4.5 GEOLOGY AND SOILS, MINERAL RESOURCES, AND PALEONTOLOGICAL RESOURCES

4.5.1 INTRODUCTION

This Geology and Soils, Mineral and Paleontological Resources section of the Draft SEIR describes the geologic and soil characteristics of the project site and assesses the effects of the proposed project on the geology and soils, mineral and paleontological resources of the County. Information for the section has been drawn primarily from the Yolo County General Plan[1] and associated EIR,[2] the Cache Creek Area Plan (CCAP) Update FEIR,[3] the 1996 EIR[4] and the following project-specific reports:

- Slope Stability Evaluation, CEMEX Cache Creek, Yolo County, California, prepared by Geocon Consultants, February 2018.[5] (Appendix I)

- Cache Creek: Hydraulic Analysis of the CEMEX Reach Memorandum, prepared by Cunningham Engineering Corporation (CEC), March 10, 2016.[6]

- Results of Paleontological Mitigation for CEMEX Woodland Quarry Project, Yolo County, California (LSA Project No. CMX1802), prepared by LSA Associates, February 2019.[7]

Government agencies and the public were provided an opportunity to comment on the proposed project in response to the Notice of Preparation (NOP) that provided a preliminary summary of proposed project. The following comments were submitted by the California Department of Conservation, Division of Mine Reclamation in an email dated March 9, 2021, and a letter dated March 29, 2021, responses are provided in *italics*. NOP comment letters are included in Appendix B of this Draft SEIR.

- What is the mine ID associated with this project?

  The County responded in an email on March 10, 2021, that the project is for Mine ID #91-57-0008.

[1] Yolo County. 2030 Countywide General Plan. November 10, 2009.

[2] Yolo County. Yolo County 2030 Countywide General Plan Environmental Impact Report. SCH #2008102034. April 2009.

[3] Yolo County. Cache Creek Area Plan Update Project, Final Environmental Impact Report. SCH #2017052069. December 2019.

[4] Yolo County, 1996, Final Environmental Impact Report for Solano Long-term Off-Channel Mining Permit Application SCH #96012034, (combined DEIR and Responses to Comments documents).

[5] Geocon Consultants, Inc, 2018. • Slope Stability Evaluation, CEMEX Cache Creek, Yolo County, California. February.

[6] Cunningham Engineering Corporation, 2016. Hydraulic Analysis of the CEMEX Reach Memorandum. March 10.

[7] LSA Associates, 2019. Results of Paleontological Mitigation for CEMEX Woodland Quarry Project, Yolo County, California (LSA Project No. CMX1802), letter report addressed to Ms. Deborah Haldeman, Regional Manager, Northern California/Nevada Aggregate Resource Development- Community Relations- Government Affairs, CEMEX. February 14.

- Division staff noted that they have reviewed the subject NOP pursuant to the CEQA and State CEQA Guidelines and offers no comments at this time, and please continue to include the Division on the distribution list for the proposed project.

The County has provided the Division notification of the availability of this Draft SEIR for review.

The following subsections describe the existing geological and paleontological setting of the County and specifically in the lower Cache Creek area, the applicable regulatory framework, standards of significance used to determine potential environmental effects that may result from implementation of the project, potentially significant impacts associated with relevant substantial changes in the project and/or the circumstances under which the project will be undertaken, and/or new information as defined by CEQA Guidelines Section 15162, and new or different feasible mitigation measures to reduce those impacts to a less-than-significant level, if applicable.

4.5.2 EXISTING ENVIRONMENTAL SETTING

The following setting information provides a brief summary of the conditions described in more detail in the above-referenced documents and includes new information that has become available since those reports were completed.

Description of Regional Environment

As noted in the 1996 EIR, the project site is located on the western margin of the Sacramento Valley, the northern portion of the Great Valley Geomorphic Province of California. The Sacramento Valley is a large structural trough formed between the Coast Ranges to the west and the Sierra Nevada to the east. The Valley is filled with a thick sequence of sedimentary rocks and sediments that range from Upper Jurassic age (150 million years old) marine rocks through modern alluvial deposits.

The headwaters (i.e., source) of Cache Creek are located in the upland area of the Coast Ranges to the northwest. The upstream reaches along Cache Creek contain areas of active erosion that are the primary sources of sediment supply, which are transported and deposited downstream. The creek flows southeastward through the Capay Valley to the southern end of the Capay Hills. From the town of Capay, the creek flows eastward across Hungry Hollow. Through this reach, the creek is a wide, braided stream with a relatively low gradient. At the eastern margin of Hungry Hollow, the creek flows in a more constricted, higher-gradient reach through the southern Dunnigan Hills. The creek then widens and the bed slope decreases as it emerges onto the Sacramento Valley near the town of Yolo. The project site is located in the southern portion of the Hungry Hollow alluvial valley.

Description of Local Environment

The local geological environment has not changed since the 1996 EIR. In summary, based on the Geologic Map of the Late Cenozoic Deposits of the Sacramento Valley and Northern Sierran

Foothills,[8] the site is underlain by Holocene-aged stream channel deposits. These depositional and erosional deposits are associated with open, active stream channels and generally consist of unweathered gravel, sand, silt, and clay. Based on the site-specific geotechnical study,[9] the overburden soil at the site consists of an approximate 5- to 15-foot-thick layer of interbedded silty sand, silt, silty clay, sandy clay, clay, and clayey sand. The gravelly soil below the overburden generally consists of loose to very dense poorly graded sand, poorly graded sand with gravel, poorly graded gravel with sand, and silty gravel with sand, with thin (up to 5 feet) interbedded layers of clay and poorly graded sand with silt and scattered small cobbles up to 4 inches. The geologic unit proposed for mining (mixed clay, silt, sand, and gravel described above) is underlain by a very stiff to hard clay layer.

No portion of the project site is within the established Alquist-Priolo Earthquake Fault Zone (APEFZ),[10] and no active faults have been mapped in the area by the United States Geological Survey (USGS) or the California Geological Survey (CGS). Fault rupture of the surface typically occurs along existing faults that have ruptured the surface in the past. The closest A-PEFZ is the zone delineated for the Hunting Creek-Berryessa Fault, located over 30 miles west of the project site. The closest known active faults to the Project Site are the Great Valley Fault System and a segment of the Dunnigan Hills Fault, both located to the west and northwest, respectively. In the event of a major earthquake along these faults or other faults in the area, the CCAP area could be subject to seismic ground shaking. The expected range of ground acceleration at the site during a major earthquake event would be expected to be very strong to severe (under the Modified Mercalli scale) and the related damage to typical structures would be moderate.

Mineral Resources

The California State Mining and Geology Board developed the Mineral Resource Zone (MRZ) system to classify California's mineral resources. It is used in this chapter to discuss the presence of significant aggregate deposits. MRZs are defined as follows:

> MRZ-1: Areas where adequate information indicates that significant mineral deposits are not present or where a low likelihood for the presence of mineral deposits exists;
>
> MRZ-2: Areas where adequate information indicates significant mineral deposits are present or where a high likelihood for the presence of mineral deposits exists;
>
> MRZ-3: Areas containing mineral deposits, the significance of which cannot be evaluated from available data; and

[8] Helley, E. J. and Harwood, D. S., Geologic Map of the Late Cenozoic Deposits of the Sacramento Valley and Northern Sierran Foothills, California, United States Geological Survey Miscellaneous Field Studies map MF-1790, scale 1:62,500, 1985.

[9] Geocon Consultants, 2018, Slope Stability Evaluation, CEMEX Cache Creek, Yolo County, California, February.(Appendix I)

[10] USGS, 2022, Earthquake Hazard Program website.– Alquist-Priolo Fault Zones in Electronic Format, December. Accessed 2 August 2022 at: https://earthquake.usgs.gov/education/geologicmaps/apfaults.php

MRZ-4: Areas where available information is inadequate for assignment to any other MRZ.

Aggregates are used in the production of building materials, such as concrete, asphalt, and cement. Locally produced aggregate is a valuable resource for urban regions because the cost of transporting these materials makes remote production cost prohibitive. The project is consistent with the State Legislature and County's recognition that the extraction of minerals is essential to the continued economic well-being of the State, County and to the needs of society (as codified in PRC Section 2711(a) and Section 10-4.103 of the County Mining Ordinance). As published in the California Department of Conservation's "Map Sheet 52, Aggregate Sustainability in California" (2018), aggregate construction materials are essential to modern society, both to maintain the existing infrastructure and to provide for new construction.

The CEMEX operation is a regionally important source of high-quality construction aggregate material that has been in operation for over 40 years. The State Department of Conservation has identified the project site as being in the MRZ-2 zone, meaning that significant mineral deposits are present or that a high likelihood for their presence exists.

As noted in the 1996 EIR, the majority of aggregate mined from the lower Cache Creek basin where the project site is located are suitable for the production of Portland Concrete Cement (PCC); this designation for the project site location was confirmed by the California Department of Conservation, California Geological Survey in 2018.[11] The specifications for PCC-grade aggregate are more restrictive than specification for other aggregate products, criteria that increase the usefulness and marketability of these deposits. PCC-grade aggregate is the scarcest and most valuable aggregate resource in the region.[12]

Paleontological Resources

Paleontology is the science is the study of life of past geological periods as known from fossil remains, and paleontological resources are fossils that typically occur in sedimentary rocks and deposits. The project site is located at the boundary between the Coast Ranges and the Central Valley geologic provinces and contains rocks associated with both regions. The rocks in the vicinity of the project site range in age from Late Cretaceous to recent and vary in lithology from marine sandstones to non-marine sands and gravel. Rocks from the Forbes (Late Cretaceous), Tehama and Red Bluff (Pliocene), and Modesto-Riverbank (Quaternary) formations are present in the planning area. Each of these formations is reported as being fossiliferous (i.e., potentially bearing paleontological resources).

Significant paleontological materials may be present within the alluvial deposits that would be excavated at the project site; however, recorded paleontological finds within the area are limited and are mostly confined to the gravels mapped as Modesto-Riverbank Formations. Several mammoth fossils have been collected from the unit mapped as the Modesto-Riverbank Formations. One mammoth locality northeast of Madison was in the bed of Cache Creek, but the

[11] California Department of Conservation, California Geological Survey, 2018, Mineral Land Classification: Concrete Aggregate in the Greater Sacramento Area Production-Consumption Region, Special Report 245.
[12] Ibid.

fossils almost certainly were eroded out of the older gravels. Mammoth tusks, four to five molars, and a skull were collected in 1982 approximately 500 feet north of the project site. In 1955, a large molar was collected about 3 miles downstream from the 1982 locality.[13] In September 2004, during aggregate excavations at the Granite Capay mining facility, the pelvis of a mammoth was discovered in the Tehama formation at the mouth of Capay Valley, where Cache Creek once formed a delta. The excavation of the specimen by paleontologists indicated that it was an isolated discovery.[14]

In 2018, a fossil discovery by CEMEX quarry workers occurred at the project site. CEMEX retained a qualified paleontological consultant (LSA Associates) to analyze fossil material collected during an unanticipated discovery made at the mining facility in November 2018. The following information was included in LSA's written report.[15]

The fossils were brought to the surface during the mining process (pumped to the surface by a large hose). The fossils were recovered (via suction dredging) from a depth of approximately 30 feet below the existing ground surface. The five postcranial bone fragments were interpreted to be a mammal (Class Mammalia Linnaeus) including one fragment from the femur (femoral head), one fragment from the pelvis, and three other undeterminable long bone fragments.

The geologic unit that produced the fossils was interpreted to be the Modesto formation. Based on their age, depositional environment, and the presence of fossils from other areas, the early Holocene to late Pleistocene sediments of the Modesto Formation are considered to have high paleontological sensitivity.

4.5.3 REGULATORY CONTEXT

The 1996 EIR included a detailed description of the California Surface Mining and Reclamation Act (SMARA), the County General Plan, and the Off-Channel Mining Plan (OCMP) and implementing ordinances. Since the 1996 EIR was certified, these laws and regulations have continued to evolve. The following discussion summarizes the relevant changes.

Federal Regulations

No relevant federal regulations are applicable to geologic or paleontological resources within the project area.

State Regulations

The following are the State environmental laws and policies relevant to geology and soils, mineral resources, and paleontological resources.

Surface Mining and Reclamation Act

The Surface Mining and Reclamation Act was enacted by the State in 1975, through Public Resources Code Sections 2710-2796, as a means of minimizing adverse environmental effects

[13] Yolo County, 1996, Draft EIR for Off-Channel Mining Plan for Lower Cache Creek, March 26.
[14] Yolo County, 2009. op.cit
[15] LSA Associates, op.cit.

of surface mining, ensuring that mined lands are reclaimed to a usable condition and that the production and conservation of mineral resources are encouraged. The act establishes state policy regarding reclamation of mined lands and minerals management practices, among other things.

In 2016, two bills (Assembly Bill 1142 and Senate Bill 209), that together provided the most significant recent updates to SMARA, was approved at the State level. These updates were identified as potentially relevant to the CCAP program and were considered by the County in developing the proposed CCAP Update (2018). These updates to SMARA specified that lead agencies and operators must implement changes to the mine inspections process, financial assurance approval process, reclamation plan requirements, and inspector qualifications.

Public Resources Code Section 5097.5

Section 5097.5 of the Public Resources Code establishes protections for historic, prehistoric, archaeological, and paleontological features. In particular, Section 5097.5 prohibits the intentional excavation, removal, destruction, injury, or defacement of any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over the lands. Public lands are defined as those lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, public corporation, or any agency thereof.

The Society of Vertebrate Paleontology has identified vertebrate fossils, their taxonomic and associated environmental indicators, and fossiliferous deposits as significant nonrenewable paleontological resources. Botanical and invertebrate fossils and assemblages may also be considered significant resources.[16]

Local Regulations

The following are the plans and regulations pertinent to the proposed project on a local level (these have been updated since the 1996 EIR was approved).

2030 Countywide General Plan

The 2030 Countywide General Plan contains the following goals, policies, and actions related to geology, soils, and paleontological resources that are relevant to the proposed project (these goals, policies, and actions would replace those included and discussed in the 1996 EIR):

Goal CO-3: Mineral Resources. Protect mineral and natural gas resources to allow for their continued use in the economy.

Policy CO-3.1: Encourage the production and conservation of mineral resources, balanced by the consideration of important social values, including

[16] Society for Vertebrate Paleontology, 1995. Conformable Impact Mitigation Guidelines. Society for Vertebrate Paleontology News Bulletin 163: January.

recreation, water, wildlife, agriculture, aesthetics, flood control, and other environmental factors.

Policy CO-3.2: Ensure that mineral extraction and reclamation operations are compatible with land uses both on-site and within the surrounding area, and are performed in a manner that does not adversely affect the environment.

Policy CO-3.5: Preserve and protect the County's unique geologic and physical features, which include geologic or soil "type localities", and formations or outcrops of special interest.

Action CO-A63: Require cultural resources inventories of all new development projects in areas where a preliminary site survey indicates a medium or high potential for archaeological, historical, or paleontological resources. In addition, require a mitigation plan to protect the resource before the issuance of permits. Mitigation may include:

- Having a qualified archaeologist or paleontologist present during initial grading or trenching;
- Redesign of the project to avoid historic or paleontological resources;
- Capping the site with a layer of fill; and/or
- Excavation and removal of the historical or paleontological resources and curation in an appropriate facility under the direction of a qualified professional.

Action CO-A65: Require that when cultural resources (including non-tribal archeological and paleontological artifacts, as well as human remains) are encountered during site preparation or construction, all work within the vicinity of the discovery is immediately halted and the area protected from further disturbance. The project applicant shall immediately notify the County Coroner and the Planning and Public Works Department. Where human remains are determined to be Native American, the project applicant shall consult with the Native American Heritage Commission (NAHC) to determine the person most likely descended from the deceased. The applicant shall confer with the descendant to determine appropriate treatment for the human remains, consistent with State law.

Off-Channel Surface Mining Ordinance

Title 10, Chapter 4 of the Yolo County Code contains the Off-Channel Surface Mining Ordinance (Mining Ordinance), which provides the following requirements relevant to geology, minerals, and paleontological resources:

Section 10-4.403. Accident Reporting.

The operator shall immediately notify the Director of any events such as fires, explosions, spills, land or slope failures, or other conditions at the site which could pose a hazard to life or property. Action shall be immediately undertaken to alleviate the hazard. The operator shall provide a written report of any such event, within thirty (30) days, which shall include, but not be limited to, a description of the facts of the event, the corrective measures used, and the steps taken to prevent a recurrence of the incident. Failure to provide this report shall initiate violation proceedings pursuant to Article 11. This condition does not supersede nor replace any requirement of any other governmental entity for reporting incidents.

Section 10-4.406. Benches.

During mining operations, a series of benches may be excavated in a slope provided that the excavations are made in compliance with the requirements of the State Mine Safety Orders (California Code of Regulations, Title 8, Subchapter 17). The vertical height and slope of the benches constructed for permanent reclaimed slopes shall not exceed maximum standards for the specific soil types presented in the California Code of Regulations, Title 8, Article 6. In general, vertical cutslopes between benches shall not exceed four (4') feet in height in topsoil and overburden sediments. Benching shall be allowed in cohesive soil (clay, sandy or silty clay, clayey silt) only. Slopes above the elevation of groundwater (determined at the time of the excavation by the level of exposed water in the excavation) that exceed the maximum vertical height shall be excavated and maintained at slopes not steeper than 2:1 (horizontal:vertical). Slopes located five (5') feet or less below the average summer low ground-water level shall not be steeper than 2:1 (horizontal:vertical). Slopes located more than five (5') feet below the average summer low groundwater level shall not be steeper than 1: 1 (horizontal to vertical).

Vertical cutslopes in excess of four (4') feet in height may be approved for the development of special habitat (e.g., bank swallows) if a site-specific slope stability analysis, performed by a licensed engineer, indicates that the slope does not exceed critical height for the on-site soil conditions. Projects proposing such slopes shall submit a long-term maintenance plan to ensure that the function of the slopes as habitat is met.

Section 10-4.410. Cultural Resources.

(a) All resource records shall be checked for the presence of and the potential for prehistoric and historic sites, paleontological resources, and unique geologic features. Damaging effects on cultural resources shall be avoided whenever possible. If avoidance is not feasible, the importance of the site shall be evaluated by a qualified professional (either an archaeologist or geologist, depending on the resource type) prior to the

commencement of mining operations. If a cultural resource or unique geologic resources are determined not to be important, both the resource and the effect on it shall be reported to the County, and the resource need not be considered further. If avoidance of an important cultural, paleontological, or unique geologic resource is not feasible, a mitigation plan shall be prepared and implemented. The mitigation plan shall explain the importance of the resource, describe the proposed approach to mitigate destruction or damage to the site, and demonstrate how the proposed mitigation would serve the public interest.

(b) If human skeletal remains are encountered during excavation, all work within seventy-five (75') feet shall immediately stop, and the County Coroner shall be notified within twenty-four (24) hours. If the remains are of Native American origin, the appropriate Native American community identified by the Native American Heritage Commission shall be contacted, and an agreement for treating or disposing of, with appropriate dignity, the remains and associated grave goods shall be developed.

If any cultural resources, such as chipped or ground stone, historic debris, building foundations, or paleontological materials are encountered during excavation, then all work within seventy-five (75') feet shall immediately stop and the Director shall be notified at once. The find must be recorded by a qualified archaeologist or paleontologist using relevant professional protocols and a report fully recording the find submitted to the County. This report shall include recommendations for appropriate removal and preservation of the artifact. The County encourages the donation of the find to the County for public display at the Cache Creek Nature Preserve or other appropriate venue.

Section 10-4.413. Drainage.

Surface water may be allowed to enter mined areas, through either perimeter berms or ditches and grading, when designed and engineered pursuant to an approved reclamation plan and where effective best management practices (BMPs) to trap sediment and prohibit contamination are included. Appropriate erosion control measures shall be incorporated into all surface water drainage systems. Stormwater drainage systems shall be designed to connect with natural drainages so as to prevent flooding on surrounding properties and County rights-of-way. Storm water runoff from mining areas shall be conveyed to lowered areas (detention basins) to provide detention of runoff generated during a twenty (20) year, one-hour storm event. All drainage conveyance channels or pipes (including spillways for detention areas) shall be designed to ensure positive drainage and minimize erosion. The drainage conveyance system and storm water detention areas shall be designed and maintained in accordance with Best Management Practices for the reduction of pollutants associated with runoff from mined areas.

The design and maintenance procedures shall be documented in the Storm Water Pollution Prevention Plan required for mining operations. The drainage system shall be inspected annually by a Registered Civil Engineer, Registered Geologist, or Certified Erosion and Sediment Control Specialist to ensure that the drainage system is functioning effectively and that adverse erosion and sedimentation are not occurring. The annual inspection shall be documented in the Annual Mining and Reclamation Report. If the system is found to be functioning ineffectively, the operator shall promptly implement the recommendations of the engineer.

Section 10-4.414. Dust Control.

Unless superseded by newer more effective standards, the following measures shall be implemented in order to control fugitive dust:

(a) All stockpiled soils shall be enclosed, covered, or have sufficient moisture to control fugitive dust at all times. Inactive soil stockpiles should be vegetated or adequately watered to create an erosion-resistant outer crust.

(b) During operating hours, all disturbed soil and unpaved roads shall be adequately watered to keep soil moist.

(c) All disturbed but inactive portions of the site shall either be seeded or watered until vegetation is grown or shall be stabilized using methods such as chemical soil binders, jute netting, or other Yolo-Solano Air Quality Management District approved methods.

Section 10-4.431. Slopes.

Except where benches are used, all banks above groundwater level shall be sloped no steeper than 2:1 (horizontal:vertical). Proposed steeper slopes shall be evaluated by a slope stability study, prepared by a Registered Civil Engineer, Certified Engineering Geologist, or Professional Geologist. Slopes below the groundwater level shall be no steeper than 1:1 (horizontal:vertical). Slopes located five (5) feet or less below the summer low groundwater level shall not be steeper than 2:1 (horizontal:vertical). This section applies only to final/reclaimed slopes and not to active mining faces.

Section 10-4.432. Soil Removal.

Soil shall be cut in maximum depths in order to minimize traffic and limit compaction. The handling and transportation of soil shall be minimized. To the extent feasible, all handling of topsoil shall be accomplished when the soil is dry in order to avoid undue compaction.

Section 10-4.433. Soil Stockpiles.

Topsoil, subsoil, and subgrade materials in stockpiles shall not exceed forty (40') feet in height, with slopes no steeper than 2:1 (horizontal:vertical). Stockpiles, other than aggregate stockpiles, shall be seeded with a native vegetative cover to prevent erosion and leaching. The use of topsoil for purposes other than reclamation shall not be allowed without the prior approval of the Director.

Slopes on stockpiled soils shall be graded to 2:1 (horizontal:vertical) for long-term storage to prevent use by bank swallows. At no time during the active breeding season (May 1 through July 31) shall slopes on stockpiles exceed a slope of 1:1, even on a temporary basis. Stockpiles shall be graded to a minimum 1:1 slope at the end of each workday where stockpiles have been disturbed during the active breeding season.

Section 10-4.502. Applications: Contents. [excerpt]

(b) Site-specific technical reports, performed by qualified professionals in the appropriate area of expertise, shall provide specific proposals for inclusion in the surface mining permit to address the following potential environmental impacts:

(5) geotechnical study to evaluate any proposed operational slopes steeper than a 2:1 (horizonal:vertical) ratio to ensure that they will be stable while mining is being conducted and that the slopes possess an adequate factor of safety. The study shall include an evaluation of any slopes proposed to provide flood protection from Cache Creek and shall indicate what measures are proposed to prevent breaching or pit capture. Measures shall be included within the study to ensure slope stability and maintenance;

Section 10-4.701. Annual Reports: Contents. [excerpt]

Every surface mining operator shall submit an annual report of surface mining operations no later than November 1 of each year, describing the activities of the previous twelve (12) months. Annual reports shall no longer be required, once final reclamation has been completed and financial assurances have been released. Operators shall submit one hard copy and one electronic copy to the County. Such reports shall contain the following information:

(g) A report prepared by a Registered Geologist, a Licensed Geotechnical Engineer, or a Registered Civil Engineer describing the remedial measures necessary to remediate any slope failures, levee breaches, or other topographical problems referred to in the site plan above;

Section 10-4.1104. Inspections: Designee.

> Inspections shall be conducted by a state-licensed geologist, state-licensed civil engineer, state-licensed landscape architect, state-licensed forester, or a qualified County employee, who is experienced in mined land reclamation (as described in the Act and related regulations) and experienced in activities governed by the Act, and who has not been employed by the mining operation in any capacity during the previous twelve (12) months.

Surface Mining Reclamation Ordinance

Title 10, Chapter 5 of the Yolo County Code contains the Surface Mining Reclamation Ordinance (Reclamation Ordinance), which provides the following requirements relevant to geology, minerals, and paleontological resources:

Section 10-5.504. Backfilled Excavations: Improvements.

> Improvements, including the construction of buildings, roadways, or other public facilities proposed for construction in reclaimed mining pits shall require a geotechnical investigation of the stability of fills conducted by a Licensed Geotechnical Engineer or a Registered Civil Engineer. A report on the results and recommendations of the investigation shall be submitted to the Director prior to the issuance of building permits. The recommendations of the geotechnical investigations shall be fully implemented by the applicant.

Section 10-5.505. Backfilled Excavations: Inspections.

> Backfilled mining areas and slopes shall be inspected by the Director following strong seismic shaking events. Observable damage shall be reported to the landowner. If the Director determines that the damage requires repair to meet the intended use of the reclaimed land, the landowner shall perform the required repairs.

Section 10-5.508. Erosion Control.

> The grading of final slopes, the replacement of soil, and associated erosion control measures shall take place prior to November 1 in areas where mining has been completed. To minimize erosion, the finish grading of mining pit slopes above the average seasonal high groundwater level, with the exception of the location of designated haul roads, shall be performed as soon as practical after the mining of overburden and unsaturated aggregate resources has been completed. A drought-tolerant, weed-free mix of native grass species shall be established on slopes prior to November 1 or alternate erosion control (mulch or netting) shall be placed on

exposed soil on the slopes prior to this date. Phasing of mining to minimize the length of exposed mining slopes during the rainy season is encouraged.

Section 10-5.530. Slopes.

All final reclaimed slopes shall have a minimum safety factor equal to or greater than the critical gradient as determined by an engineering analysis of the slope stability. Final slopes less than five (5') feet below the average summer low groundwater level shall be designed in accordance with the reclaimed use and shall not be steeper than 2:1 (horizontal:vertical). Reclaimed wet pit slopes located five (5') feet or more below the average summer low groundwater level shall not be steeper than 1:1 (horizontal:vertical), in order to minimize the effects of sedimentation and biological clogging on groundwater flow, to prevent stagnation, and to protect the public health.

The maximum slope angle for all final reclaimed slopes shall be determined by slope stability analysis performed by a Licensed Geotechnical Engineer or Registered Civil Engineer and submitted with any mining and reclamation application for review by the Director. The slope stability analysis shall conform with industry standard methodologies regarding rotational slope failures under static and pseudostatic (seismic) conditions. The minimum factor of safety for all design reclamation slopes located adjacent to levees or below existing structures shall not be less than 1.5 for static and 1.1 for pseudostatic (seismic) conditions. Other reclamation slopes shall meet a minimum factor of safety that is consistent with the post-reclamation use proposed for the mining area.

Section 10-5.531. Soil Ripping.

Where areas are to be reclaimed to agricultural usage, all A and B horizon soil shall be ripped to a depth of three (3) feet after every two (2) foot layer of soil is laid down, in order to minimize compaction.

Section 10-5.601. Applications: Contents. [excerpt]

(c) Site-specific technical studies, performed by qualified professionals in the appropriate area of expertise, shall provide specific proposals for inclusion in the reclamation plan to address the following potential environmental impacts:

(3) A geotechnical study to evaluate the proposed final slopes to ensure that they will be stable once mining has been completed and that the slopes possess an adequate factor of safety. Measures shall be included within the study to ensure slope stability and maintenance.

Section 10-5.1202. Inspections: Annual.

> At least once every year, the Director shall conduct an inspection of each surface mining operation to determine whether the operator is in compliance with the Act, the Regulations, and this chapter. Each inspection shall be conducted within six (6) months after receipt by the County of the operation's annual report, submitted pursuant to Section 2207 of the Public Resources Code, and may be combined with other site inspections, as appropriate.

Section 10-5.1204. Inspections: Designee.

> Inspections shall be conducted by a state-licensed geologist, state-licensed civil engineer, state-licensed landscape architect, state-licensed forester, or a qualified County employee who is experienced in mined land reclamation (as described in the Act and related regulations) and experienced in activities governed by the Act, and who has not been employed by the mining operation in any capacity during the previous twelve (12) months.

4.5.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the changes in the proposed project's potential impacts related to geology and soils, mineral resources, and paleontological resources. A discussion of the project's impacts, as well as mitigation measures where necessary, are also presented.

Standards of Significance

The standards of significance used for this analysis were developed from Appendix G of the CEQA Guidelines, and applicable policies and regulations of Yolo County. A geology and soils, mineral resources, and/or paleontological impact is considered significant if the proposed project would:

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:
   i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42;
   ii) Strong seismic ground shaking;
   iii) Seismic-related ground failure, including liquefaction; or
   iv) Landslides.
b) Result in substantial soil erosion or the loss of topsoil.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

g) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

h) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

i) Cause a significant environmental impact due to a conflict with applicable plans, policies, or regulations adopted for the purpose of avoiding or mitigating impacts to geology and soils, mineral resources, and paleontological resources.

The standards of significance presented in the 1996 EIR are listed below. For each standard, there is an explanation (*in italics*) describing how the standard from the 1996 EIR is addressed by the updated standards listed above. The 1996 EIR considered that the project would have a significant effect on geology and soils, mineral resources, and paleontological resources if it would result in:

- Exposure of people or property to geologic hazards, including but not limited to:
    - Fault rupture on active faults,
    - Seismic shaking (accelerations greater than 0.1g),
    - Seismically-induced ground failure, including liquefaction,
    - Seismically-induced wave,
    - Landslides or mudflows (including excavated slopes),
    - Seismicity impacts are addressed by criterion “a” above.
    - Erosion, changes in topography, or unstable soil conditions,
    - Erosion impacts are addressed by criterion “b” above.
    - Subsidence of the land, or

- Expansive soils

Subsidence and expansive soils impacts are addressed by criteria "c" and "d" above.

- Destruction, covering, or modification of unique geologic or physical features.

  Impacts to unique geologic features are addressed by criterion "f" above

- Result in the loss or availability of a known mineral resource that would be of future value to the region.

  Impacts associated with the loss of known mineral resources are addressed by criteria "g" and "h" above

- Disturb paleontological resources. (From 1996 EIR Section 4.11 Cultural Resources)

  Impacts associated with the loss of paleontological resources are addressed by criterion "f" above

Impacts Identified in the 1996 EIR

The impacts and mitigation measures adopted in the certified 1996 EIR are summarized in Table 4.5-1. The table provides a discussion of the status of each mitigation measure.

Table 4.5-1: 1996 EIR Impact Statements, Mitigation Measures, and Discussion

Impact No.	Impact Statement from 1996 EIR	Mitigation Measures/Discussion
4.3-1	Expected seismic shaking at the project could result in ground failures and damage to reclamation features. This is considered to be a significant impact.	Mitigation Measure 4.3-1a/Condition of Approval No. 32[a] requires: "Implement the performance standards included in Sections 10-5.504, 10-5.505, 10-5.512, and 10-5.526 of the County Surface Mining Reclamation Ordinance." This mitigation measure applies to the proposed project and will continue to be implemented.
4.3-2	Potential failure and/or erosion of slopes could result in unstable slope conditions or adverse sedimentation of open water bodies. This is considered to be a significant impact.	Mitigation Measure 4.3-2a/ Condition of Approval No. 33[a] requires: "Compliance with Mitigation Measure 4.3-2a of the OCMP Program EIR." This measure corresponds to Sections 10-4.406, 10-4.413, and 10-4.431 of the County Off-Channel Surface Mining Ordinance; and Sections 10-5.507, 10-5.508, and 10-5.530 of the County Surface Mining Reclamation Ordinance. This mitigation measure applies to the proposed project and will continue to be implemented.

4.3-3	Aggregate extraction proposed by the project would result in the decreased availability of aggregate resources. This is considered to be a less-than-significant impact.	No mitigation measures were required because the project allowed for mining of aggregate resources thus increasing availability.
4.3-4	Erosion, failure, or overtopping of the channel bank separating the proposed mining areas from the active channel of Cache Creek could result in flooding of the pits and potential permanent inundation of the mining or reclaimed lower agricultural fields. This is considered to be a significant impact.	Mitigation Measure 4.3-4a/Condition of Approval No. 34[a] requires: "The County shall revise the CCRMP channel boundary in the vicinity of the site to reflect the Cunningham Engineering (1995) 100-year floodplain boundary. The hydraulic model used to determine the boundary assumes replacement of the Capay Bridge with a three-span bridge. If this assumption changes, additional HEC-2 modeling shall be required to establish the revised CCRMP boundary. If this boundary changes significantly upon modeling, additional review may be required." Resolution No. 96-181 was approved by the Board of Supervisors on November 25, 1996, revising the CCRMP channel boundary to reflect the 100-year floodplain calculated by Cunningham Engineering. The Capay Bridge was built with three spans, as assumed in the hydraulic model included in the Operator's project description. This condition and mitigation measure is implemented and fully discharged. Mitigation Measure 4.3-4(b)/Condition of Approval No. 35[a] requires: "Portions of the northern margin of Phases 2, 3, 5, 6, and 7 shall be redesigned to provide a minimum 200-foot setback from the existing Cache Creek stream bank, in conformance with the requirements of Section 10-4.429 of the County Off-Channel Surface Mining Ordinance. The revised project design shall be submitted prior to the commencement of mining within Phase 3 and shall be consistent with the recommended slope design presented in the current application. If the redesigned project results in changes in any other mining area boundaries, additional CEQA review may be required." Revised mining and reclamation plans prepared by Cunningham Engineering were submitted to staff by the Operator on April 24, 1997, showing the minimum 200-foot setback between the channel boundary and the edge of proposed mining. This mitigation measure will continue to be implemented. Subsequently, the County has identified various encroachments into the 200-foot buffer from time to time and required the operator to resolve them. A history of these corrective actions is provided in Chapter 3.0, Project Description. Impact 4.6-6 identifies a new mitigation measure

		requiring submittal of an updated hydraulic analysis confirming 100-year flood flows, continued control of erosive forces, and continued integrity of the 200-foot setback area. Mitigation Measure 4.3-4c/Condition of Approval No. 36[a] requires: "The portions of the levee in these areas could be raised to provide 100-year flood protection for these areas. Prior to raising the levee, a hydraulic analysis prepared and signed by a licensed engineer, demonstrating that off-site flooding impacts would not be created, must be submitted to the County for review. This mitigation measure would be consistent with the proposed project and the requirements of the OCMP. Any levee work performed shall be completed prior to the commencement of mining within the affected phases." A hydraulic analysis was prepared by Cunningham Engineering on April 22, 1997, showing that the raised levee flood protection measures would increase the base flood elevation by less than 0.1 feet. This indicated that the proposed work would not have any significant off-site flooding impacts. In addition, at the County's request, Cunningham Engineering verified compliance with this condition and summarized its findings in a report titled, "Cache Creek: Hydraulic Analysis of the CEMEX Reach" (March 10, 2016), which was provided to the County. Cunningham demonstrated that the 100-year water surface is effectively contained within Cache Creek along the CEMEX Reach. This analysis was reviewed and confirmed by the TAC Hydraulic Engineer. This condition is implemented and fully discharged. Mitigation Measure 4.3-4d/Condition of Approval No. 37[a] requires: "Implement Mitigation Measure 4.3-3a of the OCMP EIR. Specifically, the applicant shall conduct annual monitoring and maintenance of the channel banks and levees at the northern margin of the project site during the mining and reclamation period. The monitoring shall be conducted by a licensed engineer and shall minimally include visual inspection of channel banks and levees for evidence of erosion or slope instability. Evidence of erosion shall include, but not be limited to, the existence of oversteepened banks and loss of vegetation. Evidence of slope instability shall include formation tension cracks, arcuate scarps, or unexcavated benches. The annual report of channel bank and levee conditions shall be submitted to the Yolo County

		Community Development Director with the Annual Mining and Reclamation Report. The report shall identify the location (on scaled maps and photographs), the estimated area and volume of eroded materials or slope failure, a determination of the cause(s) of erosion or slope failure, and recommendations for remedial action. Recommended remedial actions shall be implemented prior to November 1 of each year." The operator submits an annual report on monitoring for County review and acceptance. In addition, the County annually inspects the site. The 2016 analysis (confirmed by the County TAC hydrologic engineer) does show the 100 year flow is contained in Cache Creek. Subsequent annual monitoring reports confirm that no new erosion has occurred. Mitigation Measure 4.3-4e/Condition of Approval No. 38[a] requires: Following reclamation, the YCCDA shall determine, on the basis of inspection of the performance of the channel banks and levees during the mining and reclamation period, the need for continued channel bank and levee monitoring and reporting. The landowner shall be responsible for continued monitoring and maintenance. A restriction shall be placed on the deed for the underlying property requiring continued inspection and maintenance of channel banks and levees, and allowing access by the County for same. This mitigation measure applies to the proposed project and will continue to be implemented. Mitigation Measure 4.3-4f/Condition of Approval No. 39[a] requires: "The proposed project design shall be revised to provide a biotechnical bank protection design to replace the proposed placement of rip rap on that section of the south bank of Cache Creek extending 1,500 feet downstream from the 1-505 bridge Unless engineering evaluations demonstrate that riprap must be used to control erosion. The proposed bank protection shall be submitted to the Yolo County Community Development Agency and Caltrans for approval prior to the commencement of mining in Phase 7." A biotechnical bank protection solution was submitted to the County and approved in June 1997. The project was completed in September 1998. This condition is implemented and fully discharged. Maintenance and monitoring are ongoing.

		Mitigation Measure 4.3-4g/Condition of Approval No. 40[a] requires: "In compliance with Section 10-4.429 and 10-5.506, mining within Phase 7 shall not be conducted within 700 feet of the existing stream bank until stream bank stabilization is provided for that portion of the south bank of Cache Creek upstream from the 1-505 bridge. The bank protection shall be performed in accordance with the guidelines presented in the Cache Creek Resource Management Plan and Cache Creek Improvements Program. The proposed bank protection design shall be submitted to the Yolo County Community Development Agency for approval prior to the commencement of mining in Phase 7." The applicant has proposed to remove Phase 7 from the mining approvals which would eliminate the need for this measure/condition. Mitigation Measure 4.3-4h/Condition of Approval No. 41[a] requires: "Recommendations of the geotechnical report (Kleinfelder, 1995) for stabilization of the south bank of Cache Creek shall be implemented within one year after the commencement of mining. Prior to the construction of the improvements, detailed plans identifying the type of stream bank protection shall be submitted to the County for review and approval. The bank protection plans shall incorporate biotechnical methods of bank stabilization when appropriate for erosion control." The operator installed the bank stabilization measures pursuant to Condition #39 in September 1998. This condition is implemented and fully discharged. Maintenance and monitoring are ongoing. Mitigation Measure 4.3-4i/Condition of Approval No. 42[a] requires: "The operator shall enter into a Development Agreement with the County that commits the operator to participate in implementation of the Cache Creek Improvements Program for that portion of creek frontage owned or controlled by the applicant. Participation shall include, but not be limited to, contribution of equipment and labor for channel widening projects and channel maintenance activities recommended by the County." Development Agreement No. 96-287 was executed between the County and the Operator on December 30, 1996. Section 3.1 of the agreement requires the

		Operator to abide by the CCRMP. The condition is implemented and fully discharged. Maintenance and monitoring are ongoing. The Development Agreement will be amended to reflect the proposed project if approved. Mitigation Measure 4.3-4j/Condition of Approval No. 43[a] requires: "Prior to the commencement of mining below the groundwater level, the applicant shall contact the California Division of Safety of Dams (DSD) for a determination on whether the alluvial separators that would be created by the project fall under DSD jurisdiction." In a letter dated October 17, 1996, the Division of Dam Safety determined that the alluvial separators created by the project would not be subject to their jurisdiction. The condition is implemented and fully discharged.
4.11-1	Proposed mining activities could disturb paleontological resources. This is considered a significant impact.	Mitigation Measure 4.11-1a/Condition of Approval No. 72[a] requires: Implement the performance standard included in Section 10-4.410 (Cultural Resources) of the County Off-Channel Surface Mining Ordinance. This mitigation measure will continue to be implemented and will apply if unknown paleontological resources are found. Mitigation Measure 4.11-1b/Condition of Approval No. 73[a] requires: The operator shall implement a training program that alerts project employees involved with earthmoving as to the nature of paleontological and archaeological resources in the region, the laws that protect the resources, and responsibilities for reporting potential findings to appropriate authorities. This program shall be developed by a qualified cultural resource professional. CEMEX has reported that a training video was prepared by a qualified cultural resource professional and is shown to all employees on a regular basis. See Mitigation Measure 4.4-1 which would replace this measure.

Source: Baseline Environmental Consulting, 2021.

Notes:

[a] County of Yolo, 2021. Conditions of Approval Mining Permit and Reclamation Plan No. ZF #95-093 CEMEX Mining and Reclamation Project. 2020 Ten-Year Permit Review as modified through February 11, 2021.

4.5.5 IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED PROJECT

The discussion below examines relevant substantial changes in the project, substantial changes in the circumstances under which the project will be undertaken, and/or new information of substantial importance, as defined by CEQA Guidelines Section 15162. As necessary, this document updates or expands upon impact discussions in the 1996 EIR to evaluate changes associated with the proposed project and describes whether new or revised mitigation is required.

Pursuant to Section 15162 of the CEQA Guidelines, a subsequent EIR is required where proposed changes in the project or changes in the circumstances of the project would require revisions of the previous EIR due to new significant environmental effects or a substantial increase in the severity of previously identified effects. Additionally, a subsequent EIR is required where there is new information that identifies significant effects not previously discussed, significant effects examined in the prior EIR that will be substantially more severe than previously shown, or mitigation measures or alternatives that are now feasible after previously being found infeasible, or are considerably different from those previously analyzed, that would substantially reduce significant effects but the applicant declines to adopt. Each impact is analyzed to determine whether any of the requirements for a subsequent EIR are met and, if so, additional environmental analysis is provided to evaluate the impacts, mitigation measures, and alternatives, as appropriate.

Impact 4.5-1: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area based on other substantial evidence of a known fault; strong seismic ground shaking; seismic-related ground failure, including liquefaction; or landslides. The impact would be *less than significant.*

The project proposes to continue mining and reclamation activities as described and evaluated in the 1996 EIR. Potential impacts related to fault rupture, strong seismic shaking, and liquefaction would be substantially similar under the proposed project and the conditions evaluated in the 1996 EIR, and would remain less than significant.

However, the project proposes modifications to the approved mining and reclamation plans related to mining and reclamation slopes (and potentially slope stability) that differ from those analyzed in 1996. These modifications include a change to the finish slope configurations below water in the mining pits. The approved 1996 mining and reclamation plans specified slopes that are 1.5:1 (horizontal:vertical) below water, extending from 5 feet below the average low groundwater to the bottom of the mine. The project proposes slopes that are 1:1 below water, extending from 5 feet below the average low groundwater to the bottom of the mine. This proposed increase in slope steepness could increase slope instability and the likelihood of slope failures.

Under the current mining and reclamation plan, CEMEX is permitted to mine to 2:1 above water transitioning to 1.5:1 beginning five feet below average low groundwater levels. This is consistent

with Sections 10-4.433 and 10-5.530. Under the proposed mining and reclamation plan, CEMEX proposes to mine to 2:1 above water transitioning to 1:1 beginning five feet below average low groundwater levels. The applicant has indicated that the proposed slope inclination under water is more consistent with the anticipated excavation angle of the clamshell the dredge. In addition, the modified slope inclination will maximize the resource recovery of the mine, consistent with Section 10-4.411.1 of the OCSMO that encourages excavation to the full depth of the resource. Maximizing resource recovery from the existing mining phases also reduces the short-term need to develop resources elsewhere.

The 1996 project was required to conduct a geotechnical evaluation of the proposed 1.5:1 slopes below water to demonstrate that these slopes would be stable (Mining Ordinance Section 10-4.431 and Reclamation Ordinance 10-5.504); and to conduct inspections of the backfilled slopes for damage following strong seismic events and conduct repairs, as needed (Mining Ordinance Section 10-5.505). After implementation of these measures, this impact was found to be less than significant in the 1996 EIR.

The proposed project is subject to the same requirements. Consistent with Mining Ordinance Section 10-4.431 and Reclamation Ordinance 10-5.504, the applicant has retained a geotechnical consultant (Geocon) to conduct a slope stability study of the proposed slope modification.[17] Geocon assessed a final cut slope configuration of a maximum slope height of 70 feet and finish cut slopes, from surface to 5 feet below average low groundwater levels of 2:1, and finish cut slopes greater than 5 feet below average low groundwater levels of 1:1. Geocon concluded that these reclamation slope angles will be stable with adequate static (≥ 1.5) and seismic (≥ 1.1) factors of safety for the proposed end uses.[18]

In addition, under existing ordinances (and consistent with Mitigation Measure 4.3-1a from the 1996 EIR), the project would be required to conduct inspections of the backfilled slopes for damage following strong seismic events and conduct repairs, as needed (Mining Ordinance Section 10-5.505).

Conclusion

There are no proposed changes in the project that would result in new significant impacts or substantial increase in the severity of previously identified significant impacts, and therefore no revisions to the analysis in the 1996 EIR are required related to this area of impact.

There are no changes in the circumstances under which the project would be undertaken that would result in new significant impacts or substantial increase in the severity of previously identified significant impacts, and therefore no revisions to the analysis in the 1996 EIR are required related to this area of impact.

There is no new important information relevant to this area of impact that was not previously known at the time of the 1996 EIR. There are no related new significant impacts, more substantial

[17] Geocon Consultants, 2018. Op.cit.
[18] Ibid.

increase in the severity of previously identified significant impacts, previously dismissed mitigation that is now feasible, previously dismissed alternatives that are now feasible, or different more effective alternatives that have emerged or become known.

Mitigation Measure(s)

None required.

Impact 4.5-2: Result in substantial erosion or loss of topsoil. The impact would be *less than significant.*

As discussed in the 1996 EIR, mining activities at the site would result in the formation of moderately steep slopes around the perimeter of mining and reclamation areas. Under existing conditions, the topography of the project site is flat to gently sloping and the potential for erosion is generally low to negligible. When slopes are constructed in the soils and underlying sediments at the site, the potential for erosion would be increased. The 1996 EIR concluded that with implementation of Mitigation Measure 4.3-2a, which required compliance with erosion and drainage control measures included in the relevant ordinances, a potential impact related to substantial erosion was less than significant. As the proposed project would be required to continue to demonstrate compliance with these ordinances [Mining Ordinance Sections 10-4.406 (relating to benches), 10-4.413 (relating to drainage), and 10-4.431 (relating to slopes); and Reclamation Ordinance Sections 10- 5.507 (relating to drainage), 10-5.508 (relating to erosion control), and 10-5.530 (relating to slopes)], no new or more severe impacts related to erosion or loss of topsoil would occur under the proposed project. See Impact 4.6-6 in Section 4.6, Hydrology for discussion of erosive forces in the creek channel.

Conclusion

There are no proposed changes in the project that would result in new significant impacts or substantial increase in the severity of previously identified significant impacts, and therefore no revisions to the analysis in the 1996 EIR are required related to this area of impact.

There are no changes in the circumstances under which the project would be undertaken that would result in new significant impacts or substantial increase in the severity of previously identified significant impacts, and therefore no revisions to the analysis in the 1996 EIR are required related to this area of impact.

There is no new important information relevant to this area of impact that was not previously known at the time of the 1996 EIR. There are no related new significant impacts, more substantial increase in the severity of previously identified significant impacts, previously dismissed mitigation that is now feasible, previously dismissed alternatives that are now feasible, or different more effective alternatives that have emerged or become known.

Mitigation Measure(s)

None required.

Impact 4.5-3: Be located on a geological unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. The impact would be *less than significant.*

In general, the types of coarse-grained soils (which include abundant sand and gravel) that characterize the project site are not unstable, and not subject to liquefaction.[19] There are several regulations in the County's mining and reclamation ordinances which ensure stability of the mining and reclamation slopes. Sections 10-4.431 and 10-4.433 of the Mining Ordinance require slopes adhere to specific slope angles and heights. Section 10-5.530 of the Reclamation Ordinance also regulates slope stability by requiring all proposed reclaimed slopes be evaluated and determined to be stable as by an engineering analysis.

In addition, the proposed land uses at the site, off-channel surface mining and post-mining reclamation to open space, are not particularly susceptible to unstable soil hazards, and therefore impacts related to unstable soils are less than significant.

Conclusion

There are no proposed changes in the project that would result in new significant impacts or substantial increase in the severity of previously identified significant impacts, and therefore no revisions to the analysis in the 1996 EIR are required related to this area of impact.

There are no changes in the circumstances under which the project would be undertaken that would result in new significant impacts or substantial increase in the severity of previously identified significant impacts, and therefore no revisions to the analysis in the 1996 EIR are required related to this area of impact.

There is no new important information relevant to this area of impact that was not previously known at the time of the 1996 EIR. There are no related new significant impacts, more substantial increase in the severity of previously identified significant impacts, previously dismissed mitigation that is now feasible, previously dismissed alternatives that are now feasible, or different more effective alternatives that have emerged or become known.

Mitigation Measure(s)

None required.

[19] Geocon Consultants, 2018. Op.cit.

Impact 4.5-4: Be located on expansive soils, as defined in Table 18-1-B of the California Building Code, creating substantial risks to life or property. The impact would be *less than significant.*

Expansive soils contain high proportions of clay and alternately absorb and release large amounts of water during wet and dry cycles. When structures are built on expansive soil, foundations may rise during the wet season, resulting in cracked foundations, distorted frameworks, and warped windows and doors.

The Natural Resources Conservation Service (NRCS) delineates soil units and compiles soils data as part of the National Cooperative Soil Survey. Based on the NRCS soil survey, the project site soils are predominately composed of Sycamore silt loam and Yolo silt loam. These soils, which do not have a high expansion potential, have been largely disturbed (e.g., removed and stockpiled) and the underlying subsoils and geologic deposits, which are composed of sand and gravel, have little to no expansion potential. In addition, the project does not propose construction of new structures with shallow foundations that would be susceptible to expansive soil hazards, and therefore impacts related to expansive soils are less than significant.

Conclusion

There are no proposed changes in the project that would result in new significant impacts or substantial increase in the severity of previously identified significant impacts, and therefore no revisions to the analysis in the 1996 EIR are required related to this area of impact.

There are no changes in the circumstances under which the project would be undertaken that would result in new significant impacts or substantial increase in the severity of previously identified significant impacts, and therefore no revisions to the analysis in the 1996 EIR are required related to this area of impact.

There is no new important information relevant to this area of impact that was not previously known at the time of the 1996 EIR. There are no related new significant impacts, more substantial increase in the severity of previously identified significant impacts, previously dismissed mitigation that is now feasible, previously dismissed alternatives that are now feasible, or different more effective alternatives that have emerged or become known.

Mitigation Measure(s)

None required.

Impact 4.5-5: Directly or indirectly destroy a unique paleontological resource. The impact would be *significant.*

As described in the 1996 EIR and the documentation of recent fossil discoveries,[20] the numerous fossil finds in the area, indicate that the Cache Creek area (and the project site in particular) may contain fossil-bearing geologic deposits. Paleontological resources are likely to occur in the

[20] LSA Associates, 2019. Op.cit.

project site, and disturbance of these resources was considered a significant impact in the 1996 EIR. The 1996 EIR required implementation of:

> *Mitigation Measures 4.11-1a/Condition of Approval No. 72:*
> *Implement the performance standard included in Section 10-4.410 (Cultural Resources) of the County Mining Ordinance.*

and:

> *Mitigation Measure 4.11-1b/Condition of Approval No. 73*
> *The operator shall implement a training program that alerts project employees involved with earth-moving as to the nature of paleontological and archaeological resources in the region, the laws that protect the resources, and responsibilities for reporting potential findings to appropriate authorities. This program shall be developed by a qualified cultural resource professional).*

Off-Channel Surface Mining Ordinance Section 10-4.410 states:

> (a) All resource records shall be checked for the presence of and the potential for prehistoric and historic sites, paleontological resources, and unique geologic features. Damaging effects on cultural resources shall be avoided whenever possible. If avoidance is not feasible, the importance of the site shall be evaluated by a qualified professional (either an archaeologist of geologist, depending on the resource type) prior to the commencement of mining operations. If a cultural resource or unique geologic resources is determined not to be important, both the resource and the effect on it shall be reported to the County, and the resource need not be considered further. If avoidance of an important cultural, paleontological, or unique geologic resource is not feasible, a mitigation plan shall be prepared and implemented. The mitigation plan shall explain the importance of the resource, describe the proposed approach to mitigate destruction or damage to the site, and demonstrate how the proposed mitigation would serve the public interest.

Continued implementation of County regulations and Mitigation Measure 4.11-1a (Condition of Approval No. 74) would require that all construction personnel be informed about the procedures for stopping work and notifying the County in the event that there is an unanticipated discovery of paleontological materials. In the event that an inadvertent discovery of buried paleontological resources occurs during excavation activities, the project applicant would be required to implement the provisions of Mining Ordinance Section 10-4.410 and the conditions of approval. To modernize the 1996 EIR, a new mitigation measure is identified below, thus ensuring, this would result in a less-than-significant impact.

Conclusion

There are no proposed changes in the project that would result in new significant impacts or substantial increase in the severity of previously identified significant impacts, and therefore no revisions to the analysis in the 1996 EIR are required related to this area of impact.

As presented above, there are changes in the circumstances under which the project would be undertaken that would result in new significant impacts or substantial increase in the severity of previously identified significant impacts, and therefore revisions to the analysis in the 1996 EIR are required related to this area of impact. These changes in circumstances are a result of County's regulations that provide more effective mitigation for unknown paleontological discoveries.

There is no new important information relevant to this area of impact that was not previously known at the time of the 1996 EIR. There are no related new significant impacts, more substantial increase in the severity of previously identified significant impacts, previously dismissed mitigation that is now feasible, previously dismissed alternatives that are now feasible, or different more effective alternatives that have emerged or become known.

Implementation of Mitigation Measures identified below would reduce this impact to a less-than-significant level.

Mitigation Measure 4.5-5

In addition to compliance with Section 10-4.410 of the Mining Ordinance, the following new requirements shall be implemented for the proposed project to reduce potential impacts associated with a substantial adverse change in the significance of a paleontological resource to a less-than-significant level. This measure together with Mitigation Measure 4.4-1 replace Conditions of Approval #73 and 74.

Within six months of approval, the operator shall retain a qualified professional, subject to approval by the County, to develop and implement a contractor paleontological awareness training program. The program will provide resource sensitivity training regarding ground disturbing activities, discovery of paleontological resources, required protocols and notifications, and information about other related treatments or issues that may arise if paleontological resources are discovered during project construction. All employees involved with ground disturbance and other related construction activities shall complete this training annually.

Significance After Mitigation:

With implementation of mitigation measures identified above, the impact is considered less-than-significant.

Impact 4.5-6: The loss of availability of a known mineral resource that would be of value to the region and the residents of the State. The impact would be *less than significant*.

The CCAP area is located within a geologic setting that is known to contain important and high-quality aggregate resources. The area is classified as MRZ-2. The loss of availability of this resource could occur, for example, if urbanization was allowed to encroach on the resource zone, eliminating access to the resource due to the presence of high-value improvements at the surface.

Under the approved project, extraction of up to 32.17 million tons of aggregate could occur between 1997 and 2027 (the approved 30-year mining period) (see Table 3-3). Under the proposed project, the total tonnage mined, and the duration of mining would increase to up to 53.54 million tons through 2047 (see Table 3-6).

Resource extraction under both the approved project and the proposed project would result in the net reduction of available Portland Cement Concrete grade aggregate resources within the lower Cache Creek basin as a result of the harvesting and use of these resources. However, implementation of the proposed project would ensure that the full extent of the resources that can be feasibly removed occurs prior to final reclamation of the site to approved reclaimed uses. Whereas, under the project as approved, feasibly minable resources would remain in place. These resources would be utilized, as envisioned and in accordance with the regulations and primary objectives of the CCAP (in particular the OCMP portion of the program), which are to allow for the extraction of these sand and gravel resources while recognizing that there are other resources that require recognition and protection. As a mining plan, the OCMP ensures the preservation and regulation of known mineral resources and would not cause the loss of the availability of the resource.[21] Therefore, the potential impact related to a loss of availability of a known mineral resource of regional value is less than significant.

Conclusion

There are no proposed changes in the project that would result in new significant impacts or substantial increase in the severity of previously identified significant impacts, and therefore no revisions to the analysis in the 1996 EIR are required related to this area of impact.

There are no changes in the circumstances under which the project would be undertaken that would result in new significant impacts or substantial increase in the severity of previously identified significant impacts, and therefore no revisions to the analysis in the 1996 EIR are required related to this area of impact.

There is no new important information relevant to this area of impact that was not previously known at the time of the 1996 EIR. There are no related new significant impacts, more substantial increase in the severity of previously identified significant impacts, previously dismissed mitigation that is now feasible, previously dismissed alternatives that are now feasible, or different more effective alternatives that have emerged or become known.

Mitigation Measure(s)

None required.

[21] Yolo County. 2019. Cache Creek Area Plan Update Final EIR. Certified December 17, 2019.

Impact 4.5-7: The loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. The impact would be *less than significant*.

The Yolo County General Plan shows that the CCAP area is located within an MRZ-2 zone. Mining in Yolo County is regulated by the OCMP, which is a component of the CCAP. The OCMP and implementing ordinances preserve, protect, and allow controlled harvesting of mineral resources consistent with state policy and law. Therefore, the potential impact related to a loss of availability of a known locally-important mineral resource is less than significant.

Conclusion

There are no proposed changes in the project that would result in new significant impacts or substantial increase in the severity of previously identified significant impacts, and therefore no revisions to the analysis in the 1996 EIR are required related to this area of impact.

There are no changes in the circumstances under which the project would be undertaken that would result in new significant impacts or substantial increase in the severity of previously identified significant impacts, and therefore no revisions to the analysis in the 1996 EIR are required related to this area of impact.

There is no new important information relevant to this area of impact that was not previously known at the time of the 1996 EIR. There are no related new significant impacts, more substantial increase in the severity of previously identified significant impacts, previously dismissed mitigation that is now feasible, previously dismissed alternatives that are now feasible, or different more effective alternatives that have emerged or become known.

Mitigation Measure(s)

None required.

Impact 4.5-8: Cause a significant environmental impact due to a conflict with applicable plans, policies, or regulations adopted for the purpose of avoiding or mitigating impacts to geology and soils, mineral resources, and paleontological resources. The impact would be *less than significant*.

Table 4.5-2 below provides an analysis of consistency of the proposed project with applicable policies and regulations that have been adopted for the purpose of avoiding or mitigating environmental effects related to geology and soils, mineral resources, and paleontological resources. The policies and regulations identified in the table are those that have been revised or put into effect since the 1996 EIR, as the underlying CEMEX mining project has been determined to be consistent with County program policies and regulations.

The proposed project proposes to formalize use of the eastern 31.9 acres of Phase 2 for stockpiles and construction material recycling. Figure 3-12 identifies all areas approved, currently used, and proposed for use to stockpile resource material. The area identified to be used for stockpiles under the existing approvals totals 27.1 acres (shown in green). The proposed project

would add 25.1 acres (shown in red) and the 31.9 eastern Phase 2 portion, for a total increase of 57.0 new acres. Therefore, the total area for stockpiles (existing and future) would be 84.1 acres, comprised of the 27.1-acres existing stockpile area plus the 57.0-acre proposed new stockpile area. A new condition of approval has been identified requiring quarterly inspections of soil management including management of stockpile areas. This will ensure appropriate oversight and coordination regarding soil management and stockpile usage, pursuant to County regulations and approvals.

In general, the project proposes to continue mining and reclamation activities as described and evaluated in the 1996 EIR. Potential impacts related to fault rupture, seismic shaking, liquefaction, unstable soils, erosion, and slope instability would be substantially similar under the proposed project and the conditions evaluated in the 1996 EIR and would remain less than significant. The 1996 EIR found that the 1996 project was consistent with applicable plans, policies, and regulations. As the proposed project is substantially similar, and with implementation of the mitigation measure identified below. As shown in Table 4.5-2, the project is consistent with applicable plans, policies, and regulations.

Conclusion

There are no proposed changes in the project that would result in new significant impacts or substantial increase in the severity of previously identified significant impacts, and therefore no revisions to the analysis in the 1996 EIR are required related to this area of impact.

There are no changes in the circumstances under which the project would be undertaken that would result in new significant impacts or substantial increase in the severity of previously identified significant impacts, and therefore no revisions to the analysis in the 1996 EIR are required related to this area of impact.

There is no new important information relevant to this area of impact that was not previously known at the time of the 1996 EIR. There are no related new significant impacts, more substantial increase in the severity of previously identified significant impacts, previously dismissed mitigation that is now feasible, previously dismissed alternatives that are now feasible, or different more effective alternatives that have emerged or become known.

Mitigation Measure(s)

None required.

Table 4.5-2: Consistency with Applicable Plans, Policies, and Regulations

Policy/Regulation	Consistency Discussion
Yolo County General Plan	
Policy HS-1.1 Regulate land development to avoid unreasonable exposure to geologic hazards.	As discussed above, impacts related to geologic hazards would be less than significant. Therefore, the project would be consistent with this policy.
Policy HS-1.3 Require environmental documents prepared in connection with CEQA to address seismic safety	As discussed in Impact 4.5-1 above, a Slope Stability Evaluation was prepared to evaluate the seismic impacts associated with the slopes of the

issues and to provide adequate mitigation for existing and potential hazards identified.	mining and reclamation phases. Therefore, the project would be consistent with this policy.
Policy ED-1.2 Support the continued operation of existing aggregate mining activities within the county as well as new aggregate mining in appropriate areas, to meet the long-range construction needs of the region.	The proposed project would result in continued operation of an existing aggregate mine and mining activities in order to meet the economic needs of the County.
Policy CO-3.1 Encourage the production and conservation of mineral resources, balanced by the consideration of important social values, including recreation, water, wildlife, agriculture, aesthetics, flood control, and other environmental factors.	The proposed project would result in the continued production of aggregate resources from the site. All relevant environmental issues associated with the proposed mining and reclamation activities, including impacts to recreation, wildlife, agriculture, aesthetics, and flood control, are discussed throughout this Draft SEIR. Where applicable, mitigation is provided to reduce potential impacts to the maximum extent feasible. Therefore, the project would be consistent with this policy.
Policy CO-3.2 Ensure that mineral extraction and reclamation operations are compatible with land uses both onsite and within the surrounding area, and are performed in a manner that does not adversely affect the environment.	Impacts related to the creation of land use incompatibilities were initially addressed in the 1996 EIR. The project would continue an existing mining operation and therefore would not introduce a new land use that could create potential land use incompatibility. As discussed in Section 4.9 of this Draft SEIR, the project would have no impact in terms of conflicting with any applicable land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. As such, the project would be consistent with this policy.
Policy CO-3.5 Preserve and protect the County's unique geologic and physical features, which include geologic or soil "type localities", and formations or outcrops of special interest.	The project site is underlain by Holocene-aged stream channel deposits typical of the Cache Creek area. Drill hole logs demonstrate that the soil layers are relatively uniform, which is consistent with the alluvial nature of the area. The project site is currently used for mining and agricultural production, which is common within Yolo County and the project area. Consequently, the project site does not contain any unique geologic or physical features that are not found elsewhere in the County or the Cache Creek Area. Considering the geologic and physical setting of the project site, the project would not inhibit preservation or protection of any unique physical features, and, consequently, the project would comply with this policy.
Action CO-A37 Designate and zone lands containing identified mineral deposits to protect them from the encroachment of incompatible land uses so that aggregate resources remain available for the future. (Policy CO-3.1)	The State Department of Conservation has identified the project site as being in the MRZ-2 zone, meaning that significant mineral deposits are present or that a high likelihood for their presence exists. Under the proposed project, these mineral deposits would be available for future extraction. Accordingly, the project would not result in the loss of availability of mineral resources. The project would comply with this action.

Action CO-A39 Encourage the responsible development of aggregate deposits along Cache Creek as significant both to the economy of Yolo County and the region. (Policy CO-3.1)	The proposed project would involve extraction of aggregate deposits within the Cache Creek area in a manner that would be consistent with the CCAP. Thus, the project would be considered to comply with this action.
Action CO-A42 Implement the Cache Creek Area Plan to ensure the carefully managed use and conservation of sand and gravel resources, riparian habitat, ground and surface water, and recreational opportunities. (Policy CO-3.1)	Mining at the project site was already underway when the CCAP was developed, and therefore mining at the site was considered by CCAP. Reclamation of the project site would include establishment of riparian habitat within the project site. Impacts to ground and surface water are analyzed in Chapter 4.6, Hydrology and Water Quality. The project proposes to dedicate permanent lakes to the County, which will be used for future recreational and habitat uses, consistent with the CCAP and the Cache Creek Parkway Plan. Based on this, the project would comply with this action.
Action CO-A47 Ensure that mined areas are reclaimed to a usable condition that is readily adaptable for alternative land uses, such as agriculture, wildlife habitat, recreation, and groundwater management facilities. (Policy CO-3.1)	The project proposes to restore mined lands to productive agriculture and dedicate permanent lakes to the County, which will be used for future recreational and habitat uses, consistent with the CCAP and the Cache Creek Parkway Plan. Based on this, the project would comply with this action.
Action CO-A54 Implement the Cache Creek Area Plan (Policy CO-3.2).	As discussed throughout this Draft SEIR, the project would comply with the CCAP, and, as a result, be consistent with this action. Impact 4.6-6 identifies required mitigation to implement channel improvements and channel maintenance consistent with the CCAP, to address ongoing erosive forces in the channel.
Action CO-A63 Require cultural resources inventories of all new development projects in areas where a preliminary site survey indicates a medium or high potential for archaeological, historical, or paleontological resources. In addition, require a mitigation plan to protect the resource before the issuance of permits. Mitigation may include: • Having a qualified archaeologist or paleontologist present during initial grading or trenching; • Redesign of the project to avoid historic or paleontological resources; • Capping the site with a layer of fill; and/or • Excavation and removal of the historical or paleontological resources and curation in an appropriate facility under the direction of a qualified professional. (Policy CO-4.1, Policy CO-4.13)	The proposed project would be subject to the requirements of Section 10-4.410, Cultural Resources, of the Mining Ordinance. Section 10-4.410 contains specific standards for avoiding damage to cultural, historic, and paleontological resources, as well as assessing and preserving any resources discovered during mining activities. See also Mitigation Measures 4.4-1 and 4.5-1.
Action CO-A65 Require that when cultural resources (including non-tribal archeological and paleontological artifacts, as well as human remains) are encountered during site preparation or	Section 10-4.410 of the Mining Ordinance includes requirements that are substantively similar to the requirements included in this action. Because the project would be required to comply with Section 10-4.410 of the Mining Ordinance, the project

construction, all work within the vicinity of the discovery is immediately halted and the area protected from further disturbance. The project applicant shall immediately notify the County Coroner and the Planning and Public Works Department. Where human remains are determined to be Native American, the project applicant shall consult with the Native American Heritage Commission (NAHC) to determine the person most likely descended from the deceased. The applicant shall confer with the descendant to determine appropriate treatment for the human remains, consistent with State law. (Policy CO-4.1, Policy CO-4.11, Policy CO-4.12, Policy CO-4.13)	would comply with this action. See also Mitigation Measures 4.4-1 and 4.5-1.
Off-Channel Surface Mining Ordinance	
Section 10-4.403 The operator shall immediately notify the Director of any events such as fires, explosions, spills, land or slope failures, or other conditions at the site which could pose a hazard to life or property. Action shall be immediately undertaken to alleviate the hazard. The operator shall provide a written report of any such event, within thirty (30) days, which shall include, but not be limited to, a description of the facts of the event, the corrective measures used, and the steps taken to prevent a recurrence of the incident. Failure to provide this report shall initiate violation proceedings pursuant to Article 11. This condition does not supersede nor replace any requirement of any other governmental entity for reporting incidents.	Section 10-4.403 includes enforcement mechanisms that would ensure that any hazards are promptly reported to the County. Impacts 4.5-1 and 4.5-3 demonstrate that the proposed mining activity would not be anticipated to result in impacts such as collapse, subsidence, or landslide. Consequently, the project would comply with this section of the ordinance.
Section 10-4.406 During mining operations, a series of benches may be excavated in a slope provided that the excavations are made in compliance with the requirements of the state Mine Safety Orders (California Code of Regulations, Title 8, Subchapter 17). The vertical height and slope of the benches constructed for permanent reclaimed slopes shall not exceed maximum standards for the specific soil types presented in the California Code of Regulations, Title 8, Article 6. In general, vertical cut slopes between benches shall not exceed four (4) feet in height in topsoil and overburden sediments. Benching shall be allowed in cohesive soil (clay, sandy or silty clay, clayey silt) only. Slopes above the elevation of groundwater (determined at the time of the excavation by the level of exposed water in the excavation) that exceed the maximum vertical height shall be excavated and maintained at slopes not steeper than 2:1 (horizontal:vertical). Slopes located five (5) feet or less below the average summer low groundwater level shall not be steeper than 2:1 (horizontal:vertical). Slopes located more than five	The proposed project was subject to a Slope Stability Evaluation. The results of the analysis are relied upon to support the determinations presented within this chapter, specifically, those presented in Impacts 4.5-1 regarding the design of cut slopes and benches. Preparation of a Slope Stability Evaluation fulfills the requirements of Section 10-4.406.

(5) feet below the average summer low groundwater level shall not be steeper than 1:1 (horizontal to vertical). Vertical cut slopes in excess of four (4) feet in height may be approved for the development of special habitat (e.g., bank swallows) if a site specific slope stability analysis, performed by a licensed engineer, indicates that the slope does not exceed critical height for the on-site soil conditions. Projects proposing such slopes shall submit a long term maintenance plan to ensure that the function of the slopes as habitat is met.	
Section 10-4.410 (a) All resource records shall be checked for the presence of and the potential for prehistoric and historic sites. Damaging effects on cultural resources shall be avoided whenever possible. If avoidance is not feasible, the importance of the site shall be evaluated by a qualified professional prior to the commencement of mining operations. If a cultural resource is determined not to be important, both the resource and the effect on it shall be reported to the Agency, and the resource need not be considered further. If avoidance of an important cultural resource is not feasible, a mitigation plan shall be prepared and implemented. The mitigation plan shall explain the importance of the resource, describe the proposed approach to mitigate destruction or damage to the site, and demonstrate how the proposed mitigation would serve the public interest. (b) If human skeletal remains are encountered during excavation, all work within seventy-five (75') feet shall immediately stop, and the County Coroner shall be notified within twenty-four (24) hours. If the remains are of Native American origin, the appropriate Native American community identified by the Native American Heritage Commission shall be contacted, and an agreement for treating or disposing of, with appropriate dignity, the remains and associated grave goods shall be developed. If any cultural resources, such as chipped or ground stone, historic debris, building foundations, or paleontological materials are encountered during excavation, then all work within seventy-five (75') feet shall immediately stop and the Director shall be notified at once. Any cultural resources found on the site shall be recorded by a	See discussion of Impact 4.5-5. In the event of the inadvertent discovery of prehistoric, historic, paleontological resources or human remains, the project would implement the provisions of Mining Ordinance Section 10-4.410 and new Mitigation Measure 4.5-5. Therefore, the project would be consistent with this regulation.

qualified archaeologist and the information shall be submitted to the Agency. (§ 1, Ord. 1190, eff. September 5, 1996)	
Section 10-4.431 Except where benches are used, all banks above groundwater level shall be sloped no steeper than 2:1 (horizontal:vertical). Proposed steeper slopes shall be evaluated by a slope stability study, prepared by a Registered Civil Engineer, Certified Engineering Geologist, or Professional Geologist. Slopes below the groundwater level shall be no steeper than 1:1 (horizontal:vertical). Slopes located five (5) feet or less below the summer low groundwater level shall not be steeper than 2:1 (horizontal:vertical). This section applies only to final/reclaimed slopes and not to active mining faces.	A Slope Stability Evaluation was prepared that assessed a final cut slope configuration of a maximum slope height of 70 feet and finish cut slopes, from surface to 5 feet below average low groundwater levels of 2:1, and finish cut slopes greater than 5 feet below average low groundwater levels of 1:1. The geotechnical engineering firm concluded that these reclamation slope angles will be stable with adequate static (≥ 1.5) and seismic (≥ 1.1) factors of safety for the proposed end uses. As discussed under Impact 4.6-1, the stability of the proposed slopes has been evaluated in the Slope Stability Evaluation and would comply with the standards established in the Mining Ordinance. Thus, the project would be consistent with this regulation.
Section 10-4.432 Soil shall be cut in maximum depths in order to minimize traffic and limit compaction. The handling and transportation of soil shall be minimized. To the extent feasible, all handling of topsoil shall be accomplished when the soil is dry in order to avoid undue compaction.	The proposed project would stockpile soil on the project site in order to minimize transport of soil. All topsoil would be handled when the soil is dry. Therefore, the project would be consistent with this regulation.
Section 10-4.433 Soil stockpiles. Topsoil, subsoil, and subgrade materials in stockpiles shall not exceed forty (40) feet in height, with slopes no steeper than 2:1 (horizontal:vertical). Stockpiles, other than aggregate stockpiles, shall be seeded with a native vegetative cover to prevent erosion and leaching. The use of topsoil for purposes other than reclamation shall not be allowed without the prior approval of the Director. Slopes on stockpiled soils shall be graded to 2:1 (horizontal:vertical) for long-term storage to prevent use by bank swallows. At no time during the active breeding season (May 1 through July 31) shall slopes on stockpiles exceed a slope of 1:1, even on a temporary basis. Stockpiles shall be graded to a minimum 1:1 slope at the end of each work day where stockpiles have been disturbed during the active breeding season.	As described in the Initial Study for the 2022 CEMEX Minor Modification (ZF #2022-0037), the applicant has completed and/or demonstrated ongoing compliance with Conditions of Approval No. 60 and 80, which require implementation of Mining Ordinance Section 10-4.433 related to soil stockpiles. Continued compliance with Section 10-4.433 is included in the proposed project and required by existing regulation. Mitigation Measure 4.5-1 has been identified to improve soil management.
Section 10-4.434 Technical report recommendations. The recommendations contained within each technical report submitted with a surface mining permit application shall be consistent with the OCMP and with all other technical reports submitted. The recommendations of all technical reports shall be implemented.	The Slope Stability Evaluation prepared for the proposed project has been discussed throughout this chapter. All recommendations in the report would be incorporated into the proposed project. Therefore, the project would be consistent with this regulation.

Reclamation Ordinance	
Section 10-5.530 All final reclaimed slopes shall have a minimum safety factor equal to or greater than the critical gradient as determined by an engineering analysis of the slope stability. Final slopes less than five (5) feet below the average summer low groundwater level shall be designed in accordance with the reclaimed use and shall not be steeper than 2:1 (horizontal:vertical). Reclaimed wet pit slopes located five (5) feet or more below the average summer low groundwater level shall not be steeper than 1:1 (horizontal:vertical), in order to minimize the effects of sedimentation and biological clogging on groundwater flow, to prevent stagnation, and to protect the public health. The maximum slope angle for all final reclaimed slopes shall be determined by slope stability analysis performed by a Licensed Geotechnical Engineer or Registered Civil Engineer and submitted with any mining and reclamation application for review by the Director. The slope stability analysis shall conform with industry standard methodologies regarding rotational slope failures under static and pseudostatic (seismic) conditions. The minimum factor of safety for all design reclamation slopes located adjacent to levees or below existing structures shall not be less than 1.5 for static and 1.1 for pseudostatic (seismic) conditions. Other reclamation slopes shall meet a minimum factor of safety that is consistent with the post-reclamation use proposed for the mining area.	As discussed throughout this chapter, the proposed project proposes slope angles consistent with the requirements set forth by the County. As such, the proposed project would be consistent with this regulation.

Source: Baseline Environmental Consulting, 2021.
Notes:
[a] County of Yolo, 2021. Conditions of Approval Mining Permit and Reclamation Plan No. ZF #95-093 CEMEX Mining and Reclamation Project. 2020 Ten-Year Permit Review. As modified through February 11, 2021.

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