Environmental Assessment
Wortham Property Fee to Trust Acquisition

April 2026

Prepared for:
Colusa Indian Community Council
3730 State Route 45
Colusa, CA 95932

Proposed Action:
Bureau of Indian Affairs Fee-to-Trust Acquisition of 519 Acres in Colusa, California for the Colusa Indian Community Council

Environmental Assessment

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Colusa, CA 95932

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Acronyms and Abbreviations

°F	degrees Fahrenheit
ADT	average daily trip
AFY	acre-feet per year
amsl	above mean sea level
APE	area of potential effect
ARPA	Archaeological Resources Protection Act of 1979
ASAR	adjusted sodium absorption ratio
ASTM	American Society for Testing and Materials
BCC	Birds of Conservation Concern
BIA	Bureau of Indian Affairs
BMP	Best Management Practice
CAA	Clean Air Act
CAL FIRE	California Department of Fire and Forestry
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAP	criteria air pollutant
CARB	California Air Resources Board
CCAPCD	Colusa County Air Pollution Control District
CCIC	Colusa Indian Community Council
CCSD	Colusa County Sheriff's Department
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
CO	carbon monoxide
County	Colusa County
CWA	Clean Water Act
dBA	A-weighted decibel
DOC	California Department of Conservation
DOI	U.S. Department of the Interior
DPM	diesel particulate matter
DWR	California Department of Water Resources
EA	Environmental Assessment
EMS	emergency medical services
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment

FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FTA	Federal Transit Administration
GGS	giant garter snake
GPD	gallons per day
hp	horsepower
I-5	Interstate 5
I-80	Interstate 80
ITE	Institute of Transportation Engineers
LOS	level of service
MBTA	Migratory Bird Treaty Act
mg/L	milligrams per Liter
MLD	most likely descendant
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOAA Fisheries	National Oceanic and Atmospheric Administration-Fisheries Service
NOx	nitrogen oxides
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
PG&E	Pacific Gas & Electric
PM	particulate matter
PM_{10}	particulate matter 10 microns in size or smaller
$PM_{2.5}$	particulate matter 2.5 microns in size or smaller
PPV	peak particle velocity
PSD	Prevention of Significant Deterioration

REC	Recognized Environmental Condition
ROG	reactive organic gas
ROW	right-of-way
RV	recreational vehicle
S-SV EMS Agency	Sierra-Sacramento Valley Emergency Medical Services Agency
SHPO	State Historic Preservation Office/r
SIP	State Implementation Plan
SO_2	sulfur dioxide
SR	State Route
SRFD	Sacramento River Fire District
State	State of California
SVAB	Sacramento Valley Air Basin
SWPPP	Stormwater Pollution Prevention Plan
TDS	total dissolved solids
tpy	tons per year
Tribe	Colusa Indian Community Council
TSCA	Toxic Substances Control Act
UMCP	University of California Museum of Paleontology
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USFWS	U.S. Fish & Wildlife Service
USGS	U.S. Geological Survey
WEAP	Worker Environmental Awareness Training
WTP	water treatment plant
WWTP	wastewater treatment plant
VdB	vibration decibel
VELB	valley elderberry longhorn beetle
VOC	volatile organic compound

1 Introduction

The U.S. Department of the Interior's (DOI) Bureau of Indian Affairs (BIA), Pacific Region, received an application for land acquisition under 25 Code of Federal Regulations (CFR) Part 151[1] to take land into federal trust status.

The BIA is the lead federal agency, and an Environmental Assessment (EA) has been prepared to support the Colusa Indian Community Council's (CCIC or Tribe) application for acquiring a parcel of land into federal trust status in Colusa County (County). This parcel is contiguous to existing Tribal trust lands and is referred to as the Proposed Action.

The project site is known as the Wortham property. It consists of approximately 519.31 acres, which the Tribe currently owns in fee simple status. The project site is intended for future economic development. The Proposed Action includes:

- up to 40 single-family residences,
- a 215-space recreational vehicle (RV) park,
- a 100,000 square foot commercial center facing State Route (SR) 45,
- continuing agricultural use through cultivation of row crops and nut tree orchards, and
- a vehicle repair facility for Tribal use.

Approximately 56.6 acres would be allotted for the housing development. The RV park would use about 69.69 acres, and 62.6 acres would be set aside for commercial development. The remaining 330.42 acres would continue to be used for agriculture.

This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 USC §§ 4321-4370h[2]), DOI NEPA regulations (43 CFR Part 46[3]) and the DOI's Handbook of NEPA Implementing Procedures (516 DM 1[4]).

Consistent with NEPA requirements[5], the BIA will review and analyze the environmental consequences associated with the action alternatives including the No Action Alternative. Based on this review, the BIA will either determine if a Finding of No Significant Impact (FONSI) is sufficient, or request additional analysis, or require an Environmental Impact Statement be prepared.

1.1 Location and Setting

The Wortham property consists of Assessor's Parcel Number 015-020-015 in Colusa County, California. It covers approximately 519.31 acres. The Wortham property is located within an un-sectioned portion of Township 16 North, Range 2 West, as depicted on the Colusa and Moulton Weir, CA U.S. Geological

[1] Part 151 Land acquisitions

[2] National Environmental Policy Act of 1969

[3] Part 46 Implementation of the National Environmental Policy Act of 1969

[4] Handbook of National Environmental Policy Act Implementing Procedures

[5] Indian Affairs National Environmental Policy Act (NEPA) Guidebook

Survey (USGS) 7.5-minute topographic quadrangles. The property is situated about 2 miles north of the City of Colusa (refer to **Figure 1**). Princeton Road/SR 45 and the Colusa Casino Resort are located nearby to the east.

The property includes several features and current uses. A residence serves as the main living quarters, while a trailer home provides additional housing options. The vehicle repair facility supports local agricultural operations by maintaining equipment. A small walnut orchard and ongoing row crop agriculture contribute to the region's agricultural output. There is also a metal barn used for storage and farm activities.

The surrounding area is predominantly agricultural, which underscores the property's suitability for farming activities. To the east, the proximity to Colusa Casino Resort, the Wintun Mini Mart, and the Colusa Health and Wellness Facility highlight potential opportunities for community engagement and economic activities. **Figure 2** shows the regional location of the proposed trust parcel, and **Figure 3** provides an aerial view of the property.

1.2 Proposal

CCIC, a federally recognized tribe, possesses the legal right to request the BIA to acquire lands into trust under the authority of the Indian Reorganization Act of 1934 and subsequent amendments (25 USC § 5101)[6]. Trust status ensures that the land is held in trust by the federal government for the benefit of the Tribe, protecting it from state and local taxation, alienation, and certain forms of jurisdiction. The Tribe is requesting that the Wortham property be taken into federal trust status to restore Tribal homelands, support self-determination, and allow for additional economic development. The trust acquisition would be considered contiguous to the boundaries of an Indian Reservation in accordance with 25 CFR Part 151.10[7]. Placing the parcel in trust would allow the Tribe to exercise self-determination over the management of the parcel and promote economic development. Placing the parcel into trust would also increase opportunities to obtain funding to promote future economic development (long-term planning horizon of 5 to 10 years).

1.3 Need for the Proposed Action

The purpose of the Proposed Action is to enable future economic development opportunities consistent with Tribal goals to support self-determination by converting fee land to trust land in accordance with the land acquisition guidance in 25 CFR Part 151[8]. The need for the action is a request to the BIA to approve the Tribe's application in accordance with the Indian Reorganization Act (25 USC Part 5108[9]),

[6] Allotment of Land on Indian Reservations (Indian Reorganization Act of 1934 and subsequent amendments)

[7] § 151.10 How will the Secretary evaluate a request involving land contiguous to the boundaries of an Indian reservation?

[8] Part 151 Land acquisitions

[9] Part 5108 Acquisition of lands, water rights or surface rights; appropriation; title to lands; tax exemption

SAFETY FIRST	CLIENT: Colusa Indian Community Council	Site Location
terraphase engineering	PROJECT: Wortham Environmental Assessment	
	PROJECT NUMBER: C069.004.001	FIGURE 1

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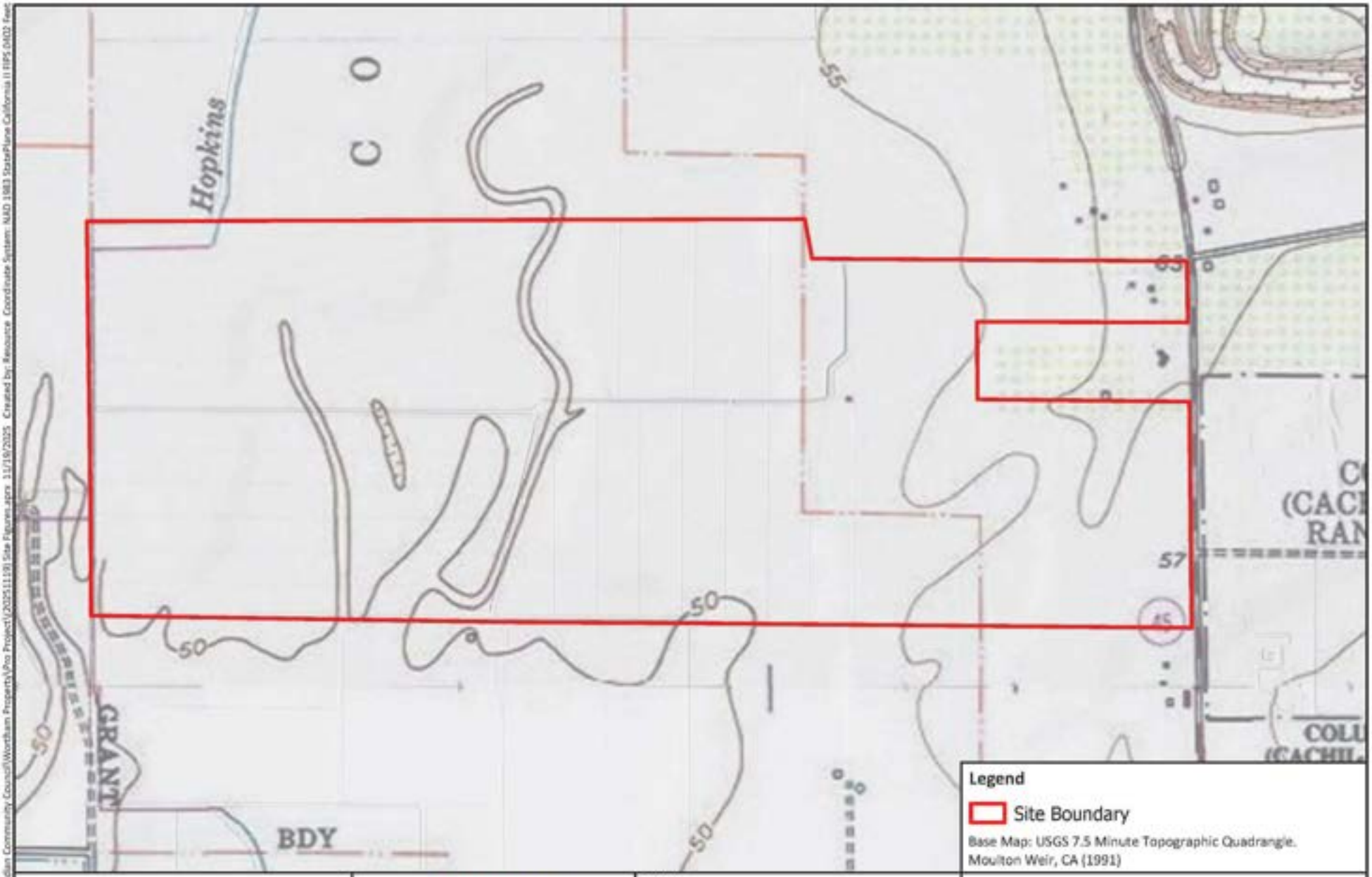

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CLIENT:	Colusa Indian Community Council
PROJECT:	Wortham Environmental Assessment
PROJECT NUMBER:	C069.004.001

Site Layout and Vicinity

FIGURE 2

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1 inch = 1,000 feet

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Aerial Imagery Source: Google Earth

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Site Aerial

FIGURE 3

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the Indian Land Consolidation Act (25 USC Part 2202[10]), and implementing federal regulations under 25 CFR Part 151.

1.4 Overview of the Environmental Review Process

A Notice of Availability for the EA and unsigned FONSI will be available to the public for a comment period. Comments received will be reviewed and considered.

1.5 Regulatory Requirements and Approvals

The following direct and indirect federal approvals and actions may occur as a result of the Proposed Action (**Table 1**).

Table 1. Regulatory Requirements and Approvals

Agency	Regulatory Need
U.S. Fish & Wildlife Service (USFWS)	Section 7 of the federal Endangered Species Act (FESA; 16 USC §§ 1531-1544)[11]
State Historic Preservation Officer (SHPO)	Section 106 of the National Historic Preservation Act (NHPA; 36 CFR Part 800)[12]
California Department of Transportation (Caltrans)	Encroachment permits
U.S. Environmental Protection Agency (EPA)	National Pollutant Discharge Elimination System General Construction Permit

[10] Part 2202 Other applicable provisions

[11] Federal Endangered Species Act

[12] Section 106 of the National Historic Preservation Act

2 Proposed Action and Alternatives

Section 102(C)(iii) of NEPA states that lead agencies are required to evaluate a reasonable range of alternatives that are technically and economically feasible and meet the purpose and need of the proposal. This EA evaluates two alternatives: the Proposed Action (Alternative A) and the No Action Alternative (Alternative B).

2.1 Alternative A. Proposed Action

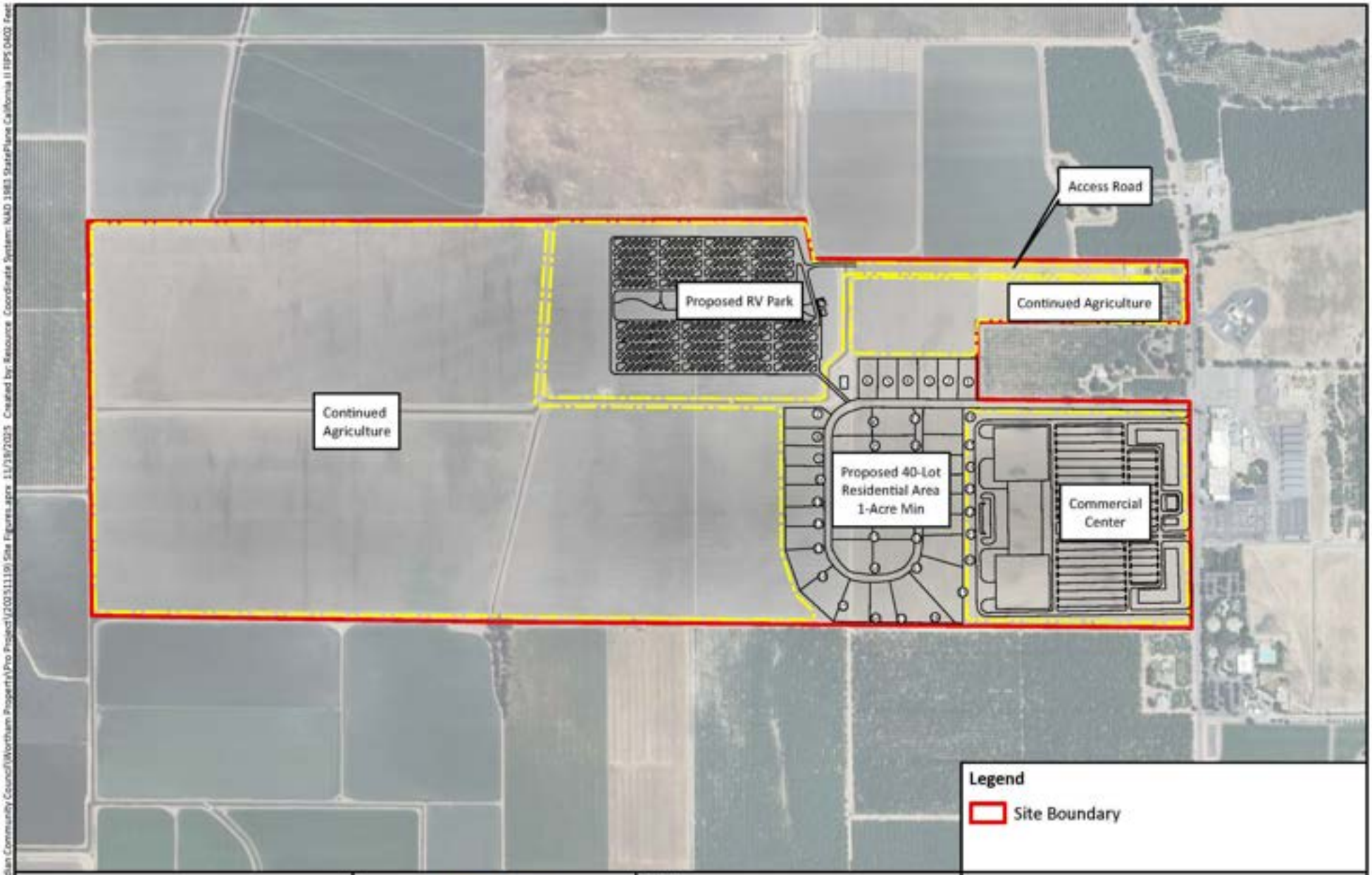
Alternative A involves placing a 519.31-acre parcel (Assessor's Parcel Number 015-020-015, known as the "Wortham property") into federal trust status—a designation that allows the land to be managed by the federal government on behalf of the Tribe. The parcel is primarily agricultural and includes a residence, trailer home, Tribal vehicle repair facility, and metal barn. Once the fee parcel is converted to trust land status, the Tribe would be eligible for federal funding opportunities enabling future development projects such as tribal housing, an RV park, and a commercial center. These economic developments are vital for the Tribe's self-determination and meet's economic and community growth.

2.1.1 Funding and Future Uses

After trust conveyance, the Tribe would seek funding from federal agencies for design, engineering, and ultimately construction of various commercial facilities and support structures. Because annual funding cycles of the various grants available to federally recognized tribes or other funding opportunities are unforeseen at this time, it could take up to 10 years before adequate funds are available to complete development of the proposed uses.

There is a general site design that identifies locations for housing, commercial, and RV park development. However, funding would be used to prepare the final design and engineering. Construction likely would occur incrementally but to facilitate environmental review and meet application requirements, the Tribe is taking a "maximum development potential" approach for the proposed uses. The proposed development areas are depicted on **Figure 4** and would encompass the following.

- Forty single-family residences for Tribal members, with each house on approximately 1 acre of land.
- A commercial center would be constructed across from the casino and east of the proposed housing development. Commercial opportunities would include a mixture of large and small retail venues including shops, restaurants, and business storefronts and is estimated to include 100,000 square feet of retail/restaurant space cumulatively.
- A 215-space RV park, each space measuring 30 feet wide by 50 feet deep. The RV park would require 30 percent to 50 percent additional space to accommodate roads, buffer zones, recreational space, on-site laundry facilities, public restrooms with showers, and an administration office as well as other amenities such as a pet park and pump stations.



0 500 1,000 Feet

1 inch = 1,000 feet

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Aerial Imagery Source: Google Earth

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CLIENT: Colusa Indian Community Council

PROJECT: Wortham Environmental Assessment

PROJECT NUMBER: C069.004.001

Site Detail

FIGURE 4

- Utilities conveying wastewater and potable water to/from the Tribe's existing facilities located east of SR 45. Future rights-of-way (ROW) may be required for new and existing utility infrastructure depending on the location of future commercial and housing development.
- The remaining acreage would continue to support agricultural production, consistent with the existing rural character of the property.

2.1.2 Land Trust Action

The Proposed Action consists of the fee simple conveyance of the 519.31-acre property into federal trust status for the benefit of the Tribe. The land transfer would be completed in accordance with procedures set forth in 25 CFR § 151.3[13] and involves numerous steps, including review of the decision under NEPA. This land trust action would shift civil regulatory jurisdiction over the 519.31-acre property from the State of California (State) and County to the Tribe and the federal government; the State and County would continue to exercise criminal jurisdiction under 18 USC § 1162[14] and other federal laws pertaining to jurisdiction in Indian Country.

Grading and Drainage

The proposed trust parcel is fairly level, so minimal large-scale grading would be required other than excavation for utilities, building foundations, and associated infrastructure with subtle grading changes to direct stormwater runoff into appropriate channels, swales, or systems. Similar stormwater controls would be included throughout the project site to ensure post-development off-site runoff is equivalent to existing runoff rates.

Because construction may occur in stages, funding secured after the parcel is placed into federal trust status would be used to prepare project-specific grading and drainage plans to support individual construction funding applications.

Water and Wastewater

Funding obtained after the trust acquisition would be utilized to develop water and wastewater feasibility studies to support future grant funding applications for engineering and construction. The water and wastewater feasibility study would be required to complete future NEPA analyses for the engineering and construction grant funding agencies.

Estimated Water Demands

The proposed trust parcel would connect to existing Tribal utilities. Potable water would be supplied from the Tribe's existing production wells and treated at the Tribe's Water Treatment Plant (WTP). Based on comparative analyses of water use rates derived from the EPA WaterSense Guidelines[15], the American Water Works Association, the California Department of Water Resources (DWR), and the

[13] § 151.3 What is the Secretary's land acquisition policy?

[14] § 1162 State jurisdiction over offenses committed by or against Indians in the Indian country

[15] EPA WaterSense® Program Guidelines Version 5.5, May 2020

USGS, the projected potable water demands for the project total approximately 44,695 gallons per day (GPD; refer to **Table 2)**.

The Tribe's potable water system currently consists of two production wells located on the existing Reservation across SR 45 from the Wortham property. One well is located inside the maintenance shop and the other north of the pool. The WTP employs reverse osmosis treatment followed by disinfection and pH balancing. Treated water is stored in two storage tanks before being distributed at an average system pressure of 65 pounds per square inch. Existing demand on the system fluctuates seasonally, where summer averages can often double winter use averages. Two backup wells are also available to provide emergency supply capacity. Based on interviews and documentation provided by the Tribal Public Works director, the existing water treatment and storage system has more than adequate capacity to meet the needs of the proposed uses without compliance or operational issues.

Table 2. Potable Water Demands

Proposed Use	Potable Water Demand (gallons per day)[1]
100,000 square foot commercial center	14,500
215-space RV park	19,135
40 single-family residences	11,060
Total	**44,695**

[1] A comparative analysis of water use rates obtained from U.S. Environmental Protection Agency WaterSense Guidelines, the American Water Works Association, California Department of Water Resources, and U.S. Geological Service Water Use Data was conducted for each proposed use to determine potable water demands. Results rounded to the nearest 5 gallons per day.

Wastewater Generation, Treatment, and Disposal

Based on the anticipated water demand and EPA guidance[16], implementation of the proposed uses is anticipated to generate 42,390 GPD of wastewater. Wastewater generated by the proposed uses would be collected and treated at the Tribe's existing community Wastewater Treatment Plant (WWTP). Treatment is provided through a Sequencing Batch Reactor process, and effluent is disposed of on-site through a subsurface GeoFlow drip system. This disposal method operates under Underground Injection Control requirements and does not require a discharge permit. The facility was constructed in 2004 and has operated without compliance or operational issues for the past five years. Routine maintenance is regularly conducted on pumps, motors, tanks, headworks, and lift stations to ensure reliability. Based on interviews and documentation provided by the Tribal Public Works Director, the WWTP has more than adequate capacity to collect and treat the wastewater generated from the proposed uses without the need for any upgrades. The Director also confirmed that the WWTP would continue to operate without compliance or operational issues.

[16] EPA Design Manual: Onsite Wastewater Treatment and Disposal Systems

2.1.3 Utilities

Pacific Gas & Electric (PG&E) provides gas and electrical utilities in the vicinity of the proposed trust parcel (California Energy Commission 2025). Overhead power lines are located along the center line and eastern end of the proposed trust parcel. A gas transmission pipeline bisects the project site, running north to south (National Pipeline Mapping Service 2025). As stated in **Section 2.1.1**, future ROW development may be required to convey utility systems from existing locations to the commercial and housing developments on the proposed trust parcel.

2.1.4 Traffic

Based on the intended uses of the proposed trust parcel, the Tribe would be required to work with Caltrans for improvements to SR 45 to address pedestrian and vehicle traffic entering and exiting the project site and the casino property. Potential improvements may include installation of a traffic signal that would improve the intersection and address potential safety issues. To support vehicle traffic flow, improvements may also include installing separate left-turn lanes on SR 45 and widening the casino exit to provide for separate right and left turn lanes. Improvements from the main exit from the project site may include separate right and left turn lanes on its approach to SR 45. A traffic study (Abrams Associates 2024) was prepared and will be discussed in **Section 3.7**.

2.1.5 Project Construction

The project components would be constructed after the proposed trust parcel is placed into federal trust, funding has been obtained, and design and engineering documents and studies have been completed. For the purposes of analysis within this EA to allow for conservative assessment of impacts, construction of the proposed uses was assumed to be completed over a five-year period, with construction occurring simultaneously for all proposed uses. Each proposed use would ultimately be developed independently after infrastructure improvements are completed relying upon funding availability. All uses would be constructed in accordance with the Uniform Building Code.

2.1.6 Best Management Practices

The following Best Management Practices (BMPs) are standard provisions incorporated into Tribal development projects and are anticipated to be required through contractual requirements when construction contracts are approved by the Tribe.

Wildfire Prevention

The following BMPs would be included as part of the proposed uses through contractual requirements to minimize the risk of fire during construction.

1. Any construction equipment that normally includes a spark arrester shall be equipped with an arrester in good, working order. This includes, but is not limited to, vehicles, heavy equipment, and chainsaws.
2. During construction, staging areas, welding areas, or areas slated for development using spark-producing equipment would be cleared of dried vegetation or other materials that could serve

as fire fuel. To the extent feasible, the contractor shall keep these areas clear of combustible materials to maintain a firebreak.

Air Quality Emissions Reductions

The following BMPs would be included as part of the proposed uses through contractual requirements to reduce temporary construction emissions.

1. For any earth moving that is more than 100 feet from all property lines, watering shall be conducted as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction.
2. For all disturbed surface areas, dust suppression shall be applied in a sufficient quantity and frequency to maintain a stabilized surface; any areas that cannot be stabilized, as evidenced by wind driven dust, shall receive an application of water at least twice per day to at least 80 percent of the un-stabilized area.
3. For all unpaved roads used for any construction vehicular traffic, the roads shall be watered as often as necessary to minimize dust or chemical stabilizer shall be applied to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface.
4. Track-out control shall be provided to minimize tracking of soil onto neighboring roadways.

The following dust suppression BMPs would be implemented during construction to control the production of fugitive dust and prevent wind erosion of bare and stockpiled soils.

1. Exposed soil shall be sprayed with water or other suppressant at least twice a day or as needed.
2. Dust emissions during transport of fill material or soil shall be minimized by wetting down loads, ensuring adequate freeboard (space from the top of the material to the top of the truck bed) on trucks and/or covering loads.
3. Spills of transported material on public roads shall be cleaned promptly.
4. On-site traffic shall be restricted to reduce soil disturbance and the transfer of material onto roadways.
5. Construction equipment and truck staging areas shall be located away from sensitive receptors, as practical and in consideration of potential effects on other resources.
6. Wheel washers shall be provided to remove particulate matter that would otherwise be carried offsite by vehicles to decrease deposition of particulate matter on area roadways.
7. Dirt, gravel, and debris piles shall be covered as needed to reduce dust and wind-blown debris.

The following BMPs would be implemented during construction to reduce emissions of criteria air pollutants (CAPs) and diesel particulate matter (DPM).

1. All diesel-powered equipment shall be properly maintained, and idling time shall be minimized to 5 minutes when construction equipment is not in use, unless per engine manufacturer's specifications or for safety reasons more time is required.
2. Engines shall be kept in good mechanical condition to minimize exhaust emissions.

3. The construction contractor shall use Tier 4 construction equipment (with the exception of Tier 4 scrapers, which are not widely available), using a minimum of 90 percent of the equipment's total horsepower (hp).
4. All construction equipment with a hp rating of greater than 50 shall be equipped with diesel particulate filters, which would reduce approximately 85 percent of DPM.

Living Resources

The following BMPs would be implemented during construction to reduce impacts to living resources.

1. At the end of each workday, all excavations of a depth of 8 inches or greater shall be covered with plywood or other hard material, and gaps around the cover shall be filled with dirt, rocks, or other appropriate material to prevent entry by wildlife. If excavations cannot be covered, then they shall include escape ramps constructed of either dirt fill, wood planking, or other appropriate material installed at a 3:1 grade (i.e., an angle no greater than 30 degrees) to allow wildlife that fall in a means to escape.

2.2 Alternative B. No Action Alternative

Under the No Action Alternative, the 519.31 acres would not be placed in federal trust. Accordingly, funding opportunities only available to trust lands would not become available to the Tribe. Without additional federal funding opportunities, the parcel would remain undeveloped and remain consistent with baseline conditions.

2.3 Comparison of Alternatives and Alternatives Eliminated from Consideration

2.3.1 Alternative A. Proposed Action

The Proposed Action and future development by the Tribe could result in mitigatable environmental impacts to land resources, water resources, living resources, cultural resources, transportation and circulation and would add numerous opportunities for revenue generation, to the benefit of the Tribe. Alternative A would also promote tribal sovereignty by offering the opportunity to provide housing for their membership.

2.3.2 Alternative B. No Action Alternative

While the No Action Alternative would not result in any of the environmental effects identified for the Proposed Action and future development by the Tribe, this alternative would not allow for additional economic development nor meet the Tribe's objectives to restore Tribal homelands or support self-determination.

Of the project alternatives evaluated in **Section 3**, the Proposed Action (Alternative A) would best meet the Tribe's objectives by providing the Tribe with additional sources of income to ultimately develop the project site and by assisting in the re-establishment of its traditional land base.

2.3.3 Alternatives Eliminated from Consideration

Other potential alternatives were eliminated from consideration because they do not meet the definition of "reasonable" under NEPA. Under NEPA, a "reasonable" alternative is one that is technically and economically feasible and can accomplish the purpose and need of a proposed action. Reasonable alternatives may include reducing the size or number of parcels taken into trust or considering alternative locations for the trust acquisition.

The requested parcel for trust acquisition is currently owned in fee by the Tribe. It contains established orchards, agricultural fields, and agricultural infrastructure. Alternative A demonstrates the Tribe's concept plan for the proposed use. The entire parcel is essential for meeting the project's purpose and needs.

Reducing the size of the parcel or taking different land into trust would decrease economic development potential for the Tribe. This reduction would hinder the Tribe's ability to exercise self-determination and self-governance as a federally recognized tribe. Economic development is crucial for the Tribe to build necessary infrastructure, such as circulation and parking, wastewater treatment and disposal, and stormwater management areas. Without sufficient land, the Tribe would not be able to support its community, pursue growth, or create opportunities for its members.

There are no other available or comparable lands that the Tribe can afford to purchase that would provide a sufficient land base to support the proposed land uses and meet the project's purpose and need. For these reasons, alternative locations for trust acquisition are not evaluated further in this EA.

3 Environmental Impact Analysis

This section describes the existing environment of the area affected by the proposed alternatives as well as the environmental consequences for each proposed alternative. The following environmental issue areas are addressed: land resources, water resources, air quality, living resources, cultural and paleontological resources, socioeconomic conditions, transportation and circulation, land use and agriculture, public services and utilities, noise, hazardous materials and public health and safety, visual resources, as well as growth inducing and cumulative impacts. Measures to mitigate for adverse impacts identified in this section are presented in **Section 4**. Note that the term "effects" is used synonymously with the term "impacts."

3.1 Land Resources

The following describes the existing land resources conditions, including topography, soils, soil hazards, geology, and seismicity that occur within the proposed trust parcel and general vicinity.

3.1.1 Existing Setting

Topography

Topography in the vicinity of the proposed trust parcel is generally level. Elevations range from approximately 50 feet above mean sea level (amsl) in the southwestern corner to 60 feet amsl in the northeastern corner of the proposed trust parcel.

Soils

The dominant soil types within the proposed trust parcel are Willows silty clay (not prime farmland), Scribner silt loam (prime farmland if irrigated and drained), Moonblend silt loam (prime farmland if irrigated), and Corbiere silt loam (prime farmland if irrigated) (Natural Resources Conservation Service [NRCS] 2025, **Appendix A**). These are poor-to-moderately well-drained soils derived from alluvium. The depth to water table ranges from more than 18 inches to over 80 inches, with moderate erosion potential, low to moderately high hydraulic conductivity, and slow or very slow infiltration rates. The proposed trust parcel is not located within a mapped liquefaction zone[17].

Geological, Mineral, and Paleontological Resources

Geotechnical studies have shown that the rock stratigraphic unit within the proposed trust parcel is from the Cenozoic Era, Quaternary System, and Quaternary series.

The top mined commodities in Colusa County consist of mercury, manganese, chromium, copper, and gold (the diggings 2025). The closest quarry, the Sites Quarry, is located approximately 14.4 miles to the west of the proposed trust parcel. The quarry has historically produced sandstone used for architectural construction including a number of notable buildings in San Francisco (Stone Business 2025).

[17] California Department of Conservation Liquefaction Zones

Paleontological resources are the fossilized remains of plants and animals, including vertebrates, invertebrates, and fossils of microscopic plants and animals (microfossils). The age and abundance of fossils depend on the location, topographic setting, and particular geologic formations. The geology of the proposed trust parcel, typical of the Sierra Nevada region, consists of sedimentary materials which could be conducive to preservation of fossil materials. The University of California Museum of Paleontology (UCMP) Database was reviewed and noted that 152 specimens have been catalogued from Colusa County, largely bivalves, gastropods, and cephalopods recovered from Petersen Ranch, Salt Creek, Sand Creek, and Funks Creek, north and west of the proposed trust parcel (UCMP 2025).

Geology and Seismicity

The proposed trust parcel lies within a seismically active region, and primary concerns include ground shaking and surface ruptures along existing fault traces. The proposed trust parcel is not within a designated Alquist-Priolo zone, which is determined by the California Geological Survey according to mandates of the Alquist-Priolo Earthquake Fault Zoning Act of 197 (Department of Conservation [DOC] 2025). The proposed trust parcel lies immediately west of the Willows fault zone, a region of pre-quaternary faults, i.e., those faults which lack recognized evidence of movement during the Quaternary period, which spans the last 1.6 million years (DOC 2015).

3.1.2 Impact Assessment

Methodology

The Proposed Project would result in adverse impacts to land resources if construction or operation results in significant alterations to the site's topography; caused significant soil erosion; limited access to geological, mineral, or paleontological resources of regional significance; or if geological/soil hazards associated with the existing setting would pose limitations to the development of an alternative.

Alternative A

Topography

This alternative would not result in substantial changes to the topography of the proposed trust parcel. Although development within the proposed trust parcel would include foundation and utility excavations, the parcel is relatively flat in nature without any significant elevation changes or slopes where construction could result in potential landslides. Furthermore, standard engineering and planning controls would be employed during trenching and excavation to prevent dangerous slopes. Impacts to topography would be less than significant.

Soils

Excavation activities during construction of Alternative A would result in minimal disturbance associated with excavation for residential and commercial foundations, RV parking pads, utilities, and any kind of storage tanks associated with RV dumping facilities. Liquefaction is not anticipated to occur given the nature of the soil and the distance to active fault lines. Based on the proposed uses and estimated grading, construction would disturb more than 1 acre of soil. Accordingly, implementation of the

proposed uses would require coverage under the EPA Construction General Permit under the National Pollutant Discharge Elimination System. To ensure that significant effects to soil resources are avoided, erosion control measures would be included in the required Stormwater Pollution Prevention Plan (SWPPP) to protect excavated soils from erosion. With the regulatory requirement to obtain coverage under the Construction General Permit at the time construction commences, adverse impacts related to soils would be reduced to less-than-significant levels.

Geological, Mineral, and Paleontological Resources

The proposed trust parcel is primarily open agricultural land. There are no mines and construction of the proposed uses would not result in a loss of economically viable aggregate rock or diminish the extraction of important ore or minerals. Due to the distance, development within the proposed trust parcel would not affect the operation of the Sites Quarry. The potential for the proposed uses to have an adverse effect on geological, mineral, or paleontological resources is reduced given the lack of identified resources on the proposed trust parcel. However, should paleontological materials be uncovered during construction, implementation of **Mitigation Measure GEO-1**, requiring an assessment of the find, would reduce adverse impacts to less-than-significant levels.

Geology and Seismicity

The proposed trust parcel is not located on any known active fault traces; thus, the risk of fault rupture is low. There are regional seismic sources, which could produce strong ground shaking events. Implementation of **Mitigation Measure GEO-2**, requiring adherence to the provisions of the Uniform Building Code and the use of appropriate building techniques and materials, would reduce the potential adverse risks due to the geological setting and seismicity to less-than-significant levels.

Alternative B

The proposed trust parcel would remain undeveloped, and therefore there no impacts related to topography; soils; geological, mineral, or paleontological resources; or seismic shaking would occur.

3.2 Water Resources

3.2.1 Regulatory Setting

Federal

The Clean Water Act (CWA) (33 USC Chapter 26 §§ 1251-1376)[18], as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality. The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The EPA is delegated as the authoritative body under the CWA. Important sections of the CWA that pertain to the Proposed Action are as follows:

[18] Federal Clean Water Act

Sections 303 and *304* provide water quality standards, criteria, and guidelines. Section 303(d) requires states to identify impaired water bodies and develop total maximum daily loads for contaminant(s) of concern.

Section 401 requires an applicant for any federal permit that proposes an activity that may result in a discharge to waters of the U.S. to obtain certification that discharge would comply with other provisions of the CWA.

Section 404 regulates the discharge of dredged and fill material into waters of the U.S. The U.S. Army Corps of Engineers (USACE) requires that a permit be obtained if a project proposes placing structures within, over, or under navigable waters and/or discharging dredged or fill material into waters below the ordinary high-water mark. The USACE has established a series of nationwide permits that authorize certain activities in waters.

The Basin Plan[19] also specifies water quality objectives for groundwater. In order to protect drinking water supplies, EPA, under the mandate of the Safe Drinking Water Act[20], defines National Primary Drinking Water Regulations (primary standards). These are legally enforceable standards that apply to public water systems. Primary standards are established to protect human health by limiting the levels of contaminants in drinking water. The EPA also defines National Secondary Drinking Water Regulations (secondary standards).

The EPA sets primary standards that apply to public water systems and defines secondary standards for contaminants that cause cosmetic and aesthetic effects, but not health effects.

3.2.2 Existing Setting

Domestic systems in Colusa County are served with groundwater, while the majority of irrigation systems are supplied with surface water distributed from the Tehama-Colusa and Glenn-Colusa Canals, the Colusa Drain, or the Sacramento River.

Watersheds and Hydrology

The Sacramento River hydrologic region covers approximately 17.4 million acres (27,200 square miles). The region includes all or large portions of Modoc, Siskiyou, Lassen, Shasta, Tehama, Glenn, Plumas, Butte, Colusa, Sutter, Yuba, Sierra, Nevada, Placer, Sacramento, El Dorado, Yolo, Solano, Lake, and Napa counties, and small areas of Alpine and Amador counties. Colusa County is located within 12 hydrologic areas, and the project site is within the Colusa Subbasin. According to the Groundwater Sustainability Plan for the Colusa Subbasin[21], data is not currently available to characterize the stream/aquifer interaction along the Sacramento River through Colusa County. To properly determine groundwater–surface water interaction, it is necessary to have nested monitoring wells located in close proximity to a stream gage. The existing well locations are not suitable for characterizing the stream/aquifer

[19] The Water Quality Control Plan (Basin Plan)

[20] Federal Safe Drinking Water Act

[21] Colusa Groundwater Authority - Groundwater Sustainability Plan for the Colusa Subbasin

interaction. The DWR Northern District has stated that existing data is inadequate to characterize the system (De Novo 2011).

The proposed trust parcel is located in the Colusa Basin Watershed, which covers approximately 1,634 square miles in northeastern California and encompasses a substantial portion of the west side of the Sacramento Valley. The watershed extends from the Cache Creek Watershed in the south, to lower Stony Creek Watershed in the north and from the Sacramento River westward to the ridge crest of the Inner Coast Range foothills. Overall, the watershed is relatively flat but steeper slopes climb westward into the lower foothills of the Inner Coastal Range. The vast majority of the watershed is rural, dominated by agricultural and rangeland activities (De Novo 2011). There are no surface water resources located within the proposed trust parcel.

Drainage

The proposed trust parcel slopes from an approximate elevation of 60 feet amsl in the northeast to 50 feet amsl in the southwest, and runoff within the proposed trust parcel occurs as sheet flow and follows the topography unless it enters one of the canals lining an agricultural field. There are no watercourses or wetlands mapped on the proposed trust parcel (USFWS 2025a). The nearest surface water consists of small ponds and the Sacramento River less than a mile to the northeast.

Flooding

The Federal Emergency Management Agency (FEMA) is responsible for assessing the potential for flooding by updating and issuing flood insurance rate maps, which depict various levels of predicted inundation. FEMA has rated the eastern portion of the project site (FEMA 2025a) as Zone X, an area of minimal flood hazard, and the western as Zone AE, which is an area that presents a 1 percent annual chance of flooding (FEMA 2025b).

Groundwater

Groundwater occurs in the alluvial deposits underlying the alluvial fans, low plains, and basin flats of the Colusa Basin Watershed. The Colusa Groundwater Subbasin comprises the part of the larger Sacramento Valley Groundwater Basin lying approximately under the Colusa Basin Watershed footprint, the Sacramento River on the east, the Coast Range on the west, Cache Creek on the south, and Stony Creek on the north. The base of the Tehama Formation is the base of groundwater-bearing alluvial deposits in the Colusa Groundwater Subbasin. The groundwater-bearing geologic formations in the Subbasin include all of the alluvial deposits overlying the Cretaceous bedrock: the Tehama Formation of Tertiary age and the overlying Quaternary alluvial fan, flood basin, and alluvial deposits (DWR 2006).

Groundwater levels in the Colusa Basin Watershed have remained historically steady, with declines occurring during drought years and recovering during subsequent normal rainfall years. Recent exceptions include the Yolo and Zamora areas which have seen up to 5 feet of land subsidence due to

extensive groundwater extraction. According to the DWR's California Water Plan (Update 2009)[22], the Arbuckle area in southern Colusa County is also seeing increases in groundwater extraction. Sufficient groundwater data exist to monitor changes in groundwater storage and provide baseline data for evaluating future groundwater management efforts in portions of the Colusa Basin watershed. DWR currently monitors groundwater levels in 98 wells approximately semiannually and maintains up-to-date published databases of well data.

Estimates of groundwater extraction for the Colusa Subbasin are based on surveys conducted by DWR in 1993, 1994, and 1999. Surveys included land use and sources of water. Estimates of groundwater extraction for agricultural, municipal and industrial, and environmental wetland uses are 310,000, 14,000, and 22,000 acre-feet respectively. Deep percolation from applied water is estimated to be 64,000 acre-feet (DWR 2006).

Water Quality

Calcium-magnesium bicarbonate and magnesium calcium bicarbonate are the predominant groundwater types in the subbasin. Calcium bicarbonate waters occur locally from Orland to Artois and near Stony Creek. Mixed character waters for different regions of the Subbasin occur as follows: sodium bicarbonate waters from Williams-Colusa south to Grimes; magnesium-sodium bicarbonate or sodium-magnesium bicarbonate waters near the Williams-Arbuckle area and locally near Zamora; and magnesium bicarbonate waters locally near Dunnigan. Total dissolved solids (TDS) values range from 120- to 1,220-milligrams per Liter (mg/L), averaging 391 mg/L (DWR unpublished data).

Impairments

High Electrical Conductivity, TDS, adjusted sodium absorption ratio (ASAR), nitrate, and manganese impairments occur near Colusa. High TDS and boron occur near Knights Landing. High nitrates occur in Arbuckle, Knights Landing, and Willows. Localized areas have high manganese, fluoride, magnesium, sodium, iron, ASAR, chloride, TDS, ammonia, and phosphorus (DWR 2006).

3.2.3 Impact Assessment

Methodology

Alternative A would result in adverse impacts to water resources if construction or operation would result in direct adverse impacts to drainage patterns resulting in off-site flooding, floodplain management, and/or cause an exceedance of applicable water quality criteria. For groundwater resources, Alternative A was analyzed to determine if either construction or operation would result in a significant decline in groundwater levels, a significant decline in groundwater recharge rates, and/or cause an exceedance of applicable groundwater quality criteria. Databases were utilized to collect information about the existing setting, soil composition, permeability, groundwater availability, and water quality within the vicinity of the proposed trust lands.

[22] California Water Plan, Update 2009

Alternative A

Surface Water

Development of Alternative A would result in a net increase in impervious surfaces and therefore a net increase in stormwater runoff, primarily from the commercial development area. While housing and RV park components would also increase impermeable surfaces, the proportion of hardscape would be low relative to the amount of remaining open space.

To mitigate the effects of increased impervious surfaces in the commercial area, curb inlets, catch basins, and underground piping would be designed to an appropriate storm event level to prevent off-site impacts. Detention basins and bioswales would be sized for each phase of development to ensure compliance with the "no net increase in runoff" standard, consistent with EPA Construction General Permit requirements. Similar provisions would be applied to the housing and RV park sites in accordance with **Mitigation Measure WATER-1**.

In addition to water quality controls, the project would address flooding hazards. The project site is located outside of the FEMA 100-year floodplain; however, increases in impervious surface could contribute to localized flooding if stormwater facilities are undersized. To prevent such impacts, detention basins would be designed to accommodate runoff from an appropriate design storm event, such as the 100-year storm event required for off-trust land development by Colusa County and Caltrans standards. Basin outlet structures would be engineered to control peak discharge rates to pre-development conditions, ensuring that downstream drainageways and receiving waters are not adversely affected by increased flow volumes or peak flows. The inclusion of bioswales and low-impact development features would provide additional storage and infiltration capacity to minimize localized ponding and protect downstream properties from potential flood risk.

With implementation of these measures, the project would not place housing or other structures in a 100-year flood hazard area, would not impede or redirect flood flows, and would not exacerbate existing flooding conditions.

Groundwater

Implementation of Alternative A would result in an increase in impervious surfaces, which would reduce the area available for groundwater recharge on the proposed trust parcel. However, conversion of irrigated row crops or nut orchards to development may provide a net beneficial effect on groundwater supply due to reduced consumptive use.

Based on the forecast potable water demands (**Table 2**), the proposed development—which includes a 100,000-square-foot commercial center, a 215-space RV park, and 40 single-family residences—would require approximately 44,695 GPD, or 50 acre-feet per year (AFY). This is substantially less than the existing agricultural demand on the project site. For comparison, typical agricultural water rates in the Sacramento Valley are:

- Row Crops: 2.5–4.0 AFY per acre (≈155–248 AFY for 62 acres) (DWR 2025a)
- Nut Orchards: 3.5–5.0 AFY per acre (≈217–310 AFY for 62 acres) (DWR 2025a)

When compared to agricultural baseline conditions, the proposed development represents a net reduction in groundwater demand of more than 100 AFY. According to USGS, conversion of irrigated agricultural lands to urban uses generally decreases deep percolation but reduces high-volume irrigation withdrawals, often resulting in a net reduction in groundwater pumping[23].

Although impervious surfaces would reduce natural recharge, the decrease is expected to be minor compared to reductions in pumping. Moreover, water-efficient landscaping, indoor water efficiency measures consistent with EPA WaterSense,[24] and implementation of BMPs would further minimize demand. With these measures, adverse effects on groundwater supply and recharge would remain less than significant, and the project would reduce pressure on the Colusa Subbasin.

Water Quality

Construction activities of the proposed uses would include ground-disturbing activities such as clearing and grubbing, grading, and excavation that could lead to erosion of topsoil. Erosion from construction sites can increase sediment discharge to surface waters during storm events, thereby degrading downstream or groundwater quality. Construction activities would also include the routine use of potentially hazardous construction materials such as concrete washing, oil, and grease that may spill onto the ground and dissolve in stormwater. Release of pollutants onsite may allow for pollutants to be carried offsite with stormwater to surface waters or to percolate to groundwater. Although water quality impacts from construction on the proposed trust parcel would likely be minimal, the Tribe is required to adhere to the provisions of the CWA. The Tribe would be required to submit an application for coverage under the EPA Construction General Permit and adhere to all guidelines therein. As required, the Tribe would create and implement a SWPPP that would outline BMPs. The Notice of Intent for the Construction General Permit and the SWPPP would be formulated and enacted prior to construction activities. The SWPPP would also be kept onsite for the duration of all construction activities and maintained in accordance with the Construction General Permit. As a regulatory requirement, compliance with the SWPPP would help reduce adverse impacts to surface and groundwater impacts related to construction of the proposed uses to less-than-significant levels.

The WWTP has been in operation since 2004, and routine maintenance is conducted on pumps, motors, headworks, and lift stations to ensure continued compliance. Based on available information, the WWTP has sufficient design capacity to treat projected flows from the proposed uses without requiring system upgrades. With proper operation and maintenance, the WWTP is expected to continue operating without compliance issues, and wastewater disposal would not result in significant adverse effects to groundwater or surface water quality.

Surface water runoff from developed areas, particularly the commercial center, RV park, and Tribal housing, could transport trash, debris, oil, sediments, and grease into nearby drainage features, thereby affecting surface water quality. Without controls, such runoff could also percolate into soils and contribute to localized groundwater contamination. Implementation of **Mitigation Measure WATER-2**,

[23] USGS Sustainability of Ground-Water Resources, Circular 1186

[24] EPA WaterSense Program

which requires development and enforcement of a SWPPP under the EPA Construction General Permit, along with structural and non-structural BMPs such as bioswales, oil/water separators, and regular street sweeping, would minimize pollutant discharges. With these measures, operational impacts to both surface water and groundwater quality from the proposed uses would be reduced to less-than-significant levels.

Water Quantity, Use, and Rights

The total estimated water demand for the proposed uses that would be developed under Alternative A, assuming maximum development, is approximately 44,695 GPD. Based on conversations with the Public Works Director, the existing water supply and treatment system has adequate capacity to serve the proposed uses, including peak demands, and no new sources of municipal water would be required.

Alternative B

Under this alternative, the proposed trust parcel would remain undeveloped and no impacts to water resources would occur.

3.3 Air Quality

3.3.1 Regulatory Setting

Federal

The federal Clean Air Act (CAA) was enacted to protect and enhance the quality of the nation's air resources in order to benefit public health, welfare, and productivity. Basic components of the CAA and its amendments include the establishment of National Ambient Air Quality Standards (NAAQS) for criteria pollutants and the requirement for states to develop and implement State Implementation Plans (SIPs) to attain and maintain the NAAQS (40 CFR Part 51[25]). The EPA is responsible for identifying criteria pollutants, establishing the NAAQS, and reviewing and approving SIPs submitted by the states.

The EPA has identified six criteria pollutants—ozone, carbon monoxide (CO), sulfur dioxide ($S0_2$), nitrogen dioxide (NO_2), particulate matter (PM [PM_{10} and $PM_{2.5}$]), and lead—that are used as indicators of regional air quality. For each pollutant, the EPA has established primary standards to protect public health and secondary standards to protect public welfare. Some standards are expressed using multiple averaging times (e.g., 1 hour, 8 hours, or 24 hour) to reflect typical exposure periods.

The EPA, in conjunction with the California Air Resources Board (CARB), designates areas of the State according to whether they meet the NAAQS. Areas that meet the standard are classified as "attainment" (or unclassifiable where data are insufficient), while areas that do not meet the standard are classified as "nonattainment." Areas that were previously designated nonattainment but have since attained the standard may be reclassified as "maintenance" areas, which requires continued planning to ensure compliance. For ozone, nonattainment areas are further classified based on severity as marginal,

[25] Part 51 Requirements for Preparation, Adoption, and Submittal of Implementation Plans

moderate, serious, severe, or extreme. These classifications determine the specific compliance requirements and deadlines included in the SIP.

Federal Class I Areas

Title I, Part C of the CAA established the Prevention of Significant Deterioration (PSD) program to preserve, protect, and enhance air quality in national parks, wilderness areas, monuments, and other areas of special natural, recreational, scenic, or historic value. All international parks, national wilderness areas, and memorial parks larger than 5,000 acres, and national parks larger than 6,000 acres, are designated as "Class I areas." The PSD program limits the amount of air quality deterioration allowed in Class I areas by requiring an analysis of potential impacts to air-quality-related values.

Any new or modified major stationary source of emissions within 100 kilometers (62 miles) of a Class I area must conduct a pre-construction review of potential impacts. Under the PSD program, a "major source" is defined as a facility that will emit 100 tons per year (tpy) or more of a regulated pollutant if it belongs to a listed source category, or 250 tpy for all other stationary sources. Mobile sources (e.g., vehicles) are not considered stationary sources and are therefore not subject to PSD permitting requirements.

General Conformity

Because the Proposed Action is a federal undertaking, it is subject to the General Conformity Rule (40 CFR Part 93, Subpart B[26]). Section 176(c) of the CAA[27] requires federal agencies to ensure that their actions conform to the purpose of the applicable SIP. Conformity means that a federal action will not:

- cause or contribute to new violations of the NAAQS;
- interfere with measures in the SIP for maintaining attainment of the NAAQS; or
- delay timely attainment of the NAAQS.

A conformity determination is required if the total of direct and indirect emissions of a criteria pollutant in a nonattainment or maintenance area equals or exceeds the applicable *de minimis* threshold listed in 40 CFR 93.153(b)[28]. For a marginal ozone nonattainment area, the *de minimis* levels are 100 tpy of nitrogen oxides (NO_x) and 100 tpy of volatile organic compounds (VOC; also known as reactive organic gas [ROG]). Federal actions with emissions below these thresholds are presumed to conform and do not require a formal conformity determination.

[26] Part 93 Determining Conformity of Federal Actions to State or Federal Implementation Plans

[27] Federal Clean Air Act

[28] § 93.153 Applicability

3.3.2 Existing Conditions

Regional Setting

The proposed trust parcel is located in Colusa County within the Sacramento Valley Air Basin (SVAB). The SVAB extends over 200 miles from Sacramento County in the south to Shasta County in the north. The Basin is bound by the Coast Ranges to the west and the Sierra Nevada to the east. The climate is Mediterranean, with cool, wet winters and hot, dry summers. These meteorological conditions, combined with frequent periods of atmospheric stagnation, can lead to the accumulation of ozone and PM during the summer and fall months.

Regional Air Quality Oversight

Air quality on fee lands in Colusa County is regulated by the Colusa County Air Pollution Control District (CCAPCD). The CCAPCD is responsible for permitting stationary sources, enforcing State and federal air quality rules, and implementing programs to reduce emissions on fee lands. The District also coordinates with CARB and the EPA on regional planning and attainment of the NAAQS. While CCAPCD does not operate its own ambient monitoring network, air quality data for the SVAB are available from nearby CARB and regional monitoring stations for ozone and PM (PM_{10} and $PM_{2.5}$).

NAAQS Designations

Colusa County is designated as nonattainment for ozone under the federal 8-hour standard. For all other criteria pollutants—including CO, NO_2, SO_2, PM (PM_{10} and $PM_{2.5}$), and lead—Colusa County is designated as attainment or unclassified under the NAAQS.

Pollutants of Concern

Given the nonattainment status for ozone, the pollutants of concern in the SVAB are the ozone precursors NO_x and ROG/VOC. These pollutants undergo photochemical reactions in the atmosphere that result in the formation of ground-level ozone. Other criteria pollutants are not pollutants of concern because the area is designated attainment or unclassified for those standards.

Federal Class I Areas

The proposed trust parcel is not located within or adjacent to a federal Class I area. The nearest Class I areas are Lassen Volcanic National Park and the Yolla Bolly–Middle Eel Wilderness, both located more than 80 miles from Colusa County. Therefore, the Proposed Action would not affect a Class I airshed.

Sensitive Receptors

Sensitive receptors are facilities or land uses where children, the elderly, or other sensitive individuals are likely to be exposed to air pollutants. These include hospitals, schools, daycare centers, convalescent facilities, and residences. Nearby land uses are primarily agricultural. The eastern edge of the project site is shaped like the letter “U,” with the opening pointed to the east, at 3787 SR 45. This interior parcel includes a residence, barn, outbuildings, and a walnut orchard and, because of the proposed trust parcel shape, is surrounded on three sides by the proposed trust parcel. There is also a residence with

outbuildings located approximately 450 feet north of the proposed trust parcel and another residence with outbuildings located approximately 1,940 feet south of the proposed trust parcel.

3.3.3 Impact Assessment

Methodology

The potential air quality impacts of the Proposed Action were evaluated in accordance with CAA Section 176(c)[29] and the General Conformity Rule (40 CFR Part 93, Subpart B)[30]. The methodology consisted of the following steps.

1. Identify Applicable Standards and Pollutants of Concern

   The project site is located in the SVAB. Colusa County is designated as nonattainment for ozone under the federal 8-hour ozone standard, and attainment/unclassified for all other criteria pollutants. Therefore, the pollutants of concern for conformity review are ozone precursors: NOx and VOCs/ROG).

2. Quantify Emissions

   Emissions from both construction and operation of the Proposed Action were estimated using the California Emissions Estimator Model (CalEEMod, version 2022.1.1.29)[31]. The model accounts for equipment use, vehicle trips, energy use, and other direct and indirect emission sources. Results were converted from maximum daily values (pounds per day) to annual emissions (tpy) for comparison against conformity thresholds. Construction was assumed to occur over a typical work year of 230 days, while operations were annualized over 365 days.

3. Compare to Federal *De Minimis* Thresholds

   The federal general conformity *de minimis* thresholds for a marginal ozone nonattainment area are:

   - 100 tpy of NOx
   - 100 tpy of VOC/ROG

   If annual emissions of these pollutants are below *de minimis* levels, the federal action is presumed to conform to the SIP, and no further conformity analysis is required.

4. Evaluate Other Pollutants for Context

   While not subject to conformity review in Colusa County, emissions of PM (PM_{10} and $PM_{2.5}$), CO, and SO_2 were also estimated to provide a complete picture of the proposed project's air emissions. These pollutants are designated as attainment or unclassified in the SVAB; therefore, they do not trigger conformity requirements.

5. Assess Sensitive Receptors and Localized Impacts

[29] Federal Clean Air Act

[30] Part 93 Determining Conformity of Federal Actions to State or Federal Implementation Plans

[31] CalEEMod®

Although conformity determinations focus on regional emissions, localized impacts to nearby sensitive receptors (e.g., residences, schools, or healthcare facilities) were qualitatively evaluated to ensure construction and operation would not result in adverse exposure to air pollutants.

Alternative A

Air Quality Impacts- Construction

Construction of the Proposed Action would occur in multiple phases, including site preparation, grading and earthwork, utility installation, building construction, paving, and architectural coating. Each of these stages would generate short-term emissions from both mobile and stationary sources.

- Site preparation and grading would involve scrapers, bulldozers, backhoes, loaders, and haul trucks, producing emissions of PM (PM_{10} and $PM_{2.5}$) from soil disturbance and dust, as well as NOx, CO, and ROG/VOCs from diesel combustion.
- Utility installation and building construction would primarily involve cranes, forklifts, concrete mixers, welders, and generators, which are significant sources of NOx and ROG/VOC due to fuel combustion and equipment operation.
- Paving activities would generate ROG/VOC from asphalt applications and combustion-related pollutants from paving equipment and delivery trucks.
- Architectural coatings (painting and finishing) would be a notable source of ROG/VOC emissions from the use of solvents and coatings.
- Worker commutes and material hauling during all phases would contribute additional mobile-source emissions of NOx, CO, and PM. Implementation of **Mitigation Measure AIR-1** would reduce construction-related impacts to air quality to less-than-significant levels.

CalEEMod modeling was used to quantify construction-related emissions across these stages. To provide a conservative analysis, the model assumes overlapping use of equipment during each construction year, representing maximum daily emissions. Considering a construction start date is unknown at this time, the model inputs conservatively assumed a 2026 start date. For conformity review, the modeled daily values (in pounds per day) were annualized to tpy for comparison to the federal general conformity *de minimis* thresholds. Results are summarized in **Table 3**.

Table 3. Anticipated Construction Emissions

Pollutant (pounds/day)	Maximum Daily Emissions (Mitigated)	Annualized Emissions (tons per year)[1]	Federal General Conformity Threshold (tons per year)	Exceeds Threshold?
Reactive Organic Gas (ROG)	21	2.4	100	No
Nitrogen Oxides (NOx)	18	2.1	100	No
Particulate Matter Smaller than 10 Microns in Size (PM_{10})	8	0.9	Not Applicable (attainment area)	No

[1] Conservatively estimates 230 construction days per year.

All construction-related emissions are far below the applicable general conformity *de minimis* thresholds (100 tpy for NOx and VOC). Therefore, the Proposed Action would be presumed to conform with the SIP, and no formal conformity determination is required.

Air Quality Impacts - Operation

Once construction is complete, long-term operational emissions would result from a combination of mobile, area, and energy sources associated with the proposed commercial, residential, and recreational uses.

- Mobile sources (on-road vehicles): The largest contributor to operational emissions would be traffic generated by the Proposed Action. According to the Transportation Impact Analysis (**Appendix B**), the proposed project would generate approximately 3,612 average daily trips (ADT), including 140 AM peak-hour trips (62 inbound, 78 outbound) and 272 PM peak-hour trips (148 inbound, 124 outbound). This includes 2,296 ADT from the 100,000-square-foot shopping center, 882 ADT from the 215-space RV park, and 434 ADT from 40 single-family residences. These trips would result in emissions of NOx, ROG/VOC, CO, and PM from fuel combustion, as well as tire and brake wear.
- Area sources: Distributed small-scale activities such as landscaping maintenance, fireplaces/barbecues, and consumer product use would produce NOx, ROG/VOC, and CO.
- Energy sources: Natural gas and electricity use for space heating/cooling, appliances, and lighting would result in NOx, ROG/VOC, and CO_2 emissions from on-site combustion and off-site power generation.
- Water/wastewater and solid waste: Energy demands from water supply, wastewater treatment, and solid waste collection and disposal would contribute indirectly to emissions, though at comparatively minor levels. Implementation of **Mitigation Measure AIR-1** would reduce operation-related impacts to air quality to less-than-significant levels.

CalEEMod modeling was used to quantify these sources under full buildout conditions. To facilitate conformity review, modeled daily emissions were annualized to tpy for comparison to federal general conformity thresholds. Results are presented in **Table 4**.

Because annual operational emissions are far below the 100 tpy *de minimis* thresholds for ozone precursors (NOx and ROG/VOC), the Proposed Action would be presumed to conform to the SIP, and no further conformity determination is required.

Table 4. Anticipated Operations Emissions

Pollutant (pounds/day)	Maximum Daily Emissions (Mitigated)	Annualized Emissions (tons per year)[1]	Federal General Conformity Threshold (tons per year)	Exceeds Threshold?
Reactive Organic Gas (ROG)	16	2.4	100	No
Nitrogen Oxides (NOx)	7	2.1	100	No
Particulate Matter Smaller than 10 Microns in Size (PM_{10})	10	0.9	Not Applicable (attainment area)	No

[1] Conservatively estimates 230 construction days per year.

Diesel Particulate Matter

Construction activities involving diesel-powered heavy equipment would generate DPM, a component of $PM_{2.5}$ and a toxic air contaminant. These emissions would be short-term and intermittent, occurring only during active construction phases. Given the low modeled $PM_{2.5}$ emissions (<1 tpy), and the fact that operational activities would not include substantial diesel equipment use, DPM emissions are not expected to result in significant localized health risks. Standard BMPs, such as limiting idling times and using newer engines or cleaner fuels, would further reduce exposure.

Sensitive Receptors and Localized Impacts

The Wortham parcel is bordered by agricultural land and SR 45. Structures within the vicinity of the project site consist of the existing Colusa Casino Resort and nearby single-family residences. Given the low magnitude of annual emissions (e.g., <3 tpy for NOx and ROG/VOC; <2 tpy for PM_{10} and $PM_{2.5}$) and the distance to sensitive receptors, neither construction nor operation would generate pollutant concentrations that could adversely affect nearby populations. With implementation of standard dust control measures during construction, localized PM exposure would be minimized.

Alternative B

Under Alternative B, the project site would continue to be used for agricultural production. Because there would be no new ground disturbance, equipment use, or increase in vehicle trips, there would be no new sources of criteria pollutant emissions. Existing air quality conditions in the region would remain unchanged, and no impacts to attainment with the NAAQS would result. Accordingly, the No Action Alternative would have no effect on air quality.

3.4 Living Resources

3.4.1 Regulatory Setting

Federal

Federal Endangered Species Act

FESA protects species that are at risk of extinction and provides for the conservation of the ecosystems on which they depend. The USFWS and the National Oceanic and Atmospheric Administration-Fisheries Service (NOAA Fisheries) share responsibility for implementing FESA. Generally, USFWS manages terrestrial and freshwater species, while NOAA Fisheries is responsible for marine and anadromous species. Section 9 (§ 1538)[32] prohibits the "take" of a listed species by anyone, including private individuals and state and local agencies. Threatened and endangered species on the federal list (50 CFR § 17.11[33] and 50 CFR § 17.12[34]) are protected from take, which is defined as direct or indirect

[32] § 1538 Prohibited acts

[33] § 17.11 Endangered and threatened wildlife

[34] § 17.12 Endangered and threatened plants

harm. If "take" of a listed species is incidental to an otherwise lawful activity, this triggers the need for consultation under Section 7 of the FESA for federal agencies.

Pursuant to the requirements of the FESA, a federal agency reviewing a proposed action within its jurisdiction must determine whether any federally listed species may be present on the proposed site and whether the proposed action would have a potentially significant impact upon such species. A discussion of regionally listed species is provided in consideration of potential impacts associated with project implementation. Under the FESA, habitat loss is considered an adverse impact to the species. In addition, the agency is required to determine whether a project is likely to jeopardize the continued existence of any species that is proposed for listing under the FESA or to result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC § 1536[3], [4])[35]. Therefore, if project-related actions were to impact these species or their habitats, a significant impact would occur.

Migratory Bird Treaty Act

Migratory birds are protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 USC §§ 703-711[36]). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed under 50 CFR Part 10[37], including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR Part 21[38]). The intentional and direct injury or death of a migratory bird due to construction activities or other construction-related disturbance that causes nest abandonment, nestling abandonment, or forced fledging would be considered take under federal law. As such, project-related disturbances must be reduced or eliminated during the nesting season. The general nesting season extends from February 15 to September 15.

The 1988 amendment to the Fish and Wildlife Conservation Act mandates that the USFWS identify species, subspecies, and populations/taxa of all migratory non-game birds that without additional conservation action are likely to become candidates for listing under FESA. The Birds of Conservation Concern (BCC) 2021 (“BCC 2021;” USFWS 2021) is the most recent effort to carry out this mandate. The overall goal of this report is to identify those bird taxa (beyond those already designated as federally threatened or endangered) that represent the highest conservation priorities of the USFWS. The BCC 2021 is intended to stimulate coordinated, collaborative, and proactive conservation actions among international, federal, state, tribal, and private partners. Bird taxa considered for the BCC 2021 lists include non-game birds, gamebirds without hunting seasons or where harvest is minimal, and subsistence-hunted non-game birds in Alaska. Excluded from consideration for the BCC 2021 are bird species not protected under the MBTA, taxa already listed as threatened or endangered under FESA, or taxa that only occur irregularly or peripherally in the United States (USFWS 2021).

[35] § 1536 Interagency cooperation

[36] Federal Migratory Bird Treaty Act of 1918

[37] Part 10 General Provisions

[38] Part 21 Migratory Bird Permits

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act was originally enacted in 1940 to protect bald eagles and was later amended to include golden eagles (16 USC §§ 668-668d[39]). This Act prohibits take, possession, and commerce of bald and golden eagles and associated parts, feathers, nests, or eggs with limited exceptions. The definition of take is the same as the definition under the FESA. The USFWS established five recovery programs in the mid-1970s based on geographical distribution of the species, which California located in the Pacific Recovery Region. Habitat conservation efforts in the Pacific Recovery Region, including laws and management practices at federal, state, and community levels, have helped facilitate bald eagle population increases. Critical habitat for bald and golden eagles was not designated as part of the Pacific Recovery Plan created under FESA. Likewise, critical habitat was not designated by regulation under FESA. In 1995, the USFWS reclassified the bald eagle from endangered to threatened under FESA in the contiguous 48 states, excluding Michigan, Minnesota, Wisconsin, Oregon, and Washington where it had already been listed as threatened. In 2007, the bald eagle was federally delisted under FESA. However, the provisions of the Act remain in place for protection of bald and golden eagles.

3.4.2 Existing Setting

An analysis of living resources for the proposed uses may be found in **Appendix C**.

Habitats

Habitats found within the proposed trust parcel include cropland, orchard, and urban as described in the California Wildlife Habitat Relationship (Mayer and Laudenslayer 1988):

> Irrigated Cropland: Irrigated croplands compose a majority of the proposed trust parcel, a habitat that is defined as a monoculture herbaceous habitat that has an augmented water regime. These habitats are routinely disturbed between harvest seasons and reseeded in monoculture. Species found alongside planted crops are often non-native grasses such as Italian rye grass (*Festuca perennis*) and slender oat (*Avena fatua*), other non-native forbs associated with irrigated cropland include black mustard (*Brassica nigra*), yellow star thistle (*Centaurea solstitialis*), and curly dock (*Rumex crispus*). This habitat feature is closely associated with the unlined irrigation ditches that convey water through the proposed trust parcel.
>
> Orchard: Orchards are agricultural lands that are dominated by a monoculture of tree species that lack an herbaceous layer. The orchard on the proposed trust parcel is composed of English walnuts (*Juglans regia*). These lands are primarily irrigated throughout the summer and routinely mowed to control weeds below the tree canopy.
>
> Urban: The urban habitat is the smallest habitat type found within the proposed trust parcel. The rural residence on the proposed trust parcel would be classified as urban habitat as it is composed of impervious surfaces, managed vegetation, and artificial structures. The proposed

[39] Protection of Bald and Golden Eagles

trust parcel contains a residence and farm outbuildings to support the agricultural operation. Ornamental trees and other decorative plants are planted around the residence.

Wetlands and Waters: The proposed trust parcel is bisected by a perennial irrigation ditch that provides water to the agricultural operations within the project limits. Additional irrigation ditches run along the southern portion of the proposed trust parcel. The southern ditch appears to support aquatic vegetation while the larger central ditch is managed with little vegetation present along the banks. These features are manmade; they would not be classified as jurisdictional waters under waters of the U.S.

Special-Status Species Review

To complete this analysis a review of relevant databases was utilized to assess the potential for listed species to occur within the proposed trust parcel. These databases included:

- USFWS IPaC database (USFWS 2025b);
- USFWS National Wetlands Inventory (USFWS 2025a);
- USFWS Critical Habitat Mapper (USFWS 2025c);
- California Natural Diversity Database (California Department of Fish and Wildlife [CDFW] 2025); and
- NRCS Web Soil Survey (NRCS 2025).

Special-status species are those listed or proposed as federally endangered or threatened under FESA. There are 12 special-status species with the potential to occur on the proposed trust parcel (one special-status plant and 11 special-status animal species) (**Table 5**). Critical habitat for these species is not found within the proposed trust parcel (USFWS 2025c).

Table 5. Special-Status Species in the Proposed Project Vicinity

Species	Status
Special-Status Plant Species	
palmate-brachted bird's beak (*Cordylantus palmatus*)	Endangered
Special-Status Animal Species	
California condor (*Gymnogyps californianus*)	Experimental Population, Non-Essential
northern spotted owl (*Strix occidentalis caurina*)	Threatened
yellow-billed cuckoo (*Coccyzus americanus*)	Threatened
giant garter snake (*Thamnophis gigas*)	Threatened
northwestern pond turtle (*Actinemys marmorata*)	Proposed Threatened
western spadefoot (*Spea hammondii*)	Proposed Threatened
monarch butterfly (*Danaus plexippus*)	Proposed Threatened
valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	Threatened
conservancy fairy shrimp (*Branchinecta conservatio*)	Endangered
vernal pool fairy shrimp (*Branchinecta lynchi*)	Threatened

vernal pool tadpole shrimp (*Lepidurus packardi*)	Endangered

Source: USFWS 2025c

There is no potential for palmate-brachted bird's beak to occur within the proposed trust parcel as the appropriate saline soils are not present and habitats are routinely disturbed to maintain the agricultural operations. Steep cliffs or large trees to support the nesting of California condors are not found within the proposed trust parcel and the species does not have the potential to occur. Old growth forests that support the nesting behavior of the northern spotted owl or riparian woodlands to support yellow-billed cuckoo are not present and neither of these species have the potential to occur on the proposed trust parcel. Due to the frequent ground disturbance related to the agricultural operations the western spadefoot is not anticipated to be found within the proposed trust parcel. Monarch butterfly roosting habitat such as eucalyptus groves or pine forests are not found within the proposed trust parcel. Suitable seasonal wetland or vernal pool habitat to support the special-status crustacean species (conservancy fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp) is not found within the proposed trust parcel. Habitats were delineated using data provided through the California Department of Water Resources Land Use Viewer (DWR 2025b) and Historical Aerial Imagery available through Google Earth.

There is potential for three special-status species to occur within the proposed trust parcel—the giant garter snake (GGS), northwestern pond turtle, and the valley elderberry longhorn beetle. These species are described below.

Giant Garter Snake

The GGS (*Thamnophis gigas*) is a federally threatened species and is the largest garter snake species, reaching up to around 64 inches (162 cm) in length (USFWS 2017b). It exhibits an olive to brown coloration with prominent yellow or orange dorsal and lateral stripes, and in some individuals a checkered pattern of dark spots between these stripes (USFWS 2017b). Historically, this species inhabited vast freshwater marshes and floodplain wetlands across California's Central Valley, from Butte County in the north of its range to Kern County in the south, now occupying only about 5 percent of its original habitat (USFWS 2017b). The remaining populations are fragmented across the Sacramento Valley in both natural wetlands and manmade agricultural environments particularly rice fields, irrigation canals, and drainage ditches (USFWS 2017b). GGS are semi-aquatic and rely on a mosaic of aquatic and upland features to meet their life-history needs. During the active season, from spring through mid-fall, they forage for small fish, frogs, and tadpoles, typically ambushing prey in shallow water among emergent vegetation (USFWS 2017b). They are diurnal and emerge from winter refugia (such as ground squirrel burrows or cracks in the soil) in spring to bask in open spaces adjacent to wetland vegetation to provide cover from predation (USFWS 2017b). Due to the network of vegetated irrigation ditches along the southern border of the project site and the perennially wet irrigation canal that bisects the project site, there is potential for this species to be found on the project site. There are 10 recorded occurrences of this species within a 5-mile radius of the project site, the closest occurrence is located 1.54 miles to the southwest within irrigation canals (CDFW 2025). These canals and adjacent agricultural fields provide suitable habitat to support the species.

Northwestern Pond Turtle

The northwestern pond turtle (*Actinemys marmorata*) is a medium-sized freshwater turtle native to western North America, ranging from central California through Oregon and Washington all the way to Baja California (National Park Service [NPS] 2025). Adults measure approximately 8.9 to 21.6 centimeters in carapace length. Its carapace displays dark olive to black coloration, often accented by lighter, radiating patterns, while the plastron is yellowish with variable brown markings (Stebbins 2003). The species is semi-aquatic, frequenting ponds, lakes, marshes, streams, rivers, and wetlands including man-made irrigation canals and stockponds so long as there is permanent water, basking sites, aquatic vegetation to provide cover from predators, and adjacent upland areas suitable for nesting and overwintering (NPS 2025). Like many turtles, *A. marmorata* is diurnal and omnivorous, consuming aquatic invertebrates, fish, frog eggs and larvae, algae, and plant matter (NPS 2025). Reproduction typically occurs in spring when females (mature at 8 to 15 years) construct nests in dry, sunny uplands, depositing 3 to 13 eggs per clutch (incubating for about 73 to 130 days, depending on latitude and conditions), with sex ratios influenced by nest temperature (Stebbins 2003; NPS 2025). The irrigation canals that run through the project site and along the southern boundary provide suitable aquatic habitat for this species and adjacent uplands may provide appropriate nesting habitat as the agricultural fields have been fallowed. There is one record of this species within a 5-mile radius of the project site, located 1.4 miles to the south (CDFW 2025).

Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle (VELB; *Desmocerus californicus dimorphus*), is listed as a federally threatened species native to California's Central Valley, this insect depends exclusively on elderberry shrubs (*Sambucus* spp.) for every stage of its life cycle. Adults are relatively small (0.5-0.8 inches), and emerge from late March to early June. Adults exhibit distinct sexual dimorphism—males have red-orange elytra with black spots and long antennae, while females are larger with metallic green wings and shorter antennae. After mating, females deposit eggs in bark crevices or at the junction of leaf stalks (USFWS 2017a). Once hatched, larvae bore into elderberry stems and build feeding galleries throughout the pith, remaining inside the host stem for approximately one month. As they develop, larvae create pupal chambers near the stem's surface, sealing them with wood shavings. Adult emergence, mating, and egg laying typically occur through the spring and summer (April-July). The adult beetles, which live for only a few days (males) to up to three weeks (females), survive on a diet primarily composed of elderberry flowers and leaves (USFWS 2017a).

VELB's ecological requirements make it highly vulnerable to habitat disturbance, particularly the loss or degradation of riparian elderberry stands. The only approved monitoring relies on identifying the species directly or the observation of exit holes in elderberry stems (USFWS 2017a). Conservation strategies center on preserving and restoring elderberry-rich riparian corridors, limiting pesticide use, and managing competing species. There is a low potential for the VELB to occur within the project site, even if elderberry shrubs are present as the agricultural activities in the region have fragmented local riparian stands. There are four recorded occurrences of this species within a 5-mile radius with the closest record found 1.43 miles to the southeast along the Sacramento River (CDFW 2025).

3.4.3 Impact Assessment

Methodology

Impacts to living resources from the proposed project alternatives would be considered significantly adverse if an alternative would directly or indirectly affect federally listed species or their designated or proposed critical habitat or would result in substantial adverse effects to special-status species or sensitive biological communities. For purposes of impact assessment, the likelihood of occurrence of special-status species within the proposed trust parcels was characterized using a standardized habitat suitability framework based on desktop review, available databases, and the findings of the living resources memo (**Appendix C**). Species' potential to occur was categorized as follows:

- *No Potential*: Habitat on and adjacent to the project site is clearly unsuitable for the species' requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- *Low Potential*: Few of the habitat components meeting the species' requirements are present, and/or the majority of habitat on and adjacent to the project site is unsuitable or of very poor quality; the species is not likely to be found on the project site.
- *Moderate Potential*: Some of the habitat components meeting the species' requirements are present, and/or only some of the habitat on or adjacent to the project site is unsuitable; the species has a moderate probability of being found on the project site.
- *High Potential*: All of the habitat components meeting the species' requirements are present and/or most of the habitat on or adjacent to the project site is highly suitable; the species has a high probability of being found on the project site.
- *Present*: Species is observed on the project site or has been recorded on the project site recently.

For federally listed species, a determination of moderate or high potential to occur, or confirmed presence, is considered sufficient to warrant further consideration under FESA. Section 7 consultation with the USFWS was completed in March 2026, prior to implementation of any ground-disturbing or construction activities. Compliance with ESA consultation requirements would ensure that project actions avoid or minimize adverse effects to listed species and are carried out in accordance with applicable federal regulations**.**

Alternative A

The biological resource assessment has identified and evaluated the existing and potential biological resources within the project area, including vegetation communities, wildlife species, and sensitive habitats. Based on this assessment, there is the low potential for three federally listed species to occur within the project site due to the previous disturbances on the site from agricultural operations including; GGS, northwestern pond turtle, and VELB. Direct impacts to these species (mortality, injury, or capture) and loss of their habitats would be considered significant impacts. To ensure regulatory compliance and protect sensitive resources, implementation of **Mitigation Measures BIO-1** and **BIO-2** would reduce potential impacts to GGS, northwestern pond turtle, and VELB to less-than-significant levels.

No aquatic resources or waters of the U.S. occur within the proposed trust parcels. As a result, implementation of Alternative A would not involve the discharge of dredged or fill material, nor would it result in disturbance to wetlands or other jurisdictional waters. Although State-listed and California Native Plant Society–ranked rare plant species may have the potential to occur in upland habitats, construction and operation of Alternative A would not adversely affect federally protected or sensitive vegetative communities. Accordingly, implementation of Alternative A would result in a less-than-significant adverse impact to biological resources, including vegetative communities and associated ecosystems.

Alternative B

There would be no change to land use in Alternative B and existing impacts created by agricultural disturbances would continue. No new impacts to threatened or endangered species would occur.

3.5 Cultural

3.5.1 Regulatory Setting

Federal

Section 106 of the National Historic Preservation Act

Section 106 of the NHPA amended, and its implementing regulations found in 36 CFR Part 800[40], require federal agencies to identify cultural resources that may be affected by actions involving federal lands, funds, or permitting. The significance of the resources must be evaluated using established criteria outlined in 36 CFR § 60.4[41], as described below.

If a resource is determined to be a historic property, Section 106 of the NHPA requires that effects of the federal undertaking on the resource be determined. A historic property is defined as*: …any prehistoric or historic district, site, building, structure or object included in, or eligible for inclusion in the National Register of Historic Places, including artifacts, records, and material remains related to such a property* (54 USC § 300308[42]).

National Register of Historic Places

Section 106 of the NHPA as amended, and its implementing regulations found in 36 CFR Part 800[43], require federal agencies to take into consideration the potential effects of proposed undertakings on cultural resources listed on or determined potentially eligible for inclusion in the National Register of Historic Places (NRHP), and to allow the Advisory Council on Historic Preservation the opportunity to comment on the proposed undertaking. The NHPA authorizes the Secretary of the Interior to maintain

[40] Section 106 of the National Historic Preservation Act

[41] § 60.4 Criteria for evaluation

[42] § 300308 Historic property

[43] Section 106 of the National Historic Preservation Act

and expand a National Register of districts, sites, buildings, structures, and objects of significance in American history, architecture, archaeology, engineering, and culture. A property may be eligible for listing in the NRHP if it meets criteria for evaluation as defined in 36 CFR 60.4[44], as follows:

A. are associated with events that have made a significant contribution to the broad patterns of our history;

B. are associated with the lives of persons significant in our past;

C. embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess an artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. have yielded, or may be likely to yield, information important in prehistory or history.

Archaeological Resources Protection Act

The Archaeological Resources Protection Act of 1979 (ARPA) (PL 96-95; 16 USC §§ 470aa-mm[45]), provides for the protection of archaeological resources and sites which are on public and Indian lands, and fosters increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources and data which were obtained before October 31, 1979. Section 14 of the ARPA specifically charges federal land management agencies to develop plans to survey lands under their control to determine the nature and extent of archaeological resources on those lands, to prepare a schedule for these surveys, and to design a format for reporting violations. ARPA also provides for federal agencies to permit archeological work on the lands they manage, and to prosecute damage and removal of archaeological resources from federal or Indian lands as well as trafficking artifacts.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (NAGPRA) is a federal law passed in 1990 (25 USC Chapter 32[46]). NAGPRA provides a process for museums and federal agencies to return certain Native American cultural items, such as human remains, funerary objects, sacred objects, or objects of cultural patrimony, to lineal descendants and culturally affiliated Indian tribes and Native Hawaiian organizations. NAGPRA includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American burials and cultural items on federal and tribal lands, and penalties for noncompliance and illegal trafficking.

[44] § 60.4 Criteria for evaluation

[45] Archaeological Resources Protection Act of 1979

[46] Native American Graves Protection and Repatriation Act

Paleontological Resources Preservation Act

The Paleontological Resources Preservation Act (16 USC Chapter 1c)[47] states that paleontological resources on federal lands are protected resources. Paleontological resources are discussed under Land Resources.

3.5.2 Existing Setting

Area of Potential Effects

The Area of Potential Effects (APE) is defined as the entirety of the 519.31-acre proposed trust parcel. The bulk of the property (approximately 330.42 acres) would remain in agricultural use. For purposes of this analysis, it is assumed that project construction, material stockpiles or storage, vehicular access or parking, tree removal, or utility installation may occur anywhere within the 188.89 acres slated for development and that construction impacts may range up to 6 feet below ground surface.

Native American Consultation

Members of the Tribal Council and the Cultural and Environmental Resources Director were interviewed on July 2, 2025. None of these individuals reported knowledge of any cultural resources on the proposed trust parcel. It is assumed that any additional Tribal consultation would be conducted by the BIA as the federal Lead Agency.

Background Research

Efforts for this project included a review of records on file with the Northwest Information Center (NWIC) on July 12, 2023 (NWIC File #22-2023). The search included the APE and an approximately 1/3-mile buffer area and found that no sites or surveys were identified within the Wortham parcel. The closest site is P-06-279, prehistoric occupation debris that was disturbed by deep ripping for agriculture, located approximately 1,000 feet to the north. Six archaeological surveys have been completed within the buffer, primarily for Tribal properties located east of SR 45 (**Appendix D**).

Aerial photographs and historic maps were also examined. In 1937, there is a possible residence and/or barn near the northeastern corner of the APE, and the eastern third may have been mowed for hay. Evidence of agricultural use is more pronounced by 1952, and the APE has orchards in the northeast, with hay fields or row crops in the west and a barn or shed near the intersection of field boundaries approximately 1/3 of the way from the eastern edge. After this, the APE appears to have been used for a rotating combination of hay fields, row crops, and orchards, with the continued presence of a farm complex located near the northeastern corner and orchards near the eastern edge. Because the APE is within the lands of the former Rancho Jimeno Mexican Land Grant, it was not mapped by the General Land Office.

[47] Paleontological Resources Preservation Act

Archaeological Field Survey

Archaeological surveys were completed on August 15, 21, and 22, 2023 and September 29-30, 2025, led by an archaeologist who meets the Secretary of the Interior's Professional Qualifications for Archaeology or the Tribal Director of Cultural Preservation. At the time of the 2023 survey, the property consisted primarily of agricultural fields planted with mature tomatoes. There was a house, metal shed, a manufactured home, and a metal vehicle repair building on the proposed trust parcel. The area immediately surrounding the residence includes a concrete parking area, graveled driveway, and ornamental plantings. At the time of the survey, the area around the shop buildings had been cleared, ground surface visibility was 100 percent, and the circumferences of all buildings were examined with a single transect each.

The proposed commercial development area in the southeastern portion of the APE is a former walnut orchard, but the trees were removed in 2022, the ground surface was somewhat smoothed out, a field road ran around the perimeter, and ground soil visibility was 100 percent. Given the distance from a reliable source of water, this area was surveyed with 30-meter wide north-south pedestrian transects. All other portions of the proposed trust parcel were covered in mature tomato plants except for subdividing field roads and canals. The field roads were each examined with a single transect. No artifacts or features were observed.

In September 2025, surveys of the RV park and housing areas were completed by the Tribal Cultural Resources Department after covering row crops had been harvested, using 30-meter-wide pedestrian transects. No cultural resources were observed.

Architectural Resources Evaluation

An architectural historian who meets the Secretary of the Interior's Professional Qualifications for architectural history completed background research on the Wortham property and then conducted a field survey on January 21, 2026. Findings indicated that there was one residence, a shed roof storage structure, a general-purpose barn currently used as a vehicle repair facility, a field barn, and miscellaneous water conveyance and diversion features on the property. According to information from the County Assessor, the residence was constructed in 1958; it was built in the mid-century modern ranch style that was very popular in the 1950s across the United States (Daly & Associates 2026). The County Assessor did not have information on the outbuildings; however, after examination of topographic maps and visual inspection, it appears that the general barn/vehicle repair facility and field barn may also date to circa 1958, while the shed may have been constructed circa 1940.

The architectural historian concluded that there were no apparent values that would make the built resources on the Wortham property eligible for listing on the NRHP. There were no associations with the broad patterns of history (NRHP Criterion A), no direct associations with the lives of persons significant in the past (NRHP Criterion B), none of the built resources appeared to embody characteristics that represent significant high artistic values, the works of a master, or be considered a true representative of an agricultural property dating from the 1950s (NRHP Criterion C), and none of the built resources appears likely to yield information important to history (NRHP Criterion D) (**Appendix D**).

3.5.3 Impact Assessment

Methodology

For cultural resources, an adverse impact would occur if implementation of Alternative A resulted in one or more of the following effects to cultural resources/historic properties that are listed, or eligible for listing, on the NRHP:

- physical destruction of or damage to all or part of the resource;
- alteration of a resource;
- removal of the resource from its historic location; or
- change of the character of the resource's use or of physical features within the resource's setting that contribute to its historic significance.

A field survey was conducted to assess for the presence of cultural resources and analyze the potential impacts to those resources. Record searches from the NWIC were accessed and results were considered in this analysis. Information was also collected through consultation with the Tribe. No NRHP-eligible resources were identified.

Alternative A

The only potential cultural resource is the primary residence in the northeastern corner of the APE. The age of the residence is unclear and it is either from the historic era and heavily remodeled or of newer construction. There are no associations with significant events or individuals in history (NRHP Criteria A and B), the residence is of a commonplace design without distinctive architecture or engineering characteristics (NRHP Criterion C), and there does not appear to be any associated data values (NRHP Criterion D). Therefore, the residence does not appear to be eligible for listing on the NRHP. Based on the lack of findings, a recommendation of *No Historic Properties Affected* is made for Alternative A.

There is always the potential for unanticipated discoveries of cultural materials made during construction. Implementation of **Mitigation Measure CUL-1** would reduce adverse effects to accidental discoveries to less-than-significant levels.

Alternative B

Under this alternative, the project site would remain undeveloped and there would be no impacts to cultural resources.

3.6 Socioeconomic Conditions

3.6.1 Regulatory Setting

Federal

The socioeconomic analysis for this EA is based on the requirements of NEPA (42 USC §§ 4321–4370h[48]) and DOI guidance provided in 516 DM 10[49] (BIA). These sources support consideration of potential effects on population, housing, employment, and public services when such impacts are connected to a federal action's environmental effects. The analysis also draws on local and regional planning documents, including the Shasta County General Plan and relevant Tribal development plans, as well as statistical data from the U.S. Census Bureau, California Department of Finance, and local service providers.

3.6.2 Existing Setting

The proposed trust parcel is located in Colusa County, approximately 2 miles north of the City of Colusa, CA and contiguous with the Tribe's trust land. The 2025 unemployment rate was 12.2 percent for the County (U.S. Bureau of Labor Statistics 2025) and 5.3 percent Statewide in May of 2025. The largest industries in the County are agriculture (29.7 percent), hospitality (8.9 percent), manufacturing (8.8 percent), and retail (7.9 percent) (Statistical Atlas 2025).

According to U.S. Census Bureau data (2024), the annual median household income in 2023 was $68,750 in Colusa and $75,149 in the County compared to $96,334 Statewide. The average household size in 2023 in Colusa County was 2.89 people and Statewide was 2.86 people (U.S. Census Bureau 2024).

The U.S. Census Bureau estimates that the 2024 population of California totaled 39,431,263 with 22,074 individuals residing in Colusa County and 6,589 people living in the City of Colusa (U.S. Census Bureau 2024).

3.6.3 Impact Assessment

Methodology

Impacts to socioeconomic conditions from Alternatives A and B would be considered adverse if the implementation of the alternative(s) would cause an exceedance of system capacities that result in a need for additional facilities, the construction and operation of which would result in adverse effects to the physical environment.

[48] National Environmental Policy Act of 1969

[49] 516 DM 10 - Managing the NEPA Process

Alternative A

Employment and Income

Alternative A would result in an increase of local employment during construction and operation of the Proposed Project. Increases in employment from operations would occur gradually as elements of the proposed uses come online. Alternative A is unlikely to create many new-hire construction jobs as it is anticipated that most construction would be completed by established, staffed companies.

Demographic Trends

As noted above, implementation of Alternative A would result in an increase in local employment; however, given the size of the various facilities, the likelihood of gaps between construction (and therefore operation) phases, and the remoteness of the proposed trust parcel, it is not anticipated that construction and operation of the proposed project would result in any significant increases in regional population.

Alternative B

Under Alternative B, the proposed trust parcel would remain undeveloped, and the Tribe would not receive income derived from operation of the proposed project. No adverse effects to socioeconomic conditions would occur.

Mitigation Measures

No mitigation would be required.

3.7 Transportation and Circulation

Caltrans manages and permits use of SR 45 and SR 20, which provide regional access in the vicinity of the project site. Caltrans requires encroachment permits for construction-related disturbances and for long-term site access improvements. The Colusa County General Plan and City of Colusa standards require intersections to operate at Level of Service (LOS) D or better during peak hours (Abrams Associates 2024; **Appendix B**).

3.7.1 Existing Setting

Roadway System

State Route 20

SR 20 is a regionally significant west to east State highway serving northern California. SR 20 begins at Route 1 near Fort Bragg in Mendocino County and ends at Interstate 80 (I-80) near Emigrant Gap in Placer County. It is predominantly a two-lane conventional highway that serves regional, commercial, agricultural, commuter, shopping, and recreational traffic and interconnects with major routes such as I-5, SR 99, SR 70, and I-80 and passes through the City of Colusa. Local city traffic and traffic from SR 45 join with SR 20 at their intersection in the center of Colusa (Abrams Associates 2024).

State Route 45 (Princeton Road)

SR 45 is a north-south, two-lane, low volume, conventional highway that serves farm-to-market and local traffic in a rural area. Two major routes (Interstate 5 [I-5] and SR 99) parallel SR 45 and carry most of the regional traffic. SR 45 begins at the junction with Route 113 in Knights Landing and extends northward through Yolo, Colusa, and Glenn counties parallel to the Sacramento River. SR 45 is classified as a minor arterial at the eastern edge of the proposed trust parcel.

Maxwell Road

Maxwell Road extends east from the unincorporated community of Maxwell and terminates at SR 45. Maxwell Road is a two-lane conventional highway and is classified as a major collector.

Bicycle and Transit System

Bicycle and pedestrian facilities in the project region are currently very limited with no bike lanes or sidewalks provided in the vicinity of the project site. The travel demands of Colusa County residents are accommodated primarily by the use of the automobile. However, the Mini-Transit Program by Colusa County Transit Agency provides Dial-A-Ride service to transportation-disadvantaged people between Colusa, Williams, Arbuckle, Maxwell, Grimes, and College City. There is no regularly scheduled public transit in the vicinity of the proposed trust parcel.

3.7.2 Impact Assessment

Methodology

Adverse impacts to the existing transportation network would occur if traffic generated during construction or operation of an alternative would result in significant delays or decrease in LOS of traffic movement along SR 45. Significant impacts to pedestrian and transit systems would occur from implementation of a project alternative if increased demands would require additional infrastructure, the development of which would adversely affect the environment.

Existing operational conditions were analyzed at nine study intersections:

- Maxwell Road and I-5 Northbound Ramps
- Maxwell Road and I-5 Southbound Ramps
- Maxwell Road and Princeton Road (SR 45)
- North Project Access and Princeton Road (SR 45)
- Main Project Access / Wintun Road and Princeton Road (SR 45)
- South Project Access and Princeton Road (SR 45)
- Market Street (SR 45) and 10th Street (SR 20)
- SR 20 and I-5 Southbound Ramps
- SR 20 and I-5 Northbound Ramps

These intersections were evaluated according to the requirements set forth by the Colusa County and City of Colusa General Plans. Analysis of traffic operations was conducted using the 6th Edition of the Highway Capacity Manual LOS methodology with Synchro software. LOS is an expression, in the form of a scale, of the relationship between the capacity of an intersection (or roadway segment) to accommodate the volume of traffic moving through it at any given time. The LOS scale describes traffic flow with six ratings ranging from A to F, with "A" indicating relatively free flow of traffic and "F" indicating stop-and-go traffic characterized by traffic jams. As the amount of traffic moving through a given intersection or roadway segment increases, the traffic flow conditions that motorists experience rapidly deteriorate as the capacity of the intersection or roadway segment is reached (Abrams Associates 2024).

Project-related operational impacts on the study intersections in Colusa County are considered significant if project-related traffic causes the LOS rating on County roadways in unincorporated areas to deteriorate from LOS C to LOS D, E, or F. Project-related operational impacts on unsignalized intersections on County roadways in unincorporated areas are considered significant if project generated traffic causes a movement/approach to deteriorate from LOS C or better to LOS D, E, or F.

Alternative A

Transportation Networks

Construction

Traffic impacts resulting from the construction of Alternative A would result from new trips being added to the roadway network from construction worker travel to the project site and the delivery of equipment and materials intermittently over the projected multi-year development period. These construction-related vehicle trips and associated impacts would be temporary in nature. Construction worker trips are not anticipated to occur during peak hours (except for a slight overlap during the PM peak hour). Construction worker arrival times typically peak between 6:30 a.m. and 7:30 a.m., while departure times peak between 4:00 p.m. and 5:00 p.m. Trips associated with the delivery and removal of heavy equipment and materials to the project site would occur intermittently during construction, as large vehicles would remain onsite during most phases of construction and materials would be stockpiled to reduce costs associated with transportation. When transport of these vehicles and materials occurs, all trucks would comply with the applicable Caltrans load limits to reduce potential road degradation. Therefore, due to the temporary and intermittent nature of construction traffic, the limited number of trips expected, and the timing of these trips, construction trips on study intersections or roadways would result in minimal impacts to traffic.

Operation

The peak-hour trip generation of the proposed uses was reviewed based on trip rates published in Institute of Transportation Engineers (ITE) Trip Generation Manual (Abrams Associates 2024). For the single-family home area, the fitted curve equations were used to develop the trip rates (ITE Land Use Code 210). For the shopping center area, the rates for a shopping plaza (40-150k – No Supermarket) were used (ITE Land Use Code 821). The shopping center trips were reduced by 66 percent to account

for pass-by traffic (26 percent) and also shared trips with the casino and other land uses (40 percent). The trip generation forecasts include all traffic in and out of the project site including customers, employees, vendors, and deliveries. During normal weekday commute peak hours, the proposed project is estimated to generate a total of approximately 140 AM peak hour trips (62 inbound and 78 outbound) and 272 PM peak hour trips (148 inbound and 124 outbound) (Abrams Associates 2024).

Analysis indicates that all the project study intersections would continue to have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours, and even on Friday evening hours with the exception of the intersection leading directly onto the proposed trust parcel (Abrams Associates 2024). **Mitigation Measures TRAFFIC-1** and **TRAFFIC-2** would reduce adverse traffic impacts related to operation of the proposed uses to less-than-significant levels.

Alternative B

Under Alternative B, no new traffic would be created; therefore, no impacts would occur.

3.8 Land Use and Agriculture

3.8.1 Regulatory Setting

Federal

The Farmland Protection Policy Act (7 CFR Part 658)[50] is intended to minimize the impact that federal programs have on unnecessary and irreversible conversion of farmland to non-agricultural uses and assures that federal programs are administered in a manner that is compatible with state and local units of government, private programs, and policies to protect farmland.

Federal aviation regulations provide requirements, standards, and processes for determining obstructions to air navigation.

3.8.2 Existing Setting

Colusa County spans about 1,151 square miles of land, equating to roughly 736,640 acres. Of that, approximately 465,843 acres (63 percent) were reported as farmland (cropland, pastureland, woodland, and other farm-related lands) in 2022 (Colusa County 2022). Soils within the proposed trust parcel are either not prime farmland or prime farmland only if irrigated and/or drained (NRCS 2025).

The County has established a zoning designation for the proposed trust parcel as Exclusive Agriculture, with land use code AD and land use description of AG – Diversified (Irrigation) (Colusa County 2025). There are minimal existing land uses including a residence, mobile home, and vehicle repair shop and the proposed uses would encompass approximately 188.89 acres for the housing area, commercial development area, and RV park. The remaining 330.42 acres would remain in agricultural use.

[50] Farmland Protection Policy Act

There are several airstrips within Colusa County to support crop dusting operations, however only one public use airport (Colusa County Airport) is located on the southern end of the City of Colusa.

3.8.3 Impact Assessment

Methodology

Following approval of the trust acquisition, the proposed trust parcel would be exempt from County land use regulations. The only applicable land use regulations on the trust land would be those of the Tribe. NEPA requires an assessment of the project effects on and compatibility with adopted land use plans. Adverse impacts to land use would result if an incompatible land use within Alternative A would result in the inability of the County to continue to implement existing land use policies outside of the proposed trust parcel boundaries. In addition, adverse impacts to land use would result if the implementation of Alternative A resulted in the conversion of a significant percentage of County-designated prime agricultural lands or other protected agricultural lands.

Alternative A

The proposed trust parcel and surrounding areas have a history of supporting agriculture, and the properties surrounding the project site are zoned for agriculture. While the proposed uses would convert up to 59 percent of the proposed trust parcel from agriculture to housing and commercial development, it would hardly affect the total number of acres dedicated to agriculture within the County. In addition, soils within the project site are either not prime farmland or require irrigation and/or drainage to qualify as prime farmland. The proposed uses on the proposed trust parcel are consistent with the adjacent uses on the Tribe's existing trust lands and would constitute orderly growth that would not impinge on County planning where the County has jurisdiction. Accordingly, implementation of Alternative A and conversion of 188.89 acres would not adversely affect agriculture in the region.

Alternative B

Under Alternative B, no development would occur and no impacts to the proposed trust parcel would result.

Mitigation Measures

No mitigation would be required.

3.9 Public Services and Utilities

3.9.1 Regulatory Setting

Federal

The Safe Drinking Water Act[51] established protective drinking water standards for protection of public health.

The CWA[52] established environmental discharge requirements for wastewater treatment.

Public Law 83-280[53] changed criminal jurisdiction from the federal government to certain states, including California, for offenses involving tribal members in Indian Country.

3.9.2 Existing Setting

Water Supply and Wastewater Services

There are water wells and wastewater treatment systems on the Tribe's existing trust land. As described in **Section 3.2.2**, water and wastewater on the proposed trust parcel would be provided via on-site wells and wastewater systems. Septic tanks could be used for the individual residences.

Solid Waste

Garbage collection for the unincorporated areas of the County is contracted to Recology Butte Colusa Counties. The Maxwell Transfer Station at 3852 Co Rd 99W, in Maxwell, collects municipal solid waste, green waste, and recyclables and transfers it to Stonyford Disposal Site (06-AA-0002), which is located on Lodoga-Stonyford Road, approximately 1 mile south of Stonyford. The Stonyford Disposal Site is operated by the Colusa County Public Works Department and has a permitted capacity of 149,219 cubic yards with 55,683 cubic yards remaining and an estimated closing date of 1/1/2064 (CalRecycle 2025).

Electricity, Natural Gas, and Telecommunications

PG&E is the primary electric and natural gas provider in northern and central California and serves 16 million people within a 70,000-square-mile service area. There are 106,681 circuit miles of electric distribution lines, 18,466 miles of circuit interconnected transmission lines, 42,141 miles of natural gas distribution pipelines, and 6,438 miles of transmission pipelines (PG&E 2025). There is a 60-kilovolt distribution line (California Energy Commission 2025) located on the east side of the Colusa Resort Casino but no nearby natural gas transmission lines (National Pipeline Mapping Service 2025). There are many private companies that provide telephone, internet, and cable services to properties within the vicinity of the proposed trust parcel.

[51] Federal Safe Drinking Water Act

[52] Federal Clean Water Act

[53] Public Law 83-280

Law Enforcement

Under Public Law 83-280[54] (18 USC § 1162[55]), the State of California and other local law enforcement agencies have criminal enforcement authority on Tribal lands. Once in trust, the Tribe would receive general public safety and law enforcement services from the Colusa County Sheriff's Department (CCSD) which is headquartered in the City of Colusa. The nearest California Highway Patrol station is located in Williams, approximately 9 miles to the west. The CCSD is staffed by 24 deputies and six volunteers (Ruiz 2025).

Fire Protection and Emergency Medical Services

The proposed trust parcel is not located within a Fire Hazard Severity Zone (California Department of Forestry and Fire Protection [CAL FIRE] 2023). The proposed trust parcel is served by the Sacramento River Fire District (SRFD), which has stations in Colusa and Grimes, three paid staff, and 33 volunteers. SRFD has four Type I engines, one Type III engine, two Type I water tenders, two light duty rescue units, one air/light unit, and two staff vehicles (Winters 2025).

Emergency medical services (EMS) are overseen and authorized by the Sierra-Sacramento Valley Emergency Medical Services Agency (S-SV EMS Agency). The S-SV EMS Agency is a regional multi-county Joint Powers Agency and is designated as the local EMS agency for the County (S-SV EMS Agency 2025). Ambulance services and EMS are dispatched through 911. Air ambulance service is available out of Williams and ambulance service is available out of Colusa, in coordination with Colusa Medical Center. The Colusa Medical Center is approximately 3.6 miles southeast of the proposed trust parcel. New construction poses additional need for EMS services, however the transient nature of the population using the new facilities indicates that it is unlikely to place a significant burden on existing services.

Public Schools

There are a number of public and private schools in Colusa. The public school system is represented by the Colusa Unified School District, with Burchfield Primary School, George T. Egling Middle School, and Colusa High School. The middle school is the closest, located approximately 2.99 miles southeast of the proposed trust parcel. Based on the transient nature of the proposed development, it is unlikely that construction or operation of the proposed project would incite new, permanent residency in the proposed trust parcel vicinity and therefore little to no additional school capacity would be needed.

Parks and Recreation

There are numerous local, state, and federal parks within the City of Colusa, as well as Colusa County, offering a wide range of recreational opportunities that include trails, parks, river access, boat launches, and preserves. The Colusa Sacramento River State Park and Colusa Levee Scenic Park are located on the western edge of the Sacramento River. There are smaller parks within the City of Colusa's boundaries as well as wildlife refuges within the County.

[54] Public Law 83-280

[55] § 1162 State jurisdiction over offenses committed by or against Indians in the Indian country

While increased visitation to parks within the City and County is possible, it is unlikely that a significant increase in visits would result from the development of the proposed project. Parks would instead serve a more transient population or those already planning on traveling to the area.

3.9.3 Impact Assessment

Methodology

Maps and County records were examined to determine if implementation of the project alternatives would result in the need for new or expanded public services, the development of which could significantly adversely affect the environment.

Alternative A

An adverse effect would occur if project-related demands on public services caused an exceedance of system capacities that resulted in significant effects to the physical environment. The proposed uses would not have a significant impact on existing water supply or wastewater services.

Solid waste and recycling from construction and operation of the proposed facilities would be collected by Recology or taken to the Maxwell Transfer Station or Stonyford Disposal Site. Based on the maximum capacity at the Stonyford Disposal Site, this small addition of solid waste would not impact solid waste services or facilities. Electrical infrastructure is already on the project site and would be adapted to the increased needs. There is no publicly available natural gas pipeline in the area, but propane tanks may be installed if desired. Multiple telecommunications services are available.

Development of the proposed uses would generate an increase in visitors to the Colusa area. At any given time, the increase could strain the capacity of existing law enforcement, firefighting, or medical services. However, additional law enforcement personnel, equipment, and firefighting units may be needed by the CCSD and SRFD, according to the Police Lieutenant (Ruiz 2025) and the Fire Chief (Winters 2025). Development of the proposed project would not result in an increase in the local population as construction and operation labor would likely be from the local population. No impacts to public schools, parks, or recreation facilities would occur.

Development of the proposed project would not result in the need for new public services, therefore there would be expansion or new facilities created that could significantly adversely affect the environment.

Alternative B

Under Alternative B, the proposed trust parcel would remain undeveloped. No impacts to public resources and utilities would occur.

Mitigation Measures

No mitigation would be required.

3.10 Noise

3.10.1 Regulatory Setting

Federal

Federal Highway Administration Construction Noise Abatement Criteria

The Federal Highway Administration (FHWA) provides construction noise level thresholds in its Construction Noise Handbook 2006, which depends on noise receptor locations, land uses, and time of day. The thresholds set noise standards for the assessment of noise consequences related to surface traffic and other project-related noise sources.

Federal Transit Administration Transit Noise and Vibration Impact Assessment Manual (2018)

The Federal Transit Administration (FTA) provides NEPA evaluation guidance for vibration assessment. Thresholds of perceptibility, interference, annoyance, and cosmetic damage to buildings 50 feet from the source of vibration are defined as the following:

- Typical Background Vibration: 52 vibration decibels (VdB);
- Limit for Vibration to Sensitive Equipment: 65 VdB;
- Residential Annoyance Frequent Events: 72 VdB;
- Threshold for Risk to Cosmetic Damage: 100 VdB.

The perceptibility of ground borne vibration is typically 65 VdB while human response to vibration occurs when levels exceed 70 VdB.

3.10.2 Existing Setting

Existing Noise Sources

The noise environment surrounding the proposed trust parcel is derived from traffic along SR 45, Colusa Casino Resort, and the Wintun Mini Mart, both located on the east side of SR 45 and opposite the project site. The proposed trust parcel is currently used for agricultural production which generates high levels of noise associated with harvesting.

Sensitive Receptors

Sensitive receptors can include land uses such as residences, hospitals, schools, and elder care centers. While the region is rural in nature, there are nearby residences, not including the one contained within the project site. The eastern edge of the project site is shaped like the letter “U,” with the opening pointed to the east, at 378 SR 45. This interior parcel includes a residence, barn, outbuildings, and a walnut orchard and, because of the proposed trust parcel shape, is surrounded on three sides by the proposed trust parcel. There is also a residence with outbuildings located approximately 450 feet north

of the proposed trust parcel and another residence with outbuildings located approximately 1,940 feet south of the proposed trust parcel.

The Colusa Medical Center, a hospital with an emergency room, is approximately 3.6 miles southeast of the proposed trust parcel in Colusa. The closest assisted living facility is Eskaton Frank Jaconetti Manor, located approximately 3.65 miles southeast of the proposed trust parcel in Colusa. There are several public and private schools in Colusa; the closest is George T. Egling Middle School, located approximately 2.99 miles southeast of the proposed trust parcel.

3.10.3 Impact Assessment

Methodology

There are currently no significant sources of noise generated on the proposed trust parcel. Other than noise generated by agricultural machinery, the primary source of noise is traffic on SR 45. Once construction begins, machinery would be a source of noise, then operation of the proposed uses would generate noise associated with various forms of traffic. Utilizing the ambient noise as a baseline, an evaluation of construction and operational noise can be made by estimating the noise produced by construction equipment and operational components. The FHWA provides construction noise level thresholds in its Construction Noise Handbook (2006), which depends on noise receptor locations, land uses, and time of day. The thresholds set noise standards for the assessment of noise consequences related to surface traffic and other project-related noise sources.

Alternative A

The following describes any potential noise impacts under this alternative.

Construction Noise

Construction noise levels at and near the proposed trust parcel would fluctuate depending on the type, number, and duration of uses of various pieces of construction equipment. Site preparation would include various pieces of earth-moving equipment, potentially including scrapers, backhoes, bulldozers, dump trucks, water trucks, concrete trucks, and similar equipment. Use of this machinery would temporarily generate noise above background noise levels. The nearest sensitive receptors that could be impacted by this temporary increase in noise include the three residences noted above.

Sources of construction noise attenuate (lessen) at a rate of 6 to 9 A-weighted decibels (dBA) per doubling of distance from the source, depending upon environmental conditions including atmospheric conditions and noise barriers, either vegetative or manufactured, etc. (FHWA 2006). However, given the distances from residences and actual construction machinery, the attenuation of noise would reduce construction noise levels to acceptable ranges. Noise would be consistent with existing agricultural operations and associated noise experienced by the nearby residences.

The maximum projected construction noise level during development of the proposed uses would be approximately 80 dBA for a backhoe or 85 dBA for a bulldozer at 50 feet. This is a conservative exercise to assess noise levels based on the assumption that any piece of machinery would be used 8 hours a day

during the entire duration of construction. However, it should be acknowledged that all equipment would not be used all day and/or daily.

Construction would take place during daytime hours and occur over a period of several months or even years as development may occur in phases. The proposed trust parcel is currently held in fee status and would, once placed in trust, no longer be under the jurisdiction of Colusa County. Given that the current noise environment includes agricultural operations including harvests that generate greater than or equal to noise levels as construction activities, adverse noise impacts associated with the construction of Alternative A would be less than significant.

Construction Vibration

Vibration associated with the construction of Alternative A would not conflict with federal regulations as there are no nearby sensitive receptors or structures (FTA 2018). For standard reference, the vibration source level (peak particle velocity [PPV]) for each piece of equipment is calculated at a reference distance of 25 feet using a calculation of PPV of the equipment adjusted for distance in inches per second. The vibration velocity for a large bulldozer, the largest piece of equipment likely to be used during construction, is 87 decibels (VdB) at 25 feet. Construction vibration damage may occur in non-engineered timber and masonry buildings, such as residences, at 94 VdB. Further distance, such as would be applicable to the proposed trust parcel, and only intermittent use during construction indicates that any adverse vibration impacts associated with the construction of Alternative A would be less than significant.

Operational Noise

Noise associated with the operation of Alternative A would mainly consist of vehicular traffic. Other sources of potential noise include visitation of the commercial and RV park components of Alternative A. This noise would be consistent with the passing vehicle traffic and tribal operations adjacent to the proposed trust parcel. Considering there are no sensitive receptors within the vicinity of the proposed trust parcel, adverse operational noise impacts would be less than significant.

Operational Vibration

Vibration associated with the operation of Alternative A would consist mostly of trucks and RVs idling at the commercial and RV park components of the proposed uses. This level of vibration would be perceptible onsite but would be unlikely to exceed 70 VdB, levels that would not cause significant damage or annoyance offsite. Vibration levels associated with operation would not result in significant adverse impacts.

Alternative B

Under this alternative, the proposed trust parcel would remain undeveloped, and no construction would occur. Therefore, there would be no increase in ambient noise levels.

Mitigation Measures

No mitigation would be required.

3.11 Hazardous Materials and Public Health and Safety

3.11.1 Regulatory Setting

Federal

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act gives the EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. The EPA has developed regulations, guidance, and policies to ensure the safe management and cleanup of solid and hazardous waste, and programs that encourage source reduction and beneficial reuse.

Federal Food, Drug, and Cosmetic Act

The 1938 Federal Food, Drug, and Cosmetic Act is a set of United States laws that authorize the Food and Drug Administration to oversee and regulate the production, sale, and distribution of food, drugs, medical devices, and cosmetics.

Federal Insecticide, Fungicide, and Rodenticide Act

The Federal Insecticide, Fungicide, and Rodenticide Act is the federal statute that governs the registration, distribution, sale, and use of pesticides in the United States. With certain exceptions, a pesticide is any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant, or desiccant, or any nitrogen stabilizer.

Hazard Communication Standard

To ensure chemical safety in the workplace, information about the identities and hazards of the chemicals must be available and understandable to workers. OSHA's Hazard Communication Standard requires the development and dissemination of information related to the following.

- Chemical manufacturers and importers are required to evaluate the hazards of the chemicals they produce or import, and prepare labels and safety data sheets to convey the hazard information to their downstream customers.
- All employers with hazardous chemicals in their workplaces must have labels and safety data sheets for their exposed workers and train them to handle the chemicals appropriately.

Hazardous Substances Act

The Hazardous Substances Act requires that hazardous household products have precautionary labeling to alert consumers of hazards, proper storage, and immediate first aid steps in case of an accident. It also enables the Consumer Product Safety Commission to prohibit severely dangerous products and products with hazards that cannot be labeled according to Hazardous Substances Act standards.

Toxic Substances Control Act

The Toxic Substances Control Act (TSCA) of 1976 provides EPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. Certain substances are generally excluded from TSCA, including among others, food, drugs, cosmetics, and pesticides. TSCA addresses the production, importation, use, and disposal of specific chemicals including polychlorinated biphenyls, asbestos, radon, and lead-based paint.

Emergency Planning and Community Right-to-Know Act

The Emergency Planning and Community Right-to-Know Act of 1986 was authorized by Title III of the Superfund Amendments and Reauthorization Act to help communities plan for chemical emergencies. It requires industry to report on the storage, use, and release of certain chemicals to federal, state, tribal, territorial, and/or local governments. It also requires these reports to be used to prepare for and protect communities from potential risks.

National Fire Protection Association Codes and Standards

National Fire Protection Association codes and standards are developed by subject matter experts from around the globe and serve as the leading resource on fire, electrical, and life safety guidelines and requirements.

State

CAL FIRE identifies fire hazard severity zones within the state responsibility areas (areas outside of the national forests).

3.11.2 Existing Setting

Hazardous Materials

The proposed trust parcel has several existing uses, including residential, vehicle repair, and agricultural. Field roads, irrigation canals, a fertilizer pumping system, power lines, a vehicle repair shop, and a barn exist on the parcel and are consistent with an operational farm.

A Phase I Environmental Site Assessment (ESA) was prepared in 2023 (Montrose 2023) in conformance with the scope and limitations of the American Society for Testing and Materials (ASTM) Standard Practice E1527-21[56] and BIA Guidelines (602 DM Chapter 2)[57]. That effort included background research and a field survey. At the time, fairly minor debris consisting of agricultural pipe, lumber, paint and other cans, and similar material was noted. The assessment concluded that none of these likely comprised a Recognized Environmental Condition (REC), and if any contained hazardous materials, they likely constituted a *de minimis* condition as defined by ASTM E1527-21 and therefore qualified as an issue that

[56] E1527 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process

[57] 602 DM 2 - Real Property Pre-Acquisition Environmental Policy and Compliance

generally does not present a threat to human health or the environment, and would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

The Phase I ESA also documented 28, 250-gallon plastic waste oil storage bins; 22, 55-gallon drums; and a shallow pool of leaked waste oil underneath these containers located south of the vehicle repair shop. The spill measured approximately 20 feet in length and 8 feet in width. The oil, bins, and drums were removed by the landowner, and soil samples were taken for laboratory testing. Results indicated that acceptable cleanup had been completed, and therefore the former drum area constituted a historical REC and posed no threat to human health or the environment. No other RECs were identified on the proposed trust parcel. Two adjacent accidents, the location of a natural gas line spill in 2006 and the site of an herbicide spill in 1989, did not appear to be RECs that would affect use of the project site (Montrose 2023).

Health and Safety

The main health and safety concern for the trust acquisition and future uses appears to be the ongoing use and distribution of fertilizer on the proposed trust parcel; a fertilizer pump station with two, 5,000-gallon tanks of potassium thiosulfate liquid fertilizer is located near the center of the proposed trust parcel, where fertilizer is introduced into the irrigation canal system. However, continued use in a controlled manner would not pose any additional risks to health and safety.

The Wortham property is located in a predominantly agricultural and rural area of Colusa County west of SR 45, adjacent to existing tribal development associated with the Colusa Casino Resort. The site is generally flat and surrounded by irrigated cropland, pastureland, and disturbed areas, with limited natural vegetation. Based on CAL FIRE Fire Hazard Severity Zone mapping, the Wortham property is not located within a State Responsibility Area Very High Fire Hazard Severity Zone and is characterized by low to moderate wildfire hazard conditions. Vegetative fuels on and adjacent to the parcel are primarily managed agricultural lands and developed areas, which reduce fuel loading and limit the potential for wildfire ignition and spread. Although regional climatic conditions, including high summer temperatures and periodic wind events, can elevate seasonal fire risk, the overall wildfire hazard at the Wortham property is comparatively low. Fire protection and emergency response services are available from local and regional fire agencies, and the parcel's direct access to SR 45 provides adequate emergency access and evacuation capability.

3.11.3 Impact Assessment

Methodology

At the request of the Tribe, a Phase I ESA was prepared in 2023 (Montrose 2023).

Alternative A

Hazardous Materials

During grading and construction of the proposed uses, hazardous materials, such as gasoline, diesel fuel, and hydraulic fluid, would be brought to the site. These materials would be used by contractors for

fueling and maintenance purposes. While the potential for an accidental release exists during handling and transfer from one container to another, any spill would be readily and appropriately cleaned and properly disposed of prior to a potential release to the environment. The quantities anticipated to be used do not pose a threat regarding use, handling, or generation of a regulated hazardous material, of which the regulated amounts would increase the potential risk of exposure resulting in reduction of quality of life or loss of life.

Stored waste oil from the vehicle repair shop had spilled onto the ground surface previously but has been remediated. No other RECs were identified on or in the immediate vicinity of the proposed trust parcel that would likely pose an adverse effect to the environmental integrity of the project site. Development of the proposed uses would not result in adversely exposing employees or the public to existing hazardous materials conditions.

Health and Safety

The proposed trust parcel is largely a working farm with irrigation and other related infrastructure. Continued use includes the application of fertilizer in an established manner. Continued operation of the farm and addition of fertilizer would not pose a new risk to health and safety.

Continued operation of the vehicle repair facility would generate more waste oil or other fluids which should be disposed of as generated rather than stored in large quantities, and any leaks should be cleaned up immediately in accordance with **Mitigation Measure HAZ-1**. Accordingly, continued use of the vehicle repair facility would not significantly increase risks, and adverse impacts to health and safety would be less than significant.

Under Alternative A, the Proposed Action would result in development of the Wortham property for residential, commercial, and recreational uses. The introduction of buildings, infrastructure, and increased human activity would incrementally increase potential ignition sources within the project area. However, the Wortham property is located in a predominantly agricultural setting with flat topography and limited natural vegetation, which reduces available fuel and limits the potential for wildfire spread. Project construction and operation would include site grading, internal roadways, utility corridors, and maintained landscaped areas that would further reduce on-site fuel loads compared to existing conditions. The property is not located within a high wildfire hazard area and is adjacent to existing developed land uses, including the Colusa Casino Resort. Fire protection and emergency response services would be available to the project area, and access from SR 45 would provide reliable emergency access and evacuation routes. Compliance with applicable fire safety and building requirements would reduce the potential for wildfire-related hazards. As a result, implementation of Alternative A would not be expected to substantially increase wildfire risk or result in adverse effects related to wildfire hazards.

Alternative B

Under this alternative, the proposed uses would not be developed.

3.12 Visual Resources

3.12.1 Existing Setting

The region features a level landscape with agricultural land and orchards dominating the view; the proposed trust parcel is largely undeveloped, with a trailer home, a vehicle repair shop, a small walnut orchard, a fertilizer pump station, and a metal barn near the eastern edge. There are wildlife refuges located between 2 and 4 miles away to the east, northwest, and south and Sutter Buttes is approximately 8.5 miles to the east. The closest State Scenic Highway is Route 20, located over 20 miles to the southeast.

3.12.2 Impact Assessment

Methodology

This section is based on an evaluation of the natural and built environment immediately surrounding the proposed trust parcel as well as the visual character of the vicinity and the level of light emissions currently in the vicinity of the proposed trust parcel.

Alternative A

The proposed uses would introduce multiple forms of development to portions of the proposed trust parcel, entirely changing the visual character of limited portions of the project site. Development of the commercial area would change the view for anyone passing on SR 45. However, this is a relatively small development within a much larger landscape that would retain its rural nature and would occur approximately opposite to the Tribal health care facilities, Colusa Casino Resort, and the Wintun Mini Mart. The development would keep with the increased growth of the immediate vicinity and would not introduce significant new sources of light to the immediate region. The visual changes resulting from the proposed development would be less than significant.

Alternative B

Under this alternative, the proposed trust parcel would not be developed. No impacts to visual resources would result from Alternative B.

Mitigation Measures

No mitigation would be required.

3.13 Growth-inducing and Cumulative Impacts

3.13.1 Growth-Inducing Impacts

Consistent with Department of the Interior NEPA regulations (43 CFR § 46.115[58]) and the Bureau of Indian Affairs NEPA Handbook (516 DM Chapter 10[59]), this EA includes an analysis of cumulative impacts, which are the effects of the Proposed Action when added to other past, present, and reasonably foreseeable future actions. Indirect growth-inducing impacts could result, for example, if a project established substantial new permanent employment opportunities (e.g., new commercial, industrial, or governmental enterprises) or if it removed obstacles to population growth (e.g., expansion of a WWTP to increase service availability).

The Tribe's proposed uses would result in the development of 188.89 acres of the 519.31 acres of agricultural lands into Tribal housing, an RV park, and commercial development and the necessary support infrastructure. Implementation of the Tribe's proposed future development after trust acquisition and funding is obtained would provide new services to the region; however, the proposed uses would not result in significant additional growth to the region, as the number of employees needed to run the various facilities is relatively minor and personnel can be pulled from surrounding areas rather than needing an influx of population from more remote locations.

Analyses of the adequacy of local infrastructure and services are included in the discussion of environmental consequences for the proposed uses. Electrical connections would be pursued and are already provided by nearby infrastructure. The Tribe would provide their own water and wastewater from domestic groundwater wells and the existing wastewater facility associated with the casino. There may be a need for additional public services (fire, police, EMS), however the proposed uses would be developed incrementally, and the effects of construction and development would have to be reassessed on a regular basis to establish a point at which new impacts would be significant. No significant adverse impacts that are unable to be mitigated have been identified that would result from the proposed uses. No indirect growth-inducing impacts are expected, as new permanent employment opportunities would not be substantial, and the result would be to provide local jobs for existing citizens. Direct growth-inducing effects would be less than significant for the proposed uses with mitigation measures and BMPs.

3.13.2 Cumulative Impacts

The cumulative effects analysis considers the incremental impacts of the Proposed Action when added to other past, present, and reasonably foreseeable future actions in the region. Only those projects for which there is reasonably ascertainable information—such as identified land development proposals, transportation improvements, or published planning documents—have been included. Speculative projects lacking sufficient detail were not considered.

[58] Department of the Interior NEPA regulations

[59] 516 DM 10 - Managing the NEPA Process

The analysis draws on available planning documents from Colusa County and the Caltrans, as well as known Tribal projects that have reached a level of planning sufficient for NEPA consideration. When considered in conjunction with Alternative A, no specific development projects are known to have been approved in the vicinity that would cause cumulative impacts. The following analysis is based on the cumulative impacts associated with future development projects that may be approved in the vicinity of the proposed trust parcel.

Land Resources

The proposed uses and local projects that may be approved in the vicinity of the proposed trust parcel would be required to implement measures consistent with local permitting requirements for construction to address any regional topographic, geologic, seismic, soil, or mineral hazards. Similarly to Alternative A, any other construction projects within the area would also be required to comply with the California Building Code. It is anticipated that other off-site cumulative projects would follow appropriate permitting procedures. Furthermore, the overwhelming majority of land within Colusa County is devoted to agricultural uses. New projects that converted that land into urban use would have to occur in an overwhelming number for the addition of Alternative A to result in adverse cumulative effects to land resources. Accordingly, the Proposed Action would not result in adverse cumulative effects to land resources when considered in combination with other reasonably foreseeable actions.

Water Resources

The proposed uses and local projects that may be approved in the vicinity of the proposed trust parcel would be required to comply with the CWA, and with California requirements for local projects as it relates to stormwater and point-source discharges. Compliance with the EPA's stormwater pollution prevention requirements for the Proposed Action and with State water quality standards for other reasonably foreseeable projects in the area, would prevent reasonably foreseeable adverse cumulative effects to stormwater.

It is anticipated that groundwater yields in the vicinity of the proposed trust parcel would meet the needs of the proposed uses and local cumulative projects. As discussed in **Section 3.2.3**, there would be a net benefit by converting high water-use agricultural land to lower-use development. The proposed uses would comply with federal and Tribal requirements for the protection of water resources; therefore, implementation of the Proposed Action would not result in reasonably foreseeable adverse cumulative effects in combination with other reasonably foreseeable projects in the area.

Air Quality

Criteria Air Pollutants

Cumulative effects to the air basin are addressed within the guidelines of the CAA, California's SIP, and the General Conformity Rule. The Conformity Rule requires the BIA to compare estimated emissions attributable to the Proposed Action and intended uses of the trust parcel to the applicable general conformity *de minimis* threshold(s) for all CAPs for which the applicable air basin or region is in nonattainment for the applicable NAAQS. The actual annual emissions that would result from the development of the proposed uses would be far less than estimated in **Section 3.3**, as fewer pieces of

construction equipment would be utilized per year over a 5-to-10-year construction period. When emission estimate(s) are below applicable *de minimis* threshold(s), then a General Conformity Determination is not required under the CAA (40 CFR Part 93[60]). As discussed in **Section 3.3**, the conservative estimate of future CAP emissions would be less than the *de minimis* levels required for federal conformity and would not result in changing the basin's air quality designation. Incorporation of BMPs for dust suppression and low-emission equipment would further reduce emissions and minimize the potential for reasonably foreseeable adverse cumulative effects to regional air quality.

Living Resources

The proposed uses and local projects that may be approved in the vicinity of the proposed trust parcel would be required to comply with CWA and the federal ESA, as well as applicable provisions of federal, State, and local laws for the local projects. As discussed in **Section 3.4**, there are three special-status species that could potentially be impacted by construction of the proposed uses—GGS, Western pond turtle, and VELB. Development and operation of the proposed uses would comply with federal and Tribal requirements for the protection of biological resources; combined with the mitigation measures included in **Section 3.4**, implementation of the Proposed Action would not result in reasonably foreseeable adverse cumulative effects to biological resources.

Cultural Resources and Paleontological Resources

Cumulative effects on cultural resources typically occur when sites that contain cultural resources are disturbed by development. This disturbance can cause permanent loss or damage to these resources prior to proper documentation. As discussed in **Section 3.5**, no historic properties would be impacted by Alternative A and mitigation was incorporated in **Section 4** to avoid adverse effects associated with undiscovered cultural resources. Local projects that may be approved in the vicinity of the proposed trust parcel would be subject to similar analysis and consideration to comply with the NRHP and NEPA as well as applicable provisions of federal, State, and local laws. Construction and operation of the proposed uses would comply with federal and Tribal requirements for the protection of cultural resources and therefore implementation of the Proposed Action would not result in reasonably foreseeable adverse cumulative effects to cultural resources.

Socioeconomic Conditions

The proposed uses, when considered in combination with other reasonably foreseeable projects in the vicinity of the proposed trust parcels, would not result in reasonably foreseeable adverse cumulative effects on socioeconomic conditions, due to the rural nature of the region and the documented need for additional employment opportunities.

[60] Part 93 Determining Conformity of Federal Actions to State or Federal Implementation Plans

Transportation and Circulation

The proposed uses, when considered in combination with local projects that may be approved in the vicinity of the proposed trust parcel, would reduce the LOS in the region; however, LOS would remain acceptable with the exception of the intersection directly onto the proposed trust parcel. Recommended mitigation includes the installation of a traffic signal, separate left-turn lanes on SR 45, and other measures which, when combined, would reduce traffic-related impacts to less-than-significant levels. Therefore, implementation of the Proposed Action would not result in reasonably foreseeable adverse cumulative effects to transportation and circulation.

Land Use and Agriculture

If taken into federal trust, the proposed trust parcel would not be subject to County land use jurisdiction. As discussed in **Section 3.8.2**, the proposed trust parcel is currently within an area zoned for agriculture by the County. The Proposed Action would create a change, in that approximately 59 percent of the parcel would be developed for commercial and residential uses, however approximately 63 percent, or 465,843 acres of land within Colusa County is devoted to agricultural uses. New projects that would convert agriculturally zoned land into urban uses would have to occur in an inordinate number for the Proposed Action to have a cumulatively considerable impact. There is no unique farmland, or land of statewide or local importance within the proposed trust parcel; only prime farmland if irrigated and/or drained exists. Therefore, implementation of Alternative A would not result in significant conversion of farmland. Implementation of the Proposed Action would not result in reasonably foreseeable adverse cumulative effects to agricultural resources.

Public Services and Utilities

The proposed uses would increase demand on solid waste facilities and would rely on collection from Recology; however, there is no indication that capacity would not be available for future local projects in the region. Given that Alternative A includes using extant wastewater and groundwater facilities, there would be no impact to community wastewater or water systems. Due to the lack of development in the area, the proposed uses would not cause a strain on the provision of electricity or telecommunication utilities, and any impacts to law enforcement, fire protection, or EMS providers would be phased in as construction progressed over a period of years. The Proposed Action would not result in reasonably foreseeable adverse cumulative effects to public services and utilities.

Noise

Development of the proposed trust parcel would temporarily increase noise levels due to increased traffic and construction activities, and there would be long-term increases in operational noise. However, the proposed uses would not generate a level of traffic that would exceed acceptable outdoor noise levels. No other off-site cumulative projects are expected to be approved in the vicinity of the proposed trust parcel that would contribute substantially to the long-term cumulative noise environment. Should additional projects be developed in the area, those projects would have to assess the baseline conditions which would include the proposed uses and determine impacts and associated

mitigation. Accordingly, the Proposed Action would not result in reasonably foreseeable adverse cumulative effects related to noise.

Hazardous Materials and Health and Safety

Local projects that may be approved in the vicinity of the proposed trust parcel would be required to comply with applicable provisions of federal, State, and local laws. The proposed uses would comply with federal and Tribal requirements regarding hazardous materials; therefore, implementation of the Proposed Action would not result in reasonably foreseeable adverse cumulative effects due to hazardous materials.

Visual Resources

Development of Alternative A would introduce development within an area that is agricultural in nature, but which lies immediately west of the Tribe's Colusa Casino Resort, mini mart, and healthcare facilities. None of the structures would be more than one story in height, and there are no nearby scenic vistas or byways. Any future development in the vicinity of the proposed trust parcel would be subject to planned land use designations and would follow applicable design, landscaping, sign, and lighting ordinances. The proposed uses would comply with federal and Tribal requirements regarding hazardous materials; therefore, implementation of the Proposed Action would not result in reasonably foreseeable adverse cumulative effects to visual resources.

4 Mitigation Measures

Mitigation measures, consistent with Department of the Interior NEPA regulations (43 CFR Part 46[61]) and the BIA NEPA Handbook (516 DM Chapter 10[62]), include actions to avoid, minimize, rectify, reduce, or compensate for the adverse effects of the Proposed Action.

Mitigation measures to be implemented during construction and operation of the alternatives are summarized in **Table 6** below. All mitigation is enforceable because it is (1) inherent to the project design; and/or (2) or required by State or federal agencies for future development and funding requirements.

Table 6. Mitigation Measures

Resource Area	Proposed Mitigation
Land Resources	**GEO-1:** Should any paleontological specimens be uncovered during construction, all construction shall halt within 25 feet of the find and the Tribe, BIA, and construction contractor shall be notified immediately. A qualified professional paleontologist shall be retained to assess the significance of the find and, if significant, shall recommend an avoidance, recovery, and/or documentation program in keeping with current professional standards. All recommendations shall be followed before the resumption of construction in the vicinity of the find. **GEO-2:** Building design and construction methods shall adhere to the provisions of the Uniform Building Code.
Water Resources	**WATER-1:** To allow for extended and periodic construction of project elements, a flexible design of water detentions, bioswales, and surface water conveyance shall be incorporated into individual construction phases to ensure ongoing compliance with NEPA and to prevent off-trust land impacts. **WATER-2:** Prior to construction, a SWPPP shall be prepared and implemented as required by the EPA to prevent erosion and prevent pollutants from entering surface and groundwater. Water quality control measures identified in the SWPPP shall include, but not be limited to, the following BMPs: • Major grading activities shall be scheduled during the dry season. • Erosion control blankets or jute netting shall be placed in rough-graded ditches and then hydroseeded. • Fiber rolls and straw wattles shall be installed throughout the construction site around the down-slope perimeter of the construction site.

[61] Part 46 Implementation of the National Environmental Policy Act of 1969

[62] 516 DM 10 - Managing the NEPA Process -- Bureau of Indian Affairs - Transmittal Sheet

Resource Area	Proposed Mitigation
	• All exposed soil areas shall be stabilized and re-seeded with appropriate native plant species. Stockpiles of unsuitable or excess soil shall be removed and disposed of at approved sites. • Hay or straw mulch and tackifier shall be used as temporary measure for stabilizing disturbed areas. • Landscaping shall be managed to minimize erosion and sedimentation according to the following practices: • Rock filter berms shall be placed across roadways. • Silt fencing shall be placed down-slope of exposed soil areas and around temporary soil stockpiles. • Catch basins, junction boxes, culverts, and outfall structures/energy dissipaters shall be used throughout grading. • Ingress/egress points to the proposed trust parcel shall be stabilized and graded. • Cleaning, fueling, maintenance, and repair of construction vehicles and equipment shall be performed offsite whenever possible. • The Contractor shall be responsible for all maintenance, inspection, and repair to all erosion and sediment control measures throughout the construction period and shall ensure that all other protective devices are maintained and repaired in good and effective condition. • Existing drainage patterns shall not be significantly modified and drainage concentrations shall be avoided. • Revegetated areas shall be properly maintained in order to ensure adequate establishment and growth.
Air Quality	**AIR-1:** • Exceeding current Title 24 building energy efficiency standards by a minimum of 15 percent; • Installation of on-site solar photovoltaic systems to offset a portion of building energy demand; • Provision of electric vehicle charging infrastructure in residential and commercial areas; • Incorporation of water-efficient landscaping and irrigation systems to reduce energy associated with water use; and • Implementation of waste reduction and recycling programs during construction and operation.
Living Resources	**BIO-1 (Valley Elderberry Longhorn Beetle):** • A qualified biologist shall conduct pre-construction surveys within 24 hours of work initiation. If no elderberry shrubs are found within the proposed trust parcel, no

Resource Area	Proposed Mitigation
	further actions would be necessary to mitigate for this species. A letter report shall be completed by the qualified biologist and submitted to USFWS. If elderberry shrubs are found within the proposed trust parcel, then the following measures shall be executed onsite: ▪ All project activities (e.g., grading, staging, vehicle use) shall be designed to avoid direct disturbance to elderberry shrubs. A minimum buffer of 100 feet shall be maintained between construction activities and any elderberry shrub with a stem diameter ≥1 inch at ground level, unless otherwise authorized by USFWS. Temporary environmental exclusion fencing (e.g., orange plastic mesh) shall be installed at the 100-foot buffer boundary to prevent encroachment by equipment or personnel. Fencing shall be maintained throughout the duration of construction activities. ▪ Prior to ground disturbance, all personnel shall receive Worker Environmental Awareness Training (WEAP) from a qualified biologist on the identification of elderberry shrubs, the life history of the VELB, and the importance of compliance with avoidance measures. ▪ Vegetation clearing and ground disturbance shall be scheduled outside of the VELB adult emergence period (typically March to June), to avoid disrupting breeding or dispersal activities. **BIO-2 (Special-Status Reptiles):** The following measures would reduce impacts to GGS and northwestern pond turtle to less-than-significant levels: • Conduct all ground-disturbing activities outside the active period for northwestern pond turtles whenever possible. Ground disturbing activities within 200 feet of aquatic snake habitat shall be conducted between May 1 and October 1. Work may also be conducted between October 2 and November 1 or between April 1 and April 30 if ambient air temperatures exceed 75 degrees Fahrenheit (°F) when work occurs and maximum daily air temperatures have exceeded 75°F for at least three consecutive days immediately preceding the work. • In the event that work must be conducted in the inactive period (i.e., work will occur between October 2 and April 30), construction and ground disturbing activities shall be initiated during the active period. The U.S. Fish and Wildlife Service shall be contacted at least one week prior to October 1 for additional protective measures to implement during construction. • A snake exclusion fence shall be installed around the proposed project boundary to allow the snake to leave the proposed project area prior to the start of construction activities. The design of the fence shall include, and is not limited to, one-way exit doors or exit funnels at ground level; burying the fence a minimum of 6 inches below ground surface; placing the fence a minimum of 24 inches away from any vegetation or

Resource Area	Proposed Mitigation
	solid surfaces (i.e., rocks or tree trunks) that could be used as a ladder by the snake; extending the fence to a height of not less than 3 feet above the ground surface; and turning all open ends of the fence by 180-degrees for at least 10 feet. Fence installation shall be supervised by a qualified biologist, and the exclusion fence shall be monitored daily by a qualified biologist or trained personnel. ▪ Prior to installing the exclusion fence, a qualified biologist shall conduct a pre-activity clearance survey and remain onsite during initial vegetation clearing and ground-disturbing activities conducted within suitable habitat for the snake. If a snake is observed, the qualified biologist shall stop work and allow the species to leave the proposed project area of its own volition. • Project related vehicles shall observe a 15-mile-per-hour speed limit within the project areas. • Pre-construction surveys shall be conducted by a qualified biologist within 24 hours of work initiation. If a listed reptile is found, work shall be halted immediately and the qualified biologist shall notify USFWS for proper guidance. • A qualified biological monitor shall be present during all initial ground-disturbing activities, initial vegetation removal, and grading. This qualified biologist shall monitor the site for reptile activity and ensure compliance with all protective measures. If a listed reptile is encountered during ground disturbing activities, the qualified biologist shall halt work and contact USFWS for proper guidance. • All materials shall be staged away from wetland/riparian areas to avoid attracting special-status reptiles causing habitat degradation. All stockpiled materials shall be covered when precipitation events exceed 50 percent probability. • All construction personnel shall receive WEAP from a qualified biologist prior to project initiation. Training shall cover listed reptile identification, legal protections, avoidance behaviors, and procedures if a listed species is encountered.
Cultural Resources	**CUL-1:** Should unusual amounts of bone, stone, shell, building materials, or other artifacts be uncovered during construction, all ground-disturbing activities within 50 feet of the find shall halt and the Tribe, construction contractor, and BIA shall be notified. A qualified professional archaeologist shall be retained to assess the significance of the find in consultation with the Tribe and BIA. Should the find be significant, a program of avoidance, treatment, or mitigation shall be devised and implemented prior to the resumption of ground-disturbing activities. At the end of construction, a report prepared in accordance with current professional standards shall be prepared and submitted to the appropriate groups or repositories. If human remains are encountered, work shall halt in the vicinity of the find and the Colusa County Coroner shall be notified immediately. Pursuant to 36 CFR Part 800.13[63] of the NHPA:

[63] Section 106 of the National Historic Preservation Act

Resource Area	Proposed Mitigation
	Post-Review Discoveries, and 43 CFR § 10.4[64] (2006) of the Native American Graves Protection and Repatriation Act (NAGPRA): Inadvertent Discoveries, the SHPO and the BIA archaeologist shall also be contacted immediately. No further ground disturbance shall occur in the vicinity of the find until the County Coroner, SHPO, and BIA archaeologist have examined the find and agreed on an appropriate course of action. If the remains are determined to be of Native American origin, the BIA representative shall notify a Most Likely Descendant (MLD). The MLD is responsible for recommending the appropriate disposition of the remains and any grave goods.
Transportation and Circulation	**TRAFFIC-1 (SR 45 at the Main Project Access and Wintun Road):** With the addition of traffic from the proposed uses this intersection would exceed County standards; installation of a traffic signal is the only improvement that would allow the intersection to meet the County's LOS standard. The signal is also recommended due to potential safety issues associated with forecast pedestrian crossing volumes that would occur once the project is developed on the opposite side of SR 45 from the existing casino and hotel. This measure would also include installing separate left-turn lanes on SR 45, widening the casino exit to provide for separate right- and left-turn lanes, and constructing separate right- and left-turn lanes on the new main project exit approach to SR 45. **TRAFFIC-2 (Site Access and Circulation):** At the intersection where the northern driveway would be constructed on SR 45, it is recommended that left-turn lanes be installed for the SR 45 approaches and that the existing casino exit be widened to provide separate right- and left-turn lanes (two-lane approach). At the southern driveway, left turns from northbound SR 45 into the project site would be prohibited. No other site circulation or access issues have been identified that would cause a traffic safety problem or unusual congestion or delay.
Hazardous Materials and Health and Safety	**HAZ-1**: Waste oil and other materials generated by the vehicle repair shop shall not be stockpiled in large quantities and the Tribe's Environmental Department shall regularly inspect any storage area in order to identify leaks at the earliest possible moment.

[64] Part 10 Native American Graves Protection and Repatriation Regulations, Section 4 General

5 Consultation, Coordination, and List of Preparers

5.1 Federal Agencies

Bureau of Indian Affairs

5.2 Preparers of EA

This EA was prepared by Terraphase Engineering Inc.

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Appendix A

Soil Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Colusa County, California

June 30, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Colusa Wortham Parcel)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Colusa County, California
Survey Area Data: Version 20, Aug 28, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 7, 2022—Sep 8, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Colusa Wortham Parcel)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
104	Willows silty clay, 0 to 1 percent slopes, frequently flooded	186.8	36.2%
107	Scribner silt loam, 0 to 1 percent slopes, occasionally flooded	182.5	35.3%
124	Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded	1.1	0.2%
125	Moonbend silt loam, 0 to 2 percent slopes	137.9	26.7%
133	Corbiere silt loam, 0 to 2 percent slopes, occasionally flooded	8.1	1.6%
Totals for Area of Interest		**516.4**	**100.0%**

Map Unit Descriptions (Colusa Wortham Parcel)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit

descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Colusa County, California

104—Willows silty clay, 0 to 1 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: hh8l
Elevation: 40 to 110 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 225 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Willows, silty clay, frequently flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Willows, Silty Clay, Frequently Flooded

Setting

Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap1 - 0 to 5 inches: silty clay
Ap2 - 5 to 13 inches: silty clay
Bw - 13 to 20 inches: silty clay
Bssy1 - 20 to 39 inches: silty clay
Bssy2 - 39 to 51 inches: silty clay
Bssy3 - 51 to 59 inches: silty clay
Bssy4 - 59 to 72 inches: clay
Bssy5 - 72 to 80 inches: silty clay
Bkssy - 80 to 87 inches: clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 10 percent
Maximum salinity: Very slightly saline to moderately saline (2.0 to 15.0 mmhos/cm)
Sodium adsorption ratio, maximum: 40.0
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: R017XY901CA - Clayey Basin Group
Hydric soil rating: Yes

Minor Components

Capay, clay loam, frequently flooded

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R017XY901CA - Clayey Basin Group
Hydric soil rating: Yes

Willows, silty clay, occasionally flooded

Percent of map unit: 2 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Unnamed

Percent of map unit: 2 percent
Landform: Channels on basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Scribner, silt loam, frequently flooded

Percent of map unit: 1 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: Yes

107—Scribner silt loam, 0 to 1 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: hh8p

Elevation: 50 to 70 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 225 to 250 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Scribner, silt loam, occasionally flooded, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scribner, Silt Loam, Occasionally Flooded

Setting

Landform: Backswamps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 6 inches: silt loam
A - 6 to 12 inches: clay loam
Ab1 - 12 to 20 inches: clay loam
Ab2 - 20 to 33 inches: loam
Ab3 - 33 to 41 inches: loam
C - 41 to 60 inches: loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: Yes

Minor Components

Vina, loam, occasionally flooded

Percent of map unit: 10 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Tread

Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Corbiere, silt loam, occasionally flooded

Percent of map unit: 8 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 2 percent
Landform: Channels
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

124—Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: hh91
Elevation: 50 to 60 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 225 to 250 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Moonbend, silt loam, occasionally flooded, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Moonbend, Silt Loam, Occasionally Flooded

Setting

Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 19 inches: silty clay loam
Bw2 - 19 to 33 inches: silty clay loam
Bw3 - 33 to 41 inches: loam

BC - 41 to 51 inches: silt loam
C - 51 to 63 inches: silt loam
Ab - 63 to 75 inches: silt loam
C' - 75 to 85 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Minor Components

Corbiere, silt loam, occasionally flooded

Percent of map unit: 10 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Willows, silty clay, occasionally flooded

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Scribner, silt loam, occasionally flooded

Percent of map unit: 4 percent
Landform: Backswamps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: Yes

Unnamed

Percent of map unit: 1 percent
Landform: Channels
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

125—Moonbend silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hh92
Elevation: 50 to 60 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 225 to 250 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Moonbend, silt loam, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Moonbend, Silt Loam

Setting

Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 19 inches: silty clay loam
Bw2 - 19 to 33 inches: silty clay loam
Bw3 - 33 to 41 inches: loam
BC - 41 to 51 inches: silt loam
C - 51 to 63 inches: silt loam
Ab - 63 to 75 inches: silt loam
C' - 75 to 85 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Minor Components

Vina, loam

Percent of map unit: 10 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Scribner, silt loam

Percent of map unit: 6 percent
Landform: Backswamps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Willows, silty clay

Percent of map unit: 2 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Colusa, loam

Percent of map unit: 1 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 1 percent
Landform: Channels
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

133—Corbiere silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: hh99
Elevation: 50 to 70 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 225 to 250 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Corbiere, silt loam, occasionally flooded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Corbiere, Silt Loam, Occasionally Flooded

Setting

Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 6 inches: silt loam
Bw1 - 6 to 13 inches: silt loam
Bw2 - 13 to 21 inches: silty clay loam
2Bw - 21 to 33 inches: silty clay
3Ab - 33 to 46 inches: silty clay
3Bssb1 - 46 to 59 inches: silty clay
3Bssb2 - 59 to 73 inches: silty clay
3C1 - 73 to 94 inches: clay
3C2 - 94 to 114 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 25.0

Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Minor Components

Moonbend, silt loam, occasionally flooded

Percent of map unit: 8 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Willows, silty clay, occasionally flooded

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Unnamed

Percent of map unit: 2 percent
Landform: Channels
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Building Site Development

Building site development interpretations are designed to be used as tools for evaluating soil suitability and identifying soil limitations for various construction purposes. As part of the interpretation process, the rating applies to each soil in its described condition and does not consider present land use. Example interpretations can include corrosion of concrete and steel, shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping.

Corrosion of Concrete (Colusa Wortham Parcel)

ENG

Engineering

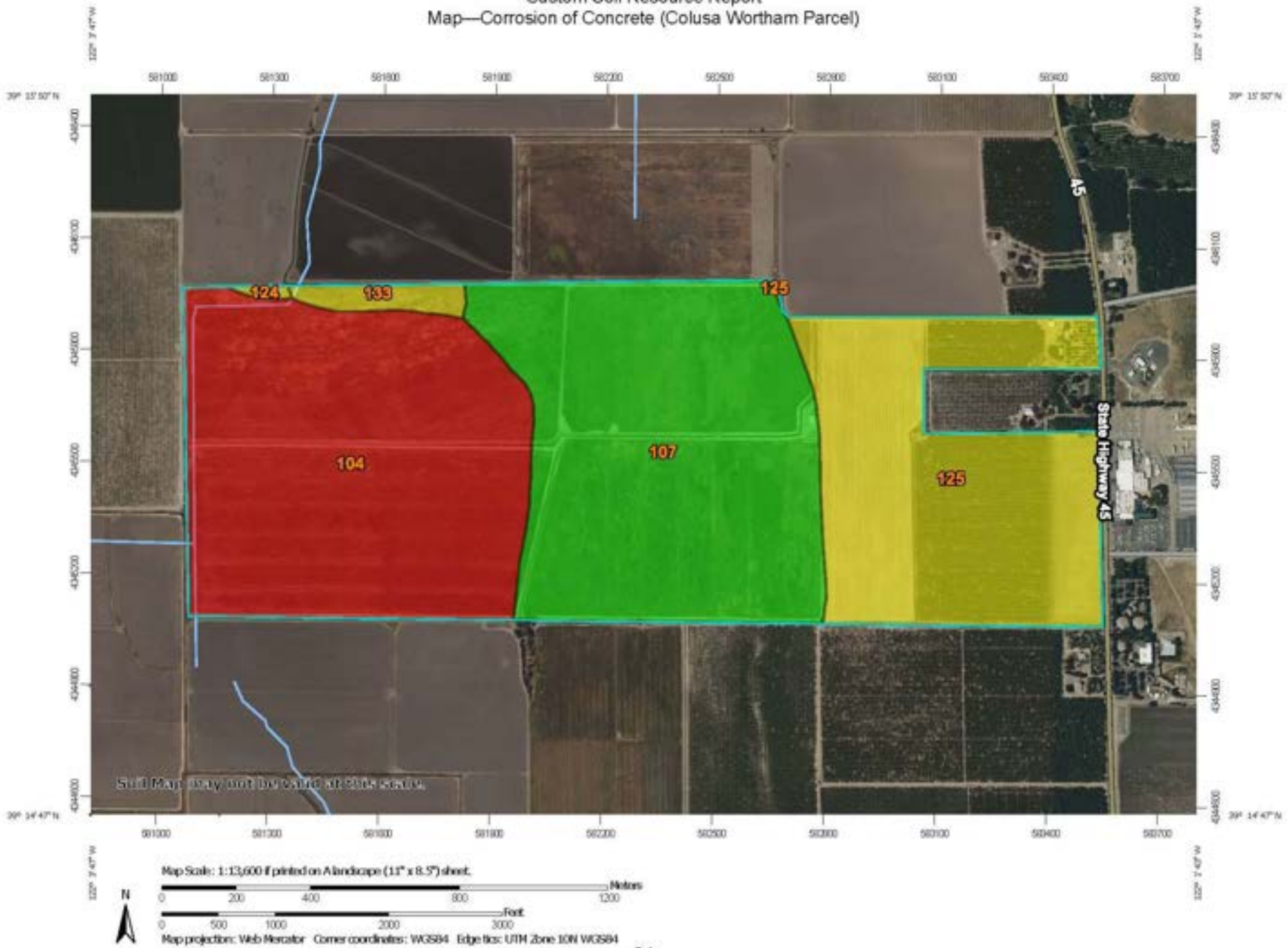
AGR

Agronomy

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens concrete. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the concrete in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."

Custom Soil Resource Report
Map—Corrosion of Concrete (Colusa Wortham Parcel)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Background
- Aerial Photography

Soils

Soil Rating Polygons
- High
- Moderate
- Low
- Not rated or not available

Soil Rating Lines
- High
- Moderate
- Low
- Not rated or not available

Soil Rating Points
- High
- Moderate
- Low
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Colusa County, California
Survey Area Data: Version 20, Aug 28, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 7, 2022—Sep 8, 2023

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Table—Corrosion of Concrete (Colusa Wortham Parcel)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
104	Willows silty clay, 0 to 1 percent slopes, frequently flooded	High	186.8	36.2%
107	Scribner silt loam, 0 to 1 percent slopes, occasionally flooded	Low	182.5	35.3%
124	Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded	Moderate	1.1	0.2%
125	Moonbend silt loam, 0 to 2 percent slopes	Moderate	137.9	26.7%
133	Corbiere silt loam, 0 to 2 percent slopes, occasionally flooded	Moderate	8.1	1.6%
Totals for Area of Interest			**516.4**	**100.0%**

Rating Options—Corrosion of Concrete (Colusa Wortham Parcel)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by

this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Corrosion of Steel (Colusa Wortham Parcel)

ENG

Engineering

AGR

Agronomy

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."

Custom Soil Resource Report
Map—Corrosion of Steel (Colusa Wortham Parcel)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Background
- Aerial Photography

Soils

Soil Rating Polygons
- High
- Moderate
- Low
- Not rated or not available

Soil Rating Lines
- High
- Moderate
- Low
- Not rated or not available

Soil Rating Points
- High
- Moderate
- Low
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

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Table—Corrosion of Steel (Colusa Wortham Parcel)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
104	Willows silty clay, 0 to 1 percent slopes, frequently flooded	High	186.8	36.2%
107	Scribner silt loam, 0 to 1 percent slopes, occasionally flooded	High	182.5	35.3%
124	Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded	Moderate	1.1	0.2%
125	Moonbend silt loam, 0 to 2 percent slopes	Moderate	137.9	26.7%
133	Corbiere silt loam, 0 to 2 percent slopes, occasionally flooded	High	8.1	1.6%
Totals for Area of Interest			**516.4**	**100.0%**

Rating Options—Corrosion of Steel (Colusa Wortham Parcel)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by

this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

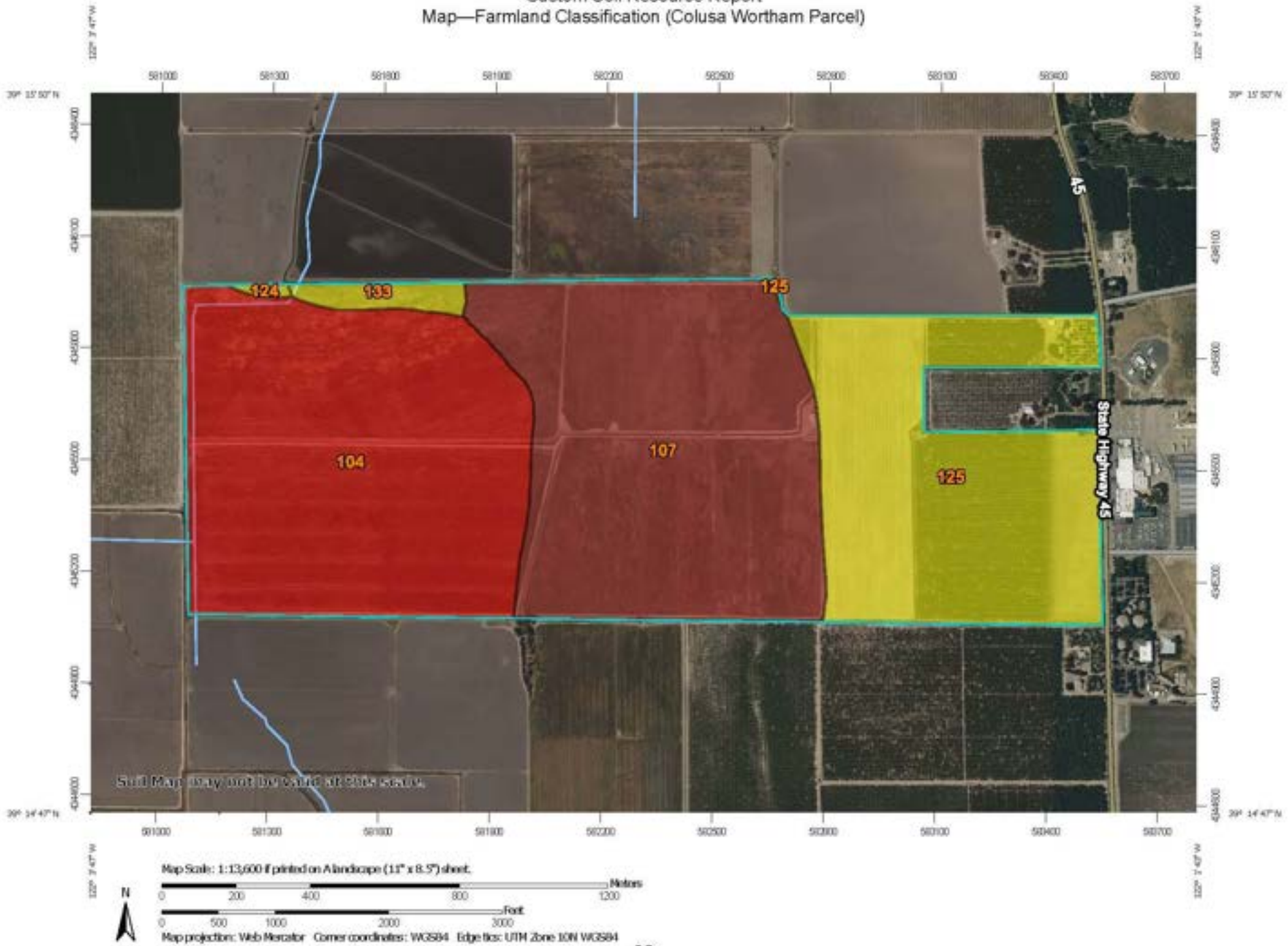
Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Farmland Classification (Colusa Wortham Parcel)

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Custom Soil Resource Report
Map—Farmland Classification (Colusa Wortham Parcel)



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

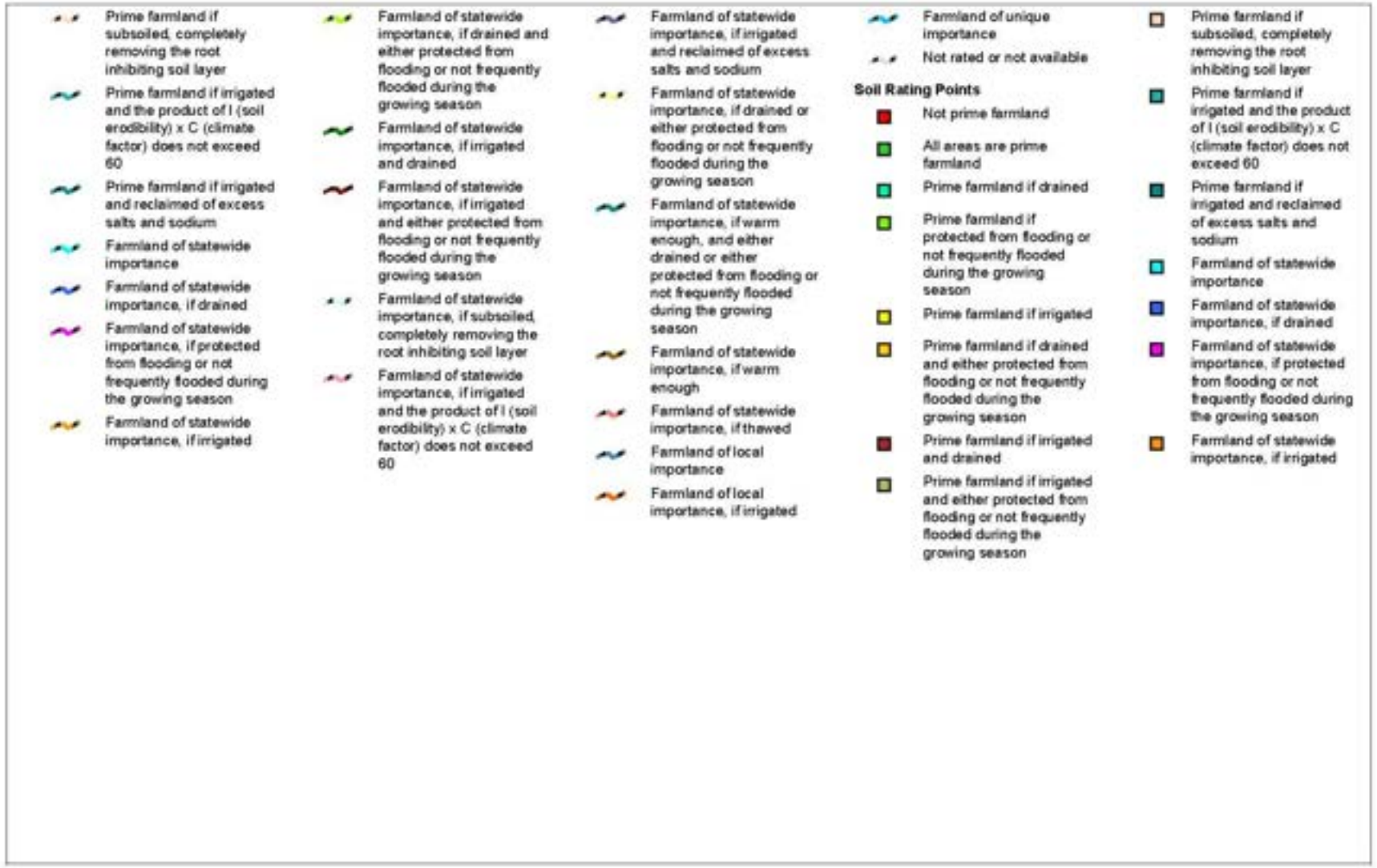
Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season


Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated
Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated and drained
Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough
Farmland of statewide importance, if thawed
Farmland of local importance
Farmland of local importance, if irrigated
Farmland of unique importance
Not rated or not available
Soil Rating Points
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated

- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

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Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Table—Farmland Classification (Colusa Wortham Parcel)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
104	Willows silty clay, 0 to 1 percent slopes, frequently flooded	Not prime farmland	186.8	36.2%
107	Scribner silt loam, 0 to 1 percent slopes, occasionally flooded	Prime farmland if irrigated and drained	182.5	35.3%
124	Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded	Prime farmland if irrigated	1.1	0.2%
125	Moonbend silt loam, 0 to 2 percent slopes	Prime farmland if irrigated	137.9	26.7%
133	Corbiere silt loam, 0 to 2 percent slopes, occasionally flooded	Prime farmland if irrigated	8.1	1.6%
Totals for Area of Interest			**516.4**	**100.0%**

Rating Options—Farmland Classification (Colusa Wortham Parcel)

Aggregation Method: No Aggregation Necessary

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The majority of soil attributes are associated with a component of a map unit, and such an attribute has to be aggregated to the map unit level before a thematic map can be rendered. Map units, however, also have their own attributes. An attribute of a map unit does not have to be aggregated in order to render a corresponding thematic map. Therefore, the "aggregation method" for any attribute of a map unit is referred to as "No Aggregation Necessary".

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Soil Taxonomy Classification (Colusa Wortham Parcel)

This rating presents the taxonomic classification based on Soil Taxonomy.

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999 and 2003). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. This table shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in sol. An example is Alfisols.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalfs (Ud, meaning humid, plus alfs, from Alfisols).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (Hapl, meaning minimal horizonation, plus udalfs, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective Typic identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, active, mesic Typic Hapludalfs.

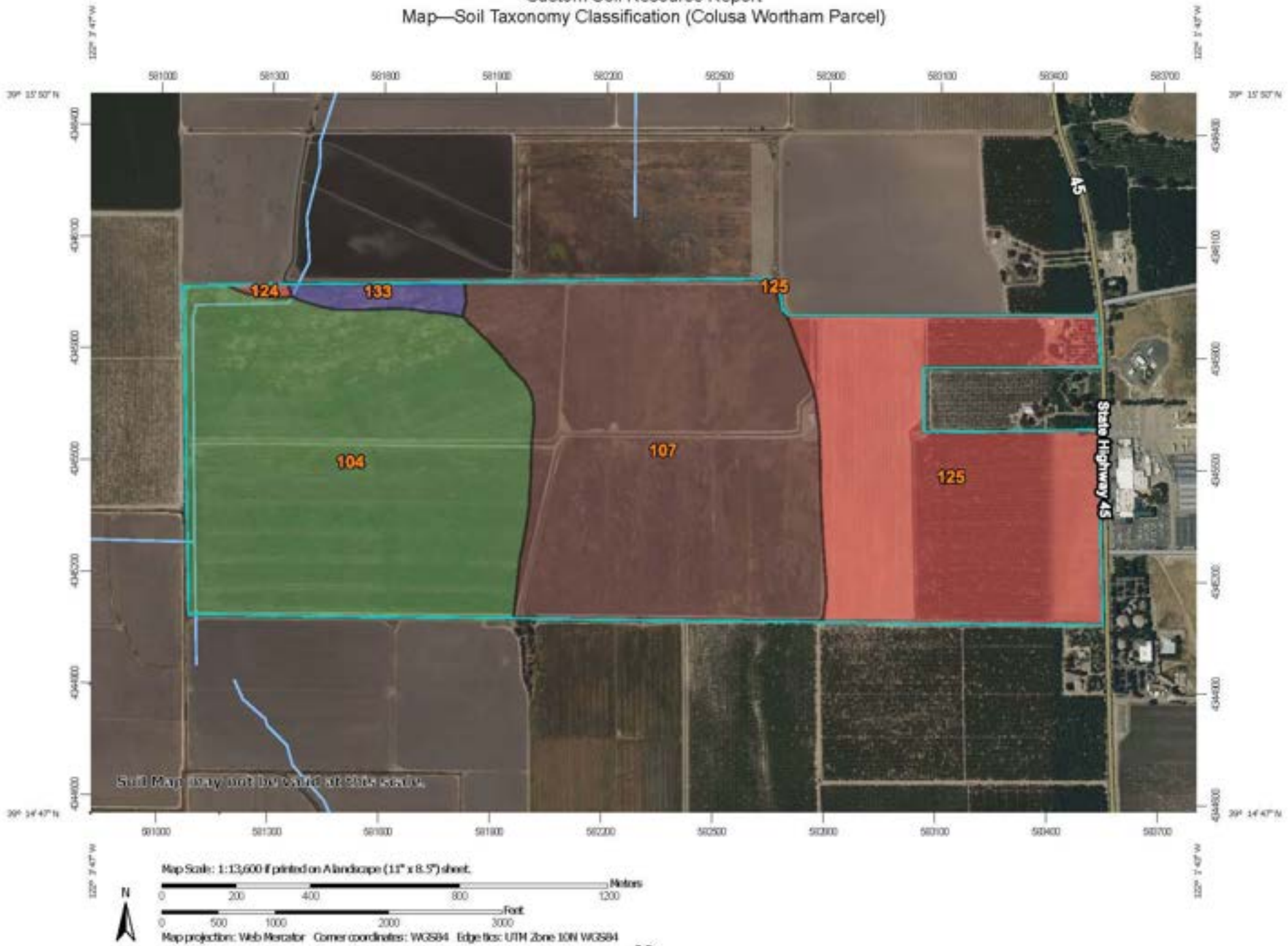
SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

References:

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2022. Keys to soil taxonomy. 13th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. (The soils in a given survey area may have been classified according to earlier editions of this publication.)

Custom Soil Resource Report
Map—Soil Taxonomy Classification (Colusa Wortham Parcel)



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Fine, mixed, superactive, thermic Cumulic Vertic Endoaquolls
- Fine, smectitic, thermic Sodic Endoaquerts
- Fine-loamy, mixed, superactive, thermic Cumulic Endoaquolls
- Fine-silty, mixed, superactive, thermic Pachic Haploxerolls
- Not rated or not available

Soil Rating Lines

- Fine, mixed, superactive, thermic Cumulic Vertic Endoaquolls
- Fine, smectitic, thermic Sodic Endoaquerts
- Fine-loamy, mixed, superactive, thermic Cumulic Endoaquolls
- Fine-silty, mixed, superactive, thermic Pachic Haploxerolls
- Not rated or not available

Soil Rating Points

- Fine, mixed, superactive, thermic Cumulic Vertic Endoaquolls
- Fine, smectitic, thermic Sodic Endoaquerts
- Fine-loamy, mixed, superactive, thermic Cumulic Endoaquolls
- Fine-silty, mixed, superactive, thermic Pachic Haploxerolls
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

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Table—Soil Taxonomy Classification (Colusa Wortham Parcel)

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104	Willows silty clay, 0 to 1 percent slopes, frequently flooded	Fine, smectitic, thermic Sodic Endoaquerts	186.8	36.2%
107	Scribner silt loam, 0 to 1 percent slopes, occasionally flooded	Fine-loamy, mixed, superactive, thermic Cumulic Endoaquolls	182.5	35.3%
124	Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded	Fine-silty, mixed, superactive, thermic Pachic Haploxerolls	1.1	0.2%
125	Moonbend silt loam, 0 to 2 percent slopes	Fine-silty, mixed, superactive, thermic Pachic Haploxerolls	137.9	26.7%
133	Corbiere silt loam, 0 to 2 percent slopes, occasionally flooded	Fine, mixed, superactive, thermic Cumulic Vertic Endoaquolls	8.1	1.6%
Totals for Area of Interest			**516.4**	**100.0%**

Rating Options—Soil Taxonomy Classification (Colusa Wortham Parcel)

Aggregation Method: Dominant Condition

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For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value

should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Erosion Factors

Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

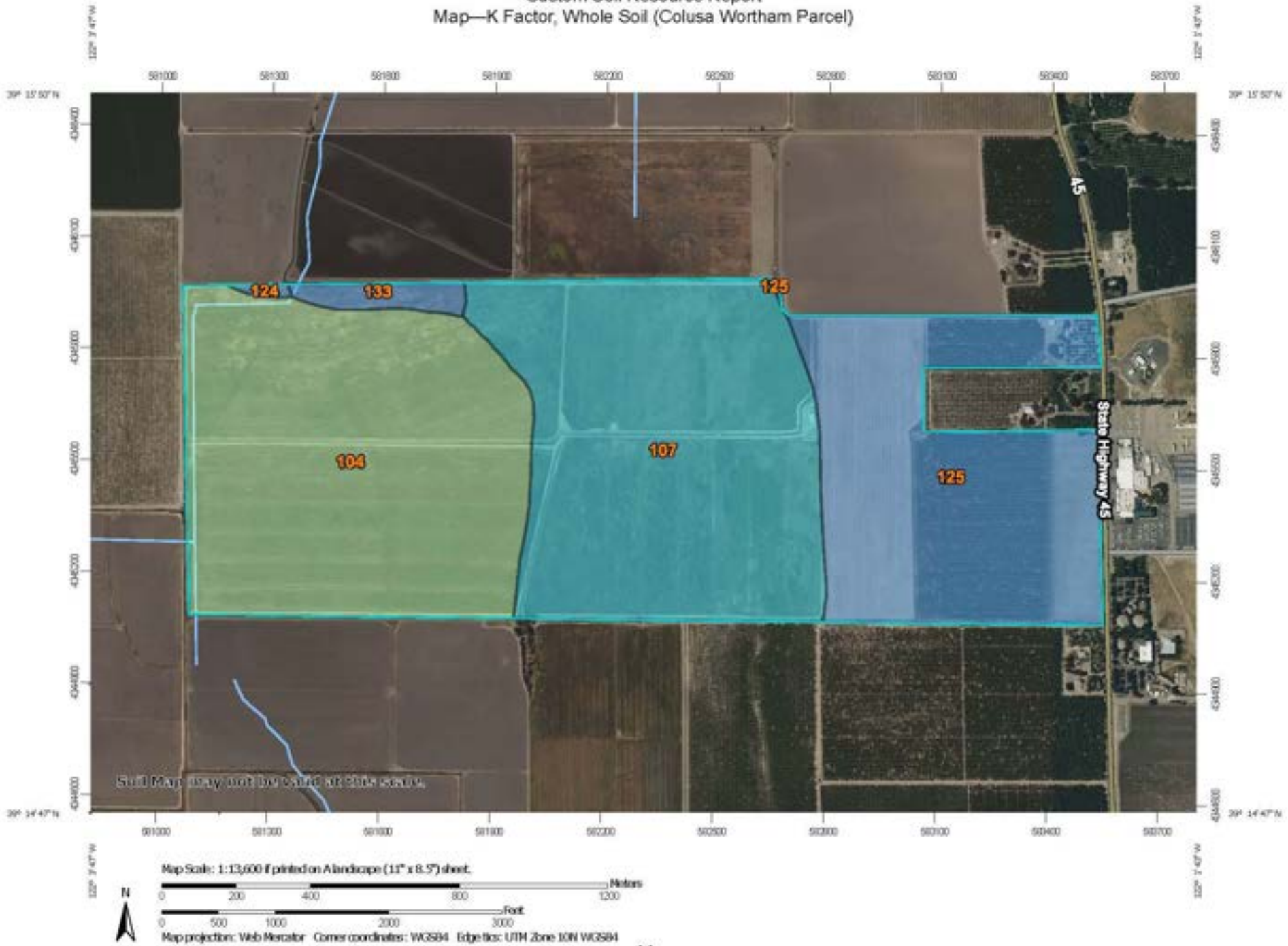
K Factor, Whole Soil (Colusa Wortham Parcel)

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Factor K does not apply to organic horizons and is not reported for those layers.

Custom Soil Resource Report
Map—K Factor, Whole Soil (Colusa Wortham Parcel)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Soil Rating Lines
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Soil Rating Points
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Colusa County, California
Survey Area Data: Version 20, Aug 28, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 7, 2022—Sep 8, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—K Factor, Whole Soil (Colusa Wortham Parcel)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
104	Willows silty clay, 0 to 1 percent slopes, frequently flooded	.28	186.8	36.2%
107	Scribner silt loam, 0 to 1 percent slopes, occasionally flooded	.37	182.5	35.3%
124	Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded	.43	1.1	0.2%
125	Moonbend silt loam, 0 to 2 percent slopes	.43	137.9	26.7%
133	Corbiere silt loam, 0 to 2 percent slopes, occasionally flooded	.43	8.1	1.6%
Totals for Area of Interest			**516.4**	**100.0%**

Rating Options—K Factor, Whole Soil (Colusa Wortham Parcel)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by

this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "Inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

Soil Physical Properties

Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Saturated Hydraulic Conductivity (Ksat), Standard Classes (Colusa Wortham Parcel)

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits. The classes are:

Very low: 0.00 to 0.01

Low: 0.01 to 0.1

Moderately low: 0.1 to 1.0

Moderately high: 1 to 10

High: 10 to 100

Very high: 100 to 705

Custom Soil Resource Report

Map—Saturated Hydraulic Conductivity (Ksat), Standard Classes (Colusa Wortham Parcel)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Very Low (0.0 - 0.01)
- Low (0.01 - 0.1)
- Moderately Low (0.1 - 1)
- Moderately High (1 - 10)
- High (10 - 100)
- Very High (100 - 705)
- Not rated or not available

Soil Rating Lines
- Very Low (0.0 - 0.01)
- Low (0.01 - 0.1)
- Moderately Low (0.1 - 1)
- Moderately High (1 - 10)
- High (10 - 100)
- Very High (100 - 705)
- Not rated or not available

Soil Rating Points
- Very Low (0.0 - 0.01)
- Low (0.01 - 0.1)
- Moderately Low (0.1 - 1)
- Moderately High (1 - 10)
- High (10 - 100)
- Very High (100 - 705)
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Colusa County, California
Survey Area Data: Version 20, Aug 28, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 7, 2022—Sep 8, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Saturated Hydraulic Conductivity (Ksat), Standard Classes (Colusa Wortham Parcel)

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
104	Willows silty clay, 0 to 1 percent slopes, frequently flooded	0.0100	186.8	36.2%
107	Scribner silt loam, 0 to 1 percent slopes, occasionally flooded	7.5789	182.5	35.3%
124	Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded	6.4737	1.1	0.2%
125	Moonbend silt loam, 0 to 2 percent slopes	6.4737	137.9	26.7%
133	Corbiere silt loam, 0 to 2 percent slopes, occasionally flooded	3.0526	8.1	1.6%
Totals for Area of Interest			**516.4**	**100.0%**

Rating Options—Saturated Hydraulic Conductivity (Ksat), Standard Classes (Colusa Wortham Parcel)

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Component" returns the attribute value associated with the component with the highest percent composition in the map unit. If more than one component shares the highest percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher attribute value should be returned

in the case of a percent composition tie. The result returned by this aggregation method may or may not represent the dominant condition throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Fastest

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: No

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

Top Depth: 0

Bottom Depth: 60

Units of Measure: Inches

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features

include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group (Colusa Wortham Parcel)

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

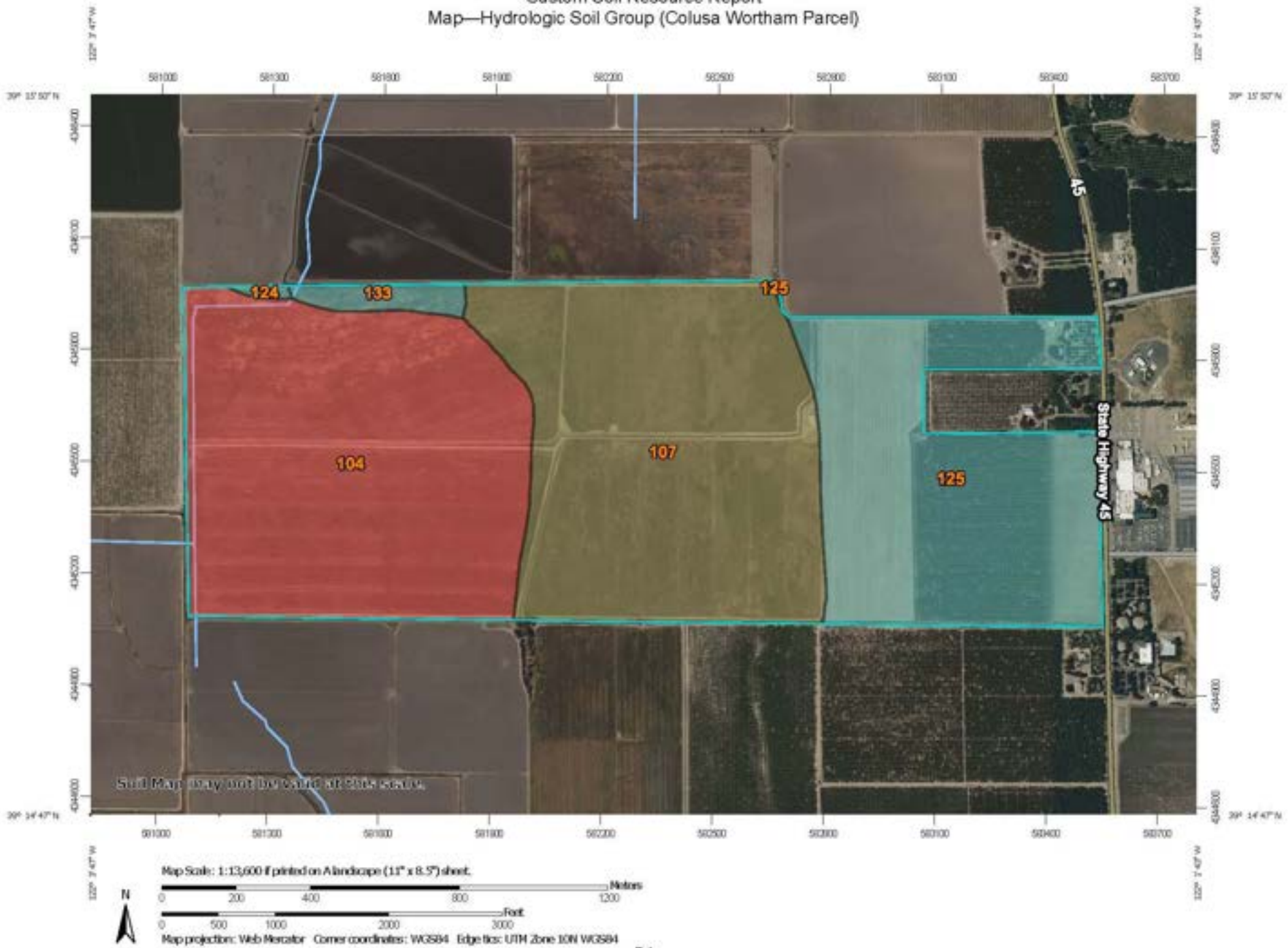
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

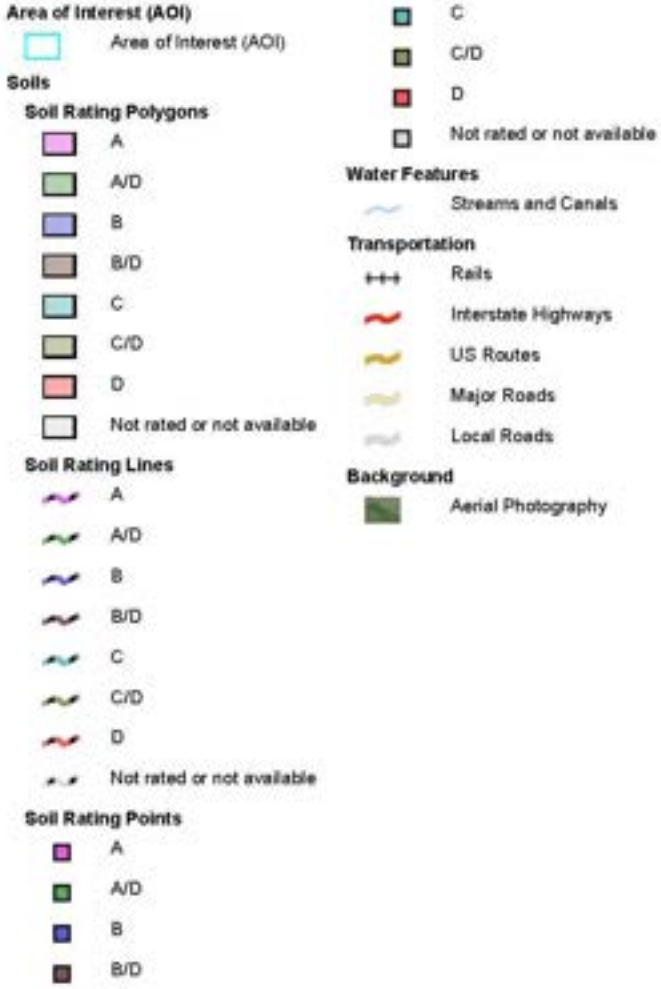
Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report
Map—Hydrologic Soil Group (Colusa Wortham Parcel)



MAP LEGEND



MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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Date(s) aerial images were photographed: Apr 7, 2022—Sep 8, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group (Colusa Wortham Parcel)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
104	Willows silty clay, 0 to 1 percent slopes, frequently flooded	D	186.8	36.2%
107	Scribner silt loam, 0 to 1 percent slopes, occasionally flooded	C/D	182.5	35.3%
124	Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded	C	1.1	0.2%
125	Moonbend silt loam, 0 to 2 percent slopes	C	137.9	26.7%
133	Corbiere silt loam, 0 to 2 percent slopes, occasionally flooded	C	8.1	1.6%
Totals for Area of Interest			**516.4**	**100.0%**

Rating Options—Hydrologic Soil Group (Colusa Wortham Parcel)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by

this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Water Features

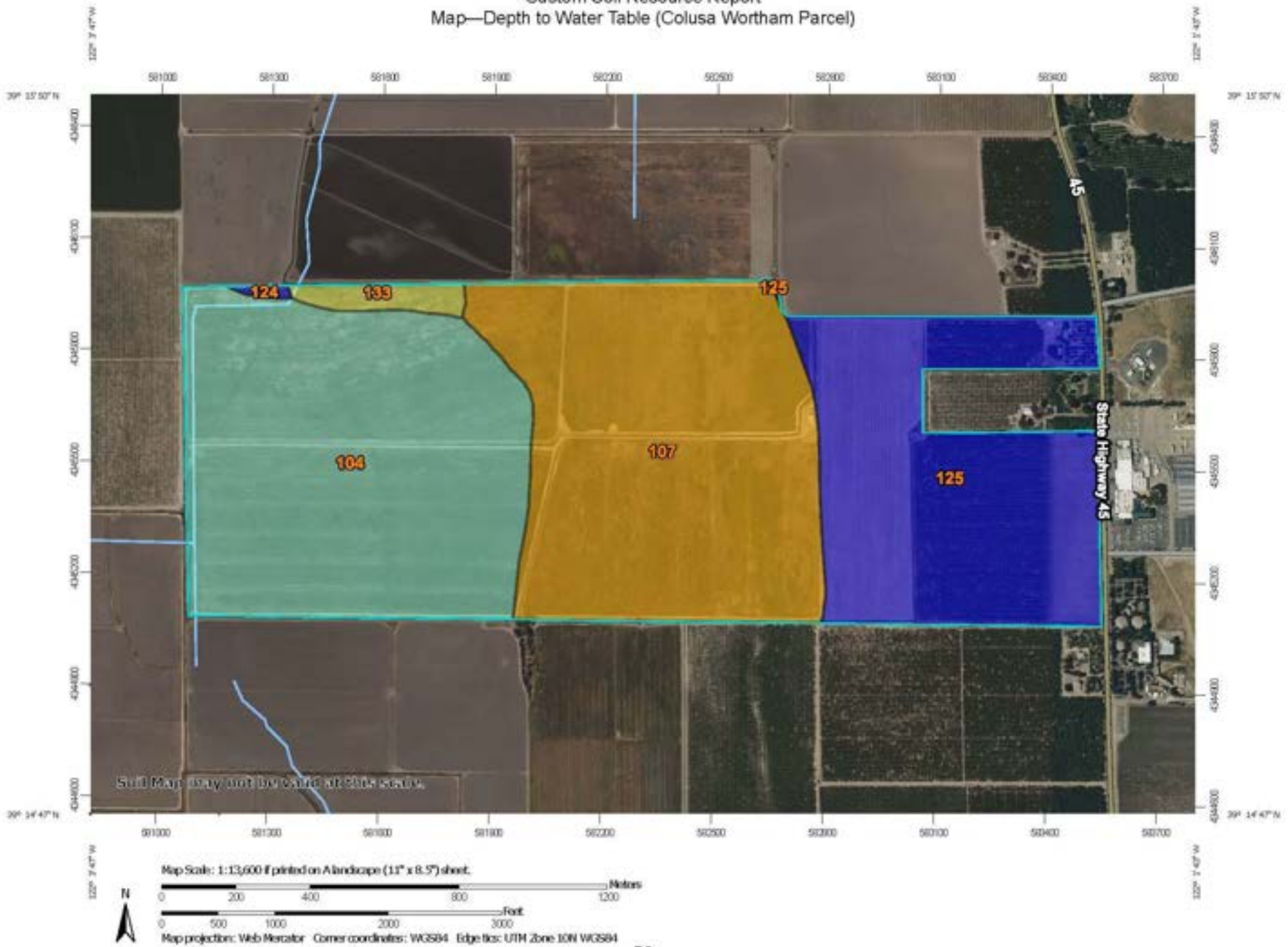
Water Features include ponding frequency, flooding frequency, and depth to water table.

Depth to Water Table (Colusa Wortham Parcel)

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—Depth to Water Table (Colusa Wortham Parcel)



MAP LEGEND

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Date(s) aerial images were photographed: Apr 7, 2022—Sep 8, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Depth to Water Table (Colusa Wortham Parcel)

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
104	Willows silty clay, 0 to 1 percent slopes, frequently flooded	122	186.8	36.2%
107	Scribner silt loam, 0 to 1 percent slopes, occasionally flooded	46	182.5	35.3%
124	Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded	>200	1.1	0.2%
125	Moonbend silt loam, 0 to 2 percent slopes	>200	137.9	26.7%
133	Corbiere silt loam, 0 to 2 percent slopes, occasionally flooded	61	8.1	1.6%
Totals for Area of Interest			**516.4**	**100.0%**

Rating Options—Depth to Water Table (Colusa Wortham Parcel)

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

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Appendix B

Transportation Impact Analysis

Draft Transportation Impact Analysis

Colusa Indian Community Mixed-Use Development Project

Colusa County

Prepared by:
Abrams Associates
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February 5, 2024

Draft Transportation Impact Analysis

Colusa Indian Community Mixed-Use Development Project

Colusa County

Prepared by:
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DRAFT TRANSPORTATION IMPACT ANALYSIS

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1) INTRODUCTION

This traffic impact study describes the existing and future conditions for transportation with and without the proposed Colusa Indian Community Mixed-Use Development Project in Colusa County. The project would include the following components which would be constructed on the Tribe's Reservation, which is currently held in federal trust:

1) Up to 100,000 square feet of retail and/or restaurant space
2) A 215 space RV park
3) 40 Single Family Homes

This study also describes the regulatory setting; the criterion used for determining the significance of environmental impacts; and summarizes potential environmental impacts and appropriate mitigation measures. This study has been conducted in accordance with the requirements and methodologies set forth by Colusa County, the City of Colusa, and Caltrans. This report has been prepared to assess off-reservation impacts of the project in accordance with Appendix B of the Tribe's Tribal-State Compact.

Summary of Required Mitigations and Recommended Improvement Measures - The following is a summary of the proposed mitigation measures to address the transportation impacts of the project. Based on a detailed analysis of traffic operations with and without each of the proposed mitigations, implementation of the following mitigation measures would reduce some of the project impacts to a *less-than-significant* level.

Impact #1 **Impacts to intersection operations - The project would result in a significant contribution (greater than 5 seconds delay) to the LOS operations at one intersection that would exceed the established standards under future Friday conditions:**

State Route 45 at the Main Project Entrance/Wintun Road (Intersection #6)

The addition of traffic from the proposed project would result in this intersection being forecast to exceed the established LOS standards. The following mitigation measures would be forecast to reduce the impacts to a less-than-significant level in all of the plus project scenarios.

Mitigation Measures

MM 1 *State Route 45 at the Main Project Access and Wintun Road – With the addition of traffic from the proposed project this intersection would exceed County standards and installation of a traffic signal is the only improvement that would allow the intersection to meet the County's LOS standard. The signal would also be recommended due to potential safety issues associated with the forecast pedestrian crossing volumes that would occur once the project is developed on the opposite side of SR 45 from the existing casino and hotel. This would also include installing separate left turn lanes on State Route 45 and also widening the casino exit to provide for separate right and left turn lanes. It is also recommended that the new main exit from the proposed project site include separate right and left turn lanes on its approach to State Route 45.*

Impact #2 Impacts related to site access and circulation.

As noted above, based on the analysis of the proposed project it is recommended that a traffic signal be installed at the main entrance intersection on State Route 45. This would also include installing separate left turn lanes on State Route 45 and also widening the casino exit to provide for separate right and left turn lanes. It is also recommended that the new main exit from the proposed project site include separate right and left turn lanes on its approach to State Route 45. At the intersection where the northern driveway would be constructed on State Route 45 it is recommended that left turn lanes be installed for the State Route 45 approaches and also separate right and left turn lanes for the existing casino exit approach (i.e., a two-lane approach). At the southern driveway it is recommended that left turns from northbound SR 45 into the project site be prohibited. No other site circulation or access issues have been identified that would cause a traffic safety problem or any unusual traffic congestion or delay.

Mitigation Measures

Implementation of Mitigation Measure MM 1.

Additional Recommendations

At the intersection where the northern driveway would be constructed on State Route 45 it is recommended that left turn lanes be installed for the State Route 45

approaches and also separate right and left turn lanes for the existing casino exit approach (i.e., a two-lane approach). At the southern driveway it is recommended that left turns from northbound SR 45 into the project site be prohibited.

2) PROJECT DESCRIPTION

As noted above, the project would include the following traffic-generating components:

1) Up to 100,000 square feet of retail and/or restaurant space.
2) A 215 space RV park
3) 40 Single Family Homes

All access to the project is currently proposed to occur via three new driveways onto SR 45. **Figure 1** shows the project location and the surrounding roadway network. **Figure 2** presents the site plan for the project.

3) EXISTING CONDITIONS

This section of the report describes the roadways, traffic conditions and other existing transportation characteristics in the vicinity of the project. The primary basis of the analysis is the peak hour level of service for the key intersections. The hours identified as the "peak" hours are generally between 7:30 a.m. and 8:30 a.m. and 4:15 p.m. and 5:15 p.m. for the transportation facilities described, based on the intersection turning movement counts collected for this analysis. These peak hours will be identified as the AM and PM peak hours. These volumes represent the conditions on a typical weekday (Tuesday through Thursday). An analysis of project impacts on Friday evening traffic conditions is presented in Section 4.8. The November, 2023 casino traffic volumes were also increased by 9% to account for seasonal variations in traffic, based on data on the monthly volumes contained in the traffic study for the previous expansion of the casino.[1] Although the proposed project could potentially generate slightly higher volumes on a Saturday afternoon, an analysis of Saturday traffic counts indicated the Saturday afternoon background traffic is so much lower than Friday afternoon traffic that Saturday conditions come out substantially better than Friday conditions in all cases. Therefore, the Friday analysis is considered the worst-case scenario and no additional useful information about the potential for project impacts would be anticipated even if additional analysis of Saturday afternoon conditions was conducted.

3.1 Project Study Intersections

Figure 1 shows the location of the project study intersections included in the analysis. As mentioned above, all access to the site would be via three new driveways to the project site on SR 45. Nine study intersections were analyzed in this study.

[1] *Colusa Casino Resort Phase II Expansion Traffic Impact Report*, Stantec Consulting, Sacramento, CA, February 20, 2007.

FIGURE 1 | PROJECT LOCATION
TRANSPORTATION IMPACT ANALYSIS
Colusa Indian Community Mixed-Use Development Project
Colusa County

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FIGURE 2 | SITE PLAN
TRANSPORTATION IMPACT ANALYSIS
Colusa Indian Community Mixed-Use Development Project
Colusa County

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3.2 Traffic Analysis Scenarios

The study intersections were evaluated for the six scenarios described below:

- Scenario 1: *Existing Conditions* – Level of Service (LOS) based on the existing weekday peak hour volumes and existing intersection configurations.

- Scenario 2: *Existing Plus Project Conditions* – Existing traffic volumes plus the trips forecast to be generated by the proposed project.

- Scenario 3: *Baseline (No Project) Conditions* – The Baseline scenario is based on the existing volumes plus growth in background traffic (for two years) plus the traffic from all reasonably foreseeable developments that could substantially affect the volumes at the project study intersections.

- Scenario 4: *Baseline Plus Project Conditions* – This scenario is based on the Baseline traffic volumes plus the trips from the proposed project.

- Scenario 5: *Cumulative Conditions* – This scenario includes year 2045 cumulative volumes based on planned and approved projects and the Colusa County General Plan.

- Scenario 6: *Cumulative Plus Project Conditions* – This scenario includes year 2040 cumulative volumes based on the Colusa County General Plan plus the forecast trips from proposed project.

3.3 Existing Roadway Network

As discussed previously, the project location and the surrounding roadway network are illustrated in **Figure 1**. The following is a more detailed description of some of the main roadways in the area that could be affected by the project:

- **State Route 20** – State Route 20 is a regionally significant west to east state highway serving northern California. It begins at Route 1 near Fort Bragg in Mendocino County and ends at I-80 near Emigrant Gap in Placer County. It is predominantly a two-lane conventional highway that serves regional, commercial, agricultural, commuter, shopping, and recreational traffic and interconnects with major routes such as I-5, SR-99, SR-70, and I-80. State Route 20 is a feeder route for agricultural and commercial trucking connecting I-5, I-80, State Route 99 and 70. The route is classified as a minor arterial, except for a 22-mile section from the Lake/Colusa County line to I-5 and in Yuba City and Marysville, where it is a principal arterial. State Route 20 passes through the City of Colusa. For about a mile in the City of Colusa, the route is four-lane roadway with parking and serves as "Main Street" for the city, providing access to

shopping, commercial and service areas. Traffic must slow for a 35 mph speed zone through the city. Local city traffic and traffic from State Route 45 join with State Route 20 at their intersection in the center of Colusa.

- **State Route 45 (Princeton Road)** – State Route 45 (Princeton Road) is a north-south, two-lane, low volume, conventional highway that serves farm-to-market and local traffic in a rural area. Two major routes (I-5 and SR 99) parallel State Route 45 and carry most of the regional traffic. State Route 45 begins at the junction with Route 113 in Knights Landing and extends northward through Yolo, Colusa, and Glenn Counties parallel to the Sacramento River. At the junction of State Route 20 west of Meridian in Colusa County a break in State Route 45 occurs. In the City of Colusa, State Route 45 again continues northward to the City of Hamilton where the route ends at the junction of Route 32. State Route 45 is classified as a minor arterial in the vicinity of the proposed project. Traffic using State Route 45 includes a high percentage of trucks and farm equipment. The posted speed limit on State Route 45 in the vicinity of the project site is 55 mph.

- **Maxwell Road** – Maxwell Road extends east from the unincorporated community of Maxwell and terminates at State Route 45. Maxwell Road is a two-lane conventional highway and is classified as a major collector. The posted speed limit is 55 mph.

3.4 Intersection Analysis Methodology

Existing operational conditions at the nine (9) study intersections have been evaluated according to the requirements set forth by the Colusa County and City of Colusa General Plans. Analysis of traffic operations was conducted using the 6th Edition of the *Highway Capacity Manual* (*HCM*) Level of Service (LOS) methodology with Synchro software.[2] Level of service is an expression, in the form of a scale, of the relationship between the capacity of an intersection (or roadway segment) to accommodate the volume of traffic moving through it at any given time.

The level of service scale describes traffic flow with six ratings ranging from A to F, with "A" indicating relatively free flow of traffic and "F" indicating stop-and-go traffic characterized by traffic jams. As the amount of traffic moving through a given intersection or roadway segment increases, the traffic flow conditions that motorists experience rapidly deteriorate as the capacity of the intersection or roadway segment is reached. Under such conditions, there is general instability in the traffic flow, which means that relatively small incidents (e.g., momentary engine stall) can cause considerable fluctuations in speeds and delays that lead to traffic congestion. This near-capacity situation is labeled level of service (LOS) E. Beyond LOS E, the intersection or roadway segment capacity has been exceeded, and arriving traffic will generally exceed the ability of the intersection to accommodate it.

[2] *6th Edition of Highway Capacity Manual*, Transportation Research Board, Washington D.C., 2016

For signalized intersections, The *HCM* methodology determines the capacity of each lane group approaching the intersection. The LOS is then based on average control delay (in seconds per vehicle) for the various movements within the intersection. A combined weighted average control delay and LOS are presented for the intersection. A summary of the HCM results and copies of the detailed HCM LOS calculations are included in the appendix to this report. **Table 1** summarizes the relationship between LOS, average control delay, and the volume to capacity ratio at signalized intersections. **Table 2** summarizes the relationship between LOS and average control delay at unsignalized intersections.

For unsignalized intersections (all-way stop controlled and two-way stop controlled) the average control delay and LOS operating conditions are calculated by approach (e.g., northbound) and by movement (e.g., northbound left-turn) for those movements that are subject to delay. In general, the operating conditions for unsignalized intersections are presented for the worst approach.

3.5 Pedestrian and Bicycle Facilities

Bicycle and pedestrian facilities in the project study area are currently very limited with no bike lanes or sidewalks provided in the vicinity of the project. Bicycle paths, lanes and routes are typical examples of bicycle transportation facilities, which are defined by Caltrans as being in one of the four classes:

Class I – Provides a completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.
Class II – Provides a restricted right-of-way designated lane for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and cross-flows by pedestrians and motorists permitted.
Class III – Provides a route designated by signs or permanent markings and shared with pedestrians and motorists.
Class IV – Provides an adjacent bike lane or bikeway that is physically separated from motor vehicle traffic.

Field observations indicate that walking and bicycling activity is limited in the immediate vicinity of the proposed project site. This is primarily due to the lack of existing bicycle and pedestrian traffic generators in the vicinity of the project site. However, there is a lack of curbs, gutters, and sidewalks along SR 45 to accommodate pedestrian activity. On most of the roadways in the study area, bicyclists must ride in the roadway and share the travel lane with vehicular traffic.

TABLE 1
SIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description of Operations	Average Delay (sec/veh)	Volume to Capacity Ratio
A	Insignificant Delays: No approach phase is fully used and no vehicle waits longer than one red indication.	≤ 10	< 0.60
B	Minimal Delays: An occasional approach phase is fully used. Drivers begin to feel restricted.	> 10 to 20	> 0.61 to 0.70
C	Acceptable Delays: Major approach phase may become fully used. Most drivers feel somewhat restricted.	> 20 to 35	> 0.71 to 0.80
D	Tolerable Delays: Drivers may wait through no more than one red indication. Queues may develop but dissipate rapidly without excessive delays.	> 35 to 55	> 0.81 to 0.90
E	Significant Delays: Volumes approaching capacity. Vehicles may wait through several signal cycles and long vehicle queues from upstream.	> 55 to 80	> 0.91 to 1.00
F	Excessive Delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80	> 1.00

SOURCES: 6th Edition of the *Highway Capacity Manual*, Transportation Research Board, 2016.

TABLE 2
UNSIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description of Operations	Average Delay (seconds/vehicle)
A	No delay for stop-controlled approaches.	0 to 10
B	Operations with minor delays.	> 10 to 15
C	Operations with moderate delays.	> 15 to 25
D	Operations with some delays.	> 25 to 35
E	Operations with high delays and long queues.	> 35 to 50
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers.	> 50

SOURCE: 6th Edition of the *Highway Capacity Manual*, Transportation Research Board, 2016.

3.6 Transit Service

Bus Transit - The travel demands of Colusa County residents are accommodated primarily by the use of the automobile. However, the Mini-Transit Program (MTP) by Colusa County Transit Agency (CCTA) provides Dial-A-Ride service to transportation-disadvantaged people between Colusa, Williams, Arbuckle, Maxwell, Grimes, and College City.

3.7 Existing Intersection Capacity Conditions (Scenario 1)

The existing intersection geometry at each of the project study intersections can be seen in **Figure 3** and the existing traffic volumes at each are presented in **Figure 4.** Traffic counts at the project study intersections were conducted in November of 2023 at times when local schools were in session. **Table 3** summarizes the associated LOS computation results for the existing weekday AM and PM peak hour conditions. Please note that the corresponding LOS analysis calculation sheets are presented in the appendix to this report. As shown in **Table 3**, all of the project study intersections currently have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours. See Section 3.8 for a description of the applicable intersection thresholds.

TABLE 3
EXISTING INTERSECTION LEVEL OF SERVICE CONDITIONS

	INTERSECTION	CONTROL	PEAK HOUR	EXISTING	
				Delay	LOS
1	MAXWELL ROAD & I-5 NORTHBOUND RAMPS	Side Street Stop	AM	9.9	A
			PM	10.3	B
2	MAXWELL ROAD & I-5 SOUTHBOUND RAMPS	Side Street Stop	AM	9.7	A
			PM	10.1	B
3	MAXWELL ROAD & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	AM	9.5	A
			PM	10.1	B
4	NORTH PROJECT ACCESS & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	AM	11.5	B
			PM	13.2	B
5	MAIN PROJECT ACCESS / WINTUN ROAD & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	AM	12.2	B
			PM	14.3	B
6	SOUTH PROJECT ACCESS & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	AM	N/A	N/A
			PM	N/A	N/A
7	MARKET STREET (STATE ROUTE 45) AND 10TH STREET (STATE ROUTE 20)	Signalized	AM	14.3	B
			PM	15.3	B
8	STATE ROUTE 20 & I-5 SOUTHBOUND RAMPS	Side Street Stop	AM	10.8	B
			PM	12.1	B
9	STATE ROUTE 20 & I-5 NORTHBOUND RAMPS	Side Street Stop	AM	11.1	B
			PM	13.1	B

SOURCE: Abrams Associates, 2024 **NOTE:** Delay results are presented in terms of seconds per vehicle.

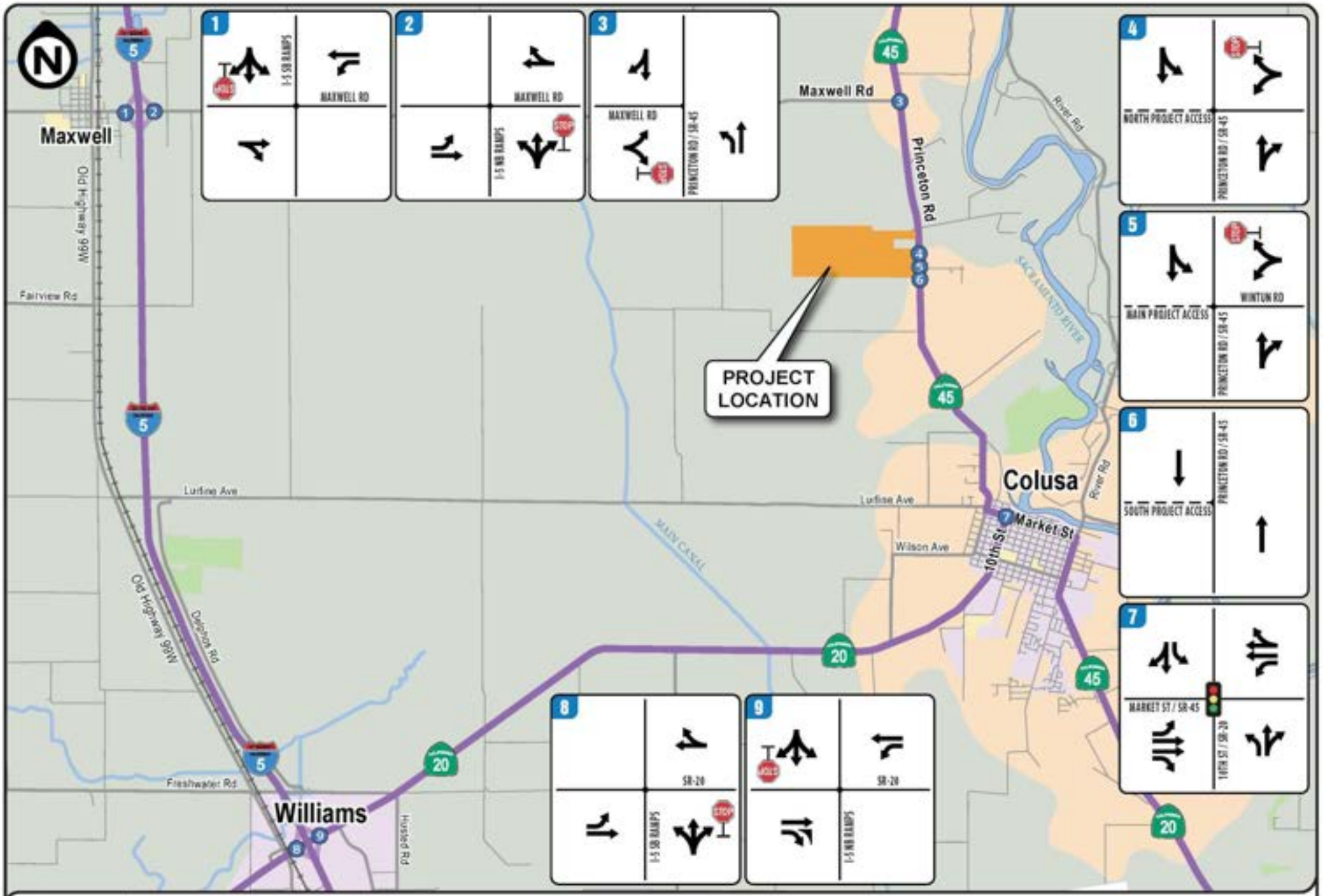

FIGURE 3 | EXISTING LANE CONFIGURATIONS
TRANSPORTATION IMPACT ANALYSIS
Colusa Indian Community Mixed-Use Development Project
Colusa County

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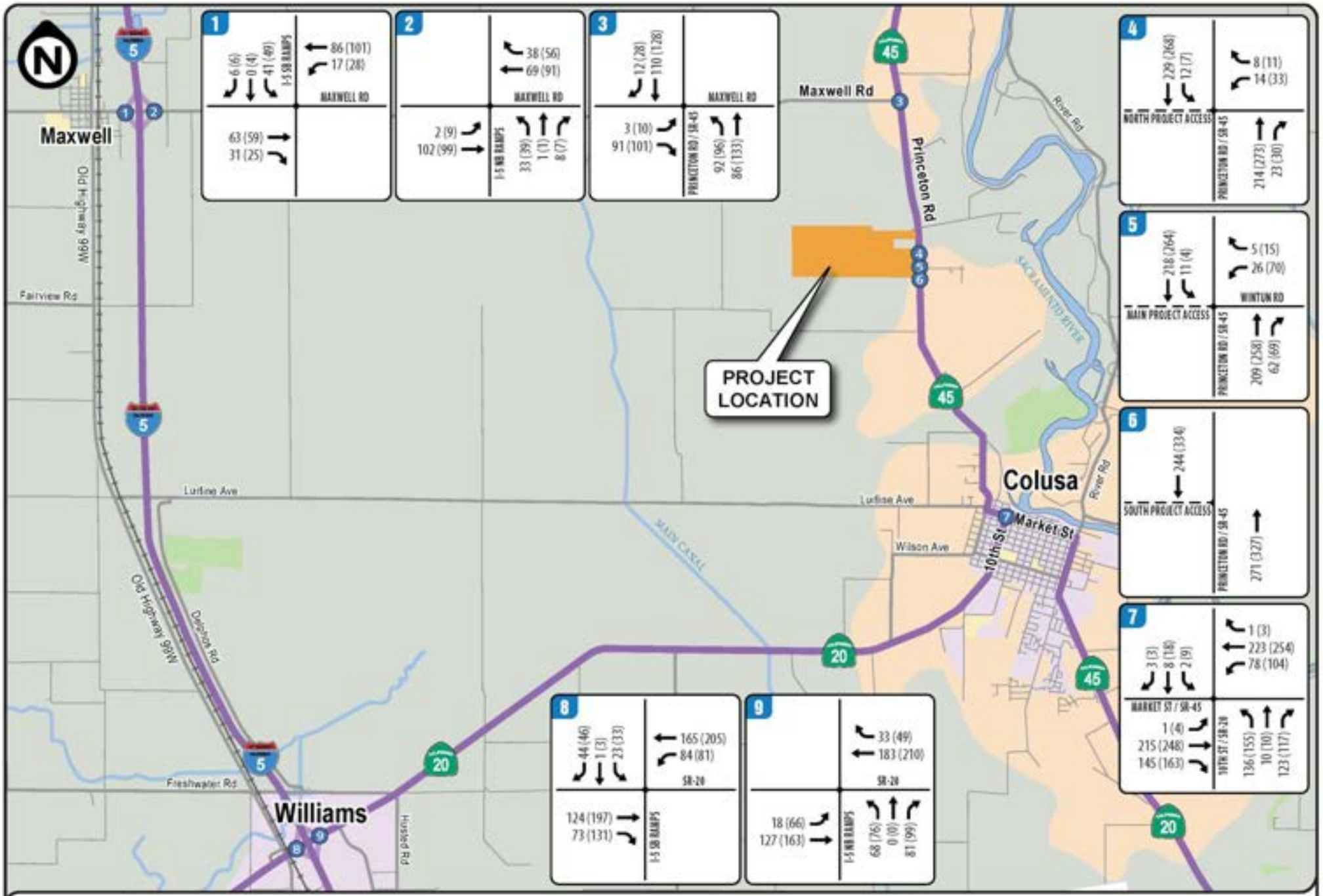

FIGURE 4 | EXISTING AM(PM) PEAK HOUR TRAFFIC VOLUMES
TRANSPORTATION IMPACT ANALYSIS
Colusa Indian Community Mixed-Use Development Project
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3.8 Standards and Objectives

Existing policies, laws and regulations that apply to the proposed project are summarized below.

Tribal-State Compact - The Tribal-State Compact Between the State of California and the Cachil Dehe Band of Wintun Indians specifies that a environmental review documents shall include: "a description of proposed mitigation measures included in the Project to reduce the potential Significant Effects on the Off-Reservation Environment to a less-than-significant level; and The Tribe's commitment to enter into an enforceable binding letter agreement with the State under which the Tribe shall agree to perform the required mitigation."

Caltrans - The California Department of Transportation (Caltrans) has jurisdiction over State highways. Therefore, Caltrans controls all construction, modification, and maintenance of State highways, such as State Route 45. Any improvements to these roadways would require Caltrans' approval.

Colusa County General Plan - The Transportation and Circulation Element included in the Colusa County General Plan was prepared pursuant to Section 65302(b) of the California Government Code. The Transportation and Circulation Element addresses the location and extent of existing and planned transportation routes, terminals, and other local public utilities and facilities. The General Plan identifies roadway and transit goals and policies that have been adopted to ensure that the transportation system of the County will have adequate capacity to serve planned growth. These goals and policies are intended to provide a plan and implementation measures for an integrated, multi-modal transportation system that will safely and efficiently meet the transportation needs of all economic and social segments of the County.

City of Colusa General Plan - The Circulation Element included in the City of Colusa General also identifies roadway and transit goals and policies that have been adopted to ensure that the transportation system of the City will continue to have adequate capacity to serve planned growth.

Significance Criteria – For the purposes of this analysis a project would have a significant impact if it would:

- Conflict with an applicable program, plan, ordinance or policy establishing measures of effectiveness for the performance of addressing the circulation system, including transit, roadways, bicycle lanes and pedestrian facilities/paths?

  The goal of Colusa County is to maintain a Level of Service (LOS) C during the peak hours. The County does not have plans, ordinances, or policies establishing measures of effectiveness for the performance of other parts of its circulation system. In the City of Colusa LOS C is established as the minimum acceptable LOS for City streets and intersections, except in the downtown area on SR 20/45 and SR 20 (Market, Bridge, 10th, and Main Streets), where LOS D is established as the minimum acceptable LOS, consistent with Caltrans LOS standards for state highways through urban areas. The applicable measures of effectiveness are summarized below:

Signalized Intersections - Project-related operational impacts on the study intersections in the Colusa County are considered significant if project-related traffic causes the Level of Service (LOS) rating on County roadways in unincorporated areas to deteriorate from LOS C to LOS D, E or F. Project-related operational impacts on Caltrans intersections and signalized study intersections in the City of Colusa are considered significant if project-related traffic causes the Level of Service (LOS) rating to deteriorate from LOS D to LOS E, or F. In the City of Colusa project impacts are also considered significant if a roadway or signalized intersection already exceeds the standards without project trips, and the project causes the volumes to increase by 5% or more.

Unsignalized Intersections - Project-related operational impacts on unsignalized intersections on County roadways in unincorporated areas are considered significant if project generated traffic causes a movement/approach to deteriorate from LOS C or better to LOS D, E or F. In the City of Colusa and for Caltrans facilities in the area impacts are considered significant if project generated traffic causes a movement/approach to deteriorate from LOS D or better to LOS E or F. For unsignalized intersections where the LOS would already exceed Colusa County standards it is considered a significant impact if the project increases the volumes by 5% or more.

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the off-reservation circulation system, taking into account all modes of transportation including mass transit and nonmotorized 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 off-reservation roads or highways?
- Substantially increase hazards to an off-reservation design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
- Result in inadequate emergency access for off-reservation responders?

4) TRANSPORTATION IMPACT ANALYSIS

4.1 Project Trip Generation

Project Trip Generation - The peak-hour trip generation of the proposed project was reviewed based on trip rates published in Institute of Transportation Engineers (ITE) Trip Generation Manual (Eleventh Edition, 2021). For the single family homes the fitted curve equations were used to develop the trip rates (ITE Land Use Code 210). For the shopping center the rates for a Shopping Plaza (40-150k – No Supermarket) were used (ITE Land Use Code 821). The shopping center trips were reduced by 66% to account for pass-by traffic (26%) and also shared trips with the casino and other land uses (40%). The trip generation forecasts include all traffic in and out of the project site including customers, employees, vendors, and deliveries. During the normal weekday commute peak hours the project is estimated to generate a total of approximately 140 AM peak hour trips (62 inbound and 78 outbound) and 272 PM peak hour trips (148 inbound and 124 outbound). The trip generation forecasts are presented below in **Table 4**.

4.2 Project Trip Distribution

The trip distribution assumptions have been based on the project's proximity to the access freeway and other key travel routes in Colusa County, the existing directional split at nearby intersections, and the overall land use patterns in the area. **Figure 5** shows the project trips that would be added at the study intersections.

4.3 Existing Plus Project Traffic Capacity Conditions (Scenario 2)

This scenario evaluates the existing conditions with the addition of traffic from the proposed project. The traffic volumes for each of the study intersections for Existing Plus Project conditions are shown in **Figure 6**. The capacity calculations for the Existing Plus Project scenario are shown in **Table 5**. The corresponding LOS analysis calculation sheets are presented in the appendix to this report. As shown in **Table 5**, all of the project study intersections would continue to have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours.

TABLE 4
PROJECT TRIP GENERATION CALCULATIONS

Land Use	Size	ADT	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
ITE Shopping Center Trip Rates - Trips per Room		67.52	1.07	0.66	1.73	2.54	2.65	5.19
Shopping Center Trip Generation	100,000 sq. ft.	6,752	107	66	173	254	265	519
Shared Traffic Reduction (75%)		4,456	70	44	114	168	175	343
Proposed Shopping Center Trip Generation		**2,296**	**37**	**22**	**59**	**86**	**90**	**176**
RV Park Trip Rates - Trips per Campsite		4.10	0.08	0.13	0.21	0.18	0.09	0.27
Proposed RV Park Trip Generation	**215 sites**	**882**	**16**	**29**	**45**	**38**	**20**	**58**
Single Family Homes Trip Rates - Trips per Unit		10.86	0.24	0.67	0.91	0.60	0.35	0.95
Proposed Single Family Homes Trip Generation	**40 units**	**434**	**9**	**27**	**36**	**24**	**14**	**38**
Net New Project Trip Generation		**3,612**	**62**	**78**	**140**	**148**	**124**	**272**

FIGURE 5 | PROJECT AM(PM) PEAK HOUR TRIPS
TRANSPORTATION IMPACT ANALYSIS
Colusa Indian Community Mixed-Use Development Project
Colusa County

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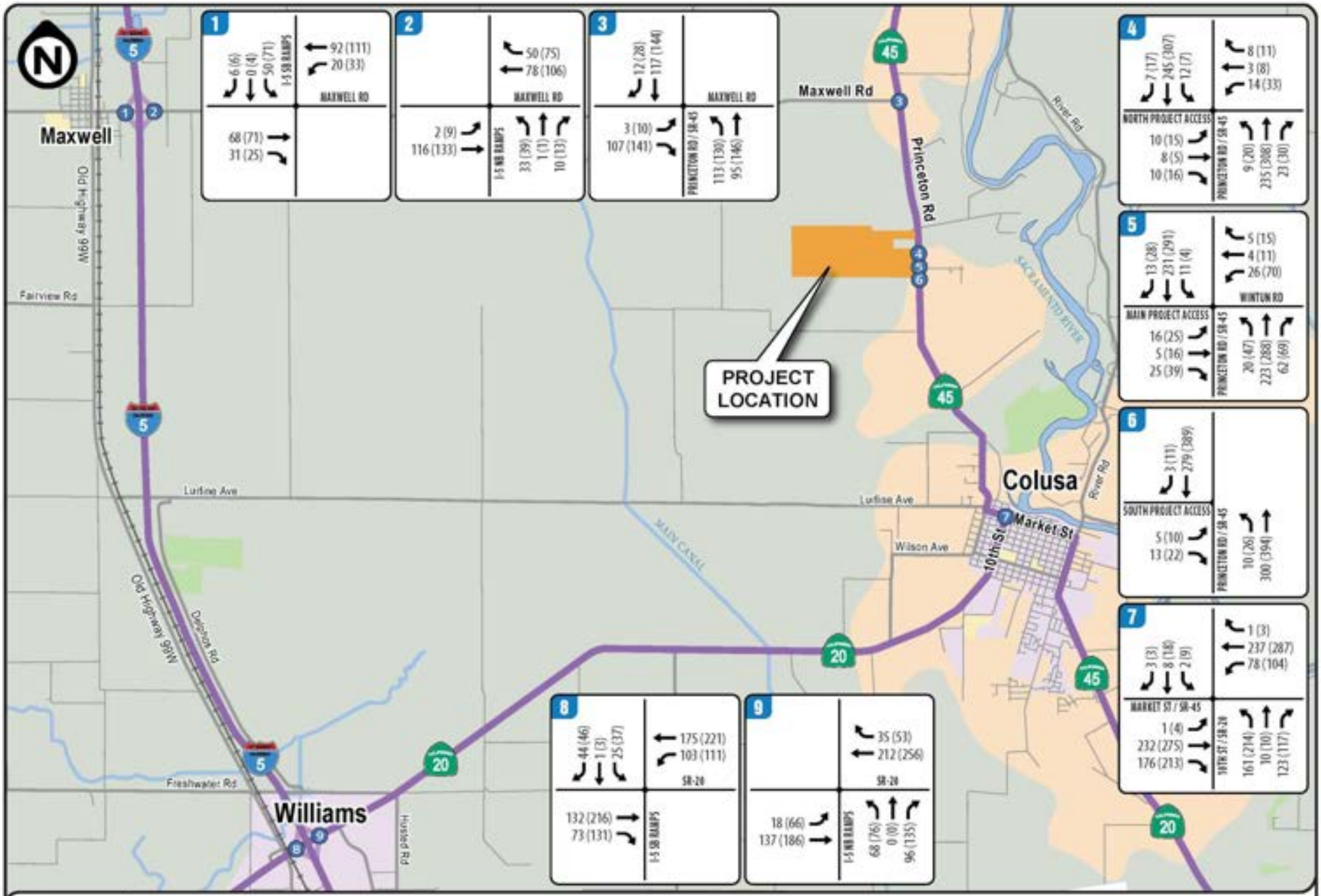

FIGURE 6 | EXISTING PLUS PROJECT AM(PM) PEAK HOUR TRAFFIC VOLUMES
TRANSPORTATION IMPACT ANALYSIS
Colusa Indian Community Mixed-Use Development Project
Colusa County

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TABLE 5
EXISTING PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS

	INTERSECTION	CONTROL	PEAK HOUR	EXISTING		EXISTING PLUS PROJECT	
				Delay	LOS	Delay	LOS
1	MAXWELL ROAD & I-5 NORTHBOUND RAMPS	Side Street Stop	AM	9.9	A	10.2	B
			PM	10.3	B	10.9	B
2	MAXWELL ROAD & I-5 SOUTHBOUND RAMPS	Side Street Stop	AM	9.7	A	9.9	A
			PM	10.1	B	10.4	B
3	MAXWELL ROAD & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	AM	9.5	A	9.7	A
			PM	10.1	B	10.6	B
4	NORTH PROJECT ACCESS & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	AM	11.5	B	13.2	B
			PM	13.2	B	17.6	C
5	MAIN PROJECT ACCESS / WINTUN ROAD & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	AM	12.2	B	14.5	B
			PM	14.3	B	22.6	C
6	SOUTH PROJECT ACCESS & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	AM	N/A	N/A	11.1	B
			PM	N/A	N/A	13.6	B
7	MARKET STREET (STATE ROUTE 45) AND 10TH STREET (STATE ROUTE 20)	Signalized	AM	14.3	B	14.8	B
			PM	15.3	B	16.6	B
8	STATE ROUTE 20 & I-5 SOUTHBOUND RAMPS	Side Street Stop	AM	10.8	B	11.3	B
			PM	12.1	B	13.4	B
9	STATE ROUTE 20 & I-5 NORTHBOUND RAMPS	Side Street Stop	AM	11.1	B	11.5	B
			PM	13.1	B	14.1	B

SOURCE: Abrams Associates, 2024 **NOTE:** Delay results are presented in terms of seconds per vehicle.

4.4 Baseline Traffic Capacity Conditions (Scenario 3)

The Baseline scenario evaluates the existing conditions with the addition of traffic from reasonably foreseeable projects in the area and general baseline growth in traffic. For this analysis the baseline volumes were developed based on the assumption that the project completion date would be 2027 with a 2% per year growth (representing approved projects and a partial return to pre-covid conditions). The traffic volumes for each of the study intersections for the Baseline scenario are shown in **Figure 7**. **Table 6** summarizes the associated LOS computation results for the Baseline weekday AM and PM peak hour conditions. As shown in **Table 6**, all of the study intersections would continue to have acceptable conditions under the Baseline scenario during the weekday AM and PM peak hours.

4.5 Baseline Plus Project Traffic Capacity Conditions (Scenario 4)

The Baseline plus proposed project traffic forecasts were developed by adding traffic from the project to the baseline traffic volumes. The traffic volumes for each of the study intersections for the Baseline Plus Project scenario are shown in **Figure 8**. **Table 6** summarizes the LOS results for the Baseline and Baseline Plus Project weekday AM and PM peak hour conditions. The corresponding LOS analysis calculation sheets are presented in the appendix to this report. As shown in **Table 6**, all of the study intersections would continue to have acceptable conditions under the Baseline Plus Project scenario during the weekday AM and PM peak hours.

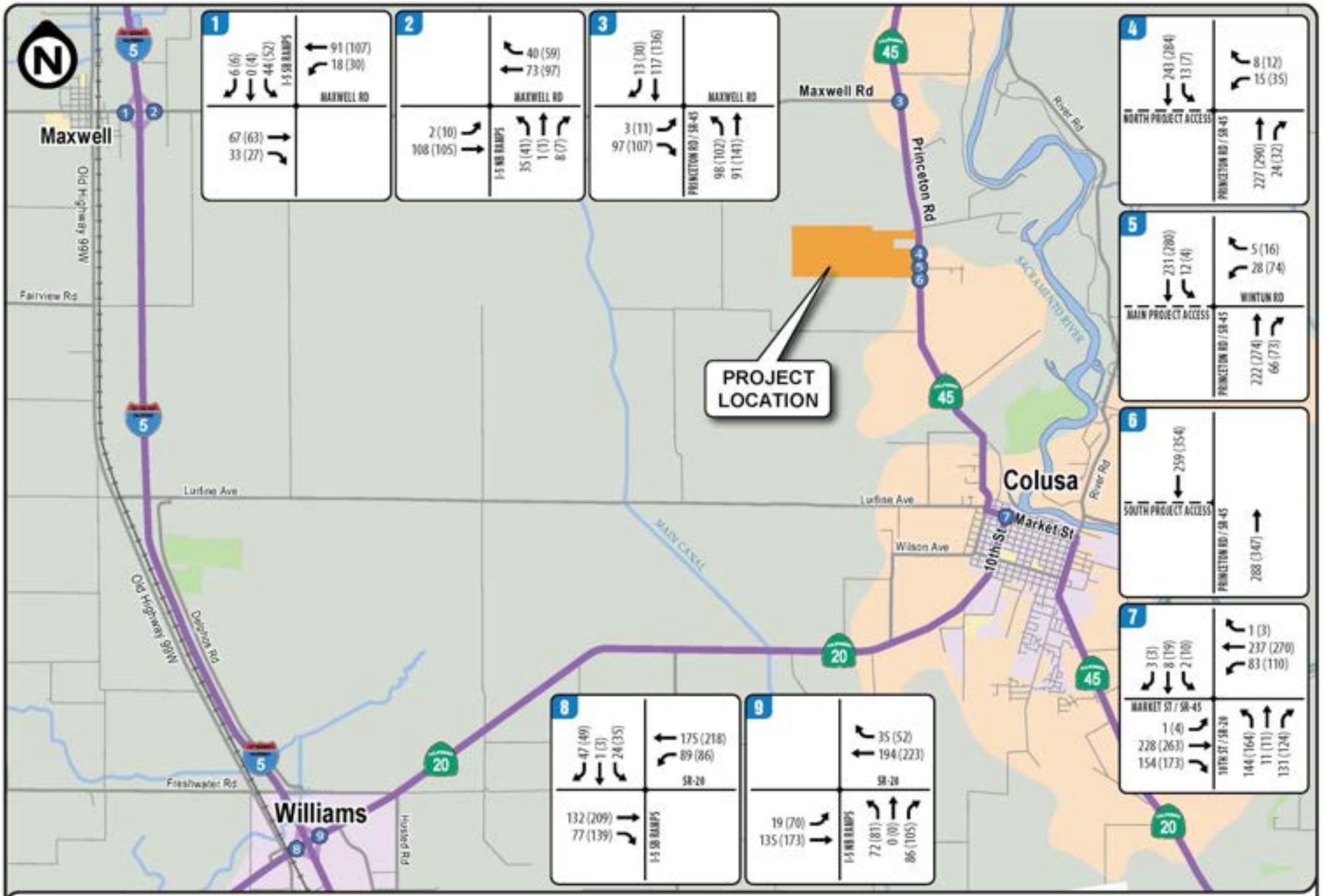

FIGURE 7 | BASELINE AM(PM) PEAK HOUR TRAFFIC VOLUMES
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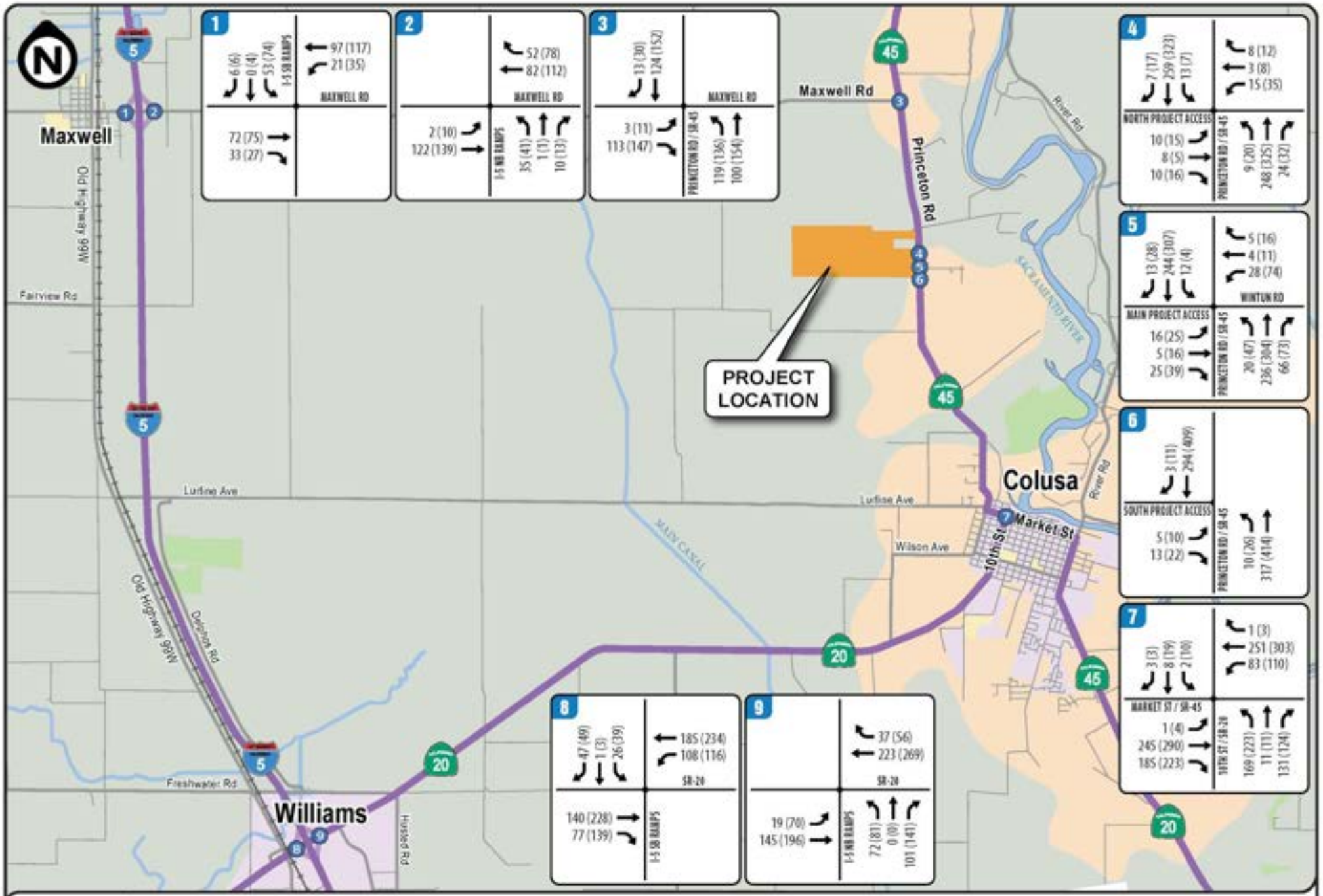

FIGURE 8 | BASELINE PLUS PROJECT AM(PM) PEAK HOUR TRAFFIC VOLUMES
TRANSPORTATION IMPACT ANALYSIS
Colusa Indian Community Mixed-Use Development Project
Colusa County

Abrams Associates
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TABLE 6
BASELINE PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS

	INTERSECTION	CONTROL	PEAK HOUR	BASELINE		BASELINE PLUS PROJECT	
				Delay	LOS	Delay	LOS
1	MAXWELL ROAD & I-5 NORTHBOUND RAMPS	Side Street Stop	AM	10.1	B	10.3	B
			PM	10.5	B	11.1	B
2	MAXWELL ROAD & I-5 SOUTHBOUND RAMPS	Side Street Stop	AM	9.8	A	10.0	B
			PM	10.2	B	10.6	B
3	MAXWELL ROAD & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	AM	9.6	A	9.8	A
			PM	10.3	B	10.8	B
4	NORTH PROJECT ACCESS & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	AM	11.8	B	13.7	B
			PM	13.6	B	18.7	C
5	MAIN PROJECT ACCESS / WINTUN ROAD & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	AM	12.6	B	15.2	C
			PM	15.0	C	24.6	C
6	SOUTH PROJECT ACCESS & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	AM	N/A	N/A	11.3	B
			PM	N/A	N/A	14.0	B
7	MARKET STREET (STATE ROUTE 45) AND 10TH STREET (STATE ROUTE 20)	Signalized	AM	14.6	B	15.1	B
			PM	15.7	B	17.0	B
8	STATE ROUTE 20 & I-5 SOUTHBOUND RAMPS	Side Street Stop	AM	11.0	B	11.5	B
			PM	12.5	B	14.0	B
9	STATE ROUTE 20 & I-5 NORTHBOUND RAMPS	Side Street Stop	AM	11.4	B	11.8	B
			PM	13.7	B	14.9	B

SOURCE: Abrams Associates, 2020 **NOTE:** Delay results are presented in terms of seconds per vehicle.

4.6 Cumulative Traffic Capacity Conditions (Scenario 5)

For the cumulative conditions, the intersection traffic volumes were based on the existing turning movements plus incremental growth of 0.5% per year in background traffic to the Year 2045 based on the Colusa County General Plan. **Figure 9** presents the cumulative build-out traffic volumes for the project study intersections. **Table 7** summarizes the LOS results for the Cumulative (Year 2045) traffic conditions at each of the project study intersections. As shown on this table, the project study intersections would be forecast to continue to have acceptable conditions during the weekday AM and PM peak commute hours.

4.7 Cumulative Plus Project Traffic Capacity Conditions (Scenario 6)

Table 7 summarizes the LOS results for the Cumulative Plus Project (Year 2040) traffic conditions at each of the project study intersection. **Figure 10** presents the cumulative build-out traffic volumes including the traffic from the proposed project. As shown on this table, all of the signalized study intersections would continue to have acceptable conditions during the weekday peak hours.

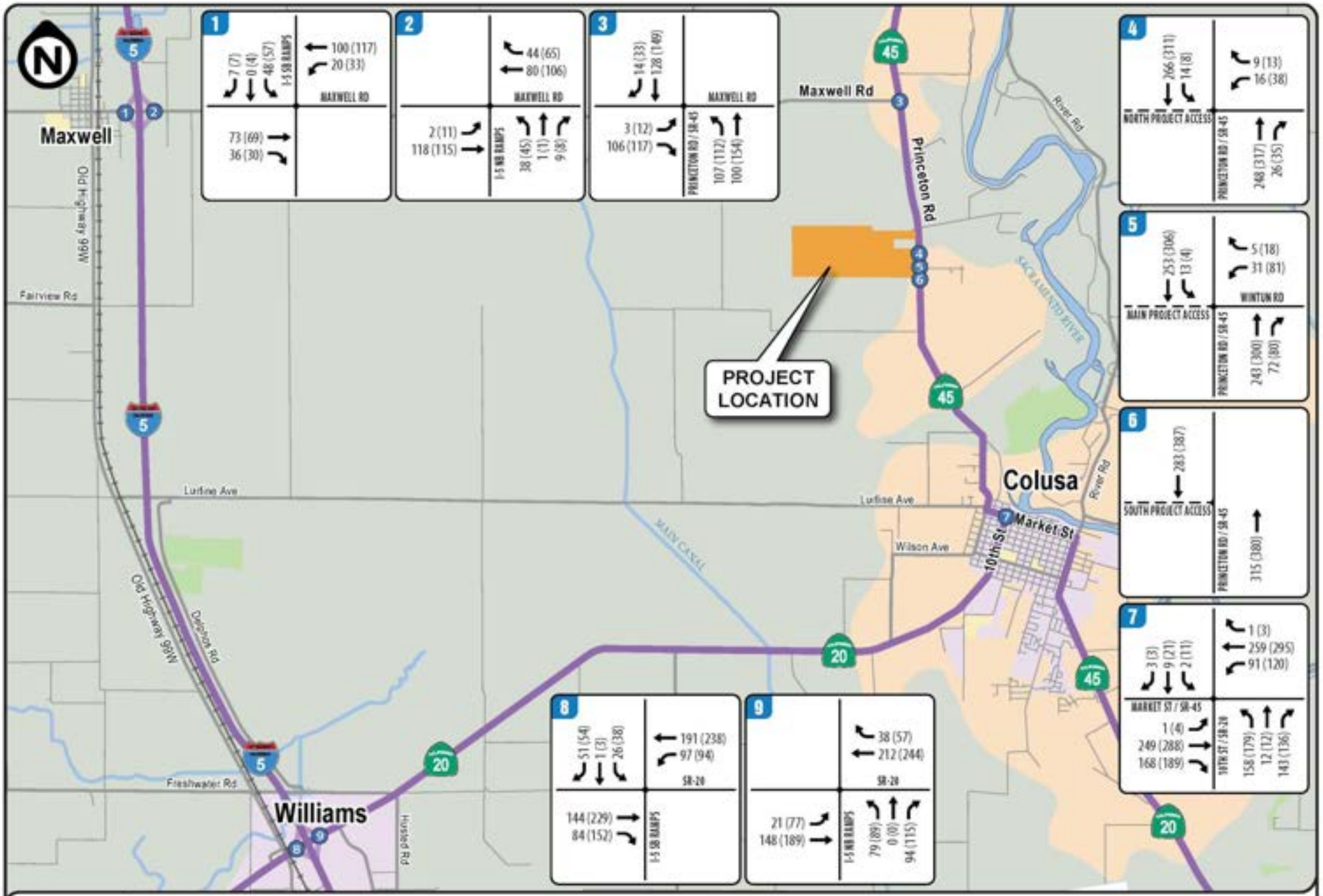

FIGURE 9 | CUMULATIVE AM(PM) PEAK HOUR TRAFFIC VOLUMES
TRANSPORTATION IMPACT ANALYSIS
Colusa Indian Community Mixed-Use Development Project
Colusa County

Abrams Associates
TRAFFIC ENGINEERING, INC.

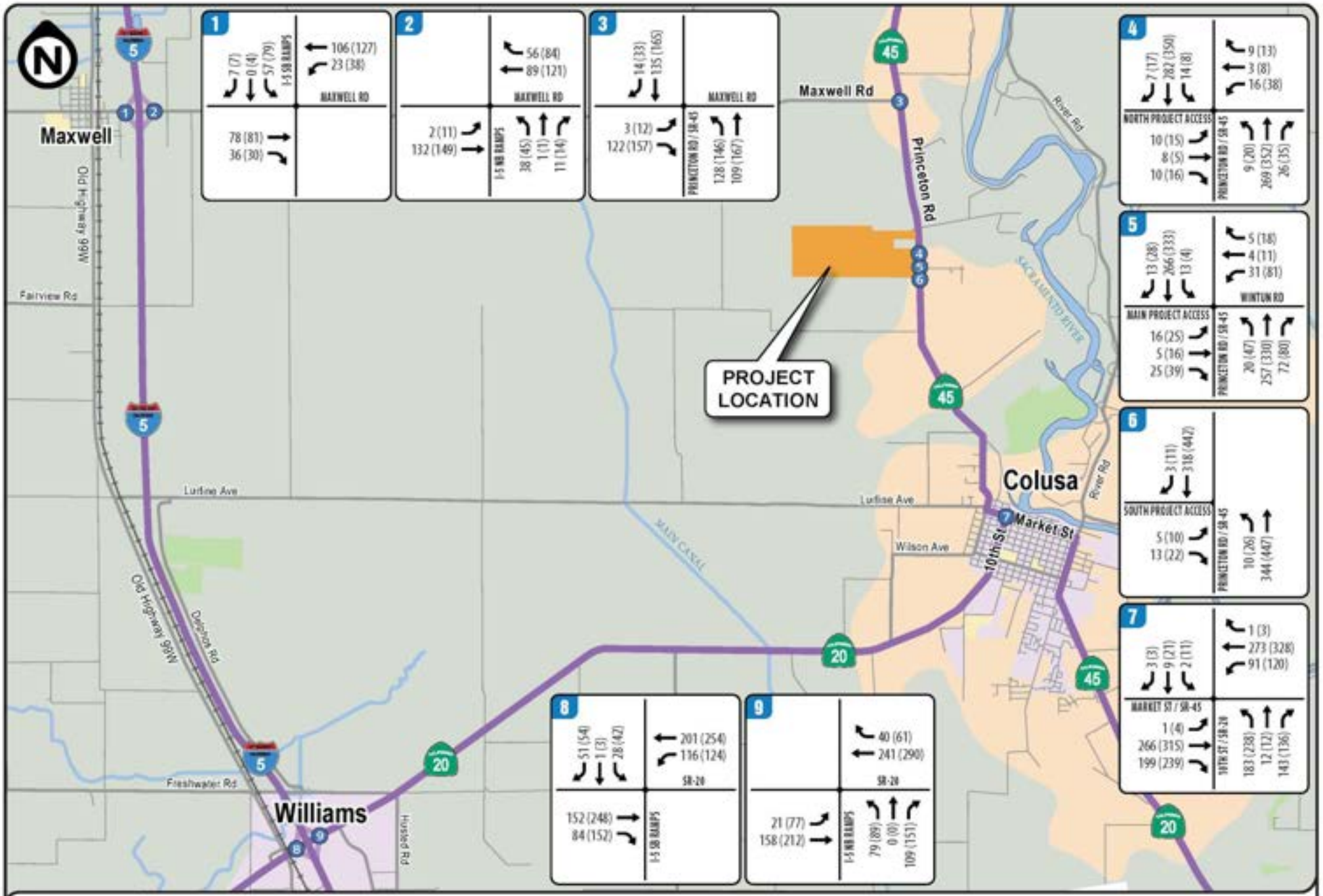

FIGURE 10 | CUMULATIVE PLUS PROJECT AM(PM) PEAK HOUR TRAFFIC VOLUMES
TRANSPORTATION IMPACT ANALYSIS
Colusa Indian Community Mixed-Use Development Project
Colusa County

Abrams Associates
TRAFFIC ENGINEERING, INC.

TABLE 7
CUMULATIVE PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS

	INTERSECTION	CONTROL	PEAK HOUR	CUMULATIVE		CUMULATIVE PLUS PROJECT	
				Delay	LOS	Delay	LOS
1	MAXWELL ROAD & I-5 NORTHBOUND RAMPS	Side Street Stop	AM	10.3	B	10.5	B
			PM	10.7	B	11.4	B
2	MAXWELL ROAD & I-5 SOUTHBOUND RAMPS	Side Street Stop	AM	10.0	B	10.1	B
			PM	10.4	B	10.8	B
3	MAXWELL ROAD & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	AM	9.8	A	9.9	A
			PM	10.6	B	11.2	B
4	NORTH PROJECT ACCESS & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	AM	12.2	B	14.3	B
			PM	14.6	B	20.6	C
5	MAIN PROJECT ACCESS / WINTUN ROAD & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	AM	13.3	B	16.3	C
			PM	16.4	C	29.0	D
6	SOUTH PROJECT ACCESS & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	AM	N/A	N/A	11.7	B
			PM	N/A	N/A	14.8	B
7	MARKET STREET (STATE ROUTE 45) AND 10TH STREET (STATE ROUTE 20)	Signalized	AM	15.0	B	15.5	B
			PM	16.2	B	17.7	B
8	STATE ROUTE 20 & I-5 SOUTHBOUND RAMPS	Side Street Stop	AM	11.4	B	12.0	B
			PM	13.3	B	14.9	B
9	STATE ROUTE 20 & I-5 NORTHBOUND RAMPS	Side Street Stop	AM	11.9	B	12.3	B
			PM	15.0	C	16.6	C

SOURCE: Abrams Associates, 2024 **NOTE:** Delay results are presented in terms of seconds per vehicle.

4.8 Friday Evening Cumulative Plus Project Traffic Capacity Conditions

Traffic counts at all of the project study intersections were conducted on Friday, May 12th, 2023. **Table 8** summarizes the associated LOS computation results for cumulative Friday PM peak hour conditions. Please note that the corresponding LOS analysis calculation sheets for all analysis scenarios are presented in the appendix to this report. For this analysis the Friday evening cumulative and cumulative plus project conditions are presented in **Table 8**. As shown in **Table 8**, all of the project study intersections would continue to have acceptable operations (LOS D or better) under cumulative plus project conditions during the Friday PM peak hour with the exception of the following intersection: State Route 45 at the main project access and Wintun Road (Intersection # 5). Mitigations to improve the operations at this intersection are discussed in Section 5.

TABLE 8
FRIDAY CUMULATIVE PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS

	INTERSECTION	CONTROL	CUMULATIVE		CUMULATIVE PLUS PROJECT	
			Delay	LOS	Delay	LOS
1	MAXWELL ROAD & I-5 NORTHBOUND RAMPS	Side Street Stop	11.3	B	12.0	B
2	MAXWELL ROAD & I-5 SOUTHBOUND RAMPS	Side Street Stop	10.6	B	11.0	B
3	MAXWELL ROAD & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	11.8	B	12.7	B
4	NORTH PROJECT ACCESS & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	16.6	C	25.2	D
5	MAIN PROJECT ACCESS / WINTUN ROAD & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	19.0	C	**36.8**	**E**
6	SOUTH PROJECT ACCESS & PRINCETON ROAD (STATE ROUTE 45)	Side Street Stop	N/A	N/A	16.1	C
7	MARKET STREET (STATE ROUTE 45) AND 10TH STREET (STATE ROUTE 20)	Signalized	16.7	B	18.2	B
8	STATE ROUTE 20 & I-5 SOUTHBOUND RAMPS	Side Street Stop	21.2	C	26.6	D
9	STATE ROUTE 20 & I-5 NORTHBOUND RAMPS	Side Street Stop	24.3	C	30.7	D

SOURCE: Abrams Associates, 2024 **NOTE:** Delay results are presented in terms of seconds per vehicle.

4.9 Transit Impacts

The project would not result in degradation of the level of service (or a significant increase in delay) on any roadway segments currently being utilized by bus transit in the area and, as such, no significant impacts to bus transit are expected. The proposed project is not be expected to significantly impact the operating capacity any existing Colusa County Transit Agency bus routes. The proposed project would not conflict with any transit plans or goals of the County or the Colusa County Transit Agency. Although the proposed project does have the potential to increase patronage on bus routes in the area, no significant effects on transit capacity are anticipated. As a result, the project would not be expected to result in any significant impacts to bus transit service in the area.

4.10 Pedestrians, Bicycles and Non-Motorized Vehicular Travel

The County does not have level of service standards for pedestrian or bicycle facilities. Nevertheless, use of existing facilities by the users of the project would not be expected to overcrowd those facilities or decrease their performance or safety. The project will add some pedestrians and bicyclists in the area but the volumes added would not be expected to significantly impact any existing facilities, with the exception of the main entrance intersection

and State Route 45. At this location (also the existing casino main entrance) it is anticipated that there will be a substantial increase in pedestrian crossings between the project site and the existing casino/hotel on the other side of State Route 45.

To maintain adequate pedestrian safety is it anticipated a traffic signal will be required at the main entrance on State Route 45, to facilitate safe pedestrian crossings. Other than the potential for increased pedestrian crossings on State Route 45 at the casino, the proposed project would not be forecast to cause any other substantial changes to the pedestrian or bicycle traffic in the area and would not significantly impact or require changes to the design of any existing bicycle or pedestrian facilities. However, consistent with the County General Plan, the project could be asked to contribute to additional pedestrian and bicycle improvement measures in the project vicinity.

4.11 Site Access and Circulation

Based on the analysis of the proposed project it is recommended that a traffic signal be installed at the main entrance intersection on State Route 45. This would also include installing separate left turn lanes on State Route 45 and also widening the casino exit to provide for separate right and left turn lanes. It is also recommended that the new main exit from the proposed project site include separate right and left turn lanes on its approach to State Route 45.

At the intersection where the northern driveway would be constructed on State Route 45 it is recommended that left turn lanes be installed for the State Route 45 approaches and also separate right and left turn lanes for the existing casino exit approach (i.e., a two-lane westbound approach). At the southern driveway it is recommended that left turns from northbound SR 45 into the project site be prohibited. Instead, motorists would be directed to make the left turn to enter the project site at the main entrance. No other site circulation or access issues have been identified that would cause a traffic safety problem or any unusual traffic congestion or delay.

4.12 Parking

The proposed project would provide an adequate supply of off-street parking based on the County's requirements. The project is currently proposing to meet the County's parking requirements and based on a review of the proposed parking plan there would be no significant parking impacts expected to the surrounding properties.

5) MITIGATION

The following is a summary of the proposed mitigation measures to address the transportation impacts of the project. Based on a detailed analysis of traffic operations with and without each of the proposed mitigations, implementation of the following mitigation measures would reduce some of the project impacts to a *less-than-significant* level.

Impact #1 **Impacts to intersection operations - The project would result in a significant contribution (greater than 5 seconds delay) to the LOS operations at one intersection that would exceed the established standards under future Friday conditions:**

State Route 45 at the Main Project Entrance/Wintun Road (Intersection #6)

The addition of traffic from the proposed project would result in this intersection being forecast to exceed the established LOS standards. The following mitigation measures would be forecast to reduce the impacts to a less-than-significant level in all of the plus project scenarios.

Mitigation Measures

MM 1 *State Route 45 at the Main Project Access and Wintun Road – With the addition of traffic from the proposed project this intersection would exceed County standards and installation of a traffic signal is the only improvement that would allow the intersection to meet the County's LOS standard. The signal would also be recommended due to potential safety issues associated with the forecast pedestrian crossing volumes that would occur once the project is developed on the opposite side of SR 45 from the existing casino and hotel. This would also include installing separate left turn lanes on State Route 45 and also widening the casino exit to provide for separate right and left turn lanes. It is also recommended that the new main exit from the proposed project site include separate right and left turn lanes on its approach to State Route 45.*

Impact #2 **Impacts related to site access and circulation.**

As noted above, based on the analysis of the proposed project it is recommended that a traffic signal be installed at the main entrance intersection on State Route 45. This would also include installing separate left turn lanes on State Route 45 and also widening the casino exit to provide for separate right and left turn lanes. It is also recommended that the new main exit from the proposed project site

include separate right and left turn lanes on its approach to State Route 45. At the intersection where the northern driveway would be constructed on State Route 45 it is recommended that left turn lanes be installed for the State Route 45 approaches and also separate right and left turn lanes for the existing casino exit approach (i.e., a two-lane approach). At the southern driveway it is recommended that left turns from northbound SR 45 into the project site be prohibited. No other site circulation or access issues have been identified that would cause a traffic safety problem or any unusual traffic congestion or delay.

Mitigation Measures
Implementation of Mitigation Measure MM 1

Additional Recommendations
At the intersection where the northern driveway would be constructed on State Route 45 it is recommended that left turn lanes be installed for the State Route 45 approaches and also separate right and left turn lanes for the existing casino exit approach (i.e., a two-lane approach). At the southern driveway it is recommended that left turns from northbound SR 45 into the project site be prohibited.

Impact #3 Impacts related to conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or potential decreases to the performance or safety of such facilities.

The project would not result in degradation of the level of service (or a significant increase in delay) on any roadways or intersections currently being utilized by bus transit in the area and would not be forecast to increase ridership beyond existing capacity. As such, no significant impacts to bus transit are expected. In addition, with the proposed mitigations described above, the project would not significantly impact or change the design of any existing transportation facilities or create any new safety problems in the area. Therefore, the project's impacts on alternative transportation would be considered ***less than significant*** and no mitigations would be required.

Mitigation Measures
None required.

Impact #4 Demolition and construction activities associated with the proposed project would result in an increase in traffic to and from the site and could lead to unsafe conditions near the project site.

The increase in traffic as a result of demolition and construction activities associated with the proposed project has been quantified assuming a worst-case single phase construction period of 24 months.

Heavy Equipment

Approximately 20 truck trips per day are estimated throughout the demolition and construction of the proposed project. Heavy equipment transport to and from the site could cause traffic impacts in the vicinity of the project site during construction. The project would implement a Traffic Control Plan to address this truck traffic. The requirements within the Traffic Control Plan will include, but are not limited to, the following: truck drivers would be notified of and required to use the most direct routes; all site ingress and egress would occur only at the main driveways to the project site and construction activities may require installation of temporary traffic signals; specifically designated travel routes for large vehicles would be monitored and controlled by flaggers for large construction vehicle ingress and egress; warning signs indicating frequent truck entry and exit would be posted on State Route 45; and any debris and mud on nearby streets caused by trucks would be monitored daily and may require instituting a street cleaning program. In addition, the ten loads of heavy equipment being hauled to and from the site each month would be short-term and temporary.

Employees

The weekday work is expected to begin around 7:00 AM and end around 4:00 PM. The construction worker arrival peak would occur between 6:30 AM and 7:30 AM, and the departure peak would occur between 4:00 PM and 5:00 PM. These peak hours are slightly before the countywide commute peaks. It should be noted that the number of trips generated during construction would not only be temporary, but would also be substantially less than the proposed project at buildout. Based on estimates of the number of construction workers, the project could require parking for up to 60 vehicles during the peak construction period. Additionally, deliveries, visits, and other activities may generate peak non-worker parking demand of 20 to 30 trucks and automobiles per day. Therefore, up to 90 vehicle parking spaces may be required during the peak construction period for the construction employees. Because the construction of the project can be staged so that employee parking demand is met by using on-site parking, the impacts of construction-related employee traffic and parking are considered less-than-significant.

Construction Material Import/Export

The project would also require removal of existing debris as well as the importation of construction material, including raw materials for the building pads, the buildings, the parking area, and landscaping. During the maximum peak construction period, it is estimated material import and export could generate approximately 10 truck trips per day.

Traffic Control Plan

The Traffic Control Plan would indicate how parking for construction workers would be provided during construction on adjacent land currently held in trust by the Tribe to ensure a safe flow of traffic in the project area during construction. This analysis assumed construction of the entire project in one phase to identify the potential worst-case traffic effects. If the project is built in phases over time, the effects of each phase will be the same or less. Therefore, the demolition and construction activities associated with the proposed project or its individual phases would not lead to noticeable congestion in the vicinity of the site or the perception of decreased traffic safety resulting in a ***less-than-significant*** impact.

Mitigation Measures
None required.

Impact #5 Impacts regarding emergency vehicle access on and surrounding the proposed project site.

Sufficient emergency access is determined by factors such as number of access points, roadway width, and proximity to fire stations. The land use plan for the proposed project includes the main entrance on SR 45 along with two secondary access driveways. All lane widths within the project would meet the minimum width that can accommodate an emergency vehicle; therefore, the width of the internal roadways would be adequate. In addition, with the proposed mitigations, traffic control plan, and recommendations the addition of project traffic would not result in any significant changes to emergency vehicle response times in the area. Therefore, development of the project is expected to have ***less-than-significant*** impacts regarding emergency vehicle access.

Mitigation Measures
None required.

Appendix C

Living Resources Memo

Biological Resources Memo

Project Title: Wortham Environmental Assessment
Project Location: Colusa County, California
Date: 09.04.2025
Prepared for: Terraphase Engineering

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1. Introduction

This memo provides an assessment of the biological resources found within the limits of the Assessors Parcel Number (APN) 015-020-015-000 (Property) of the Wortham Environmental Assessment (Project). This report reflects a desktop review to identify biological resources that may be impacted by future actions on the Property. This includes the identification of habitat types, soils, and the potential for federally listed species to have the potential to occur within the Property.

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2. Project Location

The Property is approximately 519.31 acres and is zoned as Exclusive Agricultural within Colusa County California. The Property is found within Township 16N, Range 02W, Sections 11 and 12 of the USGS *Moulton Weir 7.5-minute Quad*. A majority of the Property is currently utilized as irrigated agriculture with a small orchard and rural residence on the Property. The Property is situated at an elevation of 68 feet above mean sea level (amsl) and 54 feet amsl. Surrounding land uses include irrigated agriculture to the north, west, and south, and the Colusa Casino Resort to the east.

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3. Methodology

To complete this analysis a review of relevant databases was utilized to assess the potential for listed species to occur within the Property. These databases include:

- United States Fish and Wildlife Service (USFWS) IPaC database (USFWS 2025a)(Attachment A);
- USFWS National Wetlands Inventory (USFWS 2025b) (Attachment A);
- USFWS Critical Habitat Mapper (USFWS 2025c);
- California Natural Diversity Database (CDFW 2025);

- Natural Resource Conservation Service Web Soil Survey (NRCS 2025) (Attachment B);

Habitats were delineated using data provided through:

- California Department of Water Resources Land Use Viewer (CADWR 2025);
- Historical Aerial Imagery (Google 2025)

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4. Environmental Conditions

Soil Types

There are five soil types found within the Property, these include Willows silty clay 0 to 1 percent slopes, frequently flooded; Scribners silt loam, 0 to 1 percent slopes, occasionally flooded; Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded; and Corbiere silt loam, 0 to 2 percent slopes, occasionally flooded. These are all predominately silty loams that are derived from alluvium. These soils are better described in Attachment B.

Habitat Types

Habitats found within the Project Site include cropland, orchard, and urban as described in the California Wildlife Habitat Relationship (CWHR) (Mayer and Laudenslayer 1988). Further detail of each habitat can be found below.

Irrigated Cropland

Irrigated croplands compose a majority of the Project site, a habitat that is defined as a monoculture herbaceous habitat that has an augmented water regime. These habitats are routinely disturbed between harvest seasons and reseeded in monoculture. Species found alongside planted crops are often non-native grasses such as italian rye grass (*Festuca perennis*) and slender oat (*Avena fatua*), other non-native forbs associated with irrigated cropland include black mustard (*Brassica nigra*), yellow star thistle (*Centaurea solstitialis*), and curly dock (*Rumex crispus*). This habitat feature is closely associated with the unlined irrigation ditches that convey water through the Property.

Orchard

Orchards are agricultural lands that are dominated by a monoculture of tree species that lack an herbaceous layer. The orchard on the Property is composed of English walnuts (*Juglans regia*). These lands are primarily irrigated throughout the summer and routinely mowed to control weeds below the tree canopy.

Urban

The urban habitat is the smallest habitat type found within the Property. The rural residence on the Property would be classified as urban habitat as it is composed of impervious surfaces, managed vegetation, and artificial structures. The Property contains a residence and farm out buildings to support the agricultural operation. Ornamental trees and other decorative plants are planted around the residence.

Wetlands and Waters

The Property is bisected by a perennial irrigation ditch that provides water to the agricultural operations within the project limits. Additional irrigation ditches run along the southern portion of the Property. The southern ditch appears to support aquatic vegetation while the larger central ditch is managed with little vegetation present along the banks. These features are manmade; they would not be classified as jurisdictional waters under Waters of the United States.

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5. Special Status Species Review

Special-status species are those listed or proposed as federally endangered or threatened under the Federal Endangered Species Act. There are 12 special-status species with the potential to occur within the Property; one special status plant: palmate-brachted bird's beak (*Cordylantus palmatus*)[Endangered]; and 11 special-status animal species: California condor (*Gymnogyps californianus*)[Experimental Population, Non-Essential]; northern spotted owl (*Strix occidentalis caurina*)[Threatened]; yellow-billed cuckoo (*Coccyzus americanus*)[Threatened]; giant garter snake (*Thamnophis gigas*)[Threatened]; northwestern pond turtle (*Actinemys marmorata*)[Proposed Threatened]; Western Spadefoot (*Spea hammondii*)[Proposed Threatened]; monarch butterfly *Danaus plexippus*)[Proposed Threatened]; valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)[Threatened]; conservancy fairy shrimp (*Branchinecta conservatio*)[Endangered]; vernal pool fairy shrimp (*Branchinecta lynchi*)[Threatened]; and vernal pool tadpole shrimp (*Lepidurus packardi*) [Endangered]. Critical habitat for these species is not found within the Property (USFWS 2025c).

There is no potential for palmate-brachted bird's beak to occur within the Property as the appropriate saline soils are not present and habitats are routinely disturbed to maintain the agricultural operations. Old growth forests that support the nesting behavior of the northern spotted owl or riparian woodlands to support yellow billed cuckoo are not present and neither of these species have the potential to occur on the Property. Steep cliffs or large trees to support the nesting of California condors are not found within the Property and the species does not have the potential to occur. Monarch butterfly roosting habitat such as eucalyptus groves or pine forests are not found within the Property. Due to the frequent ground disturbance related to the agricultural operations there western spadefoot is not anticipated to be found within the Property. Suitable seasonal wetland or vernal pool habitat to support the special

status crustacean species (conservancy fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp) is not found within the Property.

There is potential for 3 special status species to occur within the Property, these include the giant garter snake, northwestern pond turtle, and the valley elderberry longhorn beetle. These species are described below:

Valley Elderberry Longhorn Beetle

The Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus), is listed as a federally threatened species native to California's Central Valley, this insect depends exclusively on elderberry shrubs (*Sambucus spp.*) for every stage of its life cycle. Adults are relatively small (0.5-0.8in), and emerge from late March to early June, exhibit distinct sexual dimorphism: males have red-orange elytra with black spots and long antennae, while females are larger with metallic green wings and shorter antennae. After mating, females deposit eggs in bark crevices or at the junction of leaf stalks (USFWS 2017a). Once hatched, larvae bore into elderberry stems and build feeding galleries throughout the pith, remaining inside the host stem for approximately one month. As they develop, larvae create pupal chambers near the stem's surface, sealing them with wood shavings. Adult emergence, mating, and egg laying typically occur through the spring and summer (April-July). The adult beetles, which live only a few days (males) up to three weeks (females) and survive on a diet primarily composed of elderberry flowers and leaves (USFWS 2017a).

VELB's ecological requirements make it highly vulnerable to habitat disturbance, particularly the loss or degradation of riparian elderberry stands. The only approved monitoring relies on identifying the species directly or the observation of exit holes in elderberry stems (USFWS 2017a). Conservation strategies center on preserving and restoring elderberry-rich riparian corridors, limiting pesticide use, and managing competing species. There is a low potential for the valley elderberry longhorn beetle to occur within the Property, even if elderberry shrubs are present within the Property as the agricultural activities in the region have fragmented local riparian stands. There are 4 recorded occurrences of this species within a 5-mile radius with the closest record found 1.43 miles to the southeast along the Sacramento River (CDFW 2025). If there are elderberry trees present within the Property then impacts to obligate shrub habitats would result in less than significant impacts with mitigation measures described in Section 6.

Giant Garter Snake

The giant garter snake (GGS) (*Thamnophis gigas*) is a federally threatened species and is the largest garter snake species, reaching up to around 64 inches (162 cm) in length (USFWS 2017b). It exhibits an olive to brown coloration with prominent yellow or orange dorsal and lateral stripes, and in some individuals a checkered pattern of dark spots between these stripes (USFWS 2017b). Historically, this species inhabited vast freshwater marshes and floodplain wetlands across California's Central Valley, from Butte County in the north of its range to Kern County in the south, now occupying only about 5% of

its original habitat (USFWS 2017b). The remaining populations are fragmented across the Sacramento Valley in both natural wetlands and manmade agricultural environments particularly rice fields, irrigation canals, and drainage ditches (USFWS 2017b). GGS are semi-aquatic and rely on a mosaic of aquatic and upland features to meet their life-history needs. During the active season, from spring through mid-fall; they forage for small fish, frogs, and tadpoles, typically ambushing prey in shallow water among emergent vegetation (USFWS 2017b). They are diurnal and emerge from winter refugia (such as ground squirrel burrows or cracks in the soil) in spring to bask in open spaces adjacent to wetland vegetation to provide cover from predation (USFWS 2017b). Due to the network of vegetated irrigation ditches along the southern border of the Property and the perennially wet irrigation canal that bisects the Property there is potential for this species to be found on the Property. There are ten recorded occurrences of this species within a 5-mile radius of the Property, the closest occurrence is located 1.54 miles to the southwest within irrigation canals (CDFW 2025). These canals and adjacent agricultural fields provide suitable habitat to support the species, impacts to the agricultural ditches or related uplands would result in less than significant impact to the species with mitigation measures described in Section 6.

Northwestern Pond Turtle

The Northwestern Pond Turtle (*Actinemys marmorata*) is a medium-sized freshwater turtle native to western North America, ranging from central California through Oregon and Washington—all the way to Baja California (USNPS 2025). Adults measure approximately 8.9 to 21.6 cm in carapace length . Its carapace displays dark olive to black coloration, often accented by lighter, radiating patterns, while the plastron is yellowish with variable brown markings (Stebbins 2003). The species is semi-aquatic, frequenting ponds, lakes, marshes, streams, rivers, and wetlands including man made irrigation canals and stockponds so long as there is permanent water, basking sites, aquatic vegetation to provide cover from predators, and adjacent upland areas suitable for nesting and overwintering (USNPS 2025). Like many turtles, *A. marmorata* is diurnal and omnivorous, consuming aquatic invertebrates, fish, frog eggs and larvae, algae, and plant matter (USNPS 2025). Reproduction typically occurs in spring; females, mature at 8 to 15 years, construct nests in dry, sunny uplands, depositing 3 to 13 eggs per clutch (incubating for about 73 to 130 days, depending on latitude and conditions), with sex ratios influenced by nest temperature (USNPS 2025, Stebbins 2003). The irrigation canals that run through the site and along the southern boundary provide suitable aquatic habitat for this species and adjacent uplands may provide appropriate nesting habitat as the agricultural fields have been fallowed. There is one record of this species within a 5-mile radius of the Property, it is located 1.4 miles to the south (CDFW 2025). Impacts to the agricultural ditches and adjacent uplands would result in less than significant impact to the species with mitigation measures described in Section 6.

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6. Results and Recommendations

This biological resource assessment has identified and evaluated the existing biological resources within the project area, including vegetation communities, wildlife species, and sensitive habitats. Based on field surveys and a review of relevant literature and databases, there is the potential for four federally listed species to occur within the site including; valley elderberry longhorn beetle, giant gartersnake, and northwestern pond turtle. Direct impacts to these species (mortality, injury, or capture) and loss of their habitats would be considered significant impacts. To ensure regulatory compliance and protect sensitive resources the implementation of the following mitigation measures would reduce the impacts of land disturbance on the Property to less than significant.

Valley Elderberry Longhorn Beetle

The following measures would reduce impacts to this species to less than significant:

1. Conduct pre-construction surveys by a qualified biologist within 24 hours of work initiation. If no elderberry shrubs are found within the Property no further actions will be necessary to mitigate for this species. A letter report will be completed by the qualified biologist and submitted to USFWS. If elderberry shrubs are found within the Property the following measures will be executed on site:
    - All project activities (e.g., grading, staging, vehicle use) shall be designed to avoid direct disturbance to elderberry shrubs. A minimum buffer of 100 feet shall be maintained between construction activities and any elderberry shrub with a stem diameter ≥1 inch at ground level, unless otherwise authorized by USFWS. Temporary environmental exclusion fencing (e.g., orange plastic mesh) shall be installed at the 100-foot buffer boundary to prevent encroachment by equipment or personnel. Fencing shall be maintained throughout the duration of construction activities.
    - Prior to ground disturbance, all personnel shall receive Worker Environmental Awareness Training (WEAP) from a qualified biologist on the identification of elderberry shrubs, the life history of the VELB, and the importance of compliance with avoidance measures.
    - Schedule vegetation clearing and ground disturbance outside of the VELB adult emergence period (typically March to June), to avoid disrupting breeding or dispersal activities.

Special Status Reptiles

The following measures would reduce impacts to giant garter snake and northwestern pond turtle to less than significant:

2. Conduct all ground-disturbing activities outside the active period for giant garter snakes and Northwestern pond turtles (typically October 1 through April 30, when snakes are inactive or in

brumation). Avoid construction during the active season (May 1 through September 30), especially in or near aquatic habitats. If work is to occur during this active season construction crews will establish and maintain a minimum 200-foot buffer from suitable aquatic habitat during active periods unless approved otherwise by the USFWS.

3. Conduct pre-construction surveys by a qualified biologist within 24 hours of work initiation. If a listed reptile is found, work will be halted immediately and the qualified biologist will notify USFWS for proper guidance.
4. A qualified on-site biological monitor will be present during all ground-disturbing activities. This qualified biologist will monitor the site for reptile activity and ensure compliance with all protective measures. If a listed reptile is encountered during ground disturbing activities the qualified biologist will halt work and contact USFWS for proper guidance.
5. Install wildlife exclusion fencing, such as silt fence, around construction areas near suitable habitat. Fencing should be checked daily and maintained throughout construction.
6. Stage all materials away from wetland/riparian areas to avoid attracting special status reptiles causing habitat degradation. All stockpiled materials will be covered when precipitation events exceed 50% probability.
7. All construction personnel must receive Worker Environmental Awareness Training (WEAP) from a qualified biologist prior to project initiation. Training should cover listed reptile identification, legal protections, avoidance behaviors, and procedures if a listed species is encountered.

Implementation of these measures will ensure that impacts to federally listed species is less than significant. If take of a listed species or its habitat is unavoidable, compensatory mitigation including the purchase of mitigation credits will be completed before the start of project activities. Mitigation ratios will be determined by regulating agencies to compensate for loss of habitat within the Property. In conclusion, with adherence to recommended best management practices and applicable environmental regulations, the project can proceed with a low risk of significant adverse effects on biological resources.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: 07/28/2025 21:33:33 UTC
Project Code: 2025-0127875
Project Name: Wortham Environmental Assessment

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

PROJECT SUMMARY

Project Code: 2025-0127875
Project Name: Wortham Environmental Assessment
Project Type: Acquisition of Lands
Project Description: Biologial Assessment
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@39.253475699999996,-122.04601849234528,14z

Counties: Colusa County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 12 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

BIRDS

NAME	STATUS
California Condor *Gymnogyps californianus* Population: Pacific Northwest NEP No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8193	Experimental Population, Non-Essential
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

REPTILES

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened
Northwestern Pond Turtle *Actinemys marmorata* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

AMPHIBIANS

NAME	STATUS
Western Spadefoot *Spea hammondii* Population: Northern DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5425	Proposed Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

CRUSTACEANS

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

FLOWERING PLANTS

NAME	STATUS
Palmate-bracted Bird's Beak *Cordylanthus palmatus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1616	Endangered

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

FLOWERING PLANTS

NAME	STATUS
Palmate-bracted Bird's Beak *Cordylanthus palmatus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1616	Endangered

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Colusa County, California

August 23, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Colusa County, California
Survey Area Data: Version 20, Aug 28, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 7, 2022—Sep 8, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
104	Willows silty clay, 0 to 1 percent slopes, frequently flooded	185.0	36.3%
107	Scribner silt loam, 0 to 1 percent slopes, occasionally flooded	180.0	35.4%
124	Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded	0.6	0.1%
125	Moonbend silt loam, 0 to 2 percent slopes	136.6	26.8%
133	Corbiere silt loam, 0 to 2 percent slopes, occasionally flooded	6.9	1.4%
Totals for Area of Interest		**509.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not

mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Colusa County, California

104—Willows silty clay, 0 to 1 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: hh8l
Elevation: 40 to 110 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 225 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Willows, silty clay, frequently flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Willows, Silty Clay, Frequently Flooded

Setting

Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap1 - 0 to 5 inches: silty clay
Ap2 - 5 to 13 inches: silty clay
Bw - 13 to 20 inches: silty clay
Bssy1 - 20 to 39 inches: silty clay
Bssy2 - 39 to 51 inches: silty clay
Bssy3 - 51 to 59 inches: silty clay
Bssy4 - 59 to 72 inches: clay
Bssy5 - 72 to 80 inches: silty clay
Bkssy - 80 to 87 inches: clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 10 percent
Maximum salinity: Very slightly saline to moderately saline (2.0 to 15.0 mmhos/cm)
Sodium adsorption ratio, maximum: 40.0
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: R017XY901CA - Clayey Basin Group
Hydric soil rating: Yes

Minor Components

Capay, clay loam, frequently flooded

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R017XY901CA - Clayey Basin Group
Hydric soil rating: Yes

Willows, silty clay, occasionally flooded

Percent of map unit: 2 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Unnamed

Percent of map unit: 2 percent
Landform: Channels on basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Scribner, silt loam, frequently flooded

Percent of map unit: 1 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: Yes

107—Scribner silt loam, 0 to 1 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: hh8p

Elevation: 50 to 70 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 225 to 250 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Scribner, silt loam, occasionally flooded, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scribner, Silt Loam, Occasionally Flooded

Setting

Landform: Backswamps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 6 inches: silt loam
A - 6 to 12 inches: clay loam
Ab1 - 12 to 20 inches: clay loam
Ab2 - 20 to 33 inches: loam
Ab3 - 33 to 41 inches: loam
C - 41 to 60 inches: loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: Yes

Minor Components

Vina, loam, occasionally flooded

Percent of map unit: 10 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Tread

Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Corbiere, silt loam, occasionally flooded

Percent of map unit: 8 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 2 percent
Landform: Channels
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

124—Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: hh91
Elevation: 50 to 60 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 225 to 250 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Moonbend, silt loam, occasionally flooded, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Moonbend, Silt Loam, Occasionally Flooded

Setting

Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 19 inches: silty clay loam
Bw2 - 19 to 33 inches: silty clay loam
Bw3 - 33 to 41 inches: loam

BC - 41 to 51 inches: silt loam
C - 51 to 63 inches: silt loam
Ab - 63 to 75 inches: silt loam
C' - 75 to 85 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Minor Components

Corbiere, silt loam, occasionally flooded

Percent of map unit: 10 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Willows, silty clay, occasionally flooded

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Scribner, silt loam, occasionally flooded

Percent of map unit: 4 percent
Landform: Backswamps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: Yes

Unnamed

Percent of map unit: 1 percent
Landform: Channels
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

125—Moonbend silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hh92
Elevation: 50 to 60 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 225 to 250 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Moonbend, silt loam, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Moonbend, Silt Loam

Setting

Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 19 inches: silty clay loam
Bw2 - 19 to 33 inches: silty clay loam
Bw3 - 33 to 41 inches: loam
BC - 41 to 51 inches: silt loam
C - 51 to 63 inches: silt loam
Ab - 63 to 75 inches: silt loam
C' - 75 to 85 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Minor Components

Vina, loam

Percent of map unit: 10 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Scribner, silt loam

Percent of map unit: 6 percent
Landform: Backswamps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Willows, silty clay

Percent of map unit: 2 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Colusa, loam

Percent of map unit: 1 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 1 percent
Landform: Channels
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

133—Corbiere silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: hh99
Elevation: 50 to 70 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 225 to 250 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Corbiere, silt loam, occasionally flooded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Corbiere, Silt Loam, Occasionally Flooded

Setting

Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 6 inches: silt loam
Bw1 - 6 to 13 inches: silt loam
Bw2 - 13 to 21 inches: silty clay loam
2Bw - 21 to 33 inches: silty clay
3Ab - 33 to 46 inches: silty clay
3Bssb1 - 46 to 59 inches: silty clay
3Bssb2 - 59 to 73 inches: silty clay
3C1 - 73 to 94 inches: clay
3C2 - 94 to 114 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 25.0

Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Minor Components

Moonbend, silt loam, occasionally flooded

Percent of map unit: 8 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Willows, silty clay, occasionally flooded

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Unnamed

Percent of map unit: 2 percent
Landform: Channels
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

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U.S. Fish and Wildlife Service

National Wetlands Inventory

Wortham Environmental Assessment

September 5, 2025

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Appendix D

Cultural Resources Report (Confidential)