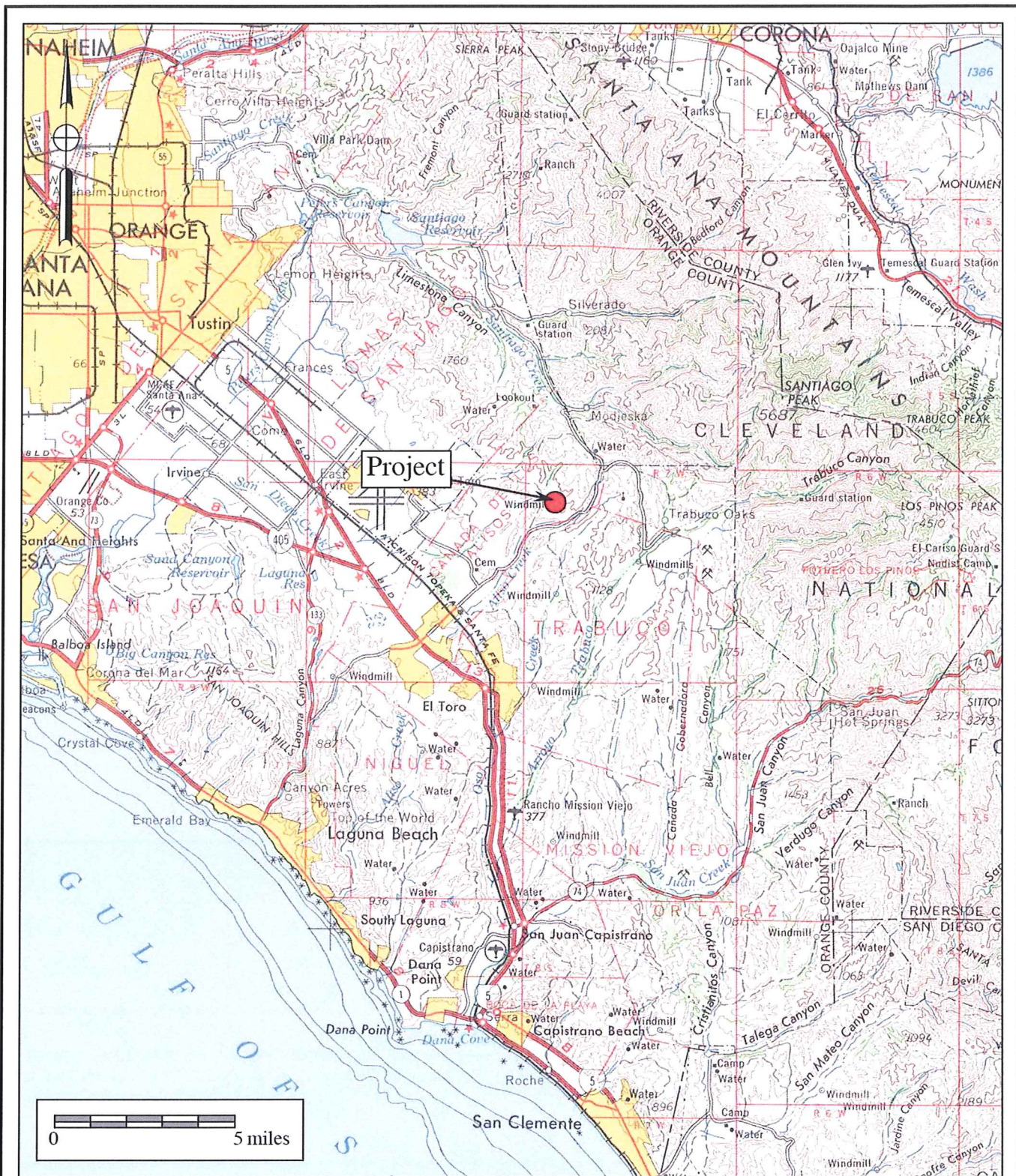


## **Project Figures**



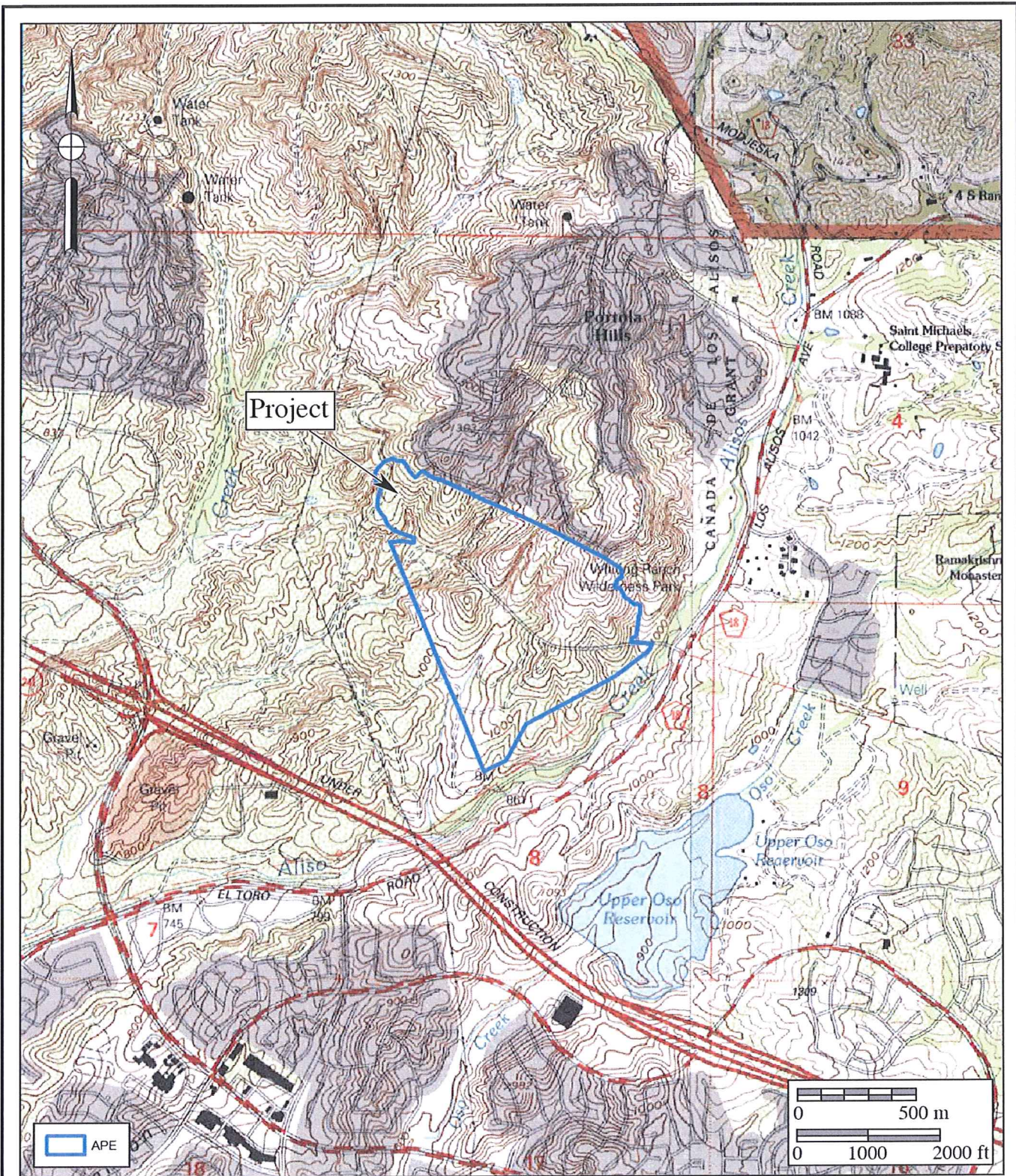
**Figure 1**

**General Location Map**

**The Portola Center Project**

USGS Santa Ana and San Diego (1:250,000 series)





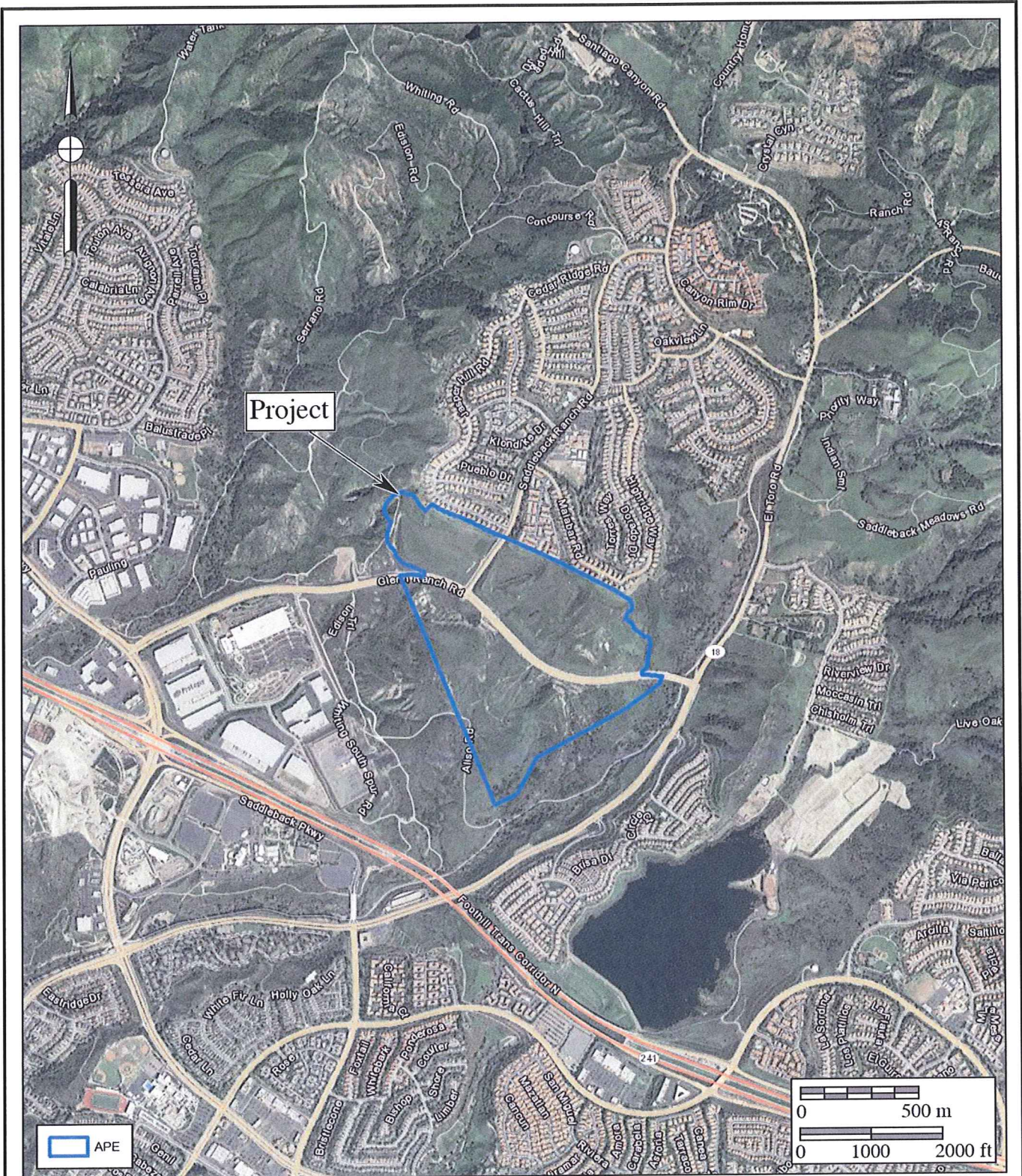
**Figure 2**

**Project Location Map**

The Portola Center Project

USGS El Toro and Santiago Peak Quadrangles (7.5 minute series)





**Figure 3**

**Project Location Map**

The Portola Center Project

Source: ESRI Aerial Imagery



# GEOLOGIC MAP LEGEND

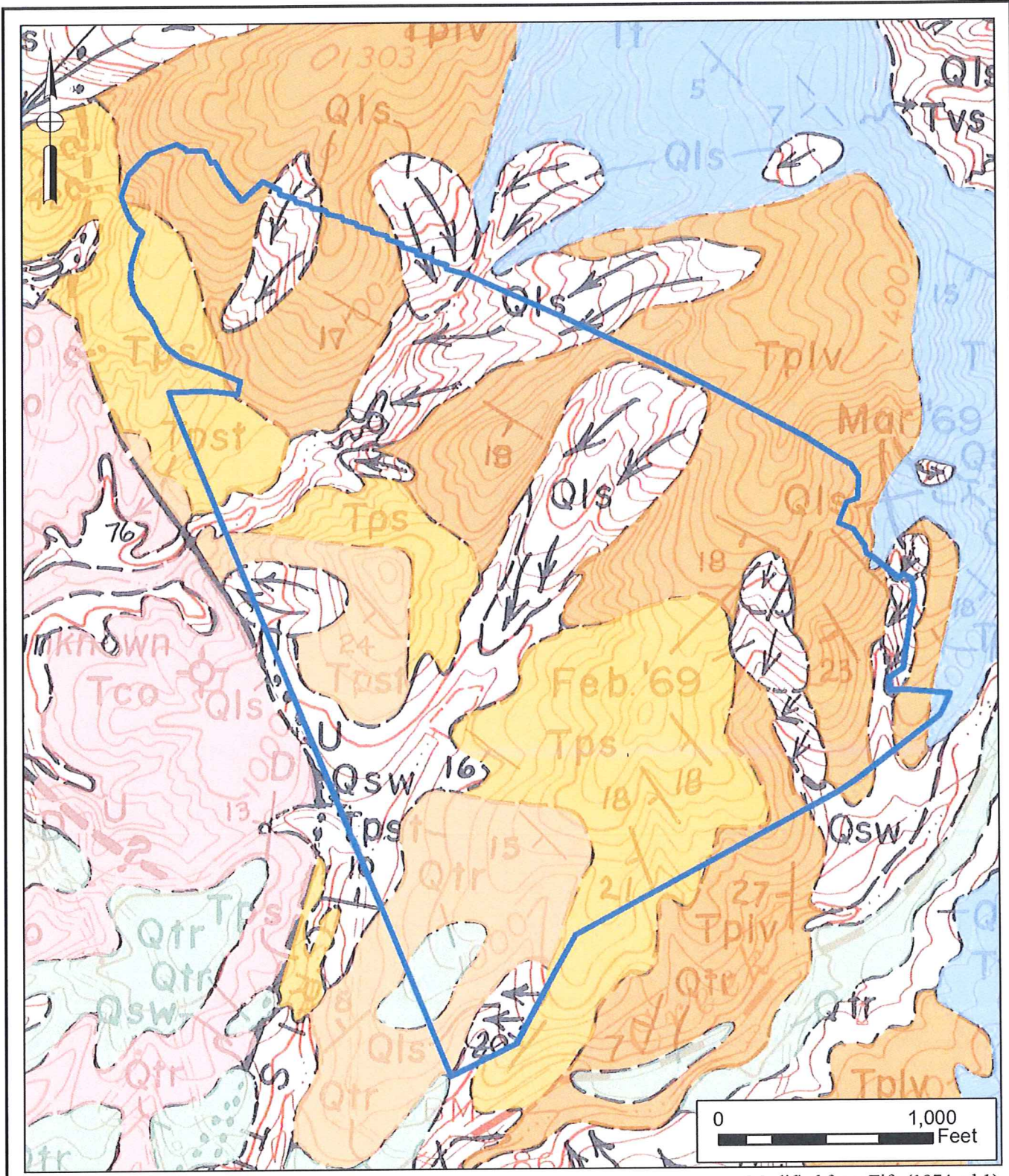
Figures 4 and 5  
(Paleontological sensitivity shown in parentheses)

## SURFICIAL DEPOSITS

- Qaf ARTIFICIAL FILL
- Qal ALLUVIUM
- Qsw SLOPEWASH
- Qls LANDSLIDES
- Qtr RIVER TERRACE DEPOSITS (HIGH)

## BEDROCK UNITS

- Tco CAPISTRANO FORMATION, OSO SAND MEMBER (VERY HIGH)
- Tpst PUENTE FORMATION, SOQUEL MEMBER, siltstone submember (HIGH)
- Tps PUENTE FORMATION, SOQUEL MEMBER, sandstone submember (HIGH)
- Tplv PUENTE FORMATION, LA VIDA MEMBER (HIGH)
- Tt TOPANGA FORMATION (VERY HIGH)
- Tvs VAQUEROS FORMATION - SESPE FORMATION, undifferentiated

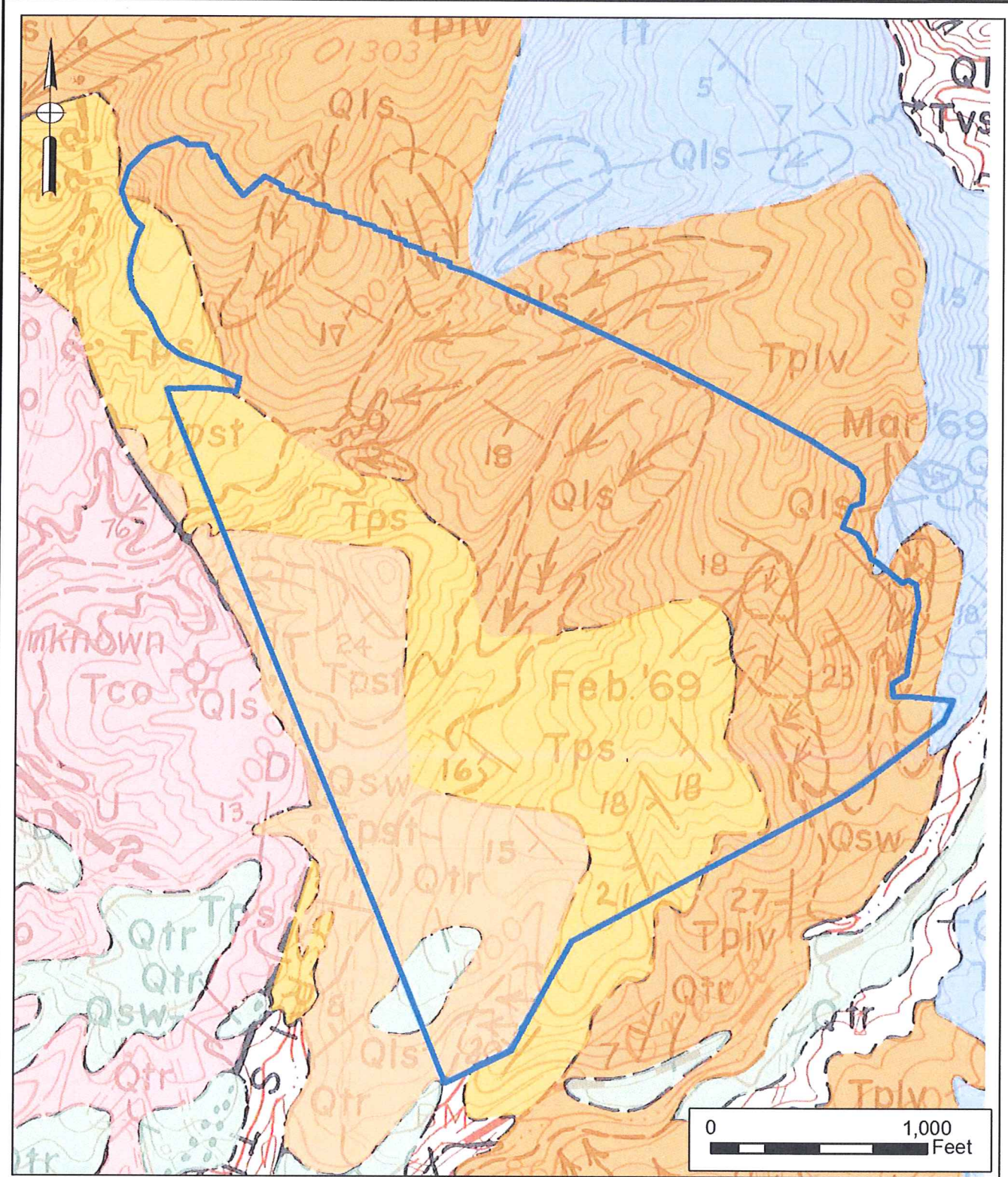


Modified from Fife (1974, pl.1)

**Figure 4**  
**Geologic Map**

The Portola Center Project





Modified from Fife (1974, pl.1)

### Figure 5

### Predicted Geologic Exposure Map

The Portola Center Project



## **Appendix 1**

### **Museum collections and records search results**



**Collections and records search results for the  
Natural History Museum of Los Angeles County,  
Los Angeles, California**

(Records also include those of the University of California at Los Angeles  
and those of the California Institute of Technology in Pasadena,  
both collections having been previously transferred to LACMNH)

**Vertebrate Paleontology Records**

Natural History Museum  
of Los Angeles County  
900 Exposition Boulevard  
Los Angeles, CA 90007  
tel 213.763.DINO  
www.nhm.org



Vertebrate Paleontology Section  
Telephone: (213) 763-3324  
FAX: (213) 746-7431  
e-mail: smcleod@nhm.org

16 August 2011

Brian F. Smith & Associates, Inc.  
14010 Poway Road, Suite A.  
Poway, CA 92064

Attn: Dr. George L. Kennedy, Senior Paleontologist

re: Vertebrate Paleontology Records Check for paleontological resources for the proposed Portola Hills Project, BFSa project 11-072, near the community of Portola Hills, Orange County, project area

Dear George:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for the proposed Portola Hills Project, BFSa project 11-072, near the community of Portola Hills, Orange County, project area, as outlined on the portion of the El Toro USGS topographic quadrangle map that you sent to me via e-mail on 9 August 2011. We do not have any vertebrate fossil localities that lie within the project boundaries, but we do have localities nearby from the same sedimentary units that occur in the proposed project area.

In the southwestern portion of the proposed project area there are some exposures of older Quaternary terrace deposits. Our closest vertebrate fossil locality from the Quaternary deposits is LACM 7713, west-southwest of the proposed project area on the western side of Highway 133 at the southern end of the interchange with the San Diego Freeway (I-405), that produced a fossil specimen of ground sloth, *Mylodontidae*, from unstated but shallow depth.

In the central part of the western margin of the proposed project area there may be some exposures of the marine late Miocene Capistrano Formation. Our closest vertebrate fossil localities from the Oso Sand Member of the Capistrano Formation, LACM 3221, 3411, 4177, and 7370-7372, are situated just south of west of the southernmost portion of the proposed project area. These vertebrate fossil localities have produced an extensive composite fossil fauna of predominately marine vertebrates including bonito shark, *Isurus hastalis*, great white shark, *Carcharocles*, eagle

ray, *Myliobatis*, sturgeon, *Acipenser*, halibut, *Paralichthys*, sabretooth salmon, *Onchorhynchus rastronus*, tortoise, *Geochelone*, leatherback turtle, *Psephophorus*, rare specimens of crocodiles, Crocodylidae, auklet, Mancallinae, sea lion, *Imagotaria*, otter, *Satherium*, dugongid sea cows, Dugongidae, horse, *Pliohippus*, rhinoceros, Rhinocerotidae, camel, Camelidae, primitive baleen whale, *Herpetocetus*, right whale, Balaenidae, rorqual whale, Balaenopteridae, and sperm whale, Physeteridae. Of particular note, E.J. Hilton and L. Grande (2006. Review of the fossil record of sturgeons, family Acipenseridae (Actinopterygii: Acipenseriformes), from North America. Journal of Paleontology, 80(4):672-683) published on fossil specimens of the sturgeon *Acipenser* from locality LACM 3221.

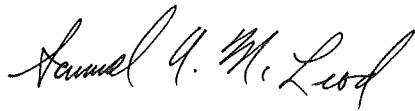
In the central part of northeastern portion of the proposed project area there are some exposures of the marine middle Miocene Topanga Formation. Our closest vertebrate fossil locality from the Topanga Formation probably is LACM 7200, on the ridge just northeast of the proposed project area, that produced a fossil specimen of the peculiar and extinct four-legged marine mammal, *Desmostylus*. We have several vertebrate fossil localities from the Topanga Formation around the Oso Dam south of the proposed project area including locality LACM 4464 that produced fossil specimens of sea lion, *Neotherium*, and shearwater, *Puffinus priscus*. The specimens of the shearwater *Puffinus* were published in the scientific literature by H. Howard and L. G. Barnes in 1987 (Middle Miocene Marine Birds from the Foothills of the Santa Ana Mountains, Orange County, California. Contributions in Science, Natural History Museum of Los Angeles County, 383:1-9). South of the Oso Dam, but still along Oso Creek, our vertebrate fossil locality LACM 5769 produced a fossil specimen of great white shark, *Carcharocles megalodon*. A bit further to the northeast of the proposed project area, near Cook's Corner, our vertebrate fossil locality LACM 5511 produced a specimen of the fossil dugong *Metaxytherium arctodites* figured in the scientific literature by F. J. Arranda-Manteca in 1994 (A New Middle Miocene Sirenian of the Genus *Metaxytherium* from Baja California and California: Relationships and Paleobiogeographic Implications. Proceedings of the San Diego Society of Natural History, 29:191-204).

Most of the proposed project though has exposures of the Soquel and La Vida Members of the marine late Miocene Puente Formation. Our closest vertebrate fossil locality from the Puente Formation is LACM 6287, north-northwest of the proposed project area southeast of the Santiago Reservoir along Santiago Canyon Road in Limestone Canyon, that produced fossil specimens of tonguefish, *Symphurus*.

Any excavations in the exposures of Quaternary terrace deposits or in exposures of the Puente Formation, the Capistrano Formation or the Topanga Formation in the proposed project area may well uncover significant fossil vertebrate remains. Any substantial excavations in the sedimentary deposits exposed in the proposed project area, therefore, should be monitored closely to quickly and professionally recover any fossil remains discovered while not impeding development. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

A handwritten signature in cursive script that reads "Samuel A. McLeod". The signature is written in black ink and is positioned below the word "Sincerely,".

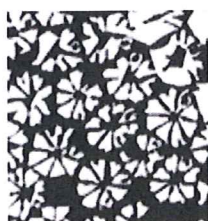
Samuel A. McLeod, Ph.D.  
Vertebrate Paleontology

enclosure: draft invoice

**Collections and records search results for the  
Natural History Museum of Los Angeles County,  
Los Angeles, California**

(Records also include those of the University of California at Los Angeles  
and those of the California Institute of Technology in Pasadena,  
both collections having been previously transferred to LACMNH)

**Invertebrate Paleontology Records**



## LACMIP Locality Register

77 of 289 selected localities

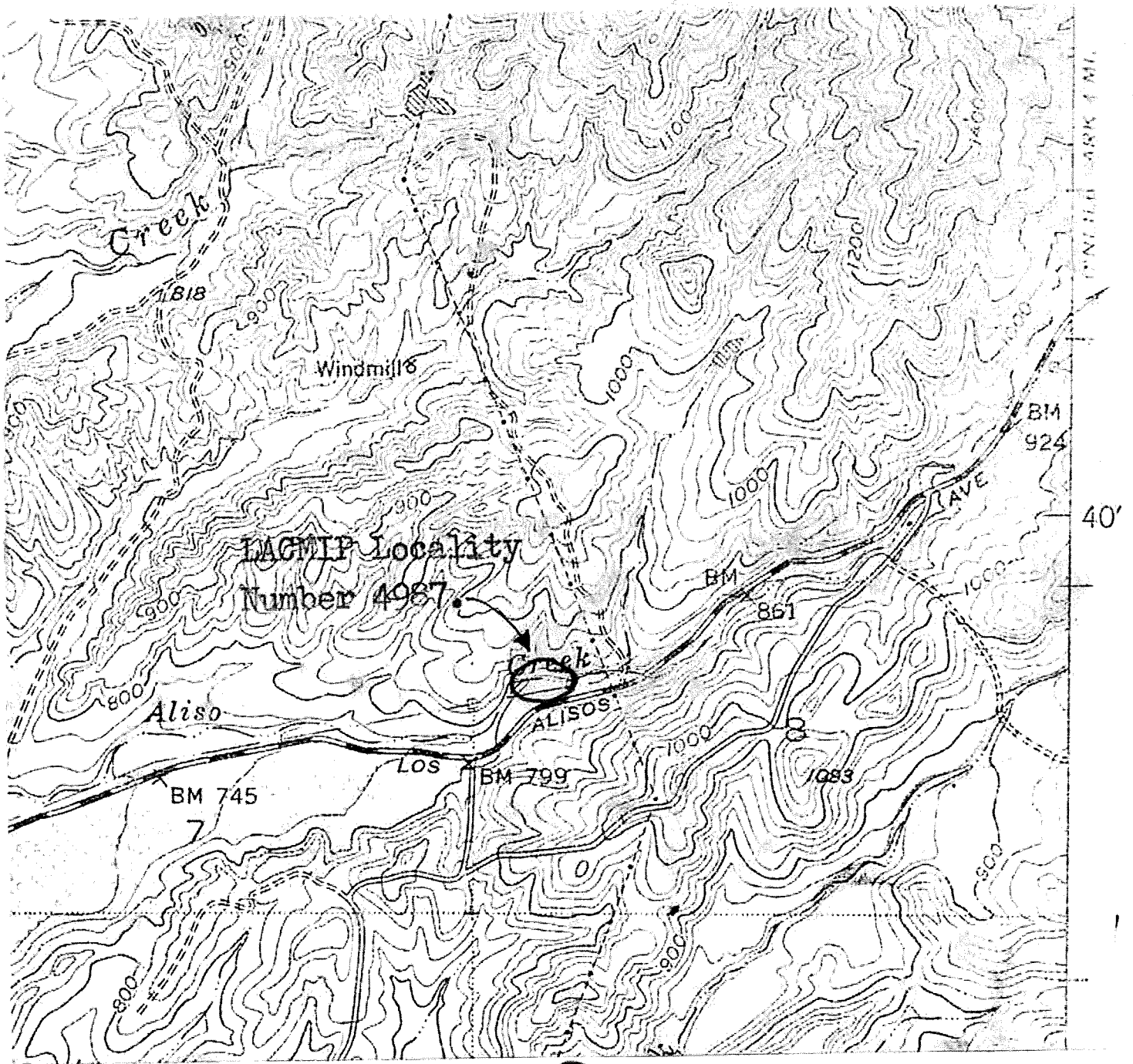
### LACMIP LOCALITY 4987

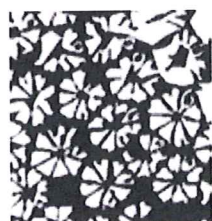
**Summary** no data  
**Unit** Capistrano Fm. (?) (Phillip G. Owen, 1975-6-11)  
**Age** Miocene (Phillip G. Owen, 1975-6-11)  
**Locality** Orange County; California; USA (Phillip G. Owen, 1975-6-11)  
**Collector** Paul Kirkland (unknown, 2003-8-29)  
**Lat./Long.** no data  
**Town./Range** NW-SW 1/4 of Section 8, T6S, R7W (Phillip G. Owen, 1975-6-11)  
**Maps** USGS, 1950, El Toro 1:24000. (Phillip G. Owen, 1975-6-11)  
**Accession** no data  
**Alt. Numbers** no data

Marine invertebrates collected by Mr. Kirkland from a concretionary gray siltstone along the bank of Aliso Creek northeast of El Toro; California. This locality is between Aliso Creek and Alisos Avenue and approximately 250 meters NE of Bench Mark 799. See the map on the back of this card.

**Source** Unknown  
**Entered by** (Phillip G. Owen, 1975-6-11)

**Maps/Photos/Notes**





## LACMIP Locality Register

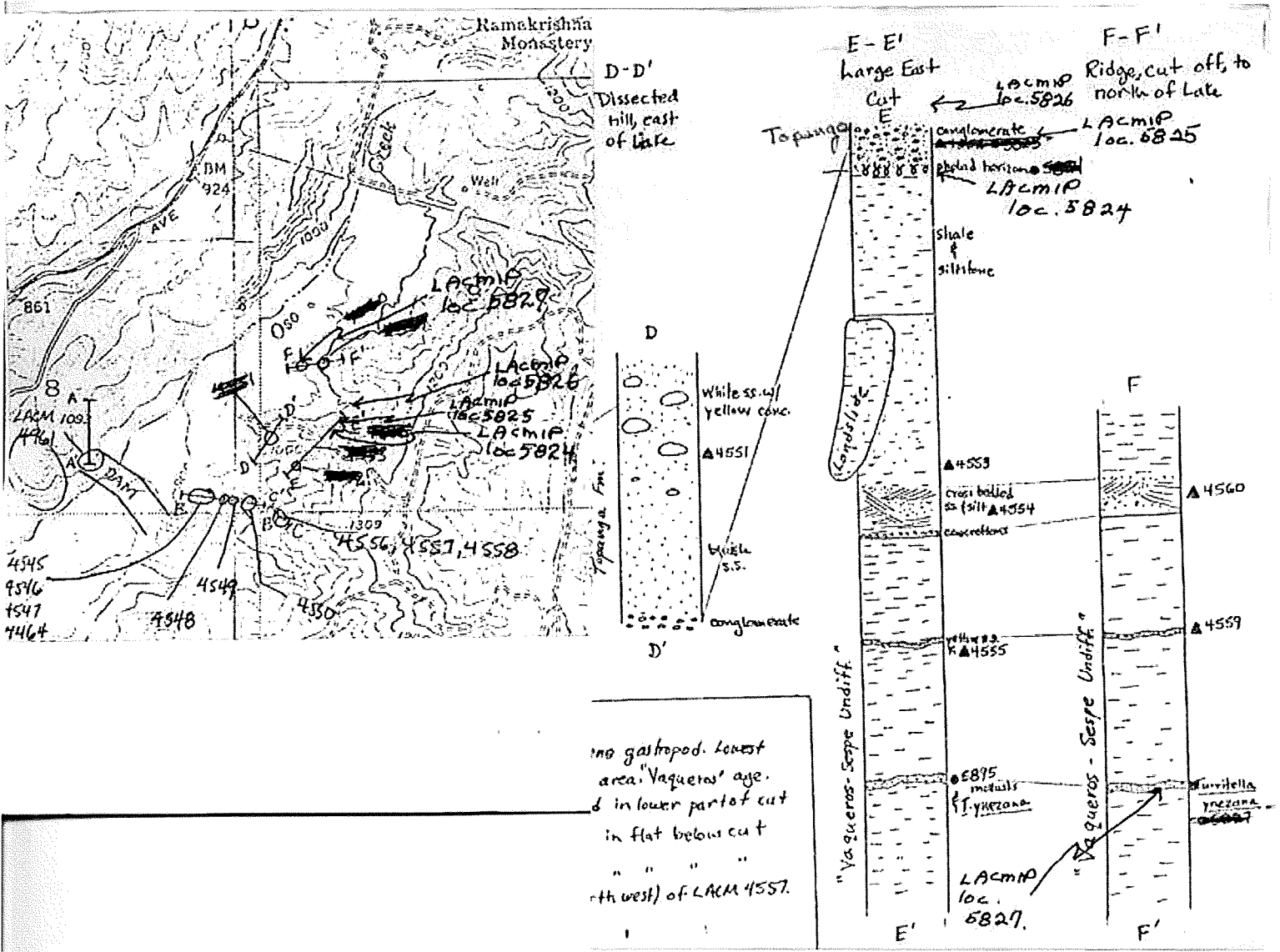
80 of 289 selected localities

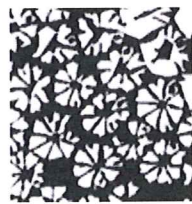
### LACMIP LOCALITY 5824

<b>Summary</b>	no data
<b>Unit</b>	Topanga Fm. (Edward C. Wilson, 1979-7-5)
<b>Age</b>	Miocene (Edward C. Wilson, 1979-7-5)
<b>Locality</b>	Orange County; California; USA (Edward C. Wilson, 1979-7-5)
<b>Collector</b>	Edward C. Wilson; OD-2; 1979-06-19 (unknown, 2003-8-29)
<b>Lat./Long.</b>	no data
<b>Town./Range</b>	Section 9, T6S, R7W (Edward C. Wilson, 1979-7-5)
<b>Maps</b>	USGS, 1954, Santiago Peak 1:24000. (Edward C. Wilson, 1979-7-5)
<b>Accession</b>	A.6440.79-3 (Edward C. Wilson, 1979-7-5)
<b>Alt. Numbers</b>	no data
	East side of excavation for resevoir of Upper Oso Dam. Pholad and other burrowing clams in 1 foot thick bed at top of dark gray shale unit and in overlying buff shaly sandstone about 1 foot thick at base of cobble conglomerate.
<b>Source</b>	Unknown
<b>Entered by</b>	(Edward C. Wilson, 1979-7-5)

### Maps/Photos/Notes







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### LACMIP LOCALITY 5825

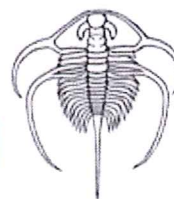
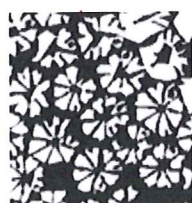
<b>Summary</b>	no data
<b>Unit</b>	Topanga Fm. (Edward C. Wilson, 1979-7-9)
<b>Age</b>	Miocene (Edward C. Wilson, 1979-7-9)
<b>Locality</b>	Orange County; California; USA (Edward C. Wilson, 1979-7-9)
<b>Collector</b>	E. Wilson; OD-1; 1979-05-29 (unknown, 2003-8-29) P. Owen; OD-1; 1979-05-29 (unknown, 2003-8-29)
<b>Lat./Long.</b>	no data
<b>Town./Range</b>	SW-SW 1/4 of Section 9, T6S, R7W (Edward C. Wilson, 1979-7-9)
<b>Maps</b>	USGS, 1954, Santiago Peak 1:24000. (Edward C. Wilson, 1979-7-9)
<b>Accession</b>	A.6440.79-3 (Edward C. Wilson, 1979-7-9)
<b>Alt. Numbers</b>	no data
	Conglomerate with schist [Catalina?] pebbles and cobbles in moderately indurated sandstone; medium gray weathers light gray; medium to coarse grained. Unit 15' thick. Casts; molds and shells of mollusks. Overlies LACMIP locality 5824 and fills some burrows below. See the map on the back of locality card 5824.
<b>Source</b>	Unknown
<b>Entered by</b>	(Edward C. Wilson, 1979-7-9)

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### LACMIP LOCALITY 5826

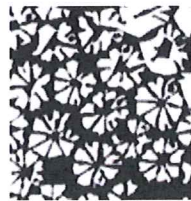
<b>Summary</b>	no data
<b>Unit</b>	Topanga Fm. (Edward C. Wilson, 1979-7-9)
<b>Age</b>	Miocene (Edward C. Wilson, 1979-7-9)
<b>Locality</b>	Orange County; California; USA (Edward C. Wilson, 1979-7-9)
<b>Collector</b>	E. Wilson; OD-3; 1979-05-29 (unknown, 2003-8-29) P. Owen; OD-3; 1979-05-29 (unknown, 2003-8-29)
<b>Lat./Long.</b>	no data
<b>Town./Range</b>	SW-SW 1/4 of Section 9, T6S, R7W (Edward C. Wilson, 1979-7-9)
<b>Maps</b>	USGS, 1954, Santiago Peak 1:24000. (Edward C. Wilson, 1979-7-9)
<b>Accession</b>	A.6440.79-3 (Edward C. Wilson, 1979-7-9)
<b>Alt. Numbers</b>	no data
	Sandstone; coarse grained; tan weathers light tan; 200 feet thick; with 10 foot thick highly fossiliferous unit 50 feet above base. Abundant large oysters; rare <i>Lyropecten crasscardo</i> . Temblor stage. 5826 is 50 feet above 5825 in same section. See the map on the back of locality card 5824.
<b>Source</b>	Unknown
<b>Entered by</b>	(Edward C. Wilson, 1979-7-9)

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### LACMIP LOCALITY 5827

**Summary** no data  
**Unit** Vaqueros Fm. (Edward C. Wilson, 1979-7-9)  
**Age** Miocene (Edward C. Wilson, 1979-7-9)  
**Locality** Orange County; California; USA (Edward C. Wilson, 1979-7-9)  
**Collector** L.G. Barnes; LGB 1980; 1979-06-19 (unknown, 2003-8-29)  
**Lat./Long.** no data  
**Town./Range** SW-SW 1/4 of Section 9, T6S, R7W (Edward C. Wilson, 1979-7-9)  
**Maps** USGS, 1954, Santiago Peak 1:24000. (Edward C. Wilson, 1979-7-9)  
**Accession** A.6440.79-3 (Edward C. Wilson, 1979-7-9)  
**Alt. Numbers** no data

Sandstone; medium gray weathers same; medium grained, with near-conglomerate of *Turritella inezana* Conrad; 1857 [Vaqueros stage]. Unit 10 feet thick. This locality is 250 feet east of the line section measured that included 5824-5826; but apparently is along strike with beds at its exposed base. See the map on the back of locality card 5824."

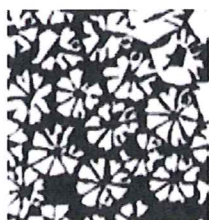
**Source** Unknown  
**Entered by** (Edward C. Wilson, 1979-7-9)

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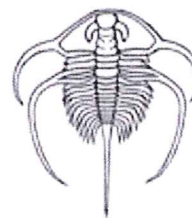


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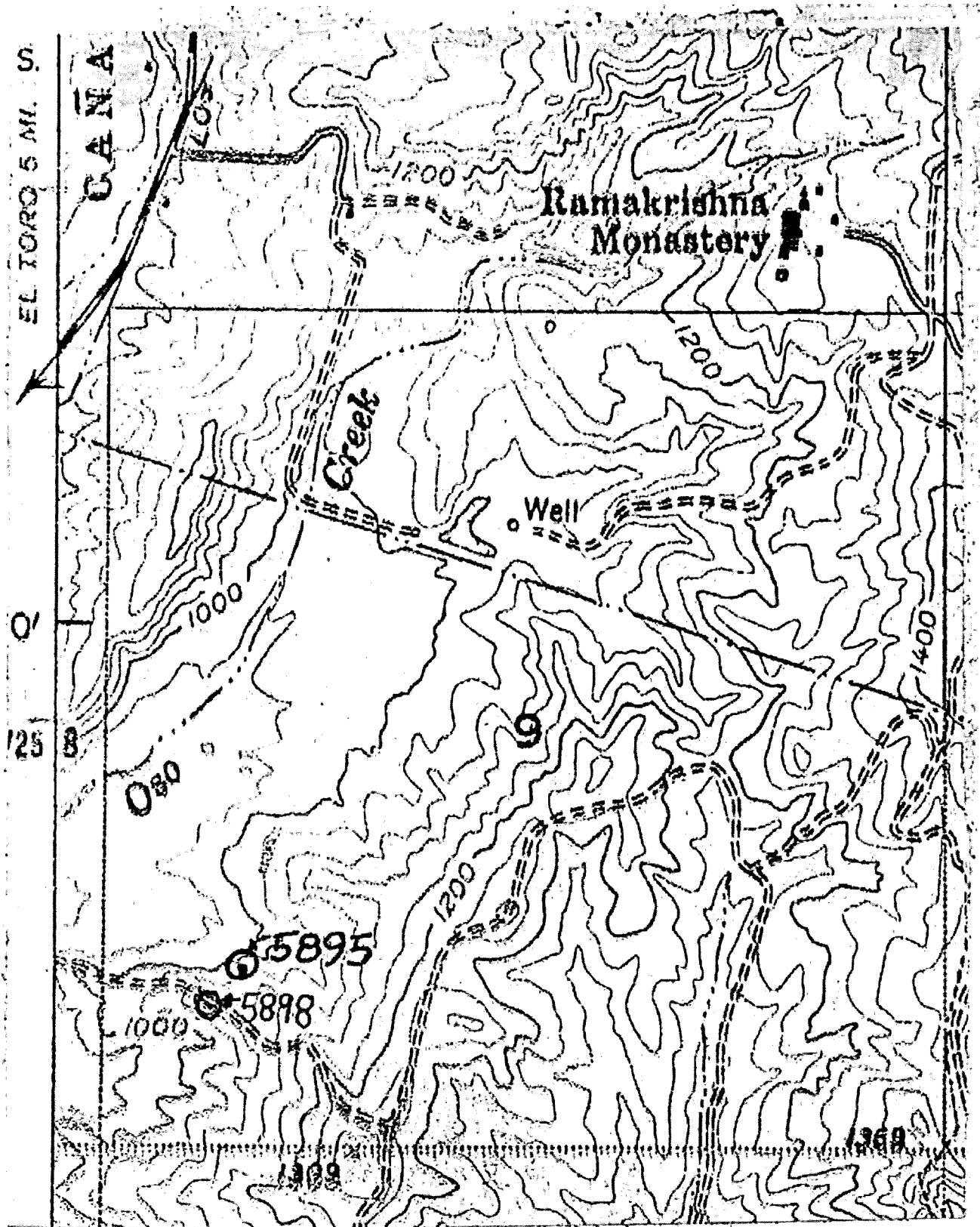
## LACMIP Locality Register

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### LACMIP LOCALITY 5895

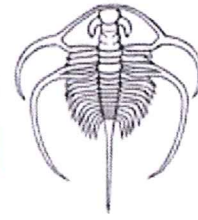
<b>Summary</b>	no data
<b>Unit</b>	Vaqueros-Sespe undif (Edward C. Wilson, 1980-5-9)
<b>Age</b>	Miocene (Edward C. Wilson, 1980-5-9)
<b>Locality</b>	Orange County; California; USA (Edward C. Wilson, 1980-5-9)
<b>Collector</b>	E. Wilson; OD-1; 1980-05-07 (unknown, 2003-8-29) P. Owen; OD-1; 1980-05-07 (unknown, 2003-8-29)
<b>Lat./Long.</b>	no data
<b>Town./Range</b>	SW-SW 1/4 of Section 9, T6S, R7W (Edward C. Wilson, 1980-5-9)
<b>Maps</b>	USGS, 1954, Santiago Peak 1:24000. (Edward C. Wilson, 1980-5-9)
<b>Accession</b>	no data
<b>Alt. Numbers</b>	no data
	South shore of resevoir of Upper Oso Dam; 0.5 miles northeast of south end of dam; on 1000 foot contour line; near base of exposed section on north side of ridge shown on map extending into resevoir basin. Sandstone; medium gray weathers same; medium grained; preservation poor. Fine-grained; medium gray shale above and below the bed. See the map on the back of locality card 5895.
<b>Source</b>	Unknown
<b>Entered by</b>	(Edward C. Wilson, 1980-5-9)

#### Maps/Photos/Notes





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### LACMIP LOCALITY 5898

<b>Summary</b>	no data
<b>Unit</b>	Topanga Fm. (Phillip G. Owen, 1980-6-12)
<b>Age</b>	Miocene (Phillip G. Owen, 1980-6-12)
<b>Locality</b>	Orange County; California; USA (Phillip G. Owen, 1980-6-12)
<b>Collector</b>	L.G. Barnes; LGB 1899; 1979-04-12 (unknown, 2003-8-29)
<b>Lat./Long.</b>	no data
<b>Town./Range</b>	SW-SW 1/4 of Section 9, T6S, R7W (Phillip G. Owen, 1980-6-12)
<b>Maps</b>	USGS, 1954, Santiago Peak 1:24000. (Phillip G. Owen, 1980-6-12)
<b>Accession</b>	no data
<b>Alt.</b>	no data
<b>Numbers</b>	

South shore of resevoir of Upper Oso Dam; approximately 0.4 miles northeast of south end of dam; about \_\_\_feet above base of measured section D - D'; on north side of ridge shown on map extending into resevoir basin. See the map on the back of locality card 5895.

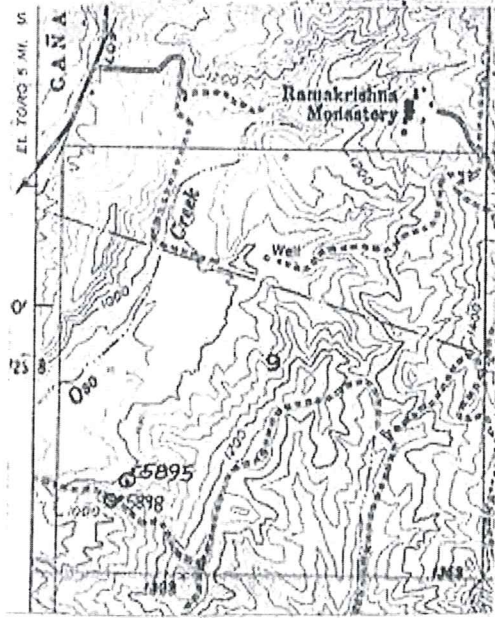
**Source** Unknown  
**Entered by** (Phillip G. Owen, 1980-6-12)

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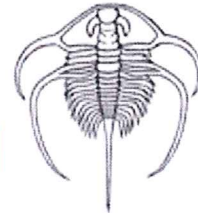
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# LACMIP Locality Register

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## LACMIP LOCALITY 6207

**Summary** no data

**Unit** Topanga Fm. (Phillip G. Owen, 1982-12-9)

**Age** Miocene (Phillip G. Owen, 1982-12-9)

**Locality** Orange County; California; USA (Phillip G. Owen, 1982-12-9)

**Collector** Rodney Raschke; RR 593; 1982-12-05 (unknown, 2003-8-29)

**Lat./Long.** no data

**Town./Range** SE-NE 1/4 of Section 8, T6S, R7W (Phillip G. Owen, 1982-12-9)

**Maps** USGS, 1968, El Toro 1:24000. (Phillip G. Owen, 1982-12-9)

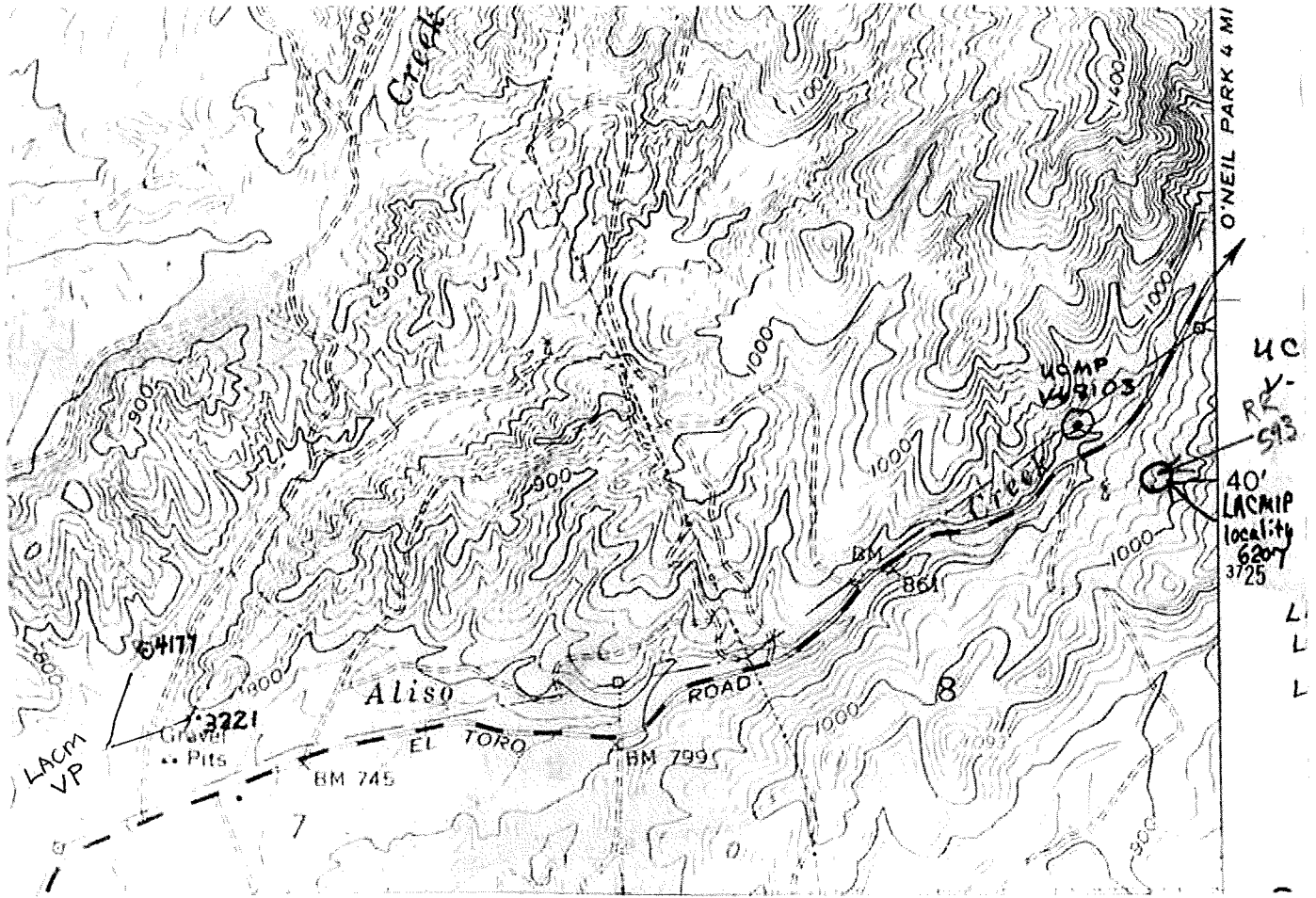
**Accession** A.10130.82-7 (Phillip G. Owen, 1982-12-9)

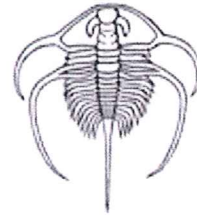
**Alt. Numbers** no data

Two specimens of *Lyropecten crassicardo* [Conrad; 1856] collected from a roadcut on new El Toro Road; along Aliso Creek; near Oso Dam in the western foothills of the Santa Ana Mountains. See the map on the back of locality card 6207.

**Source** Unknown  
**Entered by** (Phillip G. Owen, 1982-12-9)

### Maps/Photos/Notes





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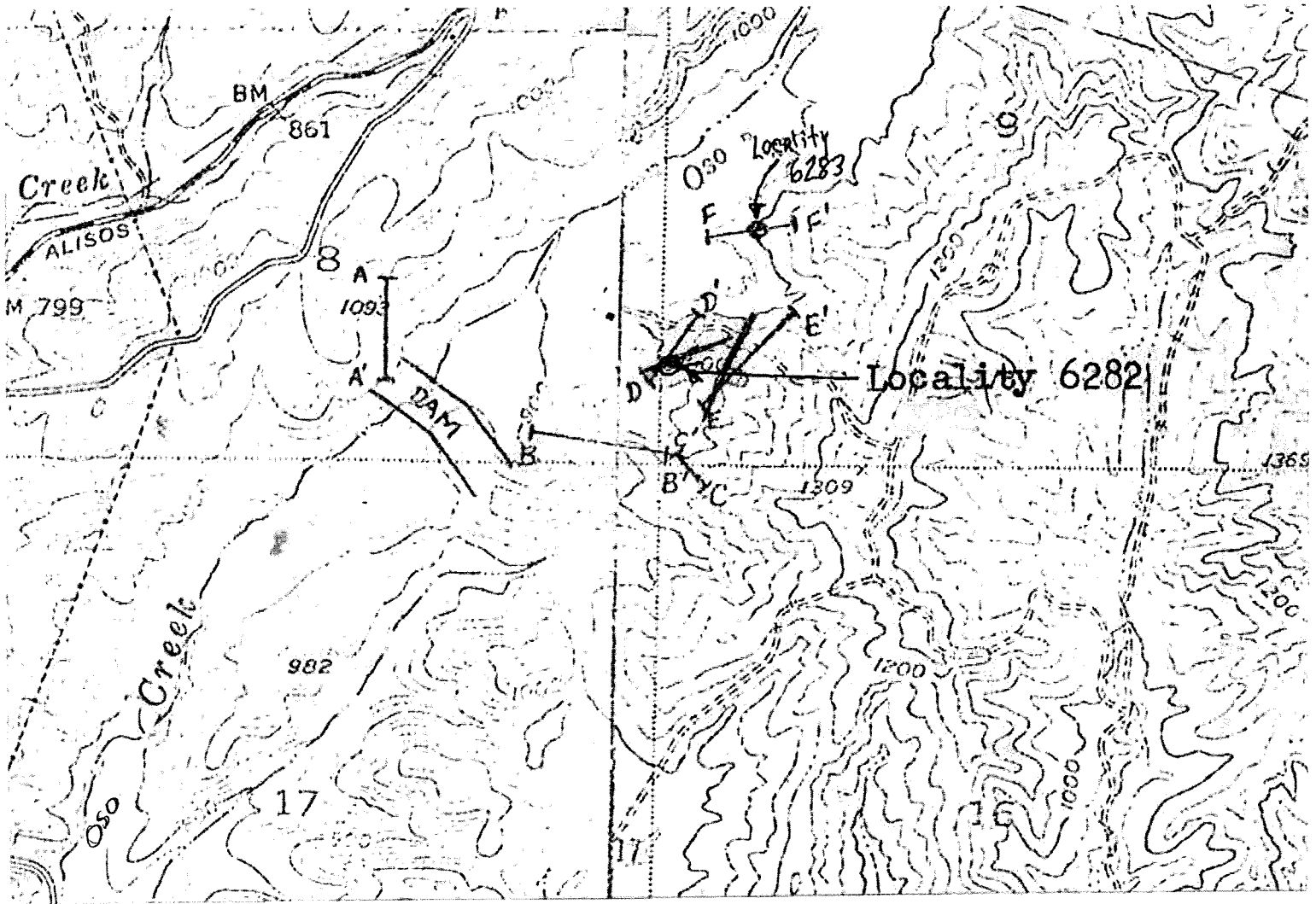
### LACMIP LOCALITY 6282

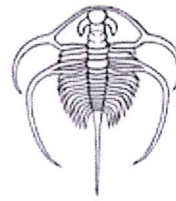
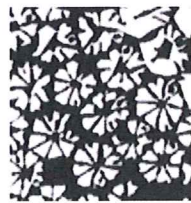
<b>Summary</b>	no data
<b>Unit</b>	Topanga Fm. (Phillip G. Owen, 1983-5-16)
<b>Age</b>	Miocene (Phillip G. Owen, 1983-5-16)
<b>Locality</b>	Orange County; California; USA (Phillip G. Owen, 1983-5-16)
<b>Collector</b>	Rodney Raschke; RR406 (unknown, 2003-8-29)
<b>Lat./Long.</b>	no data
<b>Town./Range</b>	SE-SE 1/4 of Section 9, T6S, R7W (Phillip G. Owen, 1983-5-16)
<b>Maps</b>	USGS, 1965, Santiago Peak 1:24000. (Phillip G. Owen, 1983-5-16)
<b>Accession</b>	A.10130.83-9 (Phillip G. Owen, 1983-5-16)
<b>Alt. Numbers</b>	no data

Specimen of *Pecten* {*P.*} *vanvlecki* Arnold collected by Mr. Rashcke from a dissected hill on the east side of Upper Oso Dam. The locality is in a buff colored sandstone above the basal conglomerate [?San Onofre Breccia] described on locality cards 5824 and 5825. See the map on the back of locality card 6282.

**Source** Unknown  
**Entered by** (Phillip G. Owen, 1983-5-16)

### Maps/Photos/Notes





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### LACMIP LOCALITY 6283

<b>Summary</b>	no data
<b>Unit</b>	Vaqueros Fm. (Phillip G. Owen, 1983-5-24)
<b>Age</b>	Miocene (Phillip G. Owen, 1983-5-24)
<b>Locality</b>	Orange County; California; USA (Phillip G. Owen, 1983-5-24)
<b>Collector</b>	Rodney Raschke; LGB 1979 (unknown, 2003-8-29)
<b>Lat./Long.</b>	no data
<b>Town./Range</b>	SE-SE 1/4 of Section 9, T6S, R7W (Phillip G. Owen, 1983-5-24)
<b>Maps</b>	USGS, 1965, Santiago Peak 1:24000. (Phillip G. Owen, 1983-5-24)
<b>Accession</b>	A.10130.83-9 (Phillip G. Owen, 1983-5-24)
<b>Alt. Numbers</b>	no data

This locality is in the basal part of the section exposed on the east side of the cut made for Upper Oso Dam in the western part of the Santa Ana Mountains. The locality is described in the LACM VP locality register as follows: '4559 ... exposed in cuts representing the previous location of a ridge that ran southwest to northwest in the valley northwest of the cut where LACM localities 4552 through 4555 are. Fossils are in a \_\_\_\_ thick bed of brownish sand in an otherwise fairly uniform section of gray sandstone.' See the map on the back of locality card 6282.

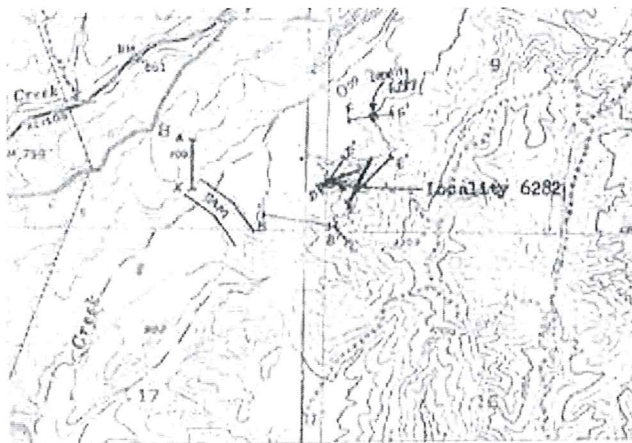
**Source** Unknown  
**Entered by** (Phillip G. Owen, 1983-5-24)

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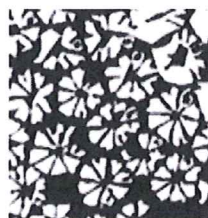
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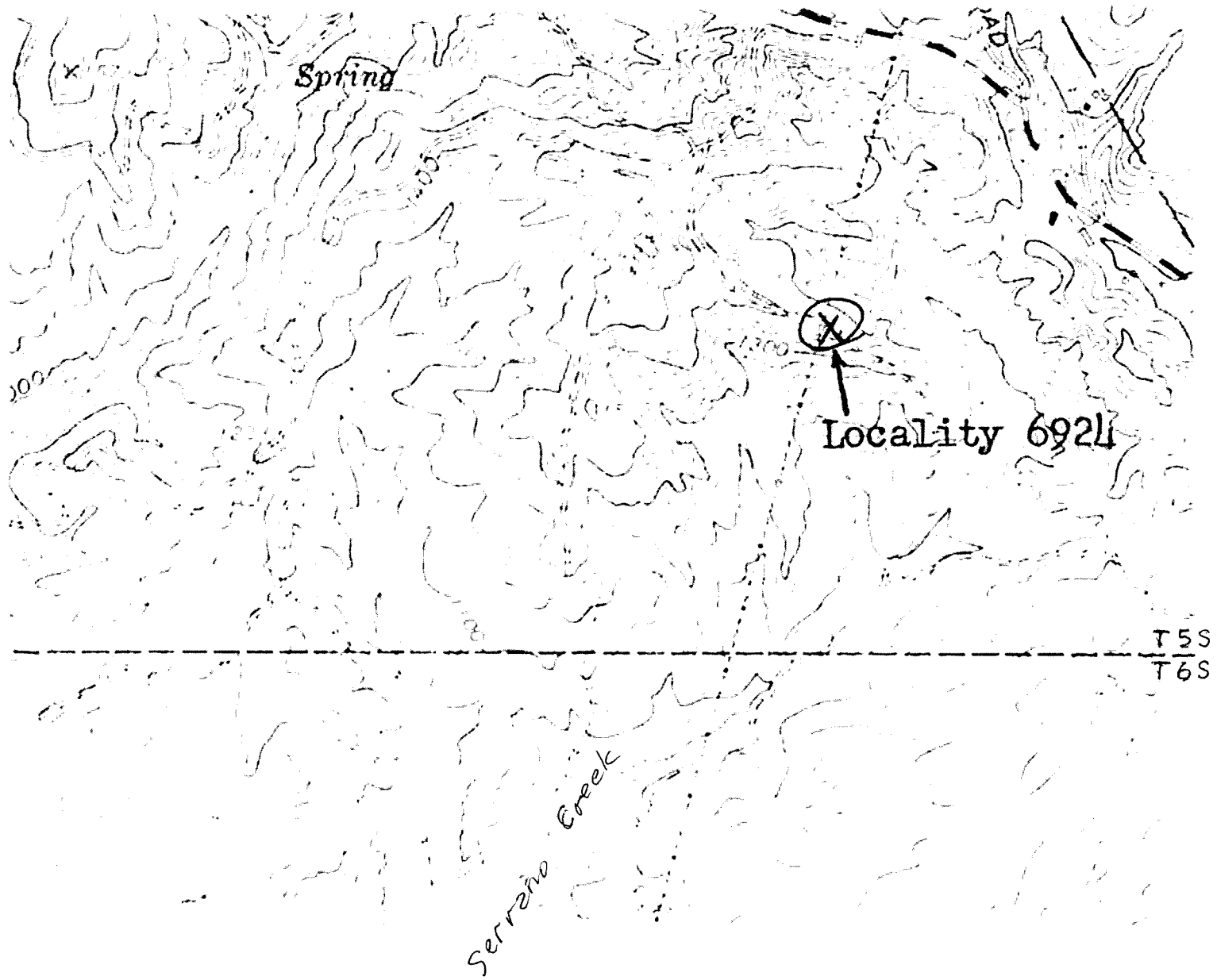
### LACMIP LOCALITY 6924

<b>Summary</b>	no data
<b>Unit</b>	Topanga Fm. (Phillip G. Owen, 1984-5-24)
<b>Age</b>	Miocene (Phillip G. Owen, 1984-5-24)
<b>Locality</b>	Orange County; California; USA (Phillip G. Owen, 1984-5-24)
<b>Collector</b>	Rodney Raschke; 1983-06-01 (unknown, 2003-8-29)
<b>Lat./Long.</b>	no data
<b>Town./Range</b>	SW 1/4 of Section 32, T5S, R7W (Phillip G. Owen, 1984-5-24)
<b>Maps</b>	USGS, 1968, El Toro 1:24000. (Phillip G. Owen, 1984-5-24)
<b>Accession</b>	A.10130.84-12 (Phillip G. Owen, 1984-5-24)
<b>Alt. Numbers</b>	no data

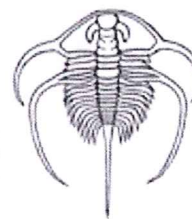
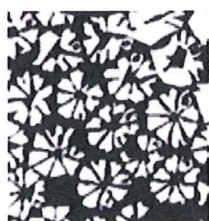
Fossiliferous sandstone on a ridge south of Santiago Canyon Road; Santa Ana Mountains; in the above section. The property is presently called Glenn Ranch. Mr. Raschke thinks that this exposure is the upper part of the Topanga Formation. See the map on the back of locality card 6924.

**Source** Unknown  
**Entered by** (Phillip G. Owen, 1984-5-24)

### Maps/Photos/Notes







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### LACMIP LOCALITY 7692

<b>Summary</b>	no data
<b>Unit</b>	Puente Fm. (Phillip G. Owen, 1985-4-25)
<b>Age</b>	Miocene (Phillip G. Owen, 1985-4-25)
<b>Locality</b>	Orange County; California; USA (Phillip G. Owen, 1985-4-25)
<b>Collector</b>	B.N. Moore; 1928-08-01 (unknown, 2003-8-29)
<b>Lat./Long.</b>	no data
<b>Town./Range</b>	no data
<b>Maps</b>	no data
<b>Accession</b>	L.2059 (Phillip G. Owen, 1985-4-25)
<b>Alt. Numbers</b>	CIT 642 (Phillip G. Owen, 1985-4-25)

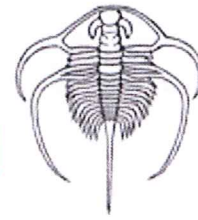
'642. Puente Formation. In coarse basal conglomerate on ridge 3/4 mile due south of Santiago-Aliso road summit; Santa Ana Mtns; Orange Co.; Calif. [This locality at contact of Puente-Vaqueros]. Aug 1928. B.N. Moore.'

**Source** CIT locality catalog  
**Entered by** (Phillip G. Owen, 1985-4-25)



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### LACMIP LOCALITY 7695

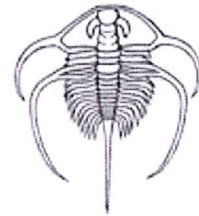
<b>Summary</b>	no data
<b>Unit</b>	no data <i>Vaqueros Fm</i>
<b>Age</b>	Miocene (Phillip G. Owen, 1985-4-25)
<b>Locality</b>	Orange County; California; USA (Phillip G. Owen, 1985-4-25)
<b>Collector</b>	B.N. Moore; 1926-10-01 (unknown, 2003-8-29)
<b>Lat./Long.</b>	no data
<b>Town./Range</b>	no data
<b>Maps</b>	no data
<b>Accession</b>	L.2059 (Phillip G. Owen, 1985-4-25)
<b>Alt. Numbers</b>	CIT 639 (Phillip G. Owen, 1985-4-25)
	'639. Vaqueros. In red sandstone on Santiago side of Borego-Santiago divide 1 mile due west of B.M. 1271. Santiago Canyon; Santa Ana Mtns; Orange Co.; Calif. October 1926. B.N. Moore.'
<b>Source</b>	CIT locality catalog
<b>Entered by</b>	(Phillip G. Owen, 1985-4-25)

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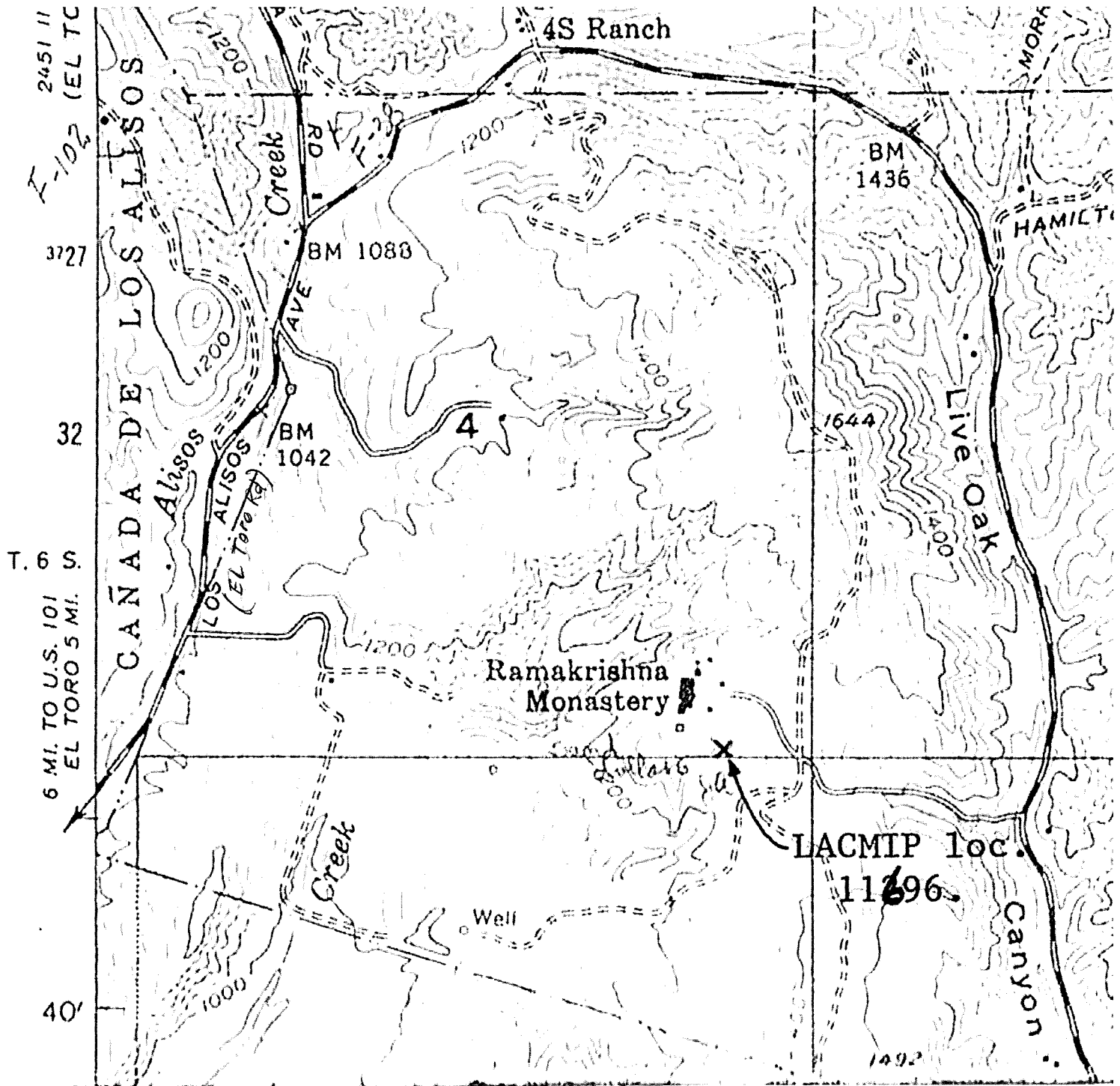
### LACMIP LOCALITY 11696

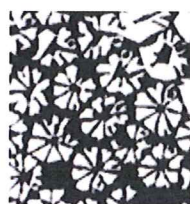
<b>Summary</b>	no data
<b>Unit</b>	no data
<b>Age</b>	Miocene (Phillip G. Owen, 1987-12-2)
<b>Locality</b>	Orange County; California; USA (Phillip G. Owen, 1987-12-2)
<b>Collector</b>	John M. Alderson; 1972-01-01 (unknown, 2003-8-29)
<b>Lat./Long.</b>	no data
<b>Town./Range</b>	SE-SE 1/4 of Section 4, T6S, R7W (Phillip G. Owen, 1987-12-2)
<b>Maps</b>	USGS, 1973, Santiago Peak 1:24000. (Phillip G. Owen, 1987-12-2)
<b>Accession</b>	no data
<b>Alt. Numbers</b>	no data

'About 650 feet west of SE corner of Section 4; T6S; R7W; in east-facing bank.'  
'Ramakrishna Monastery; Tarbuco Canyon area; Orange County.' See the map on the back of locality card number 11696.

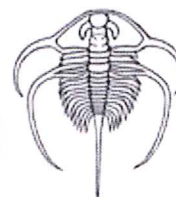
**Source** LACMIP collection label  
**Entered by** (Phillip G. Owen, 1987-12-2)

### Maps/Photos/Notes





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### LACMIP LOCALITY 20401

**Summary** no data  
**Unit** no data  
**Age** Miocene (Phillip G. Owen, 1994-9-15)  
**Locality** Orange County; California; USA (Phillip G. Owen, 1994-9-15)  
**Collector** R.W. Burger; RWB 24 (unknown, 2003-8-29)  
**Lat./Long.** no data  
**Town./Range** no data  
**Maps** USGS, 1930, Corona 1:125000. (Phillip G. Owen, 1994-9-15)  
**Accession** L.2213.86-76 (Phillip G. Owen, 1994-9-15)  
**Alt. Numbers** UCLA 401 (Phillip G. Owen, 1994-9-15)

UCLA locality 401: 'Orange County; California. On south side of little NE-SW spur on east side of little canyon east of Borrego Canyon in Canada de Los Alisos land grant; foothills of Santa Ana Mts.; on USGS Corona Quadrangle; just 2 millimeters below 'O' of Alisos in Canada de los Alisos. Probably lower Temblor; Miocene. 'R.W.B. 24!' See map p. 46; book #1; UCLA locality registers.

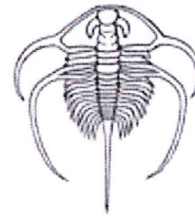
**Source** UCLA locality catalog  
**Entered by** (Phillip G. Owen, 1994-9-15)

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### LACMIP LOCALITY 20587

<b>Summary</b>	no data
<b>Unit</b>	no data
<b>Age</b>	Miocene (Phillip G. Owen, 1994-9-15)
<b>Locality</b>	Orange County; California; USA (Phillip G. Owen, 1994-9-15)
<b>Collector</b>	Berger (unknown, 2003-8-29) Hobson (unknown, 2003-8-29)
<b>Lat./Long.</b>	no data
<b>Town./Range</b>	no data
<b>Maps</b>	no data
<b>Accession</b>	L.2213.86-76 (Phillip G. Owen, 1994-9-15)
<b>Alt. Numbers</b>	UCLA 587 (Phillip G. Owen, 1994-9-15)
	UCLA locality 587: 'Orange County; California Vaqueros; Miocene. West Fork of Aliso Creek; about three miles north of confluence of W&E forks about half a mile north of hill 885; east side of canyon directly below diatomite overlap. Berger & Hobson.'
<b>Source</b>	UCLA locality catalog
<b>Entered by</b>	(Phillip G. Owen, 1994-9-15)

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# UCMP UC Museum of Paleontology Localities

Number of matches: 262

next 100

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Query: SELECT FROM ucmp\_loc2 WHERE state\_prov\_std = "California" and county\_std = "Orange County" and epoch = "Miocene" ORDER BY loc\_prefix,cast(loc\_num as unsigned integer),loc\_suffix

Click on the Loc ID to see the full locality record

Loc ID	Coll	Locality Name	County	State / Province	Country	Cont	Period	Epoch	Formation	Member	Storage Age	Flora/Fauna
<a href="#">1150-</a>	I		Orange County	California	United States	North America	Tertiary	Miocene	Vaqueros			
<a href="#">1151-</a>	I		Orange County	California	United States	North America	Tertiary	Miocene	Vaqueros			
<a href="#">1152-</a>	I	Aliso Creek	Orange County	California	United States	North America	Tertiary	Miocene	Vaqueros			
<a href="#">1153-</a>	I		Orange County	California	United States	North America	Tertiary	Miocene	Vaqueros			
<a href="#">1154-</a>	I		Orange County	California	United States	North America	Tertiary	Miocene	Vaqueros			
<a href="#">1155-</a>	I		Orange County	California	United States	North America	Tertiary	Miocene	Vaqueros			
<a href="#">1157-</a>	I		Orange County	California	United States	North America	Tertiary	Miocene	Vaqueros			
<a href="#">1907-</a>	I	Brea Canyon	Orange County	California	United States	North America	Tertiary	Miocene	Modelo			
<a href="#">1908-</a>	I	Brea Canyon	Orange County	California	United States	North America	Tertiary	Miocene	Modelo			
<a href="#">1909-</a>	I	Aliso Creek	Orange County	California	United States	North America	Tertiary	Miocene	Modelo			
<a href="#">1910-</a>	I	Aliso Creek	Orange County	California	United States	North America	Tertiary	Miocene	Modelo			
<a href="#">1912-</a>	I	Aliso Creek	Orange County	California	United States	North America	Tertiary	Miocene	Modelo			
<a href="#">1913-</a>	I	Aliso Creek	Orange County	California	United States	North America	Tertiary	Miocene	Modelo			
<a href="#">1914-</a>	I	Laguna Canyon Road	Orange County	California	United States	North America	Tertiary	Miocene	Modelo			
<a href="#">1915-</a>	I	Laguna Canyon Road	Orange County	California	United States	North America	Tertiary	Miocene				
<a href="#">2235-</a>	I		Orange County	California	United States	North America	Tertiary	Miocene	Temblor			
<a href="#">2242-</a>	I		Orange County	California	United States	North America	Tertiary	Miocene	Modelo			





<a href="#">MF6742</a>	M	Upper Newport Bay	Orange County	California	United States	North America	Tertiary	Miocene	Monterey			
<a href="#">P3618</a>	P	Shell Oil I	Orange County	California	United States	North America	Tertiary	Miocene			Miocene	
<a href="#">PA947</a>	P	Santiago Canyon	Orange County	California	United States	North America	Tertiary	Miocene	Puente	La Vida	Miocene	
<a href="#">PA1127</a>	P	Vaqueros	Orange County	California	United States	North America	Tertiary	Miocene	Vaqueros		Miocene	Vaqueros
<a href="#">PA1196</a>	P	Forster Ranch	Orange County	California	United States	North America	Tertiary	Miocene	Capistrano		Miocene	
<a href="#">V5049</a>	V	Petrel	Orange County	California	United States	North America	Tertiary	Miocene	Capistrano		Barstovian	
<a href="#">V68103</a>	V	Aliso Creek	Orange County	California	United States	North America	Tertiary	Miocene	Puente		Clarendonian	
<a href="#">V71020</a>	V	El Toro 1	Orange County	California	United States	North America	Tertiary	Miocene	Monterey		Clarendonian	
<a href="#">V72060</a>	V	Top Of The World	Orange County	California	United States	North America	Tertiary	Miocene	Topanga		Hemingfordian	
<a href="#">V72103</a>	V	El Toro 2	Orange County	California	United States	North America	Tertiary	Miocene	Capistrano		Hemphillian	
<a href="#">V72149</a>	V	Sulpher Creek Reservoir	Orange County	California	United States	North America	Tertiary	Miocene	Capistrano	Siltstone	Hemphillian	
<a href="#">V91240</a>	V	LACM 7136, Moulton Parkway	Orange County	California	United States	North America	Tertiary	Miocene	Monterey		Clarendonian	
<a href="#">V99592</a>	V	Geraldine's Turtle	Orange County	California	United States	North America	Tertiary	Miocene	Monterey		Clarendonian	
<a href="#">V99593</a>	V	Scott's Turtle	Orange County	California	United States	North America	Tertiary	Miocene	Monterey		Clarendonian	

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