DUDEK

MEMORANDUM

To:	Ryan Brady, M.A., RPA
From:	Sarah Siren, M.S.
Subject:	Paleontological Resources Review – Newell Creek Dam Project
Date:	9/20/18
Attachment(s):	Paleontological Records Search Results Letter

This memo provides a review of the potential for impacts to paleontological resources during construction of the Newell Creek Dam Project (Project) located in Santa Cruz County, California. Following this review, a paleontological survey was conducted during the cultural resource survey on February 20, 2018 by Sarah Brewer, BA and Kolin Taylor, BA, Dudek archaeologists who are dual-qualified and cross-trained to identify paleontological resources. Physical Context

The project site is located within the mountainous areas surrounding the Loch Lomond reservoir, north of the City of Santa Cruz. In this area, surface-mapped sedimentary deposits are generally Cenozoic (less than 66 million years old) in age, and include: the Butano Sandstone (Eocene), Zayante Sandstone (Oligocene), Lompico Sandstone (Miocene), Monterey Formation (Miocene), and Santa Margarita Formation (Miocene) (Clark 1981; Brabb 1997; Holroyd 2018). The southern portion of the project site, including the dam, is underlain by the Monterey Formation (Clark 1981; Brabb 1997). The northern portion of the project site, located on the east side of the Loch Lomond Reservoir, including the Loch Lomond Recreation Area, is underlain by the Butano Sandstone, Zayante Sandstone, and Monterey Formation (Clark 1981; Brabb 1997). The Monterey Formation (approximately 12-15 million years old) is known to yield scientifically significant, Miocene age marine vertebrates and well preserved invertebrates throughout California where it occurs, and has high paleontological resource sensitivity (Obradovich and Naeser 1981).

BACKGROUND RESEARCH

According to the records search results received from the Museum of Paleontology located at the University of California, Berkeley (UCMP), there are three fossil collecting localities which may lie within the project area, or nearby. The exact locations for these localities cannot be further refined. They occur within sections 27, 33, and 34 of the U.S. Geological Survey Felton, CA 7.5-minute topographic quadrangle (Holroyd 2018). The invertebrate fossils documented by the

UCMP are from localities IP8810, IP8813, and IP6624 and were collected from the Monterey and Vaqueros formations. Approximately two miles away to the southeast of the project area, vertebrate fossil localities V70184 and V6202 are both recorded from Miocene age sedimentary deposits of the Santa Margarita Formation (Holroyd, 2018). An early sea-lion like walrus or imagotariine pinniped was discovered at UCMP locality V70184, and described by Barnes (1971). The Project area is not in an area of identified significant resources identified in the County of Santa Cruz General Plan (1994).

FIELD SURVEY

Dudek cross-trained archaeologists Sarah Brewer, BA, and Kolin Taylor, BA, conducted an intensive pedestrian survey by walking transects spaced no more than 15-meter apart over the entire project APE on February 20, 2018. The project APE includes access roads, pipeline and tunnel alignments and nine potential staging areas. The project is located within a mixed woodland habitat. The over story includes redwood, bay laurel, madrone, and oak. Sycamore is also present in riparian areas. The understory is composed of coyote brush, ferns, blackberry, poison oak, and grasses. Site soils are a combination of decomposing limestone and dark to medium brown silty clay loams. A thick layer of forest duff covers most of the survey area. Ground visibility was limited due to heavy vegetation; however, exposed sandstone outcrops along the proposed tunnel ridge were intensely surveyed for paleontological resources. In areas where visibility was poor, Dudek's cross-trained archaeologists scraped the duff to inspect the soils below.

Dudek staff inspected soils and all exposed bedrock surfaces for paleontological resources. None were observed. Dudek documented the survey results using field notes, digital photography, and close-scale field maps. Photographs of the project area were taken with a Nikon Coolpix digital camera. All field notes, photographs, and records related to the current study are on file at Dudek's office in Santa Cruz, California.

RESULTS AND RECOMMENDATIONS

No paleontological resources were identified within the project site as a result of the pedestrian field survey. However, the institutional records search stated that there are records of previous paleontological resources discoveries either nearby or within the project area. While the project area has been heavily disturbed by development for the existing dam and related facilities, intact paleontological resources may be present below the original layer of fill material. Given the proximity of past fossil discoveries in the surrounding area and the potentially fossiliferous Miocene age sedimentary deposits mapped in this area (e.g., Monterey Formation), undisturbed portions of these geological units within the project site would be considered highly sensitive for

supporting paleontological resources. Ground-disturbing activities associated with construction of the proposed project, such as grading and excavation of the conduit tunnel, have the potential to destroy a unique paleontological resource or site. Without mitigation, the potential damage to paleontological resources during construction would be a potentially significant impact. However, upon implementation of the following mitigation measure, impacts would be reduced to below a level of significance. Impacts of the proposed project are considered less than significant with mitigation incorporated during construction.

> *Mitigation Measure:* Prior to commencement of any grading activity on-site, the City shall retain a qualified paleontologist to prepare a Paleontological Resources Impact Mitigation Program (PRIMP), consistent with the guidelines of the Society of Vertebrate Paleontology (SVP) (2010) that outlines requirements for: pre-construction worker environmental awareness training; locations and timing of construction monitoring; procedures for discoveries treatment; and paleontological methods (including sediment sampling for microvertebrate fossils), reporting, and collections management. The qualified paleontologist shall attend a preconstruction meeting to provide construction worker training regarding procedures in the event of discovery of paleontological resources during construction. Monitoring shall consist of onsite spot-checking once a week for five weeks during the excavation for the staging area, for two days during the first week of the tunnel excavation (to get a sense of the equipment operations), and several intermittent spot-checks thereafter. Monitoring of excavation shall consist of reviewing tunnel spoils but not entering the tunnel.
>
> In the event that significant paleontological resources (e.g., fossils) are unearthed during grading, the paleontological monitor shall coordinate with the Construction Manager or City Staff to temporarily halt and/or divert grading activity within a 50-foot radius to examine the resource. If the find is significant, the City shall require treatment of the find in accordance with the recommendations of the paleontologist, which may include, but are not limited to, specimen recovery and curation or thorough documentation. Once documentation and/or collection of the find is completed, grading may recommence in the area of the find.

Enc. Paleontological Records Search Results Letter

REFERENCES CITED

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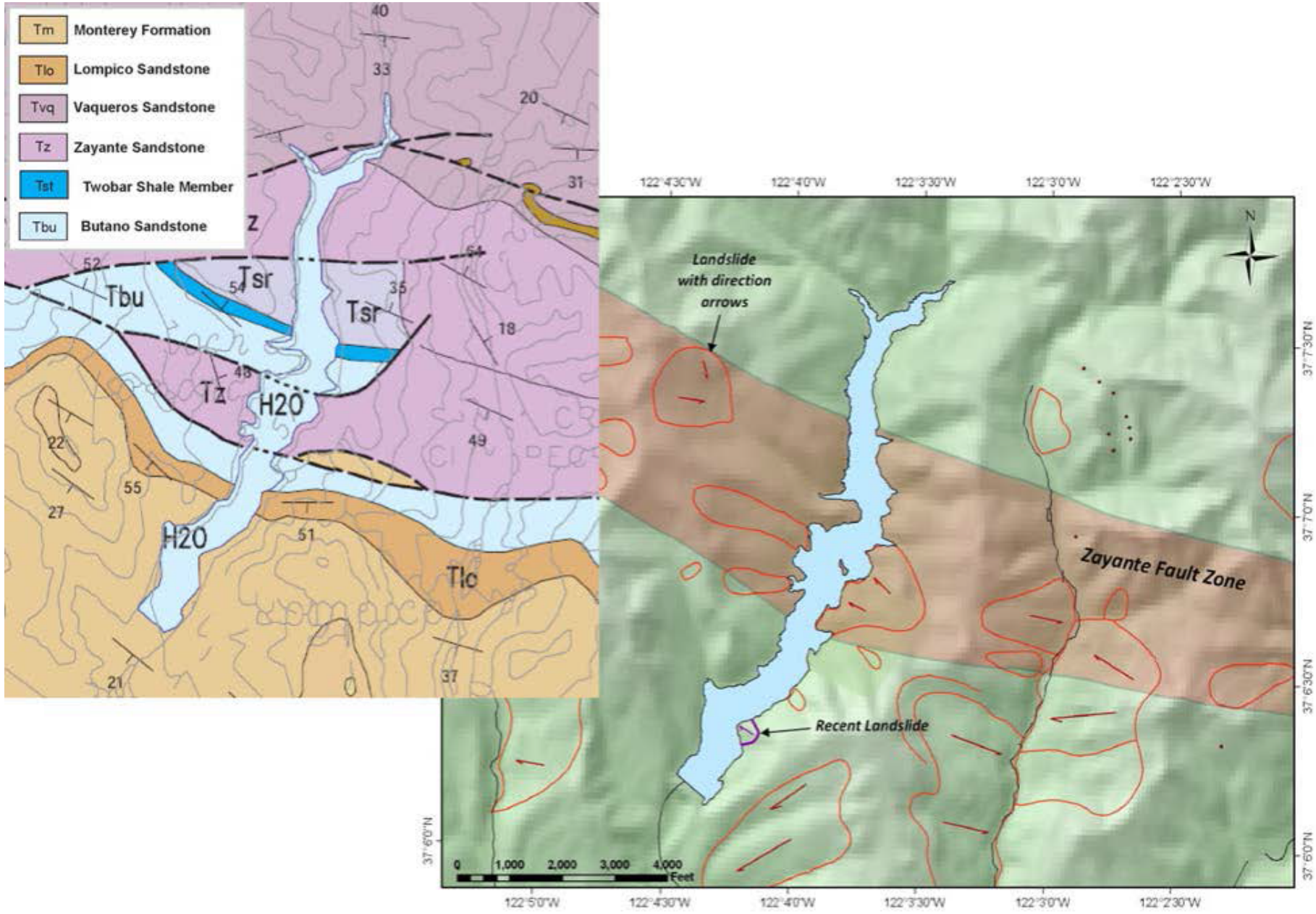

SOURCE: AECOM 2018

FIGURE 1

Project Area Geology

Newell Creek Dam Inlet/Outlet Replacement Project

DUDEK

Sarah Siren

From: Patricia HOLROYD <pholroyd@berkeley.edu>
Sent: Tuesday, January 30, 2018 11:19 AM
To: Sarah Siren
Subject: Re: FW: records search request - Newell Creek Dam

Dear Sarah,

I conducted a review of the University of California Museum of Paleontology records for paleontological resources in or near your project area on the Loch Lomond Reservoir. Three invertebrate sites may fall within the project area. These are IP8810, IP8813, and IP6624 . We don't have precise data plots for these, as they were collections we received as part of the transfer of USGS collections. We only know they occur within a particular section; these are IP8810 (sec. 34; Monterey Fm.), IP8813 (sec. 33, Monterey Fm.), and IP6624 (sec. 27, Vaqueros Fm)

The nearest known vertebrate sites are approximately 2 miles SE, V70184 and V6202, both of which are reported to be in the Santa Margarita Formation.

Patricia A. Holroyd, Ph.D.
Senior Museum Scientist
Museum of Paleontology
University of California
Berkeley, CA 94720

On Tue, Jan 30, 2018 at 10:27 AM, Sarah Siren <ssiren@dudek.com> wrote:

> Hi There,
> Wanted to follow up on this records search request (please see attached). Let me know if you have any questions.
> Thank you,
>
> **Sarah Siren, M.S., GISP**
> Senior Paleontologist
>
> **DUDEK**
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> ---
> **From:** Sarah Siren
> **Sent:** Wednesday, January 10, 2018 10:01 AM

To: 'pholroyd@berkeley.edu' <pholroyd@berkeley.edu>
Subject: RE: records search request - Newell Creek Dam

Hi Pat,
Please find the attached records search request for a project located in Santa Cruz County, along the Loch Lomond Reservoir. Let me know if you have any questions.
Thank you,

Sarah Siren, M.S., GISP
Senior Paleontologist

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