldspar; massive	Quaternary mollusks	152
32°24.6′ 1085490	119°12.8′ 101660	305	Foraminiferal sand, silty, mineral grains sparse; 5Y5/2; contains rare volcanic rock fragments; massive	Quaternary mollusks	153
32°25.6′ 1088230	119°12.3′ 107420	150	Sand, fine to medium grained, lithic, foraminiferal; 10Y6/2; contains abundant angular volcanic detritus; massive	Quaternary mollusks	154
32°26.5′ 1090960	119°11.8′ 112630	105	Sand, fine to medium grained, bioclastic; 5Y7/2; chiefly foraminiferan tests, mollusk fragments, sponge spicules, bryozoans, and echinoid spines	Quaternary mollusks	155

32°29.1′ 1055230	119°18.8′ 129770	520	Mud, sandy, foraminiferal, sparsely glauconitic; 5Y5/2; lithic fragments possibly derived from volcanic rocks	Quaternary(?)	156
32°29.8′ 1055090	119°18.9′ 133880	540	Claystone, silty, sparsely micaceous, phosphoritic; 5Y8/1 to 5Y5/1; broadly color banded; minute clay-filled fractures; low density	Discoaster variabilis; lower Mohnian (Bulimina uvigerinaformis zone)	157
32°30.3′ 1054290	119°19.1′ 137030	340	Claystone, silty; 5Y6/1; abundant Delectopecten sp.; indistinctly laminated to massive; fractured, low density	Discoaster exilis; lower Mohnian (Bulimina uvigerinaformis zone) foraminifers; subzone b, Denticula hustedtii-D. lauta	158
32°31.6′ 1052870	119°19.4′ 144930	100	Siltstone, sandy to clayey, highly micaceous, and sandstone, very fine grained, feldspathic, micaceous, in thin seams; N5,N7; mottled in part; burrowed; relatively hard; abundant subangular to subrounded pebbles in Quaternary bioclastic sand at top include recrystallized felsic volcanic rock, metamorphic quartz-muscovite rock, altered and recrystallized andesite, epidote-bearing diorite, and fine-grained hornblende diorite presumably derived from nearby conglomerate	Marthasterites furcatus (Coniacian or Santonian)	161 T952 (pebbles at top)
32°32.2′ 1051870	110°19.6′ 148430	90	Sandstone, small fragments, very fine to medium grained, quartzofeldspathic(?); 5Y8/1; angular fragments of impure quartzite(?) as large as 3mm	--	162
32°32.8′ 1050430	119°19.9′ 152550	90	Sandstone, quartzofeldspathic, fine to medium grained, angular to subrounded, sparsely micaceous, calcareous; 5Y8/1; rare lithic fragments	--	164

32°32.7′ 1037380	119°22.4 152080	420	Claystone, silty; 5Y6/1 to 5Y8/1; indistinctly laminated near bottom, massive near top; low density	Lower Discoaster kuglerior as high as Catinaster coalitus with reworking; lower Mohnian foraminifers; subzone b, Denticula hustedtii-D.lauta	167
32°32.8′ 1035170	119°22.9 152860	520	Silt, clayey, foraminiferal, few lithic fragments; 5Y6/1	Quarternary coccoliths	168
32°28.0′ 1014500	119°26.7′ 124010	910	Clay, silty, globigerinid; 5Y5/2; sparsely glauconitic and phosphoritic (pelletal); rare mineral and lithic grains	Quaternary(?)	169
32°29.6′ 1013310	119°27.0′ 134170	920	Silt, clayey, foraminiferal; 10YR4/2; sparse glauconitic pellets	--	170
32°30.9′ 1009600	119°27.8′ 142060	668	Claystone, silty, diatomaceous; 5Y5/1 to 5Y8/1; chiefly massive with few tuffaceous(?) laminae; low density	Lower Discoaster exilis?; Luisian foraminifers; subzone b, Denticula lauta	171
32°32.1′ 1003040	119°29.1′ 149600	475	Fragments, sandstone, quartzofeldspathic(?); 10YR8/2; weathered, crushed	--	172
32°32.9′ 999660	119°29.8′ 154440	300	Fragments, weathered rock, possibly silty sandstone; 10YR8/2; crushed	--	173
32°33.9′ 996240	119°30.5′ 160700	315	Claystone, silty, foraminiferal; 5Y6/1	Sphenolithus heteromorphus	174A
32°33.9′ 996240	119°30.5′ 160700	315	Sand, fine grained, silty, foraminiferal, sparsely glauconitic and phosphoritic; 10Y6/2; abundant, multicolored angular to subrounded volcanic rock fragments and mineral grains, probably locally derived	Quaternary(?)	174B

32°33.3′ 983090	119°36.8′ 171930	810	Siltstone, clayey, micaceous, calcareous; 5Y5/1; sugary texture; rare angular mineral grains and lithic fragments possibly derived from volcanic rocks	--	178
32°32.9′ 963630	119°37.2′ 158080	565	Claystone, diatomaceous, tuffaceous(?); 5Y6/1 to 5Y8/1; indistinctly laminated, low density	Helicosphaera amplia-perta or Sphenolithus heteromorphus; probably upper Relizian or lower Luisian foraminifers; subzone a, Denticula lauta	179
32°32.8′ 961740	119°37.8′ 155380	465	Siltstone, sugary texture, clayey, micaceous; 5Y4/1 to 5Y8/1; 15 to 26 cm from bottom consists of claystone, silty, phosphoritic; N4 to 5Y6/1; laminated, low density	Helicosphaera amplia-perta or Sphenolithus heteromorphus; probably upper Relizian or lower Luisian foraminifers	180
32°32.4′ 954540	119°38.6′ 152850	540	Siltstone, clayey, micaceous; 5Y4/1	Sphenolithus hetero-morphus; middle Miocene foraminifers	182
32°31.9′ 951410	119°39.1′ 149890	660	Claystone, diatomaceous, tuffaceous, phosphatic(?); 5Y6/1; 5Y8/1; indistinctly laminated; low density	Helicosphaera amplia-perta or Sphenolithus thus heteromorphus; probably upper Relizian foraminifers; subzone b Denticula lauta	183
32°31.4′ 940890	119°41.2′ 147390	1100	Claystone, diatomaceous; 5Y6/1, 5Y8/1; indistinctly laminated; minute clay-filled fractures; low density	Sphenolithus hetero-morphus; probably Relizian foraminifers; subzone b Denticula lauta	184
32°32.3′ 939180	110°41.5′ 152670	850	Silt, clayey to sandy, globogerinid; sparsely glauconitic; 5Y6/1; angular mineral grains possibly derived from volcanic rocks	Quaternary(?)	185

32°33.4′ 937300	119°42.0′ 159330	790	Sand, silty to pebbly, chiefly pelletal phosphorite, several nodules as large as 2 cm; 10YR3/2 to 10YR5/4; contains about 10 percent subrounded to angular volcanic rock fragments including hyaloclastite(?) as large as 4 cm; trace of amphibolite and epidote	--	186 T953
32°36.3′ 935550	119°42.4′ 176830	730	Claystone, silty, contains phosphorite seams and blebs; N3 and 5Y6/1; color banded, mottled in part; low density	Coccolithus miopelagicus; probably Relizian foraminifers	189
32°37.8′ 900560	119°49.3′ 187200	1030	Clay, silty, globogerinid, sparsely glauconitic; 5Y5/2; massive	Late Pliocene to Holocene foraminifers	190
32°36.9′ 896120	119°50.1′ 182000	825	Claystone, silty, phosphoritic; 5Y5/1	Discoaster exilis?; contains D.sanmiguelensis	191
32°36.4′ 893730	119°50.6′ 179280	1060	Clay, silty, globogerinid; 5GY6/1	Quaternary(?)	192
32°35.9′ 889580	119°51.4′ 176010	950	Claystone, silty, small phosphorite blebs; 5Y6/1; mottled, bioturbated, low density	Coccolithus miopelagicus; early Mohnian or late Luisian foraminifers	193
32°33.9′ 879620	119°53.2′ 164210	1065	Small weathered rock fragments, possibly volcanic or volcaniclastic; 5Y8/1	--	194
32°34.6′ 881020	119°53.0′ 168390	1008	Claystone, silty, sparse laminae of foraminiferan tests; 5Y4/1 and 5Y6/1; mostly massive; low density	Sphenolithus heteromorphus; Lusian foraminifers	195
32°34.7′ 881570	119°52.9′ 169150	940	Claystone, 5Y6/1; massive, low density	Lower Discoaster variabilis; late Luisian or early Mohnian foraminifers	196
32°36.5′ 881870	119°52.9′ 180460	1000	Claystone, silty, micaceous; 5Y4/1; includes pelletal phosphorite and glauconite possibly as Quaternary contaminants	Discoaster tamalis	197

32°40.5′ 885780	119°52.3′ 204120	990	Silt, clayey, globigerinid, sparsely glauconitic, 5Y7/2; sparse angular to subrounded mineral grains and lithic fragments as large as 1.5 mm, possibly derived from volcanic rocks	Quaternary(?)	198
32°41.0′ 885170	119°52.4′ 207310	685	Claystone, silty, diatomaceous; 5Y6/1; massive; minute clay-filled fractures; low density	Helicosphaera ampliaperta or Sphenolithus heteromorphus; probably late Luisian foraminifers; subzone a, Denticula lauta	199
32°41.5′ 886090	119°52.3′ 210440	585	Claystone, silty, diatomaceous, phosphorite blebs; 5Y6/1 to 5Y8/1; laminated to massive;	Sphenolithus heteromorphus; Luisian foraminifers; subzone a, Denticula lauta	200
32°42.0′ 886900	119°52.1′ 213110	580	Sandstone, volcaniclastic, fine to coarse grained, negligible matrix; 10YR5/4; 30 percent volcanic rock fragments, angular to subrounded, clay rimmed; includes sparse worn oyster(?) fragments and echinoid spines; massive, friable	--	201 T954
32°42.4′ 888860	119°51.8′ 215420	780	Claystone, silty, diatomaceous, micaceous; rock composed primarily of foraminiferan tests; contains phosphorite blebs; N5, 5Y6/1; laminated with thin vitric tuff higher in core; low density	Discoaster neorectus; late(?) Mohnian foraminifers	202
32°42.9′ 889990	119°51.6′ 218450	810	Claystone, silty, diatomaceous micaceous, phosphoritic streaks; 5Y6/1, 5Y8/1; indistinctly laminated; low density	Discoaster exilis, probably Coccolithus miopelagicus; Luisian foraminifers	203
32°43.3′ 891170	119°51.3′ 221050	960	Silt (ooze) clayey to sandy, globigerinid, glauconitic; 5Y7/2 to 5Y5/2; massive, bioturbated in part	Late Pliocene to Holocene foraminifers	204

32°38.2′ 821960	120°04.6′ 192580	1310	Hyaloclastite(?); pumice (N8) and glass (5YR2/1) fragments, pyritiferous throughout; includes large areas of subparallel glass prisms and pockets of perlitic glass	--	205 T955
32°39.3′ 826620	120°03.8′ 198910	990	Silt (ooze), clayey to sandy, globogerinid, glauconitic; 5Y6/2; massive	Quaternary(?)	206
32°39.9′ 829180	120°03.3′ 202940	750	Claystone, silty, contains phosphoritic streaks and pellets; 10YR6/2, 5Y5/1, 5Y7/1; deformed; bioturbated, low density	Discoaster kugleri or Catinaster coalitus; early Mohnian foraminifers	207
32°41.4′ 834930	120°02.2′ 211670	590	Sand, silty, glauconitic (pelletal), foraminiferal; 10Y4/2; sparse angular mineral grains possibly derived from volcanic rocks	Quaternary(?)	208
32°43.3′ 842430	120°00.9′ 222730	582	Sand, silty, glauconitic (pelletal), foraminiferal; 5Y5/2; abundant angular to subangular mineral grains and lithic fragments probably derived from volcanic rocks	Quaternary(?)	210
32°44.3′ 8406040	120°00.2′ 228750	810	Claystone, silty, micaceous, glauconitic; 5Y6/1, 5Y4/1; deformed; bioturbated, mottled, low density	Sphenolithus heteromorphus; Luisian foraminifers	211
32°46.1′ 854870	119°58.6′ 239370	775	Claystone, silty, micaceous; 5Y6/1, 5Y8/1; contains some diatomaceous laminae	Sphenolithus heteromorphus;middle Miocene, possibly Luisian foraminifers	212
32°46.8′ 856980	119°58.2′ 243840	800	Phosphorite, embedded in corer	--	213
32°47.2′ 862660	119°57.1′ 245590	950	Mudstone, sandy, foraminiferal, micaceous; 5Y6/1; angular to subangular fragments of volcanic rocks as large as 1.3 cm.; deformed as though slumped; bioturbated(?)	Emiliania ovata; late Pliocene to Holocene foraminifers	214

32°58.7′ 951260	119°40.2′ 312450	940	Siltstone, clayey, diatomaceous micaceous; N4 to 5Y4/1; massive, low density	Late Miocene diatoms	215
32°59.5′ 955970	119°39.3′ 317020	815	Phosphorite nodule 5.5x4x1 cm		216
33°00 0′ 963280	119°37.9′ 319780	510	Claystone, silty, micaceous, phosphoritic pellets and seams; N3 and 5Y4/1 to 5Y8/1; mottled, irregularly color banded; low density	Discoaster variabilis; late Mohnian foraminifers	217
33°00.2′ 969570	119°36.7′ 320940	500	Sand, silty, glauconitic (pelletal), foraminiferal; 5Y5/2; sparse angular to subangular mineral grains and lithic fragments as large as 1mm; possibly derived from volcanic rocks	Quaternary(?)	218
33°00.4′ 975480	119°35.5′ 322160	430	Claystone, silty, micaceous; abundant phosphorite blebs; 5Y4/1 to 5Y6/1; indistinctly laminated to massive; minute clay-filled fractures; low density	Discoaster variabilis; early Mohnian (Bulimina avigerinaformis zone) foraminifers	219
33°00.8′ 986890	119°33.3; 324390	260	Claystone, silty, micaceous, sugary texture in part; 5Y4/1 to 5Y2/1; indistinctly laminated	Probably upper Mohnian foraminifers	221
33°01.0′ 992350	119°32.3′ 325020	325	Siltstone, clayey, micaceous; 5Y6/1; massive, mottled in part, low density	Discoaster variabilis?; probably late Mohnian foraminifers	222
33°01.2′ 998580	119°31.0′ 325990	475	Sand, silty, glauconitic (pelletal) foraminiferal; 5Y7/2 to 5Y5/2; sparse angular to subrounded mineral grains; massive with indistinct color streaks	Quaternary(?)	223
33°12.6′ 1043680	119°22.6′ 394110	180	Siltstone, clayey, micaceous; N4 to 5Y4/1; massive, hard, fractured; similar to Eocene siltstone on San Nicolas Island	--	224

33°13.6′ 1042630	119°22.9′ 399940	45	Sandstone fragments, fine to medium grained, silty, quartzofeldspathic, calcareous; 10YR6/2 and 5Y8/1; similar to Eocene sandstone on San Nicolas Island	--	226
33°14.0′ 104180	119°23.0′ 402660	40	Sandstone fragments, fine to medium grained, silty, quartzofeldspathic, calcareous; 5Y8/1; common angular to subangular pink and gray lithic clasts; similar to Eocene sandstone on San Nicolas Island	--	227
33°14.4′ 1041450	119°23.1′ 405000	35	Sandstone, fine to medium grained, silty, quartzofeldspathic; 10YR 7/4; common subangular to subrounded gray lithic clasts; similar to Eocene sandstone on San Nicolas Island	--	228
33°16.5′ 103910	119°23.6′ 417680	60	Claystone, silty, micaceous, sugary texture in part; 5Y6/1; splintery fracture, low density	Sphenolithus belemnos or Helicosphaera ampliaperta with reworked Cretaceous and Eocene; Saucesian or Relizian foraminifers	232
33°16.8′ 1038760	119°23.7′ 419490	60	Siltstone, clayey, micaceous; 5Y6/1,5Y8/1; indistinctly laminated; fractured; low density	Triquetrorhabdulus carinatus?; middle Miocene foraminifers, probably Luisian	233
33°17.2′ 1037950	119°23.9′ 422120	60	Siltstone, clayey, sugary texture, fish remains common; 5Y7/2; massive; deformed; core also contains fragments of brownish-gray chert	--	234
33°18.3′ 1037590	119°24.0′ 428740	110	Sand, fine to medium grained, calcareous, quartzofeldspathic; N8 to 5Y8/1; probably derived from nearby outcrops of Eocene sandstone	Quaternary shell fragments	236

33°18.7′ 1037950	119°24.0′ 431090	335	Silt, clayey to sandy, micaceous; 5Y5/1; abundant subangular mineral grains and gray lithic fragments	Probably Quaternary foraminifers	237
33°13.2′ 1084760	119°14.6′ 396450	295	Claystone, silty, diatomaceous, tuffaceous(?); 5Y8/1; massive; upper part of core laminated; low density	Subzone a, Denticula lauta	239
33°12.7′ 1082910	119°14.9′ 393630	377	Sand, very fine grained, silty, quartzofeldspathic; 5Y5/1; probably derived from Eocene sandstone	Quaternary(?)	240
33°12.2′ 1080100	119°15.5′ 390510	415	Claystone, silty, diatomaceous, tuffaceous(?); N8 to 5Y6/1; indistinctly laminated; low density	Luisian foraminifers subzone b, Denticula lauta	241
33°11.7′ 1078550	119°15.7′ 387690	535	Claystone, silty, diatomaceous, tuffaceous; 5Y7/1; indistinctly laminated, low density	Subzone a, Denticula lauta	242
33°11.3′ 1078660	119°15.7′ 384740	665	Claystone, silty, diatomaceous, tuffaceous(?) 5Y6/1, 5Y8/1; massive, indistinctly laminated in upper part of core; low density	Discoaster exilis?; upper Relizian or Luisian foraminifers subzone b, Denticula lauta	243
33°10.7′ 1076750	119°16.1′ 381170	1010	Claystone, diatomaceous, tuffaceous(?); N8 to 5Y8/1; laminated and broad color banded; low density	Luisian foraminifers; subzone b, Denticula lauta	244
33°09.9′ 1074390	119°16.5′ 376910	1330	Mudstone, micaceous, 5GY6/2; thin laminae of micaceous quartzofeldspathic very fine grained sand and shell fragments displaced downslope	Quaternary coccoliths; late Pliocene to Holocene foraminifers; Quaternary mollusks	245
33°12.0′ 1127000	119°06.3′ 388190	1010	Claystone, silty, diatomaceous, tuffaceous(?) N8 to 5Y6/1; mottled; deformed	coccolithus miopelagicus; upper Relizian or Luisian foraminifers subzone b, Denticula lauta	246

33°11.5′ 1131520	119°05.4′ 384970	1010	Claystone, silty, diatomaceous; 5Y6/1 to 5Y8/1; mottled and indistinctly color banded; low density	Luisian foraminifers; subzone b, Denticula lauta	247
33°10.8′ 1134460	119°04.7′ 380340	1265	Siltstone, clayey, pyritiferous in part, micaceous; 5GY6/1; massive	Quaternary coccoliths; Late Pliocene to Holocene foraminifers	248
33°09.1′ 1140660	119°03.5′ 369820	1315	Silt, clayey to sandy, glauconitic (pelletal), foraminiferal; 10Y6/2 to 5Y5/2, massive to color streaked	Pliocene to Holocene (possibly late early Pliocene) foraminifers	249
33°08.5′ 1143720	119°02.9′ 366100	1295	Silt, clayey, sparsely glauconitic, micaceous 5Y7/2 to 5Y5/2; abundant redeposited(?) glass shards	Late Pliocene to Holocene foraminifers	250
33°09.0′ 1183290	118°55.1′ 368250	950	Siltstone, clayey, micaceous, calcareous; sparsely glauconitic; 5Y4/1; sugary texture	Cenozoic coccoliths	251
33°09.7′ 1182420	118°55.3′ 372670	830	Sand, silty to clayey, glauconitic, foraminiferal; 5Y5/2; sparse angular fragments of calcareous tuffaceous(?) claystone (10Y8/2) as large as 0.8 cm	Late Pliocene to Holocene foraminifers	252
33°10.0′ 1179900	118°55.8′ 374460	840	Sandstone, fine to very coarse grained, pebbly, volcaniclastic; 5G6/1 to 5B5/1; chiefly angular fragments of altered basaltic andesite	--	253 T956
33°10.4′ 1177970	118°56.2′ 377060	830	Sand, silty to clayey, glauconitic, foraminiferal; 5Y5/2; sparse angular to subangular volcanic rock fragments as large as 1.0 mm	Quaternary(?)	254
33°33.7′ 1101810	119°11.9′ 520100	465	Sand, very fine grained, silty, foraminiferal, micaceous; 5Y6/1; massive	Quaternary mollusks	255

33°33.4′ 1098070	119°12.7′ 518740	270	Claystone, silty, diatomaceous, tuffaceous(?) 5Y6/1 to 5Y8/1; massive, mottled, few indistinct laminae, low density	Sphenolithus heteromorphus or Discoaster exilis; early(?) Mohnian foraminifers; subzone a, Denticula hustedtii D.lauta 10 cm from bottom	256
33°33.3′ 1094730	119°13.3′ 517810	248	Claystone, silty, tuffaceous(?), diatomaceous; 5Y6/1 to 5Y8/1; massive, sheared; low density	Early or middle Miocene coccoliths and silicoflagellates; early(?) Mohnian foraminifers; subzone a, Denticula hustedtii-D. lauta	257
33°33.1′ 1092070	119°13.8′ 516830	303	Claystone, silty, calcareous; 5Y8/1	Middle Miocene to early Pliocene diatoms	258
33°32.8′ 1089070	119°14.4′ 515080	410	Claystone, silty, diatomaceous, micaceous; 5Y4/1 to 5Y8/1; massive; minute clay-filled fractures, low density	Middle? Miocene silicoflagellates; subzone a, Denticula hustedtii-D. lauta	259
33°32.7′ 1087200	119°14.8′ 514400	510	Claystone, silty, diatomaceous, micaceous; 5Y4/1 to 5Y6/1; massive, low density	Middle? Miocene silicoflagellates; subzone b, Denticula lauta	260
33°32.5′ 1085050	119°15.2′ 513640	590	Claystone, silty, micaceous, phosphatic; N4, 5Y4/1, 5Y6/1; indistinctly laminated, broadly color banded to mottled in part	Discoaster exilis; late Relizian or Luisian foraminifers	261
33°32.3′ 1081920	119°15.8′ 512230	660	Sand, clayey to silty, glauconitic (pelletal), foraminiferal; 5Y5/2	Quaternary(?)	262
33°32.1′ 1079500	119°16.3′ 510940	863	Siltstone, clayey, tuffaceous(?), micaceous; 5GY6/1; massive	Late Pliocene to Holocene foraminifers; Miocene to Holocene diatoms	263
33°31.9′ 1076620	119°16.8′ 509910	1050	Claystone, silty, diatomaceous, tuffaceous; 5Y4/1 to 5Y8/1; indistinctly color banded; sheared; core cross cut by veins	Late Miocene or younger foraminifers; subzone a, Denticula hustedtii-D. lauta	264

33°34.7′ 910740	119°49.6′ 532150	420	Claystone, silty, micaceous; 5Y6/1	Helicosphaera amplia-aperta	265
33°35.2′ 909720	119°49.8′ 535170	400	Claystone, silty, micaceous, pyritiferous, phosphoritic; 5Y4/1	Helicosphaera amplia-perta; Luisian foramin-ifers	266
33°36.9′ 906620	119°50.5′ 545680	250	Claystone, silty; 5Y6/1	Discoaster exilis or Catinaster coalitus; Luisian foraminifers	269
33°38.0′ 903910	119°51.1′ 552690	272	Shattered phosphorite nodule(?)	--	272
33°38.5′ 902890	119°51.3′ 555550	160	Phosphorite nodule	--	273
33°38.9′ 901950	119°51.5′ 558330	180	Mudstone, phosphoritic (pelletal), micaceous; 5YR3/1 to 5Y4/1; massive, friable; appar-ently mixed with Quaternary foraminiferal sand	Early or middle Mio-cene(?) foraminifers	274
33°39.9′ 898970	119°52.2′ 564080	140	Sand, fine grained, silty, phosphoritic (pelletal); 5YR 4/4; sparse angular to sub-rounded mineral grains and lithic fragments	--	276
33°39.9′ 869540	119°58.0′ 565470	130	Claystone, silty; sparsely diatomaceous, micaceous; 5Y4/1 to 5Y6/1	Early(?) Miocene dia-toms (shallow water) and silicoflagellates including Naviculopsis aff. N lata	277
33°39.3′ 868880	119°58.1′ 561900	130	Sandstone (feldspathic arenite), very fine to fine-grained, angular, well sorted; and siltstone, biotitic; N5 to N8; several thin layers almost entirely mica flakes; sandstone contains about 10 percent volcanic rock frag-ments; indistinctly laminated, relatively hard; similar to Paleogene rocks cored in this area	--	278 T957

33°37.1′ 868640	119°58.0′ 548560	285	Claystone, silty, micaceous, abundant glass shards and phosphoritic streaks and blebs; N4 to 5Y6/1; mottled; minute clay-filled fractures; probably bioturbated	Middle Miocene to early Pliocene coccoliths; upper Mohnian foraminifers	282
33°36.7′ 868130	119°58.1′ 545930	310	Fragments, phosphorite nodule	--	283
33°36.2′ 867600	119°58.2 543140	280	Siltstone fragments, clayey; 10YR6/2 to 5YR4/4	--	284
33°35.4′ 868210	119°58.0′ 538000	430	Claystone, silty, micaceous, scattered phosphorite blebs; N6 to 5Y6/1; indistinctly laminated to broadly and indistinctly color banded	Discoaster variabilis; lower Mohnian foraminifers	285
33°34.8′ 868030	119°58.0′ 534160	610	Claystone, silty, diatomaceous; 5Y6/1 to 5Y8/1; laminated to broadly color banded, low density	Late Mohnian foraminifers; subzone a, Denticula hustedtii; Dictyocha psuedofibula	286
33°32.7′ 867110	119°58.1′ 521590	615	Sand, clayey to silty, glauconitic (pelletal), foraminiferal; 5Y5/2	Quaternary(?)	288
33°33.5′ 778310	120°15.7′ 530000	1210	Siltstone, clayey, micaceous; 5GY6/1; massive	Quaternary coccoliths Gephyrocapsa oceanica); late Pliocene to Holocene foraminifers	289
33°34.8′ 777310	120°15.9′ 537530	1030	Claystone, silty, micaceous, diatomaceous; sugary texture in part; 5Y5/1 to 5Y8/1; indistinctly laminated to color banded; minute clay-filled fractures	Early or middle Miocene coccoliths and silicoflagellates; late Relizian or Luisian foraminifers; subzone a, Denticula lauta	290

33°35.2′ 778090	120°15.8′ 540130	855	Claystone, silty, micaceous, diatomaceous, tuffaceous(?); phosphoritic streaks and blebs; 5Y4/1 to 5Y8/1; indistinctly laminated	Helicosphaera ampliaperta; late Relizian or Luisian foraminifers; subzone a, Denticula lauta	291
33°35.6′ 778560	120°15.7′ 542440	710	Fragments, phosphorite nodule	--	292
33°35.7′ 778820	120°15.7′ 542890	610	Claystone, silty, micaceous; 5Y6/1; massive, mottled	--	293
33°36.0′ 780310	120°15.4′ 544690	560	Siltstone, sandy, sparsely glauconitic (pelletal); 5Y4/2; angular to subrounded mineral grains and green to dark gray lithic fragments as large as 1.5 mm probably derived from metamorphic rocks	--	294
33°36.3′ 783050	120°14.9′ 546470	560	Siltstone, clayey, and claystone, silty, micaceous; 5Y4/1 to 5Y6/1; massive to indistinctly laminated	Helicosphaera ampliaperta or Sphenolithus heteromorphus; late Relizian or Luisian foraminifers	295
33°36.6′ 786220	120°14.2′ 548590	580	Sand, fine-grained clayey, glauconitic (pelletal); 5Y3/2; sparse subangular to subrounded mineral grains and greenish-gray lithic fragments as large as 1.2 mm probably derived from metamorphic rocks	--	296
33°37.0′ 789500	120°13.6′ 550620	720	Fragments, phosphorite nodule; pieces clayey siltstone with sugary texture (5Y6/1)	--	297
33°37.7′ 796370	120°12.3′ 554380	960	Silt, clayey, foraminiferal, micaceous, pyritiferous; 5GY6/1; massive	Quaternary coccoliths; late Pliocene to Holocene foraminifers	299
33°52.1′ 751730	120°21.8′ 643510	740	Sand, very fine grained, silty to clayey; 5Y4/4; abundant angular to subrounded mineral grains and gray lithic fragments	Quaternary coccoliths	300

33°53.0′ 754920	120°21.2′ 649350	650	Sand, very fine grained, silty, foraminiferal, micaceous, sparsely glauconitic; 5Y5/2; abundant angular to subrounded mineral grains	Quaternary(?)	302
33°53.4; 756620	120°20.9′ 651600	500	Sand, very fine grained, silty, foraminiferal; sparsely micaceous and glauconitic; 5Y52	Quaternary(?)	303
33°53.8′ 757660	120°20.7′ 654010	465	Silt, sandy and clayey, sparsely micaceous and glauconitic; 5Y5/2	Quaternary(?)	304
33°54.3′ 758730	120°20.5′ 656900	370	Sand, fine to very fine grained, silty, foraminiferal, sparsely micaceous and glauconitic; 10Y6/2; abundant angular to subrounded mineral grains and lithic fragments; mollusks indicate downslope transport	Quaternary mollusks	305
33°54.7′ 760090	120°20.3′ 659320	285	Sand, very fine grained, silty, foraminiferal, sparsely micaceous; 5Y5/2; abundant angular to subrounded mineral grains and gray lithic fragments; mollusks indicate downslope transport	Quaternary mollusks	306
33°55.2′ 761370	120°20.0′ 662100	200	Sand, very fine to medium grained, foraminiferal; 5Y4/4; abundant angular to subrounded mineral grains and lithic fragments probably derived largely from volcanic rocks	Probably Quaternary mollusks	307
33°55.7′ 778320	120°16.7′ 664290	160	Sand, fine to coarse grained, foraminiferal; 5Y6/2; 20 percent subangular to subrounded volcanic rock fragments as large as 4 mm, 25 percent feldspar grains,1.5 percent quartz grains, trace hornblende	Quaternary mollusks	308 T958
33°55.0′ 778090	120°16.7′ 660490	218	Sand, fine to medium grained, chiefly bioclastic (mollusks, echinoids, bryozoans, foraminifers); N8 to 5Y6/1; angular to sub- and lithic fragments;	Quaternary mollusks	309

33°54.4′ 778490	120°16.6′ 656670	245	Sand, fine grained, bioclastic in part; 5Y5/2; abundant angular to subrounded mineral grains and lithic fragments; bioturbated	Quaternary mollusks	310
33°53.4′ 780510	120°16.1′ 650470	348	Sand, very fine grained, foraminiferal; 5Y5/2; angular to subrounded mineral grains and lithic fragments	Quaternary(?)	312
33°53.0′ 781430	120°15.9′ 648190	325	Sand, very fine grained, foraminiferal; 5Y5/2; angular to subrounded mineral grains and lithic fragments	Quaternary mollusks	313
33°52.5′ 782570	120°15.7′ 645250	360	Sand, very fine grained, silty, foraminiferal; 5Y6/2; massive; bioturbated in part	Quaternary(?)	314
33°52.0′ 784310	120°15.3′ 641890	435	Sand, very fine grained, silty, foraminiferal, sparsely glauconitic; 5Y6/2	Quaternary(?)	315
33°50.4′ 878110	119°56.7′ 628460	100	Siltstone, tuffaceous, micaceous; contains about 10 percent volcanic rock fragments and minor amounts of glaucophane and riebeckite; 5Y6/1; massive to mottled, bioturbated, burrows filled with sandy siltstone, 5B7/1	?Helicosphaera ampliaperta; Relizian and Luisian foraminifers	316 T959
33°50.3′ 881470	119°56.0 627840	105	Sandstone fragments fine to medium grained silty, volcaniclastic, calcareous, tuffaceous(?); 5Y8/1; resembles rock types in the Blanca Formation of Weaver and others (1969)	--	317
33°50.3′ 884620	119°55.4′ 628050	115	Siltstone, clayey, micaceous, sugary texture; abundant fish remains; 5Y6/1; massive	Middle or early Miocene coccoliths; probably early Miocene diatoms	318
33°50.3′ 888040	119°54.7′ 627850	150	Siltstone, clayey, diatomaceous, tuffaceous(?); 5Y6/1; and sandstone, very fine to medium grained, silty, angular, tuffaceous(?); N4; core laminated to thin bedded; coarser layers are 0.3 cm to 6.0 cm thick; resembles fine-grained facies of Blanca Formation of Weaver and others (1969)	Helicosphaera ampliaperta or Sphenolithus heteromorphus; Luisian(?) foraminifers; subzone a, Denticula lauta at bottom of core	319

33°50.3′ 890800	119°54.2′ 627490	170	Sand, fine to coarse grained, bioclastic (foraminifers, bryozoans, mollusks, echinoids); 5Y6/2; sparse angular to subrounded mineral grains and lithic fragments probably derived from volcanic or volcaniclastic rocks	Quaternary mollusks	320
33°50.2′ 893710	119°53.6′ 627060	200	Claystone, silty, diatomaceous, phosphoritic; 5Y4/1 to 5Y8/1; laminated	Early? Miocene coccoliths and silicoflagellates; middle Miocene (possibly Luisian foraminifers)	321
33°50.2′ 896770	119°53.0′ 626860	270	Sand, fine to coarse grained, silty, bioclastic in part; 5Y5/2; phosphorite nodules as large as 2 cm and subangular to subrounded granules and pebbles of porphyritic volcanic rocks, diorite(?) and green schist as large as 1.4 cm; probably redeposited clasts from Miocene rocks	Quaternary mollusks	322
33°50.2′ 899780	119°52.4′ 626880	380	Claystone, silty, diatomaceous, tuffaceous(?); 5Y6/1 to 5Y8/1; massive; calcite-filled fractures; low density	Subzone a, Denticula hustedtii-D. lauta	323
33°50.3′ 903930	119°51.6′ 627350	545	Claystone, silty, micaceous, phosphoritic; scattered glass shards; 5Y4/1 to 5Y8/1; laminated	Lower Mohnian (B. uvigerinaformis zone?) subzone c, Denticula hustedtii-D. lauta	324
33°50.2′ 907970	119°50.8′ 626400	715	Silt, clayey to sandy, foraminiferal; 5Y5/2; massive, bioturbated in part; mollusks indicate downslope transport	Quaternary mollusks	325
33°54.0′ 880620	119°56.4′ 650430	80	Sand, fine grained, silty; 5Y5/2; angular to subangular mineral and lithic clasts; massive, bioturbated in part	Quaternary mollusks	326
33°53.7′ 883700	119°55.7′ 648390	90	Sand, fine grained, silty; 5Y5/2; angular to subangular mineral and lithic clasts; massive, bioturbated in part	Quaternary(?) mollusks	327

33°53.4′ 885980	119°55.3′ 646830	90	Sand, fine to medium grained, foraminiferal, sparsely glauconitic; 5Y5/2; subangular to subrounded mineral and lithic clasts	Quaternary mollusks	328
33°53.2′ 888590	119°54.8′ 645250	130	Mudstone, sandy; 5Y6/1 to 5Y8/1; angular mineral grains and volcanic rock fragments include pumice and glass shards; possibly derived from Blanca Formation of Weaver and others (1969)	Mixed Quaternary and middle Miocene coccoliths; late Pliocene to Holocene foraminifers	329
33°52.8′ 893630	119°53.7′ 642630	330	Silt, sandy; 5Y5/2; layers of shell fragments in core indicate downslope transport	Quaternary mollusks	331
33°52.6′ 897120	119°53.0′ 641240	440	Claystone, silty, diatomaceous; 5Y4/1 to 5Y6/1; and tuff, vitric, in laminae 1 cm or less thick (N8); laminated	Discoaster variabilis; early Mohnian foraminifers; subzone b, Denticula hustedtii-D. lauta	332
33°56.2′ 946390	119°43.4′ 661770	90	Sand, very fine grained, silty, foraminiferal; 5Y5/2; sparse shell fragments	Quaternary mollusks	333
33°55.8′ 947330	119°43.2′ 658850	260	Sand, very fine to medium grained, silty foraminiferal; 5Y5/2 and 5Y8/1; volcaniclastic detritus presumably derived from the Blanca Formation of Weaver and others (1969)	Quaternary mollusks	334
33°55.2′ 946960	119°43.3′ 655360	390	Siltstone, clayey, diatomaceous, tuffaceous; and sandstone, fine to very fine grained, micaceous, tuffaceous (?); 5Y4/1, 5Y6/1; indistinctly laminated	Subzone a, Denticula hustedtii	335
33°54.5′ 947770	119°43.1′ 651470	480	Silt, clayey to sandy, micaceous, sparsely glauconitic; 5Y4/1	Quaternary(?)	336

33°53.9′ 950130	119°42.6′ 647240	660	Mudstone, silty, micaceous; 5Y5/1; angular fragments of silty claystone (5Y4/1) as large as 1.5 cm; probable slump deposit	Middle Miocene to early Pliocene diatoms and silicoflagellates from claystone fragments, Late Pliocene or Quaternary foraminifers	337
33°53.1′ 951800	119°42.3′ 642710	1125	Mudstone, foraminiferal, micaceous; 5GY6/1; massive, mottled in part	Quaternary coccoliths; late Pliocene to Holocene foraminifers	338
33°58.4′ 1032980	119°26.4′ 672160	390	Sand, fine to coarse grained, silty, largely bioclastic; 5Y6/2; includes volcanic detritus; mollusks displaced downslope	Quaternary mollusks	339
33°58.8′ 1029600	119°27.1′ 674870	180	Sand fragments, very fine to coarse grained, silty, calcareous; 5Y8/1; includes tuffaceous(?) volcaniclastic detritus and shell fragments	Probably Quaternary	340 (drop 1)
33°58.8′ 1029600	119°27.1′ 674870	180	Siltstone, clayey, micaceous, sugary texture; 5YR4/1; massive fractured, hard	--	340 (drop 2)
33°58.7′ 1046860	119°23.7′ 673460	490	Claystone, silty, micaceous, sugary texture, dolomitic(?) in part, 5YR4/1; massive, fractured, hard	--	341
33°59.2′ 1043830	119°24.3′ 676670	300	Sand, very fine grained, clayey to silty, glauconitic, foraminiferal; 5Y5/2; mineral grains and lithic fragments probably derived largely from volcanic rocks	Quaternary(?)	342
33°47.6′ 1060810	119°20.5′ 605900	890	Mudstone, silty, micaceous, 5GY6/1; mottled and streaked in part; massive	Quaternary coccoliths; reworked Oligocene/Miocene coccoliths; late Pliocene to Holo- foraminifers	343

33°48.1′ 1063030	119°20.1′ 608900	780	Sand, fine-grained, silty, glauconitic (pelletal), foraminiferal; 5Y5/2; sparse mineral grains and lithic fragments probably derived largely from volcanic rocks	Quaternary(?)	344
33°48.5′ 1064680	119°19.8′ 611020	635	Sand, fine to medium grained, sparsely glauconitic and phosphoritic; 10YR4/2; mineral grains and lithic fragments probably derived largely from volcanic rocks	Late Pliocene to Holocene foraminifers	345
33°48.9′ 1066470	119°19.4′ 613740	550	Silt, clayey to sandy, glauconitic, foraminiferal; 5Y5/2	Quaternary(?)	346
33°49.2′ 1068500	119°19.0′ 615550	535	Sandstone, very fine to coarse grained, pebbly, tuffaceous, largely volcaniclastic; 5Y8/1 to 5Y6/1; includes subangular to subrounded granules and pebbles of andesitic(?) and dacitic(?) rocks, fine to medium grained lapilli tuff, quartzite, and green to gray schistose rocks as large as 1.2 cm; probably equivalent to Blanca Formation of Weaver and others (1969)	--	347
33°49.6′ 1070200	119°18.7′ 617670	545	Rubble, granule-pebble, includes subrounded to angular clasts of quartz-biotite-allanite muscovite mylonite, diorite, altered andesite(?), quartz-chlorite schist, and epidote-quartz rock as large as 3.5 cm; glauconitic (pelletal) mudstone matrix; 5YR4/1 to 5GY5/2; massive; possibly derived from Santa Cruz Island Schist and Willows Diorite of Weaver and others (1969) or Vaqueros Formation breccia similar to that exposed on Santa Cruz Island	--	348 T960

33°50.0′ 1072370	119°18.3′ 620000	565	Breccia, granule-pebble; angular to subangular clasts include porphyritic andesite as large as 4cm, dacite, volcaniclastic sandstone and siltstone; sandy mudstone matrix, in part tuffaceous; 10R6/2, 10YR7/4, 10YR4/2; bulk sample contains rare fragments of schistose rock and micaceous sandstone; resembles upper part of Blanca Formation of Weaver and others (1969)	--	349 T961A T961B
33°50.4′ 1074560	119°17.9′ 622240	790	Siltstone, sandy, micaceous; 5Y5/1; possibly derived from volcanic rock	Quaternary coccoliths	350
33°42.9′ 1091300	119°14.3′ 576320	260	Breccia, granule, tuffaceous, volcaniclastic bentonitic(?) clay matrix; 5Y8/1; variegated where weathered; angular to subangular clasts of dacite(?) as large as 2 cm; massive; resembles upper part of the Blanca Formation of Weaver and others	--	351
33°42.0′ 1090140	119°14.5′ 571160	260	Sandstone fragments, fine grained, silty, tuffaceous(?); N8 to 5YR6/1; possibly volcaniclastic	--	352
33°41.5′ 1089630	119°14.6′ 568140	380	Claystone, silty, micaceous, phosphoritic; laminae of sandy silt, volcaniclastic(?); 5Y4/1, 5Y6/1, N6; laminated in part	Discoaster deflandrei	353
33°41.2′ 1088510	119°14.8′ 566190	430	Sandstone (bottom 15 cm), very fine to fine grained, silty; N6 to N7; chiefly angular to subangular grains of quartz and feldspar with sparse lithic fragments probably derived from volcanic rocks; claystone, silty, 5Y4/1; indistinctly laminated, sheared	Probably Luisian foraminifers 38 cm from bottom; Luisian, 15 to 17 cm from bottom; Luisian in sandstone in in bottom 6 cm; subzone a, Denticula lauta 15 to 17 cm from bottom	354
33°40.8′ 1087170	119°15.0′ 563900	620	Claystone, silty, micaceous, diatomaceous, tuffaceous(?); 5Y4/1 to 5Y8/1; laminated to massive, sheared in part	Early or middle Miocene coccoliths and silicoflagellates; Luisian foraminifers; subzone b, Denticula lauta	355

33°40.5′ 1086670	119°15.1′ 562070	720	Siltstone, clayey, micaceous, tuffaceous(?); 5Y3/1; massive	--	356
33°39.6′ 1083390	119°15.8′ 556550	750	Siltstone, clayey, micaceous; 5Y4/1 to 5Y6/1	--	357
33°38.2′ 1081630	119°16.1′ 548420	580	Claystone(?) silty; 5Y8/1	--	358
33°58.6′ 1155870	119°02.1′ 669770	720	Siltstone, clayey, micaceous; 5Y6/1; massive	Quaternary coccoliths; Late Pliocene to Holocene foraminifers	359
33°59.5′ 1157130	119°01.8′ 675340	590	Siltstone, clayey, micaceous; 5Y6/1; massive	Quaternary coccoliths; late Pliocene to Holocene foraminifers	360
33°59.9′ 1159660	119°01,4′ 677870	230	Siltstone, clayey, micaceous; 5GY6/1; massive	Discoaster brouweri, probably D. tamalis subzone; Repettian foraminifers	361
33°59.7′ 1148950	119°03.5; 676500	335	Siltstone, clayey, micaceous; 5Y4/1; mottled in part; massive	Discoaster brouweri, possibly D. surculus subzone; Repettian foraminifers	362