



LIVE OAK ASSOCIATES, INC.

an Ecological Consulting Firm

November 13, 2017

Zachary Dahla
Raney Management
1501 Sports Drive, Suite A
Sacramento, CA 95834

RE: Peer review for the proposed The Ranch project in Antioch (Cowan Ranch), Antioch, Contra Costa County, California (PN 2160-01).

Dear Mr. Dahla:

We have prepared this peer review of ECORP Consulting, Inc.'s (ECORP) Biological Resources Assessment Report (October 2017; BRA). This document was prepared for the applicant of the proposed The Ranch project site in Antioch located at the Cowan Ranch, in Antioch, Contra Costa County, California. This peer review is intended to ascertain the adequacy of the applicant's BRA to inform the CEQA document. The approximately 551.5-acre ranch is located in the southeastern portion of the city of Antioch. The Project Site is within the Sand Creek Focus Area, also referred to as Future Urban Area 1 (FUA-1). Access to the property is from Deer Valley Road on the east and there is an emergency vehicle access onto Empire Mine Road on the western edge of the property. Dallas Ranch Road stubs into the Project Site along the north boundary. The proposed project will consist of a community including residential, open space, parks, a village center, and a fire station. The site currently consists almost entirely of a cattle ranch with Sand Creek running through it.

Background Review

Prior to a site visit to evaluate existing site conditions, LOA completed an appropriate background review. In addition to a review of the BRA prepared by ECORP, sources of information relevant to the proposed project, the project site, and the site's vicinity were reviewed, including the project site plans, aerial photographs of the project site, U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory Maps, and the California Natural Diversity Database (CNDDB) Rarefind 5 (CDFW 2017). Additional documents reviewed included drafts of the Sand Creek Specific Plan, which was finalized in 2002, and the City of Antioch's General Plan.

Existing Site Conditions

On October 30, 2017, LOA ecologist Katrina Krakow conducted a reconnaissance-level site visit to evaluate existing conditions of the site. During the site visit, habitats present on the site were verified, including potentially suitable habitat for any special status plant or animal species that

are known to occur, or once to have occurred, regionally. LOA did not conduct focused or protocol-level surveys for rare species or a formal wetland delineation as a part of this site visit.

The project includes the approximately 551.5-acre Cowan Ranch. Cowan Ranch is currently a cattle ranch with Sand Creek running through it. Other areas proposed to be impacted include the water tank site northwest of Cowan Ranch off of Empire Mine Road as well as a strip of land on the western side of Empire Mine Road. Additional impacts are proposed to occur in the field to the east of Cowan Ranch on the east side of Deer Valley Road south of Kaiser Hospital and west of the school.

At the time of the October 2017 site visit, Sand Creek was dry and only the ponds/impoundments held water. The habitat on the main portion of the site mainly consists of a pasture of non-native grassland dominated by dried grasses and gumplant. A few oak trees occur sporadically throughout the grassland. Eucalyptus occur mainly along the western fencerow and near the ranch house. Sand Creek mainly supported blue oaks and California buckeyes as an overstory with very little understory observed.

Existing site conditions as observed by LOA during the October 2017 site visit are generally consistent with the existing site conditions found by ECORP biologists during their surveys in 2014-2016.

PEER REVIEW OF THE BIOLOGICAL RESOURCES ASSESSMENT REPORT

Project Description

ECORP briefly described the project as having approximately 550.8 acres on which is proposed up to 1,338 residential units arranged into two villages separated by Sand Creek, accompanied by parks, a system of improved and natural pedestrian trails, a trail staging area, a private recreation facility, a fire station, a series of roads throughout the development, a vehicular bridge, two storm drain basins with outfalls into the creek, and a village center across from Kaiser Hospital.

Off-site Infrastructure Areas are described as approximately 81.1 acres that may be used for water pump stations, water tanks, sewer lines, or other necessary infrastructure improvements.

LOA Review: Although the project description appears to be fairly thorough, the BRA does not define locations of the impacted areas or the areas where open space or park areas will remain, or what parts of the on- and off-site lands are expected to be impacted and whether those impacts will have a substantial adverse effect on the biological resources of the project area. A figure with a site plan where impacts are proposed to occur should be included in the BRA; this figure can help inform the analysis of whether various impacts are considered to have a substantial adverse effect. Should the project have a substantial adverse effect on any biotic resource, appropriate avoidance, minimization, and compensation measures should be included in the impacts section of the BRA.

Existing Conditions

The existing conditions of the site were identified in the BRA. These existing conditions include biotic habitats observed, trees observed, wildlife observed, soils, potential waters of the U.S., special status species that may occur onsite, and wildlife/movement corridors.

Biotic Habitats. The BRA identified three biotic habitat types: annual grassland, ruderal community, and developed.

LOA Review: Although we concur that these habitats and their descriptions are consistent with what LOA observed onsite during our October 2017 site visit, the BRA does not call out the Sand Creek Corridor as a specific and separate habitat. This habitat should be identified and discussed in the BRA. A habitat map should also be included in the BRA.

Trees. A tree survey was conducted for the site and 181 of the 255 trees were identified as indigenous. The tree survey did not include the Off-site Infrastructure Areas.

LOA Review: A tree survey should be conducted for the Off-site Infrastructure Areas.

Wildlife. The BRA reports the wildlife observed during the 2017 site visits as mainly consisting of birds and one mammal in the body of the BRA, but then lists amphibians, reptiles, birds, and mammals in Attachment C of the report.

LOA Review: We suggest the full list of observed wildlife be incorporated into the body of the BRA.

Soils. The BRA identifies six soil types, with three considered to be hydric.

LOA Review: We suggest the BRA include whether or not the soils have other characteristics such as being alkaline or characteristics which would indicate a particular type of plant species may or may not occur.

Potential Waters of the U.S. The BRA describes potential Waters of the U.S. based on the report by LOA (2014) and the USACE Approved Jurisdictional Determination (2016).

LOA Review: A site plan figure would be helpful in assessing where impacts to Waters of the U.S. have been identified.

Special Status Species That May Occur Onsite. The BRA includes a table identifying special status plants and animals that are absent, have low potential to occur, potential to occur, or are present onsite or within the Off-site Infrastructure Areas.

Plants. Rare plant surveys have occurred on the onsite area in 2015 by Monk & Associates, Inc., however, the BRA does not state the dates of the surveys, so it is unknown which blooming periods may or may not have been surveyed for. The BRA does state that the 2015 surveys were not conducted during the blooming period for Carquinez goldenbush, which the BRA defines to have a low potential to occur onsite.

Plants which have low potential to occur on either the on- or off-site areas include the California androsace, heartscale, Oakland star-tulip, Hoover's cryptantha, recurved larkspur, dwarf downingia, Mt. Diablo buckwheat, spiny-sepaled button celery, fragrant fritillary, Diablo helianthella, hogwallow starfish, Carquinez goldenbush, woodland woolythreads, Tehama navarretia, adobe navarretia, bearded poppy, Lobb's aquatic buttercup, Keck's checkerbloom, most beautiful jewelflower, and Mt. Diablo jewelflower.

Plants which have potential to occur on either the on- or off-site areas include the large-flowered fiddleneck, alkali milk-vetch, crownscale, brittle-scale, big tarplant, round-leaved filaree, Mt. Diablo fairy-lantern, Congdon's tarplant, Jepson's coyote thistle, diamond-petaled poppy, stinkbells, Brewer's western flax, Contra Costa goldfields, showy golden madia, California alkali grass, and caper-fruited tropidocarpum.

Plants which have been identified to be present onsite include the crownscale, San Joaquin spearscale, and shining navarretia.

LOA Review: Previous studies for the preparation of the Sand Creek Specific Plan (2002) had identified big tarplant onsite along the Sand Creek corridor. The Sand Creek Specific Plan and the potential for big tarplant to occur should be reviewed. Additional species have previously been observed within FUA-1 of which the Cowan Ranch is a part: 1) there was a historical occurrence (1938-1941) of showy madia on the adjacent (to the east) Kaiser property; 2) brittlescale and San Joaquin saltbrush were previously observed on the Albers property; and 3) Mt. Diablo Manzanita, Brewers dwarf flax (same species as Brewer's western flax), Contra Costa manzanita, and crownscale were previously observed on the Zeka/Higgins property adjacent to the west of Cowan Ranch. As FUA-1 has had previous surveys, these surveys should be included and discussed in the BRA. The BRA did not include discussions on the San Joaquin saltbrush, Mt. Diablo Manzanita, or Contra Costa manzanita; these species should be evaluated in the BRA. We concur with ECORP's conclusions that rare plant surveys need to be conducted for the off-site infrastructure areas.

Although rare plant surveys have occurred on the onsite area in 2015 by Monk & Associates, Inc., the BRA does not state the dates of the surveys, so it is unknown which blooming periods may or may not have been surveyed for. This should be stated in the BRA. This report should be included as a part of the BRA as an appendix with a figure showing locations of special status plants observed onsite. The off-site areas should also be surveyed.

Animals. The BRA identified special status animals which have the potential to occur onsite.

Animals which have low potential to occur on either the on- or off-site areas include the Foothill yellow-legged frog, Alameda whipsnake, Blainville's ("Coast") horned lizard, silvery legless lizard, and tricolored blackbird.

Animals which have potential to occur on either the on- or off-site areas include the Valley elderberry longhorn beetle, northwestern pond turtle, horned lark, ferruginous hawk, golden eagle, grasshopper sparrow, loggerhead shrike, northern harrier, short-eared owl, white-tailed kite, American badger, pallid bat, San Joaquin kit fox, Townsend's big-eared bat, and western red bat.

Animals which have been identified to be present onsite include the Vernal pool fairy shrimp, vernal pool tadpole shrimp, California red-legged frog, California tiger salamander, burrowing owl, prairie falcon, and Swainson's hawk.

LOA Review: Previous studies for the preparation of the Sand Creek Specific Plan (2002) and CNDDDB records identify species that have previously been observed within FUA-1 of which the Cowan Ranch is a part: 1) As well as occurring onsite, vernal pool fairy shrimp has been previously observed on the Cinocchio/Nunn property within the FUA-1; 2) As well as occurring on the site, burrowing owls are known to occur in the local region and have been observed within the greater FUA-1 as well; 3) a previous location for the western pond turtle occurs within Sand Creek on the Zeka/Higgins property to the west of the site; 4) a previous observation of the silvery legless lizard exists in the hills of the Zeka/Higgins property to the west of the site; 5) Previous observations of the California red-legged frog and California tiger salamander have been identified within FUA-1, of which the Cowan Ranch is a part of. The California red-legged frog has been previously observed on the adjacent Zeka/Higgins property to the west of the site

within the Sand Creek corridor and within the hills of that property. California red-legged frogs have also occurred on the Richland property to the south of the site. California tiger Salamanders have been previously observed on both the Zeka/Higgins (to the west) and Richland (to the south) properties. These locations should be discussed and included in the evaluation of the potential for these species to occur onsite.

Additionally, golden eagle and American badger burrows were observed during LOA's October 2017 site visit. Additional species not included in the BRA which should be included are the Mastiff bat and ringtail.

Wildlife/Movement Corridors. The BRA briefly discusses that the annual grasslands of the site and Sand Creek may be used by aquatic and terrestrial species as a wildlife movement corridor whereas the off-site areas are likely not used.

LOA Review: We recommend a more in-depth discussion of this area, especially the Sand Creek Corridor. Sources should be cited that have previously discussed this area, such as the Sand Creek Specific Plan (2002) and the City of Antioch's General Plan. This discussion should include enough information to determine whether the project will have a substantial adverse effect on the regional movement of wildlife.

Impacts.

The BRA only assesses the likelihood a biotic resource occurs onsite and does not assess potential impacts to the biotic resources or the significance of those potential impacts. Each biotic resource should be evaluated for potential impacts, and conclusions should be made about whether the impact is a substantial adverse effect. Each biotic resource should be evaluated for both potential impacts to individuals and potential impacts to habitat. Avoidance, minimization, and compensation measures should be provided for those individuals or habitats where substantial adverse effects are expected in order to adequately mitigate for those effects. Although regulatory permits may be necessary for certain species and for impacts to jurisdictional waters, these permits are outside and in addition to the avoidance, minimization, and compensation measures as is required by CEQA.

Impacts on Special Status Plants. ECORP concluded that three special status plants occur onsite, including Crownscale, San Joaquin spearscale, and shining navarretia, and that Carquinez goldenbush still needs to be surveyed in the correct season in order to determine its occupancy onsite. ECORP further concluded that several special status plant species may occur on the off-site infrastructure areas and that rare plant surveys had not been conducted for those areas yet.

LOA Review: Previous studies for the preparation of the Sand Creek Specific Plan (2002) had identified big tarplant onsite along the Sand Creek corridor. The Sand Creek Specific Plan and the potential for big tarplant to occur should be reviewed. Additional species have previously been observed within FUA-1 of which the Cowan Ranch is a part: 1) there was a historical occurrence (1938-1941) of showy madia on the adjacent (to the east) Kaiser property; 2) brittlescale and San Joaquin saltbrush were previously observed on the Albers property; and 3) Mt. Diablo Manzanita, Brewers dwarf flax, Contra Costa manzanita, and crownscale were previously observed on the Zeka/Higgins property adjacent to the west of Cowan Ranch. As FUA-1 has had previous surveys, the results of these surveys should be included and discussed in the BRA. A map of observed and historical occurrences should be included in the report, as well as a discussion of potential impacts to plants which do or may occur onsite and the significance

of those impacts. A discussion of potential impacts, given the site plan, to each species, should they occur onsite, and the significance of those impacts needs to be included in the BRA. Things to include in the evaluation of each species would be a historical account of whether they occurred onsite or in the vicinity of the site, whether or not potentially suitable habitats exist for these species onsite, and what action should be taken should they occur onsite. For the species identified as occurring or potentially occurring within the main project area and/or off-site area, the BRA should identify whether or not the potential impacts are expected to have a substantial adverse effect on each species, then include avoidance, minimization, and compensation measures to reduce impacts to a less-than-significant level. We concur with ECORP's conclusions that rare plant surveys need to be conducted for the off-site infrastructure areas and surveys should occur within the blooming period for Carquinez goldenbush.

Impacts on Special Status Animals. ECORPS concluded that the site supports habitat for the Valley elderberry longhorn beetle, vernal pool fairy shrimp, vernal pool tadpole shrimp, California tier salamanders, California red-legged frogs, Foothill yellow-legged frogs, Alameda whipsnake, Blainville's horned lizard, northwestern pond turtle, silvery legless lizard, burrowing owl, other raptors (including white-tailed kite, Swainson's hawk, northern harrier, prairie falcon, ferruginous hawk, golden eagle, short-eared owl), California horned lark, grasshopper sparrow, loggerhead shrike, tricolored blackbird, American badger, San Joaquin kit fox, pallid bat, Townsend's big-eared bat, and western red bat.

Valley elderberry longhorn beetle. ECORP concluded that the Valley elderberry longhorn beetle may occur onsite, as one elderberry tree occurs onsite and established mitigation measures for this species.

LOA Review: We concur with ECORP's conclusions that this species may occur onsite, however, a discussion of potential impacts to this species, should it occur onsite, and the significance of those impacts needs to be included in the BRA. If the potential impacts are expected to have a substantial adverse effect on the species' habitat and/or individuals, then avoidance, minimization, and compensation measures should be included in the report for impacts to habitat and/or individuals in order to reduce impacts to a less-than-significant level. A measure surveying for the beetle and a measure for take should be included in the mitigation measures for this species. The survey protocol should follow CDFW's *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (2017).

Vernal pool fairy shrimp and vernal pool tadpole shrimp. ECORP concluded that the Vernal pool fairy shrimp and vernal pool tadpole shrimp occur onsite, and established mitigation measures for this species, including take coverage under USFWS.

We concur with ECORP's conclusions. Vernal pool fairy shrimp has been previously observed on the Cinocchio/Nunn property within the FUA-1; these occurrences should be discussed in the BRA. A figure should be included in the BRA to show where these species have been observed onsite. Although the BRA says take coverage is required under USFWS, a discussion of potential impacts to this species and the significance of those impacts needs to be included in the BRA. Avoidance, minimization, and compensation measures should be included in the report for impacts to habitat and/or individuals in order to reduce impacts to a less-than-significant level.

California red-legged frog and California tiger salamander. ECORP concluded that the California red-legged frog and California tiger salamander occur onsite, and established

mitigation measures for this species, including take coverage under USFWS for both species and under CDFW for the California tiger salamander.

LOA Review: We concur with ECORP's conclusions that California red-legged frogs and tiger salamanders occur onsite and that take authorization is needed from the USFWS and CDFW. Previous observations of the California red-legged frog and California tiger salamander have been identified within FUA-1, of which the Cowan Ranch is a part of. The California red-legged frog has been previously observed on the adjacent Zeka/Higgins property to the west of the site within the Sand Creek corridor and within the hills of that property. California red-legged frogs have also occurred on the Richland property to the south of the site. California tiger Salamanders have been previously observed on both the Zeka/Higgins (to the west) and Richland (to the south) properties. A discussion of potential impacts to this species and the significance of those impacts needs to be included in the BRA. The BRA provided avoidance measures; however, minimization and compensation measures should be included in the report for impacts to habitat and/or individuals in order to reduce impacts to a less-than-significant level.

Foothill yellow-legged frog. ECORP concluded that the Foothill yellow-legged frog may occur onsite, and identified the need to acquire a take permit from CDFW should this species be observed during preconstruction surveys.

LOA Review: We concur with ECORP's conclusions that the Foothill yellow-legged frog may occur onsite. However, a discussion of potential impacts to this species, should it occur onsite, and the significance of those impacts needs to be included in the BRA. If the potential impacts are expected to have a substantial adverse effect on the species' habitat and/or individuals, then avoidance, minimization, and compensation measures should be included in the report for impacts to habitat and/or individuals in order to reduce impacts to a less-than-significant level. As acquiring a take permit takes time, it is more appropriate to obtain the permit prior to preconstruction surveys.

Alameda whipsnake. ECORP concluded that the Alameda whipsnake has low potential to occur onsite, and identified the need to consult with USFWS and CDFW as to the appropriate avoidance and minimization measures and/or mitigation for potential impacts to this species.

LOA Review: We concur with ECORP's conclusions that the Alameda whipsnake has a low potential to occur onsite. However, a discussion of potential impacts to this species, should it occur onsite, and the significance of those impacts needs to be included in the BRA. If the potential impacts are expected to have a substantial adverse effect on the species' habitat and/or individuals, then avoidance, minimization, and compensation measures should be included in the report for impacts to habitat and/or individuals in order to reduce impacts to a less-than-significant level. Measures should be thorough enough that consultation with CDFW would not be necessary.

Blainville's horned lizard, northwestern pond turtle, and silvery legless lizard. ECORP concluded that the Blainville's horned lizard, northwestern pond turtle, and silvery legless lizard may occur onsite, and established mitigation measures for this species.

LOA Review: We concur with ECORP's conclusions that these species may occur onsite, however, a previous location for the western pond turtle occurs within Sand Creek on the Zeka/Higgins property to the west of the site and a previous observation of the silvery legless lizard exists in the hills of the Zeka/Higgins property as well. a discussion of potential impacts to

this species, should it occur onsite, and the significance of those impacts needs to be included in the BRA. If the potential impacts are expected to have a substantial adverse effect on the species' habitat and/or individuals, then avoidance, minimization, and compensation measures should be included in the report for impacts to habitat and/or individuals in order to reduce impacts to a less-than-significant level. Measures should be thorough enough that consultation with CDFW would not be necessary.

Raptors and Nesting Birds. ECORP concluded that raptors and nesting birds have the potential to occur onsite and established mitigation measures for these species.

LOA Review: We concur with ECORP's conclusions that nesting birds and raptors have the potential to occur onsite and that that avoidance and minimization measures for nesting migratory birds is adequate. Although burrowing owls are called out separately in ECORP's report, Swainson's hawks and tricolored blackbird are not; Swainson's hawk protocol-level surveys should be included for this species and tricolored blackbird should be specifically called out, discussed, and potential impacts. These measures are thorough enough that consultation with CDFW would not be necessary.

Burrowing owl. ECORP concluded that burrowing owls are present onsite and established mitigation measures for this species.

LOA Review: We concur with ECORP's conclusions that burrowing owls are present onsite and that preconstruction surveys are necessary. However, a discussion of potential impacts to this species and the significance of those impacts needs to be included in the BRA. If the potential impacts are expected to have a substantial adverse effect on the species' habitat and/or individuals, then avoidance, minimization, and compensation measures should be included in the report for impacts to habitat and/or individuals in order to reduce impacts to a less-than-significant level. As well as occurring on the site, burrowing owls are known to occur in the local region and have been observed within the greater FUA-1 as well. The CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFG 2012) should be referenced in the measures for the burrowing owl protocol-level surveys for this species.

American badger. ECORP concluded that American badgers have the potential to occur onsite and established mitigation measures for these species.

LOA Review: We concur with ECORP's conclusions that badgers may occur onsite; during LOA's October 2017 site visit, badger burrows were observed onsite. However, a discussion of potential impacts to this species, should it occur onsite, and the significance of those impacts needs to be included in the BRA. If the potential impacts are expected to have a substantial adverse effect on the species' habitat and/or individuals, then avoidance, minimization, and compensation measures should be included in the report for impacts to habitat and/or individuals in order to reduce impacts to a less-than-significant level. Measures should be thorough enough so that consultation with CDFW would not be necessary.

San Joaquin kit fox. ECORP concluded that San Joaquin kit foxes may occur onsite and identified the need to consult with USFWS and CDFW as to the appropriate avoidance and minimization measures and/or mitigation for potential impacts to this species.

LOA Review: We concur with ECORP's conclusions that the San Joaquin kit fox may occur onsite. However, a discussion of potential impacts to this species, should it occur onsite, and the significance of those impacts needs to be included in the BRA. If the potential impacts are

expected to have a substantial adverse effect on the species' habitat and/or individuals, then avoidance, minimization, and compensation measures should be included in the report for impacts to habitat and/or individuals in order to reduce impacts to a less-than-significant level. Measures should include preconstruction surveys following the *U.S. Fish and Wildlife Service San Joaquin Kit Fox Survey Protocol for the Northern Range* (USFWS 1999), and construction-free buffer distances should this species be observed onsite. Measures should be thorough enough that consultation with CDFW would not be necessary.

Bats. ECORP concluded that pallid bat, Townsend's big-eared bat, and western red bat may roost on the project area and forage over the site and established mitigation measures for these species.

LOA Review: We concur with ECORP's conclusions that the pallid bat, Townsend's big-eared bat and western red bat may occur onsite, however, a discussion on mastiff bat, and potential impacts to the mastiff bat, especially since the diamond mines are nearby, need to be included in the BRA. Also, a discussion of potential impacts to these species, should they occur onsite, and the significance of those impacts needs to be included in the BRA. If the potential impacts are expected to have a substantial adverse effect on these species' habitat and/or individuals, then avoidance, minimization, and compensation measures should be included in the report for impacts to habitat and/or individuals in order to reduce impacts to a less-than-significant level. Part of the analysis should be to identify typical roosting habitats for each species and what habitats may exist onsite (i.e. barns, buildings, trees, mines), and where those potential habitat features exist onsite. Appropriate additional measures should be established for bats such as potential timing/seasonal restrictions for the project.

Impacts to Indigenous and Protected Trees. ECORP concluded that a formal tree inventory was conducted for the main portion of the site where 181 of the 255 trees were identified as indigenous, however, it was not conducted for the off-site infrastructure areas. A permit will be required from the City to remove protected trees.

LOA Review: We concur with ECORP's conclusions that a tree permit is necessary for the removal of several trees onsite. Additionally, we suggest a tree inventory be conducted for the off-site infrastructure areas and that the document state typical replacement ratios or fees required by the City for trees removed. It is unclear from the report how many trees may be protected as "mature trees" or "landscaped trees"; these should also be identified. The number of protected trees proposed to be removed should be included in the BRA and an analysis for significance of the effect should be provided.

Impacts to Wildlife Movement/Corridors. ECORP concluded that the annual grassland and Sand Creek may be used by aquatic and terrestrial species as a wildlife movement corridor and that the off-site infrastructure areas are small, disjunct areas not likely used as a major wildlife movement corridor.

LOA Review: We concur with ECORP's conclusions that the site supports a wildlife movement corridor, however, ECORP should include a more in-depth discussion of this area, especially the Sand Creek Corridor. As well as potential impacts to the wildlife movement corridor in this document. The Sand Creek Specific Plan (2002) and the Antioch General Plan with appendices and amendments are good references for this section. This section should include a determination as to whether the project will have a substantial adverse effect on the movement corridor. If it is

expected to, then avoidance, minimization, and compensation measures should be included in the BRA.

Regulatory Issues

Waters of the U.S. and other Wetlands. ECORP concluded that a total of 3.948 acres of Waters of the U.S. have been mapped and verified by USACE within the project area as well as 0.692 acres on the off-site infrastructure areas, and recommends permits for any impacts to Waters of the U.S or other wetlands.

LOA Review: We concur with ECORP that wetlands and Waters of the U.S. occur onsite and that permits are needed for any impacts to these features. Project construction may require permits from the USACE, RWQCB, and/or CDFW. The BRA needs to discuss what potential impacts to these features are expected, and determine the significance of those impacts. The BRA should also include avoidance, minimization, and compensation measures for impacts to these features to reduce impacts to a less-than-significant level.

Special Status Take Permits. Several species listed above likely require incidental take permits from the USFWS and/or the CDFW. These permits need to be acquired prior to preconstruction surveys and all measures within these permits would be in addition to the avoidance, minimization, and compensation measures the BRA will provide for the species as is required by CEQA.

LOA Summary and Recommendations

In general, LOA concurs with ECORP's assessment of the existing conditions of the site as well as their evaluation of species which may occur on the site, however, the BRA did not assess the potential impacts or significance of those impacts on the biotic resources, and for the large part, did not provide adequate avoidance, minimization, or compensation measures. Our recommendations include the following:

1. That ECORP review the Sand Creek Specific Plan (2002) and modify their 2017 report to address/include these previous these findings. This document was presented to the City Council in 2002 and the proposed development was rejected. Significant background information was collected for this document, including previous surveys onsite and in the vicinity of the site, as the Sand Creek Specific Plan covered a large area including the Cowan Ranch, and large amounts of properties to the east, west, and south of Cowan Ranch.
2. That ECORP add a discussion on consistency with the Antioch General Plan, including conformance to Appendix A of the General Plan: *Framework for Resource Management Plan for Sand Creek Focus Area* (Live Oak Associates, Inc. 2003) and the Draft General Plan Update Environmental Impact Report (LSA 2003).
3. Include an analysis of whether the project will have a substantial adverse effect to each biotic resource, and provide avoidance, minimization, and compensation measures should the potential impact be significant.
4. Revise Figures to remove "DRAFT".
5. Include a figure with the biotic habitats map.
6. Include a figure for with locations for special status species observed onsite or in the vicinity of the site.
7. Include a figure with the site plans.

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8. That ECORP modify their 2017 report to discuss the potential impacts to wildlife movement corridors. Add a discussion on whether potential impacts are considered to be significant.
 9. Revise the report to evaluate the significance of loss of habitat for native wildlife.
 10. That ECORP modify their 2017 report to discuss potential impacts to riparian habitat including potential light and noise impacts and the potential downstream effects of the project. Potential impacts of stormwater should be discussed as well.
 11. Discuss proposed setbacks from Sand Creek and other sensitive habitats.
 12. That ECORP revise the tree section to include how many trees are protected as a “mature tree” or “landscaped tree”. Include expected replacement ratios or fees the City may require for each tree removed.
 13. Include in the special status plants section, the existence of big tarplant onsite along the Sand Creek Corridor, as noted in the Sand Creek Specific Plan (2002). Ensure recent surveys were conducted within this species’ blooming period, and include this species the discussion of special status plants existing on the project site. Include in the discussion additional species have previously been observed within FUA-1 of which the Cowan Ranch is a part: 1) there was a historical occurrence (1938-1941) of showy madia on the adjacent (to the east) Kaiser property; 2) brittlescale and San Joaquin saltbrush were previously observed on the Albers property; and 3) Mt. Diablo Manzanita, Brewers dwarf flax, Contra Costa manzanita, and crownscale were previously observed on the Zeka/Higgins property adjacent to the west of Cowan Ranch. As FUA-1 has had previous surveys, the results of these surveys should be included and discussed in the BRA.
 14. Revise the report to include a rare plant location map from the rare plant surveys to provide better information the amount of area impacted and its relative location to the proposed development.
 15. Include a figure of historical and current locations for rare plants onsite and in the vicinity of the site.
 16. Include a measure for surveys and for take of the Valley elderberry longhorn beetle. The survey protocol should follow CDFW’s *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (2017).
 17. Include in the fairy shrimp section a discussion of previous records and onsite records, including a figure to show where these observations are onsite and in the vicinity of the site.
 18. Revise the measures for Foothill yellow-legged frog to either include acquiring a take permit or including measures to avoid take.
 19. Revise the measures for Alameda whipsnake to establish appropriate measures should this species be observed onsite, so consultation with CDFW would not be necessary.
 20. Revise the measures for Blainville’s horned lizard, northwestern pond turtle, and silvery legless lizard to establish appropriate measures should this species be observed onsite, so consultation with CDFW would not be necessary.
 21. Revise the report to specifically call out Swainson’s hawk and include protocol-level surveys for this species.
 22. Revise the report to specifically call out tricolored blackbird and include appropriate measures for this species.

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23. Revise the measures for burrowing owl to reference the CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFG 2012) guidelines as the protocol to use for preconstruction (take avoidance) surveys.
 24. Revise the measures for American badger to establish appropriate measures should this species be observed onsite, so consultation with CDFW would not be necessary.
 25. Revise the measures for San Joaquin kit fox to establish appropriate measures should this species be observed onsite, including preconstruction surveys following the *U.S. Fish and Wildlife Service San Joaquin Kit Fox Survey Protocol for the Northern Range* (USFWS 1999), and construction-free buffer distances so consultation with CDFW would not be necessary.
 26. Revise the report to include a discussion on potential impacts to mastiff bats and include appropriate avoidance and mitigation measures.
 27. Revise the report to include a discussion on potential impacts to ringtails and include appropriate avoidance and mitigation measures.

We appreciate you considering Live Oak Associates, Inc. to provide ecological services for you on this project. If you wish to discuss any of our findings, conclusions, or recommendations, please feel free to contact me at 408-281-5889 or Rick Hopkins at 408-281-5885.

Sincerely,



Katrina Krakow
Project Manager
Staff Ecologist