

The Junipers Project
Final Environmental Impact Report
SCH No. 2018041032 - Project No. 586670

Appendix L

Paleontological Records Search

January 2021

SAN DIEGO NATURAL HISTORY MUSEUM

17 July 2018

Ms. Tammy Ching
HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

RE: Paleontological Records Search – The Junipers

Dear Ms. Ching:

This letter presents the results of a paleontological records search conducted for The Junipers Project (Project), located in the northern portion of the Rancho Peñasquitos Neighborhood and Rancho Peñasquitos Community Plan Area of the City of San Diego, San Diego County, CA. The Project site is bordered to the east by Interstate 15 (I-15), to the south by Carmel Mountain Road, and to the north and west by existing residential and commercial development.

A review of published geological maps covering the Project site and surrounding area was conducted to determine the specific geologic units underlying the Project. Each geologic unit was subsequently assigned a paleontological resource sensitivity following City of San Diego and County of San Diego guidelines (City of San Diego, 2011; Deméré and Walsh, 1993; Stephenson et al., 2009). Published geological reports covering the Project area (e.g., Kennedy and Peterson, 1975; Kennedy and Tan, 2008) indicate that the proposed Project has the potential to impact late Pleistocene- to Holocene-age young alluvial flood plain deposits, the middle Eocene-age Mission Valley Formation, and Mesozoic-age metasedimentary and metavolcanic rocks. However, deposits mapped as the Mission Valley Formation that lie north of State Route 52 were referred to the upper tongue of the Friars Formation by Walsh (1996) and Walsh et al. (1996). Therefore, the upper tongue of the Friars Formation is assumed to underlie the Project site in areas mapped as the Mission Valley Formation. In addition, the prior development of the site suggests that there may be significant volumes of unmapped artificial fill underlying the area. Each of these geologic units (artificial fill, young alluvial flood plain deposits, the Friars Formation, and undivided metasedimentary and metavolcanic rocks) and their paleontological sensitivity are summarized in detail in the following section.

A search of the paleontological collection records housed at the San Diego Natural History Museum (SDNHM) was conducted in order to determine if any documented fossil collection localities occur at the Project site or within the immediate surrounding area (Figure 1). The SDNHM has 21 recorded fossil collection localities within one mile of the Project site. All of these localities are from the upper tongue of the Friars Formation (residing in deposits mapped as the Mission Valley Formation by Kennedy and Tan, 2008, but reassigned to the Friars Formation as mentioned above), and are described in greater detail below.

Geologic Rock Units Underlying the Project Area

Artificial fill – Undocumented artificial fill likely was emplaced within the Project site during prior development of the site as a golf course. The SDNHM does not have any fossil localities from deposits of artificial fill within a 1-mile radius of the Project site. Because artificial fill has been previously

disturbed and may have been imported to a Project site, any contained fossil remains have lost their original stratigraphic contextual data and are thus of little scientific value. For these reasons, artificial fill is assigned no paleontological sensitivity.

Young alluvial flood plain deposits – Late Pleistocene- to Holocene-age alluvial flood plain deposits (mapped by Kennedy and Tan, 2008, as Qya) occur in modern drainages, and underlie the eastern portion of the Project site in the vicinity of I-15. The SDNHM does not have any fossil collection localities from Holocene alluvial flood plain deposits within a 1-mile radius of the Project site. These deposits are generally considered to be less than 10,000 years old and are assigned a low paleontological sensitivity based on their young geologic age and the lack of known fossil localities. However, these surficial deposits likely overlie strata of the Friars Formation (see below), which could be impacted where the contact between these two units is relatively shallow.

Friars Formation – The fluvial deposits of the middle Eocene-age (approximately 47 to 46 million years old) Friars Formation, upper tongue, underlie the majority of the Project site at the surface, and likely underlie shallow surficial deposits in other portions of the Project site. The SDNHM has 21 fossil collection localities from the upper tongue of the Friars Formation within a 1-mile radius of the Project site. These localities produced trace fossils (e.g., coprolites), fossilized impressions of plants (e.g., ferns, myrtle, willows, and horsetails), and bones and teeth of terrestrial or freshwater vertebrates (e.g., bony fish, turtles, crocodiles, lizards, snakes, and assorted mammals, including marsupials, apatotheres, leptictids, pantolestids, dermopterans, insectivores, bats, primates, carnivores, rodents, condylarths, artiodactyls, and perissodactyls such as brontotheres). All three units of the Friars Formation are rich in vertebrate fossils, especially terrestrial mammals (Walsh, 1996), and the deposits underlying the Project site are therefore assigned a high paleontological sensitivity.

Mesozoic metasedimentary and metavolcanic rocks, undivided – Crystalline basement rocks of late Jurassic to early Cretaceous age (approximately 140 to 125 million years old), mapped as Mesozoic metasedimentary and metavolcanic rocks, undivided, by Kennedy and Tan (2008) and as the Santiago Peak Volcanics by Todd (2004), underlie the easternmost portion of the Project site along I-15, and the western portion of the Project site in the vicinity of Peñasquitos Drive. The SDNHM does not have any fossil localities from this undivided unit within a 1-mile radius of the Project site. The metavolcanic portions of this unit rarely preserve fossils due to the high temperatures associated with their formation; some of the volcanic breccias, however, have produced petrified wood, and are assigned a marginal sensitivity (Deméré and Walsh, 1993). The metasedimentary portions have the potential to yield fossils, including siliceous microfossils (e.g., radiolarians) and marine macroinvertebrates (e.g., clams and belemnites), and are assigned a moderate paleontological sensitivity. Since the rock units exposed within the Project site are mapped as "undivided," specific paleontological sensitivity determinations should be made by a qualified paleontologist during monitoring of the areas mentioned above.

Summary and Recommendations

The high paleontological sensitivity of the Friars Formation and marginal to moderate paleontological sensitivity of metasedimentary and metavolcanic rocks, undivided (Santiago Peak Volcanics) in San Diego County (Deméré and Walsh, 1993; Stephenson et al., 2009), as well as the presence of fossil localities in the vicinity of the Project site, suggest the potential for construction of the

Project to result in impacts to paleontological resources. Any proposed excavation activities that extend deep enough to encounter previously undisturbed deposits of the Friars Formation or metasedimentary rocks have the potential to impact the paleontological resources preserved therein. Within the Project site, the extent of previous grading is unknown, as is the depth of any emplaced undocumented artificial fill. It is therefore unclear at this point if construction will take place entirely within artificial fill, or if excavations could impact the underlying Friars Formation or metasedimentary rocks.

None of the recorded fossil collection localities discussed above lie within the Project site, nor within 100 feet of any planned earthwork within the Project site. Existing documented localities are, therefore, unlikely to be impacted by construction of the Project.

The fossil collection locality information contained within this paleontological records search should be considered private and is the sole property of the San Diego Natural History Museum. Any use or reprocessing of information contained within this document beyond the scope of The Junipers Project is prohibited.

If you have any questions concerning these findings please feel free to contact me at 619-255-0321 or kmccomas@sdnhm.org.

Sincerely,



Katie McComas
Paleontology Collections Assistant
San Diego Natural History Museum

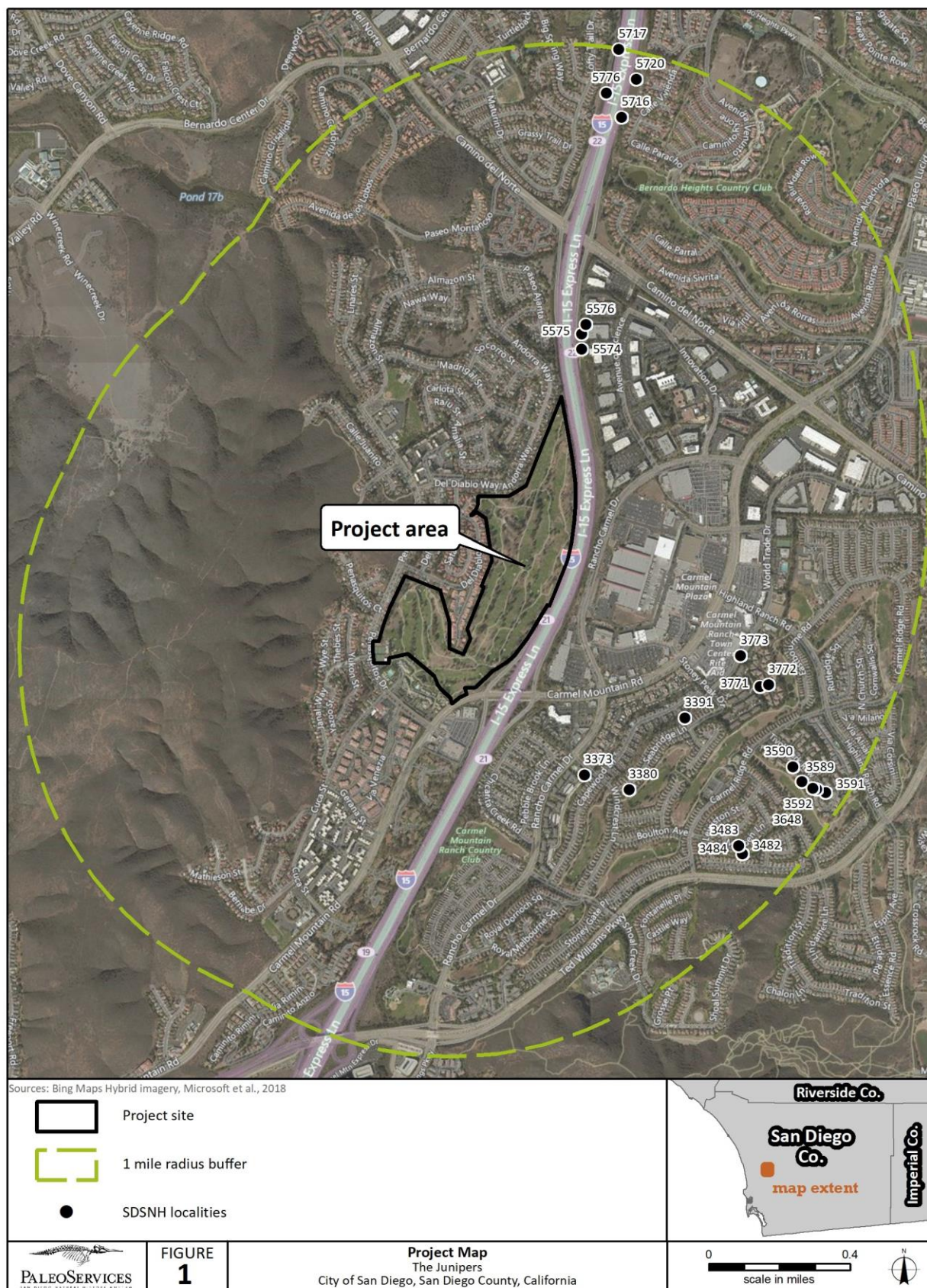
Enc: Figure 1: Project map

Appendix: List of SDNHM fossil localities in the vicinity of the Project

Literature Cited

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- Walsh, S.L., Prothero, D.R., and Lundquist, D.J. 1996. Stratigraphy and paleomagnetism of the middle Eocene Friars Formation and Poway Group, southwestern San Diego County, California, Pp. 120–154. In, D.R. Prothero and R.J. Emry (eds.). *The Terrestrial Eocene-Oligocene Transition in North America*. Cambridge University Press.



Appendix: Locality List
San Diego Natural History Museum
Department of Paleontology

Locality Number	Locality Name	Location	Elevation (feet)	Geologic Unit	Era	Period	Epoch
3373	Carmel Mountain Ranch Unit 15 site 2	City of San Diego, San Diego County, CA	660	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
3380	Carmel Mountain Ranch Unit 16 Site 3	City of San Diego, San Diego County, CA	0	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
3391	Carmel Mountain Ranch Unit 16 Site 1	City of San Diego, San Diego County, CA	780	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
3482	Carmel Mountain Ranch Unit 20-B Site 2	City of San Diego, San Diego County, CA	719	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
3483	Carmel Mountain Ranch Unit 20-B Site 3	City of San Diego, San Diego County, CA	716	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
3484	Carmel Mountain Ranch Unit 20-B Site 4	City of San Diego, San Diego County, CA	714	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
3589	Carmel Mountain Ranch	City of San Diego, San Diego County, CA	750	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
3590	Carmel Mountain Ranch	City of San Diego, San Diego County, CA	755	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
3591	Carmel Mountain Ranch	City of San Diego, San Diego County, CA	746	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
3592	Carmel Mountain Ranch	City of San Diego, San Diego County, CA	746	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
3648	Carmel Mountain Ranch	City of San Diego, San Diego County, CA	746	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
3771	Carmel Mountain Ranch Unit 19 site 1	City of San Diego, San Diego County, CA	740	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
3772	Carmel Mountain Ranch Unit 19 site 2	City of San Diego, San Diego County, CA	728	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
3773	Carmel Mountain Ranch Unit 19 site 3	City of San Diego, San Diego County, CA	697	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
5574	I-15 Managed Lanes Unit 1 Red Paleosol	City of San Diego, San Diego County, CA	754	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
5575	I-15 Managed Lanes Unit 1 Upper Siltstone	City of San Diego, San Diego County, CA	807	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
5576	I-15 Managed Lanes Unit 1 Harpagolestes Site	City of San Diego, San Diego County, CA	804	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
5716	I-15 Managed Lanes, Unit-2	City of San Diego, San Diego County, CA	738	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
5717	I-15 Managed Lanes, Unit-2	City of San Diego, San Diego County, CA	735	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
5720	I-15 Managed Lanes, Unit-2	City of San Diego, San Diego County, CA	779	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene
5776	I-15 Managed Lanes, Unit-2	City of San Diego, San Diego County, CA	727	Friars Formation, upper tongue	Cenozoic	Paleogene	middle Eocene