

Paleontological resources (fossils) are the remains or traces of prehistoric animals and plants. This section assesses the potential for earthmoving activities associated with the proposed levee repairs to affect scientifically important fossil remains, as recommended under the California Environmental Quality Act Guidelines (State CEQA Guidelines). The analysis presented in this section conforms to Society of Vertebrate Paleontology (SVP) criteria.

5.13.1 REGULATORY SETTING

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

No federal plans, policies, or laws related to paleontological resources are applicable to the proposed project.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

No state or local agencies have specific jurisdiction over paleontological resources on private lands. No state or local agency requires a paleontological collecting permit to allow for the recovery of fossil remains discovered as a result of construction-related earthmoving on state or private land in a project site. However, if a state agency were to acquire ownership of project lands, California Public Resources Code Chapter 1.7 (“Archaeological, Paleontological, and Historical Sites”), Section 5097.5, could apply. This section of the Public Resources Code specifies that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources.

LOCAL PLANS, POLICIES, REGULATIONS, AND LAWS

No local plans, policies, or ordinances related to paleontological resources are applicable to the proposed project. Yuba County has not adopted goals for protection of paleontological resources.

PROFESSIONAL STANDARDS

The SVP (1995, 1996), a national scientific organization of professional vertebrate paleontologists, has established standard guidelines that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, specimen preparation, analysis, and curation. Most practicing professional paleontologists in the nation adhere to the SVP assessment, mitigation, and monitoring requirements, as specifically spelled out in the organization’s standard guidelines. The criteria for determining sensitivity of paleontological resources are described below under “Paleontological Resource Assessment Criteria” and “Thresholds of Significance.”

5.13.2 ENVIRONMENTAL SETTING

GEOGRAPHIC LOCATION AND PHYSIOGRAPHIC ENVIRONMENT

As discussed in Section 5.2, “Geology, Soils, and Mineral Resources,” the area considered for the Feather River Levee Repair Project (FRLRP) is located in the Sacramento Valley. The Sacramento Valley and the San Joaquin Valley comprise the Great Valley of California, which is located between the Sierra Nevada on the east and the Coast Range mountains on the west.

The Great Valley is composed of thousands of feet of sedimentary deposits that have undergone periods of subsidence and uplift over millions of years. During the Jurassic and Cretaceous periods of the Mesozoic era, the Great Valley existed in the form of an ancient ocean. By the end of the Mesozoic, the northern portion of the Great Valley began to fill with sediment as tectonic forces caused uplift of the basin. By the time of the Miocene epoch, approximately 24 million years ago, sediments deposited in the Sacramento Valley were mostly of terrestrial origin.

Most of the surface of the Great Valley is covered with Recent (Holocene, i.e., 10,000 years Before Present [BP] to present day) and Pleistocene (i.e., 10,000–1,800,000 years BP) alluvium. This alluvium is composed of sediments from the Sierra Nevada to the east and the Coast Range to the west that were carried by water and deposited on the valley floor. Siltstone, claystone, and sandstone are the primary types of sedimentary deposits.

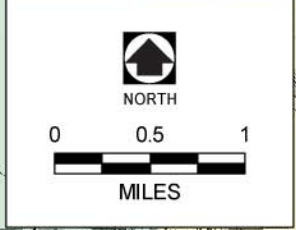
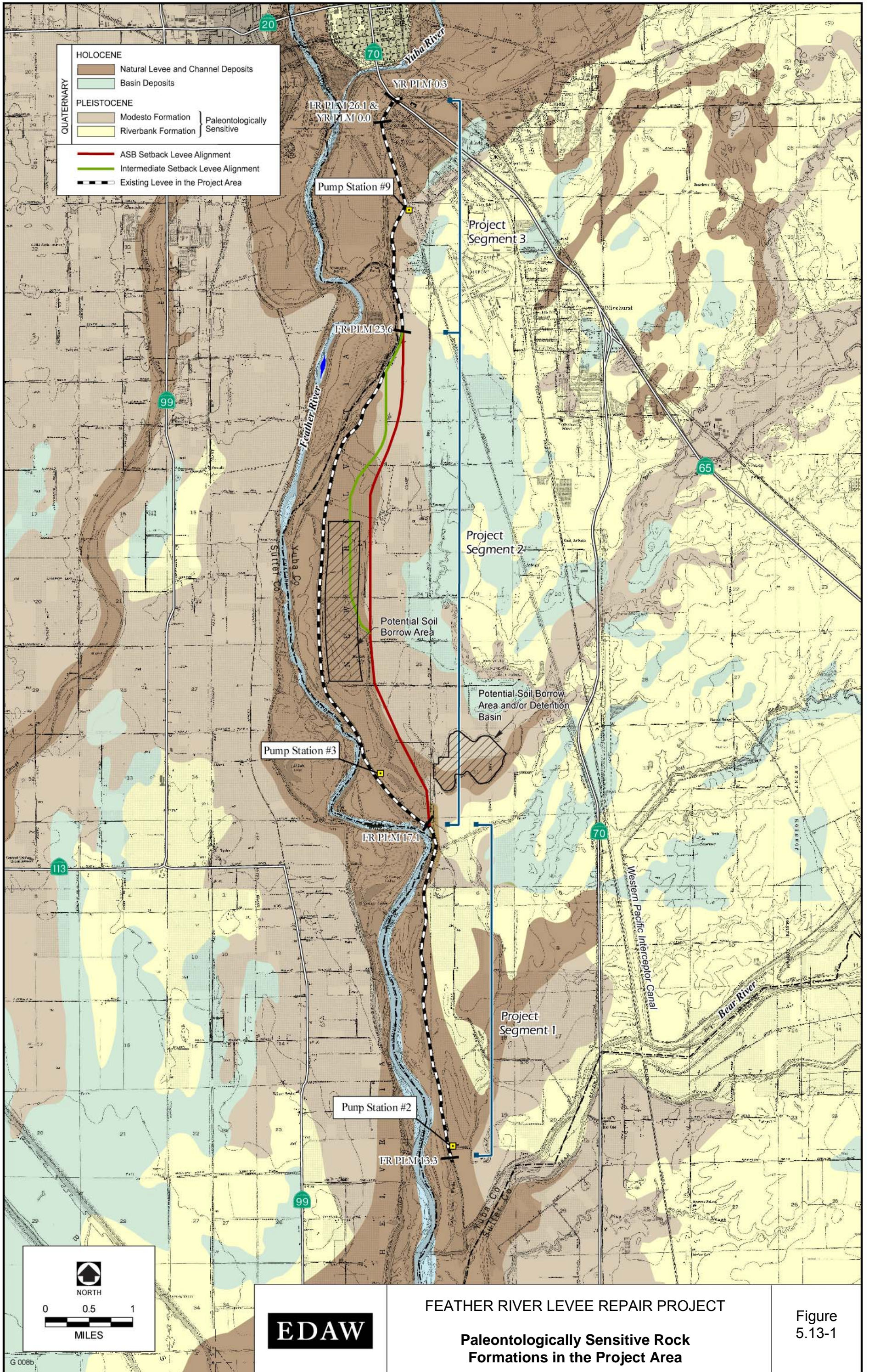
The proposed levee repair area is located entirely within Yuba County and within the U.S. Geological Survey (USGS) Nicolaus, Olivehurst, and Yuba City Quadrangles (1:24,000).

REGIONAL GEOLOGIC SETTING

Geology of the Sacramento Valley has been described in some detail by various authors such as Hackel (1966), Page (1986), Graham and Olson (1988), and Bartow (1991). Geologic history and conditions are relevant to the evaluation of paleontological resources because they influence the type of fossils that may be found (i.e., aquatic vs. terrestrial organisms) and the probability that any prehistoric remains would be subject to fossilization rather than normal decay. As discussed in Section 5.2, “Geology, Soils, and Mineral Resources,” the depositional history of the Sacramento Valley during the late Quaternary period included several cycles related to fluctuations in regional and global climate that caused alternating periods of deposition followed by periods of subsidence and erosion. Thus, during the Pleistocene epoch the Sacramento Valley consisted of stages of wetlands and floodplain creation as tidewaters rose in the valley from the west, areas of erosion when tidewaters receded, and alluvial fan deposition from streams emanating from the adjacent mountain ranges (Atwater 1982, Bartow 1991).

Holocene Alluvium

Sediments adjacent to the Feather and Yuba Rivers are composed of Recent (Holocene) alluvial floodplain deposits (Figure 5.13-1, “Paleontologically Sensitive Rock Formations in the Project Area”). In general, these deposits consist primarily of unconsolidated sand and silt. Holocene alluvial deposits overlie an older alluvial fan system composed of Pleistocene-age sediments.



FEATHER RIVER LEVEE REPAIR PROJECT

Paleontologically Sensitive Rock Formations in the Project Area

Figure 5.13-1

Source: Saucedo and Wagner 1992

Modesto Formation

Gale et al. (1938) and Piper et al. (1939) were the first to publish detailed geologic maps in the southern Sacramento/northern San Joaquin Valley areas, and designated the older alluvial Pleistocene deposits as the Victor Formation. However, in 1959, Davis and Hall proposed a subdivision of the Victor Formation into the Turlock Lake (oldest), Riverbank (middle), and Modesto (youngest) Formations. The type section (i.e., initial documented discovery) of the Modesto Formation was designated along the south bluff of the Tuolumne River south of the city of Modesto. In 1981, Marchand and Allwardt proposed that the name “Victor Formation” be abandoned and that the Turlock Lake, Riverbank, and Modesto Formations be adopted as formal nomenclature for Quaternary deposits in the Sacramento and San Joaquin Valleys. Researchers since have followed this recommendation.

In the FRLRP project vicinity, the Modesto Formation forms alluvial fans along the Feather River (Figure 5.13-1). Researchers differ as to the age of this formation: Marchand and Allwardt (1981) place the age between approximately 12,000 and 42,000 years BP; Atwater (1982) places the age from 9,000 to 73,000 years BP; and Helley and Harwood (1985) follow Marchand and Allwardt’s dating scheme. The Modesto Formation can be divided into an upper and lower member (i.e., distinct upper and lower levels), both of which occur in the project area. The lower member of the Modesto is composed of consolidated, slightly weathered, well-sorted silt and fine sand, locally containing gravels. Age estimates for the lower member range from 42,000 to 73,000 years BP. The upper member of the Modesto is composed of unconsolidated, unweathered gravel, sand, silt, and clay. These deposits form alluvial terraces that are topographically higher than those of the lower member. Age estimates for the upper member range from 12,000 to 26,000 years BP.

Riverbank Formation

Davis and Hall (1959) were the first to name the Riverbank Formation. They designated the type section in the city of Riverbank in an area along the south bank of the Stanislaus River. Sediments in the Riverbank Formation consist of weathered reddish gravel, sand, and silt that form alluvial terraces and fans. In the Sacramento Valley, this formation contains more maficigneous rock fragments than the San Joaquin Valley, and thus tends toward stronger soil-profile developments that are more easily distinguishable from the Modesto Formation.

The Riverbank Formation is Pleistocene in age, but is considerably older than the Modesto Formation; estimates place it between 130,000 and 450,000 years BP. Similar to the Modesto Formation, the Riverbank Formation forms alluvial fans and terraces of the Feather and Bear Rivers; however, Riverbank fans and terraces are higher in elevation and generally have a more striking topography than those formed by the Modesto. In the project area, the Riverbank Formation is found in a mixture with the Modesto Formation, containing more arkosic rocks, along the existing Feather River levee in project Segment 1.

PALEONTOLOGICAL RESOURCE INVENTORY METHODS

A stratigraphic inventory and paleontological resource inventory were completed to develop a baseline paleontological resource inventory of the project area and the vicinity by rock unit, and

to assess the potential paleontological productivity of each rock unit. Research methods included a review of published and unpublished literature and a cursory field survey. These tasks complied with SVP (1995) guidelines.

Stratigraphic Inventory

Geologic maps and reports covering the geology of the project area were reviewed to determine the exposed rock units and to delineate their respective areal distributions in the project area.

Paleontological Resource Inventory

Published and unpublished geological and paleontological literature was reviewed to document the number and locations of previously recorded fossil sites from rock units exposed in and near the project area, as well as the types of fossil remains each rock unit has produced. The literature review was supplemented by an archival search conducted at the University of California Museum of Paleontology (UCMP) in Berkeley, California, on May 30, 2006.

Field Survey

A field reconnaissance was conducted in May 2006 to document the presence of any previously unrecorded fossil sites and of strata that might contain fossil remains. Reconnaissance was limited to inspection of the visible ground surface in the project area. Only those parcels where access was available and that appeared to be underlain by or adjacent to the Modesto Formation were surveyed. The ground surface was clearly visible in all areas surveyed, and the site was completely flat. No exposures of potentially fossiliferous strata were observed in the areas surveyed.

PALEONTOLOGICAL RESOURCE ASSESSMENT CRITERIA

The potential paleontological importance of the project area can be assessed by identifying the paleontological importance of exposed rock units within the area. Because the areal distribution of a rock unit can be easily delineated on a topographic map, this method is conducive to delineating parts of the site that are of higher and lower sensitivity for paleontological resources and to delineating parts of the project area that may therefore require monitoring during construction.

A paleontologically important rock unit is one that (1) has a high potential paleontological productivity rating and (2) is known to have produced unique, scientifically important fossils. The potential paleontological productivity rating of a rock unit exposed at a project site refers to the abundance/densities of fossil specimens and/or previously recorded fossil sites in exposures of the unit in and near the site. Exposures of a specific rock unit at a project site are most likely to yield fossil remains representing particular species in quantities or densities similar to those previously recorded from the unit in and near the site.

A variety of factors are considered in determining whether an individual vertebrate fossil specimen may be considered unique or significant, including whether the fossil is:

- ▶ identifiable;
- ▶ complete;
- ▶ well preserved;
- ▶ age diagnostic;
- ▶ useful in paleoenvironmental reconstruction;
- ▶ a type specimen;
- ▶ a member of a rare species;
- ▶ a species that is part of a diverse assemblage; or
- ▶ a skeletal element different from, or a specimen more complete than, those now available for its species.

For example, identifiable vertebrate marine and terrestrial fossils are generally considered scientifically important because they are relatively rare. The value or importance of different fossil groups varies, depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions such as part of a research project. Marine invertebrates are generally common, well developed, and well documented. They generally would not be considered a unique paleontological resource.

The following tasks were completed to establish the paleontological importance of each rock unit exposed at the project site:

- ▶ The potential paleontological productivity of each rock unit was assessed, based on the number of fossil remains previously documented within the rock unit.
- ▶ The potential for rock units exposed within the project site to contain unique paleontological resources was considered.

RESOURCE INVENTORY RESULTS

Stratigraphic Inventory

Regional and local surficial geologic mapping and correlation of the various geologic units in the project vicinity has been provided at a scale of 1:250,000 by Saucedo and Wagner (1992) and 1:62,500 by Helley and Harwood (1985).

Paleontological Resource Inventory and Assessment by Rock Unit

Vertebrate mammalian fossils have proven helpful in determining the relative age of alluvial fan sedimentary deposits (Louderback 1951, Savage 1951, Albright 2000). Mammalian inhabitants

of the Pleistocene alluvial fan and floodplain included mammoths, horses, mastodons, camels, ground sloths, and pronghorns.

The Pleistocene epoch, known as the “great ice age,” began approximately 1,800,000 years ago. Surveys of Late Cenozoic land mammal fossils in northern California have been provided by Hay (1927), Stirton (1939), Savage (1951), Lundelius et al. (1983), and Jefferson (1991a, 1991b). On the basis of his survey of vertebrate fauna from the nonmarine Late Cenozoic deposits of the San Francisco Bay region, Savage (1951) concluded that two major divisions of Pleistocene-age fossils could be recognized: the Irvingtonian (older Pleistocene fauna) and the Rancholabrean (younger Pleistocene and Holocene fauna). These two divisions of Quaternary Cenozoic vertebrate fossils are widely recognized today in the field of paleontology. The age of the more Recent Pleistocene, Rancholabrean fauna was based on the presence of bison and on the presence of many mammalian species that are inhabitants of the same area today. In addition to bison, large land mammals identified as part of the Rancholabrean fauna include mammoths, mastodons, camels, horses, and ground sloths.

Holocene Alluvium

Project-related activities that would occur within alluvial floodplain or basin deposits identified in Figure 5.13-1 would be located within Holocene (10,000 years BP and younger) sediments. Because, by definition, an object must be more than 10,000 years old to be considered a fossil, activities in these deposits would not have an impact on paleontological resources.

Modesto and Riverbank Formations

Remains of land mammals have been found at a number of localities in alluvial deposits referable to the Modesto Formation or the Riverbank Formation. Jefferson (1991a, 1991b) compiled a database of California Late Pleistocene vertebrate fossils from published records, technical reports, unpublished manuscripts, information from colleagues, and inspection of museum paleontological collections at more than 40 public and private institutions. Although Jefferson did not list any fossil sites in Yuba County, three nearby sites in Sutter County have yielded Rancholabrean vertebrate fossils recovered from Pleistocene-age sediments. The closest vertebrate fossil to the project site was recovered from an area across the Feather River approximately 3.5 miles west of the levee, near Yuba City (UCMP V-6426), in sediments referable to the Modesto Formation. This site yielded a vertebra from a Pleistocene (Irvingtonian) age Proboscidea, an order that includes mammoths, mastodons, and elephants. UCMP locality V-3915 on Oswald Road, approximately 8 miles northwest of the project area, yielded remains from a Pleistocene-age bison in sediments referable to the Modesto Formation. UCMP locality V-4043 in the Sutter Buttes, approximately 12 miles northwest of the northern end of the project area, yielded remains from a Pleistocene-age horse in sediments referable to the Riverbank Formation.

Fossil specimens from the Modesto Formation have been reported by Marchand and Allwardt (1981) near the type locality in the city of Modesto. These authors also reported fossil specimens from the Riverbank Formation near its type locality in the city of Riverbank. Other locations are also known throughout the northern and Central Valley (University of California Museum of Paleontology 2006). For example, there are several sites approximately 20–30 miles away in

Yolo County, near the cities of Davis and Woodland, that have yielded Rancholabrean-age rodents, snakes, horses, antelope, Harlan's ground sloth, mammoth, and saber-toothed tiger from sediments referable to both the Modesto and Riverbank Formations (Hay 1927, University of California Museum of Paleontology 2004). There are at least eight recorded Rancholabrean-age vertebrate fossil sites from the Riverbank Formation in the city of Sacramento, approximately 20 miles south of the project area (Hilton et al. 2000, Kolber 2004, University of California Museum of Paleontology 2006). These sites have yielded remains of mammoth, bison, coyote, horse, camel, antelope, several types of reptiles, and Harlan's ground sloth.

Results of a paleontological records search at the UCMP indicated no fossil remains within the project area, and no fossils were observed during a cursory field visit. However, the occurrence of Pleistocene vertebrate fossil remains in sediments referable to the Modesto and Riverbank Formations from near Yuba City, other locations in Sutter County, as well as in Davis, Woodland, and numerous other areas throughout the northern and Central Valleys, suggests there is a potential for uncovering additional similar fossil remains in appropriate rock/soil types during construction-related earthmoving activities within the project area.

5.13.3 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Thresholds for determining the significance of impacts related to paleontological resources are based on the environmental checklist form in Appendix G of the State CEQA Guidelines, and on the SVP criteria discussed below. Based on the State CEQA Guidelines, a project alternative would have a significant impact on paleontological resources if it would directly or indirectly destroy a unique paleontological resource or site.

In its standard guidelines for assessment and mitigation of adverse impacts on paleontological resources, the SVP (1995) established three categories of sensitivity for paleontological resources—high, low, and undetermined:

- ▶ **High sensitivity.** Areas where fossils have been previously found are considered to have a high sensitivity and a high potential to produce fossils. In areas of high sensitivity that are likely to yield unique paleontological resources, full-time monitoring is typically recommended during any project ground disturbance.
- ▶ **Low sensitivity.** Areas that are not sedimentary in origin and that have not been known to produce fossils in the past typically are considered to have low sensitivity and monitoring is usually not needed during project construction.
- ▶ **Undetermined sensitivity.** Areas or rock formations that have not had any previous paleontological resource surveys or fossil finds are considered undetermined until surveys and mapping are performed to determine their sensitivity. After reconnaissance surveys, observation of exposed cuts, and possibly subsurface testing, a qualified paleontologist can determine whether the area should be categorized as having a high or low sensitivity.

In keeping with the significance criteria of the SVP (1995), all vertebrate fossils are generally categorized as having potential significance based on their scientific value.

IMPACT ANALYSIS

Alternative 1 – The Levee Strengthening Alternative

Impact
LS-5.13-a

Disturbance of Unknown Paleontological Resources during Earthmoving Activities.

Portions of the project area and immediate vicinity are underlain by the Modesto and Riverbank Formations, which are paleontologically sensitive rock formations. Construction activities in the Modesto and Riverbank Formations associated with proposed levee strengthening (e.g., slurry cutoff walls, relief wells), use of the soil borrow area/detention basin location, and related activities (e.g., relocation of Pump Station No. 3) could adversely affect unknown subsurface paleontological resources. This impact would be **potentially significant**.

Based on the records search conducted at the UCMP, there are no previously recorded fossil sites within the project area. The nearest recorded fossil site, UCMP V-6426, is located approximately 3.5 miles west of the project area. By definition, sediments associated with Holocene-age alluvium do not contain paleontologically sensitive resources; therefore, earthmoving activities in most of the sediments contained within and adjacent to the existing levee would result in no impacts on paleontological resources.

However, segments of the northern portion of the existing levee are located in Pleistocene-age sediments of the Modesto Formation and a portion of the existing levee in the northern portion of project Segment 1 is located in the Riverbank Formation (Figure 5.13-1). In addition, most of the area east of Star Bend that has been identified as a potential detention basin and/or soil borrow site is underlain by Modesto Formation sediments. The Modesto and Riverbank Formations are paleontologically sensitive rock formations under SVP criteria. In these areas, construction activities on and slightly below the existing ground surface would not adversely affect resources because Pleistocene-age fossils would not be encountered until approximately 10 feet below ground surface. However, excavations deeper than 10 feet, such as for the installation of slurry cutoff walls in the levee alignment or installation of relief wells, have the potential to encounter and possibly damage paleontologically sensitive resources. A new location for Pump Station No. 3 has not been identified at this time. If the relocated Pump Station No. 3 were placed in an area underlain by the Modesto Formation rock unit, excavations associated with this facility could also have the potential to encounter and possibly damage paleontologically sensitive resources. This impact would be potentially significant.

Alternative 2 – The Levee Strengthening and ASB Setback Levee Alternative

Impact
ASB-5.13-a

Disturbance of Unknown Paleontological Resources during Earthmoving Activities.

Portions of the project area and immediate vicinity are underlain by the Modesto and Riverbank Formations, which are paleontologically sensitive rock formations. Construction activities in the Modesto and Riverbank Formations associated with proposed levee strengthening (e.g., slurry cutoff walls, relief wells), construction of the ASB setback levee, use of the soil borrow area/detention basin location, and related activities (e.g., relocation of Pump Station No. 3) could adversely affect unknown subsurface paleontological resources. This impact would be **potentially significant**.

Construction activities to strengthen existing levees in project Segments 1 and 3 and to relocate Pump Station No. 3 could have an adverse impact on paleontological resources, for the reasons described above (for all project segments) in Impact LS-5.13-a. Under Alternative 2, potential

impacts on paleontological resources for project Segments 1 and 3 would be the same as described in Impact LS-5.13-a for Alternative 1.

The northern portion of the proposed ASB levee setback area in project Segment 2 is located entirely within sediments of the Modesto Formation, which is a paleontologically sensitive rock formation under SVP guidelines (Figure 5.13-1) (Society of Vertebrate Paleontology 1995, 1996). The remainder of the ASB levee setback alignment is located on the border between the Modesto Formation and adjacent natural levee and channel deposits, but the final design would favor placing as much of the levee as possible on Modesto Formation sediments because they have better engineering characteristics for levee foundation construction. Piling of soil to form levees or berms on top of the existing ground surface would not adversely affect resources because Pleistocene-age fossils would not be encountered until approximately 10 feet below ground surface. However, excavations deeper than 10 feet (e.g., for the installation of slurry cutoff walls in the setback levee) have the potential to encounter and possibly damage paleontologically sensitive resources. In addition, most of the area east of Star Bend that has been identified as a potential detention basin and/or soil borrow site is underlain by Modesto Formation sediments. This impact would be potentially significant.

Alternative 3 – The Levee Strengthening and Intermediate Setback Levee Alternative

Impact
IS-5.13-a

Disturbance of Unknown Paleontological Resources during Earthmoving Activities.

Portions of the project area and immediate vicinity are underlain by the Modesto and Riverbank Formations, which are paleontologically sensitive rock formations. Construction activities in the Modesto and Riverbank Formations associated with proposed levee strengthening (e.g., slurry cutoff walls, relief wells), construction of the intermediate setback levee, use of the soil borrow area/detention basin location, and related activities (e.g., relocation of Pump Station No. 3) could adversely affect unknown subsurface paleontological resources. This impact would be **potentially significant**.

Construction activities to strengthen the existing levee in project Segments 1 and 3 and to relocate Pump Station No. 3 could have an adverse impact on paleontological resources, for the reasons described previously (for all project segments) in Impact LS-5.13-a. Under Alternative 3, potential impacts on paleontological resources for project Segments 1 and 3 would be the same as described in Impact LS-5.13-a for Alternative 1.

Within project Segment 2, most of the proposed intermediate setback levee alignment would occur in Holocene-age sediments (Figure 5.13-1). By definition, sediments associated with Holocene-age alluvium do not contain paleontologically sensitive resources; therefore, earthmoving activities in these areas would result in no impacts on paleontological resources. However, where the alignment occurs at the interface of Holocene-age sediments and sediments associated with the Modesto Formation, the final design would favor placing as much of the levee as possible on Modesto Formation sediments because they have better engineering characteristics for levee foundation construction.

The northern portion of the proposed intermediate setback levee, also within project Segment 2, would be placed in sediments of the Modesto Formation, which is a paleontologically sensitive rock formation under SVP guidelines (Society of Vertebrate Paleontology 1995, 1996). As described above under Impact ASB-5.13-b, piling of soil to form levees or berms on top of the

existing ground surface would not adversely affect resources because Pleistocene-age fossils would not be encountered until approximately 10 feet below ground surface. Excavations deeper than 10 feet (e.g., for the installation of slurry cutoff walls in the setback levee) have the potential to encounter and possibly damage paleontologically sensitive resources. In addition, most of the area east of Star Bend that has been identified as a potential detention basin and/or soil borrow site is underlain by Modesto Formation sediments. Therefore, excavation and grading activities at this location also have the potential to encounter and possibly damage paleontologically sensitive resources. This impact would be potentially significant.

5.13.4 MITIGATION MEASURES

ALTERNATIVE 1 – THE LEVEE STRENGTHENING ALTERNATIVE

Mitigation is provided below for Impact LS-5.13-a (disturbance of unknown paleontological resources).

LS-5.13-a Conduct Training for Construction Personnel, Cease Work if Paleontological Resources are Encountered, and Implement an Appropriate Mitigation Strategy. This mitigation measure would reduce the potential impact to a less-than-significant level.

Three Rivers Levee Improvement Authority (TRLIA) or its primary construction contractor shall implement the following measures:

- (a) Before the start of construction activities, construction personnel involved with earthmoving activities shall be informed of the possibility of encountering fossils, the appearance and types of fossils likely to be seen during construction activities, and proper notification procedures should fossils be encountered. This worker training may either be prepared and presented by an experienced field archaeologist at the same time as construction worker education on cultural resources, or be prepared and presented separately by a qualified paleontologist.
- (b) If paleontological resources are discovered during earthmoving activities, the construction crew shall immediately cease work within at least 25 feet of the find. TRLIA shall retain a qualified paleontologist to evaluate the resource and prepare a proposed mitigation plan in accordance with SVP guidelines (1995). The proposed mitigation plan may include a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations determined by TRLIA to be necessary and feasible shall be implemented before construction activities can resume at the site where the paleontological resources were discovered.

Implementing this mitigation measure would reduce the potential impact on paleontological resources to a less-than-significant level.

ALTERNATIVE 2 – THE LEVEE STRENGTHENING AND ASB SETBACK LEVEE ALTERNATIVE

Mitigation is provided below for Impact ASB-5.13-a (disturbance of unknown paleontological resources).

ASB-5.13-a Conduct Training for Construction Personnel, Cease Work if Paleontological Resources are Encountered, and Implement an Appropriate Mitigation Strategy. This measure is identical to Mitigation Measure LS-5.13-a. Implementing this mitigation measure would reduce the potential impact on paleontological resources to a less-than-significant level.

ALTERNATIVE 3 – THE LEVEE STRENGTHENING AND INTERMEDIATE SETBACK LEVEE ALTERNATIVE

Mitigation is provided below for Impact IS-5.13-a (disturbance of unknown paleontological resources).

IS-5.13-a Conduct Training for Construction Personnel, Cease Work if Paleontological Resources are Encountered, and Implement an Appropriate Mitigation Strategy. This measure is identical to Mitigation Measure LS-5.13-a. Implementing this mitigation measure would reduce the potential impact on paleontological resources to a less-than-significant level.

5.13.5 IMPACTS REMAINING SIGNIFICANT AFTER MITIGATION

With implementation of the mitigation described above, all impacts on paleontological resources would be reduced to a less-than-significant level.