



22 November 2010;  
Revised 26 August 2014

Ms. Ranie Hunter  
JPB Development, LLC  
1392 East Palomar Street, Suite 202  
Chula Vista, California 91913

Mr. Stephen M. Haase  
Baldwin & Sons, LLC  
610 West Ash Street, Suite 1500  
San Diego, California 92101

Subject: Otay Ranch Resort Village Paleontological Resource and Monitoring Assessment,  
Prepared by Brian F. Smith and Associates, Inc., 10 October 2005, revised 11 August  
2008, 9 April 2009, 13 July 2010, 22 November 2010, and 26 August 2014.

Dear Ms. Hunter:

A paleontological resource assessment has been completed for the Otay Ranch Village 13 Project area and vicinity, located in the Otay Planning Area (TM 5361) east of Chula Vista on the southwestern flank of the Jamul Mountains in unincorporated San Diego County, California (Attachments 1 and 2). The project area comprises 1,869 acres, or about three square miles.

The Otay Ranch Village 13 Project area roughly encompasses the northeastern corner of projected Section 36, Township 17 South, Range 1 West, most of projected Section 31 and all of Section 32, Township 17 South, Range 1 East, and the northeastern quarter of Section 6, the northern half of Section 5, and the northwestern corner of Section 4, Township 18 South, Range 1 East, San Bernardino Base and Meridian (USGS 7.5-minute, Jamul Mountains, California quadrangle, 1955 edition, photorevised 1971 and 1975). The subject property is approximately bounded on the west by Upper Otay Reservoir and Otay Lakes Road, on the south by Otay Lakes Road along the eastern arm of Lower Otay Reservoir, on the east by the Rancho Jamul grant boundary and the eastern boundary of Section 32, and on the north by the northern boundaries of Section 32 and projected Sections 31 and 36 (Attachment 2).

The geology of the Jamul Mountains, California quadrangle is shown on the geologic maps of Tan (2002, Geologic map of the Jamul Mountains 7.5' quadrangle, San Diego County, California: A digital database, scale 1:24,000, published by the California Geological Survey) and Todd (2004, Preliminary geologic map of the El Cajon 30' x 60' quadrangle, southern California, version 1.0: U. S. Geological Survey Open-File Report 2004-1361: 1-30, 1 map sheet [scale 1:100,000]). Geologically, the Otay Ranch Village 13 Project area is underlain by two major rock types: metavolcanic rocks of the Santiago Peak Volcanics in the northern and northeastern parts of the area, and sedimentary rocks of the Otay Formation in the southern and southwestern parts of the area. Minor exposures of upper Pleistocene (>10,000 year old) older alluvium and colluvium are present west of Otay Lakes Road, but are not mapped within the project area, and unconsolidated Holocene (<10,000 year old) alluvial deposits are present in the floodplain areas of the Jamul Creek drainage, also outside of the project area.

The Lower Cretaceous (~ 128 to ~ 118 million year old) Santiago Peak Volcanics (KJmv on Attachment 3, after Tan, 2002; Ksp on Todd, 2004) consist of mildly metamorphosed volcanic and volcanoclastic rocks, but are predominantly andesite and dacite in composition. The metasedimentary parts of the Santiago Peak Volcanics of Tan (2002) and others, which are known to contain Jurassic fossils (*e.g.*, Fife, Minch, and Crampton, 1967, Geological Society of America Bulletin, v. 78, pp. 299-304), have not been identified locally. The Jurassic metasediments are regarded as a separate formation by Abbott (1999, The Rise and Fall of San Diego – 150 million years of history recorded in sedimentary rocks: Sunbelt Publications) and Walawender (2000, The Peninsular Ranges – A geological guide to San Diego's back country: Kendall/Hunt Publishing Company), *q.v.*

The Otay Formation is divided into three informal members by paleontologists at the San Diego Natural History Museum, being an upper sandstone-mudstone member, a middle gritstone member, and a basal angular-clast fanglomerate member (Deméré and Walsh, 1993, Paleontological Resources – County of San Diego, p. 12). On local geologic maps, the formation is divided into an upper member (To on geologic maps of Tan [2002, see Attachment 3] and Todd [2004]) and a lower pebbly conglomerate gritstone and sandstone member (Tof on geologic map of Tan [2002, see Attachment 3] and Tf on geologic map of Todd [2004]). Numerous fossil localities have been discovered in the upper sandstone-mudstone member and the middle gritstone member, but have yet to be recorded from the basal fanglomerate (Deméré and Walsh, 1993). Deméré and Walsh (1993) assign a “high paleontological resource sensitivity” to the upper member of the Otay Formation, and a “moderate paleontological resource sensitivity” to the middle and lower members of the Otay Formation.

Based on a paleontological collections and records search conducted by the Department of Paleontology at the San Diego Natural History Museum in San Diego (Attachment 5), there is only one previously recorded fossil locality within the boundaries of the Otay Ranch Village 13 Project area. However, many other fossil localities are present in the Otay Formation within a one-mile radius to the west of the project area (Attachment 5). These localities have yielded important and diverse assemblages of terrestrial vertebrate fossils, including lizards, snakes, tortoises, a variety of small rodent-sized animals, rabbits, dogs, foxes, small browsing animals called oreodonts (*i.e.*, *Sespia* spp. and others), and rhinoceroses. The Otay Formation is now considered to be the richest source of late Oligocene (28 to 30 million year old) terrestrial

vertebrates in California (Deméré and Walsh, 1993, p. 12). A list of species found at each of the documented localities follows each locality description in Attachment 5.

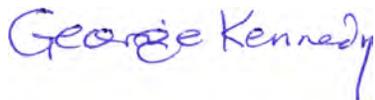
According to the “County of San Diego Guidelines for Determining Significance [of] Paleontological Resources” (Stephenson *et al.*, 2007, p. 15), “An affirmative response to or confirmation of the following Guideline will generally be considered a significant impact related to paleontological resources as a result of project implementation, in the absence of scientific evidence to the contrary”:

The project proposes activities directly or indirectly damaging to a unique paleontological resource or site. A significant impact to paleontological resources may occur as a result of the project, if project-related grading or excavation will disturb the substratum or parent material below the major soil horizons in any paleontologically sensitive area of the County, as shown on the San Diego County Paleontological Resources Potential and Sensitivity Map. (Stephenson *et al.*, 2007, figure 2)

Because of the “high paleontological resource sensitivity” of the upper sandstone-mudstone member of the Otay Formation and the “moderate paleontological resource sensitivity” of the middle gritstone and lower fanglomerate members of the Otay Formation, as well as the documented presence of numerous fossiliferous localities within and west of the project area, it is recommended that paleontological monitoring be required during all mass grading and excavation (utility trenching, etc.) activities in surface exposures of the Otay Formation (as delineated on Attachment 4) in order to mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources (*i.e.*, terrestrial vertebrate fossils). A Mitigation Monitoring and Reporting Program (MMRP) consistent with the provisions of the California Environmental Quality Act (CEQA) and of the County of San Diego Guidelines for Determining Significance [of] Paleontological Resources (2007) should be implemented for any mass grading and/or excavation-related activities, including utility trenching, during construction development of the Otay Ranch Village 13 Project area (see page 4, herein). Paleontological monitoring is not necessary within areas mapped as the Santiago Peak Volcanics.

If there are any questions concerning this evaluation, please feel free to contact us at our Poway address. Thank you for the opportunity to have provided paleontological services for this project.

Sincerely,



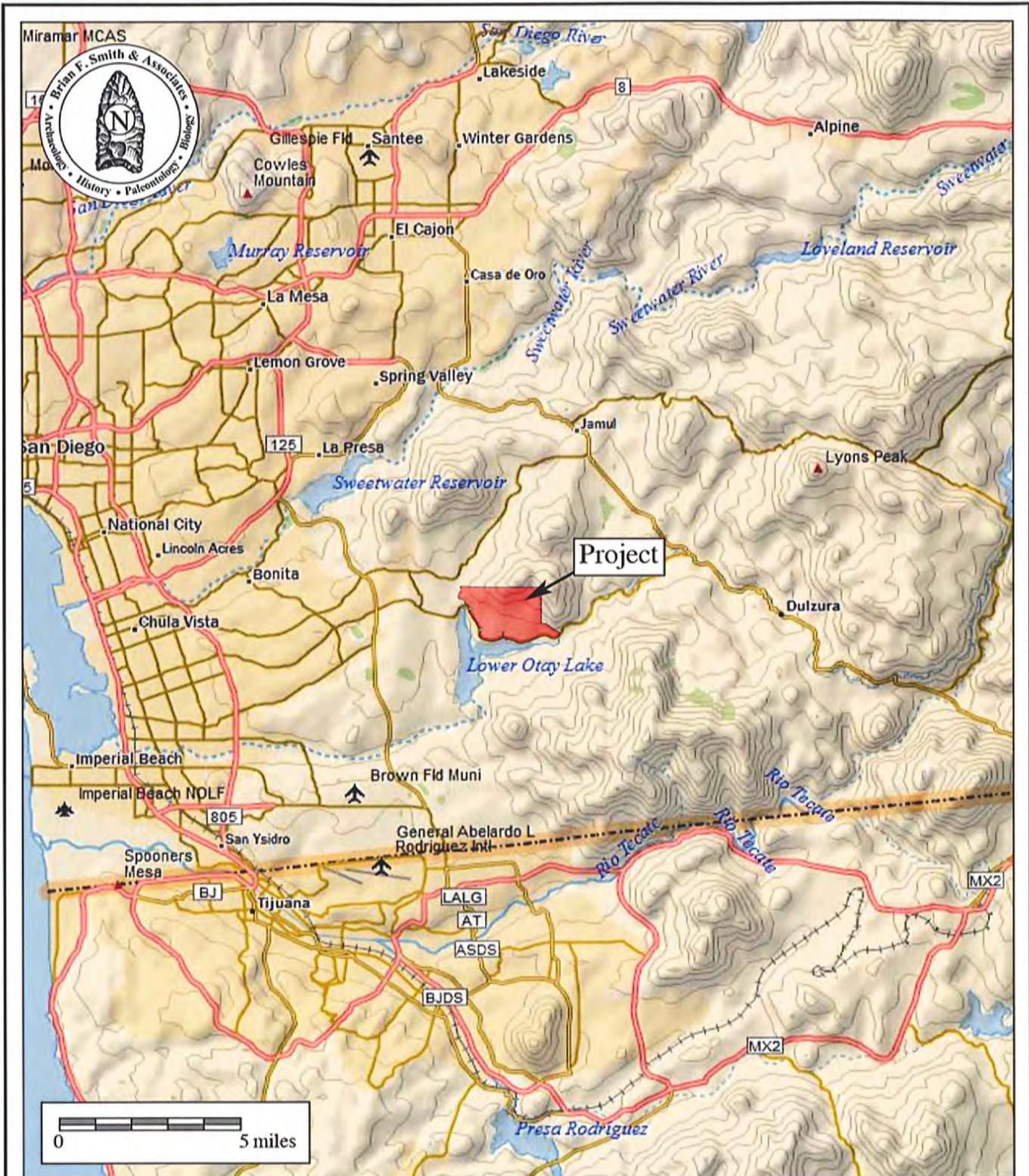
George L. Kennedy, Ph.D.  
Senior Paleontologist

Attachments: Index maps, geologic map, SDNHM records search results

### **Paleontological Mitigation Plan, Otay Ranch Village 13**

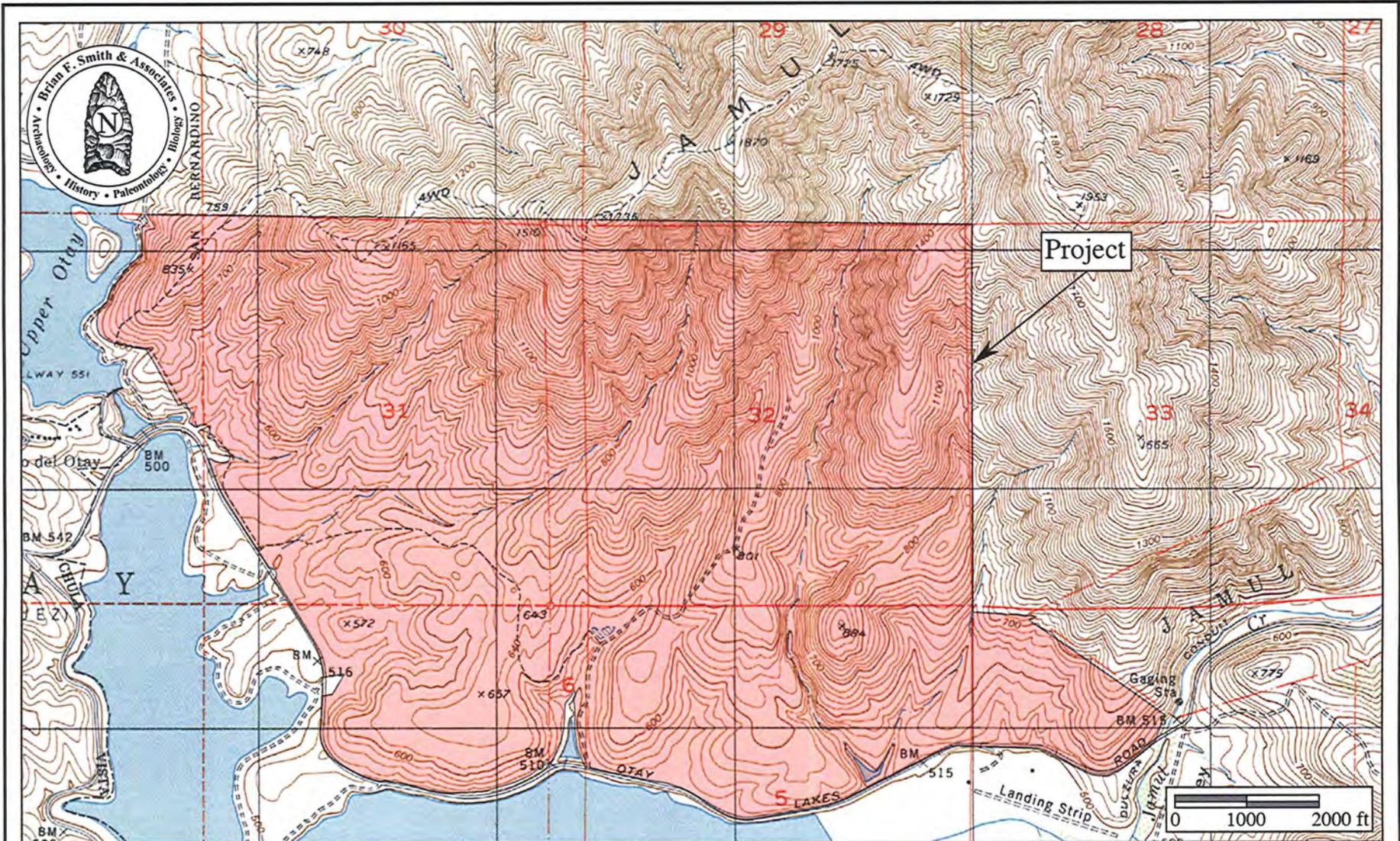
A Qualified Paleontologist or Paleontological Resources Monitor (under the supervision of the Qualified Paleontologist) shall be on-site during all excavation operations within geologic formations that may contain paleontological resources (*i.e.*, the Otay Formation). The Qualified Project Paleontologist is a person with a Ph.D. or Master's Degree in Paleontology or related field, and who has knowledge of San Diego County paleontology, and documented experience in professional paleontological procedures and techniques. A Paleontological Monitor is defined as an individual with at least one year of experience in field identification and collection of fossil materials. The Paleontological Monitor shall work under the direct supervision of the Qualified Paleontologist. The applicant shall authorize the Qualified Paleontologist and/or Paleontological Monitor to direct, divert, or halt any grading activity, and to perform all other acts required by the provisions listed below.

- A. Monitor all grading and excavation activities of undisturbed formations of sedimentary rock;
- B. If paleontological resources are unearthed the Qualified Paleontologist or Paleontological Monitor shall:
  - 1. Direct, divert, or halt any grading or excavation activity until such time that the sensitivity of the resource can be determined and the appropriate recovery implemented;
  - 2. Salvage unearthed fossil remains, including simple excavation of exposed specimens or, if necessary, plaster-jacketing of large and/or fragile specimens or more elaborate quarry excavations of richly fossiliferous deposits;
  - 3. Record stratigraphic and geologic data to provide a context for the recovered fossil remains, typically including a detailed description of all paleontological localities within the project site, as well as the lithology of fossil-bearing strata within the measured stratigraphic section, if feasible, and photographic documentation of the geologic setting;
  - 4. Prepare collected fossil remains for curation, to include cleaning the fossils by removing the enclosing rock material, stabilizing fragile specimens using glues and other hardeners, if necessary, and repairing broken specimens;
  - 5. Curate, catalog, and identify all fossil remains to the lowest taxon possible, inventory specimens, assign catalog numbers, and enter the appropriate specimen and locality data into a collection database; and
  - 6. Transfer the cataloged fossil remains to an accredited institution (museum or university) in California that maintains paleontological collections for archival storage and/or display. The transfer shall include copies of relevant field notes, maps, stratigraphic sections, and photographs.
- C. The Qualified Paleontologist shall prepare a final Paleontological Resources Mitigation Report summarizing the field and laboratory methods used, the stratigraphic units inspected, the types of fossils recovered, and the significance of the curated collection.
- D. Submit TWO hard copies of the final Paleontological Resources Mitigation Report to the Director of Planning and Development Services (PDS) for final approval of the mitigation, and submit an electronic copy of the report according to the County PDS's Electronic Submittal Format Guidelines.



**Attachment 1**  
**General Location Map**  
 The Village 13 Project  
 DelAmore (1:250,000 series)



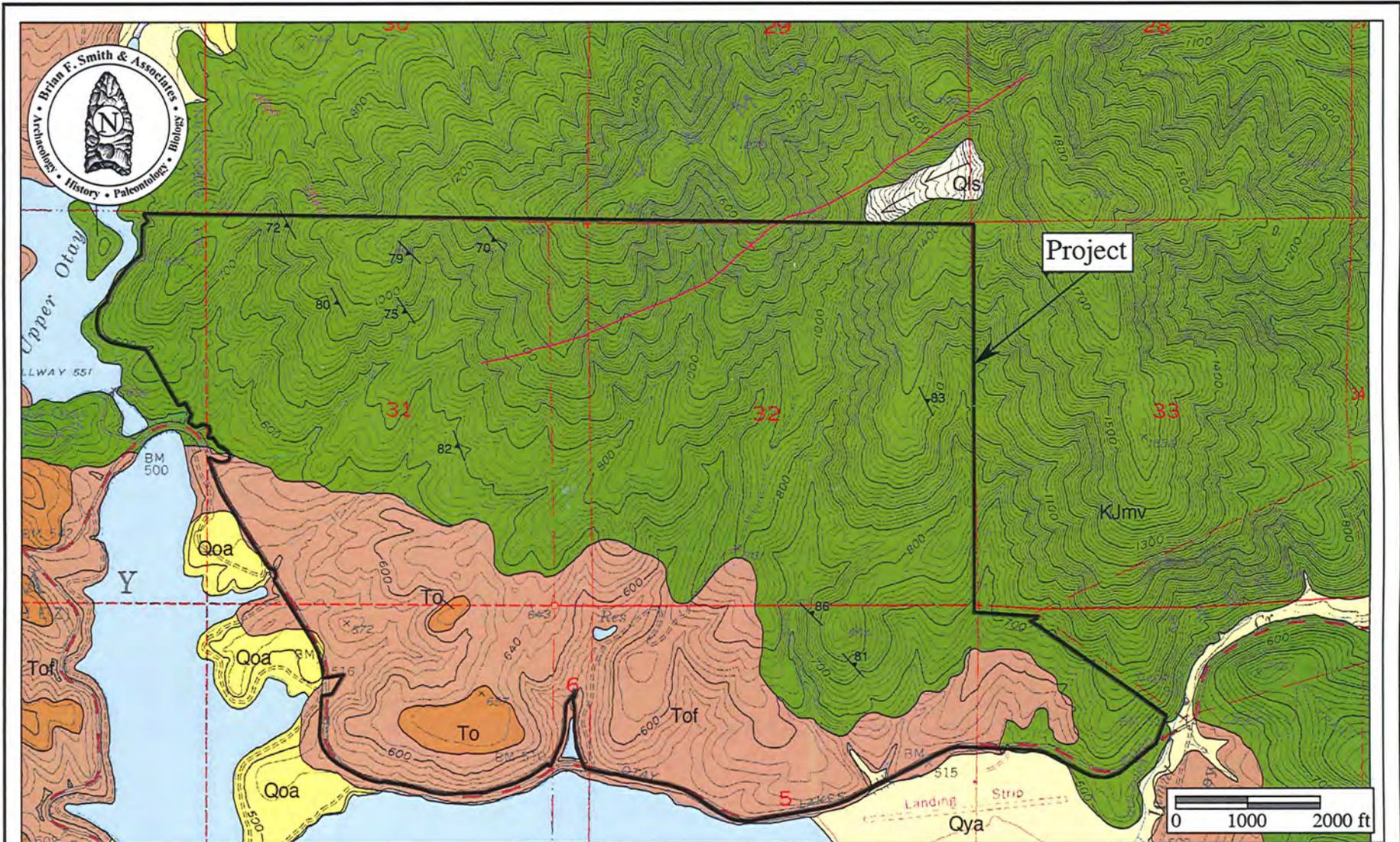


## Attachment 2

### Topographic Location Map

The Village 13 Project

USGS Jamul Mts. Quadrangle (7.5-minute series)

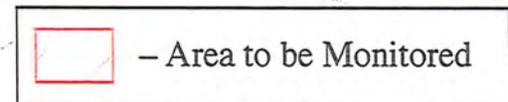
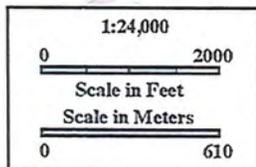
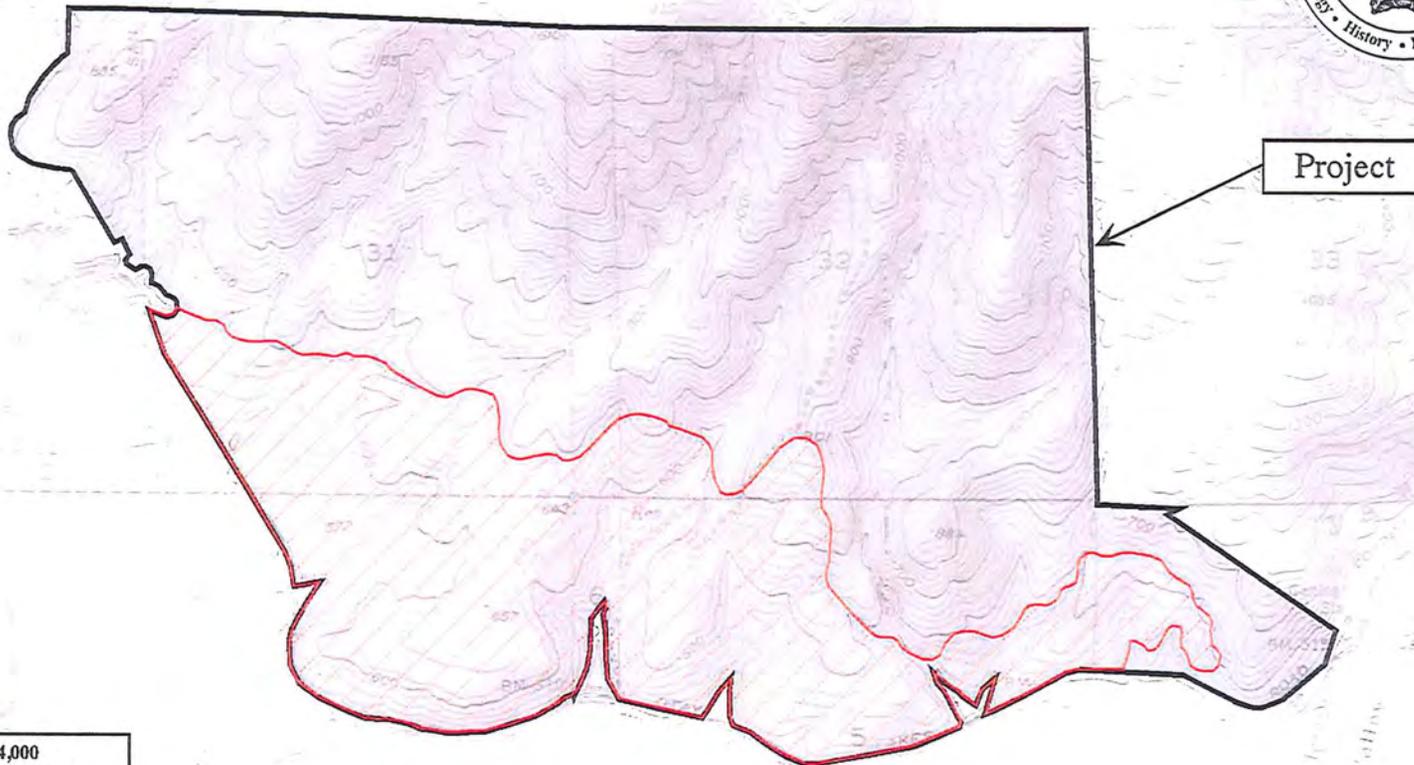


### Attachment 3

### Geologic Map

### The Village 13 Project

Geology of the *Jamul Mts.* Quadrangle after Tan (2002)



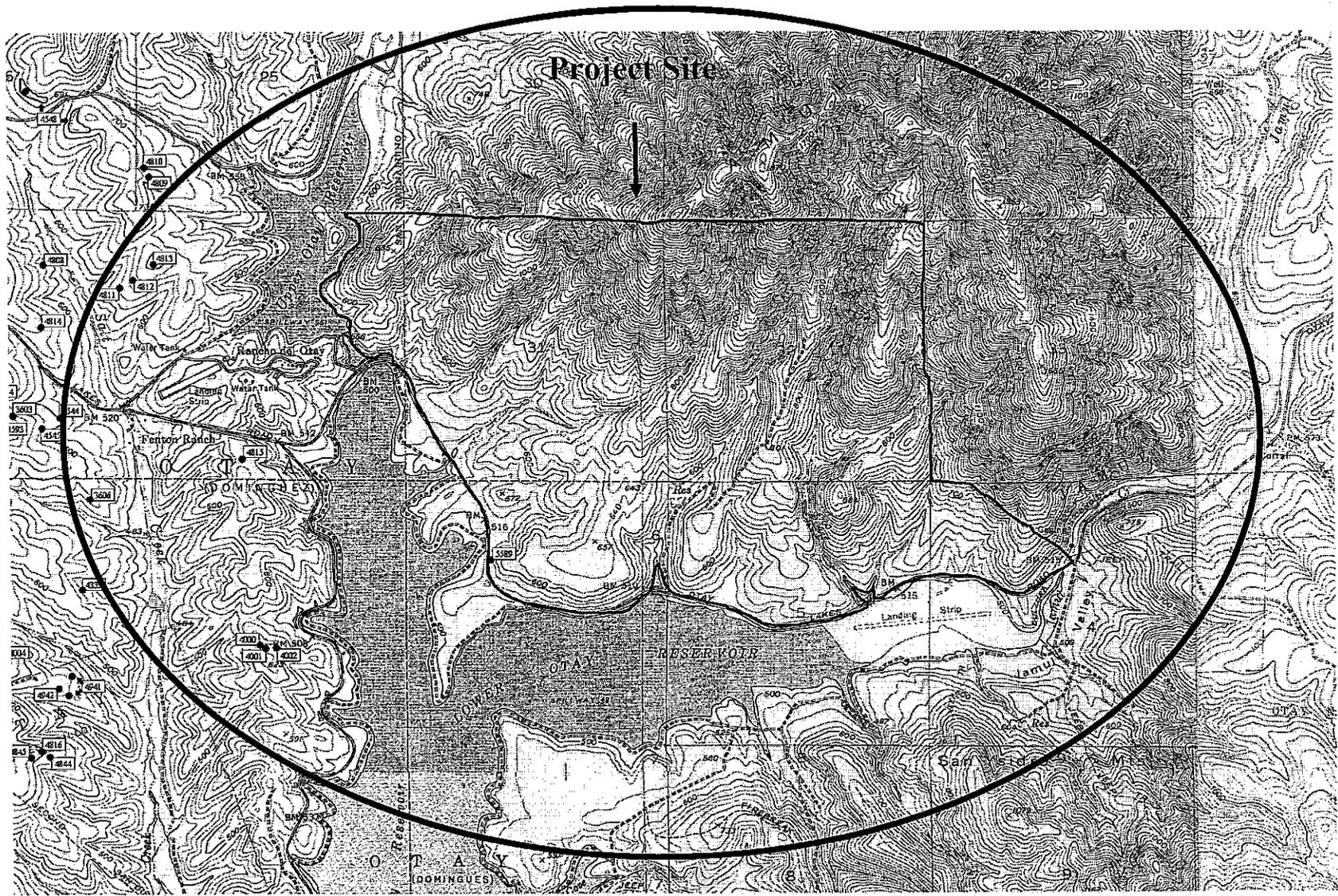
**Attachment 4**  
**Area Requiring Paleontological Monitoring**

The Village 13 Project

USGS *Jamul Mts.* Quadrangle (7.5-minute series)

**ATTACHMENT 5**

**SAN DIEGO NATURAL HISTORY MUSEUM  
COLLECTIONS AND RECORDS SEARCH**



TH 10/11  
13"



DATE 04/06/05  
TIME 14:08:38

SAN DIEGO NATURAL HISTORY MUSEUM  
DEPARTMENT OF PALEONTOLOGY  
LOCALITY CARD

LOCALITY #- 3606

LOCALITY # LOCALITY NAME  
3606 EastLake Greens

FIELD NUMBER  
EL-107

LOCATION

COUNTRY U.S.A.  
STATE CA  
COUNTY San Diego  
CITY Chula Vista

LATITUDE 32°38'24"N VARIANCE  
LONGITUDE 116°56'53"W  
UTM 11 504900 3611210 VARIANCE

SECT TWPSP DIREC RANGE DIR  
35 17 S 1 W

MAP NAME Jamul Mountains, CA  
MAP SCALE 1:24000 DATUM NAD1927  
MAP SOURCE USGS 1955(1975)

LOCATION IN SECTION NW 1/4, NE 1/4, NE 1/4

ELEVATION 551 FT

STRATIGRAPHIC POSITION

GROUP  
FORMATION Otay Formation  
MEMBER  
INFORMAL NAME sandstone-mudstone member

ERA Cenozoic  
SYSTEM Paleogene  
SER/EPOCH late Oligocene  
AGE/STAGE  
NALMA early Arikareean  
ZONE NAME

LITHOLOGY DEPOSITIONAL ENVIRONMENT  
sdst fluvial  
CITATION

FIELD NOTES  
R.A. Cerutti (p. 49); BOR NB#9, pp. 11,13,15,27  
COLLECTOR  
R.A. Cerutti, B.O. Riney 24 Jan 1990  
COMPILED BY  
T.A. Demere 22 Jul 1998

PHOTOS ACCESS NO.

DONATED BY  
EastLake Development 24 Jan 1990

ENTERED BY  
H.P. Don Vito 24 Jul 1998

LOCALITY DESCRIPTION

Fossils were discovered at this site during mass excavation for the EastLake Greens development located in eastern Chula Vista. This large residential project involved grading for house pads, roadways, and an 18-hole golf course. The project is located south of Otay Lakes Road, east of the SR-125 right-of-way, west of Hunte Parkway, and north of Orange Avenue. Access is from Otay Lakes Road at EastLake Parkway. Locality 3606 was discovered during grading of the roadbed for Hunte Parkway, approximately 800 feet north northwest of the intersection with Orange Avenue.

Fossils were collected from a tan, medium- to coarse-grained, poorly sorted, cross-bedded to massive sandstone. This sandstone unit consisted of alternating layers of coarse-grained sandstone, fine-grained silty sandstone, and fine-grained gravelly sandstone.

The fossil-producing horizon occurs just above (stratigraphically) the gritstone member/sandstone-mudstone member intraformational contact.

Fossils were collected by pluck-and-run and hand-quarrying.

Fossils recovered from this locality include partial jaws, limb bones, and a partially articulated sacrum of *Sespia* and a partial skeleton of the rodent *Peroheteromys*.

The locality was graded away.

DONATED: EastLake Development Co., Jan. 1990

LOCALITY 3606

DATE 04/06/05  
TIME 14:08:57

SAN DIEGO NATURAL HISTORY MUSEUM  
DEPARTMENT OF PALEONTOLOGY  
LOCALITY CARD

LOCALITY #- 4000

LOCALITY # LOCALITY NAME  
4000 EastLake Olympic Training Center

FIELD NUMBER  
RAC23Dec91

LOCATION

COUNTRY U.S.A.  
STATE CA  
COUNTY San Diego  
CITY San Diego

LATITUDE 32°37'55"N VARIANCE  
LONGITUDE 116°56'12"W  
UTM 11 505950 3610340 VARIANCE

SECT TWNSP DIREC RANGE DIR  
18 S 1 W

MAP NAME Jamul Mountains, CA  
MAP SCALE 1:24000 DATUM NAD1927  
MAP SOURCE USGS 1967(75PR)

LOCATION IN SECTION unsurveyed

ELEVATION 561 FT

STRATIGRAPHIC POSITION

GROUP  
FORMATION Otay Formation  
MEMBER  
INFORMAL NAME

ERA Cenozoic  
SYSTEM Paleogene  
SER/EPOCH late Oligocene  
AGE/STAGE  
NALMA early Arikareean  
ZONE NAME

LITHOLOGY DEPOSITIONAL ENVIRONMENT  
congl fluvial  
CITATION

FIELD NOTES  
R.A. Cerutti  
COLLECTOR  
R.A. Cerutti 23 Dec 1991  
COMPILED BY  
C.P. Majors 5 Feb 1996

PHOTOS ACCESS NO.  
N

DONATED BY  
Koll Construction Co. 23 Dec 1991

ENTERED BY  
C.P. Majors 12 Feb 1996

LOCALITY DESCRIPTION

This locality was at the base of the south-facing roadcut on the north side of the intersection of Orange Avenue and "A" Street (to the Olympic Training Center Visitors Center), and about 40 feet west of the western edge of "A" Street.

The lithology at this locality was light gray, very poorly sorted, compact, angular, coarse, sandy pebble conglomerate. This may be in one of the coarser-grained lenses shown at 565 feet on R. Gutzler's stratigraphic column for East Orange Avenue (R. Gutzler notebook, page 21, 21 September, 1995).

Fossils were collected by pluck and run during grading operations.

Fossil material recovered from this locality includes an articulated partial skull and dentary from the oreodont *Sespia* sp.

This locality has been graded away and no longer exists.

DONOR: Koll Construction Co.

LOCALITY: 4000

DATE 04/06/05  
TIME 14:08:58

SAN DIEGO NATURAL HISTORY MUSEUM  
DEPARTMENT OF PALEONTOLOGY  
LOCALITY CARD

LOCALITY #- 4001

LOCALITY # LOCALITY NAME  
4001 EastLake Olympic Training Center

FIELD NUMBER  
RAC16Dec91

LOCATION

COUNTRY U.S.A.  
STATE CA  
COUNTY San Diego  
CITY San Diego

LATITUDE 32°37'55"N VARIANCE  
LONGITUDE 116°56'10"W  
UTM 11 505980 3610310 VARIANCE

SECT TWNSP DIREC RANGE DIR  
18 S 1 W

MAP NAME Jamul Mountains, CA  
MAP SCALE 1:24000 DATUM NAD1927  
MAP SOURCE USGS 1967(75PR)

LOCATION IN SECTION unsurveyed

ELEVATION 581 FT

STRATIGRAPHIC POSITION

GROUP  
FORMATION Otay Formation  
MEMBER  
INFORMAL NAME

ERA Cenozoic  
SYSTEM Paleogene  
SER/EPOCH late Oligocene  
AGE/STAGE  
NALMA early Arikareean  
ZONE NAME

LITHOLOGY DEPOSITIONAL ENVIRONMENT  
congl fluvial  
CITATION

FIELD NOTES  
R.A. Cerutti  
COLLECTOR  
R.A. Cerutti 16 Dec 1991  
COMPILED BY  
C.P. Majors 5 Feb 1996

PHOTOS ACCESS NO.  
N  
ENTERED BY  
C.P. Majors 12 Feb 1996

DONATED BY  
Koll Construction Co. 16 Dec 1991

LOCALITY DESCRIPTION

This locality was about 25 feet northwest of the center of the intersection of Orange Avenue and "A" Street (to the Olympic Training Center Visitors Center).

The lithology at this locality was light gray, very poorly sorted, compact, angular, muddy, coarse sandy pebble conglomerate, about 4 feet above a 2 foot thick pebble conglomerate bed.

Fossils were collected by pluck and run during grading operations.

Fossil material recovered from this locality includes an articulated partial skull and dentary with associated post-crania of the oreodont *Mesoreodont* sp.

This locality has been graded away and no longer exists.

DONOR: Koll Construction Co.

LOCALITY: 4001

DATE 04/06/05  
TIME 14:08:58

SAN DIEGO NATURAL HISTORY MUSEUM  
DEPARTMENT OF PALEONTOLOGY  
LOCALITY CARD

LOCALITY #- 4002

LOCALITY # LOCALITY NAME  
4002 East Orange Avenue

FIELD NUMBER  
RAC13Sept95-1

LOCATION

COUNTRY U.S.A.  
STATE CA  
COUNTY San Diego  
CITY San Diego

LATITUDE 32°37'55"N VARIANCE  
LONGITUDE 116°56'10"W  
UTM 11 506020 3610340 VARIANCE

SECT TWNSP DIREC RANGE DIR  
18 S 1 W

MAP NAME Jamul Mountains, CA  
MAP SCALE 1:24000 DATUM NAD1927  
MAP SOURCE USGS 1967(75PR)

LOCATION IN SECTION unsurveyed

ELEVATION 560 FT

STRATIGRAPHIC POSITION

GROUP  
FORMATION Otay Formation  
MEMBER  
INFORMAL NAME

ERA Cenozoic  
SYSTEM Paleogene  
SER/EPOCH late Oligocene  
AGE/STAGE  
NALMA early Arikareean  
ZONE NAME

LITHOLOGY DEPOSITIONAL ENVIRONMENT  
congl fluvial  
CITATION

FIELD NOTES  
R.A. Cerutti  
COLLECTOR  
R.A. Cerutti 13 Sep 1995  
COMPILED BY  
C.P. Majors 5 Feb 1996

PHOTOS ACCESS NO.  
N  
ENTERED BY  
C.P. Majors 12 Feb 1996

DONATED BY  
Eastlake Development Company 13 Sep 1995

LOCALITY DESCRIPTION

This locality was in the road-bed of the west-bound lanes of Orange Avenue, about 250 feet east of the intersection of Orange Avenue and "A" Street (to the Olympic Training Center Visitors Center).

The lithology at this locality was gray, very poorly sorted, compact, angular, coarse sandy granule to pebble conglomerate within a relatively monotonous section of pebbly sandstone.

Fossils were collected by pluck and run during grading operations.

Fossil material recovered from this locality includes an oreodont fragmentary dentary.

This locality has been graded away and no longer exists.

DONOR: Eastlake Development Co.

LOCALITY: 4002

DATE 04/06/05  
TIME 14:09:08

SAN DIEGO NATURAL HISTORY MUSEUM  
DEPARTMENT OF PALEONTOLOGY  
LOCALITY CARD

LOCALITY #- 4809

LOCALITY # LOCALITY NAME  
4809 EastLake Woods site 2

FIELD NUMBER  
PJS28Jan02-1

LOCATION

COUNTRY U.S.A.  
STATE CA  
COUNTY San Diego  
CITY Chula Vista

LATITUDE 32°39'29"N VARIANCE  
LONGITUDE 116°56'37"W

UTM 11 505287 3613172 VARIANCE

SECT TWNSP DIREC RANGE DIR  
25 17 S 1 W

MAP NAME Jamul Mountains, CA  
MAP SCALE 1:24000 DATUM NAD1927  
MAP SOURCE USGS 1955(1975)

LOCATION IN SECTION SW 1/4, SW 1/4

ELEVATION 698 FT

STRATIGRAPHIC POSITION

GROUP  
FORMATION Otay Formation  
MEMBER  
INFORMAL NAME siltstone-mudstone member

ERA Cenozoic  
SYSTEM Paleogene  
SER/EPOCH late Oligocene  
AGE/STAGE  
NALMA late Arikarrear  
ZONE NAME

LITHOLOGY DEPOSITIONAL ENVIRONMENT  
sdst nonmarine  
CITATION

FIELD NOTES  
P.J. Sena  
COLLECTOR  
P.J. Sena 28 Jan 2002  
COMPILED BY  
P.J. Sena 4 Nov 2002

PHOTOS ACCESS NO.

DONATED BY  
EastLake Company 28 Jan 2002

ENTERED BY  
H.M. Wagner 19 Dec 2002

LOCALITY DESCRIPTION

EastLake Woods is a large land development project on the north side of Otay Lakes Road, bounded on the west by EastLake Business Park, on the east by Upper Otay Reservoir and on the north by East H Street. This locality is located east of Hunte Parkway, just east of the southeastern boundary of the Rolling Hills Ranch project.

The fossils were recovered from a red-gray to orange, medium-grained, massive sandstone with bone.

The fossils were collected from a basal coarse-grained portion of a six foot thick, light brownish-gray, fine-grained, silty sandstone that graded upward into a two foot thick light brown siltstone. Directly below this locality was a twelve foot thick massive, fine-grained, reddish-gray sandstone directly overlying a 12 inch thick pinkish-gray bentonite.

The fossils were collected utilizing hand-quarrying techniques.

The fossils consisted of specimens of *Sespia*, rodents and lizards and this locality was probably at the same stratigraphic horizon and locality 4808.

The locality has been graded away.

LOCALITY: 4809

DATE 04/06/05.  
TIME 14:09:09

SAN DIEGO NATURAL HISTORY MUSEUM  
DEPARTMENT OF PALEONTOLOGY  
LOCALITY CARD

LOCALITY #- 4810

LOCALITY # LOCALITY NAME  
4810 EastLake Woods site 3

FIELD NUMBER  
PJS6MAR02-1

LOCATION

COUNTRY USA  
STATE CA  
COUNTY San Diego  
CITY Chula Vista

LATITUDE 32°39'30"N VARIANCE  
LONGITUDE 116°56'38"W  
UTM 11 505253 3613231 VARIANCE

SECT TWNSP DIREC RANGE DIR  
17 S 1 W

MAP NAME Jamul Mountains, CA  
MAP SCALE 1:24000 DATUM NAD1927  
MAP SOURCE USGS 1955(1975)

LOCATION IN SECTION

ELEVATION 679 FT

STRATIGRAPHIC POSITION

GROUP  
FORMATION Otay Formation  
MEMBER  
INFORMAL NAME sandstone-mudstone member

ERA Cenozoic  
SYSTEM Paleogene  
SER/EPOCH late Oligocene  
AGE/STAGE  
NALMA early Arikareean  
ZONE NAME

LITHOLOGY DEPOSITIONAL ENVIRONMENT  
sdst nonmarine  
CITATION

FIELD NOTES  
P.J. Sena  
COLLECTOR  
P.J. Sena, S.L. Walsh 6 Mar 2002  
COMPILED BY  
P.J. Sena 4 Nov 2002

PHOTOS ACCESS NO.

DONATED BY  
EastLake Company, Inc. 6 Mar 2002

ENTERED BY  
H.M. Wagner 13 Jan 2003

LOCALITY DESCRIPTION

EastLake Woods is a large land development project located north of Otay Lakes Road, east of EastLake Business Park, west of Hunte Parkway, and bounded on the north by east H Street. This locality is located just west of upper Otay Lakes Reservoir.

Fossils were recovered from a red, medium-grained sandstone interbedded in tan sandstones. Bone was spotty, but occurred in a finite layer within the red sandstones. The red sandstone was less than a foot thick.

This locality was high on a hill in a cut in tan siltstones and sandstones. The red, bone-producing sandstone was in the upper portion of the cut with no distinctive lithologies, other than tan siltstones and sandstones above and below it.

Fossils were collected utilizing a pluck and run technique with a quantity, consisting of blocks with the bone-bearing layer in it, being loaded into the back of a pick-up and stock-piled off-site. A bulk sample of 250 pounds was removed and processed utilizing screen-washing techniques.

The locality yielded primarily small mammals. One block had a nice rodent mandible visible in the red sandstone.

The locality has been graded away.

Field Numbers: PJS6MAR02-1, PJS/BOR6MAR02-1

LOCALITY: 4810

DATE 04/06/05  
TIME 14:08:32

SAN DIEGO NATURAL HISTORY MUSEUM  
DEPARTMENT OF PALEONTOLOGY  
LOCALITY CARD

LOCALITY #- 4811

LOCALITY # LOCALITY NAME  
4811 EastLake Woods site 4

FIELD NUMBER  
BOR/PJSMar02-1

LOCATION

COUNTRY USA  
STATE CA  
COUNTY San Diego  
CITY Chula Vista

LATITUDE 32°39' 6"N VARIANCE  
LONGITUDE 116°56'44"W  
UTM 11 505102 3612496 VARIANCE

SECT TWNSP DIREC RANGE DIR  
17 S 1 W

MAP NAME Jamul Mountains, CA  
MAP SCALE 1:24000 DATUM NAD1927  
MAP SOURCE USGS 1955(1975)

LOCATION IN SECTION

ELEVATION 615 FT

STRATIGRAPHIC POSITION

GROUP  
FORMATION Otay Formation  
MEMBER  
INFORMAL NAME gritstone member

ERA Cenozoic  
SYSTEM Paleogene  
SER/EPOCH late Oligocene  
AGE/STAGE  
NALMA early Arikareean  
ZONE NAME

LITHOLOGY DEPOSITIONAL ENVIRONMENT  
sdst nonmarine  
CITATION

FIELD NOTES  
P.J. Sena, B. O. Riney  
COLLECTOR  
P.J. Sena, B.O. Riney 1 Mar 2002  
COMPILED BY  
P.J. Sena 12 Nov 2002

PHOTOS ACCESS NO.

DONATED BY  
EastLake Company 1 Mar 2002

ENTERED BY  
H.M. Wagner 13 Jan 2003

LOCALITY DESCRIPTION

EastLake Woods is a large land development project located north of north Otay Lakes Road, east of Eastlake Business Park, west of Hunte Parkway and bounded on the north by east H Street.

The fossils were discovered in a gray, coarse-grained, well-consolidated, pebbly gravels of the gritstone member. There was no apparent bedding.

This locality was in the gritstone member of the Otay Formation 36 feet below the contact with the overlying siltstone-mudstone member.

The specimen was hand quarried.

The fossil consisted of a skull fragment of *Sespia*.

The locality has been graded away.

Field Numbers: BOR/PJS8MAR02-1

LOCALITY: 4812

DATE 04/06/05  
TIME 14:08:33

SAN DIEGO NATURAL HISTORY MUSEUM  
DEPARTMENT OF PALEONTOLOGY  
LOCALITY CARD

LOCALITY #- 4812

LOCALITY # LOCALITY NAME  
4812 EastLake Woods site 5

FIELD NUMBER  
BOR25Apr02-1

LOCATION

COUNTRY USA  
STATE CA  
COUNTY San Diego  
CITY Chula Vista

LATITUDE 32°39' 8"N VARIANCE  
LONGITUDE 116°56'41"W  
UTM 11 505180 3612539 VARIANCE

SECT TWNSP DIREC RANGE DIR  
17 S 1 W

MAP NAME Jamul Mountains, CA  
MAP SCALE 1:24000 DATUM NAD1927  
MAP SOURCE USGS 1955(1975)

LOCATION IN SECTION

ELEVATION 653 FT

STRATIGRAPHIC POSITION

GROUP  
FORMATION Otay Formation  
MEMBER  
INFORMAL NAME gritstone member

ERA Cenozoic  
SYSTEM Paleogene  
SER/EPOCH late Oligocene  
AGE/STAGE  
NALMA early Arikareean  
ZONE NAME

LITHOLOGY DEPOSITIONAL ENVIRONMENT  
sdst nonmarine  
CITATION

FIELD NOTES  
B.O. Riney, P.J. Sena  
COLLECTOR  
B.O. Riney, P.J. Sena 25 Apr 2002  
COMPILED BY  
P.J. Sena 12 Nov 2002

PHOTOS ACCESS NO.

DONATED BY  
EastLake Company 25 Apr 2002

ENTERED BY  
H.M. Wagner 13 Jan 2003

LOCALITY DESCRIPTION

EastLake Woods is a large land development project located north of Otay Lakes Road, east of Eastlake Business Park, west of Hunte Parkway, and bounded on the north by east H Street.

The fossils were recovered from a gray, well-consolidated, massive, coarse-grained, pebbly conglomerate with no evident bedding.

This locality was in the gritstone member of the Otay Formation five feet stratigraphically below the contact between the gritstone and the siltstone-mudstone member of the Otay Formation.

The specimen was hand-quarried.

The fossil consisted of a fragment of the *Sespia*.

The locality has been graded away.

LOCALITY: 4812

DATE 04/06/05  
TIME 14:08:33

SAN DIEGO NATURAL HISTORY MUSEUM  
DEPARTMENT OF PALEONTOLOGY  
LOCALITY CARD

LOCALITY #- 4813

LOCALITY # LOCALITY NAME  
4813 EastLake Woods site 6

FIELD NUMBER  
PJS13June02-1

LOCATION

COUNTRY USA  
STATE CA  
COUNTY San Diego  
CITY Chula Vista

LATITUDE 32°39'11"N VARIANCE  
LONGITUDE 116°56'36"W  
UTM 11 505309 3612636 VARIANCE

SECT TWPSP DIREC RANGE DIR  
17 S 1 W

MAP NAME Jamul Mountains, CA  
MAP SCALE 1:24000 DATUM NAD1927  
MAP SOURCE USGS 1955(1975)

LOCATION IN SECTION

ELEVATION 648 FT

STRATIGRAPHIC POSITION

GROUP  
FORMATION Otay Formation  
MEMBER  
INFORMAL NAME siltstone-mudstone member

ERA Cenozoic  
SYSTEM Paleogene  
SER/EPOCH late Oligocene  
AGE/STAGE  
NALMA early Arikareean  
ZONE NAME

LITHOLOGY DEPOSITIONAL ENVIRONMENT  
sdst nonmarine  
CITATION

FIELD NOTES  
P.J. Sena  
COLLECTOR  
P.J. Sena 13 Jun 2002  
COMPILED BY  
P.J. Sena 12 Nov 2002

PHOTOS ACCESS NO.

DONATED BY  
EastLake Company 13 Jun 2002

ENTERED BY  
H.M. Wagner 13 Jan 2003

LOCALITY DESCRIPTION

EastLake Woods is a large land development project located north of Otay Lakes Road, east of EastLake Business Park, west of Hunte Parkway, and bounded on the north by east H Street. This locality was collected

Fossils were collected from a red, coarse-grained, cross-bedded, pebbly sandstone.

This layer was overlain by a fining upwards sequence capped by a red, coarse-grained, pebbly sandstone that yielded the fossils. The fossil bed was five feet above the contact between the underlying gritstone member, a gray massive gray gravel deposit.

Fossils were collected utilizing the pluck and run technique.

Fossils consisted of specimens of *Hypertragulus*.

The locality has been graded away.

LOCALITY: 4813

DATE 04/06/05  
TIME 14:08:42

SAN DIEGO NATURAL HISTORY MUSEUM  
DEPARTMENT OF PALEONTOLOGY  
LOCALITY CARD

LOCALITY #- 4815

LOCALITY # LOCALITY NAME  
4815 EastLake Vistas

FIELD NUMBER  
BOR11Mar02-1

LOCATION

COUNTRY USA  
STATE CA  
COUNTY San Diego  
CITY Chula Vista

LATITUDE 32°38'33"N VARIANCE  
LONGITUDE 116°56'16"W  
UTM 11 505849 3611449 VARIANCE

SECT TWNSP DIREC RANGE DIR  
18 S 1 W

MAP NAME Jamul Mountains, CA  
MAP SCALE 1:24000 DATUM NAD1927  
MAP SOURCE USGS 1955(1975)

LOCATION IN SECTION

ELEVATION 604 FT

STRATIGRAPHIC POSITION

GROUP  
FORMATION Otay Formation  
MEMBER  
INFORMAL NAME gritstone member

ERA Cenozoic  
SYSTEM Paleogene  
SER/EPOCH late Oligocene  
AGE/STAGE  
NALMA early Arikareean  
ZONE NAME

LITHOLOGY DEPOSITIONAL ENVIRONMENT  
sdst nonmarine  
CITATION

FIELD NOTES  
B.O. Riney  
COLLECTOR  
B.O. Riney 11 Mar 2002  
COMPILED BY  
B.O. Riney 12 Nov 2002

PHOTOS ACCESS NO.

DONATED BY  
EastLake Company 11 Mar 2002

ENTERED BY  
H.M. Wagner 14 Jan 2003

LOCALITY DESCRIPTION

EastLake Vistas is a large land development project due west of Lower Otay Lake. The project is bounded on the north by Otay Lakes Road, on the east by Wueste Road, and on the south by Olympic Parkway. Salt Creek forms the western boundary of this project. This locality was located in a street cut 100 yards south of Otay Lakes Road, 300 yards west of Wueste Road, and approximately 500 yards east of Salt Creek.

The fossil recovered from this locality was preserved in a light brown to tan, silty, very coarse-grained, poorly sorted gravelly sand that belong to the gritstone member of the Otay Formation. Above this locality was a series of poorly sorted, silty, very coarse-grained sandstones and gravel beds. Below this locality was essentially the same facies.

Fossils were collected utilizing the pluck and run technique.

The fossils recovered consisted of a skull and partial articulated lower jaw and some post crania of a single individual of *Sespia*.

The locality is no longer accessible as it has been graded away.

LOCALITY: 4815

DATE 04/08/05  
TIME 08:59:08

SAN DIEGO NATURAL HISTORY MUSEUM  
DEPARTMENT OF PALEONTOLOGY  
LOCALITY CARD

LOCALITY #- 5589

LOCALITY # LOCALITY NAME  
5589 Mile 5 Cut

FIELD NUMBER

LOCATION

COUNTRY USA  
STATE CA  
COUNTY San Diego  
CITY Chula Vista

LATITUDE 32°38'12"N VARIANCE  
LONGITUDE 116°55'17"W

UTM 11 507373 3610825 VARIANCE

SECT TWNSP DIREC RANGE DIR  
1 S 1 E

MAP NAME Jamul Mountains, CA  
MAP SCALE 1:24000 DATUM NAD1927  
MAP SOURCE USGS 1955(1975)

LOCATION IN SECTION unsurveyed

ELEVATION 540 FT

STRATIGRAPHIC POSITION

GROUP  
FORMATION Otay Formation  
MEMBER  
INFORMAL NAME sandstone-mudstone member

ERA Cenozoic  
SYSTEM Paleogene  
SER/EPOCH late Oligocene  
AGE/STAGE  
NALMA early Arikareean  
ZONE NAME

LITHOLOGY DEPOSITIONAL ENVIRONMENT  
mdst fluvial  
CITATION

FIELD NOTES

PHOTOS ACCESS NO.

DONATED BY  
0

COLLECTOR  
S.L. Walsh 0 0  
COMPILED BY  
K.A. Randall 8 Apr 2005

ENTERED BY  
K.A. Randall 8 Apr 2005

LOCALITY DESCRIPTION

Fossils were recovered from a road cut along Otay Lakes Road, on the northwest side of the Otay Reservoir in eastern Chula Vista. This road cut is approximately 1.46 miles (along Otay Lakes Road) east of the intersection with Wueste Road. Road cut is on the east side of the road.

The fossiliferous unit is a 3.3 meter thick, grayish red and pale greenish yellow, mottled, sandy mudstone. This unit represents the base the sandstone-mudstone member at this location.

The underlying unit is a 3.3 meter thick coarse gritstone containing common angular plutonic and metavolcanic cobbles. This unit is part of the gritstone informal member of the Otay Formation. The sandstone-mudstone/gritstone contact is erosional and has a relief of 1.5 meters. The overlying unit was not exposed here.

A single small bulk sample was collected at this locality.

Fossils recovered from the bulk sample included unidentifiable bone fragments.

The locality is still accessible.

LOCALITY 5589

DATE 04/06/05  
TIME 14:20:49

SAN DIEGO NATURAL HISTORY MUSEUM  
DEPARTMENT OF PALEONTOLOGY  
FAUNAL LIST FOR LOCALITY 4810  
EastLake Woods site 3

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PAL270

SPECIMEN NUMBER	NUMBER OF ITEMS	DESCRIPTION	SPECIES
87144	1	Rp4 fragment	Sciuridae
87145	1	RM1	Sciuridae
87146	1	Rp4	<u>Pleurolicus</u> sp.
87147	1	M1 or M2, left	<u>Pleurolicus</u> sp.
87148	1	m2, left	<u>Pleurolicus</u> sp.
87149	1	LM3	<u>Pleurolicus</u> sp.
87150	1	Lp4	<u>Heliscomys</u> sp.
87151	1	Rp4	<u>Heliscomys</u> sp.
87152	1	Rp4	<u>Heliscomys</u> sp.
87153	1	Rm1	<u>Heliscomys</u> sp.
87154	1	Rm1	<u>Heliscomys</u> sp.
87155	1	Lm2	<u>Heliscomys</u> sp.
87156	1	Lm2 fragment	<u>Heliscomys</u> sp.
87157	1	Lm3	<u>Heliscomys</u> sp.
87158	1	Lm3	<u>Heliscomys</u> sp.
87159	1	Rm3	<u>Heliscomys</u> sp.
87160	1	RM1	<u>Heliscomys</u> sp.
87161	1	RM1	<u>Heliscomys</u> sp.
87162	1	RM2	<u>Heliscomys</u> sp.
87163	1	RM2	<u>Heliscomys</u> sp.
87164	1	RM2	<u>Heliscomys</u> sp.
87165	1	LM3	<u>Heliscomys</u> sp.
87166	1	LM3	<u>Heliscomys</u> sp.
87167	1	LM3	<u>Heliscomys</u> sp.
87168	1	RM3	<u>Heliscomys</u> sp.
87169	1	RM3	<u>Heliscomys</u> sp.
87170	1	Lm1	Heliscomyidae
87171	1	Lm1	Heliscomyidae
87172	1	Rm1	Heliscomyidae
87173	1	Rm1	Heliscomyidae
87174	1	Rm1	Heliscomyidae
87175	1	Rm1	Heliscomyidae
87176	1	Rm1	Heliscomyidae
87177	1	Rm1	Heliscomyidae
87178	1	Lm2	Heliscomyidae

DATE 04/06/05  
TIME 14:20:50

SAN DIEGO NATURAL HISTORY MUSEUM  
DEPARTMENT OF PALEONTOLOGY  
FAUNAL LIST FOR LOCALITY 4810  
EastLake Woods site 3

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PAL270

SPECIMEN NUMBER	NUMBER OF ITEMS	DESCRIPTION	SPECIES
87179	1	Rm3	Heliscomyidae
87180	1	LM1	Heliscomyidae
87181	1	LM1	Heliscomyidae
87182	1	LM1	Heliscomyidae
87183	1	LM2	Heliscomyidae
87184	1	tooth fragments, one container	Mammalia
87185	1	misc. bone fragments, one container	Chordata
87186	1	unident. bone fragments, one container	Chordata
91302	1	left dentary w i1, m1, m2	<u>Leidymys</u> sp.
91303	1	right dentary with i1, p4	<u>Heliscomys</u> sp.
91304	1	right max with C1-M3	<u>Sespia californica</u> Stock, 1930
91305	1	left dent with m3 frag	<u>Sespia californica</u> Stock, 1930

DATE 04/06/05  
TIME 14:20:53

SAN DIEGO NATURAL HISTORY MUSEUM  
DEPARTMENT OF PALEONTOLOGY  
FAUNAL LIST FOR LOCALITY 4811  
EastLake Woods site 4

PAGE 1  
PAL270

SPECIMEN NUMBER	NUMBER OF ITEMS	DESCRIPTION	SPECIES
91306	1	right max with P4-M3	<u>Sespia californica</u> Stock, 1930
91307	1	skull, partial w P3	<u>Sespia californica</u> Stock, 1930
91308	1	right dent w m1-m3	<u>Sespia californica</u> Stock, 1930

DATE 04/06/05  
TIME 14:20:57

SAN DIEGO NATURAL HISTORY MUSEUM  
DEPARTMENT OF PALEONTOLOGY  
FAUNAL LIST FOR LOCALITY 4812  
EastLake Woods site 5

SPECIMEN NUMBER	NUMBER OF ITEMS	DESCRIPTION	SPECIES
91309	1	right max with DC1-DP2, DP4-M1	<u>Sespia californica</u> Stock, 1930

DATE 04/06/05  
TIME 14:21:00

SAN DIEGO NATURAL HISTORY MUSEUM  
DEPARTMENT OF PALEONTOLOGY  
FAUNAL LIST FOR LOCALITY 4813  
EastLake Woods site 6

PAGE 1  
PAL270

SPECIMEN NUMBER	NUMBER OF ITEMS	DESCRIPTION	SPECIES
91310	1	left max frag w I1	Rodentia
91311	1	palate	Artiodactyla

DATE 04/06/05  
TIME 14:21:02

SAN DIEGO NATURAL HISTORY MUSEUM  
DEPARTMENT OF PALEONTOLOGY  
FAUNAL LIST FOR LOCALITY 4815  
EastLake Vistas

SPECIMEN NUMBER	NUMBER OF ITEMS	DESCRIPTION	SPECIES
91318	1	metapodials	<u>Sespia californica</u> Stock, 1930
91319	1	skull w right M2-3	<u>Sespia californica</u> Stock, 1930