Draft
Environmental Impact Report

Bogle Wind Turbine Project

State Clearinghouse No.: 2015102072

Yolo County
Department of Community Services

Technical Assistance Provided by:
Aspen Environmental Group

March 2017

DRAFT

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List of Acronyms

ADT	Average daily traffic
BDCP	Bay Delta Conservation Plan
BGEPA	Bald and Golden Eagle Protection Act
CAP	Climate Action Plan
CASQA	California Stormwater Quality Association
CBC	California Building Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CGS	California Geological Survey
CMHWRA	Collinsville-Montezuma Hills Wind Resource Area
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon Monoxide
CRPR	California Rare Plant Rank
CVFPB	Central Valley Flood Protection Board
CWA	Clean Water Act
DOC	Department of Conservation
DTSC	Department of Toxic Substances Control
EIR	Environmental Impact Report
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FIRM	Flood Insurance Rate Map
GHG	Greenhouse gas
HCP	Habitat Conservation Plan
HSWA	Hazardous and Solid Waste Act
IBC	International Building Code
ICC	International Code Council
IPaC	Information for Planning and Conservation
IS/MND	Initial Study/Mitigated Negative Declaration
KOs	Key observation point
LOS	Level of service
LURMP	Land Use Resource Management Plan

MBTA	Migratory Bird Treaty Act
MLD	Most Likely Descendant
MMRP	Mitigation Monitoring and Reporting Program
MRZ	Mineral resource zone
NAHC	Native American Heritage Commission
NCCP	Natural Communities Conservation Plan
NCP	National Contingency Plan
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
NOP	Notice of Preparation
NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
NWIC	Northwest Information Center
PM10	Particulate matter (less than 10 microns in diameter)
PM2.5	Fine particulate matter (less than 2.5 microns in diameter)
PRC	Public Resources Code
PV	Photovoltaic
RCRA	Resource Conservation and Recovery Act.
REC	Renewable energy credit
ROG	Reactive Organic Gases
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SCADA	Supervisory Control and Data Acquisition
SEIR	Supplemental Environmental Impact Report
SR	State Route
SSC	Species of Special Concern
SWMP	Storm Water Management Program
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
UAIC	United Auburn Indian Community
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WEAP	Worker Environmental Awareness Program
YSAQMD	Yolo-Solano Air Quality Management District

Executive Summary

ES.1 Introduction

Bogle Vineyards (Bogle) is the 14th largest winery in the United States. In August 2011, Bogle opened a new wine production facility at 49762 Hamilton Road, west of Jefferson Boulevard (State Route 84), approximately 4.5 miles southwest of Clarksburg, California. Bogle proposes to construct and operate a single large wind turbine that would generate up to 2.3 megawatts (MW) of electricity. The electricity generated would power the Bogle wine production facility.

A Draft Initial Study/Mitigated Negative Declaration (IS/MND) that analyzed the environmental impacts of the proposed turbine pursuant to the California Environmental Quality Act (CEQA) was prepared by Yolo County (County) and released for public comment in September 2013. The County received comments from concerned landowners and environmental organizations. A Revised IS/MND that included additional and revised information was released in October 2013. The County Board of Supervisors unanimously approved the project in March 2014. A lawsuit was filed challenging the adequacy of the MND, and in July 2015 the Superior Court ruled in favor of the petitioners. The Superior Court ruled that there was substantial evidence to support a fair argument that the project may have a significant effect on biological resources, aesthetics, and noise. The County and Bogle declined to appeal the Court's judgment. This Environmental Impact Report (EIR) has been prepared in response to the Superior Court's ruling.

ES.2 Project Overview

The proposed project is construction and operation of a single wind turbine that would generate up to 2.3 MW of electricity, which would be used to power the Bogle wine production facility. Implementation of the proposed project requires issuance of a Major Use Permit as described in Yolo County Code Section Sec. 8-2.1103 (Small and Large Wind Energy Systems). The proposed design of the project is consistent with the County Code, with the exception of setback requirements (distance between the proposed turbine and the nearest parcel line). In March 2014, the County approved a Variance to reduce the setback distance from the adjacent agricultural parcels that are also owned by Bogle. Although the location of the turbine as approved in 2014 has not changed, the requested reductions in setback distances from the nearest property lines have been corrected as follows: from 400 to 116 feet from the west property line and from 400 to 25 feet from the south property line.[1]

Project Objectives

Bogle's objectives for the project are to:

- Contribute to Bogle's goal of reducing greenhouse gas emissions associated with wine production by 20 percent per case by 2020.
- Generate renewable energy onsite in a manner consistent with California's programs to foster greenhouse gas emissions reductions, electricity demand reductions, and growth in distributed energy resources (e.g., California's Self-Generation Incentive Program).
- Own and operate an energy resource that produces electricity that may be used towards compliance with California's Renewables Portfolio Standards Program and the Clean Energy and Pollution Reduction Act of 2015 (Senate Bill 350; De León, Chapter 547, Statutes of 2015).

[1] In March 2014, the County issued a Variance to allow reductions in setback requirements from the west property line from 400 feet to 200 feet, and from 400 feet to 50 feet from the south property line.

- Support Yolo County objectives and goals to expand capacity of and reliance on renewable energy resources (Yolo County, 2009a [e.g., Objective 9.6]; Yolo County, 2009b [e.g., Goal CC-4]).
- Reduce operating costs associated with electricity use at the Bogle wine production facility by generating renewable energy onsite.
- Meet the highest category of the Renewable Sources of Power criterion for the California Sustainable Winegrowing Alliance (CSWA, 2012), of which Bogle is a certified participant.
- Minimize impacts to agriculture and the loss of prime farmland from the development of renewable energy facilities.
- Support Yolo County goals to conserve and support the continued productivity and economic viability of agricultural land in Yolo County and the Clarksburg area (Yolo County, 2009c [e.g., Goals AG-1, AG-6]; Yolo County, 2015).

ES.3 Summary of Public Involvement

Scoping

The Notice of Preparation (NOP) of an EIR for the project was released on October 23, 2015, beginning the 30-day public scoping period, which ended on November 23, 2015. A scoping meeting was held in the evening on November 2, 2015, at the Clarksburg Public Library (52925 Netherlands Avenue) to answer questions and receive comments on the scope of the EIR. One person from the public attended the scoping meeting. Thirteen comment letters or emails were submitted by agencies, organizations, and the public. Scoping comments are summarized in Appendix A.

Agency Coordination and Native American Consultation

The County and its EIR preparation team are working closely with the California Department of Fish and Wildlife (CDFW) Bay Delta Region regarding impacts of the proposed project to Swainson's hawk and to ensure this EIR is adequate for CDFW's CEQA review to process Bogle's pending application for an incidental take permit.

In compliance with Assembly Bill 52, Yolo County sent letters to Native American individuals and groups inviting comments or concerns regarding potential impacts to cultural resources or areas of traditional cultural importance within the vicinity of the proposed project. A reply was received from the Yocha Dehe Wintun Nation, confirming that the proposed project area is within their aboriginal territory. Consultation with the Yocha Dehe Wintun Nation is ongoing.

ES.4 Areas of Controversy

Scoping comment letters or emails were submitted by agencies, organizations, and the public. Issues raised in EIR scoping comments were similar to the ones expressed by many of the same organizations and individuals that participated in the CEQA process for the IS/MND.

Aesthetics. Concerns regarding substantial visual changes to the landscape from installation of the proposed wind turbine.

Alternatives. Suggestions for alternatives to the proposed project including alternative methods of energy production and alternative locations for the wind turbine.

Biological Resources. Concerns regarding the proposed project's potential for turbine collision-related injury or fatality to birds and bats, including special-status species and cumulative effects of regional wind energy development.

Noise. Concerns about operational noise, including infrasound and low-frequency noise.

Plan Consistency. Concerns regarding the proposed project's consistency with resource agency guidelines and regional conservation planning efforts.

ES.5 Issues to Be Resolved

CEQA Guidelines Section 15123(b)(3) requires a discussion of issues to be resolved, including the choice among alternatives and whether or how to mitigate any significant effects. Issues to be resolved for this project include those stated above, whether to approve the project, consideration of the mitigation measures, and identification of appropriate conditions of project approval.

ES.6 Summary of Impacts

Significant and Unavoidable Impacts

The proposed project would not result in any significant and unavoidable impacts or cumulatively considerable impacts.

Impacts Found Less than Significant with Mitigation

Table ES-1 summarizes the impacts of the proposed project that would be reduced to less than significant with implementation of mitigation measures.

Table ES-1. Impacts Found Less than Significant With Mitigation

Impact	Mitigation Measures	
Impact BIO-1d: Operation of the project has the potential to have a substantial adverse effect, either directly or through habitat modifications, on any bat species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service	Mitigation Measure BIO-1 Mitigation Measure BIO-2	Increase cut-in speed Develop and implement an Operational Monitoring and Reporting Program
Impact CUL-1 – The project has the potential to cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5	Mitigation Measure CUL-1	Management of Unanticipated Discoveries of Historical Resources, Archaeological Resources, or Tribal Cultural Resources
Impact CUL-2 – The project has the potential to cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5	Mitigation Measure CUL-1	Management of Unanticipated Discoveries of Historical Resources, Archaeological Resources, or Tribal Cultural Resources
Impact CUL-3 – The project has the potential to disturb any human remains, including those interred outside of formal cemeteries	Mitigation Measure CUL-2	Treatment of Human Remains

Table ES-1. Impacts Found Less than Significant With Mitigation

Impact	Mitigation Measures	
Impact CUL-4 – The project has the potential to cause a substantial adverse change in the significance of a tribal cultural resource as defined in Section 21074, or a resource determined by a lead agency to be significant according to the historical register criteria in Public Resources Code section 5024.1 (c), and considering the significance of the resource to a California Native American tribe	Mitigation Measure CUL-1	Management of Unanticipated Discoveries of Historical Resources, Archaeological Resources, or Tribal Cultural Resources
	Mitigation Measure CUL-2	Treatment of Human Remains
Impact GEO-6 – The project has the potential to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature	Mitigation Measure GEO-1	Management of Unanticipated Paleontological Resources or Unique Geologic Features
Impact HAZ-1 – The project has the potential to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials	Mitigation Measure HAZ-1	Develop and Implement a Toxic Materials Control and Spill Prevention Plan
	Mitigation Measure HAZ-2	Develop and Implement a Spill Response Plan
Impact HAZ-2 – The project has the potential to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment	Mitigation Measure HAZ-1	Develop and Implement a Toxic Materials Control and Spill Prevention Plan
	Mitigation Measure HAZ-2	Develop and Implement a Spill Response Plan
Impact HYDRO-1 – The project has the potential to violate water quality standards or waste discharge requirements	Mitigation Measure HAZ-1	Develop and Implement a Toxic Materials Control and Spill Prevention Plan
	Mitigation Measure HAZ-2	Develop and Implement a Spill Response Plan
	Mitigation Measure HYDRO-1	Dewater Construction Site As Needed

Impacts Found Not to be Significant

The proposed project would result in no impacts or less-than-significant direct, indirect, and cumulative impacts to the following resources:

- Aesthetics
- Agriculture
- Air Quality
- Biological Resources (Impacts BIO-1a, 1b, 1c, 2 through 6)
- Geology and Soils (Impacts GEO-1 through 5)
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials (Impacts HAZ-3 through 8)
- Hydrology and Water Quality (Impacts HYDRO-2 through 10)
- Land Use and Planning
- Mineral Resources
- Noise and Vibration
- Population and Housing
- Public Services
- Recreation
- Transportation and Traffic
- Utilities and Service Systems
- Energy Conservation
- Growth Inducement

Impact Avoidance and Minimization Measures

The County recommends the following measures to further avoid and minimize less-than-significant impacts to biological resources.

- Assign a designated biologist
- Develop and implement a Worker Environmental Awareness Program
- Conduct pre-construction surveys for burrowing owl and implement impact avoidance and minimization measures
- Conduct pre-construction surveys for Swainson's hawk and implement impact avoidance and minimization measures
- Conduct pre-construction surveys for nesting birds and implement impact avoidance and minimization measures
- Compensate for loss of foraging habitat
- Shut down turbine operation
- Consult with CDFW

ES.7 Summary of Alternatives

No Project Alternative

Under the no project alternative, Bogle would not construct and operate the proposed wind turbine that would power the Bogle wine production facility. The Bogle wine production facility would continue operating as it currently does without an increase in renewable energy. If the no project alternative was selected, Bogle would consider other methods of reducing its greenhouse gas (GHG) emissions associated with wine production. To this end, Bogle could continue to make improvements in energy efficiency at the wine production facility.

Under the no project alternative, effects to resources would be negligible. Impacts of the proposed project would not occur.

Ground-mounted Solar Photovoltaic Alternative

A ground-mounted solar photovoltaic (PV) alternative would consist of installing solar PV panels instead of the proposed wind turbine. Implementation of this alternative would require approximately 20 acres of land for the solar panels, inverter, and ancillary infrastructure. As there is insufficient acreage available on the proposed property (APN 043-310-016), this would require use of the adjacent 115-acre Bogle-owned property. The solar PV alternative would be located south of the water treatment ponds to consolidate development and to be near the electrical interconnection site. The PV panels would be east of (and outside) the Swainson's hawk conservation easement.

The ground-mounted solar PV alternative would result in the permanent conversion of 20 acres of Prime Farmland and the permanent loss of 20 acres of foraging habitat for raptors and other birds, including Swainson's hawk, and bats. These impacts, while considered mitigable, would be greater than those of the proposed project, which would have a permanent footprint of 0.07 acres. Construction of the ground-mounted solar PV alternative would require more ground disturbance than the proposed project, thereby increasing potential for soil erosion and the discovery of unanticipated cultural or paleontolog-

ical resources. Similar to the proposed project, these impacts would be less than significant with implementation of mitigation measures. In comparison to the proposed project, operation of the ground-mounted solar PV alternative would have less visual impact due to its low profile. It would be quieter during operation (inverter hum only), thereby eliminating any low-level noise that would result during operation of the proposed turbine. This alternative poses a negligible collision risk to birds and bats; operational impacts to biological resources would be less than those of the proposed project. Impacts to other resources from construction and operation of the ground-mounted solar PV alternative would be similar to the proposed project.

No Operation Between Sunset and Sunrise Alternative

This alternative would not allow turbine operation between sunset and sunrise. It would consist of the same turbine specified for the proposed project, but the hours the turbine would be allowed to operate would be limited to between sunrise and sunset. At sunset, the wind turbine would stop operating and cease power production until sunrise. Because the turbine would be the same as for the proposed project, all the construction and operation and maintenance would be the same as for the proposed project; only the operating hours would change. This alternative meets project objectives but would contribute less to reducing greenhouse gas emissions, supporting Yolo County and State renewable energy goals, and reducing operating costs associated with electricity use. The economic feasibility of this alternative is uncertain.

The alternative would have the same construction impacts as the proposed project because construction would be the same. Daytime operation under this alternative would also be the same as the proposed project and would result in the same operational impacts during the day. By not operating at night, it would have reduced impacts to special-status bats because bat activity and associated risk of collision with the turbine is highest at night. Additionally, this alternative would also eliminate any noise at night because the turbine would not operate.

Alternatives Considered but Eliminated

The following alternatives were considered but eliminated from detailed analysis in the EIR because they: (1) did not meet most of the project objectives, and/or (2) did not reduce significant effects of the proposed project, and/or (3) were not potentially feasible in terms of possible legal, regulatory, or technical constraints. The primary reason for elimination is presented below with the name of the alternative. Refer to Chapter 5 for additional information on the rationale for elimination of each alternative.

- Wind Turbine at Another Location near the Bogle Wine Production Facility (did not reduce significant effects of the proposed project)
- Wind Turbine on a Different Bogle-owned Property (did not meet most of the project objectives)
- Rooftop Solar PV Alternative (potentially not technically and economically feasible)
- Floating Solar PV Panels on the Wastewater Treatment Ponds (potentially not technically feasible)

ES.8 EIR Conclusions: Environmentally Superior Alternative

Because the no project alternative would result in negligible or no impacts to all resources, it is the environmentally superior alternative. However, CEQA Guidelines Section 15126.6(e)(2) requires that if the environmentally superior alternative is the no project alternative, an EIR shall identify the environmentally superior alternative among the other alternatives.

In this case, determining the environmentally superior alternative requires the County to balance environmental impacts with the project objectives. The environmentally superior alternative is the alternative that the County believes would best fulfill its mission and responsibilities, giving consideration to economic, environmental, technical and other factors. The proposed project and the no operation between sunset and sunrise alternative would result in greater operational impacts to biological resources from bird and bat collision-related injury and mortality than the solar PV alternative. However, they would result in less conversion of Prime Farmland, reduced loss of foraging habitat, and fewer impacts related to ground disturbance than the ground-mounted solar PV alternative. The no operation between sunset and sunrise alternative would have fewer impacts than the proposed project; specifically, this alternative would reduce impacts to bats and nocturnal migratory birds. Therefore, the no operation between sunset and sunrise alternative is the environmentally superior alternative.

1. Introduction

1.1 Background and Project Overview

Bogle Vineyards (Bogle) is the 14th largest winery in the United States. In August 2011, Bogle opened a new wine production facility at 49762 Hamilton Road, west of Jefferson Boulevard (State Route 84), approximately 4.5 miles southwest of Clarksburg, California. Bogle proposes to construct and operate a single large wind turbine that would generate up to 2.3 MW of electricity. The electricity generated would power the Bogle wine production facility. Bogle proposes to construct the wind turbine at the southwest corner of a 60-acre parcel adjacent to the wine production facility.

A Draft IS/MND that analyzed the environmental impacts of the proposed turbine pursuant to CEQA was prepared by the County and released for public comment in September 2013. The County received comments from concerned landowners and environmental organizations. A Revised IS/MND that included additional and revised information was released in October 2013. The County Board of Supervisors unanimously approved the project in March 2014. A lawsuit was filed challenging the adequacy of certain aspects of the MND, and in July 2015 the Superior Court ruled in favor of the petitioners. This EIR has been prepared in response to the Superior Court's ruling.

1.2 Project Objectives

Bogle's objectives for the project are to:

- Contribute to Bogle's goal of reducing greenhouse gas emissions associated with wine production by 20 percent per case by 2020.
- Generate renewable energy onsite in a manner consistent with California's programs to foster greenhouse gas emissions reductions, electricity demand reductions, and growth in distributed energy resources (e.g., California's Self-Generation Incentive Program).
- Own and operate an energy resource that produces electricity that may be used towards compliance with California's Renewables Portfolio Standards Program and the Clean Energy and Pollution Reduction Act of 2015 (Senate Bill 350; De León, Chapter 547, Statutes of 2015).
- Support Yolo County objectives and goals to expand capacity of and reliance on renewable energy resources (Yolo County, 2009a [e.g., Objective 9.6]; Yolo County, 2009b [e.g., Goal CC-4]).
- Reduce operating costs associated with electricity use at the Bogle wine production facility by generating renewable energy onsite.
- Meet the highest category of the Renewable Sources of Power criterion for the California Sustainable Winegrowing Alliance (CSWA, 2012), of which Bogle is a certified participant.
- Minimize impacts to agriculture and the loss of prime farmland from the development of renewable energy facilities.
- Support Yolo County goals to conserve and support the continued productivity and economic viability of agricultural land in Yolo County and the Clarksburg area (Yolo County, 2009c [e.g., Goals AG-1, AG-6]; Yolo County, 2015).

1.3 Public Participation

1.3.1 Scoping

The NOP of an EIR for the project was released on October 23, 2015, beginning the 30-day public scoping period, which ended on November 23, 2015. A scoping meeting was held in the evening on November 2, 2015, at the Clarksburg Public Library (52925 Netherlands Avenue) to answer questions and receive comments on the scope of the EIR. One person from the public attended the scoping meeting. Thirteen comment letters or emails were submitted by agencies, organizations, and the public. Scoping comments are summarized in Appendix A.

1.4 Agency Use of the EIR

In order for Bogle to construct the wind turbine, the County must issue a Major Use Permit and a Variance, which are discretionary actions. This EIR complies with CEQA's requirement that the County first consider the impacts of the proposed project.

After consideration of comments submitted on this Draft EIR, a Final EIR will be prepared, including responses to comments on the Draft EIR. The Yolo County Planning Commission will decide whether to certify the Final EIR as being compliant with CEQA requirements. Upon review and consideration of the Final EIR, the Planning Commission will determine whether to approve or reject the proposed project (i.e., issue a Major Use Permit and a Variance).

Other agencies may use this EIR for CEQA review of permit issuance. These agencies and the permits and authorizations anticipated to be required to implement the proposed project are listed in Table 1-1.

Table 1-1. Summary of Permits and Authorizations

Agency	Permit/Authorization
California Department of Fish and Wildlife	Incidental Take Permit (for State-listed species)
Regional Water Quality Control Board	Construction Stormwater General Permit
Reclamation District 999	Authorization for installation of a temporary bridge

1.5 Document Organization

This EIR is organized as follows:

Chapter 1 (Introduction).

- Background and overview of the project, a list of the project objectives, information on the public participation process, and agency use of the EIR.

Chapter 2 (Project Description).

- Detailed description of the proposed project, including construction, operation, and decommissioning.

Chapter 3 (Environmental Analysis).

- Analysis of the environmental effects of the proposed project. Each section (e.g., Aesthetics, Noise) summarizes the environmental and regulatory setting, evaluates potential impacts resulting from implementation of the proposed project, and recommends feasible mitigation measures for significant impacts.

Chapter 4 (Other CEQA Considerations).

- Discussion of growth-inducing effects, energy conservation, and significant irreversible changes and irretrievable commitments of resources attributable to the proposed project.

Chapter 5 (Alternatives).

- Description of the alternatives evaluation process, description of the alternatives retained for analysis, impact analysis for the retained alternatives, and description of alternatives considered but eliminated from detailed analysis and the rationale for elimination.

Chapter 6 (Mitigation Monitoring and Reporting Program).

- List of the mitigation measures recommended in the EIR and the location, monitoring/reporting action, effectiveness criteria, responsible party, and timing of their implementation.

Chapter 7 (EIR Preparation).

- List of the preparers of the EIR and the agencies, organizations, and persons consulted during its preparation.

Chapter 8 (References).

Appendices:

- Appendix A – Scoping Comment Summary
- Appendix B – Additional Visual Simulations
- Appendix C – Noise and Vibration Calculations
- Appendix D – Justification for Using Bird and Bat Fatalities per Megawatt
- Appendix E – Bogle Vineyards Processing Facility Wind Turbine Application for Incidental Take of Endangered Species

2. Project Description

2.1 Introduction

The proposed project is construction and operation of a single wind turbine that would generate up to 2.3 megawatts (MW) of electricity, which would be used to power the Bogle wine production facility. Implementation of the proposed project requires issuance of a Major Use Permit as described in Yolo County Code Section Sec. 8-2.1103 (Small and Large Wind Energy Systems). The proposed design of the project is consistent with the County Code with the exception of setback requirements (distance between the proposed turbine and the nearest parcel line). In March 2014, the County approved a Variance to reduce the setback distance from the adjacent agricultural parcels that are also owned by Bogle. Although the location of the turbine as approved in 2014 has not changed, the requested reductions in setback distances from the nearest property lines have been corrected as follows: from 400 to 116 feet from the west property line and from 400 to 25 feet from the south property line.[1] In March 2014, the County also issued a Flood Hazard Development Permit to allow the project to be located within a 100-year flood zone.

2.2 Project Location

The proposed project site is at the Bogle wine production facility (49762 Hamilton Road), which is located in a rural portion of unincorporated Yolo County approximately 4.5 miles southwest of Clarksburg in California. The project would be constructed near the southwest corner of a 60-acre property (APN 043-310-016) that includes the wine production facility and is located north of Hamilton Road, west of Jefferson Boulevard (State Route 84), east of Alameda Avenue, and south of Central Avenue (refer to Figure 2-1 at the end of this section). The parcel is zoned Agricultural Intensive (A-I) and under a Williamson Act contract. This parcel is one of three adjacent parcels owned by Bogle.

Immediately west of the proposed turbine site and its 60-acre parcel is an adjacent 115-acre parcel, 80 acres of which are under a Swainson's hawk conservation easement, currently planted in alfalfa. A third 80-acre parcel of land owned by Bogle wraps around the winery facility and is planted in alfalfa and wine grapes. Northwest of the wine production facility and immediately to the north of the proposed turbine are the wastewater treatment facilities serving the wine production facility. The proposed turbine would be located at the eastern edge of the agricultural field and adjacent to the wastewater treatment ponds, within a fenced 3,000-square-foot graveled area.

There are 18 rural residences within one mile of the proposed turbine. Three homes are along Hamilton Road, eight homes are on Jefferson Boulevard, and five homes are on Central Avenue. The four nearest homes are located along Hamilton Road approximately 1,850 feet (0.35 miles) and 2,700 feet (0.5 miles) south of the proposed turbine, and along Jefferson Boulevard approximately 3,005 feet (0.6 miles) to the east. Six additional homes are located along Jefferson Boulevard ranging between 3,500 feet (0.7 miles) and 5,300 feet (1 mile) east of the turbine. Five homes are located north of the proposed turbine on Central Avenue, approximately 3,700 to 4,500 feet (0.7 to 0.8 miles) away. There are an additional 22 residences located within 1 to 2 miles of the proposed turbine.

[1] In March 2014, the County issued a Variance to allow reductions in setback requirements from the west property line from 400 feet to 200 feet, and from 400 feet to 50 feet from the south property line.

2.3 Project Components

The turbine would be a utility-scale General Electric 2.3mw-116-80mHH model. As shown in the photograph of a utility-scale General Electric 2.3mw-116-80mHH turbine in Figure 2-2 and the visual simulations of the proposed project presented in Section 3-3, the turbine would be a neutral white color and with a non-reflective finish. A wind turbine is composed of a tower (the supporting structure), nacelle (housing the main mechanical components of the turbine), hub (attaching the blades to the rotor shaft), blades/rotor, controller, transformer, braking system, safety lighting, and lightning protection system. Safety lighting meeting Federal Aviation Administration (FAA) standards would consist of a blinking red beacon light installed at the top of the tower.

The tower of the turbine would be approximately 263 feet (80 meters) in height, with the rotor blade extending vertically to a height of 453 feet (138 meters) when it is in the twelve o'clock position. The turbine would have a three-bladed rotor. The diameter of the circle swept by the blades would be approximately 380 feet (116 meters), resulting in a total rotor swept area of 113,710 square feet (2.6 acres). When in operation, the turbine blades would rotate at a rate of 5 to 15 rotations per minute, or one full rotation every 4 to 12 seconds.

The turbine would be supported within an approximately 800 square-foot concrete foundation within a 55-foot by 56-foot permanently fenced area. A temporary access road would be installed to facilitate delivery and construction of the turbine. This would result in temporary disturbance to 3.14 acres of the agricultural field that encompasses the proposed wind turbine site. A temporary bridge would be installed across the irrigation canal and would remain in place for approximately 4 weeks. Refer to Figure 2-3 at the end of this section for the location of these project components.

There would be no above-ground electrical lines. The electrical and communication conduits from the turbine would be installed underground to a PG&E distribution switch located at the wine production facility, east of the proposed turbine. As shown in Figure 2-3, trenching would occur mostly within previously disturbed, graveled areas of the wine production facility or at the edge of the adjacent agricultural field. Installation of the underground electrical and communication conduits would require crossing the irrigation canal to interconnect at the wine production facility; boring would be used to avoid affecting the canal.

2.4 Construction

Construction of the wind turbine would occur in two phases: site preparation and turbine installation. The site preparation phase would include excavation of up to approximately 30 feet from the surface to construct a concrete foundation approximately 15 feet in diameter. The foundation installation and electrical underground work would use a concrete pump, concrete trucks, and heavy equipment such as a large truss-boom crane, smaller hydraulic crane, excavator, backhoe, forklift, and possibly a portable generator. Electrical equipment, underground conductors, and transformers would also be installed adjacent to the foundation area at this time. The first phase of construction would occur over approximately four weeks followed by at least 30 days of no activity to allow sufficient time for the foundation's concrete to cure.

The second phase of construction would include delivery and assembly of the tower, rotor, nacelle, and transformer. The turbine components would be delivered to the site via Jefferson Road and Hamilton Roads. Each piece would be assembled on site with the use of cranes. The energy conditioning unit would be placed on the foundation and bolted down. The tower base section would be set on the foundation bolts and grout laid around the bolts. Over the following days the balance of the turbine would be erected. The upper tower section would be lifted into place and bolted to the base section through the welded

interior flange on the ends of the tower sections. Next, the nacelle would be bolted to the top of the upper tower, and finally the blades would be installed. Then, associated electrical work would be performed to connect the wind turbine generator to the transformer and transmission line. This second phase of construction would take approximately four weeks.

The two phases of construction may be separated by up to three months or more due to the variability in delivery schedule of the wind turbine equipment. During both phases, equipment staging and laydown areas would be within currently disturbed areas associated with the wine production facility.

Construction activities would employ approximately 35 people and will generate approximately 90 total truck trips over the entire eight- to twelve-week construction period. Generally, underground electrical and electrical panel installation takes four workers approximately three weeks, electrical testing takes two workers approximately one week, turbine erection takes ten workers two days and electrical completion requires three workers for approximately three weeks. Completion of all necessary inspections, reports and approvals requires four workers two to three weeks, and commissioning requires five workers for about two days.

2.5 Operation and Maintenance

The wind turbine would operate on an automatic basis whenever sufficient wind is present at a maximum of 24 hours per day, seven days per week. The maximum rotational speed would be 15.7 rotations per minute (rpm) operating in wind speeds of 40 meters per second (m/s) with a cut-in speed of 3.0 meters per second (m/s) (6.7 mph). Based on a turbine siting analysis of prevailing winds and wind patterns in the region, the wind in the Clarksburg area typically averages approximately 14 mph. This means the blades would usually be turning at a relatively slow pace of 8.7 rpm at this wind speed. However, on an annual basis, the turbines would not be spinning approximately 24 percent of the time due to low wind speeds. The system is expected to have an operational lifespan of at least 20 years and may be operational for more than 30 years.

Operation of the turbine would be controlled by a Supervisory Control and Data Acquisition (SCADA) system located inside the base of the tower. The SCADA system would perform self-diagnostic tests allowing a remote operator to ensure that the turbine is functioning correctly. It would monitor wind speed and direction and constantly adjust the direction of the nacelle and the blade pitch angle in order to maximize power production and safety. The minimum wind speed at which the wind turbine would produce power would be 6.7 mph. At wind velocities above 71 mph for a duration of 10 minutes, the wind turbine would automatically shut down and cease power production. This is an automatic safety mechanism that prevents damage to the wind turbine that could result from operating at wind speeds that exceed the turbine design specifications.

Routine maintenance activities would include inspections of wind turbine components and fasteners, oil changes, and gearbox lubrication. Maintenance of the turbine during operation would generate approximately two truck trips per year.

2.6 Decommissioning

The proposed turbine is anticipated to have a 30-year lifetime after which cost-effective operation may no longer be feasible. After 30 years, the site may be decommissioned and the facilities and equipment would be removed. Materials and fluids would be transported and recycled or disposed of in accordance with all State and federal environmental regulations.

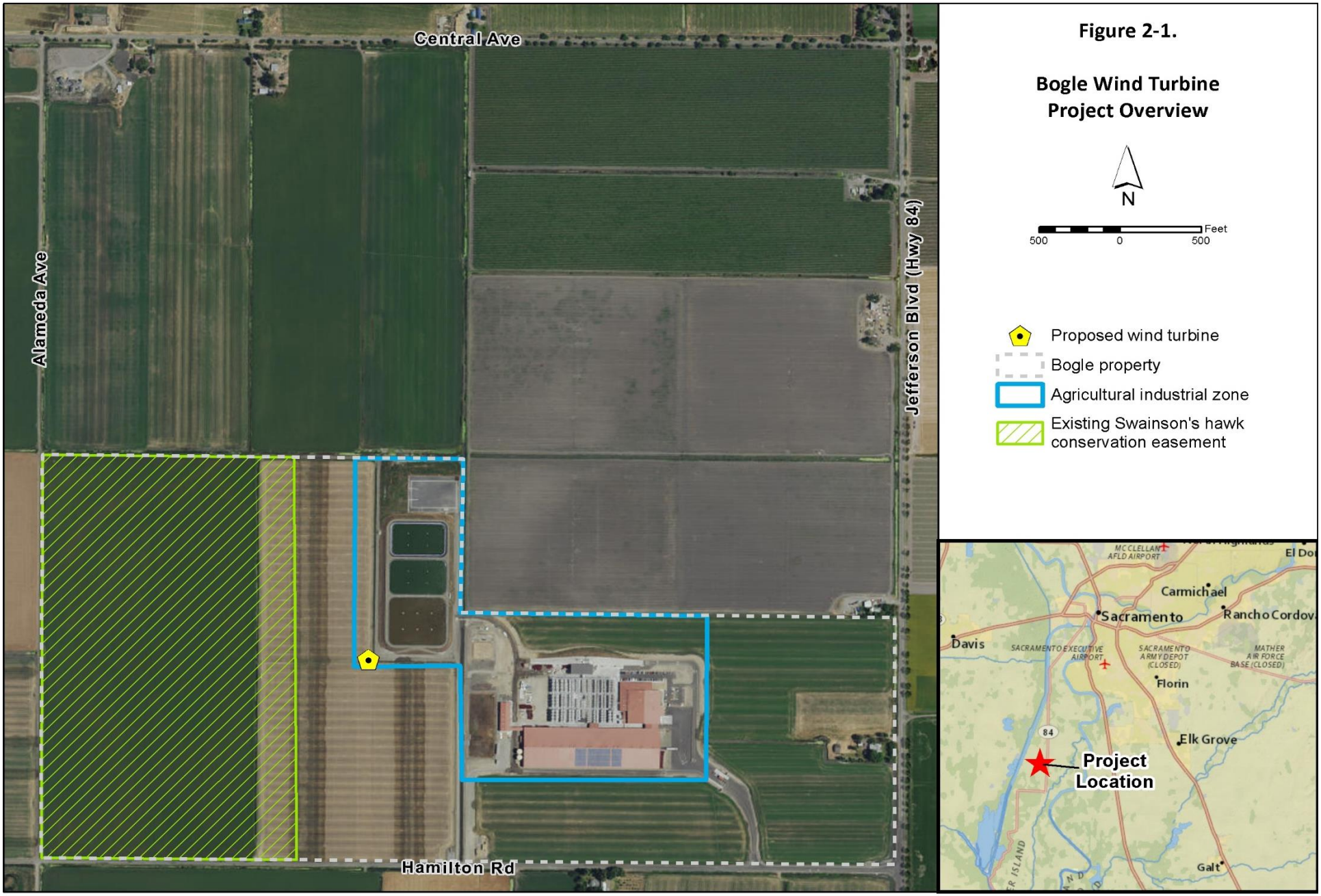
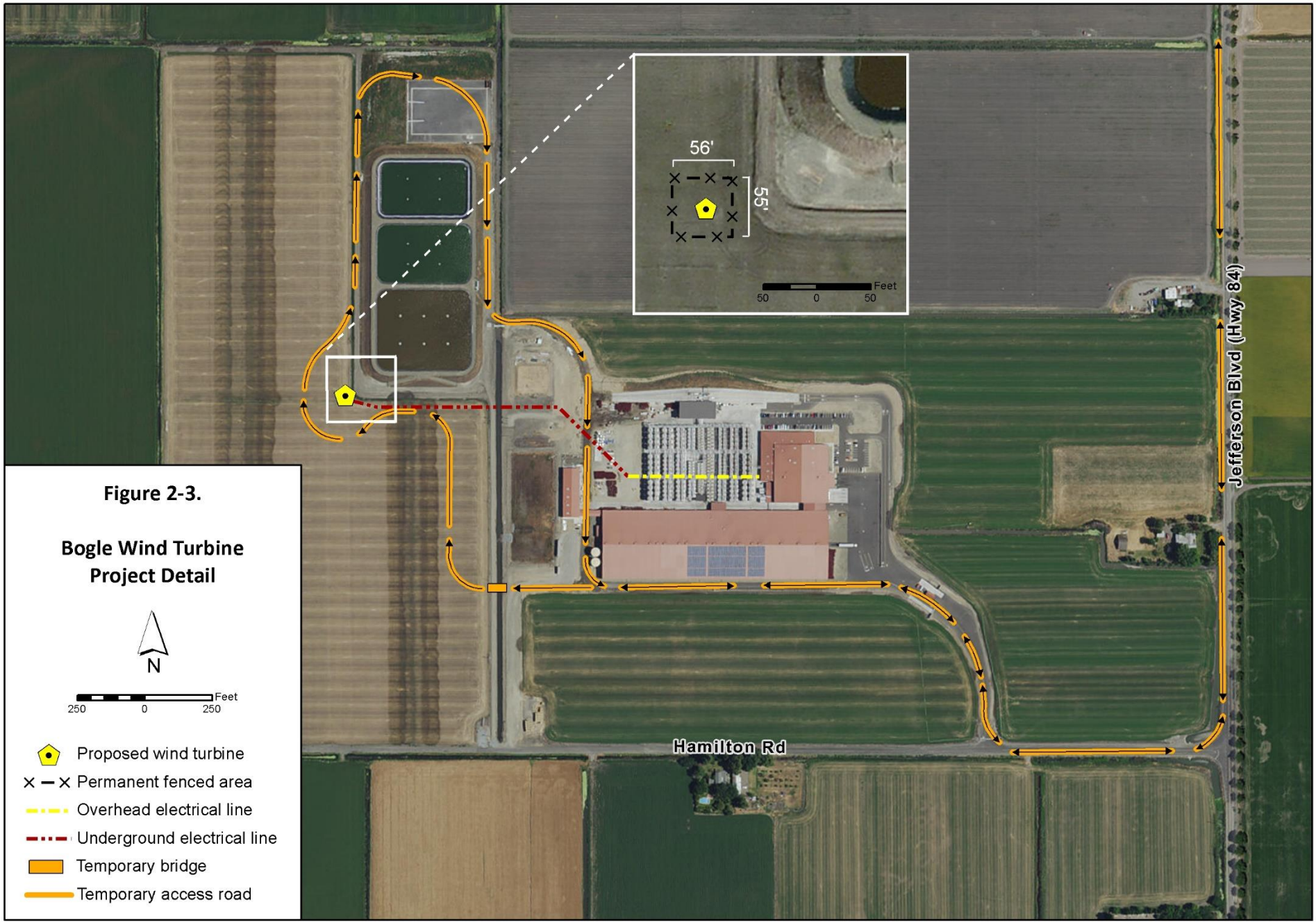

Central Ave
Alameda Ave
Jefferson Blvd (Hwy 84)
Hamilton Rd
Figure 2-1.
Bogle Wind Turbine
Project Overview
N
Feet
500
0
500
Proposed wind turbine
Bogle property
Agricultural industrial zone
Existing Swainson's hawk
conservation easement
MC CLELLAN AFLD AIRPORT
Carmichael
Sacramento
Rancho Cordov
Davis
SACRAMENTO EXECUTIVE AIRPORT
SACRAMENTO ARMY DEPOT (CLOSED)
MATHER AIR FORCE BASE (CLOSED)
Florin
84
Elk Grove
Project
Location
Galt

Figure 2-2
Photograph of Proposed Wind Turbine


56'
55'
Feet
50
0
50
Jefferson Blvd (Hwy 84)
Hamilton Rd
Figure 2-3.
Bogle Wind Turbine Project Detail
N
Feet
250
0
250
Proposed wind turbine
Permanent fenced area
Overhead electrical line
Underground electrical line
Temporary bridge
Temporary access road

3. Environmental Analysis

3.1 Approach to Environmental Analysis

Chapter 3 presents the analysis of potential direct, indirect and cumulative environmental impacts of the proposed project. Alternatives are addressed in Chapter 5.

For 10 environmental resource areas, this EIR has determined that impacts of the proposed project would not be significant. Section 3.2 provides a summary and explanation of the conclusions for each of these resource areas (as allowable under CEQA Guidelines Section 15128).

The detailed analyses of impacts related to the remainder of the environmental resource areas (Aesthetics, Biological Resources, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, and Noise) are presented in Sections 3.3 through 3.9. Cumulative impacts to these resource areas are presented in Section 3.10. Impacts related to Aesthetics and Noise have also been determined to be less than significant; however, these resource areas are described in more detail and not summarized in Section 3.2 in response to public concerns raised during public review of the 2014 IS/MND.

3.2 Resource Areas with Impacts Found Not to be Significant

CEQA requires that an EIR address potentially significant environmental effects; this analysis is included in Sections 3.3 through 3.9 of this EIR. CEQA Guidelines Section 15128 also requires that an EIR briefly explain the reasons why certain impacts associated with a proposed project have been determined not to be significant, and therefore not discussed in detail in the EIR. This section presents this required rationale.

The proposed project would result in no impacts or less-than-significant impacts to the following resources:

- Agriculture
- Air Quality
- Greenhouse Gas Emissions
- Land Use and Planning
- Mineral Resources
- Population and Housing
- Public Services
- Recreation
- Transportation and Traffic
- Utilities and Service Systems

Summary descriptions of each of these resources and an explanation of why the proposed project would not result in significant impacts are presented in the following sections. Significance criteria are derived from CEQA Guidelines Appendix G (CEQA Checklist).

3.2.1 Agriculture

CEQA Checklist Topics

The proposed project would not result in potentially significant effects to agricultural resources. Construction and operation of the proposed project would not:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract;
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), or timberland (as defined by Public Resources Code Section 4526);
- Result in the loss of forest land or conversion of forest land to non-forest use; or
- Involve other changes in the existing environment that, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.

Explanation

Designated Farmland. The California Department of Conservation (DOC) established a soil classification system that combines technical soil ratings and current land use to identify categories of Important Farmland. Currently, 98 percent of the State's private lands have been surveyed by the DOC to determine the status of agricultural resources (DOC, 2015a). Construction of the proposed project would include subsurface footing, a concrete pad, and an underground electrical line, all of which would be located on Prime Farmland as designated by the DOC (DOC, 2014). The project would permanently convert approximately 0.07 acres (3,000 square feet) of Prime Farmland to non-agricultural use.

According to the County Code Section 8-2.217, Part (e)(7), the County may issue a Use Permit for projects on prime farmland if they cannot be reasonably located on lands containing non-prime farmland (Yolo County, 2015). Given that the purpose of the proposed project is to provide electricity to the adjacent

wine processing facility, the project must be located within proximity to the facility. Designated Prime Farmland surrounds the facility and the proposed project site (DOC, 2014). As such, the proposed project could not be placed on non-prime lands while still being close enough to the production facility.

In order to be issued a County Use Permit, the proposed project must comply with the County's Agricultural Conservation and Mitigation Program that requires dedication of 3 acres of prime farmland for each acre of prime agricultural land converted to a non-agricultural use (Yolo County, 2015). For conversions of agricultural land totaling 20 acres or less, payment of a fee in-lieu of land and/or easement acquisition may be permitted (Yolo County, 2015). The proposed project would permanently convert 0.07 acres of agricultural land. Bogle would pay a fee in-lieu of land and/or easement acquisition to ensure compliance with the Agricultural Conservation and Mitigation Program. Consequently, the proposed project would comply with all required policies that mitigate the permanent loss of Farmland. Because Bogle would comply with the County's Agricultural Conservation and Mitigation Program, impacts to Farmland would be less than significant and the project's contribution to loss off Farmland in Yolo County would not be cumulatively considerable.

Williamson Act. The Williamson Act (i.e., California Land Conservation Act of 1965) enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. The 60-acre wine production facility parcel and the surrounding agricultural parcels are classified by the DOC as Williamson Act land (DOC, 2012). The property is subject to Land Use Agreement #72-281 in Agricultural Preserve No. 83.

Structures larger than 2,500 square feet may not be constructed on a Williamson Act parcel, unless the type of structure is permissible under the Williamson Act, the terms of the contract, or local rules or ordinances (DOC, 2015b). Any development on property subject to a Williamson Act contract must be related to the primary use of the land for agricultural purposes (DOC, 2015b). Compatible uses on Williamson Act lands are defined in California Government Code Section 51201(e) as "any use determined by the county or city administering the preserve pursuant to Section 51231, 51238, or 51238.1, or by this act to be compatible with the agricultural, recreational, or open-space use of land within the preserve and subject to the contract."

Yolo County administers Williamson Act contracts within its jurisdiction. According to the County Code Section 8-2.1103, Part (c)(2v), large wind energy systems may not be constructed on Williamson Act lands if they are specifically prohibited by the terms of the Williamson Act contract (Yolo County, 2015). The terms of the Williamson Act contract at the proposed project site do not contain a prohibition specific to wind energy systems. As such, the project would not conflict with the terms of the Williamson Act contract at the proposed site.

The project site is zoned Agricultural Industrial (A-I), which allows wind energy facilities as a permitted use in accordance with Section 8-2.304 of the County Code (Yolo County, 2015). In order to comply with Section 8-2.304, the project design will satisfy the development standards for large wind energy systems as established in the County Code Section 8-2.1103, Part (i) (Yolo County, 2015). Therefore, the proposed project would not conflict with existing zoning for agricultural use.

Forest Land. The project site is located in an agricultural region of Yolo County on the property of an existing wine production facility. No forest land is located within the vicinity of the project. The proposed project would not result in the loss or conversion of forest land to non-forest use or contribute to a cumulatively considerable impact.

3.2.2 Air Quality

CEQA Checklist Topics

The proposed project would not result in potentially significant effects to air quality. Construction and operation of the proposed project would not:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

Explanation

The project site is within the Sacramento Valley Air Basin. The Yolo-Solano Air Quality Management District (YSAQMD) regulates air quality conditions within Yolo County. Presently, Yolo County is classified as a non-attainment area for several air pollutants, including ozone (O3) for both federal and state standards and particulate matter 2.5 microns or less in diameter (PM2.5) for State standards (YSAQMD, 2015).

The YSAQMD sets threshold levels for use in evaluating the significance of criteria air pollutant emissions from project-related mobile and area sources in the Handbook for Assessing and Mitigating Air Quality Impacts (YSAQMD, 2007). The Handbook identifies the following quantitative significance thresholds for use in evaluating the significance of criteria air pollutant emissions from project-related sources:

- Reactive Organic Gases (ROG): 10 tons per year (approx. 55 pounds per day)
- Oxides of Nitrogen (NOx): 10 tons per year (approx. 55 pounds per day)
- Particulate Matter (PM10): 80 pounds per day
- Carbon Monoxide (CO): violation of State ambient air quality standard

The YSAQMD has established rules to reduce air quality impacts of construction activities, including tailpipe emissions and fugitive dust. The rules pertinent to the proposed project are summarized below and considered part of the project's regulatory setting:

- YSAQMD Rule 2-1 (Control of Emissions):
  - Maximize the use of diesel construction equipment that meet CARB's 1996 or newer certification standard for off-road heavy-duty diesel engines;
  - Use emission control devices at least as effective as the original factory-installed equipment;
  - Substitute gasoline-powered for diesel-powered equipment when feasible;
  - Ensure that all construction equipment is properly tuned and maintained prior to and for the duration of onsite operation; and
  - Use Tier 2 engines in all construction equipment, if available.

- YSAQMD Rule 2-1 (Nuisance) and Rule 2-11 (Particulate Matter Concentrations):
  - Water all active construction sites a least twice daily in dry conditions, with the frequency of watering based on the type of operation, soil, and wind exposure;
  - Effectively stabilize dust emissions by using water or other approved substances on all disturbed areas, including storage piles, which are not being actively utilized for construction purposes;
  - Prohibit all grading activities during periods of high wind (over 20 miles per hour).
  - Limit onsite vehicle speeds on unpaved roads to 15 miles per hour;
  - Cover all trucks hauling dirt, sand, or loose materials;
  - Cover inactive storage piles;
  - Post a publicly visible sign with the telephone number and person to contact regarding dust complaints; and
  - Limit the area under construction at any one time.

As discussed in Section 2.4, construction of the wind turbine would occur in two phases totaling eight to twelve weeks. Emissions would occur during this period from construction equipment and vehicle trips. The first phase is site preparation and foundation construction. The foundation and electrical underground work would use a concrete pump, concrete trucks, and heavy equipment. The second phase of construction involves the delivery and assembly of the tower and rotor. Construction activities would employ approximately 35 employees and generate approximately 90 total truck trips over the entire construction period.

Bogle would comply with all standards and practices required by the YSAQMD to avoid and minimize potential air quality impacts from tailpipe emissions from diesel-powered construction equipment and from fugitive dust. Daily emissions would be negligible due to the limited duration of construction (eight to twelve weeks) and small footprint of the project (temporary disturbance area of 3.14 acres, permanent disturbance area of 0.07 acres). By adhering to YSAQMD requirements, short-term emissions during construction would not exceed the thresholds for project-related air pollutant emissions as set forth in the 2007 YSAQMD Handbook or further impact criteria pollutants for which Yolo County is in non-attainment. Sensitive receptors would not be exposed to significant amounts of construction dust or emissions.

Long-term operation of the turbine would result in a net emissions benefit, as operation would reduce emissions from conventional electrical generation sources that use fossil fuels. The only permanent vehicle traffic generated by the project would be two vehicle trips per year for routine maintenance of the turbine; these would result in negligible annual emissions. Therefore, project operation would not exceed thresholds established by the 2007 YSAQMD Handbook and would not be cumulatively considerable for any non-attainment pollutant. Furthermore, implementation of the project would not conflict with or obstruct implementation of the Yolo-Solano Air Quality Management District Air Quality Attainment Plan – Triennial Assessment and Plan Update (YSAQMD, 2013) or the goals and objectives of the Yolo County 2030 General Plan Conservation and Open Space Element related to air quality (Yolo County, 2009). Therefore, the proposed project would have less than significant impacts to air quality and no conflicts with air quality plans.

3.2.3 Greenhouse Gas Emissions

CEQA Checklist Topics

The proposed project would not result in potentially significant effects from greenhouse gas (GHG) emissions. Construction and operation of the proposed project would not:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment;
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs; or
- Be affected by climate change impacts, e.g., sea level rise, increased wildfire dangers, diminishing snow pack and water supplies, etc.

Explanation

Yolo County has adopted General Plan policies and a Climate Action Plan (CAP) which address greenhouse gas related issues and goals (Yolo County, 2009 and 2011). In order to demonstrate project-level compliance with CEQA relevant to GHG emissions and climate change impacts, applications for discretionary projects must demonstrate consistency with the General Plan and CAP. The adopted 2030 Yolo Countywide General Plan contains the following relevant actions to implement the CAP:

- Action CO-A117: Pursuant to the adopted CAP, the County will take all feasible measures to reduce its total carbon dioxide equivalent (CO2e) emissions within the unincorporated area (excluding those of other jurisdictions, e.g., U.C. Davis, Yocha Dehe Wintun Nation, DQ University, school districts, special districts, reclamation districts, etc.), from 648,252 metric tons (MT) of CO2e in 2008 to 613,651 MT of CO2e by 2020. In addition, the County shall strive to further reduce total CO2e emissions within the unincorporated area to 447,965 MT by 2030. These reductions shall be achieved through the measures and actions provided for in the adopted CAP, including those measures that address the need to adapt to climate change.
- Action CO-A118: Pursuant to and based on the CAP, the following thresholds shall be used for determining the significance of GHG emissions and climate change impacts associated with future projects:
  1) Impacts associated with GHG emissions from projects that are consistent with the General Plan and otherwise exempt from CEQA are determined to be less than significant and further CEQA analysis for this area of impact is not required.
  2) Impacts associated with GHG emissions from projects that are consistent with the General Plan, fall within the assumptions of the General Plan EIR, consistent with the CAP, and not exempt from CEQA are determined to be less than significant or mitigated to a less-than-significant level, and further CEQA analysis for this area of impact is generally not required.

     To be determined consistent with the CAP, a project must demonstrate that it is included in the growth projections upon which the CAP modeling is based, and that it incorporates applicable strategies and measures from the CAP as binding and enforceable components of the project.
  3) Impacts associated with GHG emissions from projects that are not consistent with the General Plan, do not fall within the assumptions of the General Plan EIR, and/or are not consistent with the CAP, and are subject to CEQA review are presumed to be significant and further CEQA analysis is required. Bogle must demonstrate to the County's satisfaction how the project will achieve its fair share of the established targets including:

- Use of alternative design components and/or operational protocols to achieve the required GHG reductions; and
- Use of real, additional, permanent, verifiable and enforceable offsets to achieve required GHG reductions. To the greatest feasible extent, offsets shall be: locally based, project relevant, and consistent with other long term goals of the County.

The proposed project would not conflict with any applicable plan, policy or regulation adopted to reduce GHG emissions, including the Yolo County CAP or the numerous action policies of Yolo County 2030 General Plan identified above, and would help to meet CAP goals. With adherence to construction standards and practices to comply with YSAQMD rules, short-term emissions during the eight- to twelve-week construction period would be reduced and would not contribute to GHGs emissions that would have a significant environmental effect. As discussed in Section 3.2.2 (Air Quality), the long-term operation of the turbine would result in a net emissions benefit, as operation would reduce emissions from conventional electrical generation sources. The only permanent vehicle traffic generated by the project would be two vehicle trips per year for routine maintenance. Thus, operation of the proposed project would not generate GHG emissions that could have a significant impact on the environment, but instead would reduce them. Finally, the proposed wind turbine would not create a significant risk of wildfire or diminish snow pack or water supplies. Therefore, the proposed project would have less than significant GHG impacts and would have a less than cumulatively considerable contribution to GHG effects in Yolo County and the Sacramento Valley Air Basin. The proposed project would also be consistent with Yolo County General Plan and CAP policies and goals to reduce emissions.

3.2.4 Land Use and Planning

CEQA Checklist Topics

The proposed project would not result in potentially significant effects or contribute to any cumulatively considerable effects related to land use and planning. Construction and operation of the proposed project would not:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; or
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

Explanation

The proposed turbine project would be located within a parcel that contains an existing wine production facility. As such, the project would not create a physical barrier across an established community, such as may occur with a new road or railroad.

The proposed project would not conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. The following is a summary of the proposed project's consistency with applicable land use plans and policies.

- **Yolo County 2030 General Plan, Land Use and Community Character Element.** Policies CC-4.1 and CC-4.4. of the Yolo County General Plan encourage project design to reduce dependence on fossil fuels and other non-renewable resources through the use of regenerative energy source alternatives, including

onsite clean distributed generation so as to result in no net purchases from the electricity or gas grid. Additionally, Policy CC-4.5 encourages individual and community-based wind and solar energy systems (micro-grids). The proposed project would support these efforts to reduce dependence on fossil fuels.

- **Yolo County 2030 General Plan, Agriculture and Economic Development Element.** Policy AG-3.21 of the Yolo County General Plan promotes best management practices in agricultural operations to reduce emissions, conserve energy, and utilize alternative energy sources. The proposed project would reduce emissions and conserve energy by utilizing an alternative energy source.
- **Yolo County 2030 General Plan, Conservation and Open Space Element.** Policies CO-8.4 and CO-8.5 of the Yolo County General Plan encourage businesses to transition to the use of renewable energy through the installation of renewable energy technologies in order to promote GHG emission reductions. The proposed project would support these County efforts to increase the use of renewable energy (Yolo County, 2009).
- **Yolo County Code, Section 8-2.1103 (Small and large wind energy systems).** The project would require County approval of a Major Use Permit. The project would meet all of the standards set forth in Section 8-2.1103 for the development of a large wind energy system.
- **Yolo County Code, Section 8-4.401 (Flood hazard development permit).** The project requires a Flood Hazard Development Permit because the project is within the 100-year flood zone (Yolo County, 2015). The application and proposed design of the project is consistent with the requirements of the Yolo County Code that governs the issuance of Flood Hazard Development Permits. In March 2014, the County issued a Flood Hazard Development Permit to allow this project to be located within the 100-year flood zone.
- **Delta Protection Commission Land Use Resource Management Plan (LURMP).** The proposed wind turbine is located within the Primary Zone of the Delta, which is regulated by the Delta Protection Commission through its LURMP. The Delta Protection Commission is a State agency that was created by enactment of the Delta Protection Act of 1992. Although the LURMP does not specifically discuss renewable energy technologies in its Utilities and Infrastructure section, the proposed project's design would be consistent with Policies P-1 through P-7 that require utilities to be designed and constructed to minimize any detrimental effect on levee integrity or maintenance, agricultural uses and wildlife within the Delta (DPC, 2010).
- **Yolo County Habitat Conservation Plan (HCP)/Natural Communities Conservation Plan (NCCP).** The project would not conflict with the Yolo County HCP/NCCP, which is in preparation by the Yolo County HCP/NCCP Joint Powers Agency. The Draft HCP/NCCP describes the policies from the County's General Plan that support conservation and open space preservation. The Draft Plan also provides mitigation requirements for impacts to Swainson's hawk foraging habitat within the County, and a discussion of the applicability of this policy in regards to the proposed project is fully discussed in Section 3.4 (Biological Resources) (Yolo HCP/NCCP JPA, 2015). The project would not directly conflict with the provisions of any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

3.2.5 Mineral Resources

CEQA Checklist Topics

The proposed project would not result in potentially significant effects to mineral resources. Construction and operation of the proposed project would not:

- 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; or
- 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.

Explanation

The California Geological Survey administers a mineral lands inventory and classification process across the State. Surveyed areas are categorized into mineral resource zones (MRZ) on the basis of geologic factors (e.g., presence of mineral deposits). Presently, the proposed project area has not been surveyed by the California Geological Survey for the presence of significant aggregate deposits (CGS, 2015). The Yolo County General Plan Conservation and Open Space Element has also identified MRZs within the County. According to Figure CO-5 of the General Plan, the project site would not be located within a MRZ (Yolo County, 2009). Therefore, the proposed project would not affect known mineral resources or contribute to any cumulatively considerable effects to mineral resources.

3.2.6 Population/Housing

CEQA Checklist Topics

The proposed project would not result in potentially significant effects or contribute to any cumulatively considerable effects to population and housing. Construction and operation of the proposed project would not:

- Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure);
- Displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere; or
- Displace a substantial number of people, necessitating the construction of replacement housing elsewhere.

Explanation

The proposed project is a wind turbine that is located at an existing wine production facility. Construction of the project would not displace any existing housing units or people. The eight- to twelve-week construction period would employ approximately 35 workers, and future onsite operation and maintenance activities would occur approximately twice per year. Given the small construction workforce, the proposed project would not temporarily increase the local population. No impacts to population or housing would occur.

3.2.7 Public Services

CEQA Checklist Topics

The proposed project would not result in potentially significant effects or contribute to any cumulatively considerable effects to public services. Construction and operation of the proposed project would not:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:

- Fire protection
- Police protection
- Schools
- Parks
- Other public facilities

Explanation

The proposed project would not increase the need for public services, including law enforcement, fire protection, school capacity, park, or postal services, as it would involve the construction of only a single wind turbine, and therefore would not result in a significant increase in permanent jobs or population. Impacts to public services would not occur from the proposed project.

3.2.8 Recreation

CEQA Checklist Topics

The proposed project would not result in potentially significant effects or contribute to any cumulatively considerable effects to recreation. Construction and operation of the proposed project would not:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or
- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

Explanation

The proposed project would not significantly increase the use of recreational facilities because it would not result in an increase in permanent jobs or population (see Section 3.2.6, Population and Housing). The project does not propose any activities that would directly result in the construction or expansion of recreational facilities. Impacts to recreation would not occur from the proposed project.

3.2.9 Transportation and Traffic

CEQA Checklist Topics

The proposed project would not result in potentially significant effects to transportation and traffic. Construction and operation of the proposed project would not:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;
- Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);

- Result in inadequate emergency access; or
- Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Explanation

Jefferson Boulevard (Highway 84) provides regional access to the proposed project site, with local access provided by Hamilton Road (refer to Figure 2-1). Jefferson Boulevard is a conventional two-lane rural highway that is a designated truck route, serving mainly local and agricultural traffic. The 2030 Yolo Countywide General Plan Final Environmental Impact Report (Yolo County, 2009) and Caltrans data (Caltrans, 2014) indicate that average daily traffic (ADT) volumes and peak hour traffic volumes on Jefferson Boulevard between Clarksburg and Courtland Roads (the segment that includes the Hamilton Road intersection) are 1,450 and 160 vehicles per day and per hour, respectively. These volumes are equivalent to a level of service (LOS) of B, or stable operating conditions. Hamilton Road is an agricultural collector rural road with geometric characteristics similar to other low-volume county roads serving agricultural lands. Pavement widths and design features do not meet modern design standards (i.e., 12-foot vehicle lanes and 4-foot paved shoulders).

Construction of the proposed wind turbine would generate a limited number of daily trips over 8 to 12 weeks. Construction activities would employ approximately 35 workers (assumes 70 daily commute trips) and up to 20 additional daily trips for daily construction support. This results in a maximum of approximately 90 total truck trips per day. This low level of traffic would result in only a temporary increase of 6.2 percent over ADT volumes on Jefferson Boulevard, which would not exceed the capacity of the existing circulation system nor exceed a level of service standard for any nearby road either permanently or temporarily (during construction). Furthermore, long-term maintenance of the facility would result in only two vehicle trips per year.

The proposed project does not incorporate design features that would substantially increase hazards to traffic or transportation or introduce incompatible uses. All temporary access roads would be regraded and revegetated to a natural/preconstruction condition after turbine installation, consistent with the requirements identified in Section 8-2.1103(h)(16) of the Yolo County Code (Yolo County, 2015). Temporary construction access routes on Bogle property would be used only by construction personnel and not accessible to the public. However, the transport of wind turbine components (blades, etc.) may require oversize truck trips that can pose a temporary roadway hazard and limit traffic flow. Pursuant to California Department of Transportation (Caltrans) and Yolo County requirements, Bogle will obtain all necessary oversize vehicle permits and implement any conditions set forth within the permits. This would ensure the project would not result in motorist hazards, inadequate emergency access, and would not conflict with any adopted policies, plans, or programs supporting alternative transportation.

In a letter issued on May 18, 2016, the Federal Aviation Administration (FAA) determined the proposed turbine would not pose a hazard to air navigation with the implementation of FAA-recommended obstruction marking and lighting for the proposed turbine (FAA, 2016). The proposed project would implement all FAA recommendations. The proposed project would have less than significant impacts to transportation and traffic and would have a less than cumulatively considerable contribution to adverse effects on transportation and traffic along any roadways used for construction access.

3.2.10 Utilities and Service Systems

CEQA Checklist Topics

The proposed project would not result in potentially significant effects or contribute to cumulatively considerable effects to utilities and service systems. Construction and operation of the proposed project would:

- Not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- Not require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed;
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs; or
- Comply with federal, state, and local statutes and regulations related to solid waste.

Explanation

Minimal wastewater and solid waste would be generated during construction. Water used for dust suppression would be minimal, only required intermittently during the 8-week construction period. The source of water is unknown, but could be from a non-potable source if available. In the event potable water is trucked to the site for dust suppression, this water is assumed to come from within local water supplies available to serve the project from existing entitlements and resources. The limited use of water for dust suppression would not require new or expanded water entitlements. The proposed project does not include any habitable structures or any permanent uses that would generate wastewater or solid waste. Furthermore, the turbine would not create any new demand for utility systems and would not require the construction of any new facilities. Only a small area of ground disturbance is proposed for placement of the wind turbine; therefore, drainage patterns would not be altered and no stormwater drainage facilities would be needed. The proposed project would have no effect on utilities or service systems.

3.3 Aesthetics

Introduction

For the purposes of environmental impact review, the topic of Aesthetics involves consideration of visual resources in the physical environment and how they may be affected by a proposed project. While experiences and personal likes and expectations related to aesthetics vary by individual, visual resources analysis involves use of a systematic process to logically assess visible change in the physical environment and the anticipated viewer response to that change. Landforms, water, and vegetation patterns are among the natural landscape features that define an area's visual character, and buildings, roads, and other structures and changes in land use (e.g., agriculture) reflect human modifications to the natural landscape. These natural and built landscape features are considered visual resources that contribute to the public's experience and appreciation of the environment.

This section describes the existing landscape character and visual quality of the proposed project study area, existing views of the proposed turbine from various on-the-ground vantage points, the visual characteristics of the proposed project, and the landscape changes that would be associated with the construction and operation of the turbine as seen from various vantage points. For this analysis, the study area is defined as the area from which the proposed project could be seen, also referred to as the project viewshed.

Methodology for Aesthetics Analysis

For this analysis, the proposed project site and surrounding area have been viewed from various public roads and vantage points to develop an overall assessment of the existing landscape character, visual quality, and viewing conditions. Then, at representative key observation points (KOPs), the existing landscape has been characterized for its visual quality, viewer concern, and viewer exposure, and photographs have been taken.

The factors considered in the assessment of aesthetics impacts and visual sensitivity are visual quality, viewer concern, and viewer exposure. Each is discussed below.

Visual Quality is a measure of the overall impression or appeal of an area as determined by particular landscape characteristics that may be present, such as landforms, rockforms, water features, and vegetation patterns, as well as associated public values. The attributes of variety, vividness, coherence, uniqueness, harmony, and pattern contribute to visual quality classifications of indistinctive (low), common (moderate), and distinctive (high). Visual quality is studied as a point of reference to assess whether a given project would appear compatible with the established features of the setting or would contrast noticeably and unfavorably with such features.

Viewer Concern addresses the level of interest or concern of viewers regarding an area's visual resources (rated from low to high) and is closely associated with viewers' expectations for the area. Viewer concern reflects the importance placed on a given landscape based on the human perceptions of the intrinsic beauty of the existing landforms, water features, vegetation patterns, and even cultural features.

Viewer Exposure describes the degree to which viewers are exposed to views of the landscape (rated from low to high). Viewer exposure considers landscape visibility (the ability to see the landscape), distance zones (proximity of viewers to the subject landscape), number of viewers (low to high), and the duration of view (brief to extended). Landscape visibility can be a function of several interconnected considerations including proximity to viewing point, degree of discernible detail, seasonal variations (e.g., fog

and haze can obscure landscapes, agricultural fields will vary by season), time of day, and/or presence or absence of screening features such as landforms, vegetation, and/or built structures. Even though a landscape may have highly scenic qualities, it may be remote, receiving relatively few visitors and thus, have a lower degree of viewer exposure. Conversely, a subject landscape or project may be situated in relatively close proximity to a major road or highway used by a substantial number of motorists and yet still result in relatively low viewer exposure if the rate of travel speed on the roadway is high and viewing times are brief, or if the landscape is partially screened by vegetation or other features. Often, it is the project's proximity to viewers that is of particular importance in determining viewer exposure. In terms of proximity, landscapes generally are subdivided into three or four distance zones based on relative visibility from travel routes or observation points. Distance zones typically include foreground, middleground, and background. The actual number of zones and the distance assigned to each zone is dependent on the existing terrain characteristics and public policy and often is determined on a project-by-project basis.

Overall Visual Sensitivity is a concluding assessment as to an existing landscape's susceptibility to an adverse visual outcome (rated from low to high). A landscape with a high degree of visual sensitivity is able to accommodate only a low degree of adverse visual change without resulting in a significant visual impact. A landscape with a low degree of visual sensitivity is able to accommodate a higher degree of adverse visual change before exhibiting a significant visual impact. Overall visual sensitivity is derived from a comparison of existing visual quality, viewer concern, and viewer exposure.

Setting

Physical Environment

The area of Yolo County where the turbine is proposed is in the northern reach of the Sacramento–San Joaquin Delta. The project site and the land for miles around the site are extremely flat, with the topographic relief varying by only a few feet over very long distances. The landscape is rural in character, with most land in active agricultural production. Single-family housing occurs intermittently along the widely spaced country roads.

There are 18 rural residences within one mile of the proposed turbine site, with an additional 22 residences located 1 to 2 miles from the site. Three homes are along Hamilton Road, eight homes are on Jefferson Boulevard, and five homes are on Central Avenue. The four nearest homes are located along Hamilton Road approximately 1,850 feet (0.35 miles) and 2,700 feet (0.5 miles) south of the proposed turbine, and along Jefferson Boulevard approximately 3,005 feet (0.6 miles) to the east. Six additional homes are located along Jefferson Boulevard ranging between 3,500 feet (0.7 miles) and 5,300 feet (1.0 mile) east of the turbine. Five homes are located north of the proposed turbine on Central Avenue, approximately 3,700 to 4,500 feet (0.7 to 0.8 miles) away. There are an additional 22 residences located within 1.0 to 2.0 miles of the proposed turbine.

In addition to scattered housing and its associated residential vegetation, the principal vertical elements visible in the landscape include roadside utility poles (with connecting wires), roadside and riverside trees, and the large Bogle winery production facility at the wind turbine site. Visually pronounced but shorter elements in the visual environment include extensive rows of trellis-supported grape vines. Typical of a varied-crop agricultural area, the predominant colors and textures evident in the landscape vary by crop type and by season.

There are several small towns in the region, with the closest being Courtland approximately 3.7 miles to the southeast and Clarksburg approximately 4.5 miles to the northeast; both are on the Sacramento River. Heavily travelled Interstate 5 is more than 6 miles east of the proposed site. The region is also traversed

by the Sacramento River, 3.7 miles to the east of the site, and the Sacramento Deepwater Ship Channel, 1.6 miles to the west. Farther from the project site, two high-voltage transmission lines traverse the region; both are on lattice steel towers. One is an east-west 115-kilovolt (kV) transmission line north of Clarksburg, approximately 6.3 miles north of the project site, the other is a north-south 500-kV transmission line 5 miles west of the proposed site.

Regulatory Environment

Wind energy facilities must meet the development standards set forth in the Wind Energy Ordinance (Yolo County Code Section 8-2.1103 [Small and Large Wind Energy Systems]). The ordinance requires the following setbacks from an adjacent property line: twice the system's overall height or 500 feet, whichever is less (if the adjacent parcel is less than 40 acres) or 1.5 times the system's height or 500 feet (if the adjacent parcel is more than 40 acres). The minimum setback from the base of the turbine to any off-site residences on adjacent parcels must be three times the system's height or 1,000 feet, whichever is less. Components must have a non-glare/non-reflective finish or be a neutral white or light gray color. Logos and advertising are prohibited.

Based on the height of the proposed turbine, the FAA would require a flashing red beacon be located on the tower for nighttime aviation safety, consistent with FAA Advisory Circular AC 70/7460-1L.

Impacts and Mitigation Measures

To consider the impact of the proposed project, and most notably the presence of the wind turbine, on the existing visual environment, three KOPs were identified. These were selected to illustrate views of existing (pre-project) conditions and future (with-project) conditions as seen from public vantage points around the proposed project site. The nearest public vantage points are along roads surrounding the property. Each KOP is described in the following sections.

The images were captured using a "normal" lens (approximately 43.6 mm horizontal angle of view) to best represent how the site appears to the human eye when the image is viewed from approximately 12 inches away. An accurately scaled image of the turbine was inserted into a copy of the existing condition photograph to create a simulation of visual conditions with the project in place. The KOP photographs were taken on December 3, 2015, which was a variably overcast late autumn day. Figure 3.3-1, located at the end of this Aesthetics section, shows the locations of the 3 KOPs. The existing conditions and corresponding simulated conditions as seen from these KOPs are provided in Figures 3.3-1a through 3.3-3b, also at the end of this section. A previously prepared Initial Study for the proposed project included additional simulations; these are provided in Appendix B.

KOP 1 – Alameda Avenue near Central Avenue

Figure 3.3-2a presents the existing view to the southeast from KOP 1 on Alameda Avenue just south of Central Avenue, looking toward the proposed turbine site on the Bogle Winery property. The turbine site is approximately 0.75 miles distant. The simulated view from this KOP with the proposed turbine is shown in Figure 3.3-2b.

Visual Quality. Low to Moderate. The near foreground is dominated by roadside vegetation and agricultural fields. The landscape generally lacks distinctive features or elements of visual interest, presenting extensive areas of uniform color and texture. The existing Bogle wine production facility (building and tanks) is visible in the far foreground to middleground zone. The horizon is demarked by distant trees.

Viewer Concern. Moderate. Although the existing industrial-agricultural facility is prominent in the foreground of views from the road, viewers would consider any increase in industrial character and structure prominence against the sky as an adverse visual change.

Viewer Exposure. Low to Moderate. The proposed project would be highly visible in the foreground views from the public road. The number of viewers would be low, and the duration of view would be of moderate duration for people travelling on the road. Combining the four equally weighted factors (i.e., visibility, distance zone, number of viewers, and duration of view) results in an overall rating of low to moderate for viewer exposure.

Overall Visual Sensitivity. Low to Moderate. For viewers in the vicinity of KOP 1, combining the equally weighted low to moderate visual quality, moderate viewer concern, and low to moderate viewer exposure results in an overall rating of low to moderate for visual sensitivity of the visual setting and viewing characteristics.

KOP 2 – Hamilton Road near Alameda Avenue

Figure 3.3-3a presents the existing view to the northeast from KOP 2 on Hamilton Road just east of Alameda Avenue, looking toward the proposed turbine site, which is approximately 0.5 miles distant. The simulated view from this KOP with the proposed turbine is shown in Figure 3.3-3b. As with KOP 1, the landscape generally lacks distinctive features or elements of visual interest. The immediate foreground is dominated by roadside utility poles, with the more distant foreground dominated by uniform colored and textured agriculture. The wine production facility is dominant in the far foreground.

Visual Quality. Low to Moderate. The foreground is dominated by built elements (road and utility poles) and by the expanse of a uniform agricultural field. The landscape generally lacks distinctive features or elements of visual interest and is typical of most views in the region.

Viewer Concern. Moderate. Although the existing industrial-agricultural facility is prominent in the foreground of views from the road, viewers would consider any increase in industrial character and structure prominence against the sky as an adverse visual change.

Viewer Exposure. Low to Moderate. The turbine would be highly visible in the distant foreground views from Hamilton Road. However, the number of viewers would be low, and the duration of view would be of moderate duration for people travelling on the road. Combining the four equally weighted factors (i.e., visibility, distance zone, number of viewers, and duration of view) results in an overall rating of low to moderate for viewer exposure.

Overall Visual Sensitivity. Moderate. For viewers in the vicinity of KOP 2, combining the equally weighted low to moderate visual quality, moderate viewer concern, and low to moderate viewer exposure results in an overall rating of moderate for visual sensitivity of the visual setting and viewing characteristics.

KOP 3 – Jefferson Boulevard (Hwy 84) between Hamilton Road and Central Avenue

Figure 3.3-4a presents the existing view to the west from KOP 3 on Jefferson Boulevard, between Hamilton Road and Central Avenue. The proposed turbine site is approximately 0.6 miles distant, as illustrated in the simulation in Figure 3.3-4b. The landscape generally lacks distinctive features or elements of visual interest. The immediate foreground is dominated by roadside utility poles (not shown but indicated by overhead wires), with roadside trees occurring at irregular intervals. The more distant foreground is dominated by uniform colored and textured agriculture. The wine production facility is dominant in the far foreground.

Visual Quality. Low to Moderate. The foreground is dominated by built elements (utility poles and roadside trees) and by the expanse of a uniform agricultural field. The landscape generally lacks distinctive features or elements of visual interest and is typical of most views in the region.

Viewer Concern. Moderate. Although the existing industrial-agricultural facility is prominent in the foreground of views from Jefferson Boulevard, viewers would consider any increase in industrial character and structure prominence against the sky as an adverse visual change. Of the three KOPs, this view from Jefferson Boulevard (Highway 84) is the more heavily travelled road near the proposed project site. However, peak hour traffic on Jefferson Boulevard is low: measured by Caltrans as 30 southbound and 90 northbound vehicles at the Solano/Yolo County line; 60 southbound and 140 northbound vehicles at Courtland Road; and 150 southbound and 180 northbound vehicles at Clarksburg Road (Caltrans, 2014). A peak hour count of 30 vehicles, would average to one vehicle every two minutes; 180 vehicles would average to three vehicles every one minute. Off-peak hours would experience less traffic.

Viewer Exposure. Low to Moderate. The turbine would be visible in the distant foreground views from the public road. The number of viewers would be low to moderate, and the duration of view would be extended for people travelling in each direction along the road. Combining the four equally weighted factors (i.e., visibility, distance zone, number of viewers, and duration of view) results in an overall rating of low to moderate for viewer exposure.

Overall Visual Sensitivity. Moderate. For viewers in the vicinity of KOP 3, combining the equally weighted low to moderate visual quality, moderate viewer concern, and low to moderate viewer exposure results in an overall rating of moderate for visual sensitivity of the visual setting and viewing characteristics.

Significance Criteria

Significance criteria for visual impacts are derived from CEQA Guidelines Appendix G. A significant impact would occur if a substantial adverse effect on visual resources would result from implementing the proposed project. This includes significant adverse effects on scenic vistas and scenic resources (landforms, scenic highways, historic buildings, etc.), substantial degradation of visual character or quality, or creation of substantial sources of glare or light.

Impact Analysis

Impact AES-1 The project has the potential to have a substantial adverse effect on a scenic vista

The proposed wind turbine would not have a substantial effect on a scenic vista. Large isolated industrial facilities are generally a characteristic part of the agricultural landscape. Also, modern wind turbine designs are simple, graceful, and sculptural in quality, in contrast to the more industrial-looking lattice-style towers that were used in the past. The turbine would be located within a rural area dominated by active agricultural production, including row and field crops, vines, and an industrial-scale wine processing facility. The turbine would be adjacent to wastewater treatment ponds and the industrial-scale operation, which includes a winery warehouse building and numerous large outdoor steel wine tanks and related equipment and structures. The 453-foot high proposed turbine (to top of the rotor blade in the twelve o'clock position) would be visible from various residences along public roads bordering the project property. Photo simulations were prepared to illustrate how the wind turbine would appear from various vantage points (See Figures 3.3-2a through 3.3-4b). These simulations illustrate views with and without the turbine, as seen from key observation points at nearby public vantage points.

The terrain throughout the area is flat with very minor variations in elevation. Primary vertical elements in the viewshed consist of trees and utility poles along most roads, agricultural buildings and appurtenances, and widely spaced residences along local roads. The turbine would not obscure any vistas or scenic views and would be consistent with the existing visual environment and context. Therefore, this impact would be less than significant.

Level of Significance: Less than significant. No mitigation required.

Impact AES-2	The project has the potential to substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway

Construction and operation of the proposed project would not substantially damage any scenic resources along a scenic highway. There are presently no highways within Yolo County that have been officially designated within the California Scenic Highway System. The Yolo County 2030 General Plan designates several routes in Yolo County as local scenic roadways. The nearest local scenic roadway to the proposed turbine is South River Road (County Route E9), along the Sacramento River, approximately 4 miles east of the turbine location. From this road, the turbine would not be visible or would be only intermittently visible, owing to the distance between the road and the turbine and the presence of roadside and other intervening vegetation. Visibility of the turbine would diminish with distance and, even if visible, the light-colored turbine would tend to blend with the sky backdrop. Therefore, this impact would be less than significant.

Level of Significance: Less than significant. No mitigation required.

Impact AES-3	The project has the potential to substantially degrade the existing visual character or quality of the site and its surroundings

The proposed turbine would be located in a rural area dominated by agricultural production. It would be located near a large winery processing and storage facility and would not be located adjacent to publicly accessible viewing areas, such as public roads or parks.

The photo simulations prepared for the proposed project (Figures 3.3-2b, 3.3-3b, and 3.3-4b at the end of this section) show that the turbine, as seen by passing motorists on Jefferson Boulevard (State Route 84), would appear as a distinct vertical element on the horizon adjacent to a large industrial facility. From the more lightly traveled roads closer to the site (Hamilton Road, Alameda and Central avenues), the turbine would present the same characteristics.

As described above, there are 18 rural residences within one mile of the proposed turbine. The photo simulations are typical of views that would be available to residents on adjacent roads and to motorists. The turbine would be visible above the horizon. At greater distances from the site, the turbine would appear as a smaller element against the horizon (see Appendix B for additional simulations). The turbine would not be visible from the nearest community, which is the town of Clarksburg, 4.5 miles to the northeast of the proposed site.

Given the lack of distinctive landforms or vegetation, the presence of utility poles and lines along most local roads, and the mass of the existing wine production facility, the proposed turbine would not be visually dominant or inconsistent with existing conditions. Transmission lines on tall lattice steel towers are located at various points throughout the project region. These industrial-type structures are spaced across agricultural fields and along roads. Therefore, the turbine would not substantially degrade the existing visual character or quality of the site and its surroundings. Therefore, this impact would be less than significant.

Level of Significance: Less than significant. No mitigation required.

Impact AES-4	The project has the potential to create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area

The surfaces of the blades, nacelle, and tower would have non-reflective coating in neutral white. This would minimize the potential for glint or glare due to reflection of the sun. The wind turbine would be required by the FAA to include a medium intensity red flashing light at the top of the tower nacelle to increase aviation safety at night. Daytime lighting of wind turbines is not required (FAA, 2015). This lighting is typical of the lighting currently found on towers elsewhere in the county. The light would be visible to rural residences at night, including the seven closest home sites within one mile, and from other vantage points in the nearby area. Lighting of structures and towers at night is an established requirement for increasing aircraft safety. Although the light will be visible at night from select vantage points, it would be a single point of intermittent light. As a single new point of light in an area with other existing points of light (e.g., street and residential property lighting as well as night security and safety lighting at agricultural and industrial facilities), and as a structure with non-reflective surfaces, the impact of the turbine as a new source of substantial light or glare is considered less than significant.

Another potential light-based effect of turbines is shadow flicker. Shadow flicker results from the blades of a wind turbine rotating between the sun and an observer, creating a moving shadow. Where shadow flicker may occur depends on the location of the observer relative to the turbine as well as the time of day and season of the year, which vary to the sun's location relative to the turbine. The magnitude of the shadow flicker varies both spatially and temporally and depends on a number of environmental conditions coinciding at any particular point in time, including the position and height of the sun, wind speed, direction, cloudiness, and position of the turbine relative to a nearby viewer. Shadow flicker occurs only when the turbine blades are moving.

In summer, when the sun is highest in the sky, the shadow length would be shortest; it would be longest in the winter, when the sun is lower in the southern sky. In any season, the longest shadows would occur in the morning and evening, when the sun would be closest to the horizon as it rises or sets. The shortest shadows would occur at midday when the sun is at its highest in the sky. Because the turbine location is fixed and the apparent sun movement is from east to west, the cast shadow would sweep from west to east as the sun transits the sky. The area with the greatest amount of shadow (i.e., longest duration) would be nearest the tower and the least amount of shadow would occur farther from the tower. Shadow flicker is potentially present only at distances of less than 1,400 meters (4,600 feet) from the turbine (MDEP, 2012). Over the course of a year, the cumulative pattern of shadow forms a bowtie shape, centered on the turbine and oriented east-west, consistent with the path of the sun.

Flicker may have the potential to cause seizures in individuals prone to epilepsy at certain frequencies. Flicker from turbines that interrupt or reflect sunlight at frequencies greater than 3 Hertz (equivalent to 180 rotations per minute) would pose a potential risk of inducing photosensitive seizures (MDEP, 2012). The proposed turbine has a speed of 5 to 15.7 rotations per minute, which is substantially slower than the speed (180 rotations per minute) that could potentially induce photosensitive seizures in certain individuals.

Flicker can be an annoyance; however, there is limited conclusive scientific evidence of an association between annoyance from prolonged shadow flicker (exceeding 30 minutes per day) and potential transitory cognitive and physical health effects. The closest residences that could be subject to shadow flicker are eight residences approximately 0.7 miles (3,600 feet) from the project site. The potential for shadow flicker to extend to these locations would exist during winter months and would occur when the sun casts the longest shadows, the sky is not overcast, and the turbine blades are rotating. Given the distance between the tower and the nearest residences, weather conditions, and the orientation of the

turbine blades, the potential for flicker to be experienced at these locations would be limited to at most a few hours a year in early mornings or late afternoons.

The effect is mitigated where there is intervening vegetation between the residence and the turbine. Also, because the sun moves, shadow flicker is transient at any one location. As a result of the apparent slow rotation speed of blades and the low potential exposure of residents to any shadow flicker from the proposed turbine, the proposed project would result in minimal (if any) annoyance. The impact of shadow flicker would be less than significant.

Level of Significance: Less than significant. No mitigation required.

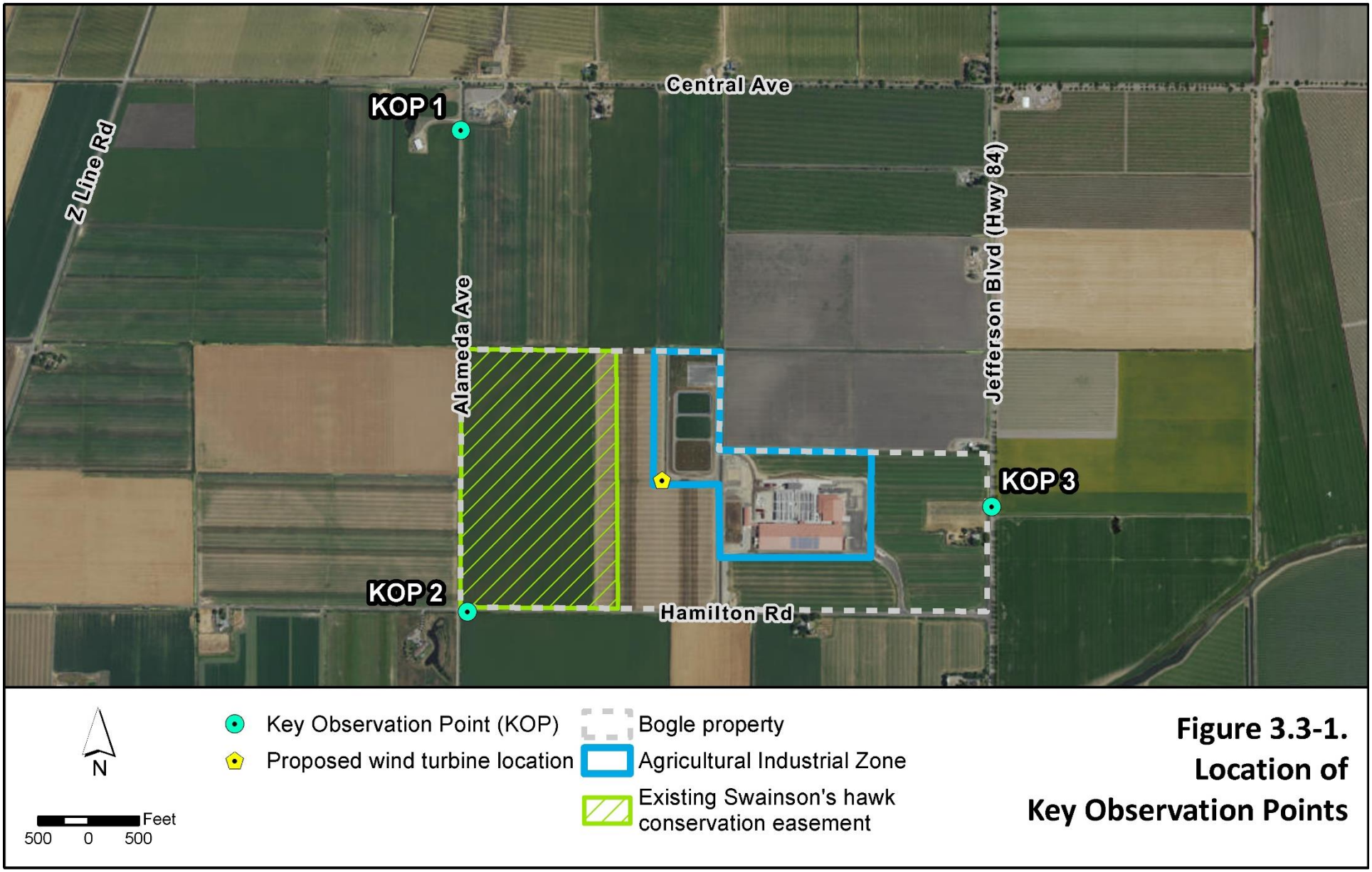


Figure 3.3-1. Location of Key Observation Points

Source: William Kanemoto & Associates

Note: The image is 10 inches wide. When viewed at a reading distance of about 12 inches, it accurately represents the scale of the landscape as seen in the field.

Figure 3.3-2a
KOP 1 – Existing Conditions
Alameda Avenue Near Central Avenue, View to Southeast

Source: William Kanemoto & Associates

Note: The image is 10 inches wide. When viewed at a reading distance of about 12 inches, it accurately represents the scale of the landscape as seen in the field.

Figure 3.3-2b
KOP 1 – With Wind Turbine
Alameda Avenue Near Central Avenue, View to Southeast

Source: William Kanemoto & Associates

Note: The image is 10 inches wide. When viewed at a reading distance of about 12 inches, it accurately represents the scale of the landscape as seen in the field.

Figure 3.3-3a
KOP 2 – Existing Conditions
Hamilton Road Near Alameda Avenue, View to Northeast

Source: William Kanemoto & Associates

Note: The image is 10 inches wide. When viewed at a reading distance of about 12 inches, it accurately represents the scale of the landscape as seen in the field.

Figure 3.3-3b
KOP 2 – With Wind Turbine
Hamilton Road Near Alameda Avenue, View to Northeast

Source: William Kanemoto & Associates

Note: The image is 10 inches wide. When viewed at a reading distance of about 12 inches, it accurately represents the scale of the landscape as seen in the field.

Figure 3.3-4a

KOP 3 – Existing Conditions

Jefferson Boulevard (Hwy 84) Between Hamilton Road and Central Avenue, View to West

Source: William Kanemoto & Associates

Note: The image is 10 inches wide. When viewed at a reading distance of about 12 inches, it accurately represents the scale of the landscape as seen in the field.

Figure 3.3-4b

KOP 3 – With Wind Turbine

Jefferson Boulevard (Hwy 84) Between Hamilton Road and Central Avenue, View to West

3.4 Biological Resources

Setting

Information regarding biological resources actually or potentially present within the proposed project area and vicinity were collected from several sources, including the California Natural Diversity Database (CNDDB); California Native Plant Society (CNPS) on-line electronic inventory of rare and endangered plants of California, 8th edition; U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) database; review of aerial imagery; the online eBird database of bird sightings; local biological resources reports and conservation plans; literature review regarding regionally occurring special-status species; and consultation with CDFW and other local species experts. The area encompassed by the CNDDB search included the USGS 7.5-minute series quadrangles that encompass and surround the project area (Clarksburg Quadrangle) (CNDDB, 2016a). Habitat-level reconnaissance surveys of the proposed project area were conducted in August 2013 (Estep, 2013), verified in December 2015, and updated during the 2016 breeding season (Bogle, 2017; see Appendix E[1]). Four aerial surveys were conducted in September and October 2013 of the proposed project area and vicinity to assess use by foraging raptors (Barnett, 2013). During the 2016 breeding season, a census of all Swainson's hawk nesting activity within a 5-mile radius of the project site was conducted between July 16 and 20, 2016 by systematically driving all available roads or on foot (as needed). All potential nest trees were searched for nests and adult Swainson's hawks, and a hand-held GPS unit was used to record coordinates of each nest. Protocol surveys of the project area were not conducted to determine the presence or absence of special-status species; the lead agency determined that the above listed information sources and surveys were sufficient to describe the setting for the purposes of CEQA impact assessment.

Physical Environment

The proposed project site is within an active agricultural landscape consisting of perennial, semi-perennial, and annually or seasonally rotated crops. Located in the southeastern panhandle of Yolo County between the Sacramento River and the Sacramento River Deep Water Ship Channel, the area is flat, open, and sparsely populated. Wine grapes dominate much of the agricultural landscape in the area, particularly east of Jefferson Boulevard. Other dominant crops in the area include alfalfa, wheat, safflower, and corn. Alfalfa fields surround the project site on the west, southwest, and northwest. Wastewater treatment ponds border the site on the northeast and the Bogle wine production facility is due east.

The project site is a flat, open area adjacent to the existing access road that borders the edge of the water treatment facility. The site is entirely cleared of vegetation other than a portion of the adjacent alfalfa field that may be disturbed during construction. The adjacent water treatment ponds are elevated with a surrounding 2:1-sloped outer berm extending approximately 12 feet above ground level. These ponds have a steep (3:1) plastic lined inner berm that precludes use of wading waterfowl and shorebirds. The water treatment ponds are an attractant for waterfowl, including diving ducks, but do not provide any resources for bird habitation.

Vegetation on the outer berm of the water treatment ponds consists of annual grasses and weeds. There are no trees or shrubs on the berm, along the gravel access road, or along field borders in the vicinity of

[1] Appendix E is the Application for Incidental Take of Endangered Species, dated January 3, 2017. It was prepared by Bogle Vineyard, Inc., and will be submitted to the California Department of Fish and Wildlife. Appendix A of the application provides the full methods and results of the 2016 nesting season surveys. Appendix E (including its Appendix A) is incorporated by reference in this analysis of Biological Resources impacts.

the project site. The nearest trees are approximately 0.3 miles to the southeast at a rural residence, approximately 0.4 miles east along an irrigation ditch, and approximately 0.7 miles northwest at a rural residence. A permanent irrigation channel extends west to east approximately 0.25 miles north of the project site and then turns south along the eastern side of the water treatment ponds toward Hamilton Road where it is within approximately 500 feet of the proposed turbine site. Portions of this channel include small, narrow patches of cattail/bulrush (*Typha, latifolia)/Schoenoplectus* sp.) emergent vegetation.

The project site and surrounding area support common wildlife use typical of Yolo County agricultural landscapes. The absence of trees, shrubs, and the sparse emergent marsh habitat available along the nearby irrigation channel limits wildlife use of the area in the immediate vicinity of the project site. Ground squirrels, small rodents, and gopher snakes likely inhabit the grassy/weedy berm around the water treatment ponds. Several common wildlife species may also inhabit the emergent marsh patches or otherwise occur along the irrigation channel (e.g., tree frog and green heron). Other species, including several rodent species and some ground-nesting birds, may also inhabit the surrounding fields.

Primary wildlife use of the area is foraging in the agricultural fields. Many bird species that nest in native habitat elsewhere or during migration use cultivated fields as foraging habitat, particularly alfalfa hay fields, which provide an abundance of rodent and insect prey species for raptors, waterbirds, and other birds. The proposed project area is located less than 1 mile from the native riparian forest and associated wetlands of Duck Slough, approximately 2 miles from the wetlands in the Yolo Bypass, 4.6 miles from wetlands in the Stone Lakes National Wildlife Refuge, 4.6 miles from the riparian forest along Babel Slough and 3.7 miles from the Sacramento River. Other habitat in the region includes the Vic Fazio Wildlife Area/Yolo Causeway and the Cosumnes River Preserve. Birds move throughout this broad, flat landscape between suitable areas in the Delta region.

Sensitive Habitats

The project area and vicinity do not support any plant communities designated as sensitive by CDFW. The irrigation channel is potentially considered non-wetland waters of the State subject to regulation by CDFW pursuant to Lake and Streambed Alteration notification requirements in Fish and Game Code sections 1600-1616.

Approximately 500 feet west of the proposed turbine site is an 80-acre Swainson's hawk conservation easement. The easement is an agreement between the Bogle family, the Yolo Land Trust, the Yolo Natural Heritage Program, and CDFW.

Special-status Species

Special-status species are those plants and animals that are classified in one or more of the following categories:

- **Federal Endangered Species Act (FESA), 16 USC §§ 1531, *et seq*.** Listed as endangered or threatened; candidate for federal listing; or proposed for federal listing.
- **Bald and Golden Eagle Protection Act (BGEPA), 16 USC §§ 668-668d.** Bald and golden eagles are protected under the federal BGEPA.
- **California Endangered Species Act (CESA).** Listed as endangered or threatened; candidate for state listing; or designated as a rare plant.
- **Fully protected species** under the California Fish and Game Code.
- **California Species of Special Concern (SSC).** Designated by CDFW.

- **California Rare Plant Rank (CRPR).** List of plants of conservation priority; maintained by the CNPS in coordination with CDFW.
  - CRPR 1A: Plants presumed to be extinct in California.
  - CRPR 1B: Plants rare or endangered in California and elsewhere.
  - CRPR 2: Plants rare or endangered in California but more common elsewhere.
  - CRPR 3: Plants about which more information is needed – a review list.
  - CRPR 4: Plants of limited distribution – a watch list.

The project area is devoid of vegetation with the exception of a portion of the active agriculture (alfalfa) area that would be disturbed for construction of the access roads and fenced turbine site. Therefore, there is no potential for the project area to support special-status plants. Within the project impact area, there is no aquatic habitat sufficient to support special-status amphibians or fish and no vernal pools to support special-status branchiopods or other vernal pool-dependent species.

Four aerial surveys were conducted in September and October 2013 of the proposed project area and up to a 2-mile radius from the proposed project area to assess use of the area by foraging raptors (Barnett, 2013). The following raptors were observed during these surveys: red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), white-tailed kite (*Elanus leucurus*), northern harrier (*Circus cyaneus*), turkey vulture (*Cathartes aura*), and golden eagle (*Aquila chrysaetos*). At the time of these aerial surveys, migratory raptors, including Swainson's hawk would have left for over-wintering grounds and would not have been detectable. During the 2016 breeding season Swainson's hawk census (Bogle, 2017), red-tailed hawk and norther harrier were observed within the 5-mile radius of the project site.

Special-status wildlife species with the potential to occur within the project impact area (i.e., areas of ground disturbance, rotor swept area of the turbine blades, and offsite areas of potential indirect effects) are presented in Table 3.4-1 and all are considered in the impact analysis presented in this section. Potential for occurrence in the project impact area is based on reconnaissance surveys to assess habitat suitability and raptor use, review of existing databases with voluntarily reported occurrence information on special-status species, and consultation with CDFW and other local species experts.

Table 3.4-1. Special-status Species that May Occur within the Project Impact Area

Scientific Name / Common Name	Listing Status		Habitat Type and General California Range	Potential to Occur in Project Impact Area[3]
	Fed[1]	State[2]		
REPTILES				
Giant garter snake *Thamnophis gigas*	FT	ST	Found in sloughs, canals, and other small waterways with prey base of small fish and amphibians on the floor of the Central Valley. Requires grassy banks and emergent vegetation for basking, and areas of high ground protected from flooding during winter. Range extends from Chico in Butte County south to Mendota Wildlife Area in Fresno County.	**Low.** Documented occurrences within 5 miles of the project site. Potential habitat associated with the irrigation channel is insufficient to support the species.

Table 3.4-1. Special-status Species that May Occur within the Project Impact Area

Scientific Name / Common Name	Listing Status		Habitat Type and General California Range	Potential to Occur in Project Impact Area[3]
	Fed[1]	State[2]		
Western pond turtle *Emys marmorata*	*	SSC	Permanent or nearly permanent lakes, ponds, marshes, rivers, streams, & irrigation ditches with aquatic veg. Needs basking sites such as partially submerged logs, vegetation mats, or open mud banks. Nests in suitable uplands, such as sandy banks or grassy, open fields on unshaded, south-facing slopes with less than 25% slope.	**Low.** Potential habitat associated with the irrigation channel is insufficient to support the species. Nearest documented occurrence is at North Stone Lake, about 5 miles from the project area.
BIRDS				
American peregrine falcon *Falco peregrinus anatum*	*	CFP	Usually breeds and feeds near water. Nests on high cliffs, occasionally on tall buildings or other structures. Uncommon in most of California during winter and migration; uncommon breeder in southern and central coasts, inland north coastal mountains, Klamath Mountains, Cascade Range, and Sierra Nevada.	**Low.** No suitable nesting habitat in project vicinity. Project area is not near foraging habitat. One nesting record of the species in Yolo County.
Burrowing owl *Athene cunicularia*	*	SSC	Grasslands, deserts, and along roads, canals, and edges of agricultural areas; rarely in vicinity of shrubs and trees; dens in underground burrows typically created by other animals, but also in culverts and debris piles. Found primarily in the Central Valley and other open, flat areas of the state; absent from steep terrain, foothill habitats, and higher elevations.	**Moderate.** Nearest recently reported burrow is 6 miles from project site. Suitable habitat surrounds the project site.
Golden eagle *Aquila chrysaetos*	BGEPA	CFP	Rolling foothill or coast-range terrain where open grassland turns to scattered oaks, sycamores, or large digger pines. Nests primarily in cliffs and large trees, but also transmission towers and nest platforms in open areas. Typically nest forage in hilly grassland or shrubland communities. Resident through much of the state, winter-only in Central Valley.	**High.** Observed in vicinity of project site (Barnett, 2013). Suitable foraging habitat surrounds project site.
Grasshopper sparrow *Ammodramus savannarum*	*	SSC	Primarily a summer resident. Breeds in grass-lands and similar habitats in scattered locations in southern, central, and northern California.	**Low.** Potentially suitable habitat surrounding the project site. Nearest documented occurrence is over 7 miles from the project site.
Greater sandhill crane *Grus canadensis tabida*	*	ST, CFP	Open freshwater wetlands, meadows, grass-lands, pastures, agricultural fields, seasonal wetlands. The Central Valley Population breeds in northeastern California and winters in the Central Valley.	**Low.** Project area does not provide suitable foraging or breeding habitat. Project area is within the broad corridor used by migrating cranes; however, cranes typically fly at a much higher altitude than the turbine (Nagy et al., 2012).

Table 3.4-1. Special-status Species that May Occur within the Project Impact Area

Scientific Name / Common Name	Listing Status		Habitat Type and General California Range	Potential to Occur in Project Impact Area[3]
	Fed[1]	State[2]		
Least Bell's vireo *Vireo bellii pusillus*	FE	SE	Found in lowland riparian with willows and dense understory. Nests in a variety of plants that provide concealment with dense foliage. Current range primarily southern Calif but expanding back into historic range, which included Central Valley north to Red Bluff. 2005-2007 nest records at San Joaquin River National Wildlife Refuge, Stanislaus County; no recent nesting there.	**Minimal.** Nearest documented occurrence is over 5 miles from the project site. No suitable riparian habitat.
Least bittern *Ixobrychus exilis*	*	SSC	Cattail and bulrush marshes. Primarily a summer resident; some winter in southern California. Breeds primarily in Central Valley and southern coast.	**Low.** Limited suitable habitat associated with the irrigation channel.
Lesser sandhill crane *Grus canadensis canadensis*	*	SSC	Pastures, moist grasslands, agricultural fields, and shallow wetlands. Winter resident and migrant; most winter in the Central Valley, small numbers winter in Imperial County south of the Salton Sea.	**High.** Suitable foraging habitat surrounding the project site.
Loggerhead shrike *Lanius ludovicianus*	*	SSC	Prefers open, thinly wooded land or scrub savanna with clearings, including meadows, pastures, old orchards. Nests in dense shrubs or small trees with thick foliage, sometimes isolated trees. Ground-hunting bird that hunts from fence line or utility line perches – typically within 3 to 16 feet (1 to 5 meters) above the ground and within 33 feet (10 meters) of perches. Found in suitable habitats throughout the state; absent from Sierra and Cascades and primarily forested areas.	**High.** Suitable foraging and nesting habitat in vicinity of project site.
Mountain plover *Charadrius montanus*	*	SSC	Winter resident on plowed fields, open grasslands with short vegetation, and open sagebrush areas in Central Valley, generally below 1000 feet and rarely near water. Avoids high, dense cover. Found in Central Valley from Sutter/Yuba County south, foothill valleys west of San Joaquin Valley, and Imperial Valley.	**Moderate.** Suitable wintering habitat surrounding project site.
Northern harrier *Circus cyaneus*	*	SSC	Nests in a variety of open habitats, especially meadows, grasslands, and open rangelands in dense grasses and shrubs. Resident through much of the Central Valley and Bay Area as well as other parts of the state; may winter where it is not resident.	**High.** Observed in vicinity of project site (Barnett, 2013; Bogle, 2017). Suitable foraging habitat surrounding the project site. Marginal nesting habitat near irrigation canal; low potential to support nesting.
Purple martin *Progne subis*	*	SSC	Forest and woodland habitats at low to intermediate elevations. Summer resident and migrant. Breeds mainly in mountains in localized areas of southern, central, and northern California.	**Low.** Limited suitable habitat in project vicinity.

Table 3.4-1. Special-status Species that May Occur within the Project Impact Area

Scientific Name / Common Name	Listing Status		Habitat Type and General California Range	Potential to Occur in Project Impact Area[3]
	Fed[1]	State[2]		
Song sparrow *Melospiza melodia* (Modesto population)	*	SSC	Freshwater cattail or tule marsh, riparian willow thickets, riparian forest, vegetated irrigation canals. The Modesto population breeds and winters in northern portions of the Central Valley and is locally abundant in the Sacramento–San Joaquin River Delta.	**High.** Documented occurrences within 5 miles of the project site. Marginally suitable habitat along irrigation canal.
Swainson's hawk *Buteo swainsoni*	*	ST	Nests in riparian areas and isolated tree stands in open desert, grassland, and cropland. Forages in grasslands, pastures, and suitable grain or alfalfa fields. Primarily a summer resident of the Central Valley and northeastern California; small year-round population in the Delta.	**High.** Many documented occurrences within 5 miles of the project site. Suitable foraging habitat surrounding the project site, particularly the adjacent alfalfa fields. Nearest suitable nest tree is 0.3 miles southeast of project site. Nearest documented nest about 1 mile from project site. At least 20 nests have been documented within 3 miles of the site (Estep, 2013) and 18 active nests were documented within 5 miles during 2016 breeding season (Bogle, 2017).
Tricolored blackbird *Agelaius tricolor*	*	Cand	Nests in large colonies near open water in cattail, bulrush, willow, blackberry, wild rose, nettle, and thistle, with open foraging habitat nearby. Endemic and highly colonial. Most numerous in Central Valley.	**High.** Documented occurrence within 5 miles of the project site. Emergent vegetation in irrigation canal insufficient to support breeding, but suitable foraging habitat surrounding the project site.
Western snowy plover *Charadrius alexandrinus nivosus*	FT Pacific coastal population only	SSC	Salt marsh, foredunes, gravel or sand beaches, alkali sinks, playas, mud flats. Breeds and winters along Pacific coast on beaches and other open, sandy, or salt pan areas.	**Minimal.** No suitable habitat. No documented occurrences within 5 miles of the project site.
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT	SE	Dense riparian forest. Summer resident that breeds in scattered locations in Central Valley, southern California, and along Colorado River.	**Minimal.** Documented occurrence within 5 miles of the project site, but no suitable habitat on or near the project site.
White-tailed kite *Elanus leucurus*	*	CFP	Low rolling foothills/valley margins with scattered oaks; open grasslands, meadows, or marshes near isolated dense-topped trees for nesting and perching. Found throughout coastal and interior California; absent from higher elevations and heavily wooded areas.	**High.** Documented occurrence within 5 miles of the project site; observed in vicinity of project site (Barnett, 2013). Suitable foraging habitat surrounding the project site. Suitable nest trees within about 0.3 miles from project site. Nearest reported nest 8 miles from project site.

Table 3.4-1. Special-status Species that May Occur within the Project Impact Area

Scientific Name / Common Name	Listing Status		Habitat Type and General California Range	Potential to Occur in Project Impact Area[3]
	Fed[1]	State[2]		
Yellow-breasted chat *Icteria virens*	*	SSC	Dense riparian habitat, generally below about 4500 feet elevation. Summer resident and migrant. Rare breeder in Central Valley, more common in northwestern California.	**Minimal.** No documented occurrences within 5 miles of the project site. No suitable riparian habitat.
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	*	SSC	Nests in freshwater marshes near open water. Found in Central Valley, northeastern and eastern California, and patchily distributed in southern California. Scarce breeder in Central Valley.	**Moderate.** Nearest documented occurrence about 7 miles from the project site. Suitable foraging habitat surrounding the project site.
Yellow warbler *Setophaga petechial*	*	SSC	Riparian habitat, mainly willow and cottonwood, along streams and in wet meadows. Summer resident and migrant. Nearly extirpated in Central Valley, but breeds in northern California and locally in small numbers in the central and southern coasts and southern deserts.	**Minimal.** No documented occurrences within 5 miles of the project site. No suitable riparian habitat.
Migratory birds	MBTA	Cal FGC	Nesting migratory birds and their eggs and nests are protected by state and federal statute.	**High** potential for nesting in the project vicinity.
MAMMALS				
American badger *Taxidea taxus*	*	SSC	Most abundant in drier, open stages of most habitats; uses underground dens. Resident in suitable habitat throughout the state.	**Minimal.** Documented occurrence within 5 miles of the project site. Limited suitable habitat.
Pallid bat *Antrozous pallidus*	*	SSC	Roosts in rocky outcrops, cliffs, caves, mines, trees (including orchards), bridges, barns, porches, bat boxes, occupied and vacant buildings, and even on or near the ground. Forages over open grasslands, oak savanna grasslands, open pine forests, talus slopes, gravel roads, orchards, and vineyards. Range includes all of California.	**Moderate (roosting), high (foraging).** Some potentially suitable roosting habitat in project vicinity. Suitable foraging habitat surrounding project site.
Townsend's big-eared bat *Corynorhinus townsendii*	*	Cand	Found in a variety of habitats. Roosts in caves, mines, tunnels, and buildings, preferring sites with caves and cavernous features; also roosts in old-growth sycamore. Most common in mesic areas. Found in suitable habitats throughout California.	**Low (roosting), moderate (foraging).** Limited potentially suitable roosting habitat in project vicinity. Suitable foraging habitat surrounding project site.
Western mastiff bat *Eumops perotis*	*	SSC	Roosts primarily in cliffs high above the ground; may also use crevices in buildings, bridges, or boulders. Most common in broad, open areas in habitats from deserts to woodlands to alpine meadows. Range principally desert southwest regions, but extends through coast ranges to SF Bay and elsewhere in California to the Oregon border.	**Low (roosting), moderate (foraging).** Limited potentially suitable roosting habitat in project vicinity. Suitable foraging habitat surrounding project site.

Table 3.4-1. Special-status Species that May Occur within the Project Impact Area

Scientific Name / Common Name	Listing Status		Habitat Type and General California Range	Potential to Occur in Project Impact Area[3]
	Fed[1]	State[2]		
Western red bat *Lasiurus blossevillii*	*	SSC	Roosts primarily in foliage of mature trees, especially willows, cottonwoods, sycamores, and walnuts, in edge habitats adjacent to streams, open fields, orchards, and sometimes urban areas. Females are riparian-dependent. Prefers edges or habitat mosaics with trees for roosting and open areas for foraging. Found throughout California from Sierra/Cascade foothills west to the coast.	**Moderate (roosting), high (foraging).** Some potentially suitable roosting habitat in project vicinity. Suitable foraging habitat surrounding project site.

1 - Federal Status:
FE = Endangered – FESA
FT = Threatened – FESA
BGEPA = Bald and Golden Eagle Protection Act
MBTA = Migratory Bird Treaty Act
* = no federal status

2 - State Status:
SE = Endangered – CESA
ST = Threatened – CESA
Cand = candidate for listing as threatened or endangered under the CESA
SSC = California species of special concern
CFP = California fully protected. Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.
* = no state status

3 - Likelihood of occurrence determined by habitat presence and quality, regional species occurrence records, and geographic range.

Burrowing Owl

Burrowing owl is a state species of special concern that nests in ground burrows, usually those constructed by ground squirrels. Associated primarily with grassland habitats, this species is also found along roadside and field edges, grassy levees, and in remnant grassland or ruderal patches within cultivated landscapes. The grassy berm around the water treatment ponds and the edges of the agricultural fields support moderately suitable burrowing habitat for this species. The agricultural fields adjacent to the project area provide suitable foraging habitat for this species.

Golden Eagle

Golden eagle is a fully protected species under California Fish and Game Code and is protected under the federal Bald and Golden Eagle Protection Act. There are several golden eagle nests known to occur in the Coast Ranges in the western portion of the county and sightings of foraging golden eagles are relatively frequent in the pasturelands and grassland habitats within and immediately adjacent to the Coast Ranges. There are also several historic and one recent golden eagle nest in the Montezuma Hills in Solano County (Smith, 2012). However, there are no golden eagle nests known to occur in the open agricultural habitats of Yolo County or other neighboring lowland agricultural areas. Golden eagles typically nest and forage in hilly grassland or shrubland communities. However, they are occasionally observed on the valley floor, including in Yolo County, mainly during the non-breeding season. A single golden eagle was observed during aerial surveys of the project (Barnett, 2013).

Sandhill Crane

Greater sandhill crane is listed as a threatened species under the California Endangered Species Act. The project site is not within a greater sandhill crane use area as defined by various researchers (Pogsdon and Lindstedt, 1991; Littlefield and Ivey, 2000) and related biological and land use studies including the extensive analysis conducted for the Bay Delta Conservation Plan (BDCP) (ICF, 2013). The nearest recorded crane roost site is approximately 5 miles southeast of the project site, east of the Sacramento River. While the BDCP identifies some lands west of the Sacramento River as potential foraging habitat for cranes (ICF, 2013), the species has not been reported from this location nor is the species typically found west of the Sacramento River, particularly north of Courtland. The *Conservation Assessment for Greater Sandhill Cranes Wintering on the Cosumnes River Floodplain and Delta Regions of California* (Littlefield and Ivey, 2000), described use of the Delta area by sandhill cranes. The assessment included a map of the islands within the Delta that are most commonly frequented by the birds; the map does not include any areas in Clarksburg north of Courtland. While cranes have been recorded flying over the Yolo Bypass Wildlife Refuge, the species is not known to occur on the refuge or elsewhere in Yolo County. Incidentally reported occurrences of migrating cranes flying above the Yolo Bypass Wildlife Refuge are at altitudes much higher than the proposed turbine. While the proposed turbine occurs within the broad corridor used by migrating cranes, they typically occur at an altitude much higher than the rotor swept area of the proposed turbine (Nagy et al., 2012).

Loggerhead Shrike

Loggerhead shrike (*Lanius ludovicianus*) is a state species of special concern. This species is relatively common in Yolo County occurring throughout much of the lowland grassland and agricultural portion of the county. It nests in shrubs and small trees and hunts in open agricultural and grassland habitats. The loggerhead shrike is a ground-hunting bird that hunts from fence line or utility line perches — typically within 1 to 5 meters above the ground and within 10 meters of perches (Yosef and Grubb, 1993; Yosef, 1996).

Northern Harrier

Northern harrier is relatively common in Yolo County and in the vicinity of the project site. This species nests on the ground in grassland or marshy areas and forages in grassland and cultivated lands. The grassy berm around the water treatment ponds is too steep, narrow, and exposed to support nesting habitat for this species; habitat associated with the irrigation canal is similarly unsuitable for nesting. This species may forage in the agricultural lands in the vicinity of the project site. Two northern harriers were observed during aerial surveys of the project (Barnett, 2013) and northern harriers were observed regularly within a 5-mile radius of the site during the 2016 Swainson's hawk breeding season census.

Swainson's Hawk

Swainson's hawk is a state-listed threatened species. It nests in mature native and nonnative trees and forages in grassland and agricultural habitats. Although it's a listed species, the Swainson's hawk is relatively common in Yolo County and in the vicinity of the project site due to the availability of nest trees and the agricultural crop patterns that are compatible with Swainson's hawk foraging. Yolo County has a dense nesting population of Swainson's hawk and the densest nesting population reported within the range of the species (Bechard et al., 2010). According to census data (Estep, 2007; 2008) and the CNDDB (2016b), over 90 nesting territories are known to occur within 10 miles of the project site; 17 within 5 miles; and 5 within 3 miles. Updated field work during the 2016 breeding season identified 18 active nests within a 5-mile radius of the site. However, while many nesting territories are known to be in the surrounding area,

there are relatively few in the immediate vicinity of the project site due to a relatively sparse distribution of potential nesting habitat. Nesting habitat in the vicinity of the project site consists primarily of native and non-native trees around farmhouses and along field borders or roadsides. The nearest suitable nest trees are approximately 0.3 miles to the southeast at a rural residence, approximately 0.4 miles east along an irrigation ditch, and approximately 0.7 miles northwest at a rural residence. The nearest nest was approximately 0.8 miles from the site, one nest was 1 mile from the site, three were from 1 to 2 miles, six were from 2 to 3 miles, four were from 3 to 4 miles, and three were from 4 to 5 miles from the site (Bogle, 2017). Swainson's hawks may forage in the agricultural lands in the vicinity of the project site, and are particularly likely to occur in the adjacent alfalfa fields.

Tricolored Blackbird

Tricolored blackbird (*Agelaius tricolor*) is a state species of special concern that nests in colonies from several dozen to several thousand breeding pairs. They have three basic requirements for selecting their breeding colony sites: open accessible water; a protected nesting substrate, including either flooded or thorny/spiny vegetation; and a suitable foraging space providing adequate insect prey within a few miles of the nesting colony (Meese et al., 2014). Nesting colonies are found in freshwater emergent marshes, in willows, blackberry bramble, thistles, or nettles. Some of the largest recent colonies have been in silage and grain fields (Meese et al., 2014). The only suitable nesting habitat in the vicinity of the project site is the cattail/bulrush emergent wetland vegetation associated with the irrigation channel. However, the small patches of emergent wetland are unlikely to support nesting of this species. This species could also could potentially forage in the agricultural fields adjacent to the project site during the winter nonbreeding season.

White-tailed Kite

The white-tailed kite is a fully protected species in California. A regular breeder in Yolo County, it is relatively uncommon. White-tailed kites nest in native (primarily willow, valley oak, cottonwood, and walnut) and some nonnative trees and forage in grassland, seasonal wetland, and agricultural habitats. The nearest suitable nest tree is approximately 0.3 miles southeast of the project site. The nearest reported nest is approximately 8 miles north of the project site (Estep, 2008). White-tailed kites may forage in the agricultural lands in the vicinity of the project site, and are particularly likely to occur in the adjacent alfalfa fields. White-tailed kites were observed during aerial surveys of the project (Barnett, 2013).

Regulatory Environment

Federal

Endangered Species Act (FESA), 16 USC §§ 1531, *et seq.* Protects plants and wildlife that are listed as endangered or threatened by the U.S. Fish and Wildlife Service and National Marine Fisheries Service (NMFS). Section 9 of FESA prohibits the "take" of endangered wildlife, which is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" 16 USC § 1532(19). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any listed plant on federal land and removing, cutting, digging up, damaging, or destroying any listed plant on non-federal land in knowing violation of state law (16 USC § 1538). Section 10 of FESA provides for issuance of incidental take permits to private parties provided a habitat conservation plan is developed.

Migratory Bird Treaty Act (MBTA), 16 USC §§ 703-712. Under the MBTA, it is unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg or any such bird, unless authorized under a permit issued by the Secretary of the Interior. Some regulatory exceptions apply. Take is defined in regulations as: "pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect."

Clean Water Act (CWA), 33 USC §§ 1251-1387. The objective of the CWA is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." 33 USC § 1251. Section 404 of the CWA prohibits the discharge of dredged or fill material into "waters of the United States" without a permit from the USACE. 33 USC § 1344.

State

California Environmental Quality Act. The California Environmental Quality Act (CEQA) requires that significant environmental impacts of proposed projects be reduced to a less-than-significant level through adoption of feasible avoidance, minimization, or mitigation measures unless overriding considerations are identified and documented. During the CEQA review process, environmental impacts are assessed and a significance determination provided based on pre-established thresholds of significance. Thresholds are established using guidance from CEQA, particularly Appendix G of the State CEQA guidelines and CEQA Section 15065 (Mandatory Findings of Significance). CEQA guidance is then refined or defined based on further direction from the lead agency.

Consistent with Appendix G of the State CEQA guidelines, a biological resource impact is considered significant (before considering offsetting mitigation measures) if the lead agency determines that project implementation would result in one or more of the following:

- Substantial adverse effects, either directly or through habitat modifications, on any species identified as being a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;
- A substantial adverse effect on a special-status wildlife species is typically defined as one that would:
  - Reduce the known distribution of a species,
  - Reduce the local or regional population of a species,
  - Increase predation of a species leading to population reduction,
  - Reduce habitat availability sufficient to affect potential reproduction, or
  - Reduce habitat availability sufficient to constrain the distribution of a species and not allow for natural changes in distributional patterns over time.
- Substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or interference with the use of native wildlife nursery sites.
- Substantial interference with resident wildlife movement is typically defined as obstructions that prevent or limit wildlife access to key habitats, such as water sources or foraging habitats, or obstructions that prohibit access through key movement corridors considered important for wildlife to meet needs for food, water, reproduction, and local dispersal.
- Substantial interference with migratory wildlife movement is typically defined as obstructions that prevent or limit regional wildlife movement through the project area to meet requirements for migration, dispersal, and gene flow that exceed the defined baseline condition.

Consistent with CEQA Section 15065 (Mandatory Findings of Significance), a biological resource impact is considered significant if the project has the potential to:

- substantially degrade the quality of the environment;
- substantially reduce the habitat of a fish or wildlife species;

- cause a fish or wildlife population to drop below self-sustaining levels;
- threaten to eliminate a plant or animal community; or
- substantially reduce the number or restrict the range of an endangered, rare or threatened species.

CEQA defines the significance of an impact on a state-listed species based on the following:

- Appendix G of the State CEQA guidelines states that a biological resource impact is considered significant (before considering offsetting mitigation measures) if the lead agency determines that project implementation would result in "substantial adverse effects, either directly or through habitat modifications, on any species identified as being a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFG or USFWS; and
- CEQA Section 15065 (Mandatory Findings of Significance), a biological resource impact is considered significant if the project has the potential to "substantially reduce the number or restrict the range of an endangered, rare or threatened species."

California Endangered Species Act (CESA). Prohibits the take, possession, purchase, sale, import or export of endangered, threatened, or candidate species unless otherwise authorized by permit or in the regulations. Take is defined as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful actions. State lead agencies are required to consult with the CDFW to ensure that any action they undertake is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of essential habitat.

Section 2081 subdivision (b) of the Fish and Game Code allows CDFW to issue an incidental take permit for a species listed as candidate, threatened, or endangered only if specific criteria are met. These criteria are reiterated in Title 14 of the California Code of Regulations, Sections 783.4 subdivisions (a) and (b), and are as follows:

1. The authorized take is incidental to an otherwise lawful activity;
2. The impacts of the authorized take are minimized and fully mitigated;
3. The measures required to minimize and fully mitigate the impacts of the authorized take:
   a. are roughly proportional in extent to the impact of the taking on the species,
   b. maintain the applicant's objectives to the greatest extent possible, and
   c. may be successfully implemented by the applicant
4. Adequate funding is provided to implement the required minimization and mitigation measures and to monitor compliance with and the effectiveness of the measures; and
5. Issuance of the permit will not jeopardize the continued existence of a CESA-listed species.

The terms and conditions of the permit will be determined by CDFW and must ensure that the issuance criteria in items 1 through 5 above are met.

California Fish and Game Code section 3503.5 – Protection of Raptors. States that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (raptors) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto."

California Fish and Game Code sections 3511, 4700, 5050, and 5515 – Fully Protected Species. Species designated as fully protected under California Fish and Game Code may not be taken or possessed at any time. Prohibits any state agency from issuing incidental take permits for fully protected species, except for scientific research.

California Fish and Game Code section 1602 – Lake and Streambed Alteration Program. Requires that a streambed alteration application be submitted to the CDFW for "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." Often, Projects that require a streambed alteration agreement also require a permit from the U.S. Army Corps of Engineers (USACE) under section 404 of the Clean Water Act. In these instances, the conditions of the section 404 permit and the streambed alteration agreement may overlap.

Local

Yolo County 2030 Countywide General Plan. Relevant polices from the Land Use and Community Character and the Conservation and Open Space Elements of the 2030 General Plan are listed below, numbered here as they are in the General Plan:

Land Use and Community Character Element

CC-4.32. Emphasize the use of regionally native drought tolerant plants for landscaping where appropriate.

Conservation and Open Space Element

CO-1.22. Emphasize the use of native grasses, shrubs and trees as the primary focus of landscaping and restoration work within resource parks and other open spaces.

CO-2.9. Protect riparian corridors to maintain and balance wildlife values.

CO-2.10. Encourage the restoration of native habitat.

CO-2.15. Encourage the use of mosquito abatement methods that are compatible with protecting fish and wildlife, including native insect pollinators.

CO-2.24. Projects that would impact Swainson's hawk foraging habitat shall participate in the Agreement Regarding Mitigation for Impacts to Swainson's Hawk Foraging Habitat in Yolo County entered into by the CDFW and the Yolo County HCP/NCCP Joint Powers Agency, or satisfy other subsequent adopted mitigation requirements consistent with applicable local, State, and federal requirements.

CO-2.30. Promote native perennial grass habitat restoration and controlled fire management in grazing lands to reduce invasive species cover and enhance rangeland forage.

CO-2.32. Protect wetland ecosystems by minimizing erosion and pollution from grading, especially during grading and construction projects.

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 County has no tree protection or other biological resource protection ordinances that would pertain to the proposed project.

Delta Protection Commission Land Use and Resource Management Plan. The relevant policy from the Plan is shown below, numbered as in the Plan.

Natural Resources P-1. Preserve and protect the natural resources of the Delta. Promote protection of remnants of riparian and aquatic habitat. Encourage compatibility between agricultural practices, recreational uses and wildlife habitat.

Impacts and Mitigation Measures

Significance Criteria

The proposed project would have a significant impact on biological resources if any activity associated with its construction, operation, maintenance, or decommissioning would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan
- Substantially reduce the number or restrict the range of an endangered, rare or threatened species

Impact Analysis

Impact BIO-1a	Construction of the project has the potential to have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service

There would be no impact to any special-status plants, invertebrates, reptiles or amphibians because none have the potential to occur in the proposed project area or areas potentially affected by the proposed project. Suitable roost sites for special-status bats are sufficiently far from the proposed project area as to not be disturbed by construction activities, including noise.

Special-status birds listed in Table 3.4-1 have potential to nest in the immediate vicinity of the proposed project. Burrowing owl, killdeer (*Charadrius vociferus*), and northern harrier are among the species that could nest at or below ground level along the irrigation canal and edges of the agricultural field; killdeers may construct scrape nests in dirt roadways used for construction access. The nearest suitable nest trees for Swainson's hawk are approximately 0.3 miles to the southeast at a rural residence, approximately 0.4

miles east along an irrigation ditch, and approximately 0.7 miles northwest at a rural residence. Additionally, tricolored blackbird and red-winged blackbird (*Agelaius phoeniceus*) have low potential to nest in the sparse emergent vegetation in with the irrigation canal. The emergent vegetation would not be disturbed by construction activities, including installation of the temporary bridge across the irrigation canal.

Noise and increased human activities associated with construction of the proposed project have the potential to disturb nesting birds, if present near construction activities. Disturbance associated with construction activities may result in nest abandonment or failure. There are two suitable Swainson's hawk nest trees within 0.5 miles of proposed construction activities, which is considered the distance within which disturbance impacts could occur. Construction equipment may also collapse or destroy burrowing owl burrows, northern harrier nests, and killdeer nests, and nests of other birds constructed at or below ground level, which are particularly susceptible to direct damage from equipment and vehicles. Birds may also be injured or killed if present in construction areas.

The mandatory findings of CEQA (Section 15065) define the criteria to be used to determine the level of significance for this impact. The section states: "A biological resource impact is considered significant if the project has the potential to substantially reduce the number or restrict the range of an endangered, rare, or threatened species."

Swainson's hawks occur in the Central Valley almost exclusively during the breeding season, from approximately mid-March through mid-September. Nesting Swainson's hawks in the Central Valley are usually habituated to human activities, but are sometimes sensitive to noise and other disturbances near the nest (Bogle, 2017). Potential indirect impacts include noise and vibration, fugitive dust, and increased human activity. If construction were to occur during the non-nesting season (approximately mid-September to mid-March) no potential for take would occur. However, if the project were constructed during the nesting season, the project would still not be expected to result in any of the effects noted above because (1) the nearest potential nesting locations (approximately 0.3 to 0,7 miles from the project site) are along roadsides and farm residences; thus, any nesting hawks would be acclimated to relatively high levels of disturbance such as harvesting activities, crop dusting, etc.; and (2) the nearest active Swainson's hawk nest is too far away to be subject to construction disturbances.

Given the small construction area, the limited nesting substrate, the short-term (eight- to twelve-week) duration of construction, and the existing noise and human presence associated with operation of the wine production facility and active agricultural operations, it is the judgment of the lead agency that impacts to birds from construction of the proposed wind turbine, would not substantially reduce the number or restrict the range of or otherwise have a substantial adverse effect on any bird species. Therefore, construction impacts to birds are less than significant under CEQA and, thus, would not require mitigation.

Nonetheless, to avoid and minimize adverse effects to birds and to ensure compliance with the federal MBTA and California Fish and Game Code, the County recommends several impact avoidance and minimization measures. These are summarized below; full text of the measures is presented in Chapter 6.

- **Assign a designated biologist.** Bogle will designate a qualified biologist, who will be responsible for implementing the biological resources conditions of approval, including impact avoidance and minimization measures and mitigation measures, as well as any permit conditions.
- **Develop and implement a Worker Environmental Awareness Program (WEAP).** Bogle will develop and implement a WEAP in which each of its employees, monitors, inspectors, contractors and subcontractors who work on the project site during construction and operation, will be informed about biological resources and requirements associated with the project.

- **Conduct pre-construction surveys for burrowing owl and implement impact avoidance and minimization measures.** Prior to construction, a qualified biologist will conduct pre-construction surveys to identify active burrowing owl nesting or wintering burrows that could be disturbed by construction activities, implement construction restrictions and/or no-disturbance setbacks to avoid nest abandonment or failure, relocate project components to avoid winter burrows, acquire compensatory mitigation, and monitor to ensure effectiveness.
- **Conduct pre-construction surveys for Swainson's hawk and implement impact avoidance and minimization measures.** A qualified biologist will conduct preconstruction surveys to search for active Swainson's hawk nests within 0.5 miles of construction activities if construction would occur during the nesting season, implement a no-disturbance buffers to avoid nest abandonment or failure, and monitor to ensure effectiveness.
- **Conduct pre-construction surveys for nesting birds and implement impact avoidance and minimization measures.** A qualified biologist will conduct preconstruction surveys for active bird nests within 500 feet of construction activities, implement construction restrictions and/or no-disturbance buffers to avoid nest abandonment or failure, and monitor to ensure effectiveness.

Level of Significance: Less than significant. No mitigation required.

Impact BIO-1b	Loss of foraging habitat from construction and operation of the project has the potential to have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service

Implementation of the proposed project would result in permanent loss of 0.07 acres and temporary loss of 3.14 acres of ground foraging habitat for raptors and other birds, including burrowing owl, Swainson's hawk and special-status bats.

There are approximately 405,625 acres of suitable foraging habitat for Swainson's hawk in the Yolo Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) area (Estep, 2015), which encompasses the proposed project area. Of this, approximately 41,692 is alfalfa, which includes the proposed project area and is considered high value foraging habitat for Swainson's hawk, but also provides foraging habitat for other raptors and birds. Within a 10-mile radius of the site, the majority of the land is in active agricultural production. While some of this land is in fruit and nut orchard production, there appears to be plentiful alfalfa, pasture, wheat, and row crops that Swainson's hawks prefer (Bogle, 2017). Nesting Swainson's hawks are distributed relatively evenly throughout this agricultural landscape where trees are available as nest sites. The matrix of alfalfa fields, irrigated pastures, and the annually rotated irrigated cropland, particularly fields planted with wheat and tomatoes, are used by foraging Swainson's hawks as rodent prey become accessible during the growing and harvesting seasons. Alfalfa fields are particularly suitable for Swainson's hawk foraging and receive high levels of foraging use by Swainson's hawks due to regular mowing, which reduces cover and increases prey accessibility, and periodic flood irrigation, which exposes prey. The agricultural matrix throughout the area is highly suitable for foraging Swainson's hawks and in part explain the high nesting densities found there. The permanent loss of foraging habitat (0.07 acres) would be minimal by comparison with foraging habitat availability in the surrounding area and by comparison with the home ranges of nesting Swainson's hawks. Implementation of the proposed project would result in a permanent loss of 0.0002 percent of the high value foraging habitat in the HCP/NCCP area. In areas of high value foraging habitat, such as the proposed project area, nesting Swainson's hawk may have home/foraging ranges as small as 830 acres; the proposed project would remove 0.008 percent of this area.

Burrowing owls have smaller home ranges than Swainson's hawk, although few measures of burrowing owl home range have been published; published studies have reported widely disparate results with differing methods for estimating abundance. Two separate studies using similar methods estimated that the mean home range was 595 acres for six owls (Haug and Oliphant, 1990) and 437 acres for nine male owls (Gervais et al., 2003). Conservatively assuming the 80-acre alfalfa field is the extent of the foraging range for any owls in the proposed project area, implementation of the project would permanently remove 0.08 percent of the foraging habitat. Permanent loss of a minimal amount of foraging habitat and associated food supply would result in a negligible (if any) decrease in productivity for affected species.

Temporary disturbance to the alfalfa field would be restored with the next planting and would not substantially affect the food supply for affected species. Impacts to special-status species from temporary or permanent preclusion of ground foraging habitat would be considered less than significant and would not require mitigation. Nonetheless, to avoid and minimize adverse effects from loss of foraging habitat and to ensure consistency with: conservation policy CO-2.24 of the 2030 Countywide General Plan, the compensatory mitigation required by CDFW throughout the state for other projects resulting in permanent loss of foraging habitat (with the exception of Antelope Valley); the interim Agreement Regarding Mitigation for Impacts to Swainson's Hawk in Yolo County (CDFW and JPA, 2002); and conditions of approval required for loss of Swainson's hawk foraging habitat from construction of the adjacent Bogle wine production facility (Yolo County, 2009), the County recommends the following impact avoidance and minimization measure (refer to Chapter 6 for the full text of this measure):

- **Compensate for loss of foraging habitat.** The applicant will purchase mitigation credits from a CDFW-approved conservation bank located in Yolo County (or other location as approved by the County and CDFW) or acquire and preserve Swainson's hawk habitat at a County- and CDFW-approved location based on a ratio of 0.25:1 for temporary ground foraging habitat loss, and a ratio of 1:1 for permanent ground foraging habitat loss.

In addition to the less-than-significant impact to ground foraging, the functional use of the aerial space within the rotor swept area and the immediate vicinity of the turbine may decrease or be lost by birds avoiding the turbine. There is no scientific evidence or agency guidance available that defines the distance from a single turbine that a bird might alter its course to avoid collision and it is not possible to predict whether and how birds might alter aerial foraging behavior in response to the presence of the proposed turbine. Unlike the potential impacts of a multi-turbine wind farm, the proposed single turbine would not preclude a substantial amount of aerial foraging habitat. It is unlikely birds would substantially alter migratory or movement pathways such that there would be a noticeable energetic cost, decrease in productivity, or other substantial effect. This potential impact to aerial forging is considered less than significant. Nonetheless, Bogle proposes to offset the loss of aerial foraging habitat, based on the 2.6-acre rotor-swept area of the proposed turbine, through purchase of mitigation credits from a CDFW-approved conservation bank located in Yolo County (or other location as approved by the County and CDFW) or acquire and preserve Swainson's hawk habitat at a County- and CDFW-approved location, as specified in the Application for Incidental Take (Appendix E).

Level of Significance: Less than significant. No mitigation required.

Impact BIO-1c	Operation of the project has the potential to have a substantial adverse effect, either directly or through habitat modifications, on any bird species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service

Birds occasionally collide with operating wind turbines. In general, wind turbine-related fatality is responsible for only a small proportion of overall collision-related fatalities in the United States relative to other

sources (e.g., buildings, power lines, communication towers, roads) (Erickson et al., 2005). However, wind resource areas are sometimes associated with conditions that also attract large concentrations of resident or migratory birds, particularly raptors. Wind patterns, topography, and land use/prey availability influence migratory patterns and use of the landscape by many raptor species. Wind turbines sited in areas of high raptor use can lead to high incidences of collision fatalities (Smallwood and Thelander, 2004). Collision fatalities of some species, particularly those that are state or federally listed, can have a greater effect on local or regional populations.

Turbine siting, the number and proximity of turbines, and structural and operational features of the turbine all influence the extent of potential collision fatalities. Generally, single turbines, particularly new generation turbines, are not expected to result in the same rate of collision fatalities compared with larger wind generation facilities where birds must negotiate through a dense turbine field. However, even with individual turbines, siting and the structural and operational features of the turbine may also influence the extent of potential collision fatality. For example, siting the turbine within a wetland area that attracts large numbers of birds, or in topographical conditions that concentrates migrating birds, can increase collision potential.

When turbines are sited in flat, open agricultural land, collision potential is generally expected to be substantially lower. In these areas, such as the proposed project area, birds tend to be more dispersed on the landscape, and the opportunity for birds to fly through the rotor swept area is correspondingly less. The proximity of the proposed project to the water treatment ponds may increase fatality potential to some extent due to potentially larger concentrations of birds using the ponds. Similarly, certain crop types in the adjacent field, such as alfalfa, may also increase bird use due to periodic flood irrigation and mowing and therefore increase fatality potential.

Another factor influencing collision potential is the flight behavior of birds. For example, the proposed turbine would be located within the broad flyway corridor used by sandhill cranes during migration, although cranes do not use the Yolo Bypass Wildlife Area. Cranes typically occur at an altitude much higher than the rotor swept area of the proposed turbine. A study of Whooping and Sandhill Crane Behavior at an Operating Wind Farm in South Dakota (Nagy et al., 2012) concluded based on three years of monitoring that risk of turbine collision is minimal due to crane migratory flight behavior (tendency to fly above the height of the rotor swept area) when turbines are visible. Conversely, loggerhead shrikes typically occur below 30 meters, which is lower than the rotor swept area of the proposed turbine. All bird use and fatality monitoring reports from the Collinsville-Montezuma Hills Wind Resource Area (CMHWRA) in Solano County indicate that while loggerhead shrikes are common, no fatalities have been reported from any post-construction monitoring study (Kerlinger et al., 2006; 2009; 2010; ICF, 2012, AECOM, 2013).

While the actual extent of collision fatalities cannot be accurately predicted or estimated, it can be ascertained by examining the results of fatality monitoring surveys from other wind turbine projects in Yolo and Solano Counties. For example, wind farms in the CMHWRA have conducted multiple years of post-construction fatality monitoring. While perhaps not an equal comparison to the proposed project due to the differences between a large multi-turbine wind farm and a single wind turbine, monitoring results from the CMHWRA still provide some context for collision fatality potential. Reported on a per megawatt basis (see justification for use of this metric in Appendix D), two selected projects, Montezuma Wind and Shiloh II report fatality estimates of 4.23 and 7.09 total birds per megawatt per year, respectively. Of this total, raptors constitute 1.06 and 0.12 per megawatt per year. Applying these totals to the proposed project, the total estimated bird fatality from proposed turbine operation would range from 0.2 to 2.0 raptors per year and 7.8 and 13.1 total birds per year. Given the riskier landscape within a multi-turbine windfarm, it is likely that this would be an overestimate for the single proposed turbine.

Additional and perhaps more comparative insight can be derived by examining fatality patterns at other single wind turbines (see Table 3.4-2). Of particular relevance are the CEMEX turbine in Yolo County near the town of Madison, and the Superior Farms turbine in Solano County near the city of Dixon. These turbines are of similar size and occur in a similar setting to that of the proposed project. The CEMEX turbine, monitored for one year, is near a large water body that supports abundant avian wildlife, and the Superior Farms turbine, monitored for two years, is immediately adjacent to several wastewater ponds that attract waterfowl and other water birds yearlong. Both turbines are also in the vicinity of alfalfa fields that can attract groups of birds during flood irrigation and mowing events, and nesting raptors, including numerous Swainson's hawks and other raptor species. To date, and using the same fatality monitoring procedures used at the CMHWRA, fatality of one small passerine has been reported at the CEMEX turbine in Yolo County and seven bird fatalities have been reported at the Superior Farms turbine: two Canada goose goslings, two mallards, two black-necked stilts, and one rock pigeon. No raptor or special-status bird fatalities have been reported at either facility.

Table 3.4-2. Comparison of Unadjusted Mortality Monitoring Results from Single Wind Turbines

	CEMEX Yolo County 1 year	Superior Farms Solano County 2 years	CEMEX Black Mountain 1 year	Ready Mix Riverside County 6 months
Raptors	0	0	0	0
Waterfowl	0	3	0	0
All birds	1	7	0	0

Sources: Estep, 2013; Estep, 2015; BioResource Consultants, 2013; Plegadis, 2013

Turbine operation could be hazardous to birds foraging in the agricultural fields as well as those moving across the project site between wetland areas and preserves and throughout the greater Delta region. However, it is expected that the proposed turbine would be responsible for a low level of associated collision fatalities similar to those presented in Table 2.4-3. These low levels of fatality resulting from the effects of a single turbine would have negligible effects on local or regional populations. Impacts would be less than significant under CEQA (i.e., would not substantially reduce the number or restrict the range of or otherwise result in a substantial adverse effect to any bird species), and would not require mitigation.

Nonetheless, to avoid and minimize adverse effects to birds and to ensure compliance with the federal MBTA and California Fish and Game Code, the County recommends the following impact avoidance and minimization measure (refer to Chapter 6 for the full text of this measure):

- **Shut down turbine operation.** The applicant will discontinue operation of the turbine during periods of high use by raptors and other birds (i.e., daylight periods when alfalfa is being cut or other field crops are being harvested or flood irrigated) and not resume operation until a biologist has determined that no raptors are using the fields.

These are activities that attract foraging raptors, non-raptor predators and scavengers (e.g., ravens, crows, jays, mockingbirds, loggerhead shrikes). Turbine shutdown during these activities is also likely to reduce hazards for other birds, including waterbirds, which are attracted to flooded fields. Additionally, Mitigation Measure **BIO-2** (Develop and implement an Operational Monitoring and Reporting Program) would be implemented to address operational impacts to special-status bats (see Impact BIO-1d, below); implementation of this measure would also require monitoring and reporting of any bird injuries and fatalities attributable to operation of the turbine.

Swainson's Hawk

Yolo County has a dense population of nesting Swainson's hawks. There is no nesting habitat and no reported Swainson's hawk nests in the immediate vicinity of the proposed project; however, there are five reported nests within 3 miles of the project site, the nearest is one mile southeast. There are also nearly 300 nesting pairs of Swainson's hawks in Yolo County (Estep, 2008; CNDDB, 2016b; Bogle, 2017). Radio-telemetry results indicate that these birds have large home ranges and are highly mobile throughout a large area where they forage in compatible agricultural crops, especially alfalfa (Estep, 1989; Babcock, 1995). During periodic flood irrigation and mowing, alfalfa can also attract large foraging groups of Swainson's hawks. Therefore, there is high potential for Swainson's hawks to occur over the proposed project site at the altitude of the turbine's rotor swept area.

Because most wind generation facilities are located outside the range of the Swainson's hawk, there is limited fatality data that can be used to assess the susceptibility of the species to turbine collision. However, there are reports of Swainson's hawk collision fatality from the CMHWRA, a large wind farm with over 700 turbines in the Montezuma Hills of Solano County. Recent data indicate that as many as three Swainson's hawks have collided with wind turbines at the CMHWRA (ICF, 2012). More relevant information is available from the CEMEX Gravel and Superior Farms single turbine sites. As described above, both turbines are similar to the proposed turbine as both occur in similar agricultural landscapes, and both occur within large concentrations of nesting Swainson's hawks and other nesting raptors. No Swainson's hawk or other raptor species fatality has been reported at either facility (refer to Table 3.4-3). Based on these relatively limited data from similar turbines, Swainson's hawks do not appear to be particularly susceptible to collision with individual turbines within an open, flat agricultural landscape. However, because of the proximity of suitable habitat immediately surrounding the turbine site and the potential for concentrating Swainson's hawk use during flood irrigation and mowing activities, multiple Swainson's hawks are expected to occasionally forage close to the turbine and at the height of the rotor swept area, thereby increasing the potential for collision.

There are no documented Swainson's hawk fatality rates at operational wind turbines. Fatality rates for other species or species groups in the CMHWRA range from 0.07 to 0.15 per MW per year for red-tailed hawk and 0.15 to 0.22 per MW per year for all large birds (Kerlinger et al., 2006, 2009, 2010). Bogle (2017) calculates that the Swainson's hawk fatality rate for the project probably will not exceed one fatality every five years, but makes a conservative estimate that one fatality may occur every three years, due to the proposed turbine's proximity to high-value foraging habitat.

The mandatory findings of CEQA (Section 15065) define the criteria to be used to determine the level of significance for this impact. The section states: "A biological resource impact is considered significant if the project has the potential to substantially reduce the number or restrict the range of an endangered, rare, or threatened species."

There is potential for Swainson's hawk collision-related injury or mortality, estimated as approximately one mortality every three years. This collision potential is considered low because of the following factors:

- the project would consist of only a single turbine;
- the turbine would be located within an open, flat agricultural landscape that does not provide topographic or landscape features that would concentrate use by Swainson's hawks;
- the operational features of the proposed turbine would reduce collision potential (e.g., slow rotational speed);
- the turbine operation would be curtailed during periods of expected higher potential foraging use; and

- no Swainson's hawk or other raptor injury or mortality has been reported at similar single turbines in Yolo and Solano Counties.

The nesting population in Yolo County is estimated at approximately 300 nesting pairs (Estep, 2008). Continuous monitoring in Yolo County since the 1980s indicates that this population is stable and has possibly increased since monitoring began (Estep, 2016; Bogle, 2017). Therefore, it is reasonable to assume that there are at least 600 breeding adult Swainson's hawks in Yolo County along with an undetermined number of non-breeding adults and sub-adults (Estep, 2016). An estimated fatality rate of one Swainson's hawk every three years equates to 0.05 percent of the adult breeding population per year. It is the judgment of the lead agency that the loss of one Swainson's hawk every three years due to operation of the proposed wind turbine, in the context of a Yolo County population of more than 600 adult breeding birds, would not substantially reduce the number or restrict the range of or otherwise have a substantial adverse effect on this threatened species. Therefore, impacts to Swainson's hawk due to operation of the proposed turbine are less than significant under the CEQA criteria and, thus, would not require mitigation.

Injury or fatality of any number of Swainson's hawk, a State-threatened species, would constitute "take" pursuant to the California Endangered Species Act. To ensure compliance with the California Endangered Species Act, the County recommends that the applicant apply to CDFW for an Incidental Take Permit.[2] Additionally, to avoid and minimize adverse effects to Swainson's hawk, the County recommends that the applicant discontinue operation of the turbine during periods of high use by Swainson's hawk (and other raptors) (i.e., daylight periods when alfalfa is being cut or other field crops are being harvested or flood irrigated) and not resume operation until a biologist has determined that no Swainson's hawks are using the fields. The full text of these impact avoidance and minimization measures is presented in Chapter 6.

Level of Significance: Less than significant. No mitigation required.

Impact BIO-1d	Operation of the project has the potential to have a substantial adverse effect, either directly or through habitat modifications, on any bat species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service

Bats are known to occasionally collide with operating wind turbine rotors. The same factors that affect collision potential for birds, as described under Impact BIO-1c, also affect collision potential for bats; these factors include wind patterns, topography, land use/prey availability, turbine siting, the number and proximity of turbines, and structural and operational features. Generally, single turbines, particularly new generation turbines, are not expected to result in the same rate of collision fatalities compared with larger wind generation facilities where bats must negotiate through a dense turbine field. When turbines are sited in flat, open agricultural land like the proposed project area, collision potential is generally expected to be substantially lower because bats tend to be more dispersed on the landscape, and the opportunity for bats to fly through the rotor swept area is correspondingly less.

The status of regional bat populations is poorly known and the ecological impact of turbine-caused fatalities is not known. To estimate annual bat fatality from operation of the proposed turbine, the following fatality rates were applied from three wind projects in the CMHWRA.

[2] Appendix E is the Application for Incidental Take of Endangered Species, dated January 3, 2017. It was prepared by Bogle Vineyard, Inc., and will be submitted to the California Department of Fish and Wildlife.

- Solano Wind (Year 1): 0.3 bat fatalities/MW
- Montezuma Wind (Year 1): 1.9 bat fatalities/MW
- Shiloh II (Year 1): 2.7 bat fatalities/MW

Monitoring frequency of these studies was variable with Solano using a 14-day search interval (AECOM, 2013), Montezuma Wind using a combined 7-day and 14-day search interval (ICF, 2012), and Shiloh II using a 7-day search interval (Kerlinger et al., 2010). Fatality rates from all projects are adjusted for the effects of scavenger removal and observer detection bias.

The proposed turbine is 2.3 MW, so using the above CMHWRA fatality rates the bat fatality estimate ranges from 0.71 to 6.35 bats per year. Applying fatality rates from a different (although nearby) location does not necessarily result in an accurate estimate of fatality, particularly since habitat conditions are different. While mostly cultivated, the land use in the CMHWRA is primarily dryland farming and grazing and the topography is hilly and dissected by small intermittent drainages. Bat roosts have been identified in the CMHWRA and bat occurrence, movements, and fatality have been studied and analyzed (Johnson et al., 2013).

However, while the landscapes are dissimilar, using the CMHWRA data provides an "order-of-magnitude" range of expected fatality at the proposed turbine. The proposed turbine is located in a flat agricultural area that lacks topographical or habitat features (e.g., major wetlands, riparian corridors) that may attract local bat activity relative to the surrounding landscape. There are no known or reported significant roosts or other bat concentration areas or movement corridors within at least 2 miles of the proposed turbine. The nearest significant roost is approximately 13 miles north along Interstate 80. However, several bat species are found in agricultural areas, and while they are likely dispersed more widely on the landscape than at CMHWRA, some level of bat fatality is expected to occur at the proposed turbine.

The vast majority of bat fatalities reported from CMHWRA projects, as well as monitoring results from the CEMEX and Superior Farms turbines are the common Mexican free-tailed bats and hoary bats (Table 3.4-3). The only special-status bat fatality reported from the CMHWRA is the red bat, a state species of special concern. No other special-status bats including the Townsends big-eared bat (a candidate for listing under the California Endangered Species Act) have been reported.

Table 3.4-3. Bat Fatalities Reported from CMHWRA Wind Farms and Individual Turbines

	CMHWRA Wind Farms			Individual Turbines	
Species	**Solano Wind Year 1**	**Montezuma Wind Year 1**	**Shiloh II year 1**	**CEMEX (Yolo County)**	**Superior Farms (Solano County)**
Mexican free-tailed bat	1	8	21	3	9
Hoary bat	3	11	8	1	0
Red bat	1	1	3	0	0

Sources: Estep, 2013; Estep, 2015

The mandatory findings of CEQA (Section 15065) define the criteria to be used to determine the level of significance for this impact. The section states: "A biological resource impact is considered significant if the project has the potential to substantially reduce the number or restrict the range of an endangered, rare, or threatened species." Fatalities that fall within the range of the fatality estimates for the proposed project would be unlikely to have a substantial adverse effect on any bat species or population. However, given the poorly known status of bat populations and the larger ecological implications of turbine-caused bat fatalities, impacts to special-status bats are considered significant absent mitigation.

Several recent studies have demonstrated that bats tend not to fly during high winds, and curtailing wind turbine operation during low winds and high bat activity can substantially decrease bat fatality (Arnett et al., 2008, 2010, 2011, 2013; Weller and Baldwin, 2012; Baerwald et al., 2009; Erickson and West, 2002). An examination of ten separate studies (e.g., Baerwald et al., 2009; Arnett et al., 2011, 2013) regarding curtailing wind turbine operation, showed reductions in bat fatalities ranging from 50 to 87 percent when compared to normally operating turbines. The cut-in speed (i.e., the wind speed at which the turbine becomes operational and begins generating electricity) of the proposed turbine is 3.5 m/s, which is the standard manufacturers cut-in speed for most new-generation turbines. These studies have demonstrated that increasing the cut-in speed by 1.5 m/s above this standard, to 5.0 m/s, can reduce bat mortality by at least 50 percent. Further increasing the cut-in speed above 5.0 m/s has little additional benefit.

Average wind speeds at the project site range from approximately 5 to 20 mph, with the strongest winds ("delta breezes") primarily occurring in the early to late evenings during summer months from approximately May to the end of August (i.e., partly overlapping with the activity period for bats). Results of monitoring studies in the CMHWRA indicate that from 80 to more than 90 percent of all bat fatalities occur during the late summer and fall months — from August through October, which is consistent with other studies (Arnett et al., 2008). All fatalities occur during nighttime hours, when bats are active.

Mitigation Measure **BIO-1** would increase the cut-in speed to 5.0 m/s when bats are most susceptible to collision. As described above, this has been proven to substantially reduce bat mortality from collisions with turbines. Mitigation Measure **BIO-2** would require development and implementation of a Bird and Bat Monitoring and Reporting Program to monitor turbine-related mortality. With implementation of these measures, impacts to special-status bats would be less than significant.

Level of Significance before Mitigation: Significant

MM BIO-1 **Increase cut-in speed.** Bogle will increase the cut-in speed for the wind turbine from 3.5 to 5.0 meters per second (3.5 M/S = 7.8 mph and 5.0 M/S = 11.2 mph) during nighttime (i.e., sunset to sunrise) hours from August 1 through October 31.

MM BIO-2 **Develop and implement an Operational Monitoring and Reporting Program.** The applicant shall implement a post-construction monitoring program to determine overall avian and bat mortality associated with operation of the turbine. For the first year of operations the monitoring will consist of weekly bat and bird carcass surveys and bird use surveys of the turbine area, ponds and the adjacent conservation easement parcel. For years two and three, surveys will be conducted weekly from February 1 to October 1, and twice monthly for the rest of the year.

After the first year of turbine operation, and based on carcass survey results and bird use surveys, the applicant will adopt, with the approval of the DFW and the County, a comprehensive post-construction avian and bat mortality mitigation, monitoring and reporting plan consistent with the California Energy Commission and California Department of Fish and Game Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development (CEC and CDFW, 2007), including biweekly reporting of bird and bat mortalities to DFW and the County.

The search area to be monitored will have a width equal to the maximum rotor tip height, which is approximately 452 feet, so the search area will extend out 452 feet from the turbine on all sides. The search area will be walked by foot in either linear or concentric circle transects around the turbine. A standard transect of 20 feet in width (10 feet on either side of a centerline) will be walked but with adjustment to the transect width

made as appropriate for vegetation and topographic conditions on the site. The field surveyor working with direction of the biologist will record and collect all carcasses located in the search area. Information to be collected should include the species of bird/bat, the condition of the carcass, and location of the bird or bat relative to the turbine.

Any injured birds or bats shall be taken to a nearby rehabilitation center. Any unidentified carcass shall be collected and submitted for identification to an appropriate facility or person. No "unidentified raptor" counts shall be included in reports. Monitoring schedules may be adapted to avoid periods immediately following turbine shutdowns. Survey protocol will include carcass surveys, searcher efficiency trials and scavenger trials.

On a monthly basis, the biologist will prepare a brief memo that will be submitted to Yolo County Planning and Public Works Department, the applicant, and the California Department of Fish and Wildlife noting the methods and results of the monitoring site visit. At the end of each annual cycle, a more detailed monitoring report will be prepared and submitted that describes the methods, results, and conclusions of the monitoring effort.

Level of Significance after Mitigation: Less than Significant

Impact BIO-2	The project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service

There are no riparian or other sensitive natural communities within the proposed project area or immediate vicinity. The proposed project includes installation of an underground electrical conduit, which would require crossing an irrigation canal to interconnect at a PG&E distribution switch located at the wine production facility. The irrigation channel is potentially considered non-wetland waters of the state subject to regulation by CDFW. The conduit would be installed by boring beneath the canal. No impact would occur.

Impact BIO-3	The project would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means

There are no federally protected wetlands within the proposed project area or immediate vicinity. No impact would occur.

Impact BIO-4	The project has the potential to interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites

The proposed project area is within the Pacific Flyway, a major north-south flyway for migratory birds in the U.S., extending from Alaska to Patagonia. Typically, migrating birds travel at altitudes much higher than the proposed turbine. Therefore operation of the proposed project would not be a barrier to or otherwise substantially interfere with bird migration. The proposed project area does not contain any wildlife nursery sites, nor would it impede the use of any wildlife nursery sites. Impacts to wildlife movement would be less than significant and no mitigation is required.

Level of Significance: Less than significant. No mitigation required.

Impact BIO-5	The project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance

The proposed project would not conflict with policies pertinent to biological resources in the Yolo County 2030 Countywide General Plan. The County has no tree protection or other biological resource protection ordinances that would pertain to the proposed project. No impact would occur.

Impact BIO-6	The project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan

There are no adopted or approved conservation plans applicable to the proposed project area; therefore, there would be no conflicts. The Yolo County Habitat Conservation Plan/Natural Communities Conservation Plan is in preparation by the Yolo Natural Heritage Program and was consulted as appropriate for setting and mitigation information. No impact would occur.

3.5 Cultural Resources and Tribal Cultural Resources

Introduction

Cultural resources are historic and prehistoric archaeological sites, historic architectural and engineering features and structures, and sites and resources of traditional cultural significance to Native Americans and other groups. Tribal cultural resources are sites, features, places, cultural landscapes, and sacred places or objects that have cultural value or significance to a Tribe.

Setting

Physical Environment

Prehistoric Setting

The Sacramento Valley may have been inhabited by humans as early as 10,000 years ago (Yolo County, 2009a). However, evidence for early human use is likely deeply buried by alluvial sediments that accumulated rapidly during the late Holocene epoch. Ancient peoples in the vicinity of the proposed project area lived in increasingly permanent villages over time. They relied on the plants and animals available in rivers and marshes as well as acorns. When Europeans arrived in the project vicinity, the area was occupied by the Patwin and the Plains Miwok. They typically situated their larger, permanent settlements on higher ground along the Sacramento River and in the inter-montane valleys. Three general archaeological patterns are associated with the inhabitants of the Sacramento Valley over the past 4500 years, known as the Windmiller, Berkeley, and Augustine patterns. The Windmiller Pattern (4,500 B.P. – 2500 B.P.) is associated with seasonal habitation villages, numerous styles of projectile points, and a mixed economy that relied on the procurement of game and plant food. The Berkley Pattern (2500 B.P. – 1500 B.P.) is associated with specialized adaptation including an increase in the number of mortar and pestle stone tool technology, indicating greater dependence on acorns as food. The Augustine Pattern (1500 B.P. – 200 B.P.) is associated with elaborate ceremonial and social organization, use of bow and arrow and the construction of smaller projectile points, and increasing trade of shell beads.

Ethnographic Setting

Yolo County includes portions of the territories of two Native American groups: the Patwin and, to a lesser extent, the Plains Miwok. The western hills and mountains of Yolo County and the lower grassland plains and oak groves were inhabited by the Hill Patwin, while the banks of the Sacramento River and associated riparian and tule marshland habitats were inhabited by the River or Valley Patwin. The Plains Miwok used this area as well. The material culture and settlement-subsistence practices of the Patwin and the Plains Miwok share similar traits, likely because of historical relationships and an often-shared natural environment. Historical maps and accounts of early travelers to the Sacramento Valley show that tule marshes, open grasslands, and occasional oak groves characterized the lower elevations near the Sacramento River and Delta. This part of Yolo County was inundated in the winter and exceedingly dry in summer. Because of this, much of the floodplain was sparsely inhabited and Native Americans typically situated their larger, permanent settlements on higher ground along the Sacramento River. Hill Patwin tribelets lived in inter-montane valleys on the eastern side of the North Coast Range, their populations concentrated in particularly dense numbers along Cache and Putah creeks (Yolo County, 2009a).

There are three tribes with traditional territory in Yolo County. The Cortina Band of Wintun Indians (Cortina Indian Rancheria) is a federally recognized tribe whose reservation land is located in Colusa

County and encompasses about 640 acres. The Cortina Band is not known to currently own property nor be active within the County. The United Auburn Indian Community (Auburn Rancheria) is a federally recognized tribe whose reservation is located in the Sierra Nevada foothills near Auburn. The United Auburn Indian Community is comprised of both Miwok and Maidu Indians. The United Auburn Indian Community is not known to currently own property within Yolo County but has established a cultural affiliation within the geographical areas that border the Sacramento River in the southeastern reaches of the County.

The Yocha Dehe Wintun Nation (Rumsey Rancheria) consists of Patwin descendants from Colusa, Yolo, Napa, and Solano Counties. The Yocha Dehe Tribe is a sovereign Native American nation and is federally recognized. The governing body consists of a five-member Tribal Council. Economic ventures of this Tribe include the Cache Creek Casino Resort, Séka Hills product line of wine and olive oil, and agricultural operations in Yolo County (Yocha Dehe Wintun Nation, 2016).

Historical Setting

Yolo County originally consisted of 11 Mexican land grants. Of these 11, only five were eventually confirmed after the U.S. government assumed control of the region: Rancho Rio de Los Putos, Rancho Quesesosi, Rancho Rio de Jesus Maria, Rancho Jimeno, and Rancho Canada de Capay (Yolo County, 2009b). Settlements in the Yolo County region began during the first quarter of the 19th Century. The first American settlers were granted land in 1848. In the beginning of U.S. control, the region was a stable, isolated farming community that was transformed into a booming agricultural area by the California Gold Rush. Fremont was the first town, founded in 1849, along the confluence of the Sacramento and Feather Rivers. It was also named the first County seat, after the formal establishment of Yolo County in 1850 (Yolo County, 2009a).

Clarksburg was established in 1849 by German immigrant Frederick Babel. He established a farm on the west bank of the Sacramento River about 10 miles south of West Sacramento. Merritt Island, the current location of Bogle Winery, was first cleared and developed for agricultural uses in 1850s. During this time, farmers provided fruit, vegetables, and milk products to gold miners. The Bogle family, residents of the area since the 1870s, moved to Merritt Island in the 1930s and planted the first wine grapes in 1968. Clarksburg remained isolated by miles of dense tules during the last half of the 1800s, but by the 1920s it had developed into a small town as the Holland Land Company reclaimed and sold land. Architect William Raymond Yelland, noted for his Arts and Crafts and Storybook Houses of the 1920s and 1930s, designed the Clarksburg Community Church and the Sugar Mill. Today, Clarksburg remains a small farming community (Yolo County, 2009a).

Cultural Resources Record Search

A cultural resources record search of the proposed project area was conducted at the California Historical Resources Information System's Northwest Information Center (NWIC). The NWIC has no record of any previous cultural resource studies for the proposed project area. They also concluded that the project area has a low possibility of containing unrecorded archaeological resources. Therefore, no further study for archaeological resources was recommended (NWIC, 2016). In addition, historical maps of the proposed project area were reviewed to identify historic built environment resources. This review found that an irrigation canal dating to at least 1952 was once located within the project site (USGS, 1952). The canal is no longer present and has likely been removed by constant agricultural operations in the area.

Native American Outreach

In compliance with Assembly Bill 52, Yolo County sent letters to the United Auburn Indian Community (UAIC) of the Auburn Rancheria, the Cortina Band of Indians, and the Yocha Dehe Wintun Nation on December 16, 2015, inviting comments or concerns regarding potential impacts to cultural resources or areas of traditional cultural importance within the vicinity of the proposed project. On January 15, 2016, a reply was received from the Yocha Dehe Wintun Nation, confirming that the proposed project area is within their traditional territory. They also requested a copy of the most recent cultural resources study (Yocha Dehe Wintun, 2015). A copy of the NWIC record search results (NWIC, 2016) was forwarded to Yocha Dehe Wintun Nation on January 28, 2016. On February 8, 2016, a reply was received from the UAIC of the Auburn Rancheria, confirming that the proposed project area is within their traditional territory. They also requested a copy of the most recent cultural resources study (UAIC, 2016). No other replies have been received as of publication of this EIR.

Buried Site Sensitivity

The proposed project site is located in an area that contains no known cultural resources, tribal cultural resources, or human remains. The proposed project area has been extensively cultivated through agricultural grading, disking, planting, and harvesting in historic times through the present. However, the geologic unit underlying the Project area consists of Holocene deposits (Wagner et al., 1981). These deposits date to a period of geologic time during which humans are known to have lived on and used the landscape (about 13,000 years ago to present). The presence of Holocene deposits indicates moderate to high potential that these landforms contain unidentified cultural and tribal cultural resources.

Regulatory Environment

State

California Environmental Quality Act (California Public Resources Code Section 21000 et seq.) (1970) CEQA establishes that historical and archaeological resources are afforded consideration and protection by the California Environmental Quality Act (CEQA) (14 CCR Section 21083.2, 14 CCR Section 15064). CEQA Guidelines define significant cultural resources under two regulatory designations: historical resources and unique archaeological resources. Under CEQA, a resource is generally considered historically significant if it meets the criteria for listing in the CRHR. A resource must meet at least one of four criteria (PRC 5024.1; 14 CCR Section 15064.5[a][3]). Historical resources must also possess integrity of location, design, setting, materials, workmanship, feeling, and association (14 CCR 4852[c]). Additionally, CEQA states that it is the responsibility of the lead agency to determine whether the project will have a significant effect on "unique" archaeological resources. An archaeological artifact, object, or site can meet CEQA's definition of a unique archaeological resource even if it does not qualify as a historical resource (PRC 21083.2[g]; 14 CCR 15064.5[c][3]).

Under CEQA California Code of Regulations Title 14, Section 15064.5, when an initial study identifies the existence of, or the probable likelihood of, Native American human remains within the project, a lead agency must work with the appropriate Native Americans as identified by the Native American Heritage Commission (NAHC). The applicant may develop an agreement for treating or disposing of, with appropriate dignity, the human remains and any items associated with Native American burials with the appropriate Native Americans identified as the Most Likely Descendant (MLD) by the NAHC.

Assembly Bill 52 This bill changes sections of the public resources code to add consideration of Native American culture within the CEQA. The goal of AB 52 is to promote the involvement of California Native

American Tribes in the decision-making process when it comes to identifying and developing mitigation for impacts to resources of importance to their culture. To reach this goal, the bill establishes a formal role for tribes in the CEQA process. CEQA lead agencies are required to consult with tribes about potential Tribal Cultural Resources in the study area, the potential significance of project impacts, the development of project alternatives, and the type of environmental document that should be prepared. AB 52 specifically states that a project that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment (PRC Section 21084.2).

Public Resources Code Section 5097.9 et seq. establishes that both public agencies and private entities using, occupying, or operating on state property under public permit, shall not interfere with the free expression or exercise of Native American religion and shall not cause severe or irreparable damage to Native American sacred sites. This section also creates the (NAHC), charged with identifying and cataloging places of special religious or social significance to Native Americans, identifying and cataloging known graves and cemeteries on private lands, and performing other duties regarding the preservation and accessibility of sacred sites and burials.

Public Resources Code Section 5024.1 establishes the CRHR. A resource may be listed as a historical resource in the CRHR if it meets National Register of Historic Places criteria or the following state criteria: (1) is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; (2) is associated with the lives of persons important in our past; (3) embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possess high artistic values; or (4) has yielded, or may be likely to yield, information important in prehistory. The CRHR is an authoritative guide in California to be used by state and local agencies, private groups, and citizens to identify California's historical resources and to indicate what properties are to be protected from substantial adverse change.

Public Resources Code 5097.98 establishes the procedures that need to be followed upon the discovery of Native American human remains. The NAHC, upon notification of the discovery of human remains is required to contact the County Coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code and shall immediately notify those persons it believes to be most likely descended from the deceased Native American.

Health and Safety Code 7050.5 establishes that any person, who knowingly mutilates, disinters, wantonly disturbs, or willfully removes any human remains in or from any location without authority of law is guilty of a misdemeanor. It further defines procedures for the discovery and treatment of Native American human remains.

Local

Yolo County Code. Chapter 11 in Title 8 of the Yolo County Code pertains to the treatment of local historic landmarks and historic districts. Overseen by the Historic Resources Commission, this section of the code provides for the identification, protection, enhancement, perpetuation, and use of cultural resources within the County that reflect elements of its cultural, agricultural, social economic, political, aesthetic, military, maritime, engineering, archaeological, religious, ethnic, natural, architectural and other heritage.

With the exception of those types of projects specified in the design review guidelines or work authorized by the Building Official upon written approval of the Community Services Department for protection of public safety, projects that would demolish, move, remove, alter the exterior appearance of, or otherwise affect a designated historic landmark or any structure located in a designated historic district must first obtain written approval from the Historic Preservation Commission.

Yolo County 2030 Countywide General Plan. This document outlines the County's policy framework to preserve and protect cultural resources, and includes fourteen policies for the protection and preservation of prehistoric and historic cultural resources.

Impacts and Mitigation Measures

Significance Criteria

The proposed project would have a significant impact on cultural resources and tribal cultural resources if any activity associated with its construction, operation, maintenance, or decommissioning would:

- Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5;
- Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5;
- Disturb any human remains, including those interred outside of formal cemeteries.
- Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Section 21074, or a resource determined by a lead agency to be significant according to the historical register criteria in Public Resources Code section 5024.1 (c), and considering the significance of the resource to a California Native American tribe.

Impact Analysis

Impact CUL-1	The project has the potential to cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5

There are no known historical resources within the project area. However, the presence of Holocene deposits in the project area indicates moderate to high potential that these landforms contain unidentified historical resources that could be adversely affected by ground disturbance associated with project construction, especially at depths greater than 3 to 4 feet below surface.

Ground disturbance associated with construction includes excavation of up to approximately 30 feet from the surface to construct a foundation approximately 15 feet in diameter as described in Sections 2.3 (Project Components) and 2.4 (Construction). A temporary access road would be installed to facilitate delivery and construction of the turbine. This would result in temporary disturbance to 3.14 acres. Trenching for electrical and communication lines would occur mostly within previously disturbed, graveled areas of the wine production facility or at the edge of the adjacent agricultural field. Ground disturbance during construction activities could result in direct impacts to unanticipated/undiscovered historical resources, including damage and/or displacement, resulting in the loss of information about history and prehistory. Impacts to previously unidentified historical resources would be significant absent mitigation. Implementation of Mitigation Measure **CUL-1,** would evaluate and protect unanticipated discoveries of historical resources, thereby reducing this impact to less than significant. Operation and maintenance (O&M) of the proposed project as described in section 2.5 (Operation and Maintenance) would not require any ground disturbance and therefore would not impact historical resources.

Level of Significance before Mitigation: Significant

Mitigation Measures for Impact CUL-1

MM CUL-1 **Management of Unanticipated Discoveries of Historical Resources, Archaeological Resources, or Tribal Cultural Resources.** In the event that any cultural or tribal cultural resources are discovered during construction and operation and maintenance, all work within 50 feet of the resource shall be halted and the County shall consult with a qualified archaeologist to assess the significance of the find and with tribal representatives qualified to identify tribal cultural resources as defined in AB 52 (PRC § 21080.3.1(a)). If any resources found on the site are determined to be significant, the County, the consulting archaeologist, and the tribal representative shall determine the appropriate course of action as prescribed in CEQA Guidelines Section 15064.5(b)(3). Recommendations may include evaluation, preservation in place, archaeological test excavation, and/or archaeological data recovery and consultation with members of affected tribes. A report shall be prepared by a qualified archaeologist and filed with the Office of Historic Preservation and/or the Northwest Information Center on the appropriate forms documenting the significance of all significant cultural resources found at the site.

Level of Significance after Mitigation: Less than significant

Impact CUL-2	The project has the potential to cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5

There are no known unique archaeological resources within the project area. However, the presence of Holocene deposits in the project area indicates moderate to high potential that these landforms contain buried unique archaeological resources. It is possible that these resources may be detected during ground-disturbing activities associated with project construction. Damage or destruction of previously unidentified unique archaeological resources would be a potentially significant impact absent mitigation. Implementation of Mitigation Measure **CUL-1** would evaluate and protect unanticipated discoveries of unique archaeological resources, thereby reducing this impact to less than significant.

Level of Significance before Mitigation: Significant

Mitigation Measures for Impact CUL-2

MM CUL-1 **Management of Unanticipated Discoveries of Historical Resources, Archaeological Resources, or Tribal Cultural Resources.**

(see Impact CUL-1 for full text of the mitigation measure)

Level of Significance after Mitigation: Less than significant

Impact CUL-3	The project has the potential to disturb any human remains, including those interred outside of formal cemeteries

No formal cemeteries or human remains are known to be located within the proposed project area. However, the presence of Holocene deposits in the project area indicates moderate to high potential that these landforms contain unidentified buried human remains. It is possible that unidentified buried human remains may be detected during ground-disturbing activities associated with project construction. Damage or destruction of previously unidentified buried human remains would be a potentially significant impact absent mitigation. Implementation of Mitigation Measure **CUL-2,** which requires evaluation, protection, and appropriate disposition of human remains, would reduce this impact to less than significant.

Level of Significance before Mitigation: Significant

Mitigation Measure for Impact CUL-3

MM CUL-2 **Treatment of Human Remains.** In accordance with Section 7050.5 of the California Health and Safety Code and PRC Section 5097.98, if human remains are found, the Yolo County Coroner shall be notified within 24 hours of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie potential remains shall occur until the County Coroner has determined, within two working days of notification of the discovery, the appropriate treatment and disposition of the human remains. If the County Coroner determines that the remains do not require an assessment of cause of death and that the remains are or are believed to be Native American, the Coroner shall notify the Native American Heritage Commission (NAHC) within 24 hours. In accordance with Section 5097.98 of the California Public Resources Code, the NAHC must immediately notify those persons it believes to be the Most Likely Descendent (MLD) of the deceased Native American. The descendants shall complete their inspection within 48 hours of being granted access to the site. The designated Native American representative would then determine, in consultation with the County, the disposition of the human remains.

Level of Significance after Mitigation: Less than significant

Impact CUL-4	The project has the potential to cause a substantial adverse change in the significance of a tribal cultural resource as defined in Section 21074, or a resource determined by a lead agency to be significant according to the historical register criteria in Public Resources Code section 5024.1 (c), and considering the significance of the resource to a California Native American tribe.

Based on tribal outreach and consultation for the proposed project conducted in compliance with AB 52, no known tribal cultural resources have been identified within the project area. However, there is a potential for buried undiscovered tribal cultural resources on the proposed project sites. The ultimate treatment of any previously unidentified resource would be developed after it has been discovered and in consultation with the appropriate resource specialists and tribes as appropriate. Damage or destruction of previously unidentified tribal cultural resources during ground disturbance would be a potentially significant impact absent mitigation. With implementation of Mitigation Measures **CUL-1** and **CUL-2,** which require evaluation and protection of unanticipated discoveries of tribal cultural resources, impacts would be reduced to less than significant.

Level of Significance before Mitigation: Significant

Mitigation Measures for Impact CUL-4

MM CUL-1 **Management of Unanticipated Discoveries of Historical Resources, Archaeological Resources, or Tribal Cultural Resources.**
(see Impact CUL-1 for full text of the mitigation measure)

MM CUL-2 **Treatment of Human Remains.**
(see Impact CUL-3 for full text of the mitigation measure)

Level of Significance after Mitigation: Less than significant

3.6 Geology and Soils

Setting

Much of the information presented in the setting comes from two geotechnical reports prepared for the proposed project: the *Preliminary Geotechnical Investigation & Grading Plan Review* (Bauer, 2009) and *Geotechnical Investigation: Bogle Winery Wind Turbine* (Raney, 2014).

Physical Environment

Faults and Seismicity

The proposed project site is not located on the Alquist-Priolo Earthquake Fault Zoning Map (DOC, 2015). The complex zone of faults known as the Coast Range–Sierran Block Boundary is the nearest fault zone to the proposed project site (Yolo County, 2009). It forms the western geomorphic boundary of the Central Valley with the Coast Ranges to the west and is recognized as a potential seismic source capable of generating moderate earthquakes that could affect Yolo County (Yolo County, 2009).

According to the geotechnical investigation for the proposed project (Raney, 2014), probabilistic seismic hazards mapping by the U.S. Geological Survey indicates the peak ground acceleration produced by maximum credible earthquakes on nearby faults on the order of 0.21g for earthquakes with a 10 percent probability of exceedance in 50 years. The controlling earthquakes that would likely develop these accelerations appear to be magnitude 6.5 to 6.6 events occurring within the Coast Range/Central Valley boundary zone about 30 to 40 kilometers west of the project site.

The proposed project site has gentle topography with no potential for major landslides.

Soils

Test borings drilled for the proposed project by Raney Geotechnical, Inc. (2014) found primarily silty organic clays until a depth of about 12 feet. Beneath the clays and extending to a depth of about 15 feet are fine, sandy, clayey silts followed by silty, fine sands until about 18.5 feet. Beneath this layer and extending until a depth of about 40 feet, the boring encountered relatively clean sands. The sand grades from loose, slightly silty fine sands, to dense fine to coarse sands mixed with gravel. Medium dense to dense fine sands followed this layer between 44 feet to about 52.5 feet, followed by a five-foot hard very silty clay then very stiff to hard and variably cemented fine sandy clayey silts and clay-silt mixtures. The near surface clays shrink and swell with variations in moisture content, causing expansive soil movement.

Liquefaction is the phenomenon in which saturated granular sediments temporarily lose their shear strength during periods of earthquake-induced strong groundshaking. The susceptibility of a site to liquefaction is a function of the depth, density, and water content of the granular sediments and the magnitude and frequency of earthquakes in the surrounding region. The project site is not located within a Landslide and Liquefaction Zone (DOC, 2015), but some of the portions of the soils under the proposed project site are susceptible to liquefaction. Saturated, unconsolidated silts, sands, and silty sands within 50 feet of the ground surface are most susceptible to liquefaction. The sand and sandy silts between depths of about 12 and 53 feet could be susceptible to liquefaction, primarily the sands above depths of 27 feet that are relatively loose materials. The deeper sands are of medium dense to dense consistency with less tendency for liquefaction. The clayey soils are not considered susceptible to liquefaction.

Paleontological Resources

Yolo County's geology spans 145 million years, from the Cretaceous Period through today. The western boundary of the County is the Blue and Rocky ridges, a northwest-southeast trending range comprised of the Cretaceous Great Valley Sequence. The Great Valley Sequence formed when great quantities of mud, sand, and gravel accumulated as regularly bedded layers on the ocean floor of a deep trench along the margin of the North American continent. Seven geological formations have been identified in the Upper Cretaceous sediments; from oldest to youngest these are the Fiske Creek, Venado, Yolo, Sites, Funks, Guinda, and Forbes Formations. The units are exposed along a north-south axis, dipping below the surface steeply towards the east to form the hills on the west side of Yolo County. The Blue Ridge is bounded by two faults, and is being uplifted on its eastern edge (Yolo County, 2009).

There are at least two geologic units present within the project vicinity; they vary in age and potential for containing paleontological resources (Yolo County, 2009). A brief summary of the geologic units are listed below, from youngest (surface) to oldest (deepest).

- *Holocene Alluvium (Holocene: Recent–10,000 years old).* Late Holocene alluvial deposits overlie older Pleistocene alluvium and/or the upper Tertiary bedrock formations in the southern and eastern portions of Yolo County. These alluvial deposits contain vertebrate and invertebrate fossils of extant, modern taxa, which are generally not considered paleontologically significant.
- *Pleistocene Alluvium (Pleistocene: 10,000–1.8 million years old).* The majority of alluvium in the Capay Valley and the southern portion of the County consists of the Pleistocene-age Modesto-Riverbank and Red Bluff formations. Vertebrate fossils in Late Pleistocene alluvium are representative of the Rancholabrean land mammal age, and many such taxa are now extinct. These fossils include, but are not limited to, bison, mammoth, ground sloths, saber-toothed cats, dire wolves, cave bears, rodents, birds, reptiles, and amphibians. Pleistocene alluvium is considered highly sensitive for paleontological resources.

Paleontological Investigations

A review of a geologic map of the region (Wagner et al., 1981) indicates that the proposed project area is composed of Holocene Basin Alluvium deposits (Qb), which began to form relatively recently in geologic time (approximately 10,000 years ago). The young age of the geologic deposits within the proposed project area indicates they are unlikely to have the potential to contain unique paleontological resources or unique geologic features. Additionally, a review of the University of California Museum of Paleontology online-database (UCMP, 2016) revealed 135 paleontological resources have been recorded within Yolo County, including microfossil, plant, invertebrate, and vertebrate collections. The majority of the specimens listed are associated with the Capay and Tehama geologic formations, and range in age from the Late Cretaceous to Pleistocene periods. Based on the locality name given to each of the specimens (i.e., Cache Creek, Putah Creek, Dunnigan Hills, etc.) it does not appear that any significant paleontological resources are recorded within or near the proposed project site, or within this southern region of Yolo County. However, these younger deposits may be underlain at moderate depth by older Pleistocene alluvium or Pliocene-Pleistocene deposits, which have proven to yield abundant paleontological resources from exposures within Yolo County.

Regulatory Environment

Federal

Clean Water Act. The Clean Water Act establishes the basic structure for regulating discharges of pollutants into the Waters of the U.S. The Act authorized the Public Health Service to prepare comprehensive programs for eliminating or reducing the pollution of interstate waters and tributaries and improving the sanitary condition of surface and underground waters with the goal of improvements to and conservation of waters for public water supplies, propagation of fish and aquatic life, recreational purposes, and agricultural and industrial uses. Proposed project construction would disturb a surface area greater than one acre; therefore, Bogle would obtain a National Pollution Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity pursuant to Clean Water Act regulations. Compliance with the NPDES requires preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

International Building Code (IBC). The International Building Code (IBC), which is published by the International Code Council (ICC), covers major aspects of construction and engineering design of structures and buildings. The International Building Code has replaced the Uniform Building Code as the basis for the California Building Code. The 2015 IBC addresses the design and installation of structures and building systems through requirements that emphasize performance. The IBC includes codes governing structural as well as fire- and life-safety provisions covering seismic, wind, accessibility, egress, occupancy, and roofs.

State

California Building Code (CBC), Title 24, Part 2. This code provides building codes and standards for design and construction of structures in California. The 2013 CBC is based on the 2012 International Building Code with the addition of more extensive structural seismic provisions. Chapter 16 of the CBC contains definitions of seismic sources and the procedure used to calculate seismic forces on structures.

Alquist-Priolo Earthquake Fault Zoning Act of 1972, Public Resources Code (PRC) sections 2621–2630. This Act regulates development and construction of buildings intended for human occupancy to avoid the hazard of surface fault rupture. While this Act does not regulate wind projects, it defines areas where fault rupture is most likely to occur. This Act groups faults into categories of active, potentially active, and inactive. Historic and Holocene age faults are considered active, Late Quaternary and Quaternary age faults are considered potentially active, and pre-Quaternary age faults are considered inactive. These classifications are qualified by the conditions that a fault must be shown to be "sufficiently active" and "well defined" by detailed site-specific geologic explorations in order to determine whether building setbacks should be established.

Seismic Hazards Mapping Act of 1990, PRC Chapter 7.8, Division 2, sections 2690–2699. This Act directs the California Geological Survey (CGS) to delineate Seismic Hazard Zones. The purpose of the Act is to reduce the threat to public health and safety and to minimize the loss of life and property by identifying and mitigating seismic hazards. Cities, counties, and State agencies are directed to use seismic hazard zone maps developed by CGS in their land-use planning and permitting processes. The Act requires that site-specific geotechnical investigations be performed prior to permitting most urban development projects within seismic hazard zones.

Local

Yolo County Code Section 8-2.1103(g)(14) requires applications for a large wind energy system to include a soil erosion and sedimentation control plan, including revegetation plan.

Yolo County Code Section 8-2.1103(i)(12) requires erosion and sediment control measures including a soil erosion and sedimentation control plan consistent with the applicable requirements of the California Regional Water Quality Control Board pertaining to the preparation and approval of Storm Water Pollution Prevention Plans.

Impacts and Mitigation Measures

Significance Criteria

The proposed project would have a significant impact on geology and soil resources if any activity associated with its construction, operation, maintenance, or decommissioning would:

- Expose people or structures to 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 or based on other substantial evidence of a known fault;
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction; or
  - Landslides;
- Result in substantial soil erosion or the loss of topsoil;
- 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;
- Be located on expansive soil, as defined in Section 1803.5.3 of the California Building Code (2013), creating substantial risks to life or property;
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater; or
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Impact Analysis

Impact GEO-1	The project has the potential to expose people or structures to 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 or based on other substantial evidence of a known fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides

Due to the presence of the Coast Range–Sierran Block Boundary, the seismic ground-shaking hazard in the proposed project area is considered severe. Some damage to the turbine may occur during a major seismically induced shaking event, but damage should be no more severe in the project area than

elsewhere in the region. Bogle would construct the wind turbine to comply with all applicable Uniform Building Code requirements related to earthquake-resistant construction. With such a design, the wind turbine would generally be flexible enough to sustain only minor structural damage from ground shaking.

The proposed project site is not located within a Landslide and Liquefaction Zone (DOC, 2015). However, as noted in the *Geotechnical Investigation* (Raney, 2014), portions of the soils under the proposed project site are susceptible to liquefaction. The report provides several recommendations regarding earthwork construction and foundation installation to reduce the risk of impacts due to seismic events, and provides seismic design standards using the lateral force provisions of the 2013 CBC. Bogle would design and construct the wind turbine consistent with these recommendations to avoid and minimize seismic impacts including those from liquefaction.

The proposed project is not located within close proximity to any people or structures. The wind turbine would be located on a private agricultural property with no structures within 1,850 feet of the turbine. In the unlikely event of turbine failure from seismic ground shaking or seismic-related ground failure, no humans or structures would be affected. Therefore, people and structures would not be exposed to potential substantial adverse effects involving strong seismic ground shaking. This impact would be less than significant.

Level of Significance: Less than significant. No mitigation required.

Impact GEO-2 The project has the potential to result in substantial soil erosion or the loss of topsoil

Implementation of the proposed project would result in 3.14 acres of temporary disturbance and 0.07 acres of permanent disturbance. Disturbance would occur in an agricultural field and on graveled areas that are generally level. Because the proposed project would disturb more than 1 acre of ground disturbance, Bogle must obtain a NPDES General Permit for Storm Water Discharges Associated with Construction Activity, which requires preparation and implementation of a SWPPP. The SWPP includes Best Management Practices such as hydroseeding, soil preparation, wind erosion control, and stabilization of construction access points to minimize the potential for erosion and sedimentation. Bogle is also required to prepare a Soil Erosion and Sedimentation Control Plan, including Revegetation Plan (as required by Section 8-2.1103(g)(14) and Section 8-2.1103(i)(12) of the Yolo County Code) for review by Yolo County as part of permit approval. Implementation of the SWPPP and the Soil Erosion and Sedimentation Control Plan would minimize soil erosion and the loss of topsoil. This impact would be less than significant.

Level of Significance: Less than significant. No mitigation required.

Impact GEO-3 The project has the potential to 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

As discussed in Impact GEO-1, portions of the soil underlying the proposed project site could become unstable due to seismic events and have the potential for liquefaction. The wind turbine would be built in accordance with Uniform Building Code requirements and information from the *Geotechnical Investigation* prepared for the proposed project (Raney, 2014). The findings and recommendations of the *Geotechnical Investigation* would be incorporated into final wind turbine design to ensure foundation stability during seismic events in consideration of underlying soils. The turbine, including its foundation, would be inspected annually. Therefore, the proposed turbine would not be unstable and risk of impacts due to landslide, lateral spreading, subsidence, liquefaction or collapse are less than significant.

Level of Significance: Less than significant. No mitigation required.

Impact GEO-4	The project has the potential to be located on expansive soil, as defined in Section 1803.5.3 of the California Building Code (2013), creating substantial risks to life or property

Areas of moderate and highly expansive soils have been documented in the project area. *Geotechnical Investigations* of the proposed project area (Raney, 2014) and adjacent wine production facility (Bauer, 2009), note that the area is typically blanketed with clays of high expansive potential. Expansive soils will experience volume changes with seasonal moisture variations. Such volume changes may crack and heave lightly loaded, shallow foundations and slabs.

The wind turbine would be built in accordance with Uniform Building Code requirements and information from the *Geotechnical Investigation* prepared for the proposed project (Raney, 2014). The findings and recommendations of the *Geotechnical Investigation* would be incorporated into final wind turbine design to ensure foundation stability in consideration of underlying expansive soils. The turbine, including its foundation, would be inspected annually.

The proposed project is not located within close proximity to any people or structures. The wind turbine would be located on a private agricultural property with no structures within 1,850 feet of the turbine. In the highly unlikely event of turbine failure from expansive soil, no humans or structures would be affected. Therefore, substantial risks to life or property would not occur. This impact would be less than significant.

Level of Significance: Less than significant. No mitigation required.

Impact GEO-5	The project would not have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater

The proposed project does not include any components requiring septic tanks or alternative wastewater systems. No impact would occur.

Impact GEO-6	The project has the potential to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature

Based on review of geologic maps and museum records search results, the geologic deposits underlying the proposed project area have a low paleontological sensitivity in accordance with criteria set forth by SVP (2010) and the Yolo County 2030 Countywide General Plan (2009), as they are generally too young to preserve fossil material. However, these deposits may be underlain at depths below approximately 15 feet by older Pleistocene alluvium or Pliocene-Pleistocene deposits, which have proven to yield abundant paleontological resources from exposures within Yolo County. Installation of the proposed turbine foundation would involve excavation approximately 30 feet deep. Therefore, ground disturbance during project construction activities could result in direct impacts to unanticipated/undiscovered unique paleontological resource or unique geologic features, including damage and/or displacement, resulting in the loss of information. Impacts to scientifically significant unknown paleontological resources or unique geologic features would constitute a significant impact absent mitigation. Implementation of Mitigation Measure **GEO-1** would identify and protect unanticipated discoveries of unique paleontological resources or unique geologic features, thereby reducing this impact to less than significant. Operation and maintenance (O&M) of the proposed project would not require any ground disturbance and therefore would not impact unique paleontological resources or unique geologic features.

Level of Significance before Mitigation: Significant

Mitigation Measure for Impact GEO-1

MM GEO-1 **Management of Unanticipated Paleontological Resources or Unique Geologic Features.** In the event that unanticipated paleontological resources or unique geologic resources are encountered during ground-disturbing activities, work must cease within 50 feet of the discovery and a paleontologist shall be hired by the County to assess the scientific significance of the find. The consulting paleologist shall have knowledge of local paleontology and the minimum levels of experience and expertise as defined by the Society of Vertebrate Paleontology's Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP, 2010). If any paleontological resources or unique geologic features are found within the project site, the County and the consulting paleontologist shall prepare a Paleontological Treatment and Monitoring Plan to include the methods that will be used to protect paleontological resources that may exist within the project site to the extent possible, as well as procedures for monitoring, fossil preparation and identification, curation of specimens into an accredited repository, and preparation of a report at the conclusion of the monitoring program.

Level of Significance after Mitigation: Less than significant

3.7 Hazards and Hazardous Materials

Introduction

This section addresses issues related to environmental hazards and hazardous materials. Environmental hazards include accidental spills of hazardous materials, the presence of existing subsurface contamination, the risk of wildfire, and aircraft safety. Hazardous materials include fuel, oil, and lubricants.

Setting

Physical Environment

Existing and Past Land Use Activities

Existing and past land use activities are commonly used as indicators of sites or areas with potential for hazardous material storage and use or potential environmental contamination. For example, many industrial sites, historic and current, have soil or groundwater contaminated by hazardous substances. Other hazardous materials sources include leaking underground tanks in commercial and rural areas, contaminated surface runoff from polluted sites, and contaminated groundwater plumes.

The proposed project site is in an agricultural field adjacent to the Bogle wine production facility, which has been in operation since 2010 and was previously agricultural land. Surrounding land is also in agricultural production. The wine production facility and agricultural land produce goods for human consumption.

Hazardous Materials

Construction activities routinely involve use and storage of hazardous materials such as cleaning solvents, paints, adhesives, vehicle fuels, oil, hydraulic control fluid, transformer oil, and other vehicle and equipment maintenance fluids. The use and storage of such materials must comply with federal and state regulations. Hazardous material use during operation and maintenance of the wind turbine would be minimal. No acutely hazardous materials would be associated with construction, maintenance, or operation of the project.

Environmental Contamination

There are no known contaminated sites within one mile of the proposed project site (DTSC, 2016; SWRCB, 2016). However, because the site has been used for agriculture and because there are two permitted underground storage tanks on an adjacent property, unknown contamination may exist on the site. Any contamination from the existing use of the site or nearby storage tanks is likely to be minor.

The proposed project is not located on a site that is included on a list of hazardous materials sites compiled by the California EPA CORTESE system, pursuant to Government Code 65962.5 (CalEPA, 2015).

Schools

The proposed project site is not located within 0.25 miles of any schools.

Airports and Airstrips

The proposed project site is not located within an airport land use plan or within 2 miles of a public airport or public use airport. However, the proposed project is located approximately 1.5 miles south of a private

airstrip used by crop-dusting aircraft, which is located on the levee along the Sacramento Deepwater Ship Channel.

Regulatory Environment

Hazardous substances are defined in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 101(14), and also in the California Code of Regulations (CCR), Title 22, Chapter 11, Article 2, Section 66261, which provides the following definition:

> *A hazardous material is a substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of, or otherwise managed.*

Federal

Clean Water Act. The Clean Water Act establishes the basic structure for regulating discharges of pollutants into the Waters of the U.S. The Act authorized the Public Health Service to prepare comprehensive programs for eliminating or reducing the pollution of interstate waters and tributaries and improving the sanitary condition of surface and underground waters with the goal of improvements to and conservation of waters for public water supplies, propagation of fish and aquatic life, recreational purposes, and agricultural and industrial uses. For projects that disturb a surface area greater than one acre, a National Pollution Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity is required. Compliance with the NPDES requires preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLA, commonly known as Superfund, provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA establishes requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified. CERCLA also enabled the revision of the National Contingency Plan (NCP). The NCP provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, and/or contaminants. The NCP also established the National Priorities List (NPL).

Resource Conservation and Recovery Act. (RCRA) RCRA (40 CFR Parts 239–282), which amended the Solid Waste Disposal Act (42 U.S.C. Section 6901 et seq.), establishes a framework for the proper management of hazardous and nonhazardous solid waste. This Act, along with the Toxic Substances Control Act of 1976, enacted a program administered by the EPA for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act (HSWA), which affirmed and extended the "cradle to grave" system of regulating hazardous wastes from their creation to disposal. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the HSWA. The EPA authorized the Department of Toxic Substances Control (DTSC) to implement the RCRA program in California.

Federal Aviation Regulation 14 CFR Part 77. The Federal Aviation Administration (FAA) regulates objects affecting navigable airspace and structures taller than 200 feet according to Federal Aviation Regulation 14 CFR Part 77. The U.S. and California Department of Transportation also require project developers to submit FAA Form 7460-1, Notice of Proposed Construction or Alteration. According to 14 CFR Part 77.5,

notification allows the FAA to identify potential aeronautical hazards in advance, thus preventing or minimizing any adverse impacts on the safe and efficient use of navigable airspace. Any structure that would constitute a hazard to air navigation, as defined in 14 CFR Part 77, requires issuance of a permit from the California Department of Transportation's Aeronautics Program. The permit is not required if the FAA aeronautical study determines that the structure has no impact on air navigation. FAA Advisory Circular 70/7460-1L sets forth standards for marking and lighting obstructions that have been deemed to be a hazard to navigable airspace.

State

Porter-Cologne Water Quality Control Act. The Porter-Cologne Water Quality Control Act ("Porter-Cologne") (California Water Code § 13000 et seq.) is a State law that provides a comprehensive water quality management system for the protection of California waters. Porter-Cologne designated the State Water Resources Control Board (SWRCB) as the ultimate authority over State water rights and water quality policy and established nine Regional Water Quality Control Boards (RWQCBs) to oversee water quality on a day-to-day basis at the local/regional level. The RWQCBs have the responsibility of granting National Pollutant Discharge Elimination System (NPDES) permits for stormwater runoff from construction sites.

California Occupational Safety and Health Administration (Cal-OSHA). Cal-OSHA is the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. Cal-OSHA standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (Title 8, Code of California Regulations [CCR], Sections 337 and 340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings.

Local

Yolo County Code Section 8-2.1103 (Small and large wind energy systems). Yolo County Code Section 8-2.1103(h)(10) requires that the applicant of any wind energy system proposed to be sited in an agriculture area that may have pest control aircraft operating at low altitudes take reasonable steps to notify and solicit comments from pest control aircraft pilots registered to operate in the County. Wind energy systems are not allowed where the County determines they would pose a risk for pilots spraying fields.

Impacts and Mitigation Measures

Significance Criteria

The proposed project would have a significant hazards and hazardous materials impact if any activity associated with its construction, operation, maintenance, or decommissioning would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;

- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
- Be located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area;
- Be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- Have a substantial adverse effect due to exposing people or structures to a significant risk of loss, injury or death involving wildland fires or failure or project structures s.

Impact Analysis

Impact HAZ-1	The project has the potential to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials

The proposed project would not involve the routine transport, use, or disposal of hazardous materials. It would require the use of limited amounts of various petrochemicals, including fuels, lubricants, and solvents to operate and maintain equipment. Bogle and/or its contractor(s) would store all hazardous materials in the manner specified by the manufacturer and in accordance with local, State, and Federal regulations. In addition, employees would receive training in the use and handling of hazardous materials. A material safety data sheet would be kept with each material stored onsite. Because the project would disturb more than one acre of soil, the project would require a SWPPP and implementation of associated BMPs in compliance with the NPDES permit to avoid and minimize any impacts from the use of hazardous materials. BMPs pertinent to hazardous materials typically include, but are not limited to:

- All construction staging activities will occur within a designated staging area. The staging area will be marked in the field and on the construction plans. All refueling and maintenance activities will occur within the staging area; and
- Any hazardous materials spill will be cleaned up immediately, in accordance with all federal, state, and local regulations.

Although the SWPPP would reduce impacts, it would not specifically address the potential for spills of hazardous materials. Spills of hazardous materials could occur near sensitive resources such as the irrigation canals or near workers resulting in a significant impact absent mitigation. Mitigation Measure **HAZ-1** would require Bogle to develop and implement a Toxic Materials Control and Spill Prevention Plan that would specifically address hazardous materials and would minimize any risk of spills. If any spills did occur, Mitigation Measure **HAZ-2** would ensure that the spills were addressed quickly and remediated adequately. With implementation of Mitigation Measures **HAZ-1** and **HAZ-2,** the impacts to the public or environment from accidental release of hazards materials would be less than significant.

Level of Significance before Mitigation: Significant

Mitigation Measure for Impact HAZ-1

MM HAZ-1 **Develop and Implement a Toxic Materials Control and Spill Prevention Plan.** Bogle shall develop and implement a Toxic Materials Control and Spill Prevention Plan to regulate the use of hazardous materials associated with construction. Bogle shall:

- Provide areas located outside waterways (irrigation canals) for staging and storing equipment, materials, fuels, lubricants, solvents, and other possible contaminants;
- Remove vehicles from near waterways (irrigation canals) before refueling and lubricating;
- Stabilize disturbed areas through erosion minimizing efforts such as straw wattles, water bars, covers, and silt fences. Sensitive area access restrictions (for example, flagging) will be installed before and during clearing and grading activities. All erosion control materials will be biodegradable and natural fiber; and
- Use secondary containment as recommended by any of the hazardous materials handling instructions for the materials used onsite.

The Plan shall be approved by the County prior to the start of construction.

MM HAZ-2 **Develop and Implement a Spill Response Plan.** Bogle shall develop and implement a Spill Response Plan that includes:

- A list of general information including what is stored at the site (contents, volume, and location);
- A list of immediate containment response actions and extended response actions if necessary;
- A list of responsible agencies to contact in the event of a spill emergency within 24 hours;
- A list of spill containment equipment held on site as well as the location of the equipment on site;
- A contact and location of a professional clean up company; and
- A designated onsite incident commander in the event of an emergency. The incident commander will have complete control of construction and cleanup activities throughout the emergency and the eventual containment.

The Plan shall be approved by the County prior to the start of construction.

Level of Significance after Mitigation: Less than significant

Impact HAZ-2	The project has the potential to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment

Implementation of the proposed project would not involve permanent storage of fuel, oil, or other potentially hazardous materials. The construction equipment associated with the proposed project typically uses only a minor amount of hazardous materials, primarily motor vehicle fuels and oils, with the construction period lasting eight to twelve weeks. During this timeframe, there is a possibility that these materials may be released in accidental spills, resulting in a potentially significant impact to the environment or workers absent mitigation. Implementation of Mitigation Measure **HAZ-1** would reduce any risk

of hazardous material spills. If any spills did occur, implementation of the Spill Response Plan required by Mitigation Measure **HAZ-2** would ensure that any spills were addressed quickly and remediated adequately, thereby reducing any impacts to the public or environment to less than significant.

Level of Significance before Mitigation: Significant

Mitigation Measures for Impact HAZ-2

MM HAZ–1 **Develop and Implement a Toxic Materials Control and Spill Prevention Plan**
(see Impact HAZ-1 for full text of the mitigation measure)

MM HAZ–2 **Develop and Implement a Spill Response Plan**
(see Impact for HAZ-2 for full text of the mitigation measure)

Level of Significance after Mitigation: Less than significant

Impact HAZ-3	The project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school

The proposed project site is not located within one-quarter mile of an existing or proposed school. No impact would occur.

Impact HAZ-4	The project would not be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment

The proposed project is not located on a site that is included on a list of hazardous materials sites compiled by the California EPA CORTESE system, pursuant to Government Code 65962.5. No impact would occur.

Impact HAZ-5	The project would not be located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area

The proposed project site is not located within an airport land use plan or within 2 miles of a public airport or public use airport. No impact would occur.

Impact HAZ-6	The project has the potential to be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area

The proposed project is located approximately 1.5 miles south of a private airstrip used by crop-dusting aircraft. The FAA reviewed the proposed turbine location and determined the project would not pose a hazard to air navigation (FAA, 2016). Bogle would implement FAA recommendations that the turbine be installed with safety lighting consistent with FAA Advisory Circular 70/7460-1L (FAA, 2015). Additionally, Bogle will notify affected crop dusting aircraft sprayers registered with Yolo County of the exact location of the proposed turbine, as required by Section 8-2.1103(h)(10) of the Yolo County Code (Yolo County, 2015). Therefore, it is unlikely that the wind turbine would present a hazard to pilots or otherwise impact people residing or working in the project area. This impact would be less than significant.

Level of Significance: Less than significant. No mitigation required.

Impact HAZ-7	The project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan

The proposed project area is not within any local or regional emergency response or evacuation routes. Construction and operation would generate negligible increases in traffic and therefore would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. No impact would occur.

Impact HAZ-8	The project has the potential to have a substantial adverse effect due to exposing people or structures to a significant risk of loss, injury or death involving wildland fires or failure of project structures

Public safety issues related to wind power generation facilities could arise from tower or rotor failure. If a wind turbine experiences excess speed, material fatigue, excessive stresses, or vibration from seismic ground shaking, a rotor blade could crack or dislocate from the turbine tower. If a blade were to be dislocated from the tower, the thrown blade could travel several hundred feet. Blade failures may also occur due to extremely high winds and excess rotor speed.

The nearest structure and closest area where wine production staff could possibly be at risk, is approximately 900 feet from the proposed turbine location. This is sufficient distance to prevent public hazards associated with potential turbine or rotor blade failures. In addition, the proposed wind turbine would be equipped with safety and engineering features to prevent excess rotor speed, to minimize the risk of tower failure, and to maintain personnel health and safety. These features include redundant aerodynamic and mechanical breaks to slow or stop the turbine's blade rotation, an active yaw system to turn the blades out of the prevailing wind direction, and an early vibration detection system to stop or slow the rotor rotation. These systems significantly reduce the probability of turbine failures. While there are rare occasions where turbine failure has started a fire, the land uses adjacent to the proposed turbine site have limited fuel potential. Further the proposed project site is not located in a designated Fire Hazard Severity Zone (CalFire, 2015). Therefore, the risk of fire or other public safety hazards from turbine failure is low and this impact would be less than significant.

Level of Significance: Less than significant. No mitigation required.

3.8 Hydrology and Water Quality

Introduction

This section addresses issues related to water resources, hydrology and water quality, including impacts to groundwater and surface water quality and from flooding hazards.

Setting

Physical Environment

Groundwater

The proposed project is located within the Sacramento River Groundwater Subbasin, which has a total thickness greater than 2,500 feet and primarily consists of surface water (WRA, 2007). Groundwater in the test boring at the proposed project site was observed at a depth of about 12 feet below the road surface (Raney, 2014). Groundwater in the area of the wine production facility has been observed at depths varying from about 3 feet to 11 feet below the field grades (Raney, 2014). Test borings for the wine production facility encountered groundwater seepage at 10 feet deep (Bauer, 2009). The groundwater levels fluctuate with rainfall as well as with irrigation of the surrounding fields. Groundwater levels can approach the ground surface level of the agricultural field during the rainy season or times of heavy flood irrigation of surrounding fields.

Surface Water

Within unincorporated Yolo County, approximately 7,300 acres is covered in surface water (Yolo County, 2009). The surface water in Yolo County generally drains from west to east, eventually being received by the Yolo Bypass. In addition, many sloughs and drainage ditches cross the eastern half of the County, which convey water to irrigate agricultural fields, manage floods, or transport water supplies to users within the County and downstream (Yolo County, 2009). The proposed project site is located approximately 1.6 miles east of the Sacramento River Deep Water Ship Channel, and 2.6 miles west of Elk Slough. An irrigation canal runs north-south through the project site approximately 600 feet east of the proposed turbine.

Flood Hazards/Inundation

Much of Yolo County is a natural floodplain. According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map for the proposed project site, the project would be located within a 100-year floodplain (FEMA, 2010). The project is in FEMA's Zone A, which indicates that FEMA has not determined the water-surface elevation (i.e., base flood elevation) for that area.

The project area was analyzed in a 2012 Flood Insurance Study, which concluded that flooding on Elk Slough and the Sacramento River Deep Water Ship Channel is controlled by backwater effects from the Sacramento River and Cache Creek, respectively (FEMA, 2012).

Regulatory Environment

Federal

Clean Water Act (CWA) (33 USC Section 1251 et seq.). CWA was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of

point source and certain non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). In California, NPDES permitting authority is delegated to, and administered by, the nine RWQCBs under the auspices of the State Water Board. The proposed project is located within the jurisdiction of the Central Valley RWQCB, and is therefore subject to management direction of this agency.

National Flood Insurance Program (NFIP). The NFIP enables participating communities to purchase flood insurance. Flood insurance rates are set according to the flood-prone status of property as indicated by Flood Insurance Rate Maps (FIRMs) developed by FEMA. FIRMs identify the estimated limits of Flood Hazard Areas, or the 100-year floodplain for mapped watercourses, among other flood hazards. A 100-year floodplain is the area expected to be inundated as a result of the 100-year flood, or the magnitude of a flood with a one percent chance of occurring in any given year. As a condition of participation in the NFIP, communities must adopt regulations for floodplain development intended to reduce flood damage for new development through such measures as flood proofing, elevation on fill, or floodplain avoidance.

State

Central Valley Flood Protection Program. In 2007, California Senate Bill 5 (SB 5) and California Assembly Bill 5 (AB 5), both dealing with Flood Management in the central valley were adopted. Between them, they renamed the Department of Water Resources Reclamation Board as the Central Valley Flood Protection Board (CVFPB), and expanded its size, duties, and powers, including a requirement that the CVFPB prepare and adopt a Central Valley Flood Protection Plan by 2012. SB 5 also established higher standards of flood protection (generally 200-year protection) for urban and urbanizing areas (defined as areas of at least 10,000 residents, or which will grow to 10,000 or more within the next 10 years). Other areas remain subject to the pre-existing 100-year standard for protection (Yolo County, 2009).

Porter-Cologne Water Quality Control Act. The SWRCB regulates water quality through the Porter-Cologne Water Quality Act of 1969, which contains a complete framework for the regulation of waste discharges to both surface waters and groundwater of the State. On the regional level, the Proposed Project falls under the jurisdiction of the Central Valley RWQCB, which is responsible for the implementation of State and federal water quality protection statutes, regulations, and guidelines. These regions have each developed a Water Quality Control Plan (Basin Plan) to show how the quality of the surface and groundwater should be managed to provide the highest water quality reasonably possible. The Basin Plans list the various beneficial uses of water within the respective region and describe the water quality that must be maintained to allow those uses and the programs, projects, and other actions necessary to achieve the standards established in these plans. The Basin Plans also summarize plans and policies to protect water quality.

California Fish and Game Code. Section 1602 of the California Fish and Game Code protects the natural flow, bed, channel, and bank of any river, stream, or lake designated by the California Department of Fish and Wildlife (CDFW) in which there is, at any time, any existing fish or wildlife resources, or benefit for the resources. Section 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the State, and requires any person, State or local governmental agency, or public utility to notify the CDFW before beginning any activity that will:

- Substantially divert or obstruct the natural flow of any river, stream, or lake;
- Substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake;
- Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

Activities that result in the diversion or obstruction of the natural flow of a stream, or which substantially change its bed, channel, or bank, or which use any materials (including vegetation) from the streamed, may require that the Applicant enter into a Streambed Alteration Agreement (SAA) with the CDFW.

California Water Code Section 13260. California Water Code Section 13260 requires that any person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the State, other than into a community sewer system, must submit a report of waste discharge to the applicable RWQCB. Any actions related to the proposed Project that would be applicable to Section 13260 would be reported to the Central Valley RWQCB.

Local

Yolo County Stormwater Management Program. The U.S. EPA regulates urban stormwater discharges as point sources and requires municipalities to obtain NPDES permits for these discharges, as described above. Yolo County developed a Storm Water Management Program (SWMP) Planning Document in March 2003 (revised in October 2004) to address stormwater quality within the County's jurisdiction. The SWMP addresses a wide variety of activities conducted in urbanized areas of the County that are sources of pollutants in stormwater.

Yolo County Code, Title 10, Chapter 9. The Stormwater Management and Discharge Control code (known as The Stormwater Ordinance) implements the required stormwater management regulations per the CWA, 33 U.S.C. § 1251 et seq., and provides for the regulation and reduction of pollutants discharged into the waters of the United States by extending NPDES requirements to stormwater and urban runoff discharge into the County storm drain system. The County's stormwater Management Program, adopted by the County on August 24, 2006, requires the County to effectively prohibit non-stormwater discharges from the unincorporated area of the County into the County storm drain system except as otherwise permitted by law.

Yolo County Code, Article 5, Section 8-4.501. The Yolo County Code requires nonresidential construction to be elevated at least one foot above the base flood elevation, as determined by the community, or be floodproofed in a manner that is certified by a registered professional engineer as sufficient to satisfy the County Code requirements.

Impacts and Mitigation Measures

Significance Criteria

The proposed project would have a significant impact on hydrology and water quality if any activity associated with its construction, operation, maintenance, or decommissioning would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Contribute to inundation by seiche, tsunami, or mudflow.

Impact Analysis

Impact HYDRO-1	The project has the potential to violate water quality standards or waste discharge requirements

The proposed project site is under the jurisdiction of the Central Valley RWQCB, which has developed a Basin Plan for the purpose of designating waters that provide beneficial uses, establishing water quality objectives to protect those uses, and creating a program of implementation needed for achieving the objectives (CVRWQCB, 2011). To further protect water quality, the State Water Board has adopted an anti-degradation policy (Section 1300 of the Water Code and State Water Board Resolution No. 68-16) that establishes requirements for maintaining the high-quality waters of the State in a manner that is "consistent with the maximum benefit to the people of the State." The RWQCBs apply these requirements when issuing a permit regarding any discharge of waste that may affect the quality of surface or groundwaters in the region (CVRWQCB, 2011). Construction of the proposed turbine would mostly occur within a graveled area of the wine production facility and adjacent agricultural land. Construction activities would not conflict with the implementation program established in the Central Valley Region's Basin Plan.

The proposed project would comply with all applicable water quality standards and waste discharge requirements. There is potential that soil erosion and sedimentation, and/or the accidental release of hazardous materials such as vehicle fuels, could occur during project-related soil disturbing activities or installation of the temporary bridge across the irrigation canal. It is likely that groundwater be encountered during the proposed 30-foot-deep excavation for the turbine foundation excavation given that groundwater seepage was encountered at the proposed project site at depths of 10 feet, but may approach the ground surface level of the agricultural field during the rainy season or times of heavy flood irrigation of surrounding fields (Raney, 2014). Therefore, both groundwater and surface water resources in the project area are vulnerable to impacts from soil erosion and sedimentation, and/or the accidental release of hazardous materials. Such occurrences could result in direct or indirect water quality degradation, should the materials be allowed to migrate to local groundwater or surface water resources. The flat topography of the project site and surrounding area would minimize erosion and migration of any accidentally released hazardous materials.

Implementation of the proposed project would result in 3.14 acres of temporary disturbance and 0.07 acres of permanent disturbance. Because the project would disturb more than one acre of soil, the project

would require a SWPPP and implementation of associated BMPs in compliance with the NPDES permit to prevent the acceleration of natural erosion and sedimentation rates and to ensure that the risk of accidental spills and releases of contaminants into waterways would be minimal. BMPs pertinent to hydrology and water quality typically include, but are not limited to:

- All construction staging activities will occur within a designated staging area. The staging area will be marked in the field and on the construction plans. All refueling and maintenance activities will occur within the staging area;
- Any hazardous materials spill will be cleaned up immediately, in accordance with all federal, state, and local regulations;
- Construction of stabilized construction entrances/exits will be required to prevent tracking onto roadways and construction activity traffic to and from the project site will be limited to these entrances/exits;
- The contractor will protect temporary borrow areas and/or stockpiles with appropriate erosion control measures satisfactory to the County engineer;
- The contractor will not disturb areas outside of the grading limits without prior approval of the engineer;
- Grading will not occur when wind speeds exceed 20 miles per hour over a one-hour period;
- Drain inlets will be protected from receiving polluted stormwater through the use of fiber roll stabilization and straw bales;
- Disturbed slopes will have a drought tolerant weed free mix of native and non-native grasses or an alternate erosion control measure installed prior to November 1 of each year;
- The contractor will inspect and repair all erosion control facilities at the end of each workday during the rainy season (October 1 to April 30); and
- All erosion and sedimentation control measures will be maintained until disturbed areas are stabilized.

Implementation of the SWPPP and associated BMPs in compliance with NPDES requirements would avoid and minimize water quality impacts from erosion and sedimentation during project construction. However, the use of construction equipment would introduce the potential for an accidental release (spill) of hazardous materials (e.g., fuel, grease, lubricants, coolant). Accidental release of hazardous materials into the irrigation canal or groundwater near the surface could result in severe degradation of water quality, which would constitute a significant impact absent mitigation. However, the risk of such a release or spill occurring would be minimized through the implementation of a SWPPP and Mitigation Measures **HAZ-1** and **HAZ-2** (see Section 3.7, Hazards and Hazardous Materials). Mitigation Measure **HAZ-1** would require Bogle to develop and implement a Toxic Materials Control and Spill Prevention Plan that would specifically address hazardous materials and would reduce any risk of spills that could impact water quality. If any spills did occur, Mitigation Measure **HAZ-2** would ensure that the spills were addressed quickly and remediated adequately as to minimize impacts to groundwater or surface water resources. Implementation of Mitigation Measure **HYDRO-1** would ensure that groundwater encountered during construction is dewatered in compliance with the CASQA Handbook for Construction to avoid water quality degradation and preserve supply.

With implementation of these measures, the proposed project would not violate water quality standards or waste discharge requirements, nor would it substantially degrade water quality in the region. Impacts to groundwater and surface water quality would be reduced to a less than significant level.

Level of Significance before Mitigation: Significant

Mitigation Measures for Impact HYDRO-1

MM HAZ–1 **Develop and Implement a Toxic Materials Control and Spill Prevention Plan.** (see Section 3.7 for full text of the mitigation measure)

MM HAZ–2 **Develop and Implement a Spill Response Plan.** (see Section 3.7 for full text of the mitigation measure)

MM HYDRO-1 **Dewater Construction Site As Needed.** If groundwater is encountered, dewatering shall be performed in compliance with the California Stormwater Quality Association (CASQA) Handbook for Construction or other similar guidelines, as approved by the Central Valley RWQCB. Encountered groundwater shall be spread or otherwise returned to the subsurface to the extent feasible.

Level of Significance after Mitigation: Less than significant

Impact HYDRO-2	The project has the potential to substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (i.e., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)

The amount of water used for dust suppression would be minimal, and only required intermittently during the eight-to twelve-week construction period. The source of water that would be used during construction is unknown, but could be from a non-potable source if available. In the event potable water is trucked to the site for dust suppression, this water is assumed to come from within local water supplies available to serve the project from existing entitlements and resources. The limited use of water for dust suppression during construction would not substantially deplete groundwater supplies. Dewatering groundwater encountered during excavation would be not substantially deplete groundwater supplies. This impact would be less than significant and would not require mitigation. Pursuant to Mitigation Measure **HYDRO-1,** which would be implemented to mitigate water quality impacts under Impact HYDRO-1, above, any groundwater encountered would be returned to the subsurface to the extent feasible consistent with standard construction practices. Implementation of this measure would also minimize groundwater depletion. Furthermore, construction activities would be located in an area of the wine production facility that would not affect any onsite well and would not deplete groundwater supplies nor interfere with groundwater recharge. This impact would be less than significant.

Level of Significance: Less than significant. No mitigation required.

Impact HYDRO-3	The project has the potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site

Implementation of the proposed project would not temporarily or permanently alter the course of any waterway. Proposed project construction activities would be conducted within a graveled area of the wine production facility and in the adjacent agricultural field. A temporary bridge would be installed across the irrigation canal to facilitate equipment delivery during construction and conduit would be installed by boring beneath the irrigation canal; neither activity would result in any disturbance to or alteration of the irrigation canal. Given the relatively flat topography of the project area and the limited acreage to be affected, the proposed project would not alter existing drainage patterns. Temporary disturbance areas

(approximately 3.14 acres) would be restored upon completion of construction and BMPs would be implemented during construction as part of the project SWPPP to stabilize disturbed areas and to minimize the potential for erosion and sedimentation. This impact would be less than significant.

Level of Significance: Less than significant. No mitigation required.

Impact HYDRO-4	The project has the potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site

As described under Impact HYDRO-3, implementation of the proposed project would not temporarily or permanently alter the course of any waterway. Given the relatively flat topography of the project area and the limited acreage to be affected, the proposed project would not alter existing drainage patterns or change absorption rates or the rate and amount of surface runoff. This impact would be less than significant.

Level of Significance: Less than significant. No mitigation required.

Impact HYDRO-5	The project would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff

There are no existing or planned stormwater drainage systems on or adjacent to the project site. As described under Impact HYDRO-4 above, potential impacts associated with increased runoff and flooding would be less than significant. Also, potential impacts associated with water quality degradation would be less than significant as described under Impact HYDRO-1. The proposed project would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, nor would the project introduce a substantial additional source of polluted runoff. No impact would occur.

Impact HYDRO-6	The project would not otherwise substantially degrade water quality

All potential water quality impacts of the Proposed Project are characterized under the discussions above for Impacts HYDRO-1 through HYDRO-5. This includes potential water quality impacts associated with erosion/sedimentation, hazardous materials, drainage pattern alterations, and stormwater drainage systems. These features capture all potential aspects of the proposed project that could affect water quality, and no other impacts to water quality would occur.

Impact HYDRO-7	The project would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map

The proposed project does not include the construction of any housing, and would not alter existing drainage patterns and flood areas in such a way that existing housing would be mapped as being in a new Flood Hazard Area. No impact would occur.

Impact HYDRO-8	The project has the potential to place within a 100-year flood hazard area structures which would impede or redirect flood flows

According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map for the proposed project site, the project would be located within a 100-year floodplain (FEMA, 2010). The project is in FEMA's Zone A, which indicates that FEMA has not determined the water-surface elevation (i.e., base flood elevation) for that area.

The project would conform with FEMA and local regulations for development within a flood zone, including Yolo County Code, which requires nonresidential construction to be elevated at least one foot above the base flood elevation, as determined by the community, or be floodproofed in a manner that is certified by a registered professional engineer as sufficient to satisfy the County Code requirements (Article 5, Section 8-4.501) (Yolo County, 2015). In March 2014, the County issued a Flood Hazard Development Permit to allow this project to be located within the 100-year flood zone. Therefore, flood hazard impacts from project structures would be less than significant.

Level of Significance: Less than significant. No mitigation required.

Impact HYDRO-9	The project would not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam

As discussed under Impact HYDRO-8, the proposed project is located within a 100-year floodplain according to FEMA. It is also within a dam inundation zone and the area subject to flooding in the event of failure of the federal levees along the Sacramento River (Yolo County, 2009).

However, the proposed project would have no influence on the boundaries of this inundation area, and would not include any activities that could contribute to a dam's potential for failure. Furthermore, the wind turbine would operate on an automatic basis controlled by a SCADA system located inside the base of the tower and there would be no onsite personnel, except to perform occasional maintenance activities. The proposed project would involve no activities which could result in the failure of a levee or dam nor would it increase the risk of loss, injury, or death involving flooding. No impact would occur.

Impact HYDRO-10	The project would not contribute to inundation by seiche, tsunami, or mudflow

The proposed project area is not located near the ocean or any large bodies of water that would pose a seiche or tsunami hazard. In addition, the proposed project area is relatively flat and is not situated near steep slopes that could be subject to mudflow events. The proposed project does not include any activities that could facilitate mudflow events on regional slopes. No impact would occur.

3.9 Noise and Vibration

Introduction

This section describes environmental noise and vibration and the potential impacts caused by the project on ambient noise levels.

Setting

Fundamentals of Community Noise and Vibration

The A-weighted scale is a measurement scale that simulates human perception; it is used to describe environmental noise and to assess project impacts on areas that are sensitive to noise. The A-weighted scale of frequency sensitivity accounts for the sensitivity of the human ear, which is less sensitive to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Decibels are logarithmic units that can be used to conveniently compare wide ranges of sound intensities.

Community noise levels can be highly variable from day to day as well as between day and night. For simplicity, sound levels are usually best represented by an equivalent level over a given time period (Leq) or by an average level occurring over a 24-hour day-night period (Ldn). The Leq, or equivalent sound level, is a single value (in dBA) for any desired duration, which includes all of the time-varying sound energy in the measurement period, usually one hour. The L50, is the median noise level that is exceeded 50 percent of the time during any measuring interval. The Ldn, or day-night average sound level, is equal to the 24-hour A-weighted equivalent sound level with a 10-decibel penalty applied to nighttime sounds occurring between 10:00 p.m. and 7:00 a.m. Community Noise Equivalent Level (CNEL) is another metric that is the average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and after addition of 10 decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m. To estimate the day-night level caused by any noise source emitting steadily and continuously over 24-hours, the Ldn is 6.4 dBA higher than the source's Leq. For example, if the expected continuous noise level from equipment is 45.0 dBA Leq for every hour, the day-night noise level would be 51.4 dBA Ldn.

Community noise levels are usually closely related to the intensity of human activity. Noise levels are generally considered low when below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. In wilderness areas, the Ldn noise levels can be below 35 dBA. In small towns or wooded and rural residential areas, the Ldn is more likely to be around 50 or 60 dBA. Agricultural and industrial operations that are common in Yolo County are characterized by variable levels of use of mechanical equipment best represented by the peak (Lmax) levels. Farming activities result in typical noise levels from tractors (as measured at a distance of 50 feet) at an average of about 84 dBA Lmax (Yolo County, 2009). Levels around 75 dBA throughout the day and night are more common in busy urban areas, and levels up to 85 dBA occur near major freeways and airports. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, they nevertheless are considered to be adverse to public health.

Annoyance generally occurs in reaction to newly introduced sources of noise that interrupt ongoing activities. Community annoyance is a summary measure of the general adverse reaction of people to noise that causes speech interference, sleep disturbance, or interference with the desire for a tranquil environment (FTA, 2006). People react to the duration of noise events, judging longer noise events to be

more annoying than shorter ones, and transportation noise is usually a primary cause of community dissatisfaction. Construction also often generates complaints, especially during lengthy periods of heavy construction, when nighttime construction is undertaken to avoid disrupting workday activity, or when the adjacent community has no clear understanding of the extent or duration of the construction (FTA, 2006).

Surrounding land uses dictate what noise levels would be considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than what would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than the corresponding daytime levels. In rural areas away from roads and other human activity, the day-to-night difference can be considerably less. Areas with full-time human occupation and residency are often considered incompatible with substantial nighttime noise because of the likelihood of disrupting sleep. Noise levels above 45 dBA at night can result in the onset of sleep interference. At 70 dBA, sleep interference effects become considerable (USEPA, 1974).

Table 3.9-1 shows typical sound levels of various environmental noise sources.

Table 3.9-1. Typical Sound Levels Measured in the Environment and Industry

Noise Source and Distance	A-Weighted Sound Level (dBA)	Subjective Impression
Civil defense siren (100 ft)	130	Pain threshold
Jet takeoff (200 ft)	120	
Rock music concert (50 ft)	110	
Pile driver (50 ft)	100	Very loud
Ambulance siren (100 ft)	90	
Diesel locomotive (25 ft)	85	Loud
Pneumatic drill (50 ft)	80	
Freeway (100 ft)	70	Moderately loud
Vacuum cleaner (10 ft)	60	
Light traffic (100 ft)	50	
Large transformer (200 ft)	40	Quiet
Soft whisper (5 ft)	30	Threshold of hearing

Existing Ambient Noise Levels

Baseline (existing) noise levels in the proposed project area are typical of those for rural lands in active agricultural or light industrial use. Existing noise levels within the project area are generally low to moderate, depending on the proximity to noise created by the wine production facility, adjacent agricultural operations, and by traffic along the nearest local roadways (primarily Jefferson Boulevard). No major highways are within one mile of the proposed project site.

Two ambient noise level surveys were prepared by Bogle (BAC, 2014; BAC, 2015). Measurements found that during the quietest nighttime hours and some daytime hours, ambient levels may range between 30 dBA to 40 dBA, except when near traffic, and day-night average levels are between 56 dBA and 62 dBA Ldn. Table 3.9-2 summarizes the noise survey data.

Table 3.9-2. Existing Ambient Noise Level Measurements

	Distance from Proposed Wind Turbine (feet)	Daytime Noise Level, Leq (dBA)	Day-night Average Noise Level, Ldn (dBA)
R1, Jefferson Boulevard, east of site	3,000	49	62
R2, Hamilton Road, south of site	1,850	41	56
R3, Road 148, south of site	3,000	38	60
R4, Road 148, north of site	3,800	37	not available

Daytime noise levels measured on January 24, 2014; day-night average noise levels measured on December 7 and 8, 2015.
Sources: BAC, 2014; BAC, 2015.

Sensitive Receptor Locations

There are 18 rural residences within one mile of the proposed turbine. However, only one home is located within one-half mile of the proposed turbine. The nearest residence is located approximately 1,850 feet (0.35 miles) south on Hamilton Road.

Regulatory Environment

Regulating environmental noise is generally the responsibility of local governments. In 1974, the U.S. Environmental Protection Agency published guidelines on recommended maximum noise levels to protect public health, and the State of California maintains recommendations for local jurisdictions in the General Plan Guidelines published by the Governor's Office of Planning and Research (OPR, 2003).

General Plan Guidelines

The State of California Department of Health Services developed recommended Community Noise Exposure standards, which are set forth in California's General Plan Guidelines (OPR, 2003). In these guidelines, land used for agriculture is in a category of lands that are considered the least-sensitive to noise, along with industrial, manufacturing, and utility land uses. For these categories, noise up to 75 dBA Ldn or CNEL can be "normally acceptable" (OPR, 2003). These standards are also included in the Health and Safety Element of the Yolo County General Plan (Yolo County, 2009), adopted by the County Board of Supervisors on November 10, 2009.

Yolo County General Plan

The Yolo County 2030 Countywide General Plan (Yolo County, 2009) includes the Health and Safety Element that establishes a goal of achieving "noise compatibility" to "protect people from the harmful effects of excessive noise" (Goal HS-7). Several of the policies and implementation actions balance the aim of providing acceptable noise levels in residential areas (Policy HS-7.1) while protecting the existing agricultural, commercial and industrial uses from encroachment by noise-sensitive uses (Policy HS-7.3).

According to Action HS-A62, the County will: "Regulate the location and operation of land uses to avoid or mitigate harmful or nuisance levels of noise to the following sensitive receptors: residentially designated land uses; hospitals, nursing/convalescent homes, and similar board and care facilities; hotels and lodging; schools and day care centers; and neighborhood parks. Home occupation uses are excluded. (Policy HS-7.1, Policy HS-7.4)"

The County considers the definition of noise "sensitive receptors," as it is used in the 2030 Countywide General Plan, to include "residentially designated land uses," rather than individual homes. For example, neighborhoods designated by the General Plan as Residential Low Density or zoned Low Density Resi-

dential or Medium Density Residential (R-L or R-M) or designated with similar residential zoning would be "sensitive receptors" for noise. This does not include individual homes ancillary to farm operations located on agriculturally designated (AG) or zoned (A-N, A-X, or A-I) land.

The County noise compatibility guidelines define 70 dBA Ldn or CNEL for outdoor noise levels in agricultural areas as "normally acceptable" and 70 to 80 dBA as "conditionally acceptable." Noise levels at or below 60 dBA Ldn or CNEL would be "normally acceptable" for all residential uses (Yolo County, 2009).

Yolo County Code

Yolo County does not have a noise ordinance, but implements the State Guidelines as applicable. Relevant noise standards appear in the Yolo County Code, Section 8-2.1103, Small and large wind energy systems [Ord. 1445, eff. August 14, 2014]. The proposed wind turbine would be "large" in the definition of the code, and as such, the following standards are presumed to apply:

> *(9) Noise. Where a sensitive receptor such as a group of residences, a school, church, public library, or other sensitive or highly sensitive land use, as identified in the Noise Element of the County General Plan, is located within one-half (1/2) mile in any direction of a project's exterior boundary, a noise or acoustical analysis shall be prepared by a qualified acoustical consultant prior to the issuance of any Major Use Permit. The report shall address any potential noise impacts on sensitive or highly sensitive land uses, and shall demonstrate that the proposed wind energy development shall comply with the following noise criteria:*
>
> > *(i) Audible noise due to wind turbine operations shall not be created which causes the exterior noise level to exceed forty-five (45) dBA for more than five (5) minutes out of any one- (1-) hour time period, or to exceed fifty (50) dBA for any period of time, when measured within fifty (50) feet of any existing group of residences, a school, hospital, church, or public library.*
> >
> > *(ii) In the event that noise levels, resulting from a proposed development, exceed the criteria listed above, a waiver to said levels may be granted by the Planning Commission provided that: written consent from the affected property owners has been obtained stating that they are aware of the proposed development and the noise limitations imposed by this code, and that consent is granted to allow noise levels to exceed the maximum limits allowed; and a permanent noise impact easement has been recorded on the affected property.*
>
> *(10) A toll-free telephone number shall be maintained for each wind energy project and shall be distributed to surrounding property owners to facilitate the reporting of noise irregularities and equipment malfunctions.*

Impacts and Mitigation Measures

Significance Criteria

Significance criteria for noise and vibration impacts are derived from CEQA Guidelines Appendix G. A significant impact would occur if the project would result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;

- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- Expose people residing or working in the project area to excessive noise levels (for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport); or
- Expose people residing or working in the project area to excessive noise levels (for a project within the vicinity of a private airstrip).

This analysis uses quantification of expected noise levels, review of agency policies and regulatory requirements, and qualitative analyses for issues that do not lend themselves to quantitative evaluation. Quantitative analyses address noise and vibration from construction equipment operations and noise from operation of the proposed turbine.

The area of interest for consideration of noise and vibration issues is typically localized. Airborne noise dissipates fairly rapidly with increasing distance from the noise source. The distances involved depend primarily on the intensity of the noise generated by the source, and partly on weather conditions such as wind speed and direction, the height and strength of temperature inversions, and the height of cloud cover. Sound is detectable somewhat further downwind than upwind of a noise source. Temperature inversions and cloud cover can reflect or refract sound that is radiated upwards; this effect can increase noise levels at locations that receive the reflected or refracted sound. Such reflection and refraction effects are important primarily for high intensity sounds, such as the operation of a wind turbine. For sources of ground-level noise such as construction activity and traffic, the region of influence is typically less than 0.25 miles from the noise source.

Impact Analysis

Impact NOI-1	The project has the potential to expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

Construction Noise

Construction activities would consist of ground clearing with equipment such as a trucks and bulldozers capable of generating peak noise levels in the range of 85 dBA to 88 dBA at 50 feet (FTA, 2006; Yolo County, 2009). These heavy equipment noise levels would be intermittent and would be similar to noise generated by equipment used in normal agricultural activities, such as tractors. The overall duration of construction would be approximately eight to twelve weeks.

Sound from an individual source or piece of equipment will naturally attenuate over distance by decreasing six dBA with every doubling of distance from the source, based on the spherical divergence of the sound waves radiating outward from the point of the source (Caltrans, 2009). This means that at a distance of 100 feet between a typical noise source and receiver, the maximum noise level from equipment that produces 85 dBA at 50 feet would be approximately 79 dBA; beyond a distance of 200 feet, the level from the same noise source would be 73 dBA or lower.

Project-related construction activities would occur approximately 1,850 feet away from the nearest residence. The maximum noise level experienced at this location would be approximately 59 dBA, after con-

sidering the attenuation over distance (refer to Appendix C for construction noise calculations). Construction noise of this nature and at these levels is contemplated by the General Plan, and these noise levels would be consistent with those described in Section 4.d, in Chapter D, Noise, of the Health and Safety Element (Yolo County, 2009). No general noise ordinance standards would apply.

Accordingly, construction would not result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, and this impact would be less than significant.

Operations and Maintenance Noise

The following discussion addresses the various types of noise associated with a typical wind turbine and whether the noise from the proposed wind turbine would be consistent with standards established in the local general plan and ordinances.

For the discussion of whether long-term operational noise would represent a "substantial" permanent increase in noise levels, please refer to Impact NOI-3, for CEQA Guidelines checklist question (c), below. The topics of shadows and light flicker are addressed in Section 3.3, Aesthetics.

Wind Turbine Noise. Wind turbines produce noise from two categories of sources: mechanical and aerodynamic.[1] These categories can be described in terms of four types of noise (tonal, broadband, impulsive, and low-frequency). Mechanical noise, associated with the rotation of mechanical and electrical components, tends to be tonal, although a broadband component exists. It is primarily generated by the gearbox and other parts, such as generators, yaw drives, and cooling fans. Aerodynamic noise from wind turbines originates mainly from the flow of air over and past the blades; therefore, the noise generally increases with tip speed. The aerodynamic noise has a broadband character, often described as a "swishing" or "whooshing" sound. Large wind turbines of contemporary design, such as the proposed wind turbine, generally achieve relatively low levels of mechanical noise, resulting in aerodynamic noise being the dominant source from the proposed wind turbine.

Sound level data for the proposed wind turbine indicates a source sound power level of up to 107.0 dBA, based on the technical specifications for Model 2.3-107, with an uncertainty of plus or minus 0.8 dBA (GE, 2014). The data represents the maximum potential source level, at the wind speed causing highest sound levels (10 meters per second standard wind speed, or 13.9 meters per second at the hub). This analysis models the source at these high wind speeds, although the wind itself would tend to mask the increasing turbine noise.

To determine the potential noise impacts at nearby residences and other noise-sensitive areas from the wind turbines, propagation of the source sound levels would occur over the surrounding terrain and distances. Considering geometric (hemispheric) spreading, the turbine would cause a sound pressure level of 52 dBA at a distance of 200 meters (656 feet), which would be a level comparable to noise from light traffic. At one-quarter mile (1,320 feet) the proposed turbine would cause less than 45 dBA Leq and less than 52 dBA Ldn or CNEL on a day-night basis, and for the nearest residence, approximately 1,850 feet (0.35 miles) south on Hamilton Road, the resulting level would be less than 41 dBA Leq and less than 48 dBA Ldn or CNEL. The combined noise levels of the proposed turbine with the existing ambient noise levels would not increase the day-night average by more than 3 dBA. Refer to Appendix C for operational noise calculations.

[1] BLM Final Programmatic Environmental Impact Statement (Section 5.5.3.1, p. 5-23) on Wind Energy Development on BLM-Administered Lands in the Western U.S. June 2005.

Other conditions, aside from distance and terrain, including atmospheric conditions would affect the resultant noise levels at nearby noise-sensitive areas. On a clear night, temperature usually increases with height due to radiant cooling of the surface. Under this condition (called a temperature inversion), sound refracts or bends downward, which is a favorable condition for propagation (i.e., sound will travel farther). However, this condition would occur only with a stable atmosphere, at low wind speeds, or below the cut-in speed for operation of the turbine; thus, increased noise propagation associated with temperature inversion would normally be minimal. In general, higher wind speeds also cause sound waves to be refracted, which can create a downwind concentration and upwind reduction of noise. Higher background noise levels also occur with higher wind speeds. Wind-generated background noise (i.e., noise caused by the interaction between wind and vegetation or structures) may also mask the wind turbine noise at wind speeds greater than 8 meters per second (26 feet per second).[2]

Noise Related to Maintenance Activities. Regular maintenance activities would include periodic site visits to the wind turbine and auxiliary facilities. These activities would involve light- or medium-duty vehicle traffic with relatively low noise levels. Infrequent but noisy activities would be anticipated for occasional repairs to the wind turbine. However, the anticipated noise levels from maintenance activities would be well below those from construction activities, noise from existing agricultural operations, and noise from non-heavy duty traffic and operation and maintenance commute traffic, ranging from light- to medium-duty vehicles, would be negligible.

Infrasound and Low-Frequency Noise. Scoping comments raised the potential issue of "infrasound" and low-frequency noise, which occurs at or below a frequency of 20 Hertz (Hz), or cycles per second, the lower end of the normal human audible range. Potential consequences of infrasound and low-frequency noise have been reviewed by the American Wind Energy Association and Canadian Wind Energy Association for potential health effects (Colby et al., 2009), and more-recently by the Commonwealth of Massachusetts (MassDEP, 2012). These studies indicate that modern wind turbines cause low-frequency noise at levels below the threshold of perception. Since the threshold for adverse health effects for low-frequency noise is probably close to the minimum levels of audibility, which are 97 dB at 10 Hz and 79 dB at 20 Hz, a source causing lower sound pressure levels would not be likely to cause an adverse health effect. Vendor information (GE, 2014) confirms that the apparent sound levels from the proposed turbine would range up to about 64 dB at 25 Hz. Infrasound and low-frequency noise at these levels and below would be less than the level of audibility.

Potential Health Impacts from Noise and Vibration. The potential for causing a nuisance or annoyance would most likely be the result of some combination of perceptible sound, the sight of the turbine, and the attitude towards the wind turbine project. Scientific review sponsored by the Commonwealth of Massachusetts indicates that: "There is limited epidemiologic evidence suggesting an association between exposure to wind turbines and annoyance; and there is insufficient epidemiologic evidence to determine whether there is an association between noise from wind turbines and annoyance independent from the effects of seeing a wind turbine and vice versa." However, while it is possible that noise from some "very loud" wind turbines can cause sleep disruption for some people, there is insufficient evidence that noise from wind turbines directly causes health problems (MassDEP, 2012). Noise levels from operation of the proposed wind turbine would be below 45 dBA at the nearest residence, and therefore not likely to cause sleep disruption.

[2] BLM Final Programmatic Environmental Impact Statement (Section 5.5.3.1, p. 5-25) on Wind Energy Development on BLM-Administered Lands in the Western U.S. June 2005.

In conclusion, because operation of the proposed wind turbine would not cause noise levels at the nearest residence over 45 dBA Leq at any time, the proposed project would be consistent with the Yolo County Code standard for "large" wind energy systems. Additionally, on a day-night basis, the turbine would not cause noise levels at the nearest residence to be in excess of 60 dBA Ldn or CNEL, which is the level considered by the General Plan as "normally acceptable" for all residential uses (Yolo County, 2009). Noise from maintenance activities would be minimal, and when occurring, would be similar in nature to construction-phase noise; however, no notable change in traffic within the site and on local roadways would occur with routine operation and maintenance. Accordingly, overall operation and maintenance activities would not result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, and this impact would be less than significant.

Level of Significance: Less than significant. No mitigation required.

Impact NOI-2	The project has the potential to expose persons to or generate excessive groundborne vibration or groundborne noise levels.

Vibration from construction equipment can be perceptible to people in the immediate vicinity of the sources. The level of groundborne vibration that could reach sensitive receptors depends on what equipment is creating vibration, the distance to the receptor, and the soil conditions surrounding the vibration source.

Construction activities on the proposed project site would be no closer than 1,850 feet from the nearest residence. At distances greater than 200 feet, persons in buildings would normally experience groundborne vibration levels less than 80 VdB during even the most severe construction-related activities (refer to Appendix C for vibration calculations). No residences would be near enough to project activities to experience excessive levels of groundborne vibrations. Because groundborne vibration levels would be localized to within the project site and unlikely to affect sensitive receptors, the resulting levels would not be considered excessive, and this would be a less than significant impact.

Level of Significance: Less than significant. No mitigation required.

Impact NOI-3	The project has the potential to have a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

Permanent noise resulting from the proposed project would be primarily the noise caused by the operation of the wind turbine. Negligible noise would be generated by occasional traffic from crews for routine operations and maintenance. The increase in ambient noise levels caused by the proposed wind turbine would not be sufficient to substantially change surrounding day-night ambient noise levels at the nearest residences, which are between 56 dBA and 62 dBA Ldn, as shown in Table 3.9-2.

The off-site noise levels from the turbine would be at or below 45 dBA Leq for any location at 0.25 miles from the base of the turbine. The proposed wind turbine would operate 24-hours daily, resulting in less than 52 dBA Ldn or CNEL on a day-night basis at 0.25 miles. At the nearest residence, approximately 1,850 feet (0.35 miles) south on Hamilton Road, the resulting level would be less than 48 dBA Ldn or CNEL, which is below the existing ambient day-night noise level for R2 shown in Table 3.9-2. Other locations further from the turbine would experience lower noise levels due to the greater distances. The combined noise levels of the proposed turbine with the existing ambient noise levels would result in no more than a 3 dBA change in the measured ambient day-night noise levels at the nearest residences. As

such, the noise from the project would not cause substantial permanent increases to day-night noise levels for any sensitive receptors near the project, and this impact would be less than significant.

Level of Significance: Less than significant. No mitigation required.

Impact NOI-4	The project has the potential to have a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Construction noise would affect the receptors closest to the proposed project site and along site access routes used by haul trucks and other construction traffic. The residence nearest the project site and other rural residences along the access routes would experience a temporary increase in noise above the levels that exist without the project.

Construction noise would occur in a setting of low to moderate existing ambient noise levels. The temporary increase in noise caused by construction would occur over a short-term duration and would not present any permanent impact to the surrounding area. Construction noise would be limited to the duration of work, approximately eight to twelve weeks, and the noise would be confined to daytime hours. All construction noise would be intermittent and variable in nature, depending on day-to-day activities, and it would naturally attenuate or diminish over distance. Although construction activity would be limited in duration, use of construction equipment at the site would result in a readily perceptible, but temporary, increase in daytime environmental noise.

Existing noise levels within the project area depend on the proximity to noise created by the wine production facility, adjacent agricultural operations, and by traffic along the nearest local roadways. Although construction noise would be readily perceptible in the setting of low to moderate ambient noise, the increase would not be considered substantial because the construction noise would not involve unusual levels of equipment use at the locations near residences. Most construction activity would occur at a distance of greater than 1,000 feet from the nearest residence. The number of receptors in the vicinity beyond this distance is also limited, and the intermittent and variable nature of construction noise limits the potential for adverse effects such as annoyance to be experienced by off-site receptors. Sleep interference would not be a concern because nighttime construction would be avoided.

Because the noise caused by construction equipment, vehicles and traffic would not be substantial in the context of the project surroundings and existing noise levels, this impact would be less than significant.

Level of Significance: Less than significant. No mitigation required.

Impact NOI-5	For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, the project would not expose people residing or working in the project area to excessive noise levels.

The proposed project site is not located within an airport land use plan or within 2 miles of a public airport or public use airport. One private landing strip (Borges-Clarksburg Airport) is located about 2 miles northeast of Clarksburg, along South River Road, and approximately six miles northeast of the project site. Because the proposed project would not add new sensitive receptors, the project would not expose people to noise from an airport. Similarly, no excessive noise would result from project operations that could impact people residing or working near an airport. As such, there would be no impact.

Impact NOI-6	For a project within the vicinity of a private airstrip, the project would not expose people residing or working in the project area to excessive noise levels.

The proposed project is not located within the vicinity of a private airstrip, although one private landing strip (Borges-Clarksburg Airport) is located approximately six miles northeast of the project site. Because the proposed project would not expose people to noise from a nearby airstrip, no impact would occur.

3.10 Cumulative Effects

3.10.1 Approach

Under CEQA, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts" (CEQA Guidelines Section 15130(a)(1)). A project's contribution to a significant cumulative impact is cumulatively considerable if its incremental effects "are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (CEQA Guidelines Section 15065(a)(3)).

To determine cumulative effects, a review was completed of past, present, and probable future projects in the vicinity of the proposed project area and an analysis made of their short- and long-term incremental effects on the local environment.

Geographic Scope

Table 3.10-1 lists projects found within a geographic area sufficiently large to provide a reasonable basis for evaluating cumulative impacts. However, it does not encompass every project considered. The area over which the cumulative scenario is evaluated may vary by resource, because the nature and range of potential effects vary by resource. This spatial area is the geographic scope for the analysis of cumulative impacts and is defined for each particular resource.

Timeframe

The timeframe of past, present, and probable future projects was determined as follows:

- **Past Projects.** Existing projects as of October 23, 2015 (the time that the EIR's Notice of Preparation was published, which, pursuant to CEQA, reflects the EIR's "baseline" (CEQA Guidelines Section 15125(a)).
- **Present Projects.** Projects that are either being constructed, or have been approved for construction and operation as of October 23, 2015.
- **Probable future projects.** Projects with a complete permit application by October 23, 2015, and which have begun their environmental review process.

List of Projects for Cumulative Analysis

Table 3.10-1 lists the past, present, and probable future projects that may have impacts that could be combined with the impacts of the proposed project to result in cumulative effects.

Table 3.10-1. Past, Present, and Probable Future Projects in the Bogle Wind Turbine Project Region

Project Name	Project Description	Status/ Schedule	Project Location
SunPower Solar Farm Research Center	Site Plan Review (non-discretionary) for construction of a 14,000-sq.ft. research barn to produce solar cleaning equipment and test crop growth under solar panels	Approved April 2015/ Building plans submitted in Nov. 2015 (permit issued in May, 2016 – currently under construction)	Located at 28110-50 Mace Blvd., just south of the City of Davis, Yolo County; approximately 12 miles northwest of the proposed project

Table 3.10-1. Past, Present, and Probable Future Projects in the Bogle Wind Turbine Project Region

Project Name	Project Description	Status/ Schedule	Project Location
Yolo Flyway Farms Habitat Restoration Project	Major Use Permit and Flood Hazard Development Permit to restore 278 acres of freshwater tidal wetlands in the lower Yolo Bypass	Preparation of a Supplemental EIR (SEIR) underway. To Planning Commission and Board of Supervisors after SEIR is circulated (early 2016).	Located in the lower Yolo Bypass on the west side of the Deep Water Ship Channel, Yolo County; approximately 3 miles west of the proposed project.
Capital Conservation Bank for Giant Garter Snake	Major Use Permit, Flood Hazard Development Permit, and Williamson Act Open Space Agreement for giant garter snake habitat conservation bank	Approved March 11, 2014. Project implementation dependent upon satisfying mitigation and permitting requirements	Located in the Yolo Bypass, west side of the Deep Water Ship Channel, directly west of Clarksburg, Yolo County; approximately 3 miles northwest of the proposed project.
Cemex Gravel Wind Turbine	Installation of one wind turbine with a total generation capacity of approximately 1 megawatt (MW).	Operational; on-line in 2012	Located along Cache Creek, at the northeast corner of Highway 16 and I-505, Yolo County; approximately 27 miles northwest of the proposed site
Superior Farms Wind Turbine	Installation of one wind turbine with a total generation capacity of approximately 1 MW.	Operational; on-line in 2012	Located northwest of the intersection of State Route (SR) 52 and Midway Road just south of the town of Dixon, Solano County; approximately 12.5 miles west of the proposed site
Anheuser-Busch Wind Turbines	Installation of two wind turbines with a total generation capacity of approximately 1.5 MW each.	Operational; on-line in 2012	Located south of I-80 at the Anheuser-Busch production facility on the southwestern edge of the town of Fairfield, Solano County; approximately 27 miles southwest of the proposed site
Montezuma I Wind Project	Installation of 16 Siemens 2.3-MW wind turbines with a total generation capacity of 78.2 MW	Operational; on-line in 2010	Located in the Montezuma Hills region south of SR 12, approximately 13 miles southeast of the city of Fairfield, Solano County; approximately 20 miles southwest of the proposed site
Montezuma II Wind Project	Installation of 34 Siemens 2.3-MW wind turbines with a total generation capacity of 78.2 MW	Operational; on-line in 2011	Located in the Montezuma Hills region south of SR 12, approximately 15 miles southeast of the city of Fairfield, Solano County; approximately 20 miles southwest of the proposed site

Table 3.10-1. Past, Present, and Probable Future Projects in the Bogle Wind Turbine Project Region

Project Name	Project Description	Status/ Schedule	Project Location
Shiloh III Wind Project	118 MW wind power project with 59 wind turbines and associated facilities and infrastructure.	Operational; on-line in 2011	Located in the Montezuma Hills south of SR 12, approximately 18 miles southeast of the city of Fairfield, Solano County; approximately 20 miles south-west of the proposed site
Shiloh IV Wind Project	102.5 MW wind power project including the removal of 235 existing turbines, installation of 50 2.05 MW wind turbines and associated facilities and infrastructure.	Operational, on-line in 2012	Located in the Montezuma Hills south of SR 12, approximately 18 miles southeast of the city of Fairfield, Solano County; approximately 20 miles southwest of the proposed site
Montezuma Hills Wind Resource Area	Existing turbines within the designated resource area with a total generation capacity of approximately 1052 MW.	Operational start dates range between 2006 and 2012	Montezuma Hills Wind Resource Area is located south of SR 12, north of the Sacra-mento River, and east of Shiloh Road, southeast of the city of Fairfield, Solano County; approximately 20 miles south-west of the proposed site

3.10.2 Cumulative Effects Analysis

Aesthetics

The geographic scope for the analysis of cumulative impacts to aesthetics encompasses the viewshed[1] of the proposed turbine. The proposed wind turbine would increase the number of wind turbines in the region, but not in the vicinity of the proposed project area. Other wind turbines identified in Table 3.10-1 would not be visible from the project site, and the proposed wind turbine would not be visible from the locations of the other turbines. The proposed wind turbine would be unique in the project vicinity. The proposed project's contribution to regional visual impacts would not be cumulatively considerable because of the lack of other visible wind turbines or other similarly prominent structures affecting the viewshed.

Biological Resources

The geographic scope for the analysis of cumulative impacts to biological resources encompasses the geographic range of affected special-status species, including the migratory routes of birds and bats that may pass through the project area. This is because cumulative effects occurring throughout a species' range exacerbates threats to the species. Emphasis is placed on the Sacramento Valley and particularly Yolo County since the area encompasses the bird and bat populations potentially affected by the pro-posed project. Within this geographic scope, threats to special-status birds and bats include loss of nest-ing habitat, loss of foraging habitat, reduced prey availability, and mortality hazards (e.g., collisions with buildings, powerlines, wind turbines, and vehicles).

[1] A viewshed is the geographical area from which an object may be visible, excluding areas where line-of-sight visibility is blocked by intervening terrain or other features, or the horizon.

The proposed project would result in the permanent loss of 0.07 acres of foraging habitat for raptors and other birds, including the State-threatened Swainson's hawk, and special-status bats. This is a very small amount relative to the abundance of foraging habitat in the project region and the project's contribution to loss of foraging habitat would not be cumulatively considerable. Any incremental contribution would be minimized by acquisition or preservation of compensatory foraging habitat [Mitigation Measure **BIO-6** (Compensate for loss of foraging habitat)]. Further, the Yolo Habitat Conservation Plan/ Natural Community Conservation Plan (HCP/NCCP) sets forth several goals and objectives to provide for conservation of special-status species affected by the project, including Swainson's hawk. Therefore, the proposed project's contribution to loss of bird and bat foraging habitat in the region would be less than cumulatively considerable.

The proposed project would increase the number of turbines within the geographic range of Swainson's hawk and many other birds and bats, which would pose an additional injury or fatality hazard to species foraging within or flying through the region. Operational single wind turbines in Yolo and Solano Counties and in similar landscapes with similar species as the proposed project area have reported very few fatality incidences (refer to Table 3.4-2 in Section 3-4, Biological Resources). It is expected the proposed project would result in similarly low levels of bird and bat fatality. Implementation of Mitigation Measures **BIO-3** (Conduct pre-construction surveys for burrowing owl and implement impact avoidance and minimization measures), **BIO-5** (Conduct pre-construction surveys for nesting birds and implement impact avoidance and minimization measures), **BIO-8** (Shut down turbine operation and implement adaptive management, as necessary), **BIO-9** (Increase cut-in speed), and **BIO-10** (Develop and implement a Bird and Bat Monitoring and Reporting Program) would avoid and minimize injury and fatality of birds and bats during construction and operation of the proposed project. Therefore, the proposed project's contribution to adverse effects on protected and special-status species would be less than cumulatively considerable.

Cultural Resources and Tribal Cultural Resources

The geographic scope considered for cumulative impacts to historic-era cultural resources is the Holland District because the district was a social and geographic unit for historic-era agricultural activities. The geographic scope for cumulative impacts to prehistoric-era cultural resources and tribal cultural resources is a two-mile area around the project area because tribal territories have changed dramatically over the last 10,000 years, therefore this scope addresses impacts to all resources within or near the project regardless of cultural or temporal affiliation. There are no known historical resources, unique archaeological resources or tribal cultural resources present within the proposed project area. However, the presence of Holocene deposits in the project area indicates moderate to high potential that these landforms contain unidentified cultural resources and tribal cultural resources that could be adversely affected by ground disturbance associated with proposed project construction, especially at depths greater than 3 to 4 feet below ground surface.

Cultural resources and tribal cultural resources are non-renewable. Impacts to cultural resources in the geographic scope from past ground disturbance have been considerable and adverse. An estimated 75 percent of the geographic scope has been subjected to ground disturbance associated with agriculture, which would have adversely impacted any resources present. As much of this initial disturbance occurred prior to 1900 AD, signs of archaeological deposits were likely considered unimportant and removed from the fields. Ground disturbance from future projects may result in damage, degradation, or removal of undiscovered or known resources. These cumulative impacts may result in a substantial adverse change in the significance of a resource, potentially jeopardizing its eligibility for listing on the California Register of Historical Resources.

Mitigation Measures **CUL-1** and **CUL-2** would require evaluation, protection, and appropriate disposition of cultural resources and tribal cultural resources. With the implementation of the mitigation measures, the project's contribution to adverse effects on cultural resources and tribal cultural resources would be less than cumulatively considerable.

Geology and Soils

The geographic scope for the analysis of cumulative impacts to geology and soils is within a 0.5-mile radius of the proposed project because impacts resulting from seismic events and erosion are localized in nature and unlikely to extend beyond the proposed project boundaries. While seismic events are likely to occur over the lifetime of the proposed project, none of the cumulative projects or similar industrial installations are sufficiently close enough to the proposed project to combine with the effects of the project and result in a cumulatively considerable impact.

No known paleontological resources or unique geological features are present in the proposed project area or in the project vicinity. However, the proposed wind turbine construction includes the subsurface ground disturbance of up to 30 feet and could result in an increased incidence of disturbances to previously unidentified significant paleontological resources and unique geologic features. It is possible that the proposed project could contribute to adverse cumulative effect of disturbances to such resources or features. With the implementation of the mitigation measures, the proposed project's contribution to cumulative effects on paleontological resources and unique geologic features would be less than cumulatively considerable.

Hazards and Hazardous Materials

The geographic scope for the analysis of cumulative impacts related to hazards and hazardous materials is within the proposed project footprint and along the access routes. This is because cumulative impacts resulting from hazards and hazardous materials would occur only if projects were in close proximity to each other. None of the cumulative projects or similar industrial installations are sufficiently close to the proposed project to combine with the effects of the project and result in a cumulatively considerable safety hazard or hazardous materials impact. While it is possible that a cumulative project could be under construction in close proximity to the access routes, the likelihood of an accidental release of hazardous materials during the transportation of the proposed project occurring at the same as an accidental release of hazardous materials at a nearby construction project such that they would combine to result in a cumulatively significant impact is low. Further, any nearby construction project would be required to have hazardous materials spill prevention and response plans similar to the proposed project (as required by Mitigation Measures **HAZ-1** and **HAZ-2**), further reducing the risk of concurrent hazardous materials upset. Therefore, the proposed project's contribution to cumulative effects related to hazards and hazardous materials would be less than cumulatively considerable.

Hydrology and Water Quality

The geographic scope for the analysis of cumulative impacts related to groundwater, water supply, and water quality would be a two-mile radius around the proposed project site. This is because any direct or indirect water quality degradation of local surface water or groundwater resources would not likely extend further than 2 miles given the limited size of proposed ground disturbance and the limited types and amounts of hazardous materials used during construction. While there are future projects several miles from the proposed project site, the likelihood of erosion or an accidental release of hazardous materials during construction of the proposed project occurring at the same as an accidental release of hazardous materials at a nearby construction project such that they would combine to result in a cumu-

latively significant impact is low. Additionally, any nearby construction project would be required to have a SWPPP similar to the proposed project, further reducing the risk of erosion or accidental release of hazardous materials combining to result in a cumulatively significant impact. While the proposed project would use some water during construction, this water is assumed to come from local water supplies available to serve the project from existing entitlements and resources so would not result in an appreciable increase in the amount of water used in the region. Therefore, the proposed project's contribution to cumulative effects to hydrology and water quality would be less than cumulatively considerable.

Noise

The geographic extent for the analysis of cumulative impacts related to noise is generally limited to the area within approximately one mile of the proposed project. The geographic extent of the cumulative noise impact area is localized because at distances greater than one mile, project-related construction or operational noise would generally dissipate such that project-related noise levels would blend in with background noise levels.

Current ambient noise conditions reflect the cumulative effect of noise generation by present activities within the local geographic scale. Existing noise levels within the project area are generally low to moderate, aside from noise created by the wine production facility and by traffic along the nearest local roadways (primarily Jefferson Boulevard). No major highways and none of the past, present, and probable future projects identified in Table 3.10-1 or other similar noise-generating installations are within one mile of the project site.

Construction and operation of the proposed wind turbine would be consistent with County noise performance standards and not likely to individually lead to a substantial temporary or permanent increase in ambient noise levels. Consequently, the proposed project's contribution to noise impacts would not be cumulatively considerable.

4. Other CEQA Considerations

4.1 Energy Conservation

In order to assure that energy implications are considered in public agency decisions, CEQA requires that an EIR include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy (see Public Resources Code section 21100(b)(3)). According to CEQA Guidelines Appendix F, the goal of conserving energy implies the wise and efficient use of energy including: (1) decreasing overall per capita energy consumption; (2) decreasing reliance on natural gas and oil; and (3) increasing reliance on renewable energy sources. Some aspects of the energy use analysis are limited by the CEQA Guidelines (Section 15145), which recognizes that the lead agency may find that certain impacts may be too speculative for evaluation.

The proposed wind turbine would be used to supply electric power to the Bogle wine production facility, which would meet the overarching goal of energy conservation. The proposed project is not intended to supply power related to growth for any particular development and would not contribute directly to a significant change in overall per capita energy consumption.

Implementation of the proposed project would result in the consumption of energy in the form of fuel for vehicles and equipment used during construction, operation, and decommissioning. Additional energy would be required for the manufacture of new materials to construct the turbine, some of which would not be recyclable at the end of the project's lifetime. The anticipated equipment, vehicles, and materials required for construction, operation, and decommissioning of the proposed project are detailed in Section 2.4 (Construction), Section 2.5 (Operation and Maintenance), and Section 2.6 (Decommissioning). No significant increases in inefficiencies or unnecessary energy consumption are expected to occur as a direct or indirect consequence of the proposed project. Therefore, no mitigation measures would be necessary.

4.2 Growth Inducement

CEQA Guidelines (15126.2(d)) require that an EIR discuss the ways in which a proposed project may foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. The discussion must address how a proposed project may remove obstacles to growth or encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. Typically, the growth-inducing potential of a project would be considered significant if it fosters growth or a population concentration above what is assumed in local or regional land use plans, or in projections made by regional planning authorities. Significant growth impacts could also occur if a project provides infrastructure or service capacity to accommodate growth levels beyond those permitted by local or regional plans and policies.

The proposed wind turbine would be used to power the existing Bogle wine production facility and is not intended to supply power related to growth for any particular development, either directly or indirectly. Therefore, the proposed project would not foster growth, remove direct growth constraints, or add a direct stimulus to growth.

As described in Section 3.2.10, it is expected that the labor force for construction, operation, and decommissioning of the proposed project would be local or commuting contractors; the required labor force would not be relocating. Therefore, construction of additional housing to support the proposed project would not occur.

4.3 Irreversible/Irretrievable Commitment of Resources

Pursuant to CEQA Guidelines Section 15126.2(C), this section addresses significant irreversible environmental changes and irretrievable commitments of resources that would be caused by a proposed project. These changes include uses of nonrenewable resources during construction and operation and irreversible damages that may result from project-related accidents.

Construction and maintenance vehicles and equipment would consume fuel. Construction would also require the manufacture of new materials, some of which would not be recyclable at the end of the project's lifetime. The energy required for manufacturing construction materials would result in an irretrievable commitment of natural resources. The equipment, vehicles, and materials required for construction and operation of the proposed project are presented in Section 2.4 (Construction) and Section 2.5 (Operation and Maintenance).

Implementation of the proposed project would result in permanent conversion of a maximum of 0.07 acres (3,000 square feet) of agricultural land. This conversion would be offset in compliance with the County's Agricultural Conservation and Mitigation Program, which may be achieved by paying a fee in-lieu of land and/or easement acquisition.

Hazardous materials used or encountered during construction and operation of the proposed project would be used, stored, and handled in accordance with applicable federal and state regulations to avoid any project-related accidents.

5. Alternatives

5.1 CEQA Requirements for Alternatives Analysis

An important aspect of the environmental review process is the identification and assessment of reasonable alternatives that have the potential to substantially lessen one or more of the significant impacts of a proposed project. CEQA Guidelines require consideration of the No Project Alternative (Section 15126.6(e)) and selection of a range of reasonable alternatives (Section 15126.6(d)). The EIR must adequately assess these alternatives to allow for a comparative analysis for consideration by decision makers. Specifically, the State CEQA Guidelines (Section 15126.6(a)) require that:

> *An EIR shall describe a reasonable range of alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation.*

CEQA Guidelines state that the discussion of alternatives shall focus on alternatives capable of eliminating or reducing significant adverse environmental effects of a proposed project, even if the alternatives would impede to some degree the attainment of the project objectives, or would be more costly. CEQA Guidelines also state that an EIR need not consider an alternative whose effects cannot be reasonably ascertained and whose implementation is remote or speculative.

To comply with CEQA's requirements, each alternative is evaluated in three ways:

- Does the alternative accomplish all or most of the project objectives (listed below)?
  - Contribute to Bogle's goal of reducing greenhouse gas emissions associated with wine production by 20 percent per case by 2020.
  - Generate renewable energy onsite in a manner consistent with California's programs to foster greenhouse gas emissions reductions, electricity demand reductions, and growth in distributed energy resources (e.g., California's Self-Generation Incentive Program).
  - Own and operate an energy resource that produces electricity that may be used towards compliance with California's Renewables Portfolio Standards Program and the Clean Energy and Pollution Reduction Act of 2015 (Senate Bill 350; De León, Chapter 547, Statutes of 2015).
  - Support Yolo County objectives and goals to expand capacity of and reliance on renewable energy resources (Yolo County, 2009a [e.g., Objective 9.6]; Yolo County, 2009b [e.g., Goal CC-4]).
  - Reduce operating costs associated with electricity use at the Bogle wine production facility by generating renewable energy onsite.
  - Meet the highest category of the Renewable Sources of Power criterion for the California Sustainable Winegrowing Alliance (CSWA, 2012), of which Bogle is a certified participant.
  - Minimize impacts to agriculture and the loss of prime farmland from the development of renewable energy facilities.
  - Support Yolo County goals to conserve and support the continued productivity and economic viability of agricultural land in Yolo County and the Clarksburg area (Yolo County, 2009c [e.g., Goals AG-1, AG-6]; Yolo County, 2015a).

- Is the alternative potentially feasible (from economic, environmental, legal, social, technological standpoints)?
- Does the alternative avoid or substantially lessen any significant effects of the proposed project (including consideration of whether the alternative itself could create significant effects potentially greater than those of the proposed project)?

Each alternative that meets these evaluation criteria is evaluated in the EIR. Those that do not meet these criteria are described in Section 5.4, Alternatives Considered but Eliminated from Detailed Analysis.

CEQA also requires consideration of the no project alternative, which considers the impacts of not proceeding with the proposed project. This is addressed in Section 5.2.1.

5.2 Selection and Analysis of Alternatives

Alternatives were suggested by the County, the EIR preparation team, Bogle, and by the public through scoping comments. Scoping comments recommended consideration of an alternative that would locate the turbine on a less-sensitive site and alternative technologies, specifically a solar photovoltaic (PV) system.

Three alternatives to the proposed project are analyzed in detail: the no project alternative (required by CEQA and presented in Section 5.2.1), a ground-mounted solar PV alternative (in Section 5.2.2), and a no operation between sunset and sunrise alternative (in Section 5.2.3). The following sections describe these three alternatives and present an assessment of their environmental impacts.

Four additional alternatives were considered, but have been eliminated from detailed analysis in the EIR. These alternatives are described in Section 5.4.

5.2.1 No Project Alternative

The no project alternative must be considered under CEQA. The purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impacts of approving the project with the impacts of not approving the project. This analysis must define the existing conditions at the time the Notice of Preparation is published, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services.

As a condition of the County's approval of the wine production facility, Bogle was required to "incorporate all feasible 'green building' features into the design of all buildings in the proposed winery facility, to reduce greenhouse gas emissions" (Yolo County, 2009d). To this end, Bogle committed to installing 1 MW of an alternative energy source on the production site. Bogle currently produces 350 kW of solar electricity on the roof of a building at the production facility, and it plans to install a system expansion, including a new system of about 750 kW (DC). With the system expansion, Bogle will have met its commitment to install 1 MW of alternative energy onsite and would be unlikely to install additional non-wind renewable energy under the no project alternative.

Under the no project alternative, Bogle would not construct and operate the proposed wind turbine to power the Bogle wine production facility. The Bogle wine production facility would continue operating as it currently does without an increase in renewable energy (except for the expanded rooftop solar system described above).

If the no project alternative were selected, Bogle would consider other methods of reducing its GHG emissions associated with wine production. To this end, Bogle could continue to make improvements in energy efficiency at the wine production facility.

Impacts

Aesthetics

The existing viewshed is dominated by active agricultural production, including row and field crops, vines, and an industrial-scale wine processing facility. If the proposed wind turbine were not erected, the existing viewshed would not change and visual impacts associated with the turbine would not occur. Any improvements in energy efficiency at the wine production facility under the no project alternative would result in negligible visual change.

Biological Resources

Existing conditions at the proposed project site and immediately adjacent to the site provide foraging habitat for birds, including the State-threatened Swainson's hawk. The parcel adjacent to and west of the proposed project site has a Swainson's hawk conservation easement, which will be preserved in perpetuity as high-value foraging habitat. As a result, the habitat on that parcel is considered a bird attractant. Under the no project alternative, there would be no loss of foraging habitat from proposed project construction, no bird and bat injury and mortality from collision with the operating turbine, and no other potential biological resources impacts would occur. Any improvements in energy efficiency at the wine production facility under the no project alternative would not affect biological resources.

Cultural Resources and Tribal Cultural Resources

Existing conditions at the proposed project site do not contain any documented cultural resources or tribal cultural resources. Under the no project alternative, there would be no ground disturbance associated with project construction, thus eliminating any potential for impacting buried and unidentified significant cultural resources and tribal cultural resources. Any improvements in energy efficiency at the wine production facility under the no project alternative would not affect cultural resources or tribal cultural resources.

Geology and Soils

The existing geology includes nearby active seismic faults. The soils are dominated by clay at the surface with primarily sandy soils as you progress down the soil profile. There is some risk of seismic shaking and potential liquefaction due to the faults and sandy soils. If the proposed wind turbine was not constructed, no impacts caused by exposing people to adverse effects due to geologic forces would occur. Any improvements in energy efficiency at the wine production facility under the no project alternative would not affect geology and soils.

Existing conditions at the proposed project site do not contain any documented paleontological resources or unique geologic features. Under the no project alternative, there would be no ground disturbance associated with project construction, thus eliminating any potential for impacting buried and unidentified significant paleontological resources, or unique geologic features. Any improvements in energy efficiency at the wine production facility under the no project alternative would not affect significant paleontological resources, or unique geologic features.

Hazards and Hazardous Materials

There are no known contaminated sites within one mile of the proposed project site, nor is it located within 0.25 miles of a school or airport. The site is located 1.5 miles from a private airport and is in the flight path of crop-dusting aircraft. Construction and operation of the proposed project would require the use of some hazardous materials. If the proposed wind turbine was not constructed, no impacts caused by exposing people to hazardous materials would occur. Any improvements in energy efficiency at the wine production facility under the no project alternative would not affect hazards or hazardous materials.

Hydrology and Water Quality

The existing conditions at the proposed project site consist of a groundwater level between three to 10 feet below surface. The proposed project site is near several irrigation ditches and within a 100-year floodplain. There is the potential for soil erosion and sedimentation due to ground disturbance during construction and the accidental release of hazardous materials that could directly or indirectly impact water quality. If the proposed wind turbine was not constructed, no impacts to water quality would occur. Any improvements in energy efficiency at the wine production facility under the no project alternative would not affect hydrology and water quality.

Noise

Existing noise levels within the project area are generally low to moderate, aside from noise created by the wine production facility and by traffic along the nearest local roadways. Under the no project alternative, the activities and noise sources related to construction and operation of the proposed wind turbine would not occur. As such, there would be no change in background noise levels, and no impact would occur. Any improvements in energy efficiency at the wine production facility under the no project alternative would result in negligible temporary increases in noise during their installation or implementation.

Conclusion

Under the no project alternative, effects to resources would be negligible. Impacts of the proposed project would not occur.

5.2.2 Ground-Mounted Solar Photovoltaic Alternative

A ground-mounted solar PV alternative would consist of installing solar PV panels instead of the proposed wind turbine. Implementation of this alternative would require approximately 20 acres of land for the solar panels, inverter, and ancillary infrastructure. As there is insufficient acreage available on the proposed property (APN 043-310-016), this would require use of the adjacent Bogle-owned property. The solar PV alternative would have to be located on cultivated land. The most logical site would be immediately south of the water treatment ponds to consolidate development and to be near the electrical interconnection site. The PV panels would be east of (and outside) the Swainson's hawk conservation easement. Refer to Figure 5-1 at the end of this section for the location of this alternative.

A typical solar PV project would consist of PV module arrays mounted on a racking system supported by a pile-driven foundation design. The racking system would be either fixed-tilt or tracking and would likely have a low profile (typically 6 feet tall but potentially up to 12 feet tall). Electrical connections from the PV arrays would be channeled to combiner boxes where they would be collected and combined prior to feeding the inverters. Inverters would likely be consolidated to minimize cable routing, trenching, and electrical losses. Inverters are fully enclosed, pad mounted, and stand approximately 7.5 feet tall. A transformer would be required to convert the electricity to the interconnection voltage and

would also likely be 7.5 feet tall. A security perimeter fence may be required. Interconnection lines could be either above ground or underground.

Construction vehicles for the solar PV alternative would use the same access roads and routes as for the proposed wind turbine.

Operations and maintenance of the PV alternative would require occasional cleaning of solar panels. Typically, this would use approximately 0.35 acre-feet of water per year; however, given the surrounding agricultural operations and associated dust, additional cleaning may be required. Nighttime lighting, required for safety purposes for maintenance or washing of the panels, would be minimized by either having an on/off switch or motion detectors.

Consistency with Project Objectives

This alternative would meet some, but not all of the project objectives. Because it would generate renewable energy, it would contribute to the goal of reducing greenhouse gas emissions, support Yolo County and State renewable energy goals, and reduce operating costs associated with electricity use. Conversely, because it would be constructed on large swaths of agricultural land, this alternative would not minimize impacts to agriculture and the loss of Prime Farmland. It also would directly conflict with Yolo County goals to conserve and support the continued productivity and economic viability of agricultural land in Yolo County and the Clarksburg area.

Feasibility

This alternative is feasible. Ground-mounted solar PV projects exist throughout California and in the Central Valley.

Impacts

Agricultural Resources

Installation of the ground-mounted solar PV alternative would result in permanent conversion of 20 acres of Prime Farmland to non-agricultural use. In comparison, the proposed project would convert approximately 0.07 acres (3,000 square feet) of Prime Farmland to non-agricultural use. This impact could potentially be reduced through conservation in compliance with the County's Agricultural Conservation and Mitigation Program, but would still result in permanent farmland conversion. Farmland conversion impacts of the ground-mounted solar PV alternative would be substantially greater than those of the proposed project.

The 115-acre parcel where the ground-mounted solar PV alternative would be located is zoned Agricultural Intensive (A-N) and classified by the DOC as Williamson Act land (DOC, 2012) pursuant to Land Use Agreement No. 72-281. According to County Code Section 8-2.1104 (d)(2i) and (g)(3), medium solar energy systems are allowable on A-N parcels and Williamson Act lands, respectively (Yolo County, 2015b). Other agricultural impacts of this alternative and its consistency with zoning and Williamson Act provisions would be similar to the proposed project.

Aesthetics

Assuming that the ground-mounted solar PV alternative was designed as a rectangle situated between the wind turbine site and Hamilton Road, it would cover nearly two-thirds of the parcel west of the main winery facility and south of the wastewater ponds. It is assumed that the panels would be facing south, mounted so as to be 12 feet high at their high end, and enclosed by a chain-linked fence. Therefore, the PV array and facilities would be highly visible from Hamilton Road. From other roads nearby (Alameda

Avenue and Jefferson Boulevard) the solar array would be less visible due to its relatively low profile as compared to the existing building and tank structures at the wine production facility. Jefferson Boulevard is 0.5 miles from the alternative site; the view of the solar array from Jefferson Boulevard would largely be obstructed by existing buildings and vegetation. The distance between Jefferson Boulevard and the solar array would also reduce its visibility. The solar array would be visible from Alameda Avenue, approximately 0.25 miles west, because of a lack of obstructions. However, existing wine production facility structures and vegetation on the horizon would form a backdrop to this view. Also, drivers along Alameda Avenue may notice minor glare from the solar array during certain times of day; however, because PV panels absorb sunlight, thereby minimizing glare, any effects would be negligible.

Because solar PV has a lower vertical profile, the solar array would be less visually pronounced than the proposed turbine and would have a smaller vertical viewshed[1] as compared to that of a wind turbine. The height of the turbine tower and the span of its blades would make a wind turbine visible over a larger area. Overall, the solar array would be less visible than a wind turbine at the same location when considering the viewshed of each. Along the portion of Hamilton Road immediately adjacent to or near the solar array, the solar array would be more pronounced in the view than the proposed turbine, which would be set back approximately 0.25 miles from the road. From this location, the PV panels would be at eye-level, blocking views beyond. However, because of its lower profile and smaller viewshed, the ground-mounted solar PV alternative would have less visual impact than the proposed wind turbine. Blade flicker would not occur. Shadows would be limited to the solar array and its immediate surroundings.

Biological Resources

The ground-mounted solar PV alternative would result in the permanent loss of 20 acres of foraging habitat for raptors and other birds, including the state-threatened Swainson's hawk, and special-status bats, as well as habitat for burrowing owl. In comparison, the proposed project would result in permanent loss of approximately 0.07 acres and temporary loss of 3.14 acres of foraging habitat and burrowing owl habitat. Though similar acquisition or preservation of compensatory habitat would likely be required to offset habitat loss, the ground-mounted solar PV alternative would still result in greater impacts on foraging habitat than the proposed project. Other construction-related impacts to biological resources would be similar to the proposed project.

Operational impacts of the ground-mounted solar PV alternative to biological resources would be minor and comparatively less than those of the proposed project, which could result in less than significant impacts to birds and bats from collision-related injury and mortality.

Cultural Resources and Tribal Cultural Resources

Installation of the ground-mounted solar PV alternative would likely include several steel pile foundations driven into the soil to depths between 4 and 9 feet. This ground disturbance over 20 acres has the potential for impacting buried and as yet unidentified significant cultural resources and tribal cultural resources. In comparison, the proposed project would require installation of one foundation 30 feet deep and 15 feet in diameter. Though similar mitigation measures to reduce impacts would likely apply, such as **CUL-1** (Management of Unanticipated Discoveries of Historical Resources, Archaeological Resources, or Tribal Cultural Resources) and **CUL-2** (Treatment of Human Remains), the ground-mounted solar PV alternative

[1] A viewshed is the geographical area from which an object may be visible, excluding areas where line-of-sight visibility is blocked by intervening terrain or other features, or the horizon.

would have greater potential impacts to cultural resources than the proposed project because ground disturbance would be spread over a larger area, which would increase the likelihood of encountering and impacting as-yet-unidentified resources.

Geology and Soils

The ground-mounted solar PV alternative would result in disturbance to 20 acres of land. The seismic risk, including the risk of liquefaction, would remain the same as with the proposed project. Because installation of the ground-mounted solar PV alternative would require more grading and excavations for more foundations than the proposed project, it would result in the potential for more erosion and potential risk to as-yet-unidentified paleontological resources. Implementation of a Storm Water Pollution Prevention Plan and Mitigation Measure **GEO-1** (Management of Unanticipated Paleontological Resources or Unique Geologic Features) would reduce these impacts. In conclusion, the impact to geology and soils, including erosion, would be greater under this alternative than under the proposed project.

Hazards and Hazardous Materials

Construction of the ground-mounted solar PV alternative would use similar types of hazardous materials as the proposed project. The alternative would have similar types of risks regarding the potential of upset or accident as the proposed project, as well as similar mitigation measures to reduce these impacts, because it would also require the use of petrochemicals, lubricants, and solvents for construction and operation.

Cadmium telluride (CdTe) may be present in the PV solar panels. CdTe is considered toxic if ingested or inhaled via dust particles. Human exposure of CdTe would occur only if a module, sealed in glass, generated flake or dust particles. The potential for CdTe release would occur only from severe pitting of the panel surface. Some high-performance solar photovoltaic cells contain small amounts of selenium and arsenic, which could be emitted if solar cells were broken during construction or decommissioning. For photovoltaic facilities using high-performance solar cells, special handling of solar panels containing toxic metals would be required to prevent accidental breakage that would also preclude recycling of the solar cell materials at off-site facilities. Most PV providers include life-cycle care of the panels, including removal of any broken panels, which would minimize exposure. Therefore, there is a potential increase in impacts related to hazardous materials (CdTe) exposure in comparison to the proposed project. Special life-cycle care would reduce any impacts from exposure to less than significant.

Hydrology and Water Quality

The ground-mounted solar PV alternative would result in disturbance to 20 acres of land. Similar to the project, ground disturbance would require implementation of the Storm Water Pollution Prevention Plan and Mitigation Measures **HAZ-1** (Develop and implement a Toxic Materials Control and Spill Prevention Plan), **HAZ-2** (Develop and implement a Spill Response Plan), and **HYDRO-1** (Dewater construction site, as needed) to reduce these impacts. Because the ground disturbance required for installation of this alternative would be greater than the proposed project, there is a greater risk of erosion and sedimentation and resulting effects to water quality. This alternative would also require some trenching for the underground conduits. This would likely require dewatering due to the shallow nature of groundwater at the site.

Noise

Existing noise levels within the proposed project area are generally low to moderate, aside from noise created by the wine production facility and by traffic along the nearest local roadways. Under the

ground-mounted solar PV alternative, construction-related activities and noise sources would continue to occur, and the construction-phase noise impacts would be similar to and comparable with those of the proposed project. Low-level operational noise of the proposed wind turbine would be eliminated; PV modules operate essentially silently while producing energy but the inverters generate continuous low-level noise. After the construction-phase for the ground-mounted solar PV alternative, there would be a very small permanent increase in background noise levels due to inverter hum. The noise impacts associated with proposed wind turbine operation would be eliminated when compared with those of the ground-mounted solar PV alternative, thereby reducing operational noise impacts.

Conclusion

The ground-mounted solar PV alternative would result in the permanent conversion of 20 acres of Prime Farmland and the permanent loss of 20 acres of foraging habitat for raptors and other birds, including Swainson's hawk, burrowing owl, and special-status bats. These impacts, while potentially mitigable, would be greater than those of the proposed project, which would have a permanent footprint of 0.07 acres. Construction of the ground-mounted solar PV alternative would require more ground disturbance than the proposed project, thereby increasing potential for soil erosion and the discovery of unanticipated cultural or paleontological resources. These impacts could be less than significant with implementation of mitigation measures.

In comparison to the proposed project, operation of the ground-mounted solar PV alternative would have less visual impact due to its low profile. It would be quieter during operation (inverter hum only), thereby eliminating any low-level noise that would result during operation of the proposed turbine. This alternative would pose a negligible collision risk to birds and bats; operational impacts to biological resources would be less than those of the proposed project.

Impacts to other resources from construction and operation of the ground-mounted solar PV alternative would be similar to the proposed project.

5.2.3 No Operation Between Sunset and Sunrise Alternative

In this alternative, the turbine would not operate between sunset and sunrise. It would use the same turbine specified for the proposed project, but operation of the turbine would be limited to between sunrise and sunset. At sunset, the wind turbine would be shut down and cease power production until dawn. Because the turbine model and design specifications would be the same as for the proposed project, all of the construction and operation and maintenance activities would be the same as for the proposed project.

Consistency with Project Objectives

This alternative would meet all the project objectives. Because it would generate renewable energy, it would contribute to reducing greenhouse gas emissions, supporting Yolo County and State renewable energy goals, and reducing operating costs associated with electricity use. However, these objectives would be achieved to a lesser degree than the proposed project, because less renewable energy would be generated. Because it would be constructed in the same manner as the proposed project, this alternative would also minimize impacts to agriculture and the loss of Prime Farmland as well as support Yolo County goals to conserve and support the continued productivity and economic viability of agricultural land in Yolo County and the Clarksburg area.

Feasibility

This alternative is feasible, but its economic feasibility is uncertain due to the restricted hours of operation. The strongest winds in the region primarily occur in the early to late evening, between 6 p.m. and midnight, during summer months from approximately May to the end of August. As such, this alternative would curtail a substantial portion of the operating hours.

Impacts

This alternative would install the same turbine in the same location as the proposed project. It would use the same construction and operation techniques except that it would prohibit operation from sunset to sunrise. The impacts to agriculture resources, aesthetics, cultural resources and tribal cultural resources, geology and soils, hazards and hazardous materials, and hydrology and water quality would be the same as for the proposed project.

Biological Resources

This alternative would install the same turbine in the same location as the proposed project. It would use the same construction and operation techniques except that it would prohibit operation from sunset to sunrise, which is when bats are primarily active. During construction and operational hours (i.e., daylight), the impacts to biological resources would be the same as for the proposed project.

Several special-status bats are likely to forage in the area and vicinity. Several recent studies have demonstrated that curtailing wind turbine operation during low winds and high bat activity can substantially decrease bat fatality (Arnett et al., 2008, 2010, 2011, 2013; Weller and Baldwin, 2012; Baerwald et al., 2009; Erickson and West, 2002). An examination of ten separate studies (e.g., Baerwald et al., 2009; Arnett et al., 2011, 2013) regarding curtailing wind turbine operation, showed reductions in bat fatalities ranging from 50 to 87 percent when compared to normally operating turbines. Mitigation Measure **BIO-1** for the proposed project would increase the cut-in speed during periods of high bat activity to reduce injury and mortality to special-status bats to less than significant. This alternative would further reduce those operational impacts to special-status bats by prohibiting turbine operation from sunset to sunrise, when bats are primarily active.

Similarly, in comparison to the proposed project, this alternative would reduce collision hazards for bird species that migrate or are otherwise active at night.

Noise

This alternative would install the same turbine in the same location as the proposed project. It would use the same construction and operation techniques except that it would limit the working hours from sunrise to sunset. Because the alternative would not operate during nighttime hours, it would eliminate operational noise during these hours reducing the impacts compared to the proposed project.

Conclusion

The no operation between sunset and sunrise alternative would install the same turbine in the same location as the proposed project and use the same construction and operation techniques as the proposed project. Therefore, most of the impacts of the alternative would be the same as the proposed project. However, impacts to bats and impacts from noise would be reduced compared with the proposed project.

5.3 Environmentally Superior Alternative

Table 5-1 presents a comparison of the proposed project with the alternatives, considering the most important impacts for each environmental discipline. For each discipline in Table 5-1, the alternatives are ranked from 1 (least impacts) to 4 (most severe impacts) based on the conclusion for each alternative presented in Sections 5.2.1 and 5.2.2.

Table 5-1. Ranking of Alternatives

	No Project Alternative	Proposed Project	Ground-mounted Solar PV Alternative	No Operation between Sunset and Sunrise Alternative
Aesthetics	1	3	2	3
Agriculture	1	2	3	2
Air Quality	—	—	—	—
Biological Resources	1	4	2	3
Cultural Resources	1	2	3	2
Geology and Soils	1	2	3	2
Greenhouse Gas Emissions	—	—	—	—
Hazards and Hazardous Materials	—	—	—	—
Hydrology and Water Quality	1	2	3	2
Land Use and Planning	—	—	—	—
Mineral Resources	—	—	—	—
Noise	1	4	2	3
Population and Housing	—	—	—	—
Public Services	—	—	—	—
Recreation	—	—	—	—
Transportation and Traffic	—	—	—	—
Utilities and Service Systems	—	—	—	—

"—" = no preference

Because the no project alternative would result in negligible or no impacts to all resources, it is the environmentally superior alternative. However, CEQA Guidelines Section 15126.6(e)(2) requires that if the environmentally superior alternative is the no project alternative, an EIR shall identify the environmentally superior alternative among the action alternatives.

In this case, determining the environmentally superior alternative requires the County to balance environmental impacts with the project objectives. The environmentally superior alternative is the alternative that the County believes would best fulfill its mission and responsibilities, giving consideration to economic, environmental, technical and other factors. Although the proposed project and the no operation between sunset and sunrise alternative would result in greater operational impacts to biological resources from bird and bat collision-related injury and mortality, they would result in less conversion of Prime Farmland, reduced loss of foraging habitat, and fewer impacts related to ground disturbance than the ground-mounted solar PV alternative. In comparison to the proposed project, the no operation between sunset and sunrise alternative would have fewer impacts to special-status bats and would reduce noise impacts at night. Therefore, the no operation between sunset and sunrise is the environmentally superior alternative.

5.4 Alternatives Considered but Eliminated

This section provides a brief description of each alternative considered but eliminated from analysis in the EIR, and the rationale for the elimination of each.

5.4.1 Wind Turbine at Another Location near the Bogle Wine Production Facility

This alternative would locate the wind turbine elsewhere on one of the three contiguous parcels that encompass the Bogle wine production facility. The wind turbine has to remain on the contiguous property to comply with the PG&E interconnection agreement. The turbine would need to have a minimum setback from any property line equal to the turbine's height (County Code Sec 8-2.1103 (Small and large wind energy systems), which would be 453 feet with the rotor blade in the twelve o'clock position. GE also recommends setback distances from the center of the turbine to objects of concern (residences, office buildings, parking lots, and public roads). The furthest GE-recommended setback distance is 1.5 times the hub height plus the rotor diameter to account for the unlikely event of blade failure.

Given these setbacks, the furthest the turbine could be sited from the Swainson's hawk conservation easement and remain on the property would be an estimated 3,000 feet (refer to Figure 5-1). Moving east (away from the conservation easement) would place the turbine along the eastern boundary of the Bogle property, approximately 650 feet from Jefferson Boulevard. The turbine would be located in the middle of the existing vineyard. It would require a new access road to reach the location that would eliminate some of the existing grape vines, and a longer interconnection to the PG&E distribution switch. The alternative turbine location is approximately 655 feet from the nearest residence along Jefferson Boulevard, which is approximately 670 feet closer than the location of the proposed turbine to the nearest residence. Construction methods for this alternative would be similar to the proposed project.

Consistency with Project Objectives. This alternative would meet all of the project objectives as it would generate wind energy on the project site.

Feasibility. This alternative would potentially be technically feasible as it would be very similar to the proposed project except for its location. This alternative would need to abide by the County setback requirements.

Environmental Considerations. This alternative was eliminated because it would not avoid or substantially lessen any significant impact of the project. Specifically, while the turbine would be located an estimated 3,000 feet further from the conservation easement than the proposed project, this distance would not reduce the risk of collision for birds and bats. This is because birds, including Swainson's hawk, and bats access the conservation easement from all directions and the other agricultural parcels have similar foraging potential as the proposed project site, so it's unlikely that there would be substantially lower concentrations of birds and bats at the alternative turbine location in comparison to the proposed location.

In addition, this turbine site would be closer to residences than the proposed project site (proposed turbine site is approximately 1,325 feet from the nearest residence, alternative site would be approximately 655 feet from the nearest residence), thereby increasing noise and visual impacts to residents.

5.4.2 Wind Turbine on a Different Bogle-owned Property

The Bogle family currently farms over 1,600 acres in the Clarksburg and Lodi areas. A wind turbine could potentially be sited at any of these locations, assuming there was an available interconnection point (i.e., a

nearby PG&E distribution line with available capacity to accommodate the electricity generated). The wine production facility on Hamilton Road is the only facility on Bogle property with high energy demand; therefore, construction of a wind turbine on a different Bogle-owned property would feed the electricity directly into the electric grid for use elsewhere, rather than directly reducing Bogle's electricity demand.

Consistency with Project Objectives. This alternative was eliminated because it would not meet most of the project objectives.

Specifically, placing a wind turbine on a different Bogle property would not directly reduce the greenhouse gas footprint of the wine production facility. This alternative would be similar to purchasing renewable energy credits (RECs) from an offsite energy generator.

Additionally, this alternative would not reduce the operating costs associated with electricity use at the production facility. Instead, the energy would have to be sold to the grid owner (PG&E).

Feasibility. Because this alternative could be built at multiple locations, it is assumed that there is at least one site where it would be technically feasible to build a wind turbine that could tie into the PG&E electric grid. However, this alternative is potentially not feasible under the current interconnection agreement that Bogle has with PG&E because that agreement requires that the turbine be sited at either the wine production facility or at one of the adjacent Bogle-owned properties.

Environmental Considerations. Because this alternative could be built at various sites, it is not possible to state with certainty whether the alternative would reduce any of the impacts of the project as proposed. Reduction of project impacts would depend on the proximity of the alternative site to residences and to sensitive habitat.

5.4.3 Rooftop Solar Photovoltaic Alternative

This alternative would place solar PV panels on new or existing structures at the wine production facility. Options would include placing more solar panels on the production facility rooftop, and/or building shade structures for the parking lot or over the tanks and placing solar PV panels on top of these new structures.

Consistency with Project Objectives. This alternative would meet most of the project objectives. By generating renewable energy onsite, it would reduce emissions associated with wine production. Because it would be constructed on rooftops, it would avoid impacts to agriculture and the loss of Prime Farmland as well as support Yolo County goals pertaining to the conservation of agricultural land. It would not reduce operating costs associated with electricity use at the Bogle wine production facility due to the high cost of installing additional rooftop PV systems (refer to explanation below).

Feasibility. This alternative was eliminated because it is potentially not technically and economically feasible.

- **Additional Rooftop PV Panels.** In 2013, Bogle Vineyards considered placing additional solar PV panels on the wine production facility roof. The PV installer evaluated an expansion that would place an approximately 746 kW (DC) system on the remaining south-facing roof system. This was based on a site survey of the property and knowledge of the previous PV installation. The solar PV installer determined that the remaining south-facing roof was the only available roof and site best suited for a solar PV system. As noted above, Bogle is already planning on expanding the PV system onto the remainder of the suitable roof area. Therefore, rooftop solar on the rest of the existing facility rooftop, most of which is north facing, is not a feasible alternative.

- **Parking Lot Shade Structures.** Constructing shade structures with solar panels on the facility parking lot would be technically feasible; solar on shade structures is a common technology with a variety of installation options. There are an estimated 10,000 square feet of available parking lot that could potentially accommodate a PV system on shade structures. This would generate up to 100 kW. Due to the high cost of infrastructure needs for the new structures, long conduit and wire routings due to the distance between the shade structures and the inverters and switch gear, this alternative is not economically feasible.
- **Shade Structures for Wine Tanks.** Constructing shade structures with solar panels on the wine storage tanks would not be economically feasible. The wine storage tanks are approximately 45 feet tall with catwalks used to access the tanks for management of the wine during fermentation. In order to place solar PV panels above the tanks and catwalks, Bogle would have to first build a 60-foot tall shade structure. While there would be an operational benefit to reducing heat in the tanks, the construction of panels on very tall supports would be extremely expensive, so this alternative would not be economically feasible.

Environmental Considerations. Because this alternative would place solar PV panels only on new or existing structures or on already disturbed land, it would have fewer impacts to visual resources and biological resources than the proposed wind turbine. While birds and bats can collide with ground-mounted PV panels, they are less likely to do so with panels located on existing structures that they already avoid.

5.4.4 Floating Solar Photovoltaic Panels on the Wastewater Treatment Ponds

This alternative would place floating solar PV panels on the approximately 6 acres of wastewater treatment ponds adjacent to the wine production facility.

Consistency with Project Objectives. This alternative would meet the objective to contribute to the reduction of greenhouse gas emissions associated with wine production and would support Yolo County and State renewable energy goals by producing more renewable energy onsite. It would also avoid impacts to agriculture and the loss of Prime Farmland as well as support Yolo County goals pertaining to the conservation of agricultural land. It is uncertain whether it would meet the objective to reduce the operating costs associated with electricity use as the cost of installing floating panels is not readily available. While floating solar PV systems are operating in Sonoma County and are under construction in the United States and elsewhere, the cost of installing such a system and its lifespan are uncertain because the implementation of this technology is relatively new.

Feasibility. Floating solar PV projects have been developed successfully, primarily in Japan, but also in California and Australia. The Far Niente Winery in Oakville, California has a floating solar array with nearly 1,000 solar panels on pontoons located on the winery's irrigation pond. This technology would not be technically feasible at the proposed project site because the existing ponds have aerators that are used on the surface of each pond to assist in the breakdown of solids processed in the waste ponds. The aerators produce turbulence and dispersion similar to a geyser, which would be incompatible with floating solar panels. Weekly routine maintenance is required for the aerators and any floating panels would preclude access to and maintenance of the treatment ponds. Therefore, floating panels would not be technically feasible at this site.

Environmental Considerations. Because this alternative would place solar PV panels only on existing wastewater treatment ponds, it would have fewer impacts to visual resources. Given that birds and bats may be attracted to the wastewater ponds, they could collide with the solar PV panels on top of the ponds. Because floating PV panels are a newer PV technology, little is known about the long-term effects on avian species, although is assumed effects would be similar to those of ground-mounted PV panels.

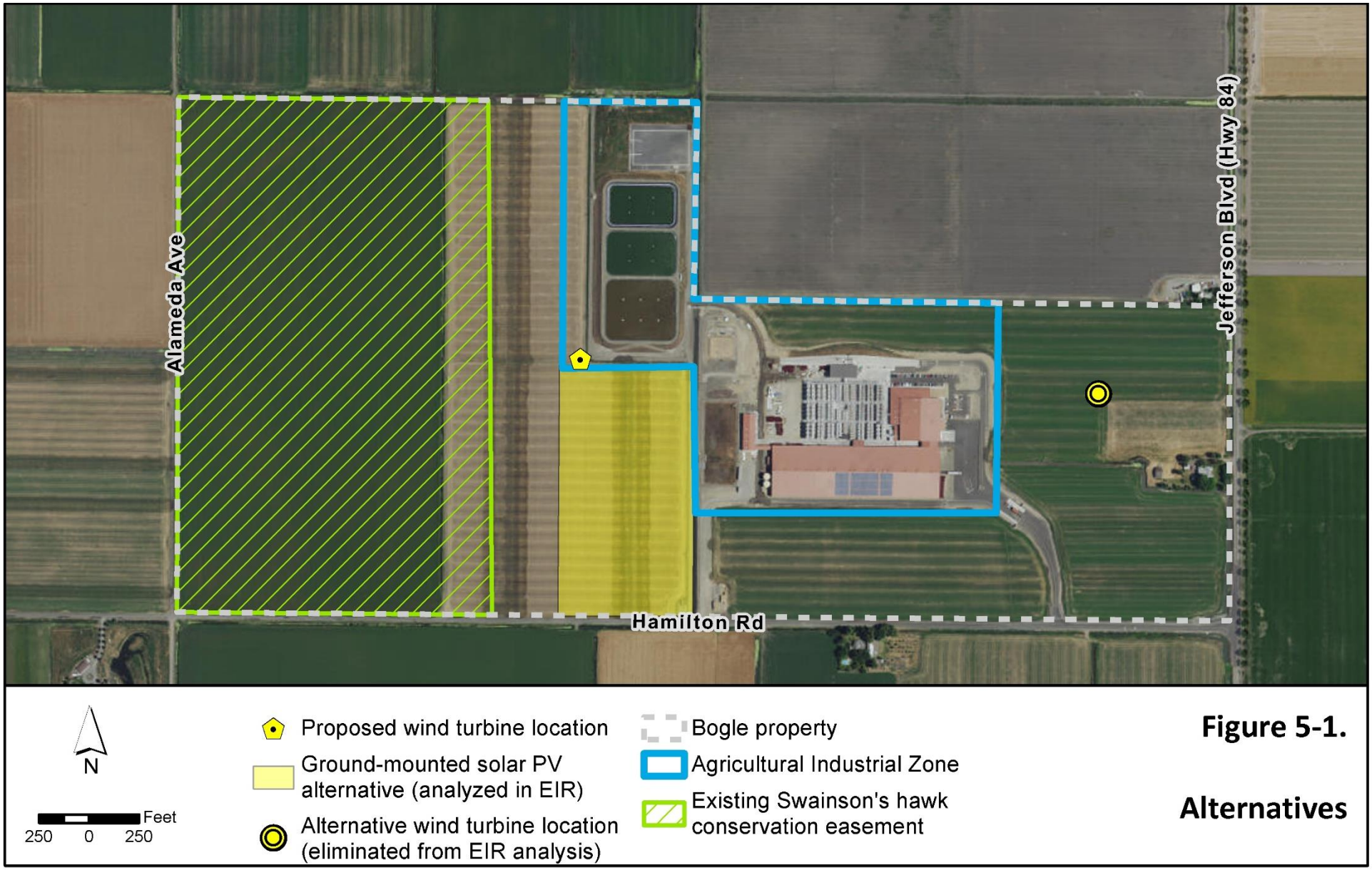


Figure 5-1.

Alternatives

6. Mitigation Monitoring and Reporting Program

This Mitigation Monitoring and Reporting Program (MMRP) will be used by the County to ensure that each mitigation measure, adopted as a condition of project approval, as well as the recommended biological impact avoidance and minimization measures are implemented. Mitigation measures identified in this EIR to reduce impacts below the level of significance pursuant to CEQA are identified in Table 6-1. Measures recommended by the County in this EIR to avoid and minimize impacts are presented in Table 6-2. Both sets of measures may ultimately be adopted by the County Board of Supervisors as Conditions of Approval. The MMRP is consistent with CEQA Guidelines (Sections 15074(d), 15091(d), and 15097) for the implementation of mitigation.

The County will be responsible for monitoring the implementation of all Conditions of Approval. The applicant will designate specific personnel to implement and document all aspects of the MMRP. The applicant will ensure that the designated personnel have authority to enforce condition requirements and will be capable of terminating project construction activities found to be inconsistent with condition objectives. Additionally, the applicant will be responsible for ensuring that construction personnel understand their responsibilities for adhering to the MMRP and other contractual requirements related to the implementation of Conditions of Approval.

Table 6-1. Mitigation Measures

Impact Category	Measure	Implementation Timing	Responsible Monitoring Party	Monitoring/ Reporting Method
Biological Resources	**MM BIO-1: Increase cut-in speed.** Bogle will increase the cut-in speed for the wind turbine from 3.5 to 5.0 meters per second (3.5 M/S = 7.8 mph and 5.0 M/S = 11.2 mph) during nighttime (i.e., sunset to sunrise) hours from August 1 through October 31.	During operation (sunset to sunrise, August 1 through October 31)	Yolo County	Inspection to verify turbine speed
Biological Resources	**MM BIO-2: Develop and implement an Operational Monitoring and Reporting Program.** The applicant shall implement a post-construction monitoring program to determine overall avian and bat mortality associated with operation of the turbine. For the first year of operations the monitoring will consist of weekly bat and bird carcass surveys and bird use surveys of the turbine area, ponds and the adjacent conservation easement parcel. For years two and three, surveys will be conducted weekly from February 1 to October 1, and twice monthly for the rest of the year. After the first year of turbine operation, and based on carcass survey results and bird use surveys, the applicant will adopt, with the approval of the DFW and the County, a comprehensive post-construction avian and bat mortality mitigation, monitoring and reporting plan consistent with the California Energy Commission and California Department of Fish and Game Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development (CEC and CDFW, 2007), including biweekly reporting of bird and bat mortalities to DFW and the County. The search area to be monitored will have a width equal to the maximum rotor tip height, which is approximately 452 feet, so the search area will extend out 452 feet from the turbine on all sides. The search area will be walked by foot in either linear or concentric circle transects around the turbine. A standard transect of 20 feet in width (10 feet on either side of a centerline) will be walked but with adjustment to the transect width made as appropriate for vegetation and topographic conditions on the site. The field surveyor working with direction of the biologist will record and collect all carcasses located in the search area. Information to be collected should include the species of bird/bat, the condition of the carcass, and location of the bird or bat relative to the turbine. Any injured birds or bats shall be taken to a nearby rehabilitation center. Any unidentified carcass shall be collected and submitted for identification to an appropriate facility or person. No "unidentified raptor" counts shall be included in reports. Monitoring schedules may be adapted to avoid periods immediately following turbine shutdowns. Survey protocol will include carcass surveys, searcher efficiency trials and scavenger trials. On a monthly basis, the biologist will prepare a brief memo that will be submitted to Yolo County Planning and Public Works Department, the applicant, and the California Department of Fish and Wildlife noting the methods and results of the monitoring site visit. At the end of each annual cycle, a more detailed monitoring report will be prepared and submitted that describes the methods, results, and conclusions of the monitoring effort.	Program developed prior to operation Implemented during operation	Yolo County	Approval of the Program by Yolo County Monthly memos and annual reports submitted to Yolo County

Table 6-1. Mitigation Measures

Impact Category	Measure	Implementation Timing	Responsible Monitoring Party	Monitoring/ Reporting Method
Cultural Resources and Tribal Cultural Resources	**MM CUL-1: Management of Unanticipated Discoveries of Historical Resources, Archaeological Resources, or Tribal Cultural Resources.** In the event that any cultural or tribal cultural resources are discovered during construction and operation and maintenance, all work within 50 feet of the resource shall be halted and the County shall consult with a qualified archaeologist to assess the significance of the find and with tribal representatives qualified to identify tribal cultural resources as defined in AB 52 (PRC § 21080.3.1(a)). If any resources found on the site are determined to be significant, the County, the consulting archaeologist, and the tribal representative shall determine the appropriate course of action as prescribed in CEQA Guidelines Section 15064.5(b)(3). Recommendations may include evaluation, preservation in place, archaeological test excavation, and/or archaeological data recovery and consultation with members of affected tribes. A report shall be prepared by a qualified archaeologist and filed with the Office of Historic Preservation and/or the Northwest Information Center on the appropriate forms documenting the significance of all significant cultural resources found at the site.	During construction, operation, and maintenance	Yolo County	Consultation with Yolo County and tribal representative Report submitted to the Office of Historic Preservation and/or the Northwest Information Center
Cultural Resources and Tribal Cultural Resources	**MM CUL-2: Treatment of Human Remains.** In accordance with Section 7050.5 of the California Health and Safety Code and PRC Section 5097.98, if human remains are found, the Yolo County Coroner shall be notified within 24 hours of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie potential remains shall occur until the County Coroner has determined, within two working days of notification of the discovery, the appropriate treatment and disposition of the human remains. If the County Coroner determines that the remains do not require an assessment of cause of death and that the remains are or are believed to be Native American, the Coroner shall notify the Native American Heritage Commission (NAHC) within 24 hours. In accordance with Section 5097.98 of the California Public Resources Code, the NAHC must immediately notify those persons it believes to be the Most Likely Descendent (MLD) of the deceased Native American. The descendants shall complete their inspection within 48 hours of being granted access to the site. The designated Native American representative would then determine, in consultation with the County, the disposition of the human remains.	During construction, operation, and maintenance	Yolo County	Notification of Yolo County Coroner
Geology and Soils	**MM GEO-1: Management of Unanticipated Paleontological Resources or Unique Geologic Features.** In the event that unanticipated paleontological resources or unique geologic resources are encountered during ground-disturbing activities, work must cease within 50 feet of the discovery and a paleontologist shall be hired by the County to assess the scientific significance of the find. The consulting paleologist shall have knowledge of local paleontology and the minimum levels of experience and expertise as defined by the Society of Vertebrate Paleontology's Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP, 2010). If any paleontological resources or unique geologic features are found within the project site, the County and the consulting paleontologist shall prepare a Paleontological Treatment and Monitoring Plan to include the methods that will be used to protect paleontological resources that may exist within the project site to the extent possible, as well as procedures for monitoring, fossil preparation and identification, curation of specimens into an accredited repository, and preparation of a report at the conclusion of the monitoring program.	During construction, operation, and maintenance	Yolo County	Paleontological Treatment and Monitoring Plan submitted to Yolo County Summary report submitted to Yolo County at the conclusion of monitoring

Table 6-1. Mitigation Measures

Impact Category	Measure	Implementation Timing	Responsible Monitoring Party	Monitoring/ Reporting Method
Hazards and Hazardous Materials	**MM HAZ-1: Develop and Implement a Toxic Materials Control and Spill Prevention Plan.** Bogle shall develop and implement a Toxic Materials Control and Spill Prevention Plan to regulate the use of hazardous materials associated with construction. Bogle shall: ▪ Provide areas located outside waterways (irrigation canals) for staging and storing equipment, materials, fuels, lubricants, solvents, and other possible contaminants; ▪ Remove vehicles from near waterways (irrigation canals) before refueling and lubricating; ▪ Stabilize disturbed areas through erosion minimizing efforts such as straw wattles, water bars, covers, and silt fences. Sensitive area access restrictions (for example, flagging) will be installed before and during clearing and grading activities. All erosion control materials will be biodegradable and natural fiber; and ▪ Use secondary containment as recommended by any of the hazardous materials handling instructions for the materials used onsite. The Plan shall be approved by the County prior to the start of construction.	Developed prior to construction Implemented during construction	Yolo County	Plan approved by Yolo County Inspection to verify implementation
Hazards and Hazardous Materials	**MM HAZ-2: Develop and Implement a Spill Response Plan.** Bogle shall develop and implement a Spill Response Plan that includes: ▪ A list of general information including what is stored at the site (contents, volume, and location); ▪ A list of immediate containment response actions and extended response actions if necessary; ▪ A list of responsible agencies to contact in the event of a spill emergency within 24 hours; ▪ A list of spill containment equipment held on site as well as the location of the equipment on site; ▪ A contact and location of a professional clean up company; and ▪ A designated onsite incident commander in the event of an emergency. The incident commander will have complete control of construction and cleanup activities throughout the emergency and the eventual containment. The Plan shall be approved by the County prior to the start of construction.	Development prior to construction Implemented during construction, operation, and maintenance	Yolo County	Plan approved by Yolo County
Hydrology and Water Quality	**MM HYDRO-1: Dewater Construction Site As Needed.** If groundwater is encountered, dewatering shall be performed in compliance with the California Stormwater Quality Association (CASQA) Handbook for Construction or other similar guidelines, as approved by the Central Valley RWQCB. Encountered groundwater shall be spread or otherwise returned to the subsurface to the extent feasible.	During construction	Yolo County	Inspection to verify compliance

Table 6-2. Impact Avoidance and Minimization Measures

Impact Category	Measure	Implementation Timing	Responsible Monitoring Party	Monitoring/ Reporting Method
Biological Resources	**Assign a designated biologist.** Bogle will designate a qualified biologist, acceptable to the County and CDFW, as the point of contact with the County and CDFW. The designated biologist will be responsible for implementing the biological resources mitigation measures and any permit conditions. The designated biologist will conduct environmental training sessions with construction and operations personnel. The designated biologist will have or obtain the necessary state and federal permits needed to collect and transport injured birds and bats or bird and bat carcasses (including Swainson's hawk)	Prior to construction	Yolo County	Approval of the designated biologist by Yolo County and CDFW
Biological Resources	**Develop and implement a Worker Environmental Awareness Program.** Bogle will develop and implement a Worker Environmental Awareness Program (WEAP) in which each of its employees, monitors, inspectors, contractors and subcontractors who work on the project site during construction and operation, will be required to take the WEAP training to become informed about biological resource sensitivities associated with the project. The training shall be given at the time of hiring for new employees, monitors, inspectors, contractors and subcontractors and repeated annually for long-term and/or permanent employees that will be conducting work in the project area. The WEAP shall: ▪ be administered by the designated biologist and consist of an on-site or classroom presentation in which supporting written material is made available to all participants; ▪ discuss the locations and types of sensitive biological resources on the project site and adjacent areas if appropriate and present the reasons for protecting these resources, including the locations and extent of any Swainson's hawks, methods of avoidance, permit conditions, and possible fines for violations of permit conditions and state or federal environmental laws; ▪ discuss protection measures as well as any terms and conditions of any permit applicable to the project and present the meaning of the measures, terms, and conditions; ▪ include information about what to do when dead or injured birds or bats are discovered; ▪ discuss possible fines for violations of permit conditions and measures as well as state and federal environmental laws; and ▪ identify who to contact if there are comments and questions about the material discussed in the program. Each participant in the WEAP shall sign a statement declaring that the individual understands and will abide by the guidelines set forth in the program material. Each statement shall also be signed by the person administering the WEAP. Signed statements for active construction and operations personnel shall be kept on file by Bogle for the duration of their employment and for six months after their termination. At least 30 days prior to the start of construction, Bogle shall provide copies of the draft WEAP and all supporting written materials prepared by the designated biologist to the County and CDFW for review and comment. Within 10 days prior to the start of construction, a final approved WEAP shall be submitted to the County and CDFW.	Developed prior to construction Implemented prior to construction and prior to operation	Yolo County	Approval of WEAP materials by Yolo county and CDFW Statements from personnel

Table 6-2. Impact Avoidance and Minimization Measures

Impact Category	Measure	Implementation Timing	Responsible Monitoring Party	Monitoring/ Reporting Method
Biological Resources	**Conduct pre-construction surveys for burrowing owl and implement impact avoidance and minimization measures.** Prior to construction at any time of the year, a qualified biologist shall conduct a survey consistent with CDFW's Staff Report on Burrowing Owl Mitigation (Mitigation Guidelines; CDFW, 2012.) Results of the habitat assessment and surveys shall be submitted to the County and, if an active nest is identified, survey results and planned no-disturbance setbacks will also be submitted to and approved by CDFW. If an active burrowing owl nesting burrow is located during preconstruction surveys, a no-disturbance setback shall be established to avoid destruction or disturbance of the burrow. No project activity shall commence within the setback until a qualified biologist has determined in coordination with CDFW that the young have fledged, the nest is no longer active, or that reducing the buffer would not result in nest abandonment. If an active wintering burrow is within construction areas, the construction areas shall be adjusted to avoid direct disturbance to the burrow. If this is not feasible, the winter burrow may be removed by installing one-way doors to allow owls to escape and then collapse the burrow according to Mitigation Guidelines. Before any burrow exclusion and/or burrow closure (temporary or permanent) occurs, a Burrowing Owl Exclusion Plan, consistent with Appendix E of the Mitigation Guidelines (CDFW, 2012) shall be submitted to and approved by CDFW. If an active burrow is found and must be relocated, habitat compensation will be implemented subject to approval by CDFW and consistent with the Mitigation Guidelines.	Prior to construction	Yolo County	Survey results submitted to Yolo County and, if positive, also to CDFW Inspection to verify setbacks Proof of habitat compensation submitted to Yolo County and CDFW, if warranted
Biological Resources	**Conduct pre-construction surveys for Swainson's hawk and implement impact avoidance and minimization measures.** If any aspect of project construction would occur during the Swainson's hawk nesting season (mid-April through mid-September), a pre-construction survey for active Swainson's hawk nests within 0.50 miles of the turbine location shall be conducted by a qualified biologist. If active nests are found during the preconstruction survey during the nesting season of these species, the Permittee shall maintain a no-disturbance buffer zone around active nests during the breeding season or until it is determined by the Permittee's qualified biologist that the young have fledged and are no longer dependent upon the nest for survival. The no-disturbance buffer zone from active Swainson's hawk nests shall be from 0.25 miles to 0.5 miles, or as otherwise determined by the qualified biologist considering such factors as type and extent of the construction activity, line-of-sight from the activity to the nest, and time of year within the nesting season.	Prior to construction	Yolo County	Survey results submitted to Yolo County and CDFW Inspection to verify set-backs

Table 6-2. Impact Avoidance and Minimization Measures

Impact Category	Measure	Implementation Timing	Responsible Monitoring Party	Monitoring/ Reporting Method
Biological Resources	**Conduct pre-construction surveys for nesting birds and implement impact avoidance and minimization measures.** The following measures shall be implemented to protect nesting raptors and other nesting special-status and migratory birds: For all construction activities that begin during the nesting season, a qualified biologist shall conduct a preconstruction survey in suitable habitats no more than 10 days prior to construction. The survey shall encompass 500 feet in all directions from construction areas. If no nesting is detected, no further action shall be required. Results of nest surveys and planned setbacks for any active nests will be submitted to Yolo County and CDFW. For each active nest found within 500 feet of construction activities, a no-disturbance buffer shall be established. The size of the setback shall be sufficiently large to avoid construction-related disturbance to nesting activities, as determined by a qualified biologist. A minimum no-disturbance setback of 250 feet around active nests of non-listed passerine-type bird species and a 500-foot, no-disturbance buffer around the nests of non-listed raptors is recommended until the breeding season has ended, or until a qualified biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care for survival. Monitoring of the nest by a qualified biologist during construction activities shall be conducted to ensure the appropriate setback has been established and maintained and project activity is not resulting in detectable adverse effects to active nests.	Prior to construction	Yolo County	Survey results submitted to Yolo County and CDFW Inspection to verify set-backs
Biological Resources	**Compensate for loss of foraging habitat.** The applicant will purchase mitigation credits from a CDFW-approved conservation bank located in Yolo County (or other location as approved by the County and CDFW) or acquire and preserve Swainson's hawk habitat at a County- and CDFW-approved location. The acreage for the acquisition and/or preservation of foraging habitat will be calculated based on a ratio of 0.25:1 for temporary ground foraging habitat loss, and a ratio of 1:1 for permanent ground foraging habitat loss. Preservation lands will consist of any combination of native or non-native grassland, grazing land, mixed grain or cropland (especially alfalfa) but not orchard or vineyard land or other agricultural lands not typically used by Swainson's hawks. The off-site habitat mitigation area will be preserved in perpetuity by an established conservation bank or through a conservation easement and endowment held by a certified third party approved by CDFW to hold a conservation easement. If the off-site habitat mitigation area will be preserved in perpetuity by an established conservation bank, Bogle will submit evidence in the form of a sales agreement or receipt to the County and CDFW of the purchase of the required acreage prior to construction. If the mitigation occurs at a CDFW-approved location by conservation easement, Bogle will show proof of purchase of a conservation easement encompassing the required acreage and an endowment to ensure conservation in perpetuity; this evidence will be provided to the County and CDFW prior to construction.	Prior to construction	Yolo County	Proof of habitat compensation submitted to Yolo County and CDFW

Table 6-2. Impact Avoidance and Minimization Measures

Impact Category	Measure	Implementation Timing	Responsible Monitoring Party	Monitoring/ Reporting Method
Biological Resources	**Shut down turbine operation.** To reduce the risk of collision of Swainson's hawks and other birds as well as bats with the turbine, the operator will discontinue operation of the turbine during daylight periods when alfalfa is being cut or other field crops are being harvested or flood irrigated on applicant-owned parcels encompassing and adjacent to the turbine, including the 115-acre parcel with the 80-acre conservation easement. These shutdowns will take place during daylight hours from March 1 through October 10 of each year, when Swainson's hawks are in the area. Raptors may use the fields for some time after crops are harvested or irrigated, until prey numbers are reduced. Consequently, the turbine will not begin operation during daylight hours after cut, harvest, or flood irrigation until the designated biologist or qualified designee has surveyed for a period of 30 minutes, the adjacent harvested or irrigated fields, including the 115-acre parcel, and has determined that no Swainson's hawks or other raptors are using the fields. Using the fields means one or more Swainson's hawk or other raptor on the ground, flying directly over Bogle's adjacent fields at an elevation of less than 150 meters, or flying in the turbine's rotor swept area.	During operation	Yolo County	Inspection to verify shutdown
Biological Resources	**Consult with CDFW.** Bogle will prepare and submit to CDFW an application for an Incidental Take Permit, pursuant to Section 2081 of the California Fish and Game Code and Section 783.2 of the California Code of Regulations, for the potential "take," as defined by the California Endangered Species Act, of Swainson's hawk. A key requirement of the CESA 2081 permit will be to prepare and implement an operational bird and bat monitoring and reporting program, consistent with the California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development (CEC and CDFW, 2007).	Prior to operation	Yolo County	Copy of permit application submitted to Yolo County

7. EIR Preparation

7.1 Organizations and Persons Consulted

The County and its EIR preparation team are working closely with the CDFW Bay Delta Region regarding impacts of the proposed project to Swainson's hawk and to ensure this EIR is adequate for CDFW's CEQA review to process Bogle's pending application for an incidental take permit.

Tribal Consultation

In compliance with Assembly Bill 52, Yolo County sent letters to the United Auburn Indian Community (UAIC) of the Auburn Rancheria, the Cortina Band of Indians, and the Yocha Dehe Wintun Nation on December 16, 2015, inviting comments or concerns regarding potential impacts to cultural resources or areas of traditional cultural importance within the vicinity of the proposed project. On January 15, 2016, a reply was received from the Yocha Dehe Wintun Nation, confirming that the proposed project area is within their traditional territory. They also requested a copy of the most recent cultural resources study (Yocha Dehe Wintun, 2015). A copy of the NWIC record search results (NWIC, 2016) was forwarded to Yocha Dehe Wintun Nation on January 28, 2016. On February 8, 2016, a reply was received from the UAIC of the Auburn Rancheria, confirming that the proposed project area is within their traditional territory. They also requested a copy of the most recent cultural resources study (UAIC, 2016). No other replies have been received as of publication of this EIR.

7.2 EIR Preparers

Yolo County Community Services Department – Lead Agency

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